# The Challenge Timken Roller Bearing Wind Mill




POWERFUL—STRONG—SELF-OILING—
LIGHT RUNNING

**Sizes—6-8-10-12-14-16-18'**

**ALL RUN IN OIL**

Wind, that invisible current of air, is without doubt the cheapest power known for pumping water on the farm for stock and home. It is available everywhere, but to utilize it and get the best results a WIND MILL of suitable size is required. Unlike other machinery on the farm, however, a wind mill is erected on a tower away up out of observation and is generally neglected, therefore it is necessary that it be constructed with as few working parts as possible; that will require oiling only once every one or two years, and automatically takes care of itself in the strong winds. In the construction of the CHALLENGE mill these points have been taken into consideration and we have produced the lightest running, simplest and most durable wind mill on the market.

The Challenge 27 wind mill represents, without doubt, the biggest improvement in wind mill design since back gearing was first used. The Challenge reservoir self oiling system is far superior to anything yet devised. It carries at least a year's supply of oil, and all moving joints are thoroughly oiled at every revolution of the wheel.

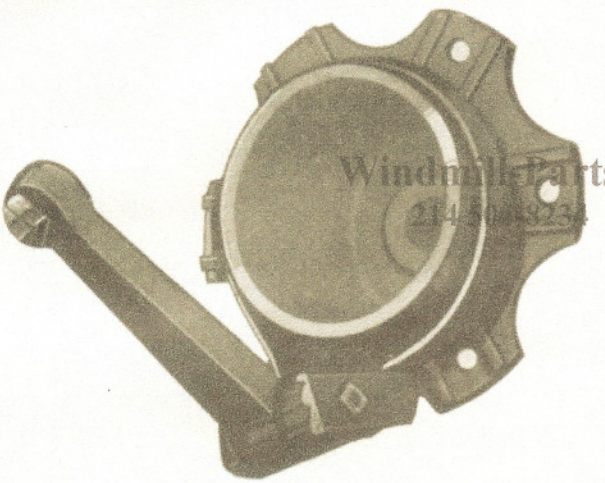
## Strength vs Weight

The aim of all windmill manufacturers has always been to make a mill which would be large and strong, yet run easily. It was a simple matter to increase the strength by adding weight, but added weight placed a greater strain on the tower, and caused the mill to run slowly and clumsily.

To increase strength without adding weight we have used Semi-Steel in the castings instead of ordinary cast iron. They add years of service to the mill and are ideal for a farmer far away from repair or service men.

## The Governor

A good governor on a wind mill is absolutely necessary, otherwise it would be blown to pieces in the strong winds that frequently pass over the country. The Multiplying Spring Governor, same as used on the CHALLENGE for the last 20 years and gave it the reputation of "the perfectly governed mill made," is used on this mill. It will automatically take care of the mill in the strongest winds that blow and allow the mill to do the maximum amount of work in ordinary winds. You won't have to worry about your mill blowing to pieces if it is a CHALLENGE.



Positive Brake



## Friction Band Brake

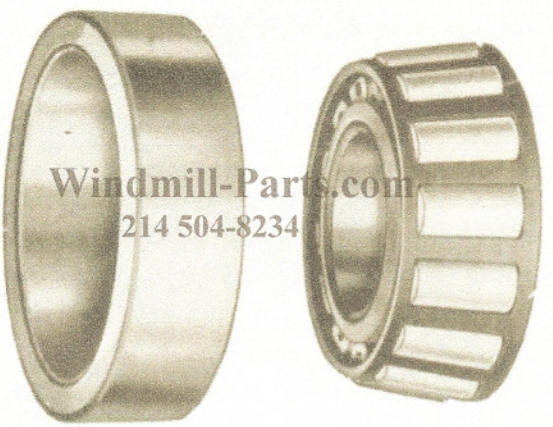
A flexible steel band brake, same as used on your automobile, is applied automatically to the rim of spider when the mill is pulled out of wind. It acts effectively and with a certainty when it is needed but never interferes with the smooth operation of the mill at other times.



## Bearings

A choice is given of Timken Roller or Die Cast Babbitt Bearings. Either can be easily removed and replaced should they wear out after 25 or 30 years of use. Running in oil as they do, they should last a life time. Exhaustive tests have shown there is practically no wearout to them, when lubricated as they are in the CHALLENGE.

Timken Bearings permit the mill to run in the lightest breeze. They develop about 23% more power in the same wind.



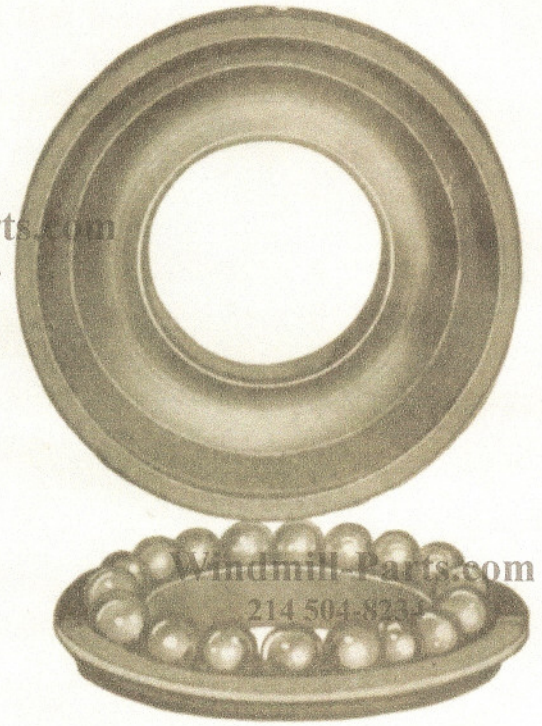
Timken Tapered Roller Bearing



The Babbitt Bearings too, are high grade in every respect, but are available on the 6, 8 and 10 foot mills only.

# Ball Bearing Turntable

This consists of an upper and lower raceway and twenty steel balls with retainer ring which locks the three parts together into one weather-proof unit. Raceways are semi-steel and hardened to prevent undue wear. Turn table requires oiling but once a year. This represents a distinct improvement over the old style [illegible] of turn table, and allows the mill to turn on the tower in the lightest breeze.





## SPECIFICATIONS OF CHALLENGE 27 WINDMILLS

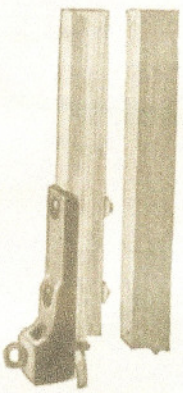
Back Geared 3 to 1

| Size Wheel | No. Arms | No. Slats | No. Sections | Length Stroke | Shipping Weight | Oil Required | Horse Power | Price | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Babbitt Bearings | Timken Bearings |
| 6 Feet | 4 | 12 | 4 | 5¾" & 7" | 290 | 1 quart | 1/5 | $44.30 | $ 47.10 |
| 8 Feet | 6 | 18 | 6 | 5¾" & 7" | 355 | 1 quart | 3/10 | 54.30 | 57.10 |
| 8 Feet Special | 6 | 18 | 6 | 6" & 8" | 385 | 3 pints | 3/10 | 62.85 | 67.00 |
| 10 Feet | 6 | 24 | 6 | 6" & 8" | 455 | 3 pints | 3/5 | 78.60 | 82.85 |
| 12 Feet | 8 | 16 | 8 | 7" & 10" | 900 | 5 pints | 1¼ | | 148.60 |
| 14 Feet | 8 | 24 | 8 | 7" & 10" | 1200 | 5 pints | 2 | | 214.30 |
| 16 Feet | 8 | 24 | 8 | 10" & 15" | 2300 | 1½ Gallons | 3 | | 400.00 |
| 18 Feet | 8 | 24 | 8 | 10" & 15" | 2700 | 1½ Gallons | 4 | | 485.70 |

Horse Power is based on 15 miles per hour wind.

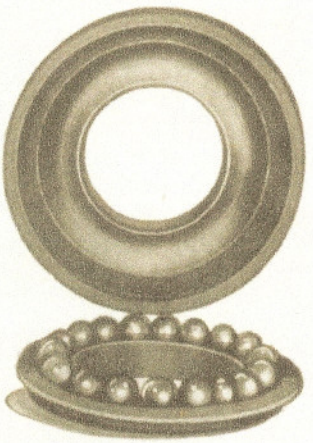
# What You Get With The Challenge Windmill





Two lengths of windmill rod (for 40' tower). This is high grade painted pine rod.





Ball bearing thrust collar, furnished with equipment. Permits the mill to "face the wind" easily.



Tower Cap fits any make of tower. Makes stub tower unnecessary. Special caps for towers of odd design or old style.




A year's supply of Oil. The Challenge mill requires oil but once a year. A 12 months' supply of Challenge Zero Oil is sent free. This will not freeze or gum up but is light running.

# Challenge Wind Mills

The wheel generates the power which makes the mill go. It is very strong and durable, of the best grade of galvanized sheet steel.

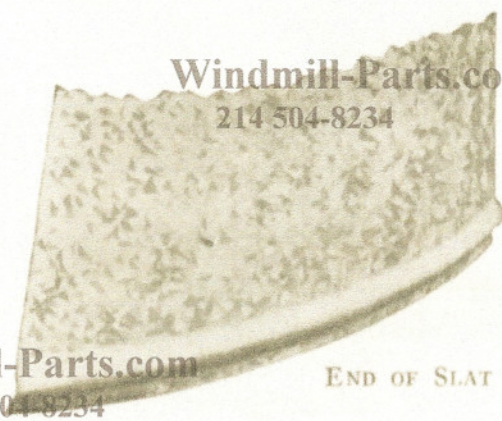
The slats in each section are slightly curved and set at just the right angle to give the maximum power and greatest efficiency.

SECTION OF WHEEL

Each slat is attached to two steel cross bands by steel brackets that support and brace the slats their entire width.

The brackets are pressed galvanized steel. The depth of flange against the sail and rim is great enough to secure permanently the union of these parts. The bracket is placed behind the sail in a way to reinforce its own strength, and maintain both its angle and curvature.

STEEL BRACKET

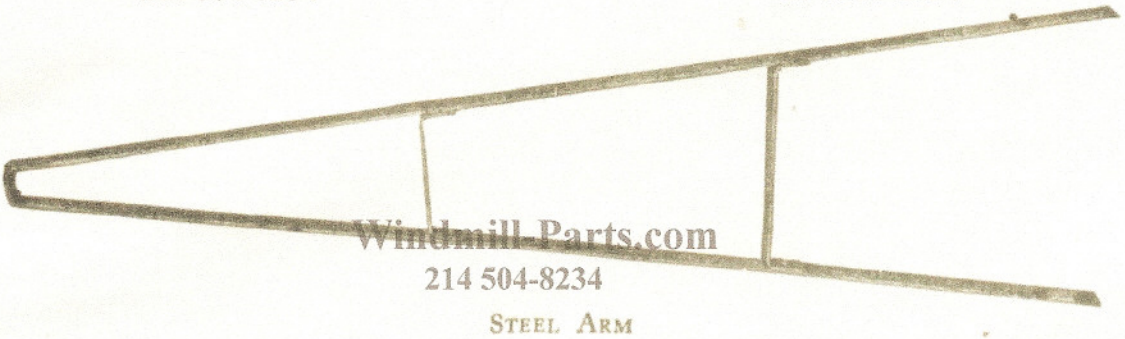


END OF SLAT

To further strengthen the slats they are beaded on the wide end as shown in cut. This adds much to the resisting power of the slats.

# Challenge Wind Mills

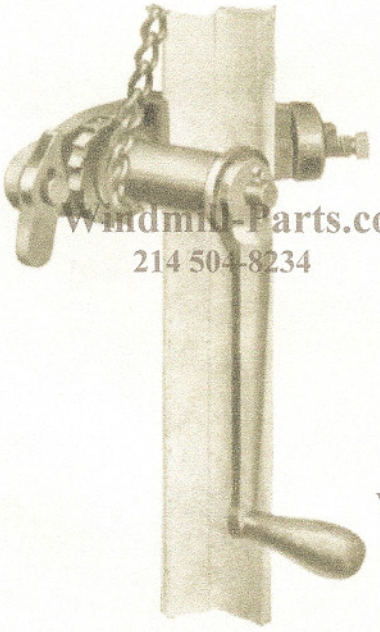




STEEL ARM

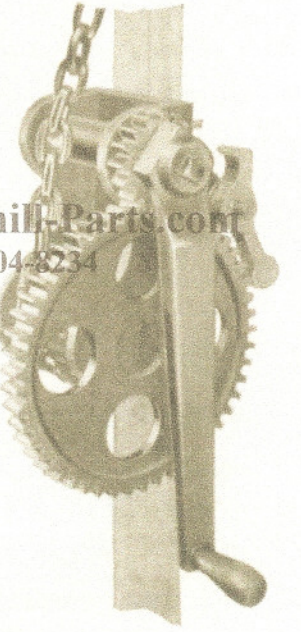
The wheel is composed of several sections and each section is attached to a steel arm, the outside rim being attached to the outer end and the inside rim to a bridge near center. The arms are made of heavy flat steel bar, braced in such a manner as to withstand all strain the wheel is capable of placing upon them. Being double, they brace the wheel from both directions, thereby making it rigid and strong and supporting it in such a manner as to defy the storms. Every wind storm that passes over the country bears evidence to the storm proof qualities of the Challenge. Challenge wheels do not buckle or collapse.

## Pullout



The pullout is the device by which the wheel is thrown out of the wind when pumping is not desired.

It consists of a windlass with ratchet which is attached to the corner post of the tower. It is made in 3 sizes, one for 6, 8 and 10 foot mills, a larger size, geared, for the 12 and 14 foot mills and an extra large size, geared, for the 16 and 18 foot mills. They have ample capacity for easily pulling the mills out of the wind and are sent with each mill at no additional charge.



# Sizes, Gear and Capacities of the Challenge Windmills



6-FOOT MILL. Back geared 3 to 1. Has 5¾ and 7-inch stroke, four arms, four sections and twelve fans. Develops 1-5 horse power in 15-mile wind, and is especially adapted for shallow wells from 10 to 50 feet deep. Shipping weight 290 lbs. Oil required, 1 quart.



8-FOOT MILL. Back geared 3 to 1. Has 5¾ and 7-inch stroke, six arms, six sections and eighteen fans. Develops 3-10 horse power in 15-mile wind, and is the standard farm mill for wells 35 to 100 feet deep. Shipping weight 355 lbs. Oil required 1 quart.

10-FOOT MILL. Back geared 3 to 1. Has 6 and 8-inch stroke, six arms, six sections and twenty-four fans. Develops 3-5 horse power in 15-mile wind, and is our heavy duty farm mill for wells 75 to 150 feet deep. Shipping weight 455 lbs. Oil required, 3 pints.



12-FOOT MILL. Back geared 3 to 1. Has 7 and 10-inch stroke, eight arms, eight sections and sixteen fans. Develops 1¼ horse power in 15-mile wind, and is adapted for deep wells and irrigation. Shipping weight 900 lbs. Oil required, 5 pints.



14-FOOT MILL. Back geared 3 to 1. Has 7 and 10-inch stroke, eight arms, eight sections and twenty-four fans. Develops 2 horse power in 15-mile wind, and is adapted for deep wells and irrigation. Shipping weight 1200 lbs. Oil required, 5 pints.


16-FOOT MILL. Back geared 3 to 1. Has 10 and 15-inch stroke, eight arms, eight sections and twenty-four fans. Develops 3 horse power in 15-mile wind, and is the mill to use for deep well pumping, irrigation, etc. Shipping weight 2300 lbs. Oil required, 1½ gallons.



18-FOOT MILL. Back geared 3 to 1. Has 10 and 15-inch stroke, eight arms, eight sections and twenty-four fans. Develops 4 horse power in 15-mile wind, and is the size to use when a large quantity of water is required, for elevated tanks, irrigation, etc. Shipping weight 2700 lbs. Oil required, 1½ gallons.