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I. S. HART.

SIL0.

APPLICATION FILED MAR. 14, 1912.

1,042,788.

Patented Oct. 29, 1912.

2 SHEETS—SHEET 1.

Fig. 1

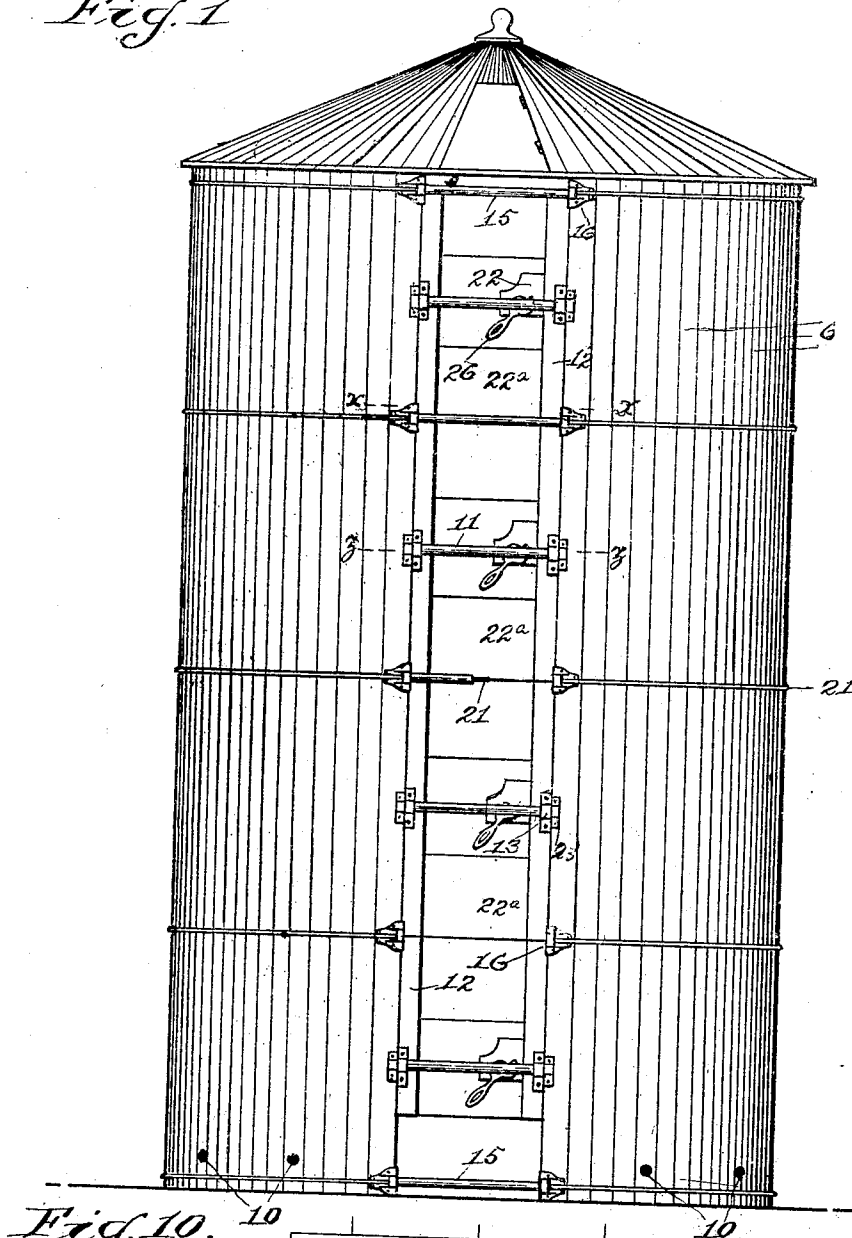
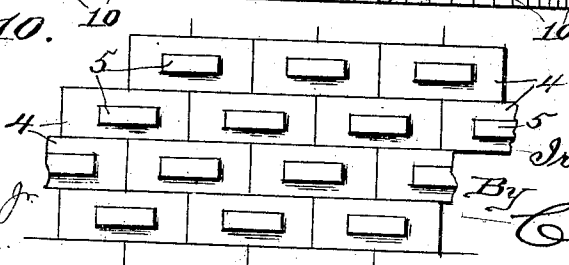


Fig. 10.



Witnesses

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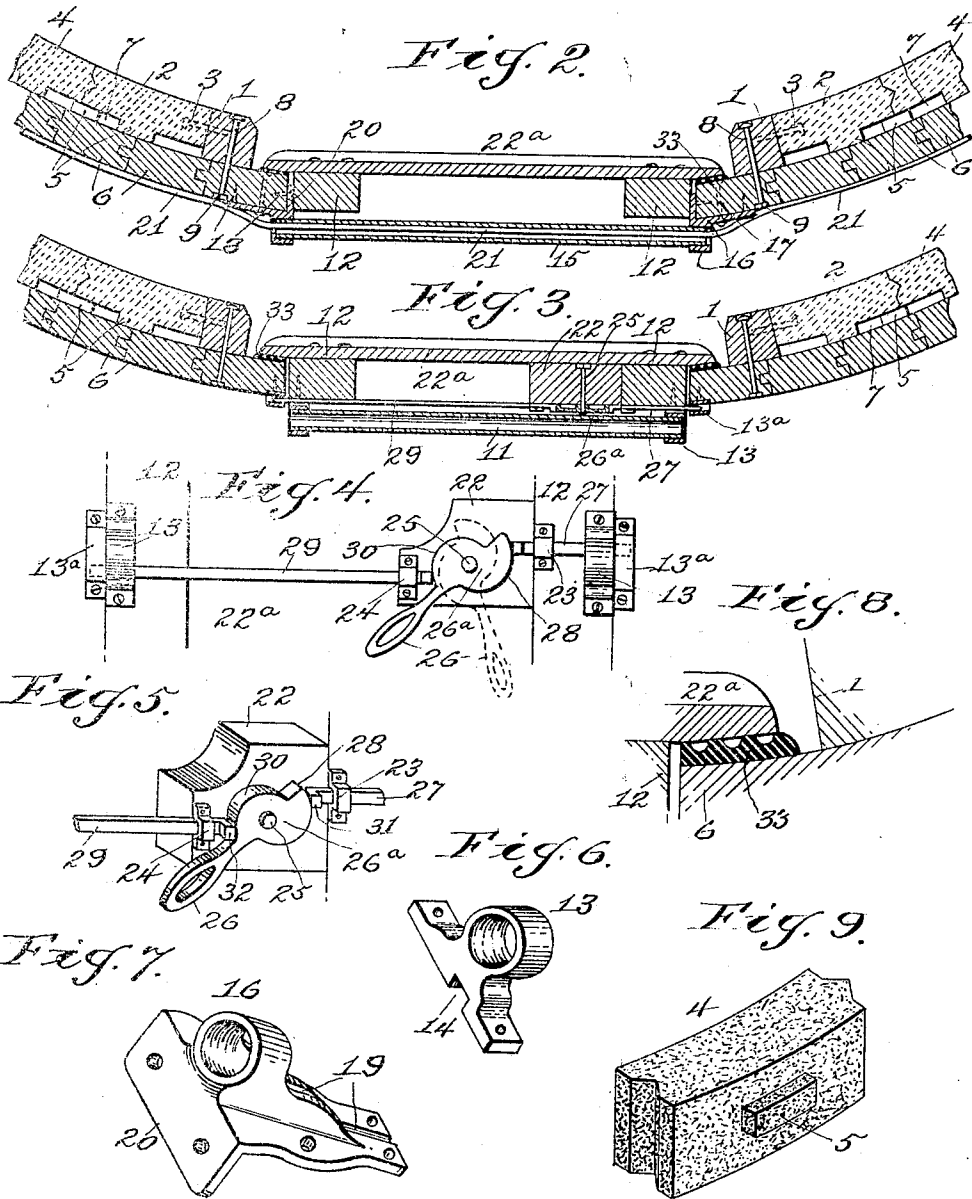
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

IRVING S. HART, OF WAVERLY, NEW YORK.

SILO.

1,042,788.

Specification of Letters Patent.

Patented Oct. 29, 1912.

Application filed March 14, 1912. Serial No. 683,758.

To all whom it may concern:

Be it known that I, IRVING S. HART, a citizen of the United States, residing at Waverly, in the county of Tioga and State of New York, have invented certain new and useful Improvements in Silos, of which the following is a specification.

This invention relates to silos, and especially to a transportable knock-down silo having such novel and peculiar construction and combination of parts as to be expeditiously packed, shipped and assembled in operative position.

The object of the invention is to provide a combination ladder rung and door-batten brace, and special supporting brackets for the rungs so as to permit the operation of a pair of door-locking bars through the brackets; and to furnish the door panels with means for operating the bars.

Various other objects, advantages and improved results will be found in the practical application of the invention as herein-after fully disclosed.

In the accompanying drawings forming part of this application:—Figure 1 is an elevation of a silo embodying my invention. Fig. 2 is an enlarged sectional view of part of a silo, taken on the dotted line X—X of Fig. 1. Fig. 3 is a similar view taken on the dotted line Y—Y, with the door-rung partly broken away. Fig. 4 is a detail elevation showing the application of the locking device, the dotted lines showing the swinging movement of the cam-lever. Fig. 5 is a perspective view of the locking device partly broken away. Figs. 6 and 7 are perspective views of the respective brackets. Fig. 8 is a detail section showing a packing strip. Fig. 9 is a perspective view of one of the blocks. Fig. 10 is a detail elevation of assembled blocks.

The same reference characters denote the same parts throughout the several views of the drawings.

In carrying out my invention, two posts or beams are set in vertical position on a suitable foundation, and such posts form the door-jambs 1, which also form an abutment for the first and the last tiers of concrete blocks 2. The blocks 2 have one or more pointed anchors 3 projecting therefrom, and the anchors are driven onto the jambs for connecting the said blocks with the jambs. The said blocks as well as the intervening

blocks 4 have tongue and grooved joining edges which are preferably V-shaped, and each of all of said blocks has a central rectangular lug or projection 5, upon the outer face thereof, and the vertical panels or staves 6, have their tongue and grooved meeting edges placed against the said block-projections so as to form a continuous air space or annular chamber 7, between the outer casing, which is formed by the staves, and the inner wall, which is formed by the blocks. The posts or door jambs are also used as a means for starting and finishing the setting up or assembling of the panels or staves against the wall, in that the first and the last stave is secured to the respective posts by bolts 8, extending at right angles to the anchors 3, through the posts and through the said staves and provided with nuts 9, and the intervening panels or staves are fitted together in succession from one jamb to the other so that every other stave-joint will be made on a block projection, and the said projections alternate vertically with the block joints throughout the height of the wall, and the lug ends are in vertical alinement. Such arrangement not only equally distributes the contact between the wall and the casing throughout the height and circumference of the silo, but the lugs intercept and deflect the air into more general and equal circulation, retard the upward passage of the air, and prevent its taking a direct course from the air ducts 10, formed in the lower portion of the casing, to the top of the silo.

The ladder for the silo is composed of two sets of tubes or ladder rungs. One set of tubes 11 are secured to the door battens 12 by means of supporting brackets 13, into which the ends of the tubes are screwed, and these brackets have a slot 14 through which the door locking-bars are operated. The other set of rungs or tubes 15 are screwed into angle brackets 16 secured to the door-staves by means of bolts 17 and screws 18, and these brackets have a groove 19, for the binding hoops 21, which extend through the tubes 15. It will be observed that the brackets 16 extend over the face of the door-staves and have a flange 20 extending across the edge of said staves, and that one set of ladder rungs connect and hold the door battens in proper position, and that said rungs also shield or protect the locking device, while

the other set of rungs brace the door staves apart and prevent such staves from being affected by operating the hoops.

The door-locking device comprises a plate 5 22 secured to the door panels or sections 22^a against and flush with one of the door battens which is provided with a guide 23, and the plate is provided with a like guide 24; the plate is secured by means of a pivot bolt 10 25, upon which is mounted a lever 26, having a double cam head 26^a substantially S-shaped, a short locking bar 27 is operated by one of said cams 28, and a long locking bar 29 is operated by the other of said cams 30, 15 and each of said bars has a head 31 and 32, respectively, for limiting the outward movement of the bars through the brackets 13 and keepers 13^a and said heads form a bearing for the cams. It will be seen that the bars 20 are located out of the plane of the pivot bolt; that the short bar is placed above the plane of the long bar; and that the bars are slidable in opposite directions under pressure of the cams for automatically locking 25 the doors simultaneously at each edge thereof. The bars are of such length and the cams are of such shape as to provide for expansion and contraction in the doors or door-way, so as to wedge the bars into 30 locked position.

It is obvious that the doors are locked and unlocked by merely swinging the cam-lever, and the doors may be placed and removed as desired or as occasion may demand.

35 It will be observed that the bars are slid through the rung supporting brackets 13, and that said brackets off-set the rungs from the locking device so as not to interfere with the operation of said device.

40 It will be understood that this silo may be used with or without the inner wall, in which latter event the posts are dispensed with and the door-staves or the staves of

the door-way are first fixed in upright position, all other features remaining the same. 45

In order to make an air-tight joint between the door and the jambs or door-staves, I provide corrugated soft cork strips 33.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

1. The combination with a silo, a plurality of vertically sliding doors having battens fitting within the door-way of the silo, and two sets of rungs, of a pair of brackets secured to the battens of each door for hanging one set of the rungs and having a slot in the inner face thereof, brackets secured to the door jambs for hanging the other set of rungs in the same vertical plane with the said door-rungs, a pair of locking bars carried by the doors and between the doors and the door-rungs and slidable through the bracket-slots, a cam-head pivoted to the doors, cam-faces on the head for simultaneously sliding the bars outwardly, and a hand lever projecting from the head and separating the cams. 55 60 65

2. The combination with a silo, and a plurality of vertically sliding doors having battens fitting within the door-way of the silo, of a pair of rung brackets secured to the battens of each door and having a slot in the inner face thereof, a pair of locking bars carried by the doors and slidable through the bracket-slots, a cam-head pivoted to the doors, cam-faces on the head for simultaneously sliding the bars outwardly, and a hand-lever projecting from the head and separating the cams. 70 75 80

In witness whereof I hereunto set my hand in the presence of two witnesses.

IRVING S. HART.

Witnesses:

H. STANLEY WINLACK,
J. CHAPMAN ROBINSON.