W. B. STARR.

SILO.

APPLICATION FILED SEPT. 1, 1914.

1,150,232.

Patented Aug. 17, 1915.

2 SHEETS—SHEET 1.

FIG. 1.

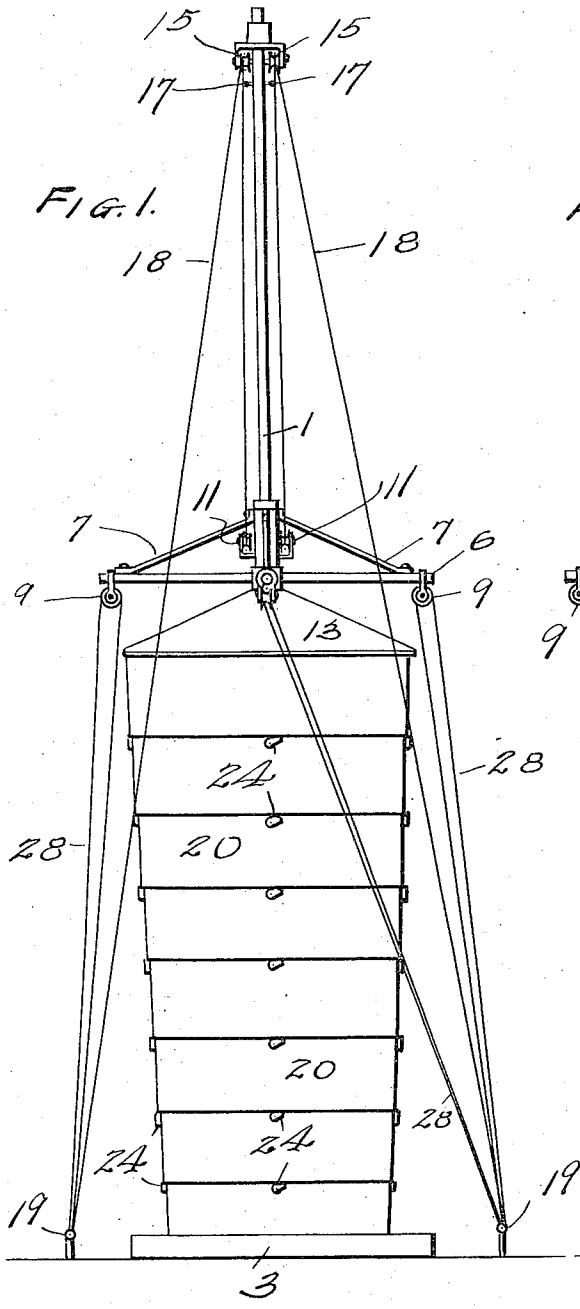
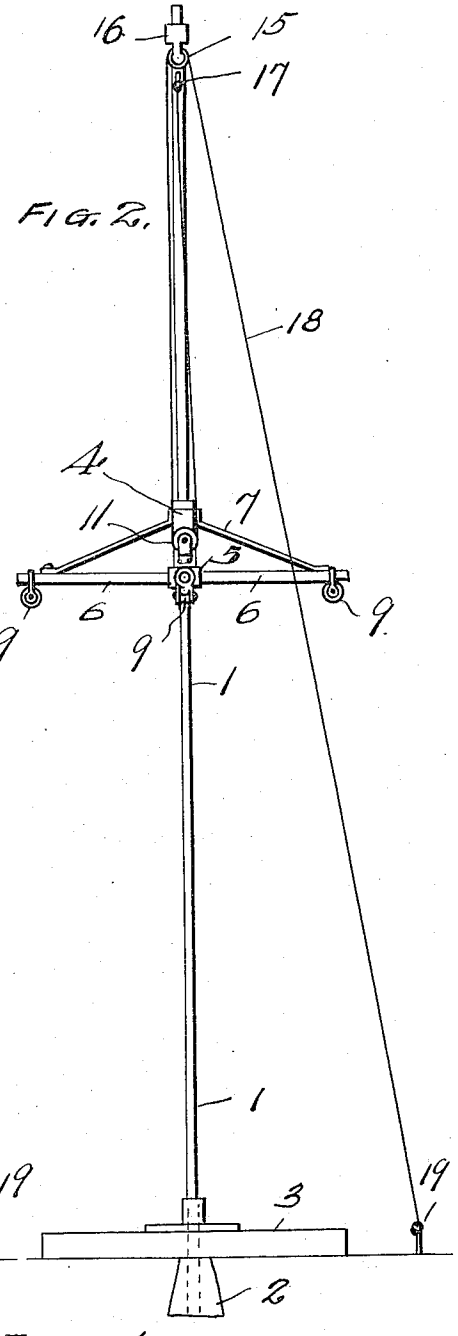


FIG. 2.



Witnesses.

C. T. Davies

M. L. Newcomb

Inventor

W. B. Starr

By Herman A. Phillipp

Attorney

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

W. B. STARR.

SILO.

APPLICATION FILED SEPT. 1, 1914.

1,150,232.

Patented Aug. 17, 1915.

2 SHEETS—SHEET 2.

Fig. 3.

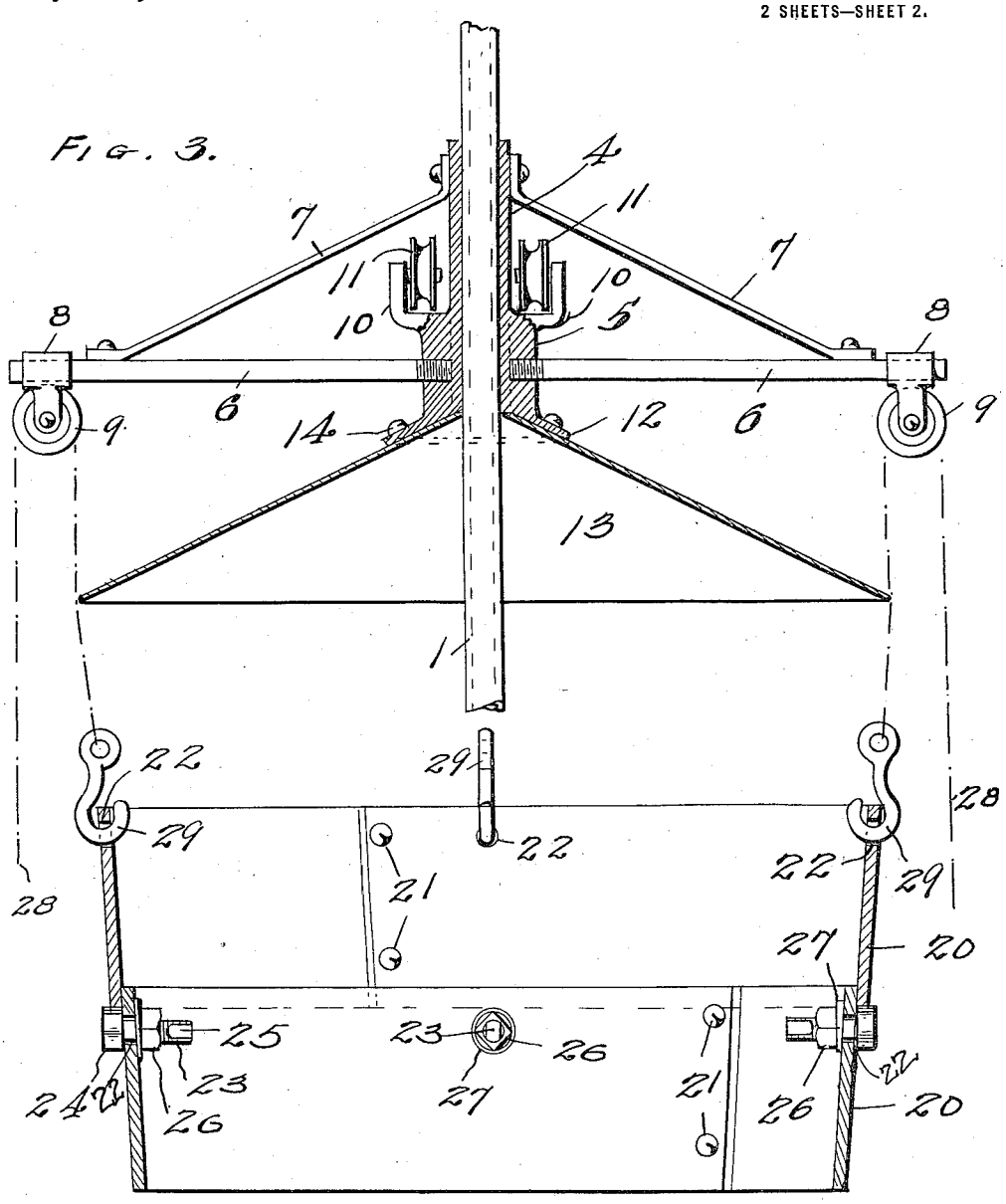
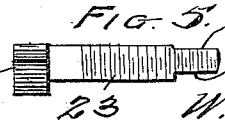


Fig. 4.



Fig. 5.



Witnesses.

C. K. Davies.

M. L. Newcomb

Inventor

W. B. Starr

By

Thomas A. Phillips

Attorney

COLUMBIA PLANOGRAPH CO. WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM BURR STARR, OF CISCO, TEXAS, ASSIGNOR OF ONE-HALF TO RUPERT ROSWELL CLARIDGE, OF LONGVIEW, TEXAS.

SILO.

1,150,232. Specification of Letters Patent. Patented Aug. 17, 1915.

Application filed September 1, 1914. Serial No. 859,671.

To all whom it may concern:

Be it known that I, WILLIAM B. STARR, a citizen of the United States of America, residing at Cisco, in the county of Eastland and State of Texas, have invented certain new and useful Improvements in Silos, of which the following is a specification.

The present invention relates to improvements in silos.

The primary object of the invention is to construct a silo that is capable of being increased or diminished in its capacity for holding ensilage, and also in providing means by which sections of the silo may be handled in order to increase or diminish the size of the silo.

The invention consists essentially in providing a silo made up of sections or units, and in means for raising and lowering these units as will be described.

It further consists in certain novel combinations and arrangements of parts whereby the sections or units of the silo are supported, and are released, as will be more fully hereinafter set forth.

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 side elevation of a silo showing the complete embodiment of my invention. Fig. 2 is a side elevation of the mast, the silo being omitted, showing the cover lifting means, and the hoisting devices for the units or sections of the silo. Fig. 3 is an enlarged view showing the cover for the silo, and a slidable sleeve in section, and showing also two of the silo units and the means for lifting said units. Fig. 4 is an end view of one of the cam bolts used in the construction of the silo. Fig. 5 is a side elevation of the bolt of Fig. 4.

In the preferred embodiment of my invention, I employ a central mast or pole 1, which is illustrated as a metal tube, formed with a concrete base 2, and a concrete foundation 3, by means of which its stability is secured. This mast is of suitable height, and is designed to support a vertically movable sleeve 4. This sleeve 4 has an enlarged hub portion 5 from which radiate four diametrical bars 6. These bars are threaded into the hub 5, and by means of braces 7, they are connected to the upper end of the sleeve 4, and a rigid relationship is thus established between the bars and the sleeve. At the end of each bar a bracket 8 is provided to support a pulley 9, and by means of the brackets 10 integral with the hub 5, a pair of pulleys 11 are journaled close in to the sleeve 4. At the lower end of the hub 5, a flange 12 is formed, and about this flange the conical cover 13 of the silo is secured by means of rivets 14.

The sleeve, hub, radial bars and cover, are all rigid with each other and are movable with relation to the mast 1, the sleeve and hub being slidable on the mast. Thus the cover may be raised or lowered as desired, and to accomplish this result a pair of pulleys 15 are permanently located near the top of the mast and supported by means of the bracketed sleeve 16, which is fixed to the mast in a suitable manner. At 17—17 the hoisting ropes 18—18 are secured to the mast. Each of these ropes is then extended down and under one of the pulleys 11, and then up over one of the pulleys 15, and as shown in the drawings the end of the hoisting rope is tied to a post or stake 19. By means of these two hoisting ropes 18, it will be apparent that the cover may be raised or lowered on the mast 1. The silo is built up around this permanent and fixed mast 1. It is made up of a multiplicity of rings or bands 20, and as clearly seen in Fig. 1, these bands or rings increase in diameter and are superimposed one upon another. Referring to Fig. 3, two of these rings are shown in section, and they are illustrated as metallic bands bolted or riveted together at 21. Each of the bands is provided with four diametrically arranged bolt holes 22 adapted to receive the threaded bolts 23, and each of these bolts is provided with a cam head 24 and flattened faces 25. After the bands or sections have been lifted to position, the bolts are passed through the openings 22 with the bolt heads outside, and by means of nut 26 and washer 27, these bolts are clamped through the rings 20. Then by turning the cam heads, successively, the section or ring 20 may be further lifted, although but slightly, and thus forced into closer frictional engagement with its next lower section or band. A tool applied to the flat places 25 will turn the bolts and as they are turned the cam head frictionally engages

the lower edge of the upper section and lifts the section as described. Each ring is supported upon the bolt heads 24 clamped in the next lower ring as shown in Figs. 1 and 3.

In increasing or decreasing the capacity of the silo the ropes 28 and hooks 29 are employed. There are four ropes 28 and 29, and from the drawings it will be apparent that these ropes are passed over the pulleys 9, and the hooks are adapted to engage in the bolt holes 22 on the rings or sections 20. Thus when a section 20 is to be moved, its bolts 23 are removed and the four hooks 29 on the ropes 28 are attached to the ring, and after the ropes are disengaged from the stake 19, the ring or section may be lowered. All the bolts 23 on the next lower ring, are now removed, and the upper ring may be lowered to the ground passing down over the entire height of the silo from top to bottom. This is accomplished by reason of the fact that each upper ring is greater in diameter than its next lower one. In this manner all of the rings may be successively lowered from the top until they stand in concentric arrangement about the lowermost ring. In like manner, by a reverse arrangement, the silo may be built up one ring upon another until the desired height is reached.

From this description taken in connection with the drawings, it will be evident that the capacity of the silo may be increased or decreased at will, and with facility. For instance, when loading the silo, the ensilage is piled into the silo to its top ring. Then another ring is added, and the ensilage packed, and the rings are added and ensilage alternately packed until a sufficient capacity has been reached. The movable cover 13 is as large as the greatest diameter of the largest ring, and consequently the cover is adapted to close the silo at all possible heights. The ensilage packed in the silo and about the mast, renders the structure more stable, but if desired, guy ropes or braces may be utilized to support the mast whenever necessary.

It is evident that silo constructed as above set forth is facile in manipulation, efficient in operation, and economical in performing the functions for which it is intended.

I claim:

A silo comprising a multiplicity of tapering perforated metallic ring sections of increasing diameter superimposed one upon another, and each section having bolts with cam shaped heads thereon for raising the next upper section into closer frictional contact with its lower section.

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

WILLIAM BURR STARR.

Witnesses:
FRANK B. BROWN,
F. D. CAMPBELL.

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