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Fig. I.

Fig. II.

Fig. III.

Fig. IV.

Fig. V.

Fig. VI.

Fig. VII.

Fig. VIII.

Fig. IX.

Fig. X.

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SHEET-METAL SILO.

1,127,643.

Specification of Letters Patent.

Patented Feb. 9, 1915.

Application filed February 6, 1913. Serial No. 746,489.

To all whom it may concern:

Be it known that I, ANDREW A. KRAMER, a citizen of the United States, residing at Kansas City, in the county of Wyandotte and State of Kansas, have invented certain new and useful Improvements in Sheet-Metal Silos; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to sheet metal silos, and has for its principal object to provide a structure of this character comprising the improved details of structure hereinafter described and illustrated in the accompanying drawings, wherein:—

Figure I is a perspective view of a portion of a silo constructed according to my invention, showing an improved form of joining the plates, and a self-sealing door.

Fig. II is an enlarged detail perspective view of the improved plate joint showing the intersection of three plates. Fig. III is a similar view from the opposite side of the same. Fig. IV is a sectional view showing a modified form of joint. Fig. V is a similar view showing still another modification of the same. Fig. VI is a detail perspective view of the under side of the joint, showing another modification of the same.

Fig. VII is a perspective view of the self sealing door. Fig. VIII is a detail perspective view showing the hinged mounting of the door. Fig. IX is a section on the line VIII—VIII, Fig. VI, showing the construction of the door frame. Fig. X is a similar view showing a modified form of door frame.

Referring more in detail to the parts: 1 designates a portion of the wall of a sheet metal silo comprising a plurality of shell plates 2, each having an inwardly opening groove 3 extending longitudinally along the bottom and adapted to receive the outwardly turned flange 4 of the adjacent plate. At one end of the plate the lower portion of groove 3 is cut away, to form a shoulder 5, against which rests the end of another plate, and an uncut portion which is adapted to overlie said plate and be held thereto by rivets 6, so that the adjacent grooves 3 are continuous. The flange 4 is also cut away a

short distance as at 7, so that the overlapping of the plates at the top will not throw them out of alinement. The plates are preferably set so that the end joints lie near the center of the plates adjoining the top and bottom and a suitable packing 8 inserted between the flange 4 and one side of the groove 3. Bolts 9 are then projected through the groove and flange portions and the parts drawn tightly together against the packing 8.

In Figs. IV and V I have shown modified forms of the joint, the one having a flange 10 along the bottom of the plate provided with a downturned lip 11, which is adapted to receive the edge of the flange 4 of the adjacent plate so that the bolt 9 will bear directly against the flanges 10 and 4; the other having the groove 3 of wider proportions to receive the flange 12 of the adjacent plate, which is bent back upon itself to provide a spring leaf 13 that bears uniformly on the packing between the bolts.

Fig. VI shows another modification of the joint in which a portion of the groove 3 is offset, 3', to receive the mating portion of the adjacent plate so as to extend the lap. In one plate of each tier is a door 14 having the door frame 15 which comprises an aperture 16, around which extends an angle iron frame 17 that is secured to the face of the plate by turning the edge 18 of the aperture over the horizontal leg of the angle iron to provide a smooth unbroken surface and to reinforce that portion of the plate pierced by the opening. Swingingly mounted on the plate by means of a hinge 20 is a pressed steel door 21 having a flange 22 adapted to rest against the surface 19, and a depressed portion 23 which extends to the plane of the outer face of the angle iron 17 and is provided with a latch comprising a handle portion 24, pivotally mounted at 25 to the center of the door and provided with latch bars 26 which are slidably mounted in stirrups 27 and adapted to engage the door frame. A handle 28 is mounted on the face of the door and serves to draw the door in or out and, in cooperation with a similar handle 29 on the plate, forms a ladder to the top of the silo.

As a modification for the door frame just described I have provided the structure shown in Fig. IX, which comprises a circular rod 30 held in position by turning the metal surrounding the aperture 16 around

the rod to form an unbroken bearing surface 31.

In assembling the silo, a tier of plates are set upon a suitable foundation (not shown) and their adjoining ends riveted together. A plate is then placed so that the groove 3 fits over the tongue 4 of the first tier of plates, a packing strip is inserted between the tongue and the groove, and bolts 9 inserted to hold the plate in position. Another plate is similarly placed but has its shoulder 5 abutting the end of the first plate and its remaining uncut end portion overlapping the end thereof, in which position bolts 9 are inserted and the lapped ends riveted together. By providing the horizontal tongue and groove connection a continuous reinforcing rib is provided around the shell which greatly adds to the strength and prevents the silo from becoming distorted or damaged under great wind pressure.

In forming the self sealing door, a circular opening is stamped in the plate and a circularly formed piece of angle iron, having one leg turned inwardly, is placed so

that the edge of the plate surrounding the opening may be turned over the adjoining leg of the angle iron to form a continuous unbroken jamb. The door is stamped from sheet metal and provided with the continuous unbroken flange 22 so that when the door is hinged to the shell and moved into place the two surfaces may be drawn tightly together by the latch.

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

A silo comprising a shell formed of longitudinally curved sheet metal plates, a flange turned outwardly at one edge of each plate, and an inwardly opening socket member turned outwardly from the opposite longitudinal edge of each plate, and having a portion of one end cut away to receive the abutting socket of a like plate.

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

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Witnesses:

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