A. W. GRAY.

SILO PACKER.

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1,171,783.

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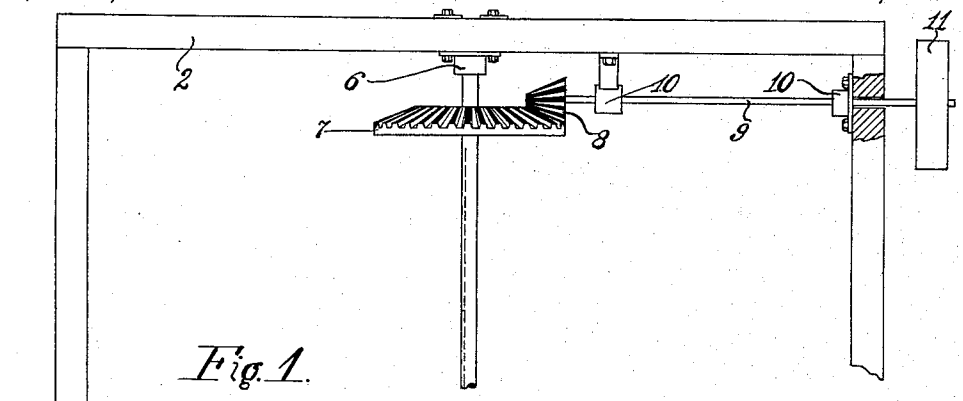


Fig. 1.

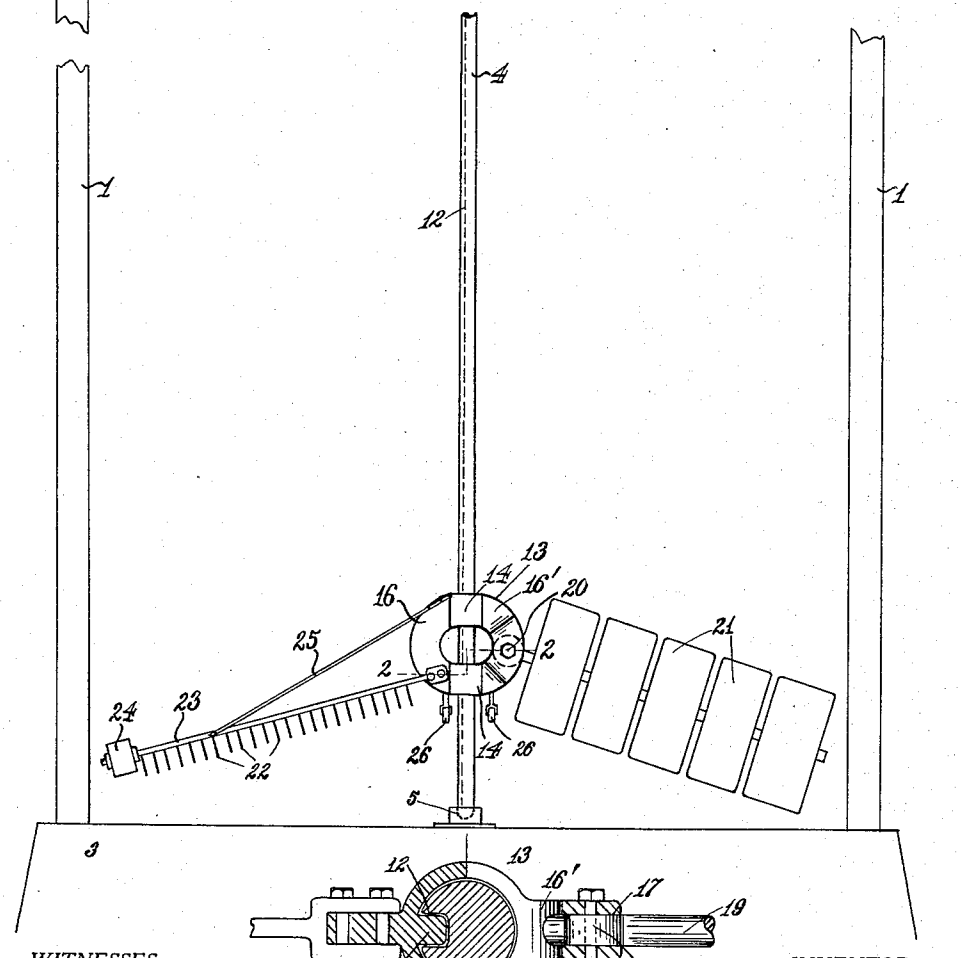


Fig. 2.

WITNESSES:

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ARTHUR W. GRAY, OF ELLENSBURG, WASHINGTON.

SILO-PACKER.

1,171,783. Specification of Letters Patent. **Patented Feb. 15, 1916.**

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To all whom it may concern:

Be it known that I, ARTHUR W. GRAY, a citizen of the United States of America, residing at Ellensburg, in the county of Kittitas and State of Washington, have invented certain new and useful Improvements in Silo-Packers, of which the following is a specification.

The present invention relates to improvements in silo packers, and is designed particularly to provide a machine for more closely packing the ensilage within the silo for numerous reasons, and particularly in order to preserve the ensilage in a healthy condition until used.

The primary object of the invention is the provision of a device for packing the ensilage as it is fed into the silo, said device being designed to operate with facility, economy and efficiency.

The invention consists in an automatically adjustable packing apparatus capable of a rotary movement with a supporting shaft, and in certain novel combinations and arrangements of these parts to provide an operative mechanism, as will be hereinafter pointed out.

In the accompanying drawings I have illustrated one complete example of the physical embodiment of my invention constructed according to the best mode I have so far devised for the practical application of the principles of the invention.

Figure 1 is a view in elevation showing a supporting frame and my silo packer complete combined therewith. Fig. 2 is a transverse sectional view, enlarged, on the line 2—2 of Fig. 1.

In the preferred embodiment of my invention I have illustrated a portable apparatus which is automatically adjustable as to height, and this device is located within the interior of a silo for the purpose of packing the ensilage as it is fed in in proper manner. In the drawings I have illustrated a frame for supporting the mechanism comprising the uprights 1—1, and the cross bar 2, supported upon the foundation 3. It will readily be understood that these members or elements may be located within the silo, or the silage may be packed in the open, if desired.

When the device is used in connection with a silo, the cross bar 2, of course, is located across the top of the silo, and the driven shaft 4 which is located centrally of the silo and extends vertically therein, is supported in the bearing cup 5 at the lower end, and in the bearing box 6 at its upper end, the latter bolted to the cross bar 2. This vertical shaft 4 is provided with a large bevel gear 7 horizontally disposed thereon, and through the bevel pinion 8 on driving shaft 9 which is supported in the bearings 10, and driven by the sheave or pulley 11, the bevel gear is revolved, and the vertical shaft 4 is also revolved with it. In this manner the driven vertical shaft 4 is revolved from the driving shaft from a suitable source of power, as by belt over the pulley 11.

The vertical shaft 4 is provided with a slot or key-way 12 extending from the bevel gear throughout the length of the shaft to its lower supported end, and this key-way forms part of the connection for revolving the ensilage packer.

The packing device is supported from a hub 13 which includes a pair of sleeves 14, spaced apart, and each provided with a tongue 15, which tongues are adapted to slide in the key-way or slot in the shaft 4. The sleeves are connected by webs 16—16′, and one of these webs as 16′ is slotted at 17 to receive the perforated end 18 of a shaft 19. This perforated end 18 is pivoted to swing vertically by means of a bolt 20 in the slot 17 of the web 16′. The shaft 19 carries a suitable number of rollers 21 (five being shown in this case), which are journaled to freely revolve on the shaft.

At the opposite side of the shaft 4, a rake 22 is supported from the web 16, and at the end of the bar 23 of the rake, a supporting wheel 24 is journaled, while a brace 25 diagonally arranged between bar 23 and the web 16 holds the rake bar 23 in rigid relation with the hub 13. Beneath the hub and in close proximity to the shaft 4, are a pair of casters or supporting rollers 26, which are designed to support the hub above the ensilage as it is piled into the silo.

It will be understood that the rollers 21 upon their shaft 19, are capable of movement and may swing upon the bolt 20 as a pivot, while the rake 22 is fixed with relation to the hub.

In operation with the power applied by means of a belt at the pulley 11, the shaft 4 is revolved carrying with it the hub 13 and the shaft 19 with its rollers together with the rake 22. The ensilage is fed or piled into

the silo at the bottom and the rotary packer is revolved upon the surface of the ensilage. The rake 22, of course, levels off the irregularities in the surface of the pile of ensilage, and the rollers 21 traveling around in circles will pack the ensilage as it is fed into the silo. Preferably the top surface of the pile of ensilage is conical in shape so that the rollers will travel in circles with the shaft 19 at approximately the angle shown in Fig. 1. The angle of the rake tends to form the top surface of the pile in this manner, but it will, of course, be understood that should flat surfaces be encountered, or should the incline of the conical top of the pile be greater, the rollers will adapt themselves to the change in the incline of the surface of the pile. As the ensilage is continuously fed into the silo and packed, it will readily be seen that the hub is lifted by the rollers and shaft 19, as these members rise, due to the continuous feed of the ensilage and increased height of the pile. The keys or tongues 15 slide upwardly in the key-way, and at all times hold the hub in operative relationship with the driven shaft 4. In this manner the rollers are continuously traveling in circles about the center shaft 4, and as the pile increases, they are lifted until a sufficient quantity has been packed in the silo. In this manner the ensilage is packed with uniformity and compactness, and the capacity of the silo is increased because of the more workmanlike manner of packing the ensilage.

From the above description, taken in connection with my drawings, it will readily be seen that I have devised a silo packer which fulfils the conditions and functions of a comparatively perfect machine of this type.

What I claim is:

The combination with an upright grooved driving shaft, of a hub having a key slidable vertically in the grooved shaft, a rake attached to the hub, a radial shaft pivoted in the hub to move bodily in a vertical direction, and rollers on said radial shaft whereby the rollers may have a flexible movement as they travel over the silage.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR W. GRAY.

Witnesses:
JAMES MCQUEEN,
FRANCIS A. KERN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."