

W. HAYWARD.
SILO DOORS AND FASTENING MEANS THEREFOR.
APPLICATION FILED FEB. 2, 1912.

1,054,292.

Patented Feb. 25, 1913.

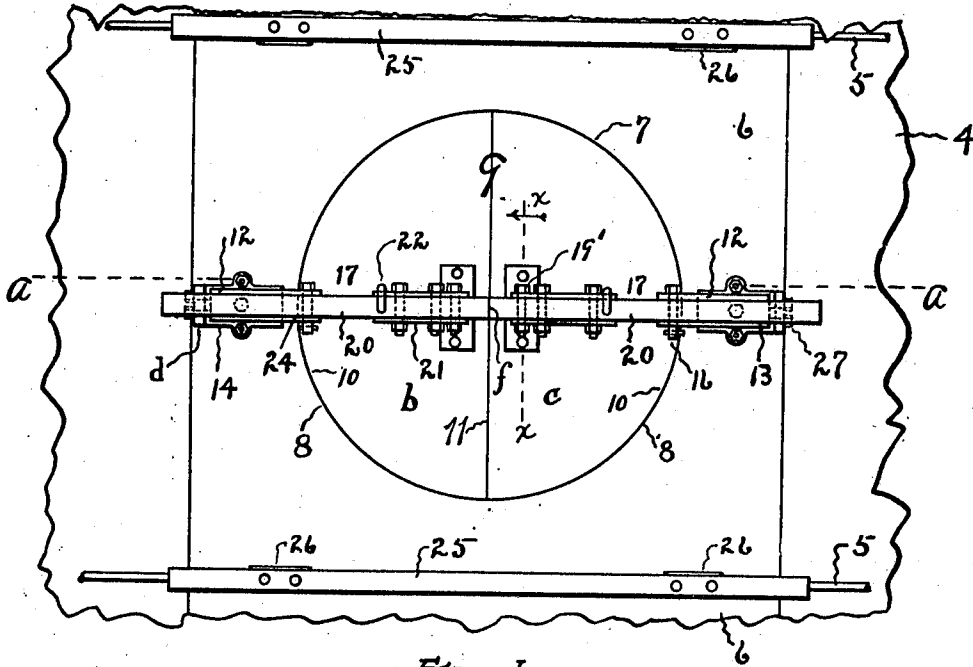


FIG. I.

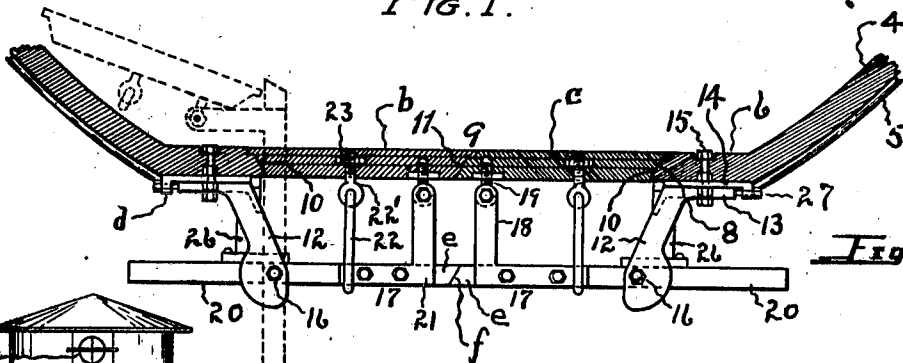


FIG. II.

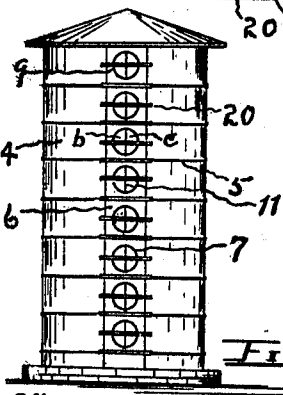


FIG. III.

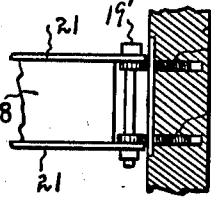


FIG. V.

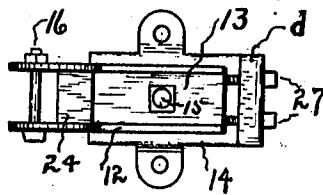


FIG. IV.

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Witnesses

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SILO-DOORS AND FASTENING MEANS THEREFOR.

1,054,292.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM HAYWARD, a citizen of the United States, residing at Wenatchee, in the county of Chelan and State of Washington, have invented certain new and useful Improvements in Silo-Doors and Fastening Means Therefor, of which the following is a specification.

This invention relates to improvements in doors for silos, and has for its object to provide doors which may be conveniently closed or opened and of such construction that the closure will be practically effective to prevent ingress or egress of air.

While the door and its mounting is described in connection with a silo, it may be employed to advantage as a grain door or for other purposes.

The invention has reference to the formation of a substantially flat vertical wall or face for the cylindrical body of the silo, and to provide therein between its top and bottom and at substantially uniform intervals, circular openings, ports or man-holes; a two-part door being employed for and conforming to the shape of each circular opening as a closure therefor; a pair of L-shaped supporting-levers being employed and arranged to swing from brackets, to convey the two halves of the door inwardly from the opening, the arms of the lever, when the two parts of the door are closed, forming one of the rungs of a ladder.

The invention includes a continuous wall of beveled or mitered form for the door-opening, as bearings for the inclined or beveled walls of the door; also, it includes means connected with the supporting-levers for causing the doors when closed to be disposed in alinement in the openings.

It also includes means for securing the doors when closed, and certain adjustable features found to be of advantage for securing the doors loosely upon or in closed relation with their bearings, as may be desired.

With these objects in view and others to be mentioned, the invention presents a novel and useful construction, combination and arrangement of parts as described herein and claimed, and as illustrated in the drawing, wherein,—

Figure 1 is an enlarged, vertical, front view of a portion of the silo shown in Fig. 3 and illustrating, in detail, one of the doors. Fig. 2 is a transverse section of

the doors and wall of the silo, the view being on line *a a* of Fig. 1. Fig. 3 is a side or front elevation of a silo. Fig. 4 is a detail relating to Fig. 1, showing one of the pivotally mounted brackets and an adjusting-plate. Fig. 5 is a transverse section on line *x x* of Fig. 1, showing the mounting of a door upon the arm of a lever.

Referring now to the drawing for a more particular description, numeral 4 indicates the upright body or wall of a silo, hoops 5 generally being employed to circumscribe the wall.

At 6 is indicated a flat portion of the wall, preferably extending from the bottom to the top of the silo, and in this flat portion at substantially uniform intervals are provided circular openings 7 each having the continuous, inwardly-divergent or beveled bearing-wall 8 for the double door 9, the two halves of the door, for convenience, being indicated at *b* and *c*.

Doors 9 are of circular form, and when mounted in openings 7 their outwardly-convergent or beveled walls 10 may have bearings upon the continuous wall 8, and therefore the doors must open inwardly of the silo. Each door 9 preferably consists of the two semi-circular doors *b* and *c* each having a straight wall 11 of mitered or beveled form; and when the doors *b* and *c* are disposed within an aperture or opening 7, walls 11 may have bearings upon each other. It is obvious that if means be provided for causing an outward pressure of the doors upon wall 8 and a pressure of their walls 11 upon each other, a passage of air outwardly or inwardly of the silo may be practically prevented.

At 12 are indicated brackets, each having a foot-piece 13 for a mounting upon a casting or adjusting-plate 14, one of said plates being secured upon the wall of the silo at each side of a doorway or opening 7. The brackets are therefore of angular form, and the body of each bracket projects horizontally and outwardly of wall 6, and its foot-piece may be pivotally secured to the casting by a bolt 15.

Pivotally mounted at 16 in the outer terminal of each bracket is an L-shaped lever 17, its arm 18 projecting inwardly and having a pivotal mounting at its terminal upon the screw-bolts 19, pintles or pivot-bolts 19 being employed for this connection. Screw-bolts 19 are employed in pairs and are

mounted one above the other and near the inner edges of the doors *b* and *c*, and by a longitudinal adjustment of these bolts, doors *b* and *c* may be disposed in alinement with an opening 7; and when doors *b* and *c* are closed, arms 20 of the supporting-levers will be disposed in horizontal alinement. To maintain arms 20 in horizontal alinement and thereby prevent sagging of the doors, set screws 27 are provided, and they are mounted in the bosses *d* at the outer ends of the adjusting-plates for engagement with the terminals of each foot-piece 13.

In the drawing and best shown in Fig. 1, are indicated reinforcing plates 21 for the inner ends of the supporting-levers, this being to provide a strong and convenient construction.

At 22 are indicated holder-members, latches or hooks having their inner ends mounted in the longitudinally-adjustable members or screw-eyes 22', and their outer terminals may catch upon the supporting-levers.

The screw-eyes are preferably mounted substantially upon the middle part of each door *b* and *c*, and they may have a threaded connection with anchor-blocks 23 seated in the body of these doors as shown in Fig. 2, and an adjustment is therefore provided, so that each door *b* and *c* may have an outward pressure upon the bearing wall 8. If the screw-eyes are rotated, hooks 22 will, of course, be disposed farther from or nearer to the doors *b* and *c*, and when the hooks engage the supporting-levers, the doors will have a corresponding lesser or greater pressure, as may be desired, upon their bearings 8.

Arms 20 of the L-shaped supporting-levers, are provided with extensions *e* at their junction with arms 18, these extensions being in alinement with arms 20, and preferably they have beveled terminals *f*, to operate as stops, as best shown in Fig. 2. The terminals of the brackets are preferably formed as pockets 24, whereby they provide sockets for mountings therein of the supporting-levers, this arrangement, in effect, providing a hinge joint for each supporting-lever.

In operation, to open the doors, the hook of door *b* is first released from the supporting-lever which it engages, and this door

may then be swung inwardly of the silo to the position shown by the dotted lines in Fig. 2; and after releasing the hook of door *c* from the other supporting-lever, said door *c* may also be swung inwardly. To close the doors the operation is the reverse to that just described.

It will be noted that when the doors *b* and *c* are closed, arms 20 form a rung of a ladder, and at 25 are indicated other rungs of the ladder, these being disposed between openings or doorways 7 and secured to wall 6 by any suitable means, as by arms or brackets 26, and the construction is such that when the doors are closed, the rungs formed by arms 20 are preferably disposed in vertical alinement with rungs 25.

While I have shown doors *b* and *c* of semi-circular form, and prefer this construction, I do not limit myself in this respect, and while I have shown and described hooks 22 and their connections, I may employ other means for securing the doors and for causing them to be compressed upon their bearings.

Having fully described the several parts and their uses, a further explanation relating to operation is not necessary.

What I claim and desire to secure by Letters Patent, is—

In a silo door construction, the combination with a silo body having a plurality of vertically alined openings formed therein, a pair of abutting doors for each of said openings, a pair of L-shaped levers, the free ends of which are pivotally connected to said doors adjacent their abutting edges, said levers lying horizontally and centrally across said doors, brackets to which the long arms of the L-shaped levers are pivoted, said brackets holding said levers in spaced relation to the outer faces of said doors, said levers conjointly forming the rung of a ladder, and laterally extending hooks pivoted to the faces of said doors and adapted to engage said levers to lock them into rigid relation to said doors.

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

WILLIAM HAYWARD.

Witnesses:

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