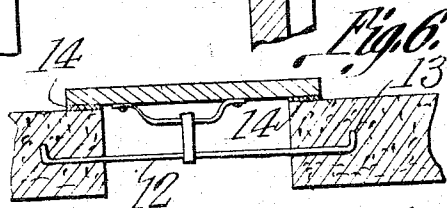
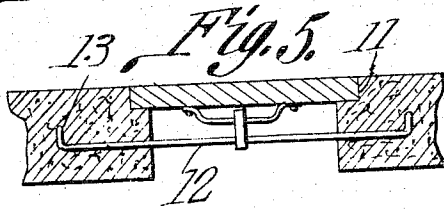
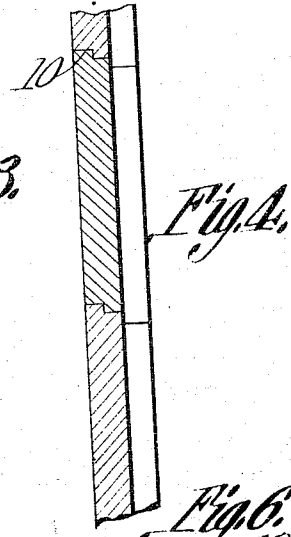
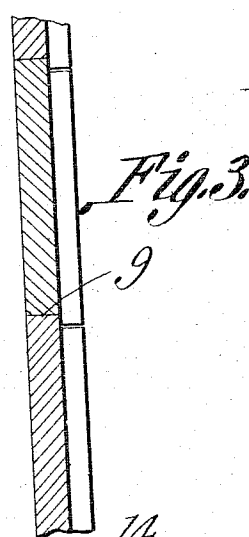
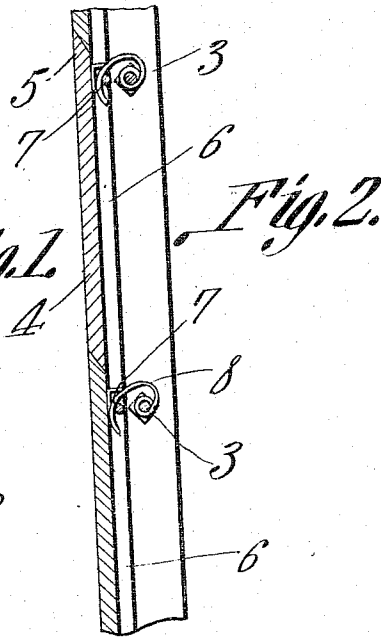
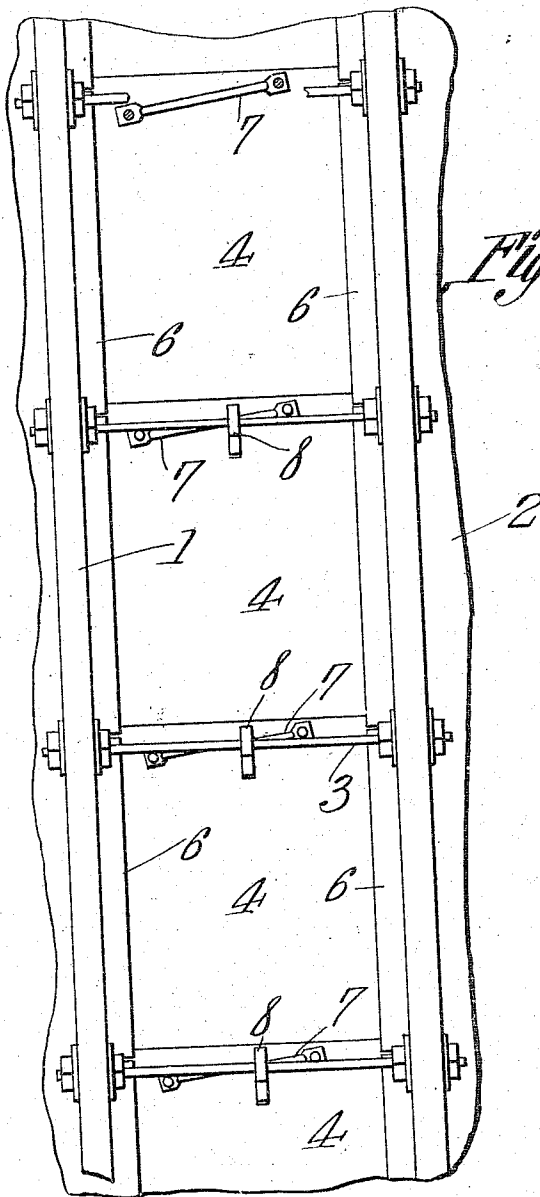


W. H. LUDWIG.
DOOR AND LOCK THEREFOR.
APPLICATION FILED JUNE 10, 1910.

Patented Dec. 27, 1910.

979,679.



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UNITED STATES PATENT OFFICE.

WILLIAM H. LUDWIG, OF DE PERE, WISCONSIN.

DOOR AND LOCK THEREFOR.

979,679.

Specification of Letters Patent.

Patented Dec. 27, 1910.

Application filed June 10, 1910. Serial No. 566,198.

To all whom it may concern:

Be it known that I, WILLIAM H. LUDWIG, a citizen of the United States, residing at De Pere, in the county of Brown and State of Wisconsin, have invented a new and useful Door and Lock Therefor. of which the following is a specification.

This invention relates to doors for silos, refrigerators, and the like constructed of wood, stone, concrete or other material, and relates, more particularly, to means whereby the separate members of a sectional door can be securely fastened in position, the fastening means being simple and durable in construction and easy to operate.

A further object is to provide a sectional door having fastening means so constructed and arranged as to permit any one of the sections to be moved without necessitating the displacement of the remaining sections.

A still further object is to provide a fastening device which allows for the expansion or contraction of the material constituting the door structure without causing displacement of any parts of the fastener used in connection with the door.

A still further object is to provide a fastener, one of the members of which constitutes a handle whereby the door section to which it is connected may be conveniently carried.

With these and other objects in view the invention consists in certain novel details of construction and combination of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings the preferred forms of the invention have been shown.

In said drawings:—Figure 1 is an elevation of a portion of a silo having the present improvements applied thereto. Fig. 2 is a central vertical section through a portion of the door shown in Fig. 1. Fig. 3 is a section through a modified form of the door. Fig. 4 is a section through another form of door. Fig. 5 is a horizontal section through a portion of a concrete silo and showing the door in position within the opening. Fig. 6 is a view similar to Fig. 5 and showing the door arranged in a different way.

Referring to the figures by characters of

reference 1 designates the side strips of the door of a silo 2, these strips being connected at desired intervals by cross rods 3 forming the rungs of a ladder such as commonly employed.

The door for closing the silo is formed of a plurality of similar sections each of which has been designated by the numeral 4. The upper and lower edges of each section are beveled as shown at 5 and disposed in parallel planes, there being cleats 6 upon one face of each section and adapted to fit snugly against the side strips 1, the cleats on each section terminating below the upper beveled edge 5 but extending below the lower beveled edge. A bail shaped keeper 7 is secured upon the upper portion of each section 4 at points between the cleats 6, said keeper being preferably inclined relative to the adjoining rung 3, as clearly indicated in Fig. 1, a portion of the keeper extending above the rung while another portion thereof extends therebelow.

Mounted on each of the rungs 3 is a spiral catch 8 adapted to rotate upon the rung and to also slide thereon. The free end of this catch is adapted, when the catch is rotated in one direction, to enter into engagement with the keeper 7 and draw it outward toward the rung, thus binding the door section tightly against the side strips or frame 1 and also downward tightly against the top end of the adjoining lower door section. By having the keeper 7 inclined as shown and described and by mounting the catch so as to slide on the rung 3, said catch can be shifted upon the rung so as to engage the keeper, at the point where it crosses the rung, thus allowing for any expansion or contraction of the door sections which may occur as the result of seasoning or variations in climatic conditions. It will be seen that the fasteners 8 engage keepers connected to the upper end portions of the door sections and thus hold said end portions in place, while the lower end portions of said sections are held by the cleats 6 which lap the adjoining sections 4 as clearly indicated in Fig. 2.

Obviously any one of the sections 4 can be removed simply by disconnecting its fastener 8 from its keeper 7 and then tilting

the upper end of the section away from its cleat so as to permit the cleat 6 on said section to be lifted out of engagement with the next section 4 thereunder. The keeper 7 can be utilized as a handle by means of which the door section can be conveniently carried and swung back in place as the silo is emptied.

Instead of beveling the door sections as shown in Fig. 2 said sections can have their upper and lower sections cut off square as indicated at 9 in Fig. 3 or, if preferred, said edges may be stepped as shown at 10 in Fig. 4. In every instance, however, the cleats are arranged to lap the sections thereunder next adjoining them.

When the silo or other structure is formed of stone or concrete the door frame or strips used in connection with a wooden structure are dispensed with and, instead, longitudinal recesses or seats 11 are formed in the sides of the door opening and the doors 4 are adapted to rest within these recesses. Rods 12 extend transversely of the opening and have bent or hooked ends 13 embedded within the wall of the structure. If preferred, and as shown in Fig. 6, the recesses 11 may be dispensed with and the door sections drawn against the inner surface of the structure, it being understood that gaskets or other suitable packing devices may be interposed between the door and the wall of the structure, as indicated at 14.

While the door and fastener have been described as particularly designed for use in connection with silos, it is to be understood that they can be used wherever it may be desired to employ a door made up of a series of sections to be separately removed.

Various changes may be made in the construction and arrangement of the parts without departing from the spirit or sacrificing any of the advantages of the invention as defined in the appended claims.

What is claimed is:—

1. The combination with a door having lapping sections, of a keeper upon each section, and a spiral catch revoluble into engagement with the keeper.

2. The combination with a door consisting of lapping sections, of a keeper upon each section and a spiral catch mounted to slide and rotate.

3. The combination with a door, and means thereon for lapping a fixed structure to hold one end of the door against displacement, of a keeper upon the door, and revoluble means for engaging the keeper to bind the door in closed position.

4. The combination with a door, and means extending therebeyond for lapping a fixed structure to hold one end of the door, of a keeper upon the other end of the door,

and spiral means for engaging the keeper to secure the door in closed position.

5. The combination with a removable door, of a supporting element, a spiral fastener slidably and revolubly mounted on said element, and a keeper secured to the door for engagement by the fastener.

6. The combination with a door, of a supporting element, a spiral fastener slidably and revolubly mounted on said element, and a keeper secured to the door and inclined relative to the element for engagement by the fastener.

7. The combination with a door and cleats thereon projecting beyond one end of the door for engaging a relatively fixed structure, of a keeper upon the opposite end of the door, a supporting element, and a spiral fastener mounted for rotation on said element to engage the keeper.

8. The combination with a structure having a door opening, and superposed rungs extending across the opening, of a sectional door for closing the opening, a section lapping one of the adjoining sections, a keeper upon each section, and a direct connection between each rung and the adjoining keeper.

9. The combination with a structure having a door opening, and rungs extending across the opening and constituting a ladder, of a door consisting of lapping sections, a keeper upon each section, and spiral fasteners mounted for rotation upon the rungs and shiftable into engagement with the keepers.

10. The combination with a structure having a door opening, of a ladder rung extending across the opening, a door, a keeper upon the door, and a direct connection between each rung and its adjacent keeper, said connection being revoluble to engage the keeper.

11. The combination with a structure having a door opening, and a rung extending across the opening, of a door, a keeper secured to the door and inclined relative to the rung and a spiral fastener slidably and revolubly mounted on the rung for engaging the keeper.

12. The combination with a door, of a keeper upon the door, and a catch revoluble toward the door and into engagement with the keeper.

13. The combination with a sectional door, of a keeper upon each section, and a catch revoluble toward the door and into engagement with each keeper.

14. The combination with structure having a door opening, and rungs extending across the opening, of a door, a keeper upon the door, and means revoluble upon one of the rungs for engaging the keeper.

15. The combination with a structure hav-

ing a door opening, and a rung extending
across the opening, of a door, an element on
the door, and a revoluble device constitut-
ing a direct connection between the rung
5 and element and for drawing the door to-
ward the rung.

In testimony that I claim the foregoing

as my own, I have hereto affixed my signa-
ture in the presence of two witnesses.

WILLIAM H. LUDWIG.

Witnesses:

HERB. J. SMITH,
ARTHUR J. ALTMAYER.