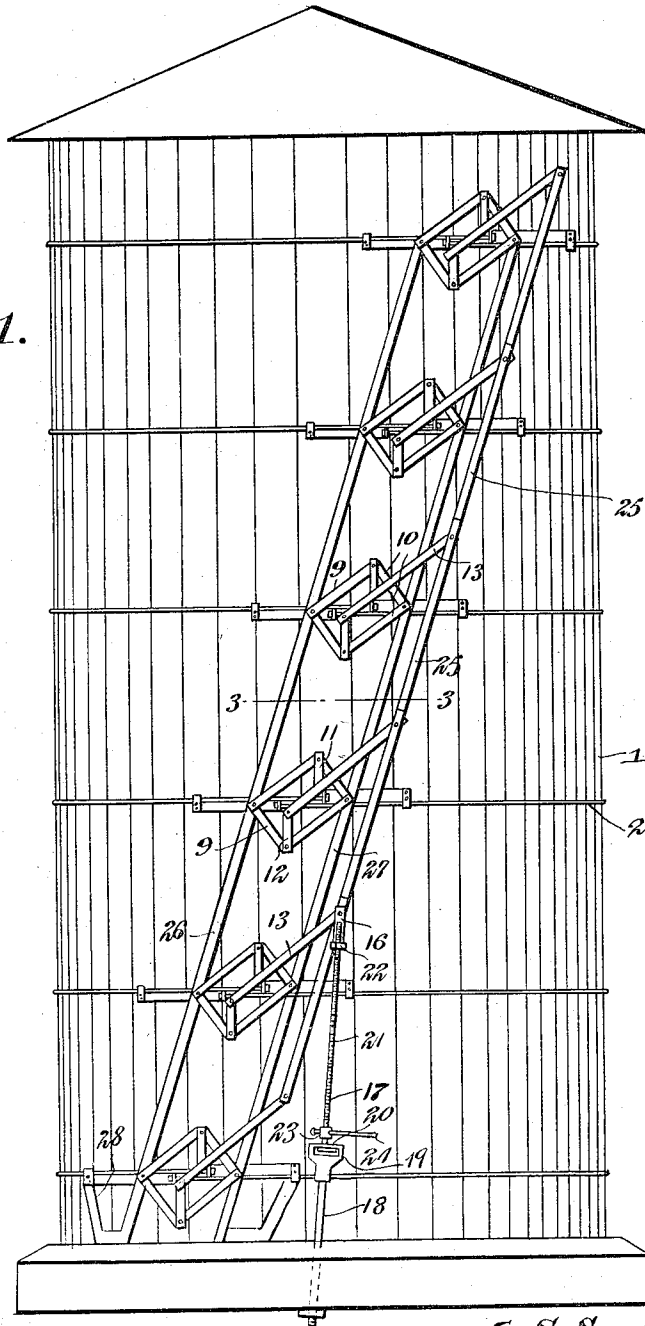


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STAVE FORMED CONSTRUCTION.
APPLICATION FILED SEPT. 2, 1914.

1,175,833.

Patented Mar. 14, 1916.
2 SHEETS—SHEET 1.

Fig. 1.



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Witnesses

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Fig. 2.

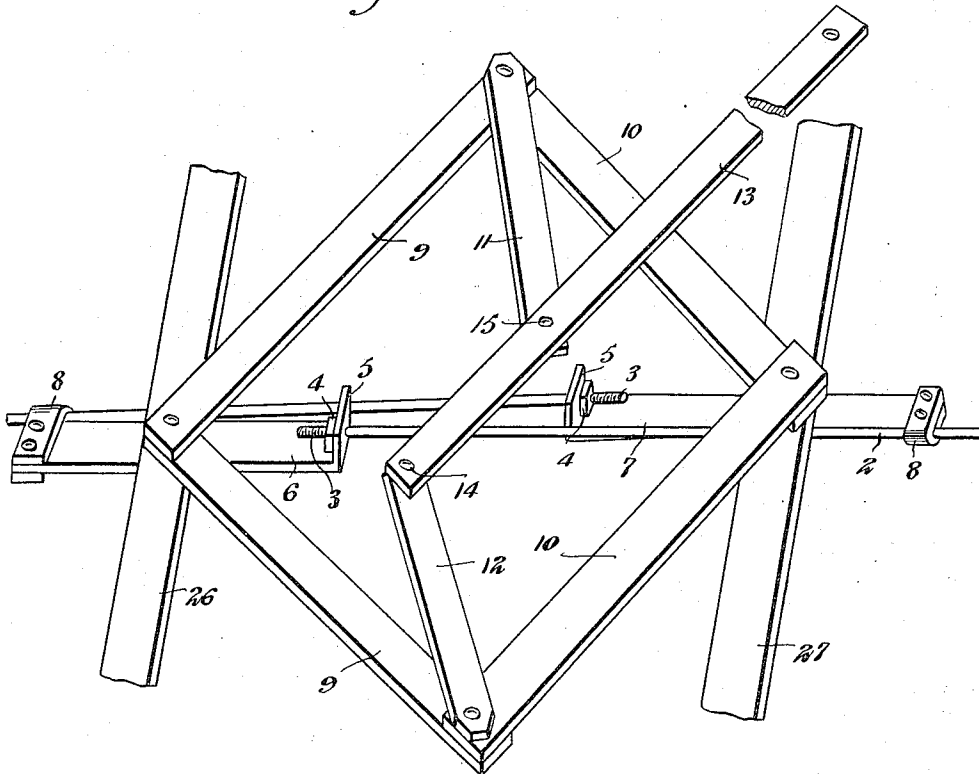
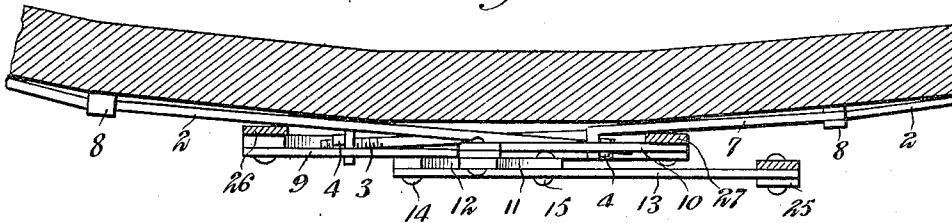


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES S. SPRINGER, OF SHELBYVILLE, MISSOURI.

STAVE-FORMED CONSTRUCTION.

1,175,833.

Specification of Letters Patent.

Patented Mar. 14, 1916.

Application filed September 2, 1914. Serial No. 859,827.

To all whom it may concern:

Be it known that I, CHARLES S. SPRINGER, a citizen of the United States, residing at Shelbyville, in the county of Shelby and State of Missouri, have invented new and useful Improvements in Stave-Formed Constructions, of which the following is a specification.

This invention relates to silos or other stave formed constructions and more particularly to means for tightening the hoops thereof.

The principal object of the invention is to provide simple and efficient means for tightening all of the hoops simultaneously, which means is operable from the base of the silo or other stave formed construction, and by a single man. In tightening the hoops upon the silos, or other stave formed construction, it is necessary to replace the ladder used to reach the lugs several times on account of the fact that the lugs are run in a diagonal line to avoid bringing more than one of them into contact with the same stave, these lugs, as is well known, having a tendency to push the stave inwardly.

It is the object of the invention to avoid this difficulty and to provide means whereby an operator can, from the base of the silo, operate all of the tightening devices simultaneously without the use of a ladder.

Further objects of the invention will appear as the following description is read in connection with the accompanying drawing, which forms a part of this application and in which:—

Figure 1 is an elevation of the silo showing the hoop tightening mechanism applied thereto. Fig. 2 is an enlarged detail perspective view of the tightening mechanism used for one hoop. Fig. 3 is an enlarged horizontal sectional view taken on the line 3—3 of Fig. 1.

Referring more particularly to the drawing, 1 represents an ordinary stave constructed silo or tank whose staves are held together by the hoops or bands 2. The terminal ends of each band are threaded, as shown at 3, to receive the securing and adjusting nuts 4, and are passed through apertures in the angular ends 5 of the associated lugs 6 and 7. The hoops or bands pass alongside of one lug and enter the angular end of the opposite lug so that in order to tighten the bands and draw their ends together it is necessary to force the lugs apart,

and in so forcing apart the hoops or bands are guided over the lugs by means of the clips 8 which surround the bands and lugs, as shown in Fig. 2. Arranged above and below the lugs 6 and 7 and having their terminals pivotally connected to said lugs are a pair of toggle levers 9 and 10, each having pivoted to the joint between the legs of the toggle lever the links 11 and 12, the link 11 being connected to the toggle 9 and the link 12 being connected to the toggle 10. A lever 13 is pivoted adjacent one terminal to the terminal of the link 12, as shown at 14, and is also pivoted, as shown at 15 to the terminal of the link 11. It will be seen that upon lowering or pulling downwardly upon the outer or free end of the lever 13 that the intermediate portion of each toggle lever will be drawn toward the lugs 6 and 7, thus causing the separation of the terminal ends of each toggle lever and the consequent separation of the lugs. Connected to the lever of the mechanism associated with one of the lower hoops on the silo is a link 16 which has interposed between its lower end and the base or foundation of the silo a jack, such as is indicated at 17. This jack or actuating mechanism may of course be of any suitable type which will draw downwardly upon the link 16 but is preferably constructed as shown of a connecting bolt 18 embedded in the base and having an apertured head 19 in which is swiveled the head 20 of a screw 21 which threads into the bracket 22 formed at the terminal end of the link 16. Secured to the base of the screw 21 is a collar 23 in which is slidably mounted an operating lever 24. As each hoop is associated with mechanism similar to the one described, in order that all of these mechanisms may be operated simultaneously and from a single source of power, the jack 17 and all of the levers are connected together by a link 25 which is of course actuated in either direction by the jack 17.

In order that the mechanisms may be supported and held in proper separated relation, there is provided a pair of supporting rods or bars 26 and 27 which are connected to the terminal ends of the toggle levers and to the lugs of each mechanism and adapted to be separated with the separation of the lugs and the ends of the toggle levers as will be readily understood. The lower end of each supporting or bracing bar 26 and 27 is

provided with angular extensions 28 which rest upon the base and have their terminal ends connected to the lugs of the lower hoop. It will be seen therefore that upon operation of the jack to draw downwardly upon the link 16 that the link 25 actuates all of the levers 13 and that the terminal ends of the toggle levers of each mechanism will be separated thus causing the consequent separation of the lugs and the tightening of the hoops upon the silo or other stave formed construction. In the separation of the lugs and the terminal of the toggle levers, the supporting rods or bars 26 and 27 will also be separated, their lower angular ends 28 moving over the base 1.

What is claimed is:

1. In a silo, hoops surrounding the same, mechanism connected to each hoop for tightening said hoop about the silo, means operable from the base for actuating the mechanism of one of the lower hoops, means for connecting all of said mechanisms whereby all of the hoops will be tightened simultaneously and equally, and means for tightening each hoop independently of said mechanism.

2. In a silo, hoops surrounding the same, mechanism connected to each hoop for tightening said hoop about the silo, means operable from the base for actuating the mechanism of one of the lower hoops, means for

connecting all of the mechanisms whereby all of the hoops will be tightened simultaneously and equally and supporting members connected to the mechanisms for holding the same in separated relation, said supporting members moving with the tightening mechanism.

3. In a silo, hoops surrounding the same, mechanisms connected to each hoop for tightening the hoop about the silo, means operable from the base for actuating the mechanism of one of the lower hoops, means for actuating all of the mechanisms whereby all of the hoops will be tightened simultaneously and equally, a base for supporting the silo, and means for supporting said mechanisms which is movable therewith and slidable over the base.

4. In a silo, hoops surrounding the same, lugs connected to opposite ends of the hoops, means for guiding the lugs on the hoops, toggle lever mechanism connected to the lugs for tightening the hoops about the silo and means operable from the base of the silo for simultaneously tightening all of the tightening mechanism.

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

CHARLES S. SPRINGER.

Witnesses:

JOSHUA M. ENNIS,
EUGENE M. TERRILL.

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