A. N. BRAGSTAD.

SILO DOOR CONSTRUCTION.

APPLICATION FILED AUG. 18, 1914.

1,166,740.

Patented Jan. 4, 1916.

Fig. 1.

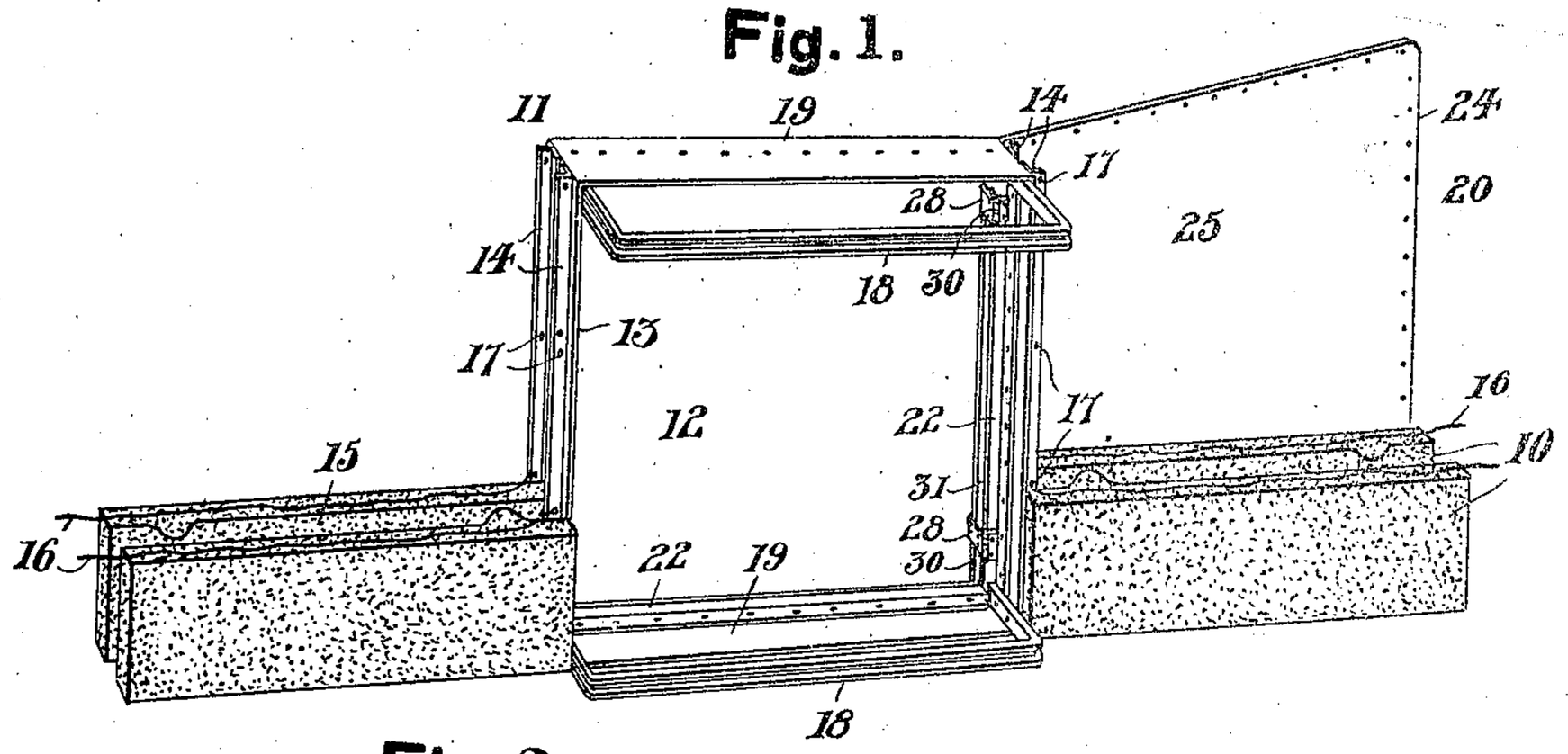

Fig. 2.

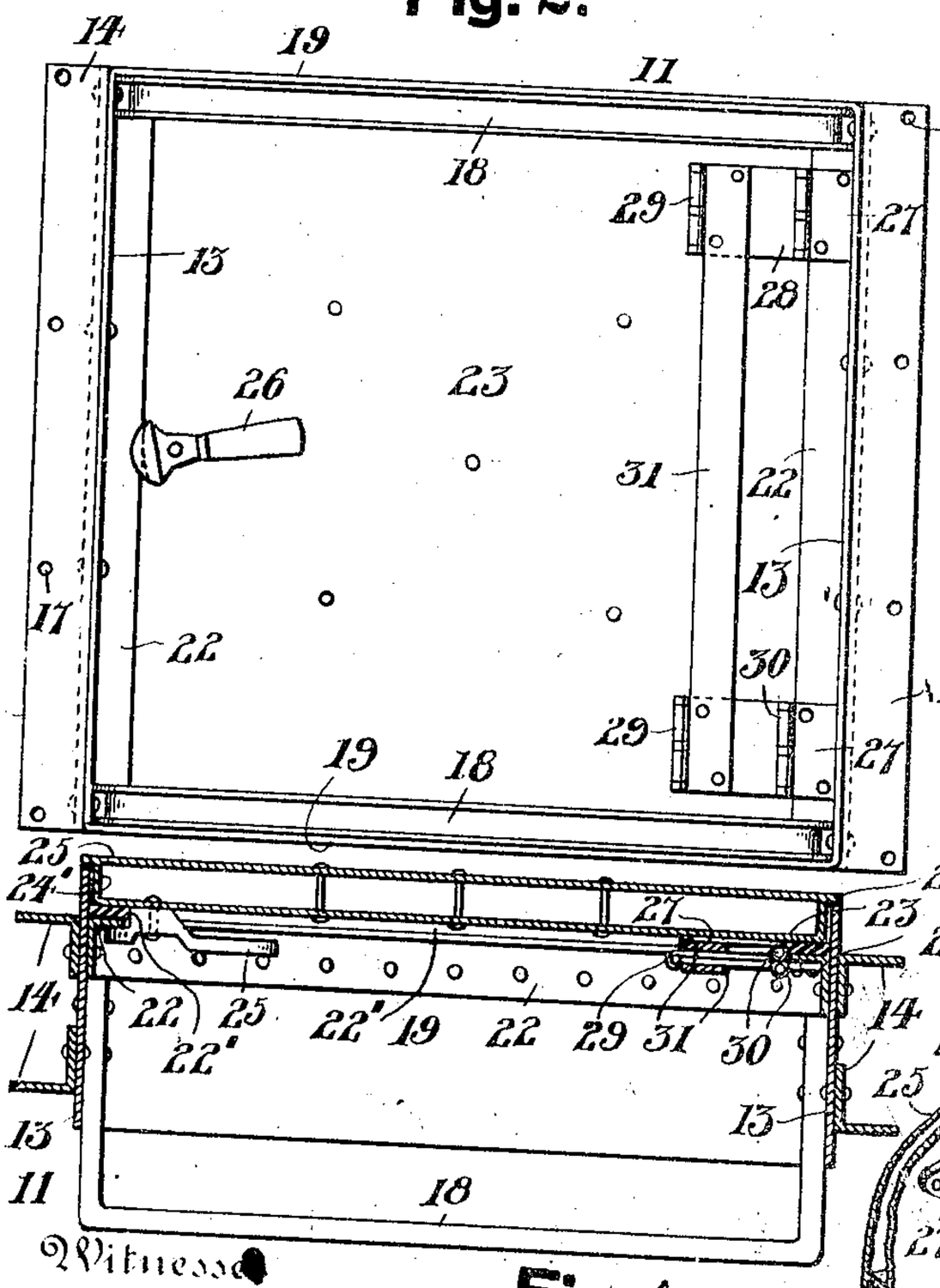

Fig. 3.

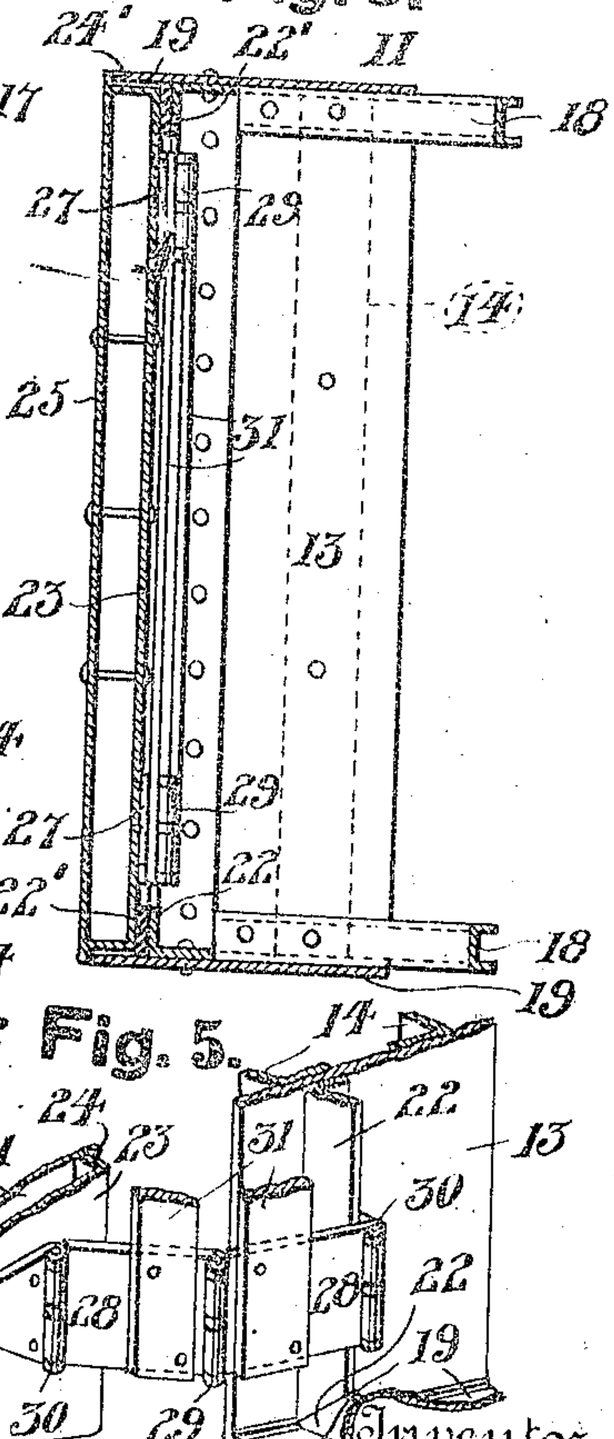

Fig. 5.

Witnesses:

M. E. Lowry

L. L. Bryant.

Inventor

Adolph N. Bragstad

By A. M. Wilson

Attorney

UNITED STATES PATENT OFFICE.

ADOLPH N. BRAGSTAD, OF CANTON, SOUTH DAKOTA.

SILO-DOOR CONSTRUCTION.

1,166,740. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed August 18, 1914. Serial No. 857,376.

To all whom it may concern:

Be it known that I, ADOLPH N. BRAGSTAD, a citizen of the United States, residing at Canton, in the county of Lincoln and State of South Dakota, have invented certain new and useful Improvements in Silo-Door Construction, of which the following is a specification.

This invention relates to certain new and useful improvements in silo-door construction.

The primary object of this invention is to provide a door construction especially adapted for employment with silos built of concrete blocks, a plurality of such constructions being arranged one upon the other and forming a vertically arranged series of separate openings, each provided with its individual door.

It is also designed to form a door construction consisting of the frame and the door, the door being provided with a lock and hinges and the frame supporting ladder steps which coöperate with similar steps of the adjacently positioned construction.

Another object of the device is to provide double hinges for the silo door for floating the door directly into the frame when closing but allowing the door to swing to its fullest extent rearwardly when opened, the door itself being hollow forming a heat insulating air space therein.

With these general objects in view and others that will appear as the nature of the invention is better understood, the same consists in the novel combination and arrangement of parts to be hereinafter more fully described, illustrated in the accompanying drawings, and set forth in the appended claims.

In the drawings forming a part of this application and in which like-designating characters refer to corresponding parts throughout the several views, Figure 1 is a perspective view of the exterior of the devised door construction illustrating the door in its open position, and with the adjacent blocks positioned in the course of construction. Fig. 2 is an enlarged exterior front view of the device with the door closed. Fig. 3 is a central vertical transverse sectional view thereof. Fig. 4 is a central horizontal transverse sectional view of the same, and Fig. 5 is an enlarged detail view of one of the door hinges and the adjacent portions of the members connected thereby.

Referring more in detail to the drawings, it will be noted that the invention is designed to provide a door, or a series of doors vertically arranged through the side wall of a silo which is constructed of concrete blocks 10.

The present construction is preferably formed entirely of metal, and consists of the rectangular frame 11 providing the doorway or opening 12 therethrough. The opposite side walls 13 of the frame 11 have longitudinally positioned spaced-apart angle-irons 14 upon their outer sides, which angle irons are adapted to engage and position the blocks 10 in their spaced relations and forming an air-space 15 therebetween after the usual manner of this form of construction of block silo-walls. Band wires 16 are adapted to be secured at their ends through openings 17 of the angle-irons 14 and to lie between the blocks at each layer thereof throughout the wall formation.

Channel-irons 18 bent in substantially U-shaped steps are secured to the frame 11 preferably interiorly thereof, and adjacent the top and bottom walls 19 of the frame. It will be apparent that when the entire wall of the silo is completed after this manner, and with a plurality of the door frames mounted upon each other and secured within the wall, that the lower step of each frame will substantially aline and lie adjacent to the upper step of the adjacent door frame, and in this manner a complete ladder of uniformly spaced steps will be formed from the bottom to the top of the silo walls.

A door 20 is provided for the frame which is rectangular in shape and is formed hollow and with an inner air-chamber or space 21 which renders the door insulated against heat. The frame 19 is provided with an angle-iron inwardly projecting flange 22 positioned entirely around within the frame, and the door 20 is adapted to close by a straight inward movement so as to seat its outer face 23 firmly and flatly against the inner side of the said flange 22, and contacting a cushion packing 22′ upon the said flange.

The edges of the door 20 are provided with a completely encircling flange 24 formed by projecting the inner wall 25 of the door at each side thereof. In the door closing operation, the side edges 24′ of the door are adapted to slide within and in con-

tact with the inner face of the frame 11 so that when completely closed, the door face 23 seats upon the frame flange cushion 22′ and the door flange 24 rests upon the inner edge of the door frame 11, thus forming an air insulated door opening inwardly of the silo and forced closed by the contents of the silo. A swinging lock or latch 26 is pivoted to the exterior of the door and adapted to engage over the adjacent portion of the frame flange 22 for retaining the door closed as illustrated in Figs. 2 and 4 of the drawings.

The special form of hinges now provided consists of the end leaves 27 which are secured to the outer face of the door at a point spaced from the hinged edge thereof, and to the outer side of the adjacent frame flange 22. Leaves 28 of equal length are centrally hinged together as at 29 and are in turn hinged at their free ends as at 30, to the inner edges of said end leaves 27. Connecting strips 31 are secured between the oppositely positioned leaves 28, which insures a uniform movement of the hinge members.

From this detail description of the door and hinge formation, it will be seen that by reason of the double leaves provided for the hinges, that the door is capable of swinging entirely inwardly of the silo and free and clear from the door frame 11 as illustrated in Fig. 1, while the direct closing of the door folds the hinges with a flat engagement between the leaves 28 thereof as illustrated in Fig. 4, and inwardly of the frame flange 22 and allowing the door to flatly engage the said frame flange 22.

It will be thus seen that the silo walls are provided with a continuous air space and that the door also forms an air space construction for the purpose of affording heat insulating means throughout the entire area of the silo exterior.

While the forms of the invention herein shown and described, are what are believed to be the preferable embodiments thereof, minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

What I claim is:—

1. The combination with a metallic door frame having a flange projecting inwardly therefrom in spaced relation to the outer edge of the frame whereby to form a door receiving rabbet; of a door fitted within the rabbet; and hinges connecting the door and frame, each consisting of four leaves, the intermediate leaves being free from the frame and door and the terminal leaves so connected, respectively, to the frame and door as to cause the intermediate leaves to lie in a plane parallel to the door when the door is closed, whereby said hinges permit direct lineal movement of the door into and out of the frame and permit of close seating of the door through its periphery.

2. The combination with a metallic door frame having a flange projecting inwardly therefrom in spaced relation to the outer edge of the frame whereby to form a door receiving rabbet, of a door fitted within the rabbet, and hinges connecting the door and frame, each consisting of four leaves, the intermediate leaves being free from the frame and door and the terminal leaves so connected, respectively, to the frame and door as to cause the intermediate leaves to lie in a plane parallel to the door when the door is closed, whereby said hinges permit direct lineal movement of the door into and out of the frame and permit of close seating of the door through its periphery, said hinges being further so arranged, as to permit folding of the door flatly against a structure carrying the frame, when the door is open.

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

ADOLPH N. BRAGSTAD.

Witnesses:
OLE OSHEIM,
H. A. HANSON.