

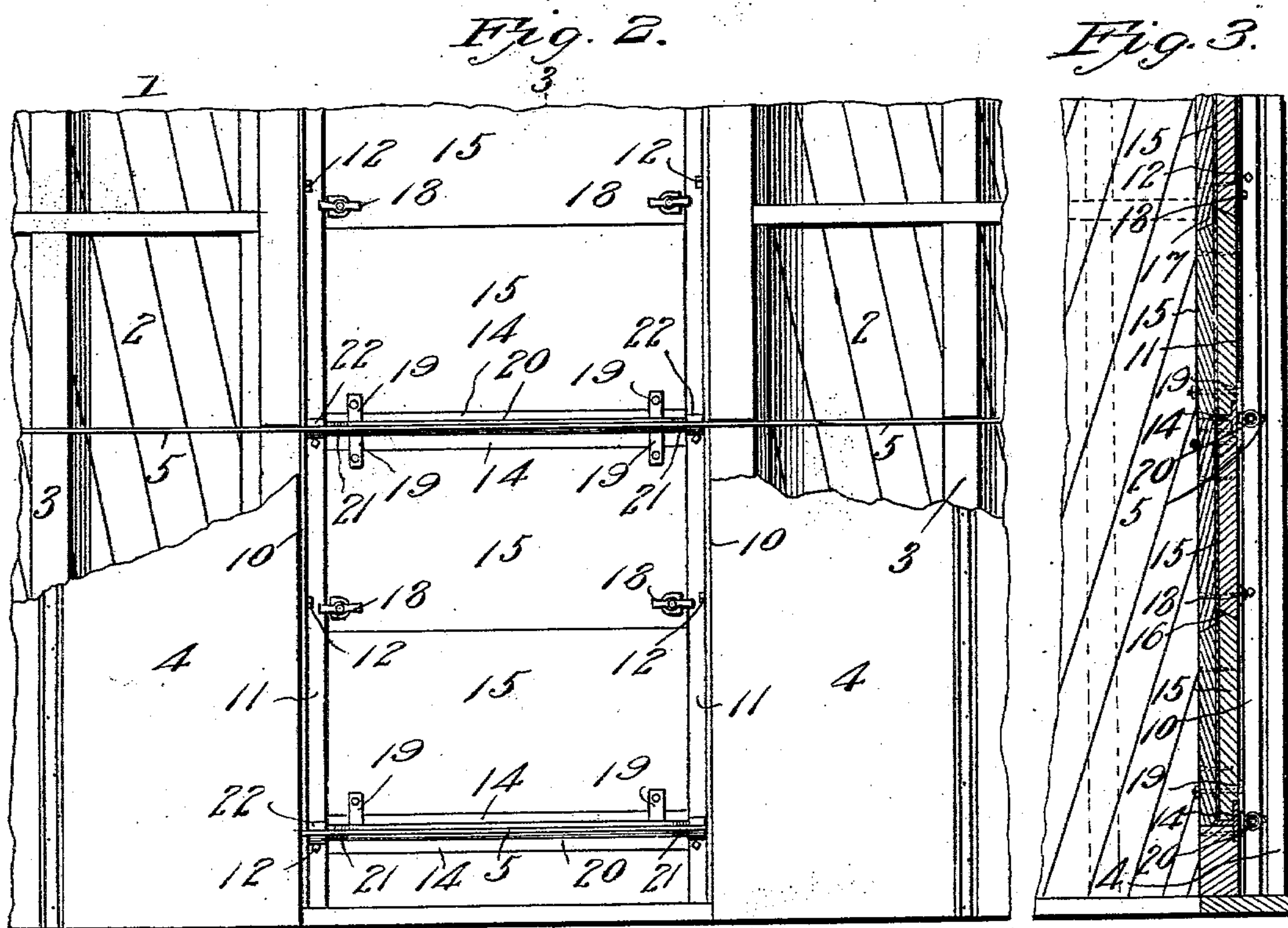
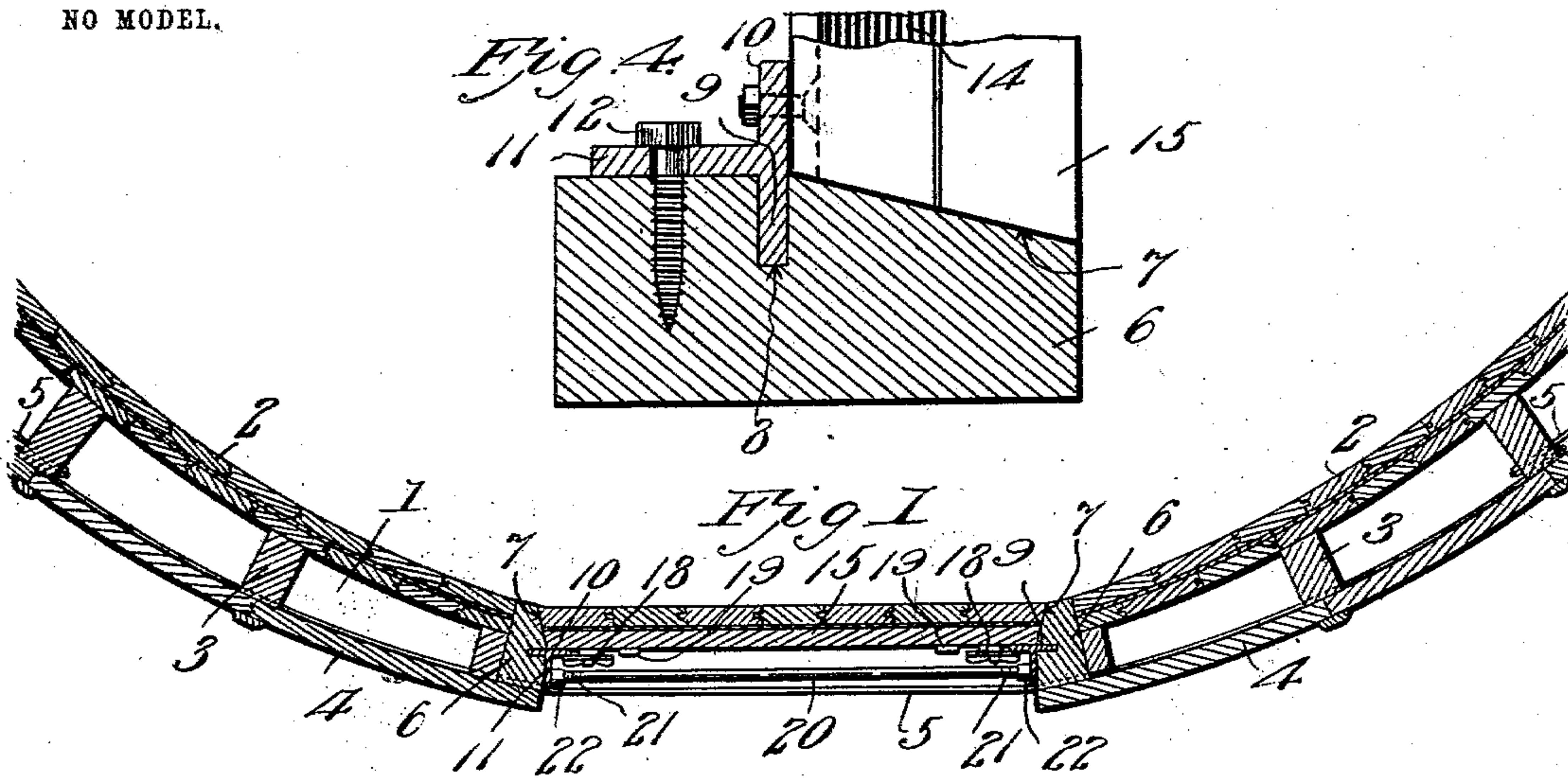
No. 745,666.

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E. B. REPP.
SILO.

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NO MODEL.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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SILLO.

SPECIFICATION forming part of Letters Patent No. 745,666, dated December 1, 1903.

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To all whom it may concern:

Be it known that I, EPHRAIM B. REPP, a citizen of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Silos, of which the following is a specification.

The invention relates to silos, and particularly to door structures therefor.

Many attempts have been made to produce door structures for silos to meet the various contingencies incident to filling a silo with and removing silage therefrom, and many of these structures have been more or less successful, but all embody defects, particularly in points of convenience in applying and removing the doors, rendering the latter airtight and facilitating the erection of the silo.

The present invention contemplates a structure which may be fully assembled on the ground or other surface and then disposed in vertical position and from which the wall of the silo may be regularly completed.

The present invention also contemplates a novel arrangement of posts and T-irons arranged in vertical and horizontal relation for the reception and positive retention in place of door-sections adapted to open inwardly through the medium of specific break-joints which normally interlock and obstruct the leakage therethrough of the silage-juices as well as the admission of air to the interior of the silo.

The invention also consists in certain novel fastening means for the door-sections, which cooperate with the intermediate interlocking joints and reduce to a minimum in use by the particular form of such joints.

The invention still further consists in the provision of cross-braces to prevent the posts and parts secured thereto from collapsing and also serving as ladder-rounds or foot-supports.

The invention still further consists in the details of construction and arrangement of the several parts, which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is a horizontal section through a portion of a silo and the improved door structure. Fig. 2 is an exterior elevation of a portion of a silo and the improved door structure. Fig. 3 is a transverse vertical section on the line 3 3, Fig. 2.

Fig. 4 is an enlarged detail horizontal section through one of the posts, showing a portion of the T-irons and one door-section.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The numeral 1 designates the wall of a silo, composed of an interior or inner wall-section 2, made up of overlapped tongue-and-groove strips and having studding 3 disposed vertically against and secured to the outer side thereof. Over the studding is secured an outer wall or sheathing 4, between which and the studding bands or hoops 5 are interposed and partially embedded in the studding as well as terminally secured to the latter at intervals. The structure of the wall of the silo is immaterial, so far as the present invention is concerned, as it is proposed to apply the improved door structure to any form of silo-wall.

The improved door structure has opposite posts 6, formed from studding of suitable dimensions and having inner opposing beveled faces 7, the two faces diverging inwardly and increasing the transverse extent of the door-opening adjacent to the inner wall-section 2 of the silo. The beveled faces 7 extend throughout the full length of the posts 6 and terminate at their outer portion at transverse slots 8, formed in the posts, one in each, to receive a portion of the heads 9 of T-irons 10, as clearly shown by Fig. 4. The heads 9 of the T-irons are in transverse alinement, and the legs 11 thereof snugly bear against the inner opposing surfaces of the posts 6 in advance of the slots 8 and secured to said posts by screw-bolts or analogous fastenings 12, the heads of the latter being permitted to project inwardly. At regular intervals horizontally-disposed T-irons 14 are connected to the T-irons 10, the heads of the irons 14 being located outwardly and the legs thereof projected inwardly, as clearly shown by Fig. 3. As shown by Fig. 4, the heads of the irons 14 are bolted to the inwardly-projecting portions of the heads 9 of the irons 10, stove-bolts being preferably employed for this purpose, though other analogous fastenings can be used. The heads of the bolts connecting the heads of the irons 14 to the heads 9 of the irons 10 are countersunk, as shown by dotted lines in Fig. 4, so as to leave the legs and

inner surfaces of the heads of the irons 14 without obstructing projections to enable a door to be fitted snugly in the said T-irons between the posts 6.

5 Each door is made up of separable sections 15, and while only two sections are shown it will be understood that their number could be increased without in the least departing from the spirit of the invention. The sections 15 are rabbeted at their upper and lower portions and at the opposite sides to compensate for the projection of the heads of the T-irons 14 and to permit the sections to bear snugly against the heads 9 of the T-irons 10.

15 The material of which the door-sections are formed is cut away sufficiently at the meeting edges of each set of sections or doors to compensate for the inwardly-projecting legs of the T-irons 14, and by means of this particular fitting of the several door-sections air-tight joints are established. The intermediate or interlocking joints of the door-sections between the T-irons 14 are first beveled upwardly and inwardly from the exterior of the silo and then downwardly and inwardly, as at 16, (see Fig. 3,) the outer bevels being above the planes of the inner bevels to provide abutting shoulders 17. The formation of the bevels, as just set forth, renders the assemblage of the door-sections expeditious in view of the fact that the edges of the sections so constructed will be instantly centered in relation to each other when assembling them in the door-frame. Moreover, the said beveled joints will obstruct any tendency of the juices of the silage from passing through to the exterior of the doors, and, furthermore, a perfectly air-tight joint will be provided in each instance. The upper section of each pair or series of sections adjacent to the intermediate interlocking joints is provided with oppositely-disposed turn-buttons or other similar fastenings 18 to engage the outer surfaces of the head 9 of the T-irons 10 to relieve the strain of the interior pressure from the said interlocking joints. The edges of the sections which are located adjacent to the T-irons 14 are also provided with vertically-extending retention-clips 19, which snugly fit against the outer sides of the heads of the said T-irons 14 and prevent the sections at such points from moving inwardly out of place when applying the same previous to filling the silo or in shifting them in opening different portions of the door structure of the silo to remove the silage.

To prevent collapsing of the T-irons 10 and the posts 6, to which they are connected, tubular cross-braces 20 are employed and have screw-threaded terminals 21, provided with sleeves 22, which are freely adjustable and adapted to fit over the heads of the screw-bolts 12 to hold the braces in applied position. The braces 20 are readily applicable by first adjusting the sleeves 22 inwardly thereover a sufficient distance to permit said braces to be interposed between transversely-aligned

heads of the bolts 12 and then moving the said sleeves outwardly to fit over the said heads. It will be seen that the braces can be readily detached by moving the sleeves 22 inwardly thereover to clear the heads of the bolts 12. These braces also provide foot-rests or ladder-rounds, whereby ascent may be made to the top or upper portion of the silo, and the bands 5, which cross the door structure in alinement with the braces 20, can also be used for ascending the silo.

As before stated, the braces 20 prevent collapsing of the side members of the door structure, and the T-irons 14 obstruct outward or lateral displacement or bulging of the said side members of the door structure, and the latter is thus always maintained in true condition for receiving the doors and to preserve air-tight joints.

The door, including the sections set forth, are regularly applied as the silo is filled up to certain levels, and in fitting the sections in the frame they are bent inwardly at the center, and the upper and lower edges of the respective sections are disposed in rear of the heads of the T-irons 14 and the two sections then sprung outwardly at the center and locked through the medium of the fastenings 18, heretofore explained. This operation is continued until the silo is filled and all the door-sections have been applied. The silage is removed from the silo in the usual manner for feeding or other purposes, and the doors are successively opened at different levels; but instead of entirely detaching the doors and storing them on the ground-surface or other place at a distance from the silo they are reapplied in an upper position, and the portion of the door structure from which they have been removed remains continually open until the silage has been removed to a level below the lowermost portion of said opening or to a point opposite the door next below.

The improved door structure will be found exceptionally advantageous in silo erection, particularly in view of the fact that the posts and T-irons may be assembled on the ground or other surface and elevated in proper position to have the wall of the silo built therefrom and without requiring the erection of at least a part of the wall before the door structure is completed.

The sections 15 are preferably made up of laminæ of tongue-and-grooved strips and outer plate, with an interposed filling of paper or other analogous material, the inner tongue-and-grooved strips being disposed vertically and the outer plates in planes at right angles to the inner ones, thereby obstructing any tendency to warping and providing a strong and durable door. It will also be seen that when the door-sections are forced outwardly by the pressure of the silage within the silo the opposite side edges thereof will be firmly jammed against the beveled faces 7 of the posts 6, the said edges of the sections being

correspondingly beveled to produce a tight joint, as clearly shown by Fig. 1. Moreover, by embedding a portion of the head of each T-iron 10 within the post 6 a considerable amount of the strain is removed from the fastening-bolts 12, and said T-irons are less liable to be pressed outwardly or become displaced.

Having thus fully described the invention, what is claimed as new is—

1. The combination with a silo, of a door structure comprising opposite posts having vertically-disposed T-irons secured thereto, horizontally-disposed T-irons secured at regular intervals to the vertical T-irons to form door-openings, and sectional doors removably mounted in the said opening.

2. The combination with a silo, of a door structure comprising upright flanged irons secured to opposite sides thereof and horizontal flanged irons connected at intervals to the upright irons to define door-openings, and doors to removably fit in said openings consisting of sections having intermediate reversely-beveled meeting edges.

3. The combination with a silo, of a door structure, comprising opposite posts having T-irons secured thereto and extending the full vertical length thereof, horizontally-disposed T-irons secured to the said vertical T-irons at regular intervals to regularly define door-openings, sectional doors removably fitted in said openings, and outer cross-braces freely applicable to and removable from portions of the vertical T-irons and adapted to serve also as foot-rests.

4. The combination with a silo, of a door structure, comprising opposite vertically-disposed posts, T-irons having the heads thereof of partially let into the posts and the legs projected outwardly, horizontally-disposed T-irons having the heads thereof secured to the heads of the vertical T-irons and the legs projected inwardly and regularly defining door-openings, and sectional doors removably mounted in the said door-openings.

5. The combination with a silo, of a door structure, comprising oppositely-disposed vertically-arranged posts with inner beveled faces, vertical T-irons secured to said posts, horizontal T-irons secured to the vertical T-irons to regularly define door-openings, and doors to removably fit the said openings comprising separable sections having intermediate reversely-beveled joints and opposite side edge bevels.

6. The combination with a silo, of a door structure comprising opposite posts having

vertical T-irons secured thereto with their heads disposed inwardly, horizontal T-irons having their heads arranged outwardly and secured to the heads of the vertical T-irons, the said horizontal T-irons regularly defining door-openings, and doors removably fitted in the said openings and comprising sections having intermediate interlocking joints, the uppermost section in each instance being provided with fastenings to engage the heads of the vertical T-iron.

7. The combination with a silo, of a door structure, comprising opposite posts having T-irons secured thereto with the heads thereof disposed inwardly, horizontal T-irons secured at regular intervals to the vertical T-irons and having their heads outermost, and door-sections fitted between the said horizontal T-irons and provided respectively at the upper and lower edges thereof with clips to bear against the heads of said horizontal T-irons.

8. The combination with a silo, of a door structure comprising opposite posts having vertical T-irons secured thereto with their heads disposed inwardly, horizontal T-irons having their heads arranged outwardly and secured to the heads of the vertical T-irons, the said horizontal T-irons regularly defining door-openings, doors removably fitted in the said openings and comprising sections having intermediate interlocking joints, the uppermost section in each instance being provided with fastenings to engage the heads of the vertical T-iron, and clips on the upper edges of the upper sections and lower edges of the lower sections to removably engage the heads of the horizontal T-irons.

9. The combination with a silo, of a door structure having door-openings distinctly defined therein at regular intervals, and doors to removably fit in said openings comprising sections having intermediate reversely-beveled meeting edges with abutting shoulders at the terminals of the beveled edges.

10. The combination with a silo, of a door structure having door-openings distinctly defined therein at regular intervals, and doors to removably fit in said openings and each comprising freely-separable sections having intermediate reversely-beveled meeting edges.

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

EPHRAIM B. REPP.

Witnesses:

L. M. GOTWALD,
CHAS. S. HYER.