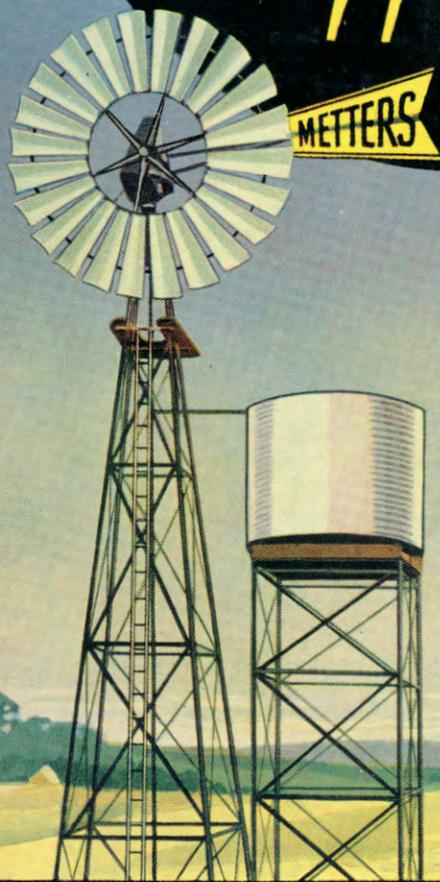


METTERS

Mills



METTERS

PUMPS
PUMPING GEARS
TROUGHING
SQUATTERS TANKS
TANK STANDS
ETC.

METTERS LIMITED

ADELAIDE · SYDNEY · MELBOURNE · BRISBANE · PERTH

Adelaide Telegraphic address "METTERSMIL" ADELAIDE

OUR GUARANTEE



Every article we manufacture is guaranteed for all time against faulty workmanship on our part, and we agree to replace free of charge, F.O.R. or F.O.B., Adelaide, Sydney, Melbourne, Perth, or Brisbane, any faulty part or parts, provided such part or parts are returned to us for inspection.



FOREWORD

This catalogue is published with the object of conveying to patrons as clearly as possible detailed and illustrated descriptions of the various windmills, pumps, squatters' tanks, tankstands, troughing, pumping gears and other sundry equipment of our manufacture used in connection with water conservation and pumping plants for various purposes.

Circumstances and distances sometimes prevent clients from making personal inspection. Therefore, by the information contained in this catalogue, we hope to assist them in their selection of the most suitable equipment for their requirements.

To cover the whole field of demand we manufacture three different pattern windmills, viz., Master Nuoil, Type K, and Direct Action.

The Master Nuoil is a heavy duty windmill and manufactured in sizes 6, 7, 8, 10, 12, and 14 ft. windwheels.

It can be said with every confidence that no other windmill ever made has stood the test so completely and so satisfactorily. It is the best that can be made, and owing to its greater lifting strength, replaceable and interchangeable bearings, and general service efficiency, discriminating clients do not hesitate to regard the Master Nuoil as the best windmill that can possibly be purchased.

The Type K, originally designed to fill a demand for an efficient low price windmill, was first produced during 1934. Subsequent improvements and additions have placed this mill above comparison with ordinary low-priced mills, but the enormous demand has enabled us to maintain low production costs, with the result that prices are competitive in the low price field.

We manufacture the Type K windmill in sizes 5, 6, 8, and 10 ft. windwheels.

Metters Direct Action Self-Oiling windmill contains very important improvements over other windmills of similar principle. The method of crank and pump rod balance positively overcomes the disadvantages of ordinary direct action windmills.

This windmill is supplied with either 12 or 14 ft. windwheels.

Metters service to their clients is an established fact, and their reputation in this regard is being zealously maintained. Realising that it is most imperative for clients to provide ample water supply for stock and other purposes, special attention is given to orders for all pumping equipments, etc., and spare parts.

Ample stocks of spare parts are always on hand ready for immediate despatch, and clients are assured of obtaining duplicate parts for any article manufactured by Metters Limited, no matter how long ago. This service, added to careful attention to all details of manufacture, has placed Metters Limited very high in the estimation of the community, with the result that clients have the utmost confidence in our products and organisation.

METTERS

ORGANIZATION THROUGHOUT AUSTRALASIA

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Adelaide, S.A.
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Phones: B 2810, B 7412, B 7900

METTERS LIMITED
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Thebarton, S.A.
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METTERS LIMITED
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Cr. Adelaide and Creek Streets
Brisbane, Queensland
Phones: B 0211

METTERS LIMITED
Box H, 592, G.P.O.
847-851 Hay Street, Perth, W.A.
Phones: B 7167 (4 lines)

METTERS (N.Z.) LIMITED
Petone, Wellington, N.Z.

Also

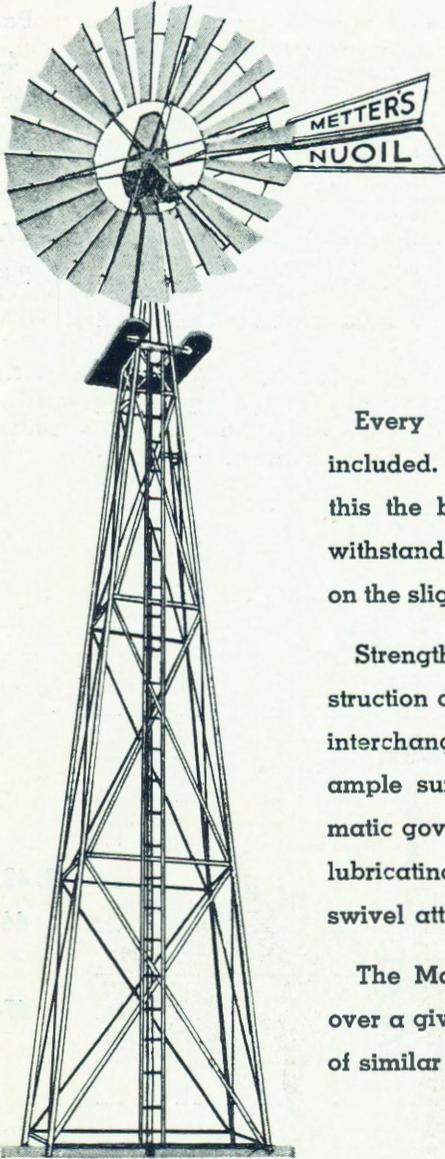
METTERS LIMITED
London, E.C.1.

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Metters Master Nuoil Windmill

Manufactured in sizes 6 ft., 7 ft., 8 ft., 10 ft., 12 ft., and 14 ft. windwheels.
Positively the best that can be made.



Every known feature of advantage is included. No effort has been spared to make this the best that money can buy. It will withstand the strongest wind and it will work on the slightest breeze.

Strength is the basis throughout the construction of this Windmill; it is equipped with interchangeable and replaceable bearings of ample surface, ball-bearing turntable, automatic governing device, a positive automatic lubricating system, and an anti-pump rod swivel attachment.

The Master Nuoil will pump more water over a given period than any other Windmill of similar size.

SPECIFICATIONS.

THE MAIN CASTING is also the oil container, and is made in one piece so as to eliminate any possibility of the oil leaking away. It also accommodates the working gears. The sleeve portion receives the main driving spindle, which is automatically lubricated. The surplus of oil drains back through the sleeve into the sump. The central pillar is integral with the main casting.

Metters Master Nuoil Windmill

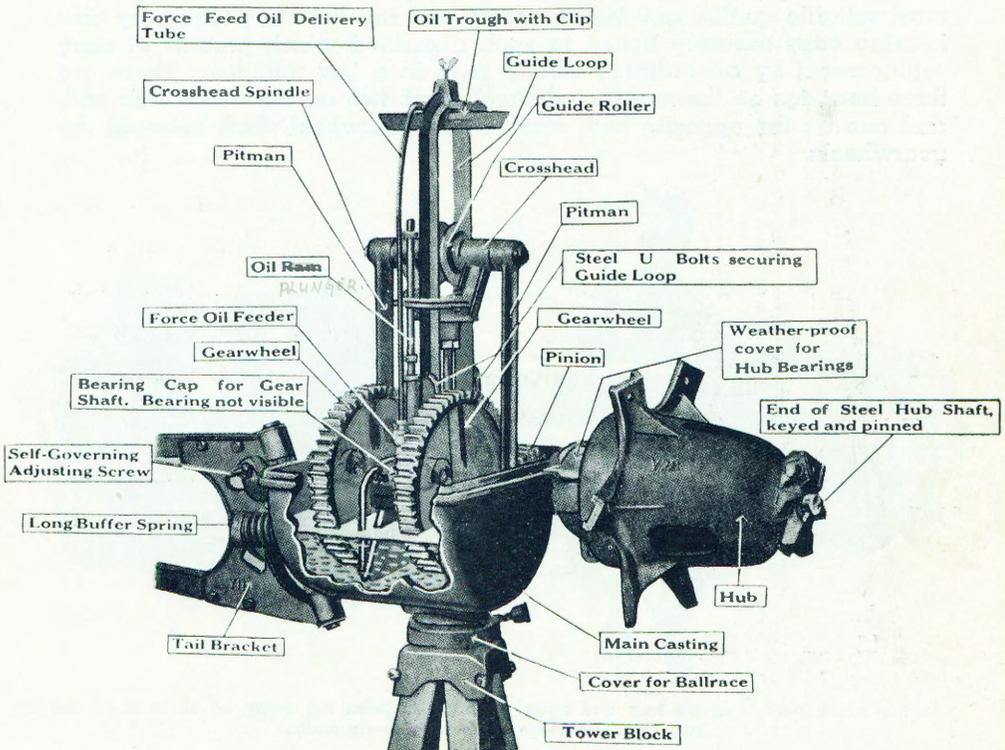
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TWIN GEARS consist of two gear wheels and two pinion wheels, which are securely keyed to the gearwheel spindle and the hub spindle respectively, with the bottom end of the pitman arms connected to the gearwheels by properly machined cold-rolled mild steel crankpins, with a feather steel key and drawn up tight by a faced steel nut, and operate in the oil contained in the main casting.

Gear Ratio, 3 to 1, so as to obtain maximum power and long, steady stroke.

A **TEE IRON GUIDE LOOP** penetrates through the central pillar of the main casting, and is positively held in position by two steel U bolts on the outside and by specially machined steel plates on the inside, which are let into a recess on the pillar casting, and welded to the guide loop.

MAIN PUMP ROD passes through a hole in the central pillar portion of the main casting, and is screwed right through the crosshead and prevented from becoming unscrewed by a steel cotter pin. The bottom end of the pump rod is attached to the anti-pump rod swivel.



Illustrating a 10-ft. Master Nuoil Windmill Head with main casting cut away to show working gears.

THE CROSSHEAD is connected to the pitmans by a steel shaft which passes through each of the pitmans, the crosshead and the guide roller, and secured at each end by a cotter pin.

Metters Master Nuoil Windmill

Continued.

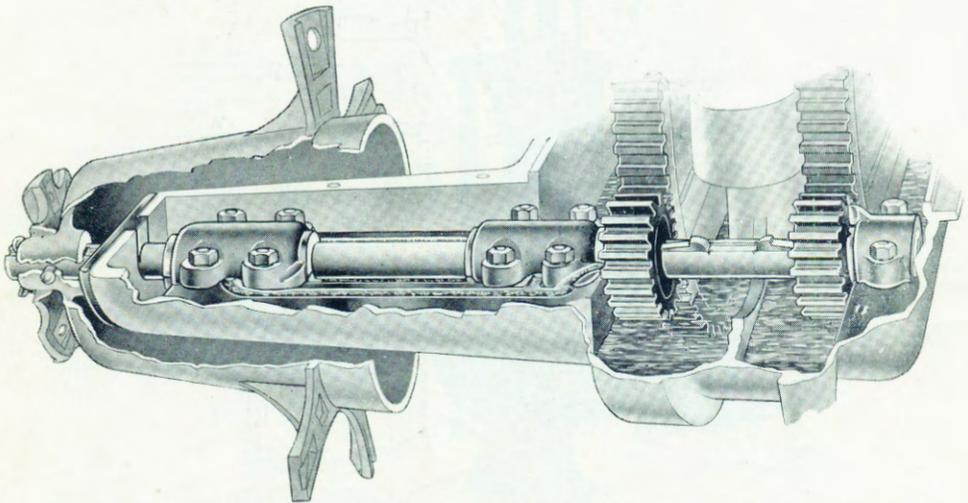
WHEEL HUB is securely fastened to the hub shaft by an extra strong steel key fitted tight into a deep keyway. A cotter pin passes through the outer end of the shaft hard up against the key as a special precaution against the key working loose.

The hub is further made secure on the shaft by a steel tapered pin which passes right through the hub casting and the hub shaft. The thrust of the windwheel is taken by three case-hardened steel washers on shaft.

GUIDE ROLLER positively ensures a true and smooth stroke movement of the crosshead in the guide loop.

OIL FORCE FEEDER is automatically operated by a solid steel ram which passes through a clamp securely attached to each side of the crosshead from whence is derived the up and down motion. The oil is forced through a copper delivery tube into the cast oil trough, which is secured to the top of the guide loop by a cast clip securely bolted, the nuts being positively prevented from unscrewing by steel cotter pins. The oil flows down from the oil trough and amply lubricates the movement of the guide roller and top end of pitman arms, and then drops back into the sump absolutely clear of the hole in the main casting through which the pump rod passes.

BEARINGS are interchangeable and replaceable, and consist of the most suitable quality anti-friction metal, and are held in position by cast bearing caps securely bolted in such a method which permits of easy replacement by an ordinary handy man in a few minutes. There are three bearings on the main windwheel shaft, two on the wheel hub end, and one on the opposite end, also on the gearwheel shaft between the gearwheels.



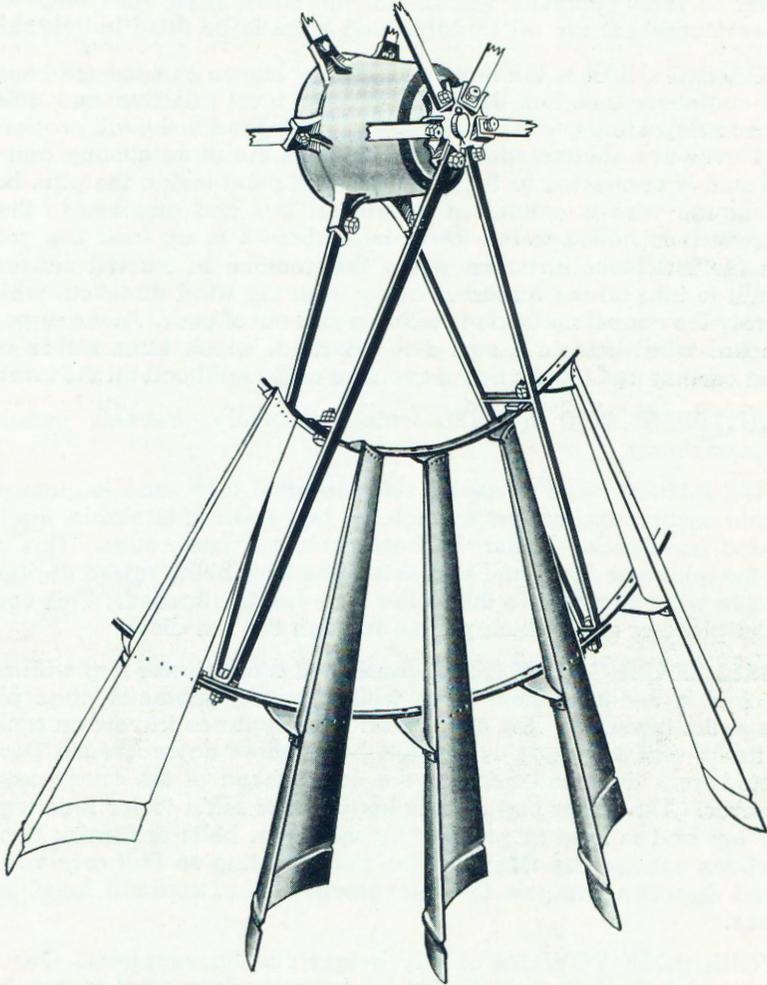
In this block portion of the hub and main casting has been cut away so as to show the hub shaft, bearings, etc., and oil channels.

GALVANISED STEEL COVER is fitted over the main working parts of the mill and double flanged at the bottom to fit over the ridge on the top of the main casting, and held down to the cast iron clip which is fitted to the top of the guide loop by a steel wing nut, thus eliminating any possibility of dust or rain penetrating into the working gears.

Metters Master Nuoil Windmill

Continued.

"STORM-PROOF" AUTOMATIC GOVERNING is thoroughly reliable, and controls the speed of the windwheel. This is achieved by the poise of the tail without the aid of springs or weight controls. The maximum wheel revolutions are in accordance with the setting of the adjusting bolt, which can be altered without the slightest difficulty, according to the maximum speed desired. This does not stop the mill, but prevents it from working too fast. In the case of a new mill the adjustment is made to suit average requirements before the mill leaves our works.



Showing a section of an 8 ft. Master Nuoil Windwheel.

WINDWHEELS are designed so as to transmit every available ounce of wind energy to the working gears. The set of the sails is so arranged that the slightest wind pressure causes the wheel to revolve. The 8-10-12 and 14 ft. Master Nuoil Windwheel are of similar design but differ slightly in detail. The 6 and 7 ft. wheels consist of four sections, each section

Metters Master Nuoil Windmill Continued.

containing four Galvanised Sails, which are electrically welded to Galvanised Sail Clips. The clips being rivetted to section of inner and outer rings. The spokes are of flat steel. The eight foot wheel has six double staggered spokes and six assembled sections. Each section has three Galvanised Sails, electrically welded to Galvanised Sail Clips, which are rivetted to inner and outer section of rings. The ten foot wheel is similar to the 8 ft., but has four Galvanised Sails to each section. The twelve foot wheel is also of similar design, with three sails to each section. The sections for 6-7-8-10 and 12 ft. wheels are assembled ready to be bolted together to form complete wheel, but the sails, clips, and rings of the fourteen foot wheel are all separate and have to be fitted individually.

FURLING GEAR is the most satisfactory known to windmill constructional engineers and has definitely proved most effective and efficient. A strong twisted link chain is applied to a hook fitted to the tail bracket and passes over two sheave wheels and through the main casting and pipe barrel and is connected to the furl wire at a point inside the pipe barrel. No. 8 gauge wire is connected to the furl bar and attaches to the furl lever, which is bolted to the tower legs about 4 ft. up from the ground. When the furl lever is pulled down the position of the tail causes the windmill to turn on the turntable away from the wind direction, which is positively the correct method of pulling a mill out of gear. At the upper end of the furl wire there is a cast disc attached, which turns inside of the furl bar casting and allows free movement of the millhead on the turntable.

ANTI-PUMP ROD SWIVEL which positively prevents pump rod from unscrewing.

PIPE BARREL is of specially selected steel tube, and is clamped to the main casting and passes through the ball bearing turntable, top tower cap, and baseblock. Under the baseblock is a cast collar. This collar holds the millhead down and prevents same from being raised during any excessive wind storms. To this collar a tie bar is attached. This consists of a flat piece of steel which passes through the furl disc.

BALL BEARING TURNTABLE consists of a cast tower cap with a cast cover and a series of steel balls with a strong gunmetal cage placed between the tower cap and cast cover. The ballrace travels on a chilled steel track, and is amply lubricated by a screw-down grease cup and protected from dust and rain by the construction of the tower cap and cast cover. The tower cap also holds the four main tower legs together at the top and is held in position by four steel bolts and nuts; two cast protections engage the flange of the main casting so that any variation of wind direction compels free movement of the windmill head on the ballrace.

FOUR POST TOWERS of any height can be supplied. Our stock sizes are 20 ft. and 30 ft. high, but we have made special towers to suit local conditions up to 70 ft. high. Our towers are scientifically designed to resist wind storms, keeping in mind their responsibility in respect to the strain of central loads, and consist of four heavy steel main angle legs, each of the four sides having double angle diagonal stays, also angle girths, heavy angle steel anchor posts, anchor timber, and angle steel ladder included. List prices for Master Nuoil Windmills include painted towers, but Galvanised Towers can be supplied at extra cost.

Metters Master Nuoil Windmill

Continued.

APPROXIMATE WEIGHT.

	6 ft.	7 ft.	8 ft.	10 ft.	12 ft.	14 ft.
	C. Q. Lbs.	C. Q. Lbs.	C. Q. Lbs.	C. Q. Lbs.	C. Q. Lbs.	C. Q. Lbs.
Mill only, no Tower ..	2 3 2	2 3 17	3 0 22	6 1 10	9 0 0	10 1 8
Mill with 20 ft. Tower	5 2 26	5 3 13	7 2 15	11 3 6	15 0 19	16 2 19
Mill with 30 ft. Tower	6 3 0	6 3 15	8 3 23	13 2 22	17 2 22	18 3 13
Length of Stroke ..	7 in.	7 in.	7 in.	6-8 in.	8-10 in.	8-10 in.
Spread of 20 ft. Tower at ground level ..	5 ft. 4 in.	5 ft. 4 in.	5 ft. 4 in.	5 ft. 4 in.	5 ft. 4 in.	5 ft. 4 in.
Spread of 30 ft. Tower at ground level ..	6 ft.	6 ft.	5 ft. 9 in.	5 ft. 9 in.	5 ft. 9 in.	5 ft. 9 in.

MAXIMUM PIPE CLEARANCE INSIDE TOWER.

Size of Mill.	20 ft. Tower.	30 ft. Tower.
6 ft.	12 ft. 11 in.	22 ft. 6 in.
7 ft.	12 ft. 11 in.	22 ft. 6 in.
8 ft.	12 ft. 11 in.	22 ft. 6 in.
10 ft.	12 ft. 2½ in.	21 ft. 9 in.
12 ft.	12 ft.	19 ft. 7 in.
14 ft.	12 ft.	19 ft. 7 in.

MAXIMUM PUMPING HEAD IN FEET OF METTERS MASTER NUOIL WINDMILLS.

Size of Windmill	DIAMETER OF PUMP						
	2 in.	2½ in.	2½ in.	2½ in.	3 in.	3½ in.	4 in.
6 ft.	91	78	70	61	53	39	29
7 ft.	142	105	98	84	71	53	31
8 ft.	185	133	127	110	100	74	52
10 ft.	391	360	346	298	243	170	140
12 ft.	567	510	497	461	372	300	200
14 ft.	693	618	587	514	400	350	250

MASTER NUOIL WINDMILL HEADS CAN BE FITTED ON ANY EXISTING WINDMILL TOWER.

Thousands have been supplied for this purpose, and where the old Metters windwheels are in good order same may be fitted to the Master Nuoil hub. In cases where the old mill is not of our manufacture, but designed to produce a clockwise wheel movement, we may be able to fit clients' old windwheel hub to the Master Nuoil windmill head, thus permitting the old wheel to be used.

Owing to the much improved and simplified automatic governing system new tail mounts are essential, but the old galvanised iron portion of a Metters tail can be used if so desired, but when establishing a Master Nuoil windmill head on to an old tower we recommend that a new complete tail be purchased, as the labour costs in taking the galvanised iron portion away from the old tail mounts and fitting same to the new tail mounts would not justify any saving in cost by purchasing the tail mounts only.

When supplying a Master Nuoil head for an old windmill tower we include a light sheet-iron template to be placed over the corner of the angle iron legs at the top, and contains indication of where the fresh holes have to be made with a hack saw and punch in the corners of the old tower for the bolts which secure the Master Nuoil tower cap, baseblock, and crossguide.

The tower cap which is supplied with the head must be fitted over the top of each of the four main angle iron legs. The pipe barrel passes through this tower cap, also passes through the cast baseblock a little lower down. There is very little work required to fit a Master Nuoil head to an old tower, and in most cases the new head is fitted by ordinary handyman, the assistance of an expert being considered unnecessary.

Testimonials

Every Metters Windmill is in itself an example of efficiency and reliability, and undoubtedly the best advertising medium. Hundreds of verbal expressions of appreciation and written testimonials have been received regarding Master Nuoil Windmills. We reproduce the following as of average contents:—

Minlaton,
South Australia.

METTERS LIMITED.

Dear Sirs,

The 10 x 30 Master Nuoil windmill, pump, pipe and fittings arrived safely. Everything required for the job was included, and I thank you for giving my order such prompt and efficient attention. The whole plant is now erected. Everything went together without difficulty, and is working beautifully.

The Master Nuoil is raising water from a bore 153 ft. deep and then forcing through $1\frac{1}{2}$ miles of $1\frac{1}{2}$ in. pipe with a rise of about 33 ft., and is pumping sufficient water for up to 3,000 head of sheep.

The way this mill is doing the job reflects great credit on Metters Ltd. It works on an extremely light breeze and automatically governs itself perfectly. It is creating quite a great amount of local interest, and I am very proud to be the owner of such an efficient windmill plant.

I was tempted to get a cheaper windmill for this bore, but after careful consideration, and bearing in mind the complete satisfaction I have obtained from the other seven Metters mills I have on my various properties, I decided to order another "Metters," and I am indeed very glad that I did.

Thanking you for the efficient manner in which you handled my order and the courtesy I have always received from your firm.

Yours faithfully,

(Signed) H. MUMFORD.

71 Victoria Street,
Peterborough.

METTERS LTD.

Dear Sirs,

I have just completed erecting the 14 x 30 Master Nuoil windmill and 3 in. pump, etc., and I consider it to be the best windmill I have ever erected.

The wind was only just sufficient to move the leaves of the trees, but the mill was running quite nicely and pumping a good stream of water from a depth of 300 ft. and forcing another 25 ft.

I will with pleasure recommend your windmills without hesitation.

Yours truly,

(Signed) W. H. TALBOT.

Theldarpa,
Milparinka, via Broken Hill.

METTERS LTD.

Dear Sirs,

I am writing to let you know that the 14 ft. Metters Master Nuoil mill supplied to us is doing the job splendidly.

We are very pleased with it and will always recommend your mills.

Yours faithfully,

(Signed) L. J. BAKER.

Box 14, Strathalbyn, S.A.

METTERS LTD.

Dear Sirs,

With reference to the 8 x 30 Master Nuoil windmill purchased last September. It is working a $2\frac{3}{4}$ in. pump on a total vertical head of 171 ft., and I feel that I must express my entire satisfaction on the way it is doing the job.

Throughout last summer the mill pumped more than sufficient water required for my stock, and I was able to do a little irrigating.

I admit I was rather sceptical when purchasing the mill, as other windmill firms would not recommend an 8 ft. mill for this job, but I am indeed pleased that I took your advice, as it would be impossible for any other mill—even a larger one—to give better service.

It is remarkable how this 8 ft. Master Nuoil mill works on such a light breeze, and I sincerely thank you and your Strathalbyn agent, Mr. J. L. Weidenhofer, who erected the plant, for practical advice and valuable assistance.

Yours faithfully,

(Signed) E. H. WOOLFITT.

Port Vincent,
Yorke's Peninsula.

METTERS LTD.

Dear Sirs,

With reference to the 8 x 30 Master Nuoil windmill we purchased from you during August last year. We have had ample time to form an opinion of this mill under practical conditions, and, after careful observation, we have come to the conclusion that it is practically perfect.

This particular mill is operating on a bore one hundred and fifty feet deep, and the way it works on the lightest breeze is positively astounding. The automatic governing arrangements are extremely simple, but most effective.

We have adjusted the tail to prevent the mill from exceeding 35 strokes per minute. It answers to the adjustment instantaneously. I have taken the galvanised cover off the head and carefully studied the operation of the gears and oiling system, and the whole lot works with clockwork precision.

The bearings in this mill are a great improvement over the older models, and must add years to the life of the mill.

I have had a wide experience in most classes of machinery, but I cannot see where any improvements can be made on your Master Nuoil windmill, the operation of which under practical conditions is 100 per cent. efficient.

We have altogether 14 Metters windmills, and within a few weeks we will be placing orders for two more.

Yours faithfully,

(Signed) T. W. CORRELL & SONS,
Per J. C. Correll.

"Kelleen,"
via Wentworth,
River Darling, N.S.W.

METTERS LTD.

Dear Sirs,
Please forward as soon as possible the following:—

One 10 ft. Master Nuoil windmill, complete with 30 ft. tower.

One No. 2 Metters force pump, 4 in. x 2 in. Five 20 ft. lengths 2 in. galvanised pipe.

Two 2 in. galvanised bends.

One 2 in. galvanised footvalve and strainer.

I already have four Metters Nuoil windmills and one Metters old pattern windmotor on my property, and the fact that I am now ordering another is ample evidence of my complete satisfaction with the service they have given me.

Please send the above order as soon as you possibly can, as I am urgently requiring it. I will be wanting another mill very shortly, and it will be another Metters.

Yours truly,
(Signed) M. F. CULLINAN.

Adelaide.

Messrs. METTERS LIMITED.

Dear Sirs,

We have been using your mills for a number of years, having equipped over two hundred on our different properties.

The mills have given satisfaction, both in respect to their efficiency in the pumping of water, as well as the low cost of replacement of parts.

Yours faithfully,
For A. J. & P. A. McBRIDE LTD.
(Signed) P. A. McBRIDE.

Walkers Flat.

METTERS LIMITED.

Dear Sirs,

With reference to the 10 ft. Master Nuoil Windmill purchased from you—The mill has given wonderful satisfaction; several months ago when the whole district was out of water owing to the lack of wind for weeks at a time, this Metters Mill with the evening breeze and the light breeze at sunrise gave us a full supply of water.

This year is the first year since we have been here that a mill has given us enough water in the calm period.

Yours faithfully,
(Signed) G. S. HOSKING.

Mundi Mundi Station,
Silverton, N.S.W.

METTERS LIMITED.

Dear Sirs,

With regard to your Master Nuoil Windmills—We have seven on this station as well as 48 other Metters Windmills on this and on our other stations, and I have no hesitation in advising you that same have given us complete satisfaction.

Windmills on our country are subject to very severe conditions, but judging from our experience, Metters Windmills are designed and manufactured to stand up to such conditions.

The Master Nuoil Windmills are as near to mechanical perfection as possible. There is positively no doubt about their strength and durability, and they work on the faintest breeze.

The operation of the oiling system is perfect, and the automatic governor is most reliable.

Years ago we standardised on Metters Windmills, and I say with every confidence that we have never had cause to regret doing so.

Yours truly,
For MUNDI MUNDI PASTORAL CO.
(Signed) H. A. LEWIS.

METTERS LTD.

McLaren Vale.

Dear Sirs,

I feel that I must express to you my complete satisfaction in the 12 x 30 Master Nuoil windmill that I purchased from you in November.

It is pumping from a depth of 270 ft. and forcing the water 600 ft., with a further rise of 30 ft., without any difficulty whatever. It is indeed surprising the way this mill pumps on such very light breeze, and I have not had the slightest trouble with it in any way.

I would recommend a Metters Master Nuoil to anyone who requires a reliable and efficient windmill, and will be pleased to show my mill to anybody who may be interested.

These remarks are sincere and unsolicited, and you have my heartfelt thanks for the valuable advice and assistance you rendered me during this transaction.

Yours faithfully,
(Signed) W. H. WHITING.

METTERS LTD.

Blinman.

Dear Sirs,

In reply to yours of the 3rd April I am pleased to say that the 14 x 30 Master Nuoil supplied by you is giving satisfactory service.

It raises water from a depth of 430 ft., and without over-strain forces it a distance of 600 ft. up a hillside to an elevation of 70 ft., into the storage tank.

It seems to operate quite easily under a comparatively light wind pressure.

Yours sincerely,
(Signed) J. J. EMERY.

METTERS LTD.

Percyton.

Dear Sirs,

I assume you will be quite interested to learn that my 12 ft. Nuoil mill is now handling all the additional load I have put on it.

It is now pumping from a surface tank to a point two miles and 25 chains distant, the rise being 450 ft.

Yours sincerely,
(Signed) M. L. McCORMACK.

Mundi Mundi Station,

METTERS LTD.

Via. Silverton.

Dear Sirs,

Referring to the Master Nuoil windmills purchased by the Mundi Mundi Pastoral Company Ltd., for this station, I consider you have reached an unsurpassed standard on these particular jobs. These mills are doing an excellent job, and I have yet to see a windmill their equal. The extraordinary feature about them is the light wind pressure required to work them, which is a most important thing in this country, where the paddocks are large, and consequently big numbers of stock on the waters, and every turn of a windmill is required at times to keep the water up to them.

Although we have gone through days without wind, they have never given me a moment's anxiety, and have kept the water up to the stock without the assistance of an engine. I consider they are the ideal job for station use.

Yours faithfully,
(Signed) J. D. KELLY, Manager.

METTERS LTD., Adelaide.

Minlaton.

Dear Sirs,

I feel it incumbent upon me to indicate to your firm my great satisfaction with 10 ft. Master Nuoil Windmill I purchased from you last month. I say without hesitation and in all sincerity that from every point of view this mill absolutely stands alone. I am delighted with it. The automatic governing is simply wonderful; no matter how strong the wind the mill never races, but keeps working at an even pace. I congratulate Metters Ltd. on the production of a windmill with such all-round general efficiency, and I recommend your Master Nuoil with every confidence.

Yours faithfully,
(Signed) S. F. HOYLE.

Metters Type K Self-Oiling Windmill

Manufactured in sizes 5 ft., 6 ft., 8 ft. and 10 ft. windwheels.

This pattern is manufactured to meet a demand for a reliable low price Windmill. It is not a heavy duty mill, and it does not contain all the advantages included in the Master Nuoil, but nevertheless, it is both efficient and reliable, and provided it is not overloaded will give most satisfactory service. It is definitely the best Windmill obtainable at the price, and second only to the Master Nuoil in general all-round efficiency and reliability.

SPECIFICATIONS.

Ball-Bearing Turntable ensuring free and easy movement of mill head according to variations in wind direction.

Anti-Pump Rod Swivel Attachment, which positively prevents pump rod from unscrewing.

Machine Moulded Twin Gears working in oil bath and effectively secured to shaftings by steel engineer's keys.

Double crank movement guided by tee steel loop oxywelded to pipe barrel.

Pipe barrel passing through and oxywelded to main casting.

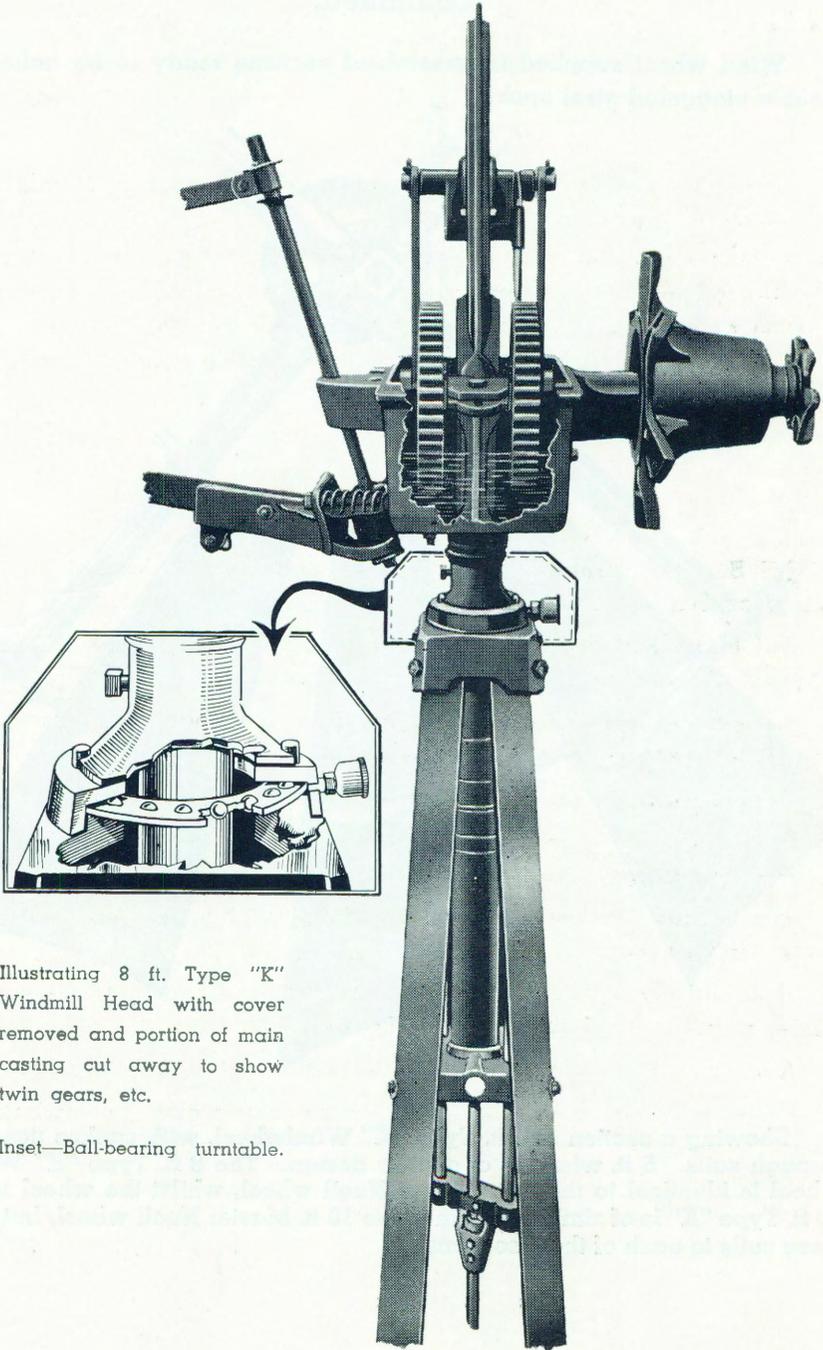
Replaceable anti-friction metal bearings to pitmans, hub and gear shafts. Ample surface.

Main casting which effectively houses working gears, in one piece, thus eliminating possibility of oil escaping.

Automatic governor, providing protection to mill against wind storms.

Every working part assured of ample lubrication by automatic oiling system and protected from weather by heavy galvanised iron cover flanged over top of main casting.

Metters Type K Self-Oiling Windmill

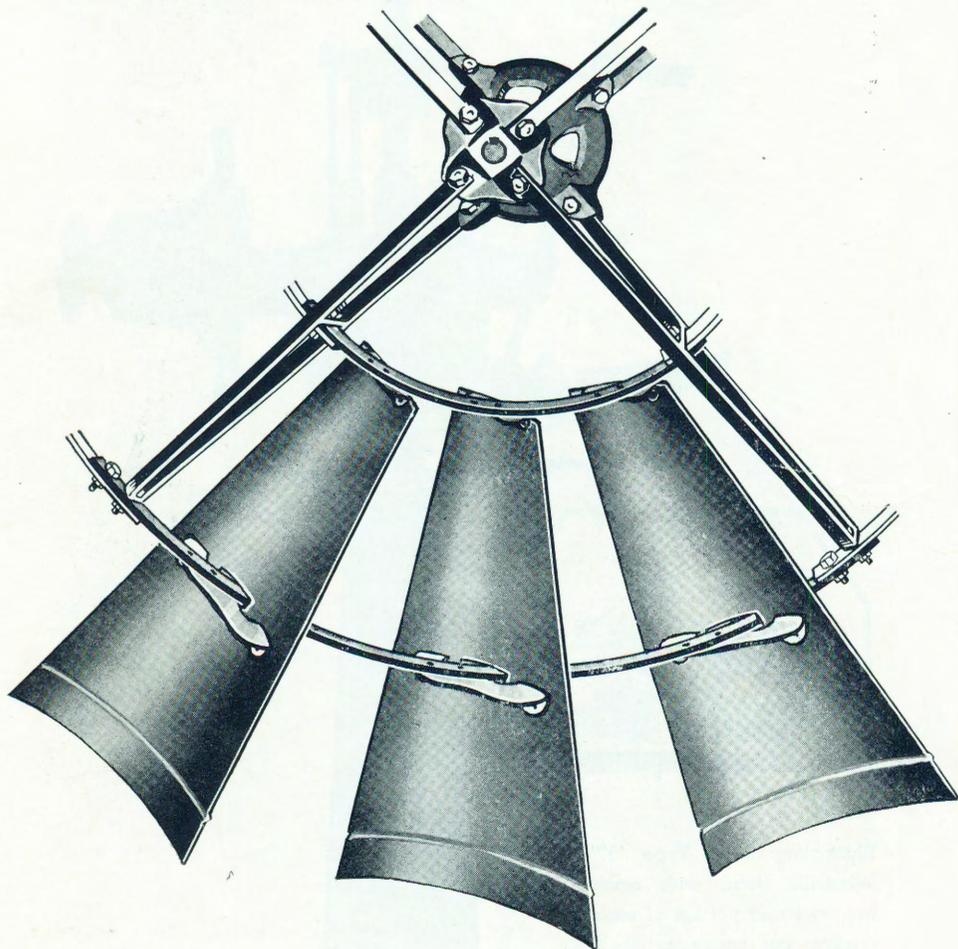


Illustrating 8 ft. Type "K"
Windmill Head with cover
removed and portion of main
casting cut away to show
twin gears, etc.

Inset—Ball-bearing turntable.

Metters Type K Self-Oiling Windmill Continued.

Wind wheel supplied in assembled sections ready to be bolted to double staggered steel spokes.



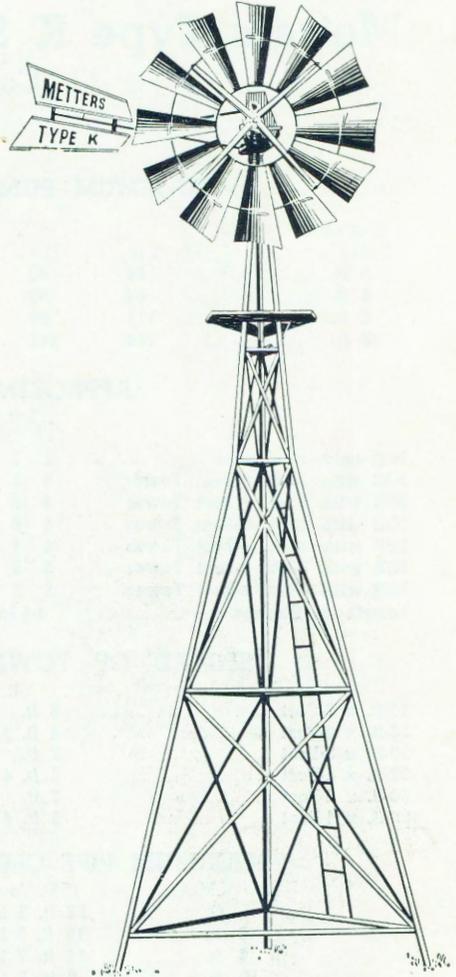
Showing a section of 6 ft. Type "K" Windwheel, with spokes passing through sails. 5 ft. wheel is of similar design. The 8 ft. Type "K" Windwheel is identical to the 8 ft. Master Nuoil wheel, whilst the wheel for a 10 ft. Type "K" is of similar design to the 10 ft. Master Nuoil wheel, but has three sails to each of the 6 sections.

Metters Type K Self-Oiling Windmill

Continued.



An 8 ft. Type "K" Windmill
on a 20 ft. 4-post Tower.



Illustrating 6 ft. Type "K" Windmill on
20 ft. 3-post tower.

Tower Legs, Girths and Ladder of angle steel with flat steel diagonal stays securely tightened by tension bolt.

Towers supplied with either three or four legs; painted or galvanised (to be specified). Stock sizes, 15, 20 and 30 ft. high. Anchor posts and anchor timber included with towers.

Pump rod and connections to ground level.

Tin of oil supplied with mill head.

Tower Cap and Base Block for 3 or 4 Post Tower (to be specified) supplied with Head.

Type "K" Windmill Heads can be fitted to any existing windmill tower.

Metters Type K Self-Oiling Windmill Continued.

MAXIMUM PUMPING HEAD IN FEET.

Size of Mill	DIAMETER OF PUMP						
	2 in.	2½ in.	2½ in.	2¾ in.	3 in.	3½ in.	4 in.
5 ft.	58	49	38	30	25	20	17
6 ft.	64	55	44	36	31	25	22
8 ft.	115	92	78	65	56	40	31
10 ft.	260	212	187	146	126	90	66

APPROXIMATE WEIGHTS.

	5-ft.		6-ft.		8-ft.		10-ft.	
	C.	Q. Lbs.	C.	Q. Lbs.	C.	Q. Lbs.	C.	Q. Lbs.
Mill only, no Tower	1	1 2	1	2 0	2	1 20	4	1 9
Mill with 15-ft. 3-Post Tower	3	1 12	3	2 10	4	2 2	—	—
Mill with 15-ft. 4-Post Tower	3	2 24	3	3 22	4	2 22	—	—
Mill with 20-ft. 3-Post Tower	4	0 2	4	1 0	5	0 20	7	2 19
Mill with 20-ft. 4-Post Tower	4	1 18	4	2 16	5	2 8	8	2 0
Mill with 30-ft. 3-Post Tower	5	0 5	5	1 3	6	0 23	8	3 25
Mill with 30-ft. 4-Post Tower	5	2 6	5	3 4	6	2 24	10	1 2
Length of Strokes	4-5 in.		4-5 in.		5-6 in.		6-7 in.	

SPREAD OF TOWER AT GROUND LEVEL.

	5-ft.	6-ft.	8-ft.	10-ft.
15-ft. x 3-Post	5 ft.	5 ft.	5 ft.	—
15-ft. x 4-Post	4 ft. 3 in.	4 ft. 3 in.	4 ft. 3 in.	—
20-ft. x 3-Post	7 ft.	7 ft.	7 ft.	7 ft.
20-ft. x 4-Post	5 ft. 4 in.	5 ft. 4 in.	5 ft. 4 in.	5 ft. 9 in.
30-ft. x 3-Post	7 ft.	7 ft.	7 ft.	7 ft.
30-ft. x 4-Post	5 ft. 4 in.	5 ft. 4 in.	5 ft. 4 in.	5 ft. 9 in.

MAXIMUM PIPE CLEARANCE INSIDE TOWER.

Size of Mill	15 ft. Tower	20 ft. Tower	30 ft. Tower
5 ft.	12 ft. 3 in.	17 ft.	26 ft. 7 in.
6 ft.	12 ft. 3 in.	17 ft.	26 ft. 7 in.
8 ft.	11 ft. 7 in.	16 ft. 4 in.	25 ft. 11 in.
10 ft.	9 ft. 5 in.	14 ft. 2 in.	23 ft. 9 in.

Metters Type K Self-Oiling Windmill

Continued.

Testimonials

A FEW OF THE MANY LETTERS OF APPRECIATION RECEIVED
FROM CLIENTS RELATING TO TYPE "K" WINDMILLS.

"Duncalan,"
Wolseley, S.A.

Messrs. METTERS LIMITED.

Dear Sirs,

I confirm my telephone order for my seventh Metters K Mill 6 ft. wheel 15 ft. galvanised tower for this year. I am extremely pleased with the other K mills already erected.

Yours faithfully,

(Signed) T. F. ALLEN.

Yacka.

METTERS LIMITED, Adelaide.

Dear Sirs,

About 18 months ago I purchased one of your 8 ft. Type K Self-oiling Windmills. It is working a 3 in. pump in a bore 100 ft. deep, and I feel that I should express to you my appreciation and satisfaction on the way this mill is doing the work.

All through last summer the mill pumped more water than I required for my stock, and even during very calm periods when the breeze was hardly perceptible the mill was working beautifully.

When I purchased this mill you told me that the Type K was intended to compete in the low price field, but it would be impossible for any windmill, regardless of price, to work on a lighter breeze than this one, and this seems to be the general opinion.

Yours faithfully,

(Signed) JAMES HAY.

Mannum.

Dear Sirs,

I am writing to let you know that I am delighted with the 10 x 30 Metters Type K Windmill. It is pumping from 240 ft. with a 2 in. pump on a very light wind. I am more than pleased with it and would gladly let anyone inspect same.

Yours sincerely,

(Sgd.) K. McLOUGHLIN.

Victor Harbour.

Dear Sirs,

Enclosed please find payment for two 6 x 15 Type K Windmills, etc. I am quite pleased with them, especially the method of fixing the tower stays. I put the second stand together by myself in an hour.

Both mills are working most satisfactorily, and I thank you for prompt attention to my order.

Yours faithfully,

(Signed) A. E. HAWKE.

Private Bag, Kaniva.

METTERS LIMITED.

Dear Sirs,

Received 10 ft. Type K Mill and tower safely which you forwarded to me on 3rd March. I have erected same on bore recently put down and it is working to my complete satisfaction, pumping from 130 ft. deep to the surface.

I purchased a Metters 10 ft. K at the Border-town Show last year, and that is pumping from about the same depth on another bore and has been going all the summer and has given entire satisfaction, nothing whatever giving trouble.

Yours faithfully,

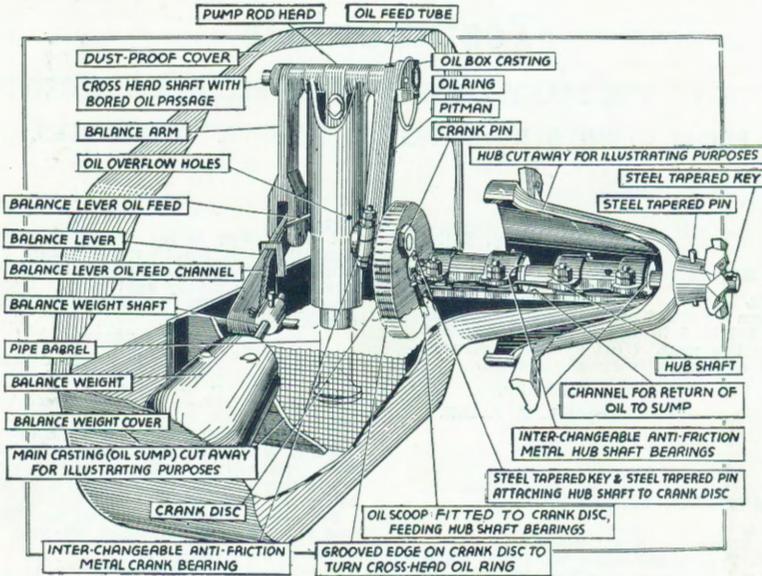
(Signed) A. O. HOBBS.

Metters Direct Action Self-Oiling Windmill

Manufactured with 12-ft. or 14-ft. Windwheels, 5-in. stroke.

Designed on original direct acting principle, but with the disabilities entirely overcome by modern progress.

When designing this Windmill the basis of all calculations was SIMPLICITY AND PUMPING CAPACITY. Particular care was given to every detail of construction. Every part is standardised and tested to withstand double the strain of actual requirements. No effort has been spared to ensure smooth working under all conditions, especially those prevailing in the outback pastoral country where it is vitally essential for the Windmill to function on the slightest breeze.



Before Metters Double Action Self-Oiling Windmill was released for production, every known method of testing was applied, and the results were even better to a very great extent than was anticipated.

In the past, considerable trouble has been experienced with ordinary direct action windmills owing to the sudden jar on the pump rods when working in fairly strong winds. This has been completely overcome on Metters Direct Action Windmills by an original and unique method of CRANK BALANCE, which also, to a considerable extent, balances the weight of the pump rods and ensures even running.

The main difference between Metters Direct Action Windmills and ordinary direct action windmills is the CRANK and PUMP ROD BALANCE.

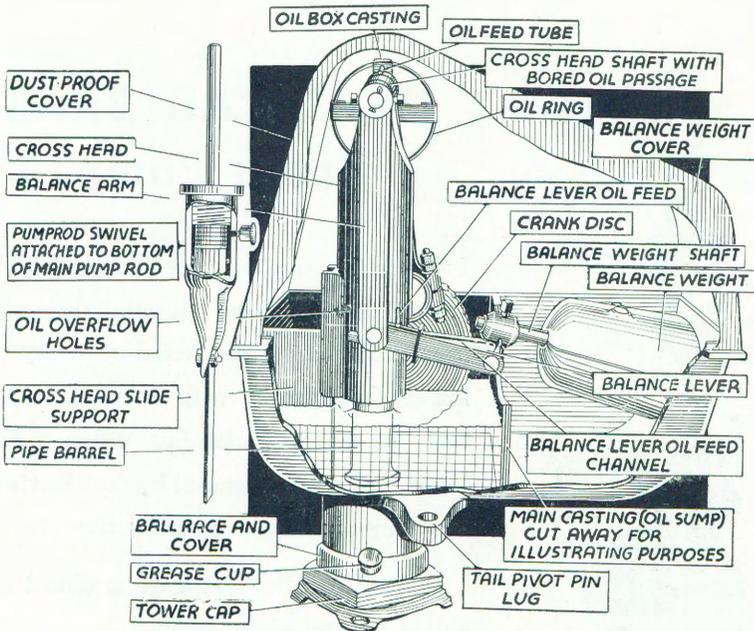
THE BEARINGS ARE ADJUSTABLE and are of anti-friction metal, fitted to the hub shaft and crank pin so as to be readily replaced.

The HUB SHAFT is automatically lubricated by an oil scoop attached to the crank disc, which diverts a continuous flow of oil through an oil passage in both sides of the bearings and returns to the sump through a channel in the main casting.

The HUB is securely fastened to the end of the shaft by a steel key and by a STEEL TAPERED PIN which passes through both the hub and the shaft. The thrust of the windwheel is taken by three case-hardened steel washers on the shaft.

The OILING SYSTEM is simple, but most effective. The CRANK DISC is securely keyed and pinned to the shaft and partially submerged in the oil contained in the main casting or sump, and on the downstroke the oil is transmitted from the crank disc to an OIL RING attached to a clamp on the CROSSHEAD SPINDLE and deposited in an OIL BOX, also attached to the crosshead spindle on the upstroke. The oil is then fed into a hole bored through the spindle so as to provide ample lubrication to the top of the PITMAN and BALANCE ARM. The overflow drains through a passage in the balance arm to the BALANCE LEVER and SPINDLE.

Metters Direct Action Self-Oiling Windmill (Continued.)



The CROSSHEAD slides evenly over the PIPE BARREL and dips into the oil bath on the downstroke. Portion of the surplus oil escapes through holes in the crosshead and portion is fed into the balance lever, thus providing lubrication to the balance lever from two sources.

The MAIN PUMP ROD is securely bolted to the PUMP ROD HEAD, which contains a recess in the casting to prevent any possibility of the nut becoming loose. An entirely new and effective ROD SWIVELLING ATTACHMENT prevent the joints from unscrewing. This part is fitted to the main pump rod under the cross guide inside of the tower.

The CRANK PIN attaching the bottom of the pitman to the crank disc dips into the oil bath on the downstroke.

A BALL-BEARING TURNTABLE causes the mill to answer instantaneously to the slightest variation in wind direction and is provided for ample lubrication by a steel grease cup.

The AUTOMATIC GOVERNOR can be adjusted to prevent the mill from exceeding the speed desired and is of the gravity principle. The tail hinge is offset so that when the wind pressure turns the windwheel away from the direction of the wind the vane is raised, thus ensuring entire safety in wind storms. A HEAVY STEEL COVER prevents dust and rain from entering the oil sump and hub shaft housing. A FURLING WINCH attached to a tower leg a handy distance from the ground enables the mill to be pulled out of the wind with the greatest of ease.

The WINDWHEEL is of similar design to the Master Nuoil Windwheel, consisting of SIX DOUBLE STAGGERED SPOKES securely braced, and EIGHTEEN GALVANIZED SAILS of ample strength. Hexagon head bolts and nuts and spring washers are supplied. The complete wheel is very easily assembled, and is regarded as the most efficient ever known.

Meters Pumps for all Purposes

In order to show the internal parts of our various pumps, portion of the outer casings have been cut away in the illustrations.

No. 1A All Brass Force Pump

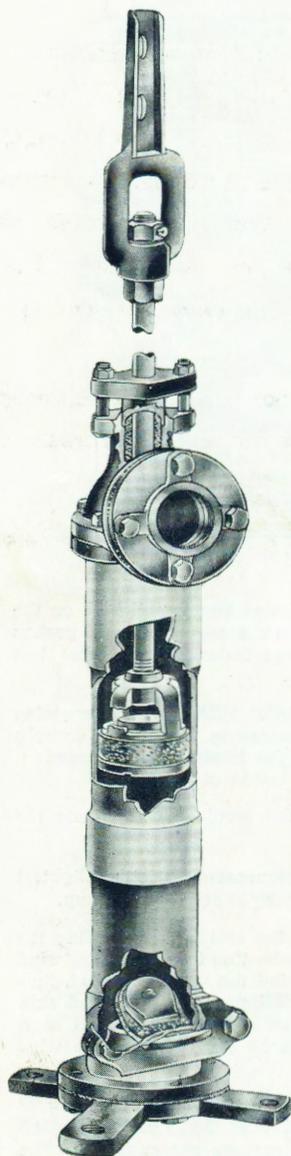
Specially suited for mounting at ground level where long delivery pipes are employed. Constructed of heavy cast brass throughout, with inspection door and removable retaining valve. Solid brass rod, with gunmetal bucket, having a carefully machined bucket valve.

Stuffing box has extra deep gland controlled by two gland bolts.

Flanged to take horizontal delivery pipe.

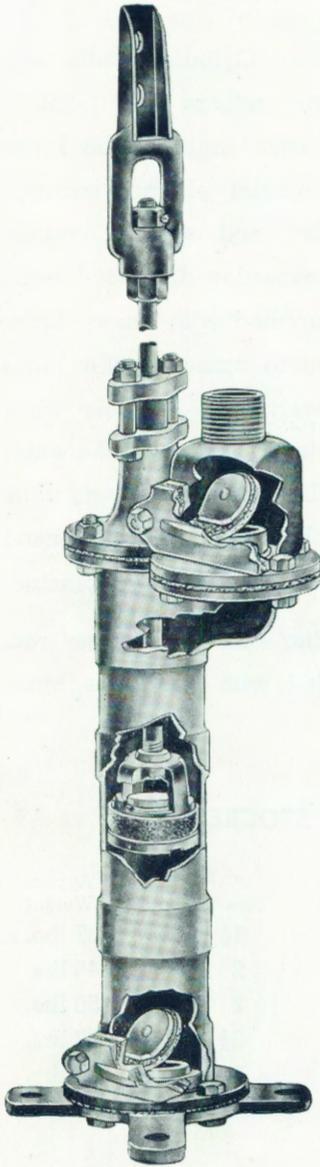
We can supply Monel or Stainless Steel rod in lieu of brass by arrangement.

An extra strong pump suitable for heavy duty.



Internal Diameter of Barrel	Maximum Plunger Movement	Size of Pipe	Approx. Weight
3 in.	14 in.	1½ in.	36 lbs.

No. 1 All Brass Force Pump



No. 1 Force Pump

Heavy Cast Brass throughout with inspection cleaning doors to the retaining bottom valve and to the delivery valve. Solid brass plunger rod with gunmetal plunger castings, mushroom valve, and special leather. The seating of both retaining valves are machined, thus assuring the pump against losing its priming.

Brass gland packing box for plunger rod well packed and controlled by two compression bolts with brass nuts.

Specially adapted for deep wells or long delivery pipe.

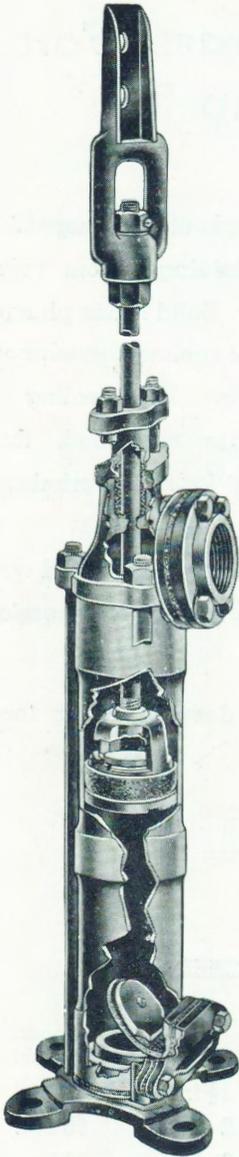
SIZES STOCKED:

Internal Diameter of Barrel	Length of Plunger Movement	Size of Pipe	Approx. Weight
3 in.	12 in.	1½ in.	49 lbs.
3½ in.	12½ in.	2 in.	55 lbs.
4 in.	12½ in.	2 in.	62 lbs.

No. 2 Brass Force Pump

A Heavy Cast Brass Cylinder, built with brass top and bottom castings held together with iron bolts with brass nuts. Solid brass plunger rod and gunmetal plunger castings with mushroom valve and special leather, cylinder fitted with inspection door for bottom valve, top casting supplied with heavy brass flange, having bolted to same a twin brass flange tapped to receive the delivery pipe. Special Features of this pump are that the water is discharged from the barrel with very little agitation, and the packing leathers can be used a great many years without requiring replacing.

Brass gland packing box for plunger rod, packed and controlled with two bolts brass nutted.



No. 2 Force Pump

SIZES STOCKED:

Internal Diameter of Barrel	Length of Plunger Movement	Size of Pipe	Approx. Weight
3 in.	12 in.	1½ in.	37 lbs.
3½ in.	12 in.	2 in.	45 lbs.
4 in.	12 in.	2 in.	50 lbs.
5 in.	13 in.	2½ in.	86 lbs.
6 in.	13 in.	3 in.	106 lbs.

No. 3 Brass Force Pump



Metters No. 3
Brass Pump

Solid drawn brass barrel, brass plunger rod and gunmetal plunger castings, mushroom valve, special leather, built with brass top and bottom castings held together with iron side bolts, brass nuted. Brass gland packing box, well packed and controlled with two bolts, brass nuted. The top and bottom castings have a specially machined groove in which is placed the leather packing to receive the edge of the cylinder, which prevents the packing from being blown out under pressure.

ONE SIZE ONLY STOCKED:

Internal Diam. of Barrel	Length of Plunger Movement	Size of Pipe	Approx. Weight
3 in.	11½ in.	1½ in.	24 lbs.

A low priced good selling pump.

No. 2B All Brass Force Pump

Especially designed for long delivery pipe where pump is established on ground level. Bottom casting equipped with lugs for bolting down. Top and bottom castings screwed to barrel. Bottom casting fitted with cleaning clack door, which allows the bottom clack to be removed without disturbing the pump.

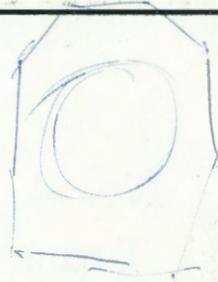


No. 2B
Force Pump

STOCK SIZES:

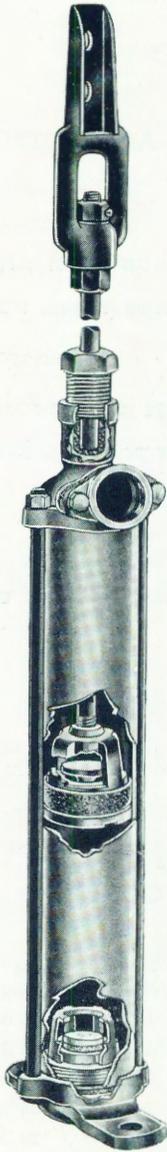
Intern. Diam. of Barrel	Length of Barrel	Length of Plunger Movement	Size of Pipe	Approx. Weight
2 in.	14½ in.	13 in.	1¼ in.	22 lbs.
2½ in.	14½ in.	13 in.	1¼ or 1½ in.	26 lbs.

Can be supplied with longer strokes to instructions.



No. 2A Brass Force Pump

Solid drawn brass barrel, top and bottom castings are brass built with iron side bolts, brass nuted. Brass plunger rod and gunmetal plunger with mushroom valve and best quality leather; screw down brass stuffing box; brass flange bolted to top of pump, tapped to receive delivery pipe.



No. 2A
Force Pump

MADE IN ONE SIZE ONLY:

Internal Diameter of Barrel	Length of Plunger Movement	Size of Pipe	Appox. Weight
2½ in.	12 in.	1¼ in.	22 lbs.

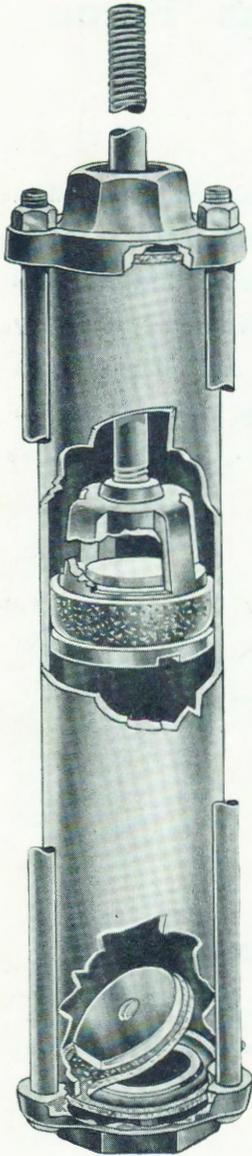
No. 4 Seamless Drawn Brass Cylinder Pump

WITH BOLTED BRASS TOP AND BOTTOM
CASTINGS.

Held together with heavy iron bolts brass
nuted, which permits of it being taken apart
by using an ordinary spanner.

The top and bottom castings are specially
machined to receive the leather packing. Brass
plunger rod with gunmetal plunger fitted with
mushroom valve and special leather.

This pattern can be supplied to give any
length of stroke required.



No. 4
Cylinder Pump

SIZES OF PUMPS STOCKED:

Intern. Diam. of Barrel	Length of Barrel	Length of Plunger Movement	Size of Pipe	Approx. Weight
2½ in.	12½ in.	9 in.	1¼ in.	11 lbs.
2¾ in.	12½ in.	9 in.	1¼ in.	12 lbs.
3 in.	14¼ in.	12 in.	1½ in.	16 lbs.
3½ in.	15 in.	12 in.	2 in.	20 lbs.
4 in.	15 in.	12 in.	2 in.	23 lbs.
5 in.	19 in.	14 in.	2½ in.	44 lbs.
6 in.	19 in.	14 in.	3 in.	67 lbs.

No. 4A Cast Brass Cylinder Pump



No. 4A
Cylinder Pump

Top and Bottom and Barrel are all Heavy Brass Castings held together with iron side bolts, brass nuted; Brass Plunger Rod with gunmetal plunger, mushroom valve, special leather. The top and bottom castings have a machined groove in which is placed the leather packing to receive the edge of barrel, which prevents the packing from blowing out under heavy pressure. The barrel is provided with cleaning door.

This cylinder is specially adapted for deep wells, and will give a greater supply of water than is obtained from pumps which are fitted with packing glands to the plunger.

SIZES STOCKED:

Intern. Diam. of Barrel	Length of Barrel	Length of Plunger Movement	Size of Pipe	Approx. Weight
3 in.	15½ in.	10 in.	1½ in.	24 lbs.
3½ in.	15½ in.	10 in.	2 in.	30 lbs.
4 in.	15½ in.	11 in.	2 in.	35 lbs.
5 in.	18 in.	12 in.	2½ in.	57 lbs.
6 in.	18½ in.	12 in.	3 in.	75 lbs.

No. 5 All Brass Flush Cap Cylinder Pump



No. 5 Flush Cap Cylinder Pump

Solid drawn brass tube barrel 3/16 inch thick with brass top and bottom caps screwed to barrel, gunmetal plunger castings, mushroom valves, with special leather. The bottom or retaining valve of this pump is also mushroom pattern with caged follower. The inlet valve openings are arranged as full as possible to allow free ingress of water supply. Brass plunger rod.

This cylinder being exceedingly compact in area, is specially adaptable to bores, is of non-corrosive metal, and may be submerged in water of indifferent quality.

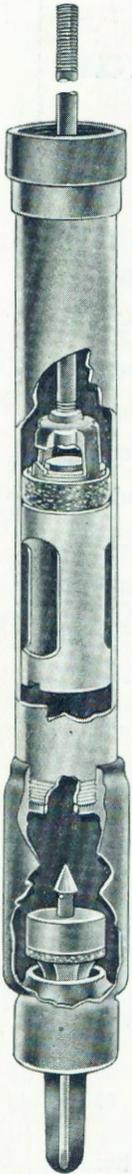
SIZES STOCKED:

Intern. Diam. of Barrel	Length of Barrel	Length of Plunger Movement	Size of Pipe	Approx. Weight
2 in.	18 in.	13 in.	1 1/2 in.	13 lbs.
2 3/8 in.	18 in.	13 in.	1 3/4 in.	14 lbs.
2 3/4 in.	18 in.	12 1/2 in.	1 1/2 in.	18 lbs.
3 in.	18 in.	12 1/2 in.	2 in.	19 lbs.
3 1/2 in.	18 in.	12 in.	2 in.	22 lbs.
4 in.	18 in.	12 in.	2 in.	30 lbs.
4 1/2 in.	20 in.	12 in.	2 1/2 in.	46 lbs.
5 in.	20 in.	12 in.	2 1/2 in.	50 lbs.

Can be tapped for different size pipes if required.

Can be supplied with two Plunger Leathers or with two complete Plunger Valves and Leathers; Brass Ball Valves in lieu of mushroom valves and extra long strokes at extra cost.

No. 6 All Brass Draw Plunger Bore Pump



Metters No. 6 Brass
Draw Plunger Bore
Pump

Solid drawn brass barrel $\frac{3}{16}$ in. thick brass plunger rod and gunmetal plunger castings, mushroom bronze valve with special leathers. The bottom retaining valve can be withdrawn with the special picking up tool supplied with pump. Special provision is made to allow full flow of water into barrel of pump by increasing the internal diameter of the bottom casting as applied to this barrel. To enable the withdrawal of plunger and bottom valve, pipe slightly larger in diameter than the internal diameter of barrel is required.

SIZES STOCKED:

Intern. Diam. of Barrel	Length of Barrel	Length of Plunger Movement	Size of Delivery Pipe	Size of Suction Pipe	Approx. Weight
1 $\frac{3}{4}$ in.	18 in.	13 in.	2 in.	1 $\frac{1}{2}$ in.	19 lbs.
2 $\frac{3}{8}$ in.	18 in.	13 in.	2 $\frac{1}{2}$ in.	2 in.	24 lbs.
2 $\frac{3}{4}$ in.	18 in.	13 in.	3 in.	2 $\frac{1}{2}$ in.	35 lbs.

Can be supplied with two Plunger leathers or with two complete Plunger Valves and Leathers at extra cost.



No. 7 All Brass Draw Plunger Pump

Heavy solid drawn brass barrel, $\frac{3}{16}$ in. thick brass rod and gunmetal plunger. Ball plunger valves of especially selected bronze, and three especially selected plunger leathers. Bottom valve of bronze, with double plunger leathers. To enable plunger and bottom valve to be withdrawn through column, the delivery pipe must be slightly larger in diameter than internal diameter of pump barrel. To raise bottom valve, plunger should be slightly lowered to engage thread on valve.

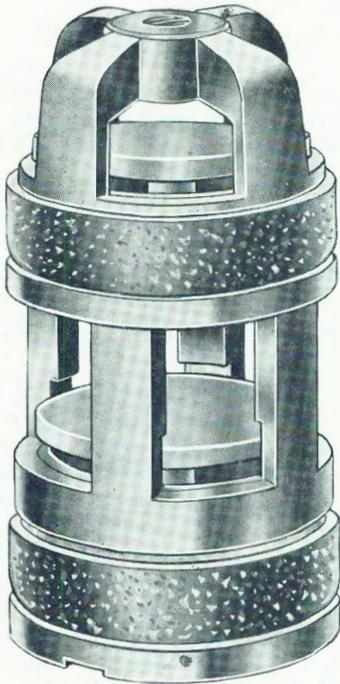
SIZES STOCKED:

Intern. Diam. of Barrel	Length of Barrel	Length of Plunger Movement	Size of Delivery Pipe	Size of Suction Pipe	Approx. Weight
2 $\frac{3}{8}$ in.	30 in.	14 in.	2 $\frac{1}{2}$ in.	2 in.	23 lbs.
2 $\frac{3}{4}$ in.	30 in.	14 in.	3 in.	2 in.	32 lbs.

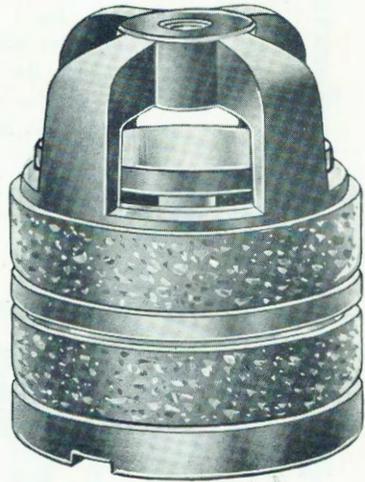
Longer barrels made to specifications.

Metters No. 7 All Brass Draw Plunger Pump

Pump Plungers



Double Valve Plunger



Single Valve, Double Leather Plunger

All Metters Pumps with solid drawn brass tube barrels can be supplied with either double valve plunger with double leathers, or single valve plunger with double leathers, at extra rates.

List prices include single valve, single leather plungers.

Note ample water clearance. Valves shown are only half open.

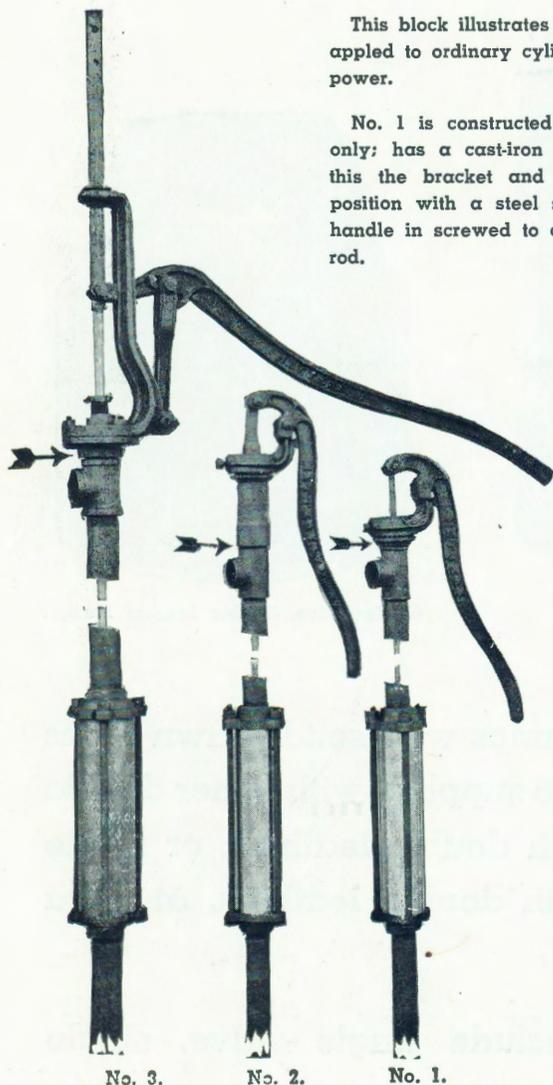
Special Attachments for Hand Power to be applied to Ordinary Cylinder Pumps.

This block illustrates Nos. 1, 2, and 3 attachments to be applied to ordinary cylinder pumps and operated by hand power.

No. 1 is constructed to raise the water to the surface only; has a cast-iron collar tapped for $1\frac{1}{2}$ in. pipe. To this the bracket and handle are applied and held in position with a steel set screw. The rod connection on handle is screwed to connect up with the ordinary pump rod.

No. 2 is constructed to raise water overhead; is fitted with a short cast cylinder tapped for $1\frac{1}{2}$ in. pipe, to which the bracket and handle is applied, and is held in place with a steel set screw. The cylinder is turned and fitted with inverted bucket leather on plunger rod, which on the downward travel of the plunger causes the water to be forced to the higher level.

No. 3 is constructed to force water overhead, and can be applied to either greater capacity pumps or to raise from greater depths, as it is furnished with longer and adjustable fulcrum; can be adjusted to work $5\frac{1}{2}$ in., 7 in., or 9 in. stroke; has a cast flange tapped for 2 in. pipe, to which the cast bracket and handle are attached with bolts. A polished plunger rod with brass packing nut with a long hand lever makes this a most complete attachment.



No. 3.

No. 2.

No. 1.

Prices quoted do not include any fittings under the arrow.

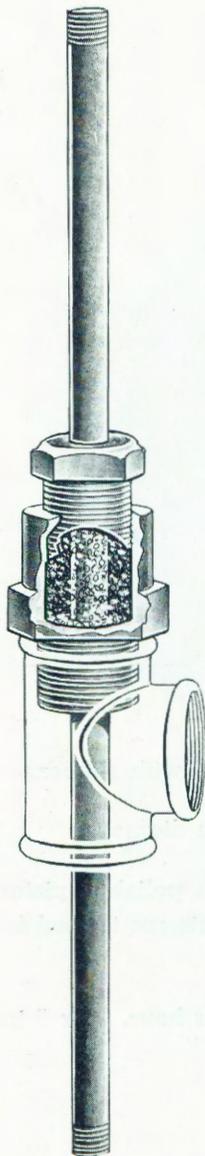
All Brass Differential Compensator

Used in conjunction with cylinder pumps to force water. Utilizes weight of column rods in deep bores and wells on down stroke, but not recommended for shallow depths.

The barrel takes in portion of the pump discharge on the up stroke, and on the down stroke this portion is forced out of the compensator through the delivery pipe line.

Thus the power of the down-stroke is used to relieve the up-stroke of portion of the load resulting in a double action movement.

Manufactured to suit column Pipes from $1\frac{1}{4}$ in. to 3 in.

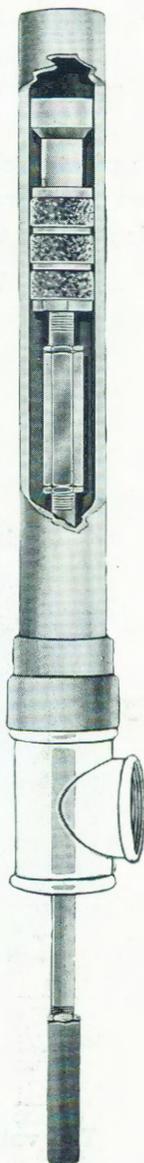


Brass Stuffing Box and Rod

which, when applied with a tee piece to the delivery and connected up to the pump rod will convert a cylinder into a force pump. Made in all brass with special prepared packing.

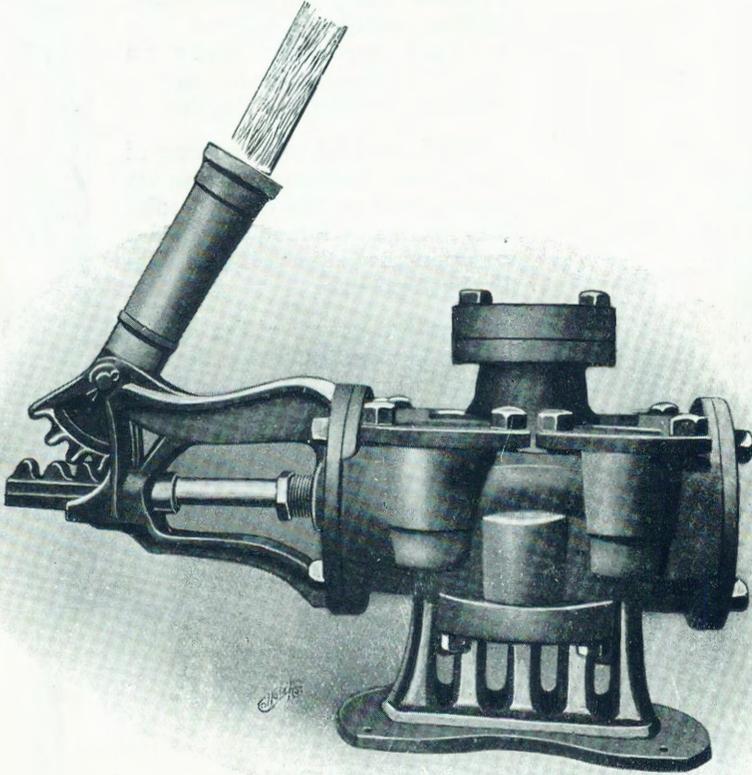
Sizes stocked are tapped for pipe $1\frac{1}{4}$ in., $1\frac{1}{2}$ in., 2 in., $2\frac{1}{2}$ in., and 3 in.

The brass rod is tapped for Whitworth connections?



No. 10 Double-Acting Lowdown Hand Pump

is constructed with the four valves on top of the pump, each one under an individual bolted-down cover, and can be attended to without disturbing any of the other valves.



The valve seats are brass with metal valves faced with rubber.

The waterways throughout this pump are full 2-inch diameter.

The cylinder is carefully drilled and polished with polished piston and brass stuffing box nut. The discharge and inlet ports are tapped for $1\frac{1}{2}$ in. or 2 in. pipes

A light working pump. Capacity, 1,450 gallons per hour. 5 x 5 in. cylinder. Double acting (one size only stocked).

Approximate weight, 94 lbs.

Can be supplied with heavy brass lined cylinder at extra price.

Metters Douglas Pattern Hand Pump

Suitable for lifting water 25 feet or less. Having the adjustable ears to base of pump the spout can be placed in any position. This pump has gunmetal plunger castings and brass valve seat and is complete in every respect. The top casting is adjustable so that the handle may be placed and operated from any position.

Screwed for ordinary pipe connections. Brass ring and tail can be supplied at extra cost.



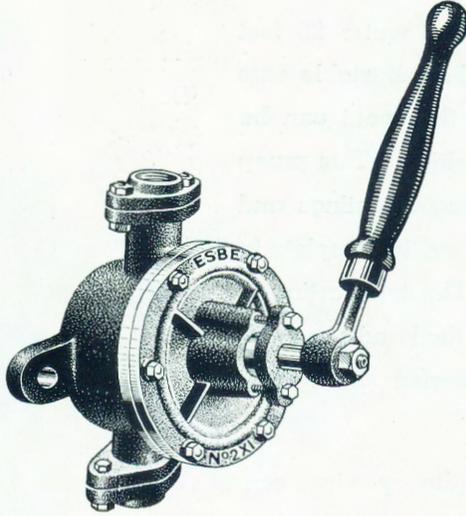
SIZES STOCKED:

Pump No.	Intern. Diam. of Barrel	Size of Pipe	Weight
2	2 $\frac{5}{8}$ in.	1 $\frac{1}{2}$ in.	22 lbs.
3	2 $\frac{3}{4}$ in.	1 $\frac{1}{2}$ in.	26 lbs.
4	3 in.	2 in.	32 lbs.
5	3 $\frac{1}{4}$ in.	2 in.	35 lbs.
6	3 $\frac{1}{2}$ in.	2 $\frac{1}{2}$ in.	52 lbs.

If any variation in size of suction is desired, this can be obtained by the use of a pipe socket.

Semi Rotary Wing Pumps

Made with Iron Bodies with Brass Valves and Rotor, or
Entirely of Brass.



Pump No.	Pipe Sizes Suction and Delivery Sides Ins.	Overall Height between Flanges	Overall Width	Approximate Weight, lbs.	Number of Strokes per Minute	Capacity in Gallons per Hour
0	$\frac{1}{2}$	$8\frac{7}{8}$	$6\frac{5}{8}$	11	100	260
1	$\frac{3}{4}$	10	$7\frac{3}{8}$	15	100	420
2	1	11	$8\frac{1}{8}$	19	85	520
3	$1\frac{1}{4}$	$12\frac{3}{8}$	$9\frac{3}{8}$	26	80	620
4	$1\frac{1}{2}$	$13\frac{1}{2}$	$10\frac{1}{4}$	33	80	900
5	$1\frac{1}{2}$	$14\frac{3}{8}$	$11\frac{3}{8}$	40	70	1170
7	2	18	14	76	55	1825

ALL BRASS BORE FOOT VALVE.



Compact in area, and giving a free passage for water. Can be supplied with poppet valve as illustrated, or with clack valve. (To be specified.)

Sizes stocked are tapped for— $1\frac{1}{4}$ in., $1\frac{1}{2}$ in., 2 in., $2\frac{1}{2}$ in., 3 in. pipe.

Can be supplied with brass gauze and strainer at extra cost if required.



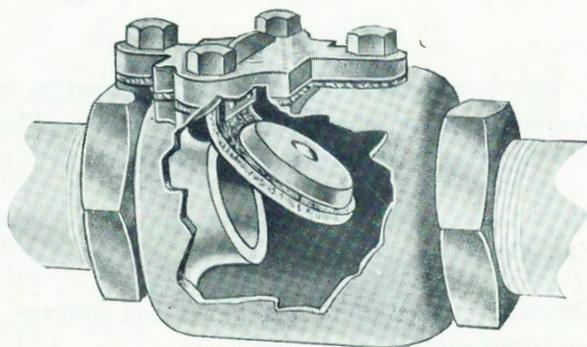
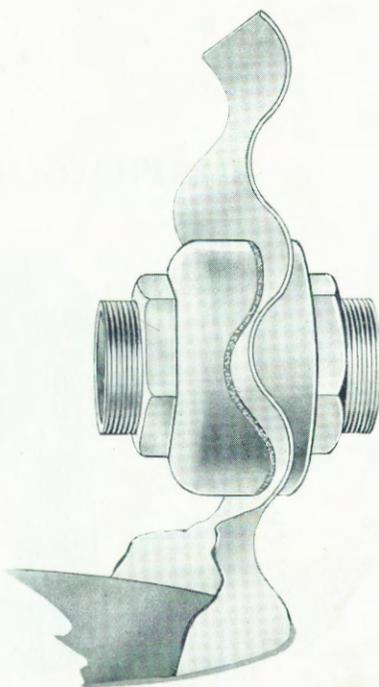
GALVANISED FOOT VALVE AND STRAINER

For Wells or Dams. Supplied in sizes from $\frac{3}{4}$ in. to 3 in. pipe.

METTERS CAST CORRUGATED FLANGES

for connecting up pipe delivery to
Corrugated Tanks.

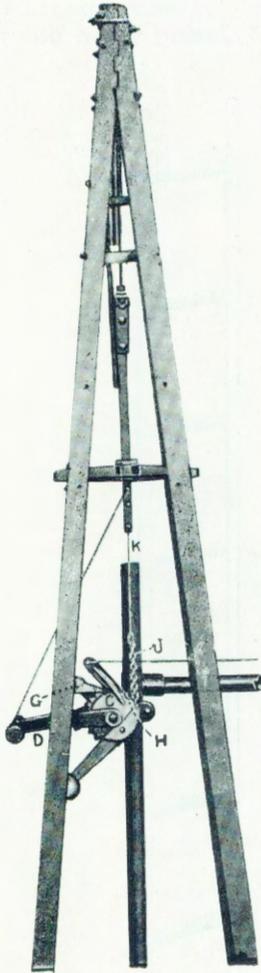
No solder required. Supplied
complete with long nipple and
back nuts, and necessary pack-
ing or castings only. All sizes
stocked from $\frac{1}{2}$ to 3 in.



METTERS NEW PATTERN CHECK VALVE WITH CLEANING DOOR.

The cleaning door enables replacement of leathers
without disturbing the pipe line. Can be used in a
vertical position or placed horizontally if the latter
have the door facing upwards. Can be supplied in
all brass, galvanised, or black cast iron. Sizes
stocked are tapped for— $1\frac{1}{4}$ in., $1\frac{1}{2}$ in., 2 in., $2\frac{1}{2}$ in.,
3 in. pipe.

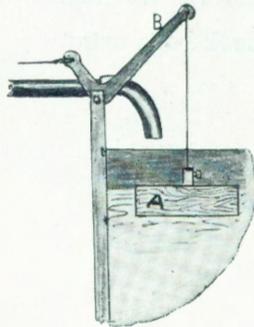
Metters Self Acting Automatic Stopping Gear for Windmills



We have several different Types of Automatic Stopping Gears, but give the preference to the Clutch Gear here shown.

It is compact, easily applied, and requires very little attention when properly adjusted.

Keep the working parts greased, and the operations are perfect.

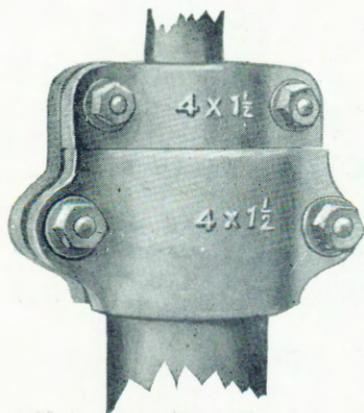


SUPPLIED IN TWO SIZES:

No. 1—For 5, 6, 7, and 8 ft. Mills.

No. 2—For 10, 12, and 14 ft. Mills.

METTERS HEAVY CAST IRON CLAMP.



A three-part Clamp to apply to Steel Bore Casing, and to support Column Pipe; also forms a cover to the Bore.

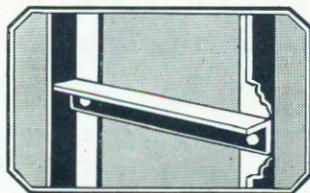
Made to apply to Steel Casing External Diameter, 4, 5, 6, and $6\frac{1}{2}$ in., and to Clamp Pipe from $1\frac{1}{4}$ to 3 in.

NOTE.—Give outside measurement of end of Casing when ordering.

Angle Steel Well Ladder. Supplied in 10-ft. lengths, in galvanised or painted.

Substantial angle steel uprights with angle steel rungs securely rivetted. Joint and hook bolts extra.

Back view showing rung rivetted to uprights.



Useful Information

Every foot elevation of a column of water produces a pressure of approximately half a pound per square inch.

To find the area of a circle or pipe, square the diameter and multiply by .7854.

To compute the approximate capacity of a circular tank:—

Rule A—Multiply the circumference by itself and the product by half the height.

Rule B—Multiply the diameter by itself and the product by five times the height.

Example—Diameter, 6 ft.; height, 6 ft. 6 ft. x 6 ft. x 30 ft., equal 1,080 gallons approximate capacity.

The practical limit of suction is 25 ft., but to obtain the best results the pump should be placed as near to the water line as possible.

Doubling diameter of a pump increases capacity approximately four times.

Never reduce the size of the suction pipe.

We do not advise reducing the delivery pipe below what is arranged for in the construction of the pump. But if it is found necessary to reduce the size of the pipe to overcome the increased friction, introduce an air chamber into the delivery pipe as near the pump as possible.

Use cylinder pumps for preference, because they require less power to operate.

An air chamber is essential on all long delivery pipes, but it must be positively airtight, otherwise it will not be effective. A check valve should also be used.

Where the pump is above the water a footvalve should be screwed to the end of the suction pipe.

Make sure when erecting your mill that the tower is perfectly plumb, so that all the working parts will receive only their proper proportion of strain, and that the bearings may have an even wearing.

See that the pump is in a dead plumb with the centre of the mill swivel, more especially if the pump is a force type of pump, with piston rod passing through a packing box.

Remember that a windmill is a machine, and must be properly oiled to obtain the best results. Do not use ordinary lubricating oils, as the continuous action of the gears creates frothing. Use Metters Special Windmill Oil. It gives better service and is cheaper. The oil sump should be drained at least once a year, thoroughly cleaned out with kerosene or petrol, and replenished with fresh oil. The oil level should be one inch below the pinion shaft.

Bear in mind it is most important for the safety of the windmill that during the winter months the turntable is kept well greased, as this is the safety valve for the mill during a storm.

In reticulation from tanks, the height is the only factor which creates pressure. The quantity of water stored does not influence the pressure in any way.

Long delivery pipe lines expand and contract according to weather conditions, and if a Metters or other reliable expansion joint is not used serious consequences may result.

Remember a small pump will often raise more water than a larger pump, because it requires less wind and a greater number of strokes per minute are obtained.

Never load a windmill up to its maximum.

Sharp angles in a pipe line cause a large increase of friction. Therefore use bends and easy curves instead of elbows.

WEIGHTS OF GALVANISED PIPE.

Size of Pipe	C. Q. Lb. Weight per 100 feet	Size of Pipe	C. Q. Lb. Weight per 100 feet
1/4 inch	0 1 12	1 1/4 inch	2 0 25
"	0 2 6	1 1/2 "	2 3 5
"	0 3 2	2 "	3 2 6
"	1 0 11	2 1/2 "	5 0 0
1 "	1 2 6	3 "	5 3 19

One Imperial Gallon of water weighs 10 lbs.
 One United States Gallon of water weighs 8.35 lbs.
 One Imperial Gallon of water equals 1.2 U.S. gallons
 One cubic foot of water equals 6 1/4 gallons
 One inch of water over one acre equals 22,700 gallons

STATIC HEAD is the vertical height of a column of water. Head is always expressed in feet.
FRICITION is the resistance which the walls and irregularities inside pipes offer to the flow of water.

Useful Information

TABLE OF WIND VELOCITIES.

Miles per Hour	Description	Effect
1 to 3	.....	Smoke drifts.
4 to 7	.....	Wind felt on face. Leaves rustle.
8 to 12	Gentle breeze	Leaves and small twigs in constant motion. Extends light flag.
13 to 18	Moderate breeze	Raises dust and loose paper. Small branches are moved.
19 to 24	Fresh breeze	Small trees in leaf begin to sway. Crested wavelets form on lake.
25 to 31	Strong wind	Large branches in motion. Whistling heard in telegraph wires and umbrellas used with difficulty.
32 to 38	High wind	Whole trees in motion. Inconvenience felt when walking against wind.
39 to 46	Gale	Breaks twigs and trees. Generally impedes progress.
47 to 54	Strong gale	Slight structural damage occurs.

12 to 15 miles per hour can be regarded as an approximate average wind velocity. A geared windmill, if correctly loaded, should commence to operate on a five mile per hour wind pressure.

FRICTION.

Table A shows the friction head per 100 feet of piping, which must be added to the static head to arrive at the total so that the power required may be computed.

For example, to pump 1,000 gallons per hour through 1,000 feet of 1½ inch piping to a height of 100 feet requires sufficient power to pump against a total head of—

Static Head	100 ft.
Plus friction head from table	140 ft.

Total

240 ft.

It will be obvious that by using larger piping and so reducing the friction head much less power will be required. For example, by using 2 inch piping for the same job the friction head would be reduced to only 15 feet, making a total head of 115 feet, which would require less than half the power.

Table No. A—FRICTION HEAD (per 100 ft. of Pipe).

Galls. per Hour	DIAMETER OF PIPE IN INCHES									
	1 in.	1½ in.	2 in.	2½ in.	3 in.	4 in.	5 in.	6 in.	8 in.	10 in.
500	9	3	1	—	—	—	—	—	—	—
800	—	6	2.5	.6	—	—	—	—	—	—
1,000	—	14	5.5	1.5	.5	—	—	—	—	—
1,200	—	18	7.5	2	.75	.25	—	—	—	—
1,600	—	—	15	3.5	1	.5	—	—	—	—
2,000	—	—	17	4	1.5	.75	—	—	—	—
2,500	—	—	29	7	2.5	1	.25	—	—	—
3,000	—	—	45	10	3.5	1.5	.35	—	—	—
3,500	—	—	—	15	5	2	.5	.1	—	—
4,000	—	—	—	20	6.5	2.5	.65	.2	—	—
5,000	—	—	—	28	9	3.75	1	.3	.1	—
6,000	—	—	—	42	14	5.5	1.3	.45	.2	—
8,000	—	—	—	—	25	10	2.3	.8	.3	—
10,000	—	—	—	—	38	15	3.5	1.25	.5	—
12,000	—	—	—	—	—	22.5	5.3	1.7	.7	.3
16,000	—	—	—	—	—	45	11	3	1.5	.7
20,000	—	—	—	—	—	55	13	4	2	1
30,000	—	—	—	—	—	—	33	11	4.5	2
										1

**Table B—
APPROXIMATE CAPACITIES OF METTERS PUMPS PER HOUR
AT 30 STROKES PER MINUTE.**

Pump Stroke	INTERNAL DIAMETER OF PUMP CYLINDER									
	2 in.	2½ in.	2½ in.	3 in.	3½ in.	4 in.	4½ in.	5 in.	6 in.	
4 inch	80	112	127	154	180	250	325	410	500	725
5 inch	100	139	157	192	225	310	400	510	625	900
6 inch	120	169	190	231	270	375	480	615	750	1080
7 inch	140	195	220	270	315	435	560	715	875	1260
8 inch	160	223	254	308	360	480	650	820	1000	1450
9 inch	180	261	284	346	400	550	725	920	1125	1625
10 inch	200	280	317	384	450	620	800	1020	1250	1800
11 inch	220	308	347	423	495	680	880	1125	1375	1980
12 inch	240	335	380	462	540	750	960	1230	1500	2160
14 inch	280	390	440	540	630	870	1120	1430	1750	2520
16 inch	320	447	508	612	720	960	1300	1640	2000	2900
18 inch	360	501	568	692	800	1100	1450	1840	2250	3250
20 inch	400	559	634	768	900	1240	1600	2040	2500	3600
24 inch	480	668	760	924	1080	1500	1920	2460	3000	4320

These are the theoretical quantities delivered. No allowance has been made for slip or leakage which may take place owing to wear of the leathers or valves.

Useful Information

Table C shows the quantity in gallons per minute that a pipe line 1,000 feet long of any size up to 6 inches will discharge under different heads.

TABLE C.
DISCHARGE IN GALLONS PER MINUTE.
INTERNAL DIAMETER OF PIPE

Head (or Fall) in Feet	½ in.	¾ in.	1 in.	1½ in.	1¾ in.	2 in.	2½ in.	3 in.	3½ in.	4 in.	5 in.	6 in.	Head (or Fall) in Feet
1	.16	.45	.93	1.63	2.57	5.28	9.22	14.5	21.3	29.8	52.1	82.2	1
2	.23	.64	1.32	2.30	3.63	7.46	13.0	20.5	30.1	42.1	73.6	116.0	2
4	.33	.91	1.87	3.26	5.14	10.6	18.4	29.1	42.7	59.6	104.0	164.0	4
6	.40	1.11	2.29	3.98	6.29	12.9	22.5	35.5	52.2	73.0	127.0	201.0	6
9	.49	1.36	2.80	4.88	7.71	15.9	27.7	43.6	64.1	89.5	156.0	246.0	9
12	.57	1.57	3.25	5.64	8.90	18.3	32.0	50.4	74.0	103.0	180.0	285.0	12
16	.66	1.81	3.73	6.51	10.3	21.1	36.9	58.1	85.4	119.0	208.0	329.0	16
20	.74	2.03	4.18	7.28	11.5	23.6	41.2	64.9	95.4	133.0	233.0	367.0	20
25	.82	2.27	4.67	8.14	12.9	26.4	46.1	72.6	106.0	149.0	260.0	411.0	25
30	.90	2.48	5.11	8.92	14.1	28.8	50.5	79.5	116.0	163.0	285.0	450.0	30
40	1.04	2.88	5.91	10.3	16.3	33.5	58.3	92.0	135.0	188.0	329.0	520.0	40
50	1.16	3.21	6.61	11.5	18.2	37.4	65.2	102.0	150.0	210.0	368.0	581.0	50
75	1.42	3.93	8.10	14.1	22.3	45.7	79.9	125.0	184.0	258.0	451.0	712.0	75
100	1.65	4.55	9.35	16.3	25.7	52.8	92.2	145.0	213.0	298.0	521.0	822.0	100
150	2.03	5.59	11.5	19.9	31.5	64.9	113.0	178.0	262.0	366.0	637.0	1011.0	150
200	2.33	6.42	13.2	23.0	36.3	74.6	130.0	205.0	301.0	421.0	736.0	1161.0	200
250	2.61	7.20	14.8	25.7	40.7	83.7	146.0	230.0	337.0	471.0	824.0	1303.0	250
500	3.69	10.20	20.9	36.4	57.5	118.0	206.0	325.0	476.0	667.0	1164.0	1840.0	500

When pipe line is more or less than 1,000 feet long, multiply by factor from Table D to get correct figure.

TABLE D.

Length in feet	50	100	150	200	300	400	500	750	1000	1250	1500
Factor	4.47	3.16	2.58	2.237	1.827	1.580	1.414	1.154	1.0	.895	.817
Length in feet	1750	2000	2500	3000	4000	5000	7500	10000	5 mls.	10 mls.	50 mls.
Factor ....	.756	.707	.633	.577	.500	.447	.365	.316	.195	.138	.0616

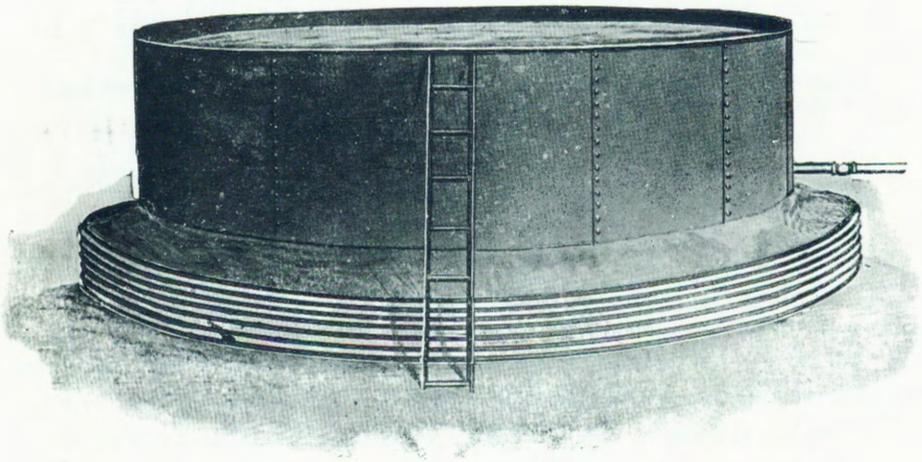
The tables on these pages will be of considerable value when any pumping or reticulation plant is being installed. It is possible to effect very considerable economies by using the correct size of piping for each job, and we would strongly recommend that our advice be obtained before pipe sizes are decided, so as to avoid possible unnecessary expense.

Metters Black Steel Economic Squatters' Tank for Clay Bottom; or with Metal Bottom

Put together in Bolted Sections.

No expert knowledge is required to assemble. All sections are punched to a set template, so to increase the capacity simply means adding to the number of sections.

We consider it perfectly safe to employ this type of storage up to 50,000 gallons capacity.



This illustration shows a Tank assembled, and with a corrugated circle of sheets placed for the purpose of raising the Tank sufficiently to allow water to gravitate into the troughing. The bottom of the Tank is formed by a deposit of Clay. Tank of 14-gauge Black Steel Sheets with Iron Bars inside and outside of each joint, having suitable packing between the joints made tight by bolting up. Angle Steel Ring for top included.

Black Steel Squatters' Tanks

Continued.

Approx. Capacity	Diameter	Approx. Weight without Bottom	Approx Weight with Metal Bottom
5,000 Galls.	13 ft. 5 in.	11 cwt.	17½ cwt.
10,000 Galls.	18 ft. 3 in.	15 cwt.	25½ cwt.
15,000 Galls.	23 ft. 2 in.	19 cwt.	35½ cwt.
20,000 Galls.	25 ft. 6 in.	21 cwt.	43 cwt.
30,000 Galls.	30 ft. 6 in.	25 cwt.	54 cwt.

Metters Galvanised Steel Squatters' Tank for Clay Bottom; or with Metal Bottom

Formed of 18-gauge Galvanised Flat Steel Sheets, bolted together with Galvanised Bars inside and outside of the Sheets, having suitable packing between the joints. Angle steel ring for top included.

Approx. Capacity	Diameter	Approx. Weight without Bottom	Approx Weight with Metal Bottom
5,000 Galls.	13 ft. 5 in.	8 cwt.	12 cwt.
10,000 Galls.	18 ft. 3 in.	10½ cwt.	17½ cwt.
15,000 Galls.	23 ft. 2 in.	13½ cwt.	24½ cwt.
20,000 Galls.	25 ft. 6 in.	15 cwt.	28 cwt.
30,000 Galls.	30 ft. 6 in.	18 cwt.	37 cwt.

Please state size of outlet required when ordering. A small charge is made for same.

Metters Steel Tank Stands



Showing a 2,000-Gallon Tank on a
stock pattern 20 ft. Stand.

Manufactured to carry Tanks of any capacity. Steel angles are used throughout, with specially selected timber for the deck and deck frame. All are securely bolted, and the weight of the Tank evenly distributed over the Stand.

Can be supplied to any height.

List prices are for Black Angle Steel, but Galvanised can be supplied at extra cost.

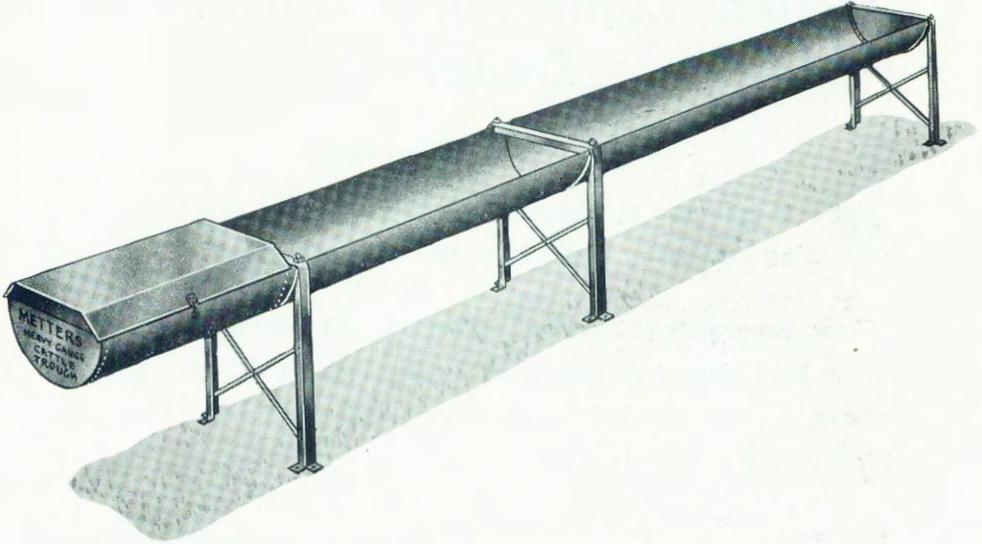
We stock Stands for Tanks of 1,000, 2,000 or 3,000 gallon capacity, in heights of 6 ft., 10 ft., 15 ft., and 20 ft. Other sizes made to instructions.

Capacity of Tank	Approximate Weights of				Diam. of Deck
	6 ft. High C. Q. Lbs.	10 ft. High C. Q. Lbs.	15 ft. High C. Q. Lbs.	20 ft. High C. Q. Lbs.	
1,000 Galls.	6 0 23	6 3 24	8 1 3	9 1 13	6 ft. 0 in.
2,000 Galls.	12 3 5	14 2 7	15 3 6	17 3 11	8 ft. 6 in.
3,000 Galls.	17 0 10	18 2 5	20 0 12	22 0 21	10 ft. 3 in.

Metters Stock Troughing

Heavy series, 12, 14 or 16 gauge. Galvanised or Black. Supplied in six foot sections. Sections to be joined together by yokes and bands to form any length trough required.

Flanged ends, rivetted or with yokes and band.

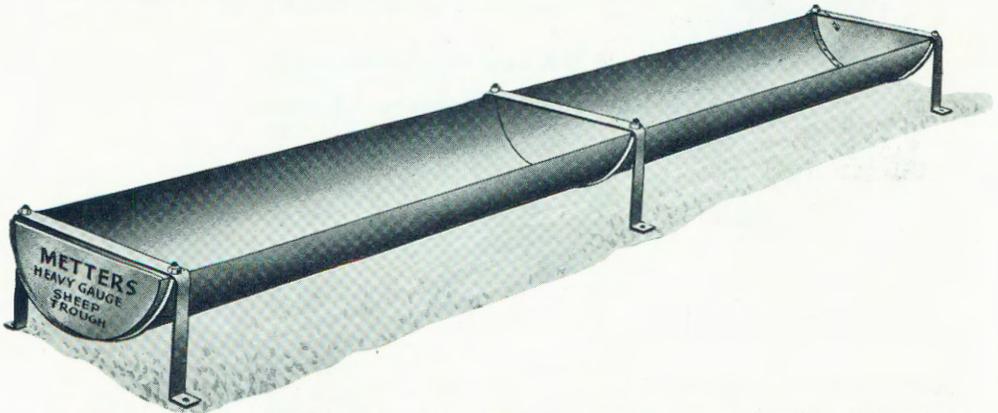


Illustrating a 12-ft. Metters Heavy Series Cattle Trough, with one end rivetted, Cover and Division, 30 in. Standards, which include Yokes and Bands for joining, also for coupling other end, which can be very easily removed for flushing out purposes.

Stock Sizes.	Approx. Weight.			Approx. Capacity
	per 6 ft. section.			
	12-Gauge	14-Gauge	16-Gauge	
15 ins. wide by 8 ins. deep	0 1 20	0 1 10	0 1 4	22 gallons
18 ins. wide by 10 ins. deep	0 2 4	0 1 22	0 1 12	34 gallons
21 ins. wide by 12 ins. deep	0 2 16	0 2 4	0 1 20	48 gallons

Troughing quoted per foot. Ends, Yokes and Bands, or Standards and Cover and Division for Ballcock, quoted separately.

Metters Pattern Trough Standards include yoke and band. Standards for cattle trough are 30 in. high, and for sheep trough 13 ins. high.



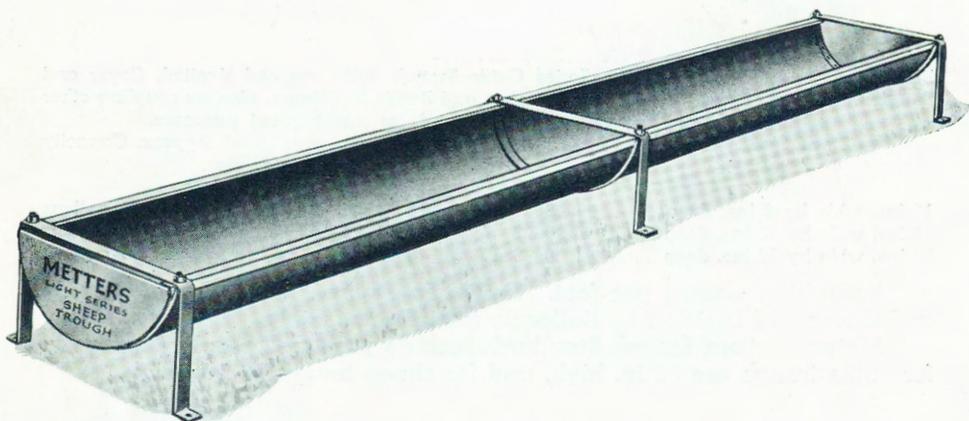
Illustrating a 12-ft Metters Heavy Series Sheep Trough, with ends, and 13-in. Standards. Heavy Series Troughing can be supplied with Flat Bottom and Straight Sides.

Metters Light Series Galvanised Troughs

18 ins. wide by 10 ins. deep.

Cattle troughs are of 20-gauge and include 30 in. standards, angle iron stiffening bars along both edges, and ends soldered.

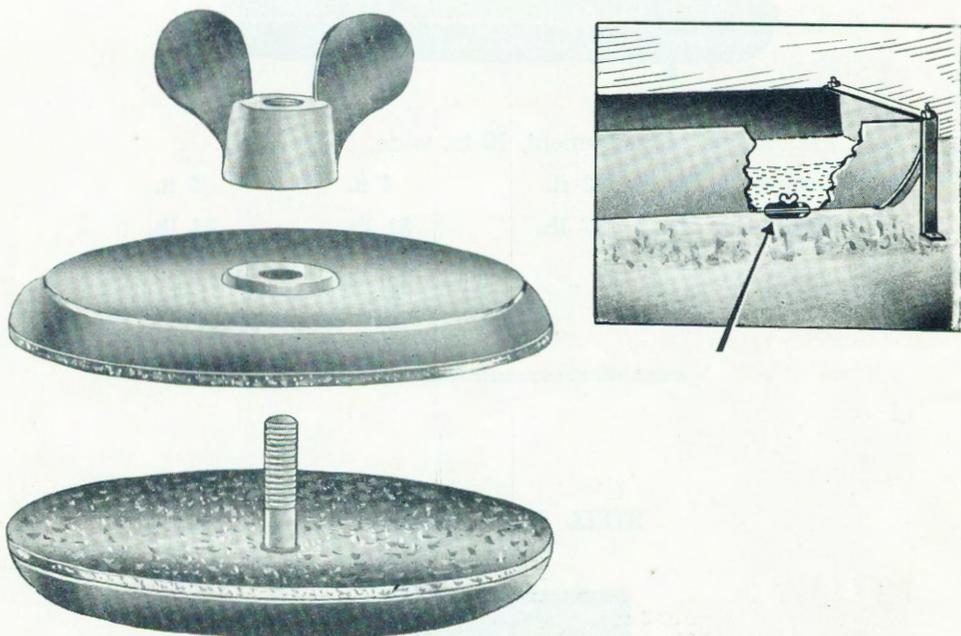
Sheep troughs are of 22-gauge and include 13 in. standards, angle iron stiffening bars along both edges, and ends soldered. Quoted complete as above, in any specified length in multiples of six feet. Cover and division quoted separately.



Illustrating a 12-ft. Light Series Sheep Trough.

Approximate capacity: 34 gallons per 6 ft. length.

A VERY SIMPLE METHOD OF DRAINING OUT TROUGHS.

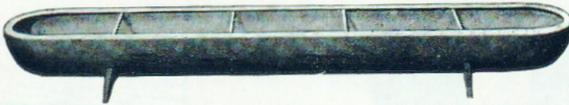


McBride Pattern Washout Flanges, consisting of a pair of heavy cast brass flanges shaped to match the curve of the trough and drawn water tight over hole in bottom of trough by a brass wing screw and adequate leather packing.

Brass screw pattern washout plugs can also be supplied.

Metters Pig Troughs

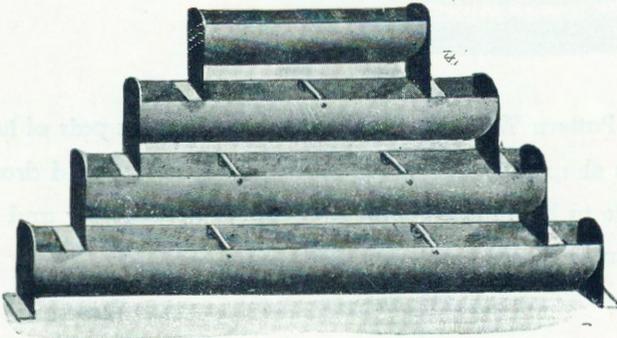
CAST IRON PIG TROUGHS.



Inside Measurement, 10 in. wide, 5½ in. deep.

Length	3 ft.	4 ft.	5 ft.	
Weight	37 lb.	51 lb.	64 lb.	

STEEL PIG TROUGHS.

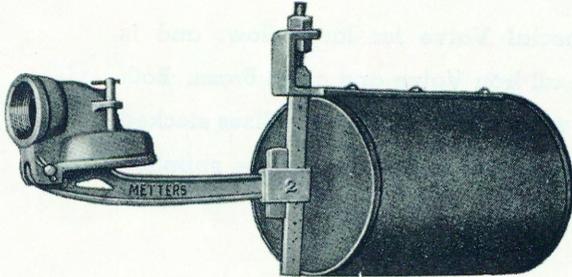


With rivetted ends and solid iron stiffening bars. Heavy gauge black or galvanised sheets.

Inside measurement, 10 in. wide, 5 in. deep.

	2 ft.	3 ft.	4 ft.	5 ft.	6 ft.
Weight	10	15	19	23	25 lbs.
Approx. capacity	3	4½	6	7½	9 gall.

Metters "Pastoral" Pattern Trough Valve



This Valve is favoured by pastoralists throughout Australia owing to its simplicity and absolute reliability.

Constructed of specially selected Brass with Rubber Seating.

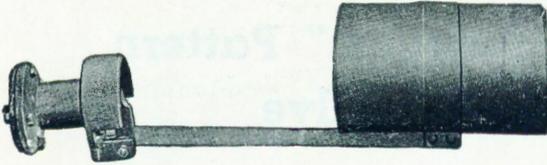
Will take full pipe flow.

Supplied with either Brass or Galvanised Iron Float. (To be specified.)

Float provided for double adjustment.

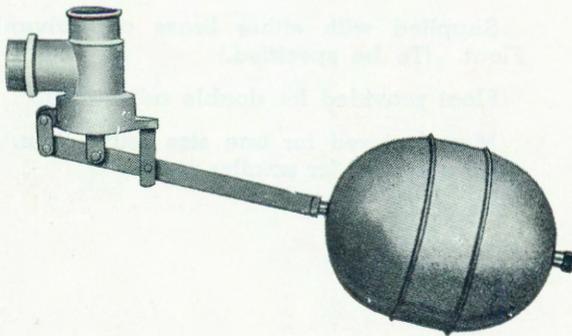
Manufactured for one size only—2 in. pipe, but can be bushed for smaller pipe.

Klewitz Pattern Full Flow Trough Valve

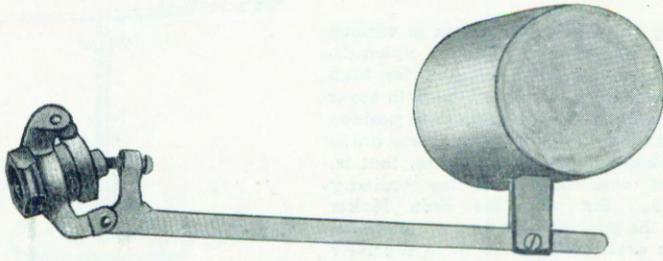


This is a special Valve for large flow, and is made up as an all Iron Valve and of all Brass. Both types are fitted with Galvanised Float. Sizes stocked are tapped for 2, 2½, and 3 in. Pipe. Can be supplied with Copper Float at extra cost.

Metters Lambert Pattern Ballcock

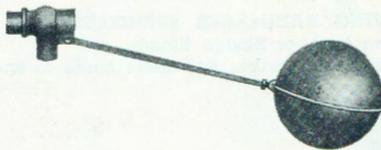


A Highly-finished Valve, constructed of Brass, with a Copper Float and a very efficient seating arrangement. Designed to resist high pressure with a maximum capacity. Recommended for use in conjunction with long Sheep and Cattle Troughs. Manufactured for 2 in., 2½ in., and 3 in. Pipe.



Metters Pattern Trough Valve

A Full Flow Valve with Brass Valve and Lever, and Galvanised Float. Can be supplied with Copper Float if required. Sizes stocked are for $\frac{3}{4}$, 1, $1\frac{1}{4}$, and $1\frac{1}{2}$ in. pipe.

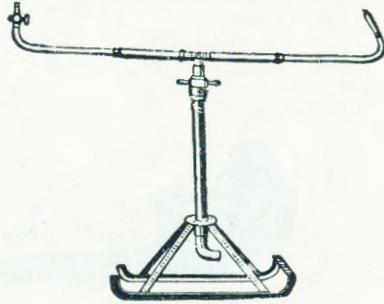


High Low Ballcock

An All-Brass Valve with Copper Float for $\frac{3}{4}$ in., 1 in., $1\frac{1}{4}$ in., or $1\frac{1}{2}$ in. Pipe. For use on Small Troughs.

Metters Rainmaker Sprinkler

We supply this particular pattern in various sizes from 3 ft. 6 in. in diameter upwards. The sprinkler is specially adapted for high or low pressure, and can be adjusted to cover a larger or smaller area by setting the position of the outlet cuts. Very few sprinklers are a success working under low pressure, that is, the pressure obtainable from the ordinary storage tank. But with the Rain Maker Sprinkler, if the storage tank has an elevation of 10 ft., an area of 23 to 25 ft. in diameter is covered with an even supply of water. These sprinklers can be fitted to fixed stand pipes, or supplied attached to tripod saucer, or sledge stands. We advise the sledge stands, as these can be pulled along whilst the sprinkler is working, and no need to walk over the wet ground.



Metters Patent
Rain Maker Sprinkler.

No. 3—REVOLVING RAINMAKER SPRINKLER.

measures about 3 ft. 6 in. overall, and is constructed throughout of brass, solid drawn brass tube forming the arms, and cast brass for the head piece. The friction is on a leather washer, which can easily be replaced when worn. The jets or nozzles are arranged so that they may be adjusted to cover the greatest possible area under the existing water pressure. If being used for low pressure the best results will be obtained by using a jet at either end with a cut in same; the jet with a round hole outlet may be used for high pressure. The correct adjustment is, first treat with the smallest outlet. This is so placed that the water discharged forms the inner circle and just meets under the Sprinkler stand. Then the larger jet, which has to spray the larger circle, is set in the opposite direction, allowing the water to just meet the smaller circle. By this means water is deposited evenly over the whole area.

No. 4 REVOLVING RAINMAKER SPRINKLER

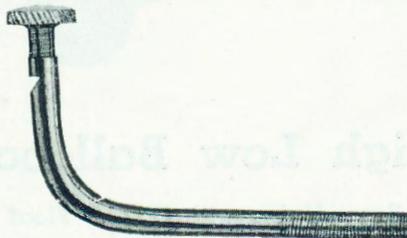
measures about 6 feet overall, is constructed throughout of brass, is exactly as described for No. 3 except that it is longer from tip to tip, and will consequently work under low pressure.

No. 5 REVOLVING RAINMAKER SPRINKLER

measures about 5 ft. 3 in. overall, is constructed throughout of brass, is heavier than No. 4, and gives out a larger body of water. The small outlet is fitted with stop cock. This type of Sprinkler may be used to water beds or lawns, oval or half circle in shape. Close off the outlet from the cock end, and set the jet at other end to throw the water straight out from the stand, and not allowing Sprinkler to revolve.

STANDS FOR REVOLVING RAINMAKER SPRINKLERS are tripods with three legs. Stands with heavy cast iron tray, or Sledge Stands.

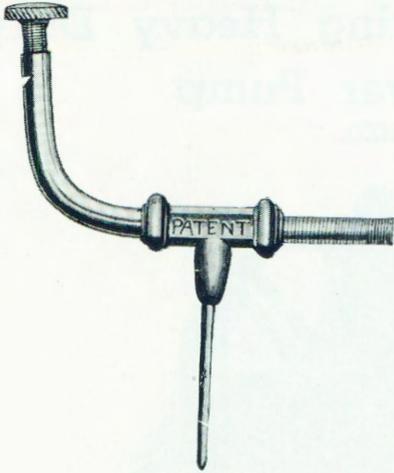
Larger Revolving Rainmaker Sprinklers made to specifications.



THE SINGLE BENT RAINMAKER SPRINKLER WITHOUT SPIKE

is purely a hand sprinkler, is made to enter $\frac{1}{2}$ -in. hose. For larger hose we make a metal socket, which enters the hose and into which the Sprinkler will screw. The outlet of water is controlled by a screw plug. The larger the opening the smaller the area watered. The smaller the outlet the greater the area watered.

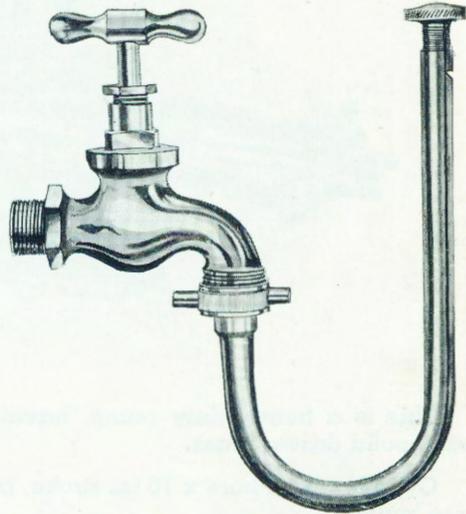
Metters Rainmaker Sprinkler (Continued)



THE SINGLE BENT RAINMAKER SPRINKLER WITH SPIKE

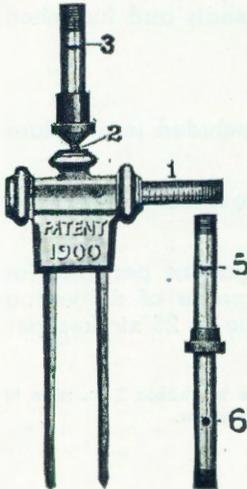
is similar to the Bent Sprinkler without spike.

The advantage of the Spike is that it may be placed in any position in the garden, and dispenses with the tedious operation of holding the hose.



THE DOUBLE BENT RAINMAKER SPRINKLER

applies directly on to the thread on the tap, and thereby dispenses with the hose altogether. When taps are conveniently placed, this method saves a very considerable amount of labour. The Sprinkler can be so adjusted to water in a complete circle around the tap standard. The adjustment of area covered is made by the screw-down plug.

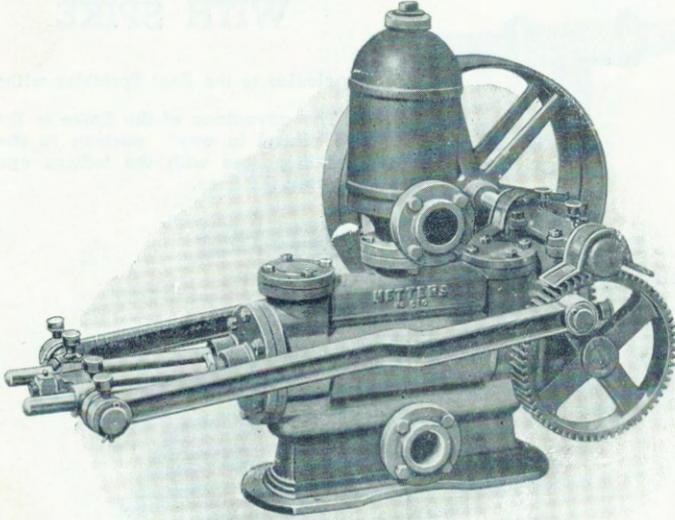


No. 2 DOUBLE SPIKE RAINMAKER SPRINKLER

is a most perfectly equipped Sprinkler. Having different pipes can be set up for any shaped bed or lawn in the garden. As shown the setting is for spraying a full circle. Water enters No. 1 pipe and is discharged at No. 2, the water striking the cone is distributed according to the pressure to a greater or lesser distance. This outlet is adjustable. Reverse this pipe by screwing end 3 into the body of Sprinkler and you will obtain a perfect half circle, and can be set so that the water is not deposited on to the path. Pipe 5, screwed into Sprinkler body, will give out a spray forming a quarter of a circle, and reversed, No. 6 will water a long, narrow bed or row of plants, also will answer the same purpose for hand spraying that is obtained from the perforated brass rose. These Sprinklers do not revolve and are practically everlasting.

No. 510 Double-Acting Heavy Duty Geared Power Pump

BRASS LINED.



This is a heavy duty pump, having a renewable cylinder liner of heavy solid drawn brass.

Cylinder, 5 in. bore x 10 in. stroke, back geared 5 to 1, 24 in. fast and loose pulleys.

Piston of heavy brass secured by brass nuts and cottered to a polished brass piston rod which works through brass adjustable gland.

Valves of prepared rubber seated on brass gridseats and furnished with bronze spring.

Inspection plates give easy access to valves.

Air chamber and outer bearing for drive shaft included in standard equipment.

Flanges for 2½ in. suction and delivery pipe are provided. Other sizes to instructions.

Tested capacity at 25 strokes per minute, 2,050 gallons per hour; at 35 strokes per minute, 2,860 gallons per hour. Capable of delivering water to an elevation of 350 feet through 2½ inch pipe at 25 strokes per minute.

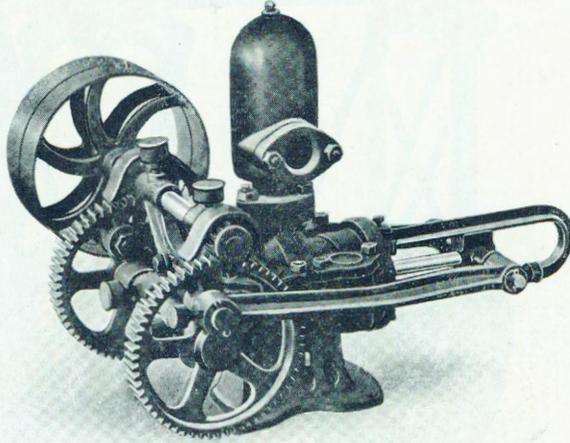
Can be supplied with a special cylinder reduced to 4 in. bore to enable 2 in. pipe to be used over long distances where cost of pipe is a great consideration.

Approximate Weight, 7 cwts. 2 qrs

10A Double-Acting Geared Power Pump

Cylinder 5 x 5. Back Geared 5 to 1.

Fitted with Fast and Loose Pulleys, 12 in. diameter.



The Cylinder is 5 in. diameter, fitted with four metal valves, rubber faced, and with brass seats. Valves are covered with bolted-down covers, which allow of easy access for replacements.

Piston of polished steel, with brass stuffing box nut. Suction and delivery ports are tapped for 2 in. pipe, but can be reduced if required by introducing an ordinary pipe bushing. The large pipe means the lighter load.

Side arms are of heavy cast iron.

The Gears are special castings timed to reduce the speed travel of plunger 5 to 1 with a 5 in. stroke.

The Pump should be worked at not more than 35 strokes per minute, giving a capacity of 1,600 gallons per hour.

Specially designed for shallow pumping.

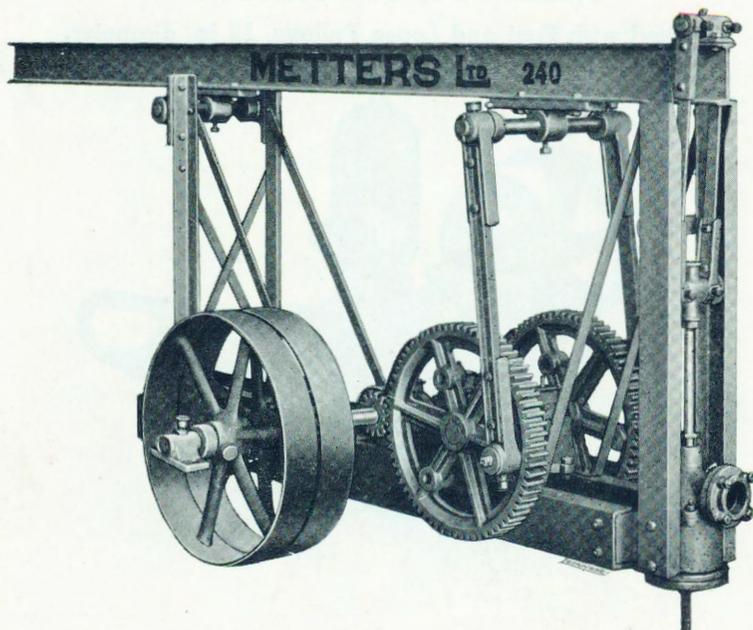
Weight complete, 1 cwt. 3 qrs. 7 lbs.

Can be supplied with heavy brass lined cylinder at extra price.

Can supply with 16 in. or 24 in. Pulleys
at extra cost.

No. 240 Heavy Duty Pumping Beam

Scientifically designed for displacing large volume of water from deep bores or wells and/or forcing up long distance grades.



Gear Ratio—5 to 1.

Fast and Loose Pulleys—27 in. diam. x $4\frac{1}{4}$ in. face.

Adjustable Stroke—20 in., 24 in., or 30 in.

$2\frac{1}{2}$ in. Gear Shaft and $1\frac{3}{4}$ in. Drive Shaft of polished steel with high-class anti-friction bearings.

Exceptionally strong Frame, constructed of Steel Beam, 4 x 2 Channel Steel Rod Guides with Lubricated Rollers, heavy Angle Steel Beam Supports and 6 x 3 Channel Steel Bottom Bearers.

Guides and supports can be easily detached to facilitate removal of column pipe, etc.

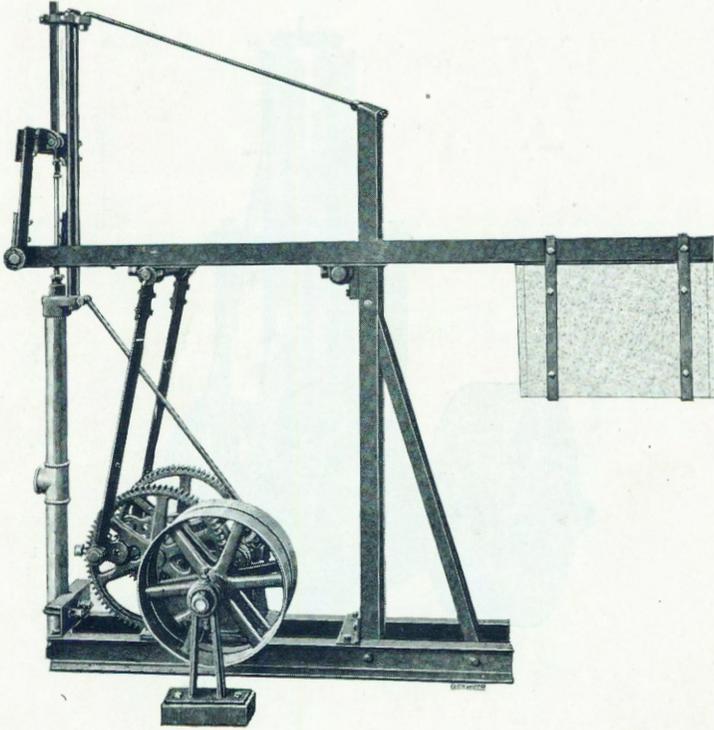
Special Dome-headed Stuffing Box provided with outlet flange for delivery.

All wearing parts standardised and provided for ample lubrication.

Geared unit can be supplied separately.

Maximum Load, 6-8 h.p. Approximate Weight, 14 cwts. 1 qr. 2 lbs.

No. 140 Pumping Beam



Adjustable Stroke, 16 in., 20 in., or 24 in. Back Geared 7 to 1.

Equipped with anti-friction bearings, $1\frac{1}{2}$ in. polished steel gear shaft, $1\frac{1}{4}$ in. drive shaft, 4 in. x 2 in. x $\frac{1}{4}$ in. channel steel bottom bearers, 3 in. x 3 in. x $\frac{3}{8}$ in. double angle steel beam fabricated with mild steel cross bars, and 18 in. x $3\frac{1}{2}$ in. fast and loose pulleys.

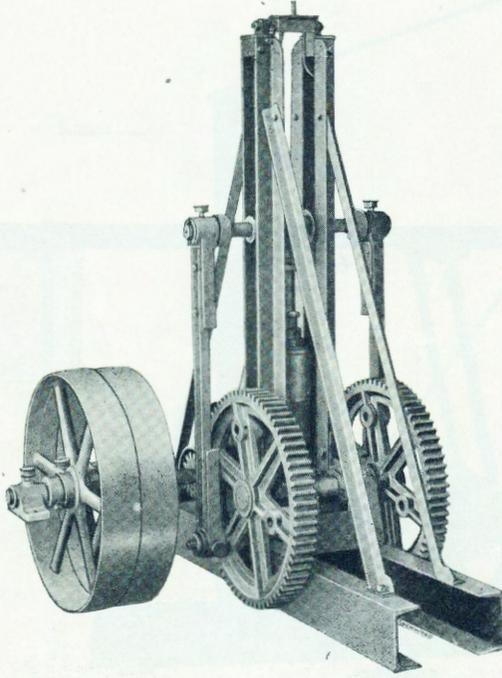
Outer bearings for drive shaft included.

Maximum Load, 4 h.p.

Approximate Weight, 6 cwts.

No. 180 Heavy Duty Pumping Gear

A powerful gearing especially designed for heavy duty.



Adjustable Stroke—12 in., 15 in., or 18 in.

Gear Ratio—5 to 1.

Fast and Loose Pulleys—27 in. diam. x $4\frac{1}{2}$ in. face.

Heavy Double Angle Steel Rod Guides with Lubricated Rollers, supported by Angle Steel Stays.

$2\frac{1}{2}$ in. Gear Shaft and $1\frac{3}{4}$ in. Pulley Shaft of polished steel with high-class anti-friction bearings.

If required for side delivery pump can be made with guides and Pitmans extending under gearing instead of above.

Brass Stuffing Box and Polished Steel Rod included.

Maximum Load, 6-8 h.p.

Approximate Weight, 10 cwts. 0 qrs. 17 lbs.

No. 140 Pumping Gear

Back Geared, 7 to 1.

10 in., 12 in., and 14 in. stroke.

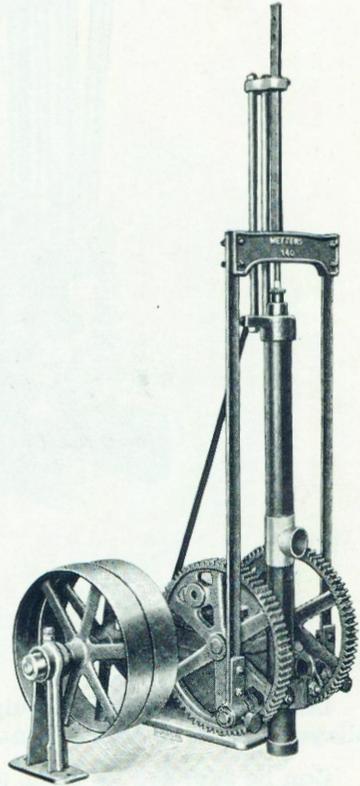
18 in. Fast and Loose Pulleys, $3\frac{1}{2}$ in. face.

Gearing supplied as illustrated, with $2\frac{1}{2}$ in. pipe and outlet.

All parts are standardised, and renewable.

Bearings are anti-friction type, renewable and interchangeable, and are amply lubricated.

Sizes of pulleys may be altered by arrangement.



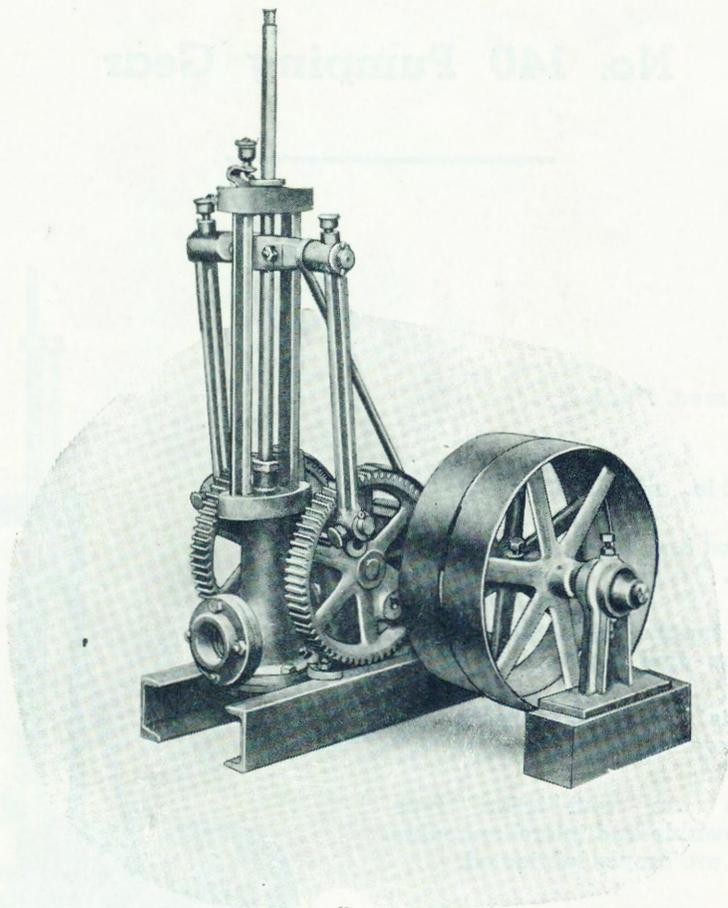
This gearing may be arranged for a belt drive from an electric motor. Particulars of motor should be given.

Weight, 4 cwts. 1 qr. Maximum Load, 4 h.p.

NOTE.—If used in conjunction with a Windmill Pump it will be necessary to adjust the stroke accordingly.

METTERS
LIMITED

No. 401 Pumping Gear



Back Geared 5 to 1. Equipped with 18 in. x 3½ in. Fast and Loose Pulleys. Length of Stroke, 5 in., 7½ in., 10 in.

Can be supplied for 1½ in. to 3 in. pipe. Constructed for heavy work, either, well, bore or surface supply.

Is double geared, fitted with long driving shaft for pulleys, supported with cast bracket having a self-aligning bearing, heavy cast flange for delivery pipe, cross head of heavy metal machined to receive two cast driving arms, polished steel pump rod with screw-down packing gland.

All wearing parts furnished with metal screw-down grease lubricators.

Gearing is securely bolted to steel channel base and is readily assembled.

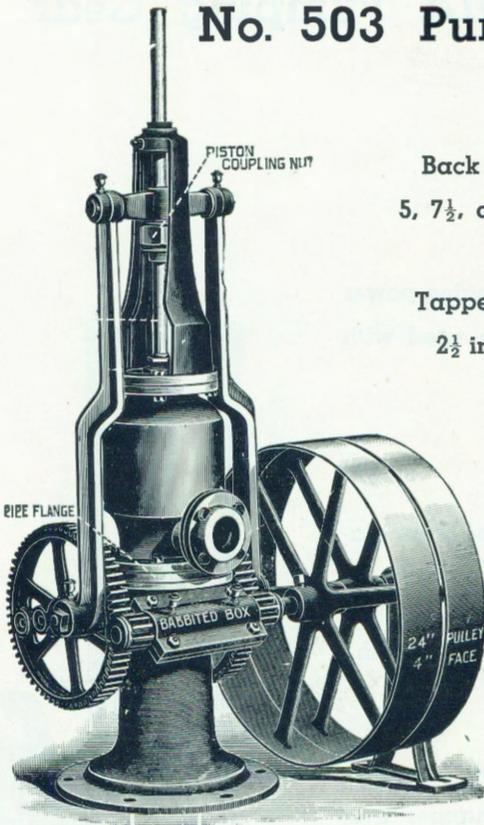
We recommend this Gearing for heavy service on Station or Farm.

Measurement overall at base, 2 ft. 9 in. by 2 ft. 9 in. Height from base to top of pump rod, 4 ft.

Complete weight, 3 cwts.

Maximum Load, 4 h.p.

No. 503 Pumping Gear



Back Geared, 5 to 1;
5, 7½, and 10 in. Stroke.

Tapped for either 2 in.,
2½ in., or 3 in. Pipe.

This pumping gear is built specially for deep wells or bores. It has great lifting power and capacity. The gears are special castings fitted to polished steel shafting running in Babbit metal bearings. Fast and loose pulleys 24 in. in diameter and 4 in. face.

Speed should be: For shallow depths, 35 strokes per minute, and a slower speed for deep wells or bores.

If rod connection is required for pump rod, state size and type of rod being used.

Height overall, 63 in. x 36 in. x 28 in. floor space.

Weight, 3 cwts., 3 qrs. 20 lbs.

Maximum Load, 5 h.p.

No. 401A Pumping Gear

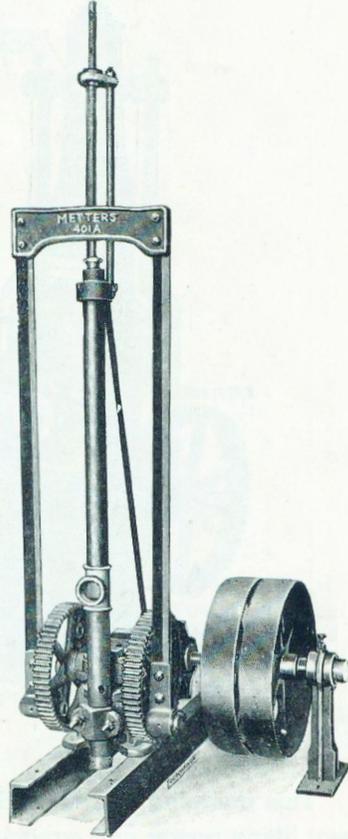
Suitable for use with engine power with pumps such as are used with windmills.

Back Geared, 5 to 1.

Pulleys, Fast and Loose, 18 in. diameter and $3\frac{1}{2}$ in. face.

Stroke can be adjusted for 5 in., $7\frac{1}{2}$ in., or 10 in.

Supplied with 2 in. pipe, 2 in. outlet, stuffing box and channel iron bed, as illustrated.



A compact unit which may be readily connected as an auxiliary to a windmill, on a pump with an inside or an outside pump rod.

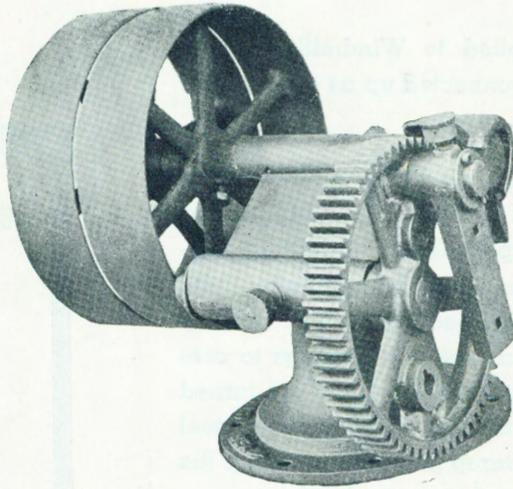
Gearing is strongly made with standardized parts and with renewable bearings amply lubricated.

Approximate Weight, 3 cwts. 3 qrs.

Maximum Load, $3\frac{1}{2}$ h.p.

No. 701 Back Geared Countershaft

Back Geared 5 to 1, with 5 to 10 in. Stroke.



Supplied with a link and guide attachment, which is constructed to allow the movements of wrist pin and rod connection in its travel and to cause the pump rod to travel in a direct perpendicular line with the pump barrel. Where a force pump having a side delivery pipe and rods outside of pipe is being fixed, this countershaft with link and guide is a most satisfactory gear to employ.

The gears are special castings fitted to polished steel shafting running in white metal bearings, 16 in. fast and loose pulleys, 3½ in. face. Turned steel wrist pin with cast rod connection. The whole is perfectly lubricated with screw-down grease caps, and is mounted on heavy base.

Weight, Countershaft only, 1 cwt. 1 qr. 7 lbs.

Maximum Load, 2½ h.p.

No. 601A Pumping Gear

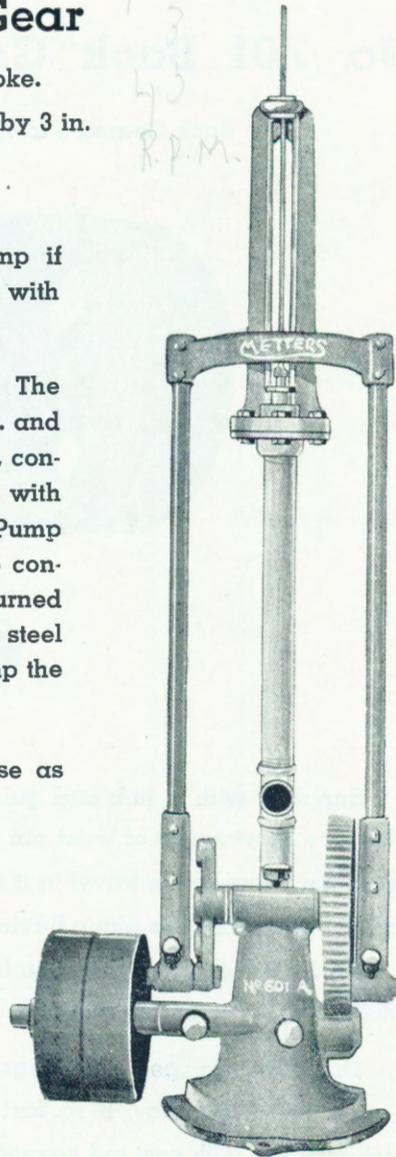
Back Geared, 5 to 1; 5 to 10 in. Stroke.

Fast and Loose Pulleys, 12 in. diameter by 3 in. face.

Can be applied to Windmill Pump if delivery pipe is connected up as shown with gearing attached.

Designed for belt-driven power. The gears are special castings fitted to $1\frac{1}{4}$ in. and $1\frac{1}{2}$ in. cold rolled polished steel shafting, connecting arms are 1 in. heavy tube with adjustable cast crosshead to connect to Pump Rod and with heavy socket castings to connect up with wrist pins; wrist pins are turned steel fitted and held in position with steel nut. Steel loop clamp provided to clamp the gearing to delivery pipe as shown.

A good type pump gearing for use as auxiliary to Windmill.



It is at all times necessary to establish a suitable rod guide in connection with pumping gears. We recommend the attachment shown, which is complete with rod guide and stuffing box.

The price listed does not include the Stuffing Box Rod Guide or Pipe Column.

Approximate weight of Gear only, 1 cwt. 1 qr. 13 lbs.

Maximum Load, $2\frac{1}{2}$ h.p.

No. 601A Pumping Gear

FITTED WITH COUNTERSHAFT.

Designed for use with High Speed Engines or
Electric Motors.

Consists of standard No. 601a Pumping Gear,
fitted with Special Countershaft, having adjust-
able alignment bearings and 12 in. pulley,
mounted on channel iron base.

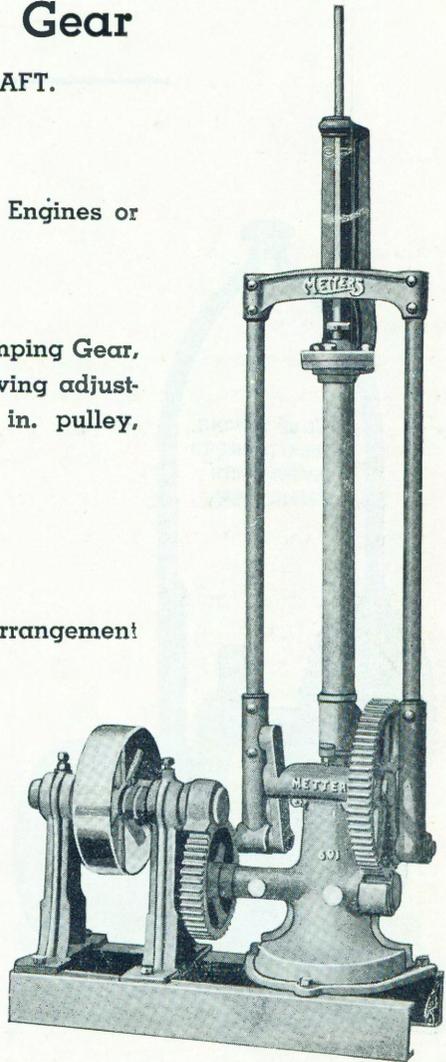
Total gear ratio, 16 to 1.

Length of Stroke, 5 to 10 inches.

Size of Pulley can be varied by arrangement
when ordering.

Supplied with Bracket, Rod and
Guide, and Stuffing Box.

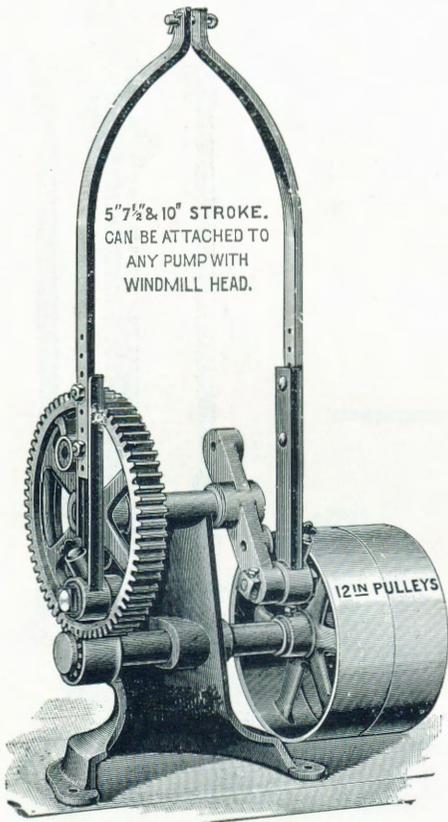
Maximum Load, $2\frac{1}{2}$ h.p.



No. 601 Pumping Gear

Back Geared, 5 to 1; 5 to 10 in. Stroke.

Fast and Loose Pulley, 12 in. diameter by 3 in. face.



Can be applied to Windmill Pump if delivery pipe is connected up as shown with gearing attached (see No. 601a).

Designed for belt-driven power. The gears are special castings fitted to $1\frac{1}{4}$ and $1\frac{1}{2}$ in. cold rolled polished steel shafting; connecting arms are heavy wrought steel, with special casting to attach to pump rod and heavy arm connections to wrist pins; the side arms can be adjusted to the height of pipe delivery. Wrist pins are turned steel fitted and held in position by steel nut. Steel loop clamp provided to clamp gearing to pipe stand delivery, as shown.

Approximate Weight, 1 cwt. 1 qr. 3 lbs.

Maximum Load, $2\frac{1}{2}$ h.p.

No. 901 Pumping Gear

Back Geared 6 to 1 with 12 inch Fast and Loose Pulleys.

Can be applied to Windmill Pump if pipe attachments are placed as shown.

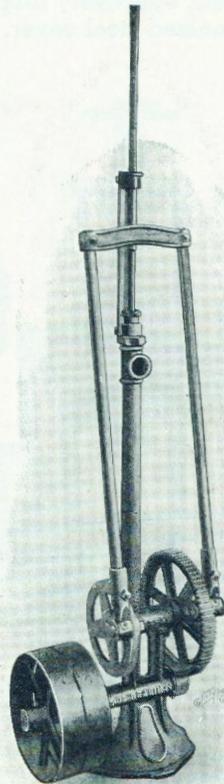
The gear and pinion wheels are special castings fitted to cold rolled steel shafting. Connecting arms are of tubular mild steel, with adjustable cross head. Wrist pins are turned steel, threaded and held in position by a steel nut. The standard pulleys are 12 in. diameter, $2\frac{1}{2}$ in. face. Steel loop clamp provided to clamp to pipe standard.

It is at all times necessary to establish a suitable rod guide in connection with pumping gears. We recommend the attachment shown, which is complete with rod guide and stuffing box.

Weight of gearing only, 2 qrs.
18 lbs.

The price listed does not include the Stuffing Box Rod Guide or Pipe Column.

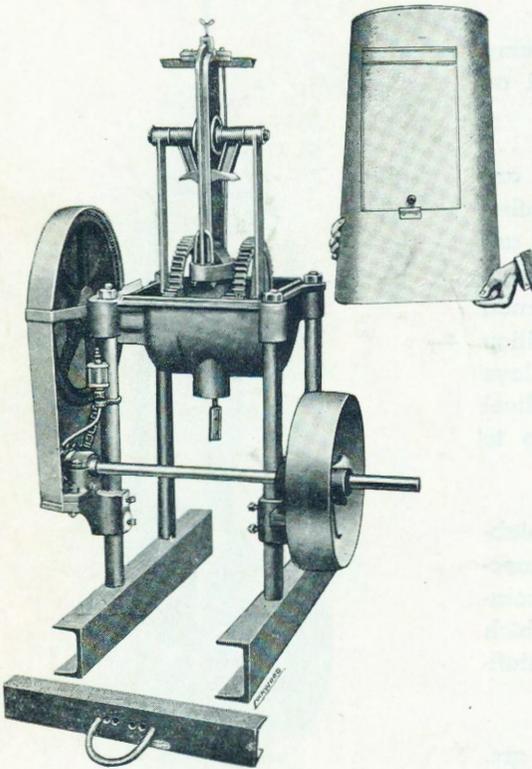
Maximum Load, 1 h.p.



No. 10 Self-Oiling Pumping Gear

Especially designed for operation on deep wells or bores in conjunction with an electric motor. The main head and internal gears are standard without 10 ft. Master Nuoil Windmill. The double gears work in an oil bath and are protected from the weather by a galvanised steel cover which double flanges around the top of the main casting and is securely held in position at the top by a wing nut.

The countershaft portion is fitted with a 16 in. pulley for belt drive, and drives the gear shaft by means of a Reynolds roller chain and sprockets, effectively lubricated by a Sight Feed Lubricator and housed in a galvanised steel cover.



The gear ratio is 13 to 1, which, when using a three horse-power electric motor produces a gear speed of 28 strokes per minute. If required for engine drive, the gear ratio can be altered by arrangement.

Adjustable Stroke, 6 in. and 8 in.

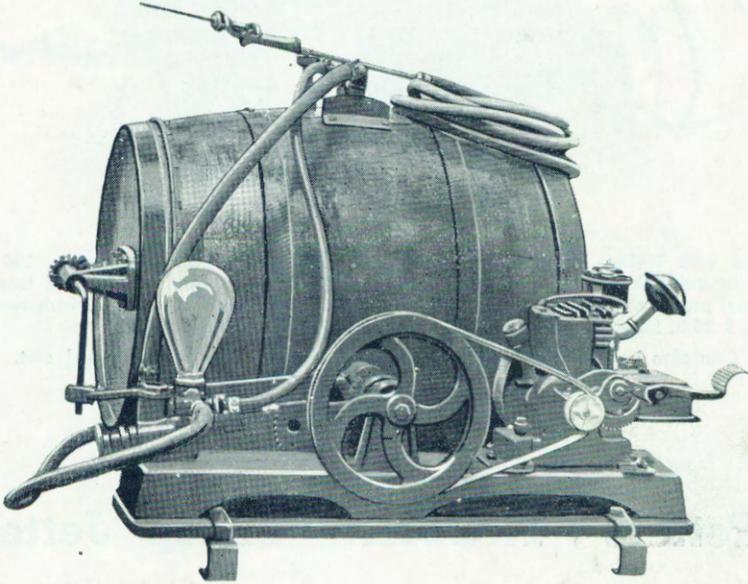
This is a silent, easy-running gear, and requires practically no attention. Specially recommended for continuous running over long periods.

Similar pumping gear, but of greater strength, can be supplied by utilizing a 12 ft. Master Nuoil Windmill Head. A lighter gear can be made up if required by using an 8 ft. Master Nuoil Head.

Approximate Weight, 5 cwt. Maximum Load, 3 h.p.

Metters "BANTAM" Sheep Jetter

ALSO SUPPLIED FOR FIRE FIGHTING.



A most reliable outfit, and may be readily transported in a light truck or lorry.

Consists of an engine and pump mounted on a cast bed plate, with 40 gallon oak tank with a most efficient agitator, all carried on a steel frame.

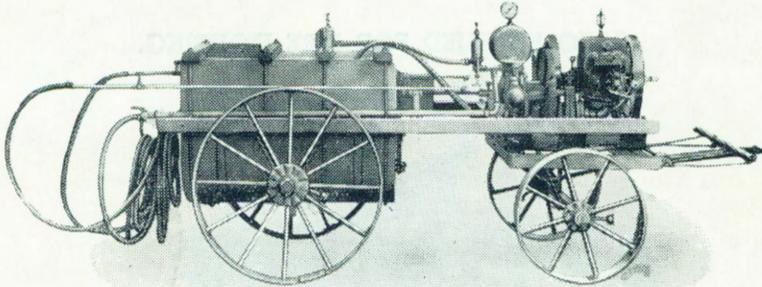
SPECIFICATION:

Gunmetal pump, equipped with snap-action pressure regulating valve and pressure gauge, driven by means of Vee belt, by a 4 cycle vertical engine, with automatic speed governing device.

Standard equipment includes 30 ft. of pressure hose and sheep jetting nozzle.

Will maintain 150 lbs. Pressure on two nozzles.

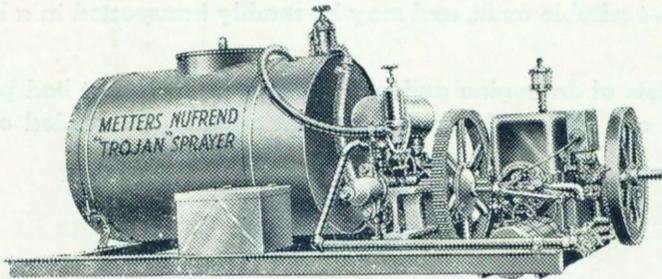
Metters Type E Sheep Jetter For Heavy Duty



Equipped with Metters Nufrend Pressure Pump, 2 H.P. International Engine, 100 gallon wooden or galvanised steel vat underslung between rear wheels. Angle steel frame, five inch tyres, propeller type agitator, automatic relief valves, brass suction pot with removable strainer, 2 25-ft. lengths special pressure hose, with sheep jetting nozzles.

Can also be supplied with Lister Engine. Weight, as illustrated, 15½ cwt.

Metters "TROJAN" Sheep Jetter



SPECIFICATIONS: 2 H.P. Petrol Engine, Speed 500 R.P.M., direct coupled to Nufrend Spray Pump. Galvanised Vat of 50 gallon (approximate capacity) fitted with rotary agitator, mounted on a welded steel frame. The plant is equipped with a Metters automatic relief valve, suction pot with removable strainer, double cock, 2 25-ft. lengths of $\frac{1}{2}$ in. special spray hose, and sheep jetting nozzles. The pressure may be regulated and set as required up to 250 lbs.

CAPACITY: Pump is capable of delivering 240 gallons of mixture per hour at a pressure of 200 lbs.

WEIGHT: 6 cwt.

ALL the resources of technical skill and modern construction facilities which are at the disposal of Metters Limited have been focused on the manufacture of the highest quality products. For over 50 years a specialised branch has been concentrating on the manufacture of Windmills and Pumping Equipment best suited for Australian conditions, with the result that their reputation in this sphere has spread throughout Australia and other parts of the world.

Pastoralists and Graziers proclaim Metters Windmills and Pumping Equipment by every standard of comparison the most efficient and reliable obtainable.



"Metters Mills are Better"