

DEMPSTER NO. 10 DOUBLE-GEARED STEEL MILL

SPECIAL NOTICE.

THIS GENERAL CATALOG NO. 10, SUPERSEDES ALL PREVIOUS ISSUES.

**TERMS**—Orders from parties unknown or without commercial rating must be accompanied with cash, or satisfactory references. C. O. D. orders must be accompanied by sufficient cash to pay carrier charges both ways, unless otherwise arranged.

**PRICES**—Subject to change without notice.

**ILLUSTRATIONS**—Subject to modification.

**ORDERS**—In ordering always give figure number and name of article wanted. Orders cannot be countermanded without our consent. This applies more especially to goods other than standard.

**CONTRACTS**—Are subject to delay from strikes, accidents or other causes beyond our control.

**CORRESPONDENCE**—Correspondence, in order to receive immediate attention, should be addressed to the firm and not to individuals.

**SHIPMENTS**—In shipping goods, our responsibility ends when we have made delivery to the transportation company, and obtained receipt for same in good order. Goods are then at the purchaser's risk, and any claim for loss or damage in transit must be made on transportation company.

**CLAIMS**—For correction or deduction must be made within ten days after receipt of goods.

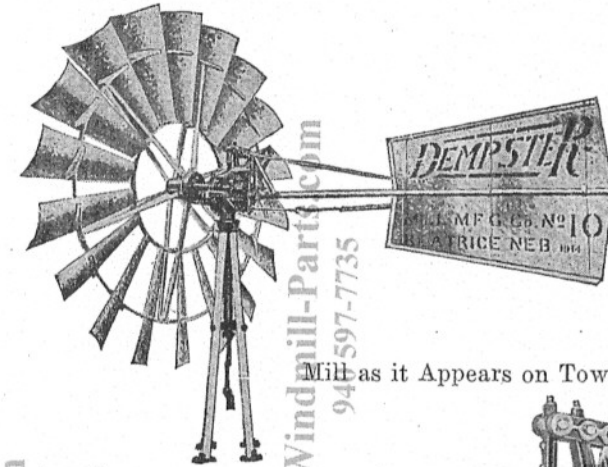
**DEFECTIVE GOODS**—Should goods be proven defective the measure of damage is the price of the defective goods only, and no charges for labor or expense required to repair defective goods or occasioned by them will be allowed.

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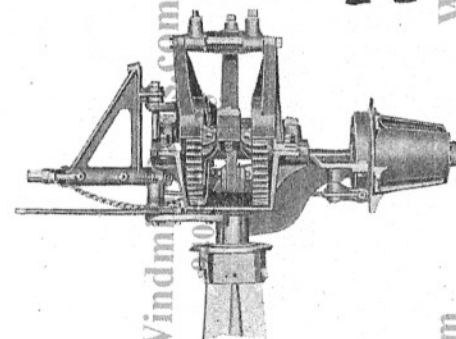
DEMPSTER MILL MFG. CO.

January, 1917.

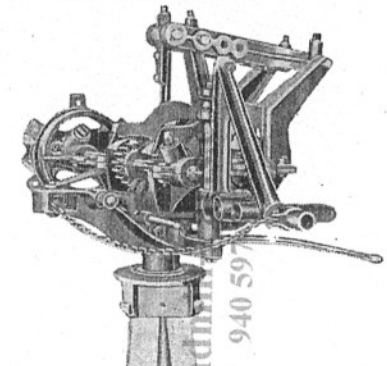
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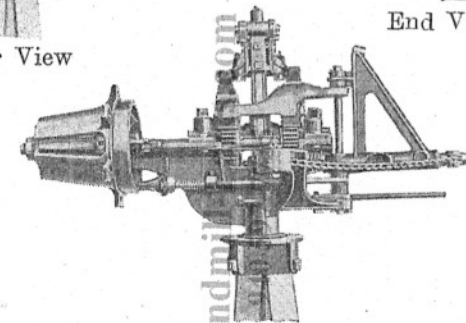
Mill as it Appears on Tower.



Rear View



End View



Front View.

Dempster No. 10 is Made in the Following Sizes:

Size	Length of Stroke	Gear Back	No. Sections	Weight
8 foot	5, 6, 7 in.	3 to 1	6	450 lbs.
10 foot	6, 7, 8½ in.	3 to 1	8	585 lbs.
12 foot	8, 9½, 12 in.	2½ to 1	8	1040 lbs.

**DEMPSTER NO. 10 DOUBLE-GEARED STEEL MILL**

**CONSTRUCTION**

We believe that our No. 10 has the simplest, most reliable and efficient mechanism of any double back-geared windmill on the market. It has the fewest possible parts—therefore the least number of places for “wear and tear.” This and the following pages describe the **DEMPSTER** No. 10 in detail.

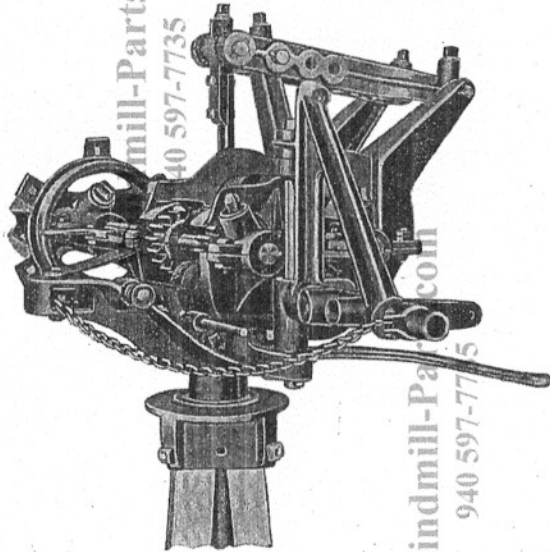


Plate A

This illustration, Plate A, gives you a splendid view of the **DEMPSTER** No. 10 motor as it appears on top of the tower. The view is from the front and side with all parts of the motor in place.

Most conspicuous on the cut of the motor is the rocker arm, which is the topmost part and guides the pitman and plunger rod that connects the pump

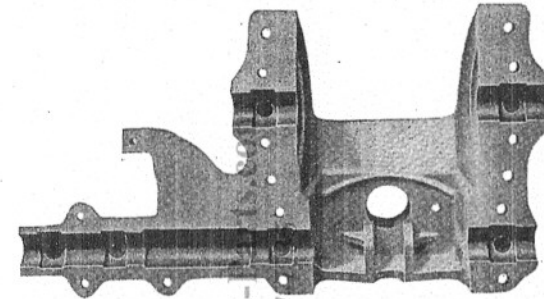
The Gears and Pinions—Note how completely they are covered.

The Vane Hinge—the triangular casting to the right of the plunger.

The Long Multiplying Lever—that plays an important part in governing the mill.

All of these parts are described in detail further along. But this illustration gives you an excellent idea of the strong, compact construction of the No. 10 Motor.

**DEMPSTER NO. 10 DOUBLE-GEARED STEEL MILL**



Top View Main Frame  
Plate B

The foundation of a windmill is its Main Frame, necessarily it must be strong enough to bear its load. A glance at the above illustration, Plate B, convinces of strength.

The illustration is a top view. It shows the following very essential features:

That all bearings are on one plane.

That the load, that is, the weight on the pumping apparatus, in action, comes between the bearings.

These two features mean an equal distribution of burden throughout the mill.

Another important feature of the main frame on No. 10 **DEMPSTER** mill is that the frame is cast separate from the pipe mast. Pipe is connected to main frame by a clamp and three heavy machine bolts.

**CRANK SHAFT FORGED FROM ONE PIECE STEEL**



Plate C Crank Shaft

This illustration, Plate C, shows the **DEMPSTER** Center Lift, One-Piece Steel, Forged Crank Shaft.

This shaft is one continuous piece of steel forged into shape and turned true. It runs in its own bearings in the main frame on a level with the main shaft. Its form and work have an important part in the distribution of the mill's load.

The Solid Bearings on both sides, the straight Center Lift, all bearings on a level and each helping to carry the load, are features in windmill construction that make the **DEMPSTER** No. 10 in a class by itself.

**DEMPSTER NO. 10 DOUBLE-GEARED STEEL MILL**

**WHEEL SPIDER, MAIN SHAFT AND SMALL PINIONS**

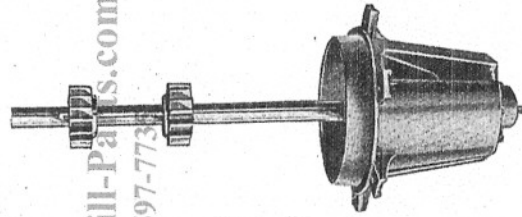


Plate G

Plate G shows the Main Shaft, Pinions and Spider or Hub used in the **DEMPSTER** No. 10. The hub casting is cast en' bloc' making a strong and substantial base for the wheel which is attached to it. The hub being long and hollow does not only reinforce the wheel, but allows the center of wheel to be carried directly over the center of the long bearings on end of main shaft. The hub is held in place on end of shaft by a long key and set screw.

**THE STEP GEAR.**

The pinions are keyed on main shaft and are thoroughly substantial. But note how these pinions are set—the relation of cogs to each other. They are offset with the offset cogs in the pinions and gears; we accomplish the newest and greatest improvement in windmill construction, the **step gear**. Extreme quiet and maximum of power are secured by reason of the fact that while the cog on one side of gear is in full mesh a cog on the other side is entering and one leaving, which makes a continuous contact and three cogs in mesh all the time, instead of one. The use of the **step gear** in windmill construction is a long step forward.

**Important.**—The small pinions are separate and independent of each other. Some manufacturers cast the small pinions en' bloc' and in case of breaking one of the pinions you would be compelled to buy both.

Also note the openings around large spider, which makes it easy to insert bolts when erecting mill.

**DEMPSTER NO. 10 DOUBLE-GEARED STEEL MILL**

**ASSEMBLED MOTOR, BRAKE AND BUFFER**

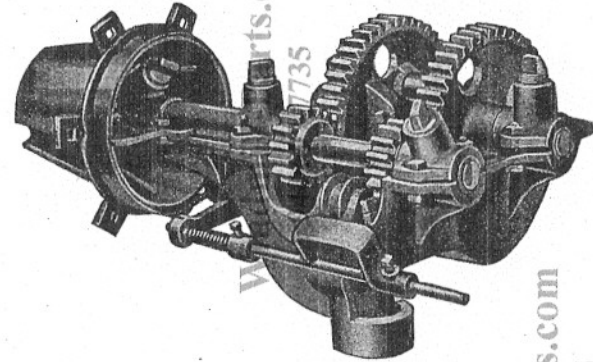


Plate H

The illustration, Plate H, shows the gears and pinions in place. It also will give an excellent idea of the substantial manner in which the **DEMPSTER** No.

10 is constructed. Note the large bearings and oil boxes. The substantial way in which the wheel hub is attached to the main shaft. You will also note the brake—the broad braking surface presented by the hub which is encircled by a flexible steel band; see Plate I, which gives a contact that is im-

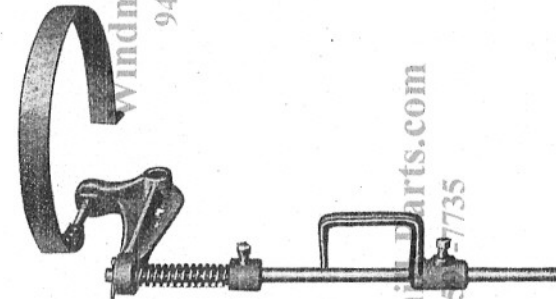
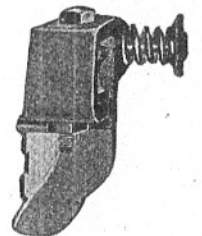


Plate I

possible to secure with a cast iron brake. The **DEMPSTER** brake acts effectively and with certainty when it is needed but offers no interference in the least with the smooth operation of the mill.

The **DEMPSTER** No. 10 is also equipped with spring buffer, an important feature that protects the vane and absorbs the shock when the vane is suddenly whipped around by a changing wind.



Buffer

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## DEMPSTER NO. 10 DOUBLE-GEARED STEEL MILL

## LARGE GEARS CONNECTED TO CRANK

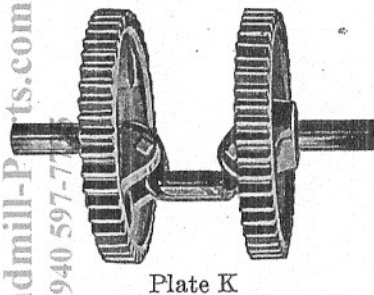


Plate K

This illustration, Plate K, shows the crank shaft and large gears.

We call attention to the unique method of driving the crank shaft. A substantial lug on each side of the crank on the inside of the gear is the only device used to drive the crank shaft around with each revolution of the gear. The use of set screws through the lugs and set screws on outside hub of gears makes gears doubly secure on crank.

By this device, a secure fastening of the gear to shaft is obtained, and it admits of easy removal from the shaft. How superior this solid, simple shaft and its operations are to wrist pins with heads and bolts and built-up crank to work loose and cause trouble. A long chapter of Windmill wear, Windmill knocking and Windmill disorders has been cut out by the **DEMPSTER** crank shaft.

It is through the crank shaft that the pumping motion of the mill is obtained. With each revolution of the gear wheels the crank shaft makes its circular trip and to it is attached the lower end of the pitman. The upper end of the pitman is connected with the rocker arm. See illustration, Plate D. The crank moves around, the pitman up and down, which gives the rocker arm an up and down or rocking motion. The free end of the rocker arm holds the plunger or long bar that drops down through the tower and operates the pumping machinery.

**DEMPSTER** one-piece crank has no key seats to weaken shaft. No keys to work loose. Wrist pins and built-up cranks have given the users of windmills more trouble than anything else. **DEMPSTER** No. 10 eliminates all of this trouble.

## DEMPSTER NO. 10 DOUBLE-GEARED STEEL MILL

## ROCKER ARM, ROCKER ARM SUPPORTS AND PITMAN.

Notice how pitman and plunger are placed between the bars of the rocker arm—no twist—no torsion. Just a straight line lift. The work load of the rocker arm is central between bearings, the way of least resistance and greatest efficiency.

The **DEMPSTER** pitman, Plate E, is connected with the crank shaft by a box of maple soaked in oil. This oil soaked maple box is an old **DEMPSTER** feature. It is retained and probably long will be, because nothing has been found to equal it for standing the heavy strain of lifting and pushing which

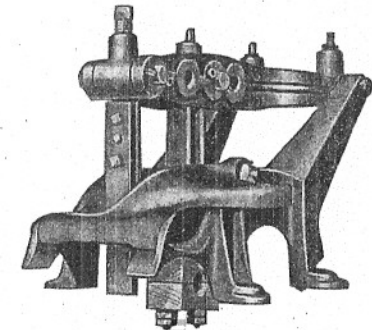
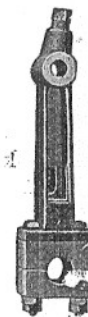
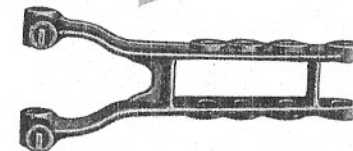


Plate D.

falls on the pitman at this point. The oil soaked fibre smooths away friction, and its resistance to wear is remarkable. Provision has been made in the pitman for re-oiling the maple box, thus making it possible to keep it oil soaked for years.

The **DEMPSTER** rocker arm, Plate F, is a double bar hinged at one end to two supports rising from the main casting.

The illustration will show four openings. The one at the extreme end is for plunger connection. The other three holes are for pitman connection with rocker arm, each hole giving a different length of stroke. All that is necessary to make a longer or shorter stroke is to shift the pitman pin from one hole to another. This can be done without disturbing any part of the mill machinery.

Pitman  
Plate E

Rocker Arm, Plate F

## DEMPSTER NO. 4 VANELESS MILL

Connected at either end to the cross bars of the section is a heavy iron brace (No. D, page 21), one end of which is heavier than the other, and acts as the centrifugal weight. This weight can be plainly seen in the center of wheel section in Fig. 1090. From the center of this combined brace and weight, as you can also see on page 17, the shifting rods run to a spider, which slides back and forth on the main shaft, the spider being connected to the counter weight by a pair of twin rods and flat bars; (shown just back of the horse.)

Fig. 1090, page 18, shows how shifting rod is attached to cast brace on section by means of machine bolt and pipe bushing to prevent drawing bolt too tight. The other end of shifting rod is attached to small spider. Pipe bushing is also used at this point.

### HOW DEMPSTER NO. 4 OPERATES.

As the wheel turns the centrifugal weights on the sections have a tendency to fly out from the center. In a light wind the counter weight, acting through the twin rods, sliding spider and shifting rods, holds the wheel in the wind, presenting the greatest possible wheel surface to the wind. But as the wind grows stronger and the revolutions of the wheel increase, the centrifugal force in the section weights overcomes the counter weight and the wheel slowly closes, reducing the wheel surface presented to the wind. The extent to which the wheel closes depends entirely on the velocity of the wind.

As the wind decreases, the centrifugal force exerted by the section weights decreases, and the counter weight gradually opens the wheel, causing it to present a greater surface to the wind.

It is therefore apparent that this automatic governing device operates the **DEMPSTER** No. 4 Mill at a uniform speed under all conditions eliminating the possibility of a sudden strain on the pumping equipment or of tearing the wheel to pieces. In a high wind the **DEMPSTER** mill operates perfectly.

The cut at bottom of page 17 shows the wheel wide open operating in a light wind, the counter weight hanging low. The cut at the top shows the wheel closed, the counter weight pulled high by the centrifugal action of the section weights, one of which can be plainly seen in the top section and one in the bottom section.

### OTHER IMPORTANT PARTS.

The main frame (See Fig. 1206, page 20), is of heavy cast iron, reinforced by a large rib extending the full length of the frame on each side, which makes the foundation exceedingly strong.

In this main frame is a heavy wrought steel tube or stem, one end extend-