J. H. SCHLAFLY.

SILO CHUTE.

APPLICATION FILED JAN. 31, 1914.

1,184,385.

Patented May 23, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

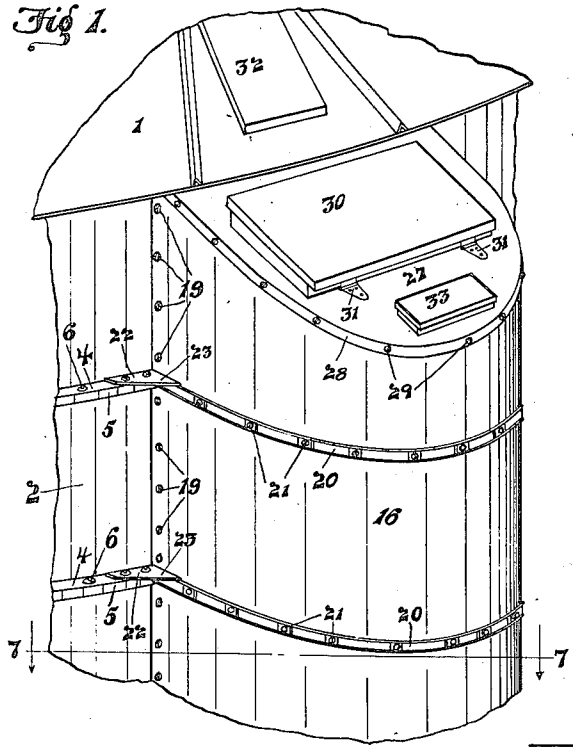


Fig. 2.

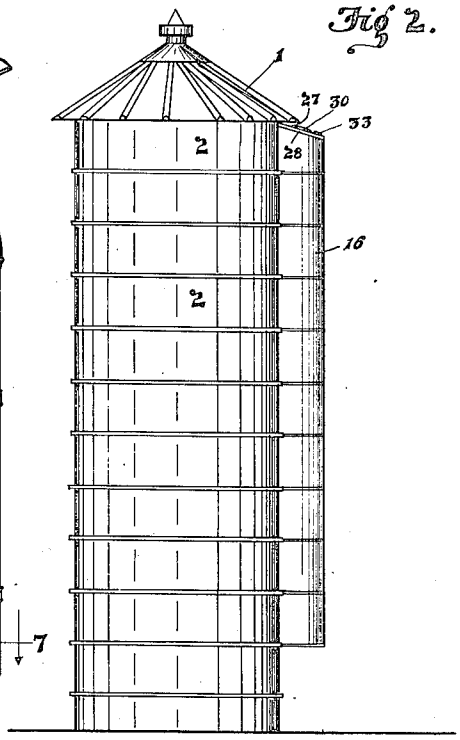


Fig. 3.

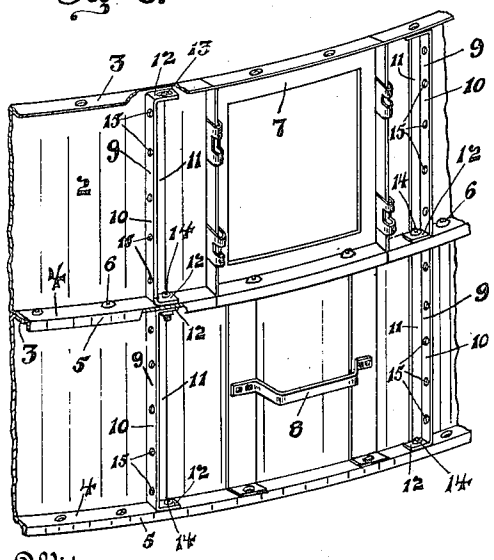
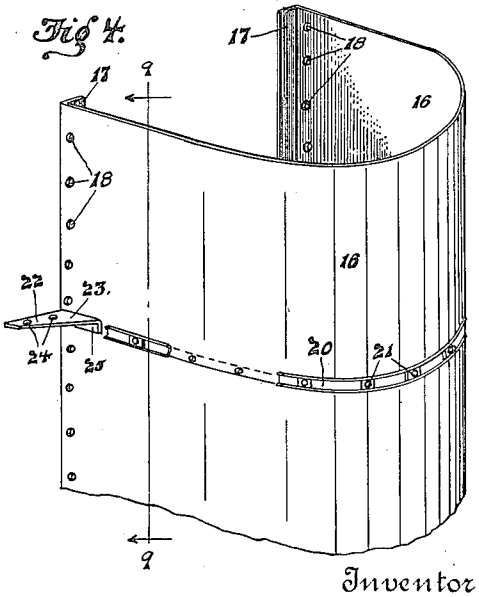


Fig. 4.



Witnesses
Robert Karcher.
Hazel Awan.

Inventor
Julius H. Schlafly.

By Boudt Muller
Attorneys

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2 SHEETS—SHEET 2.

Fig 5.

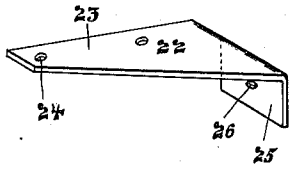


Fig 6.

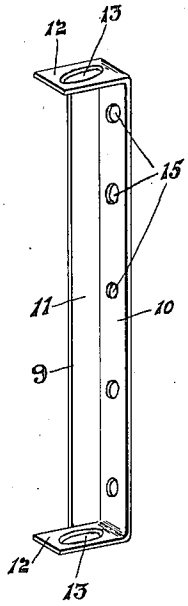


Fig 7.

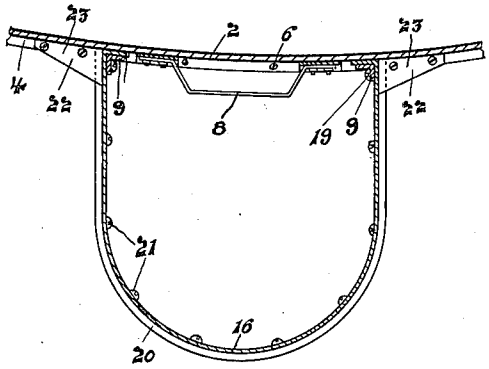


Fig 8.

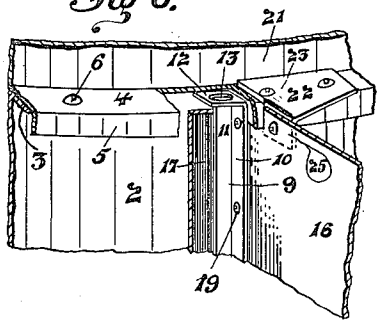
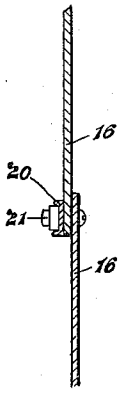


Fig 9.



Witnesses
Robert Karcher.
Hazel Owen.

Inventor
Julius H. Schlafly.

By Bond & Miller
Attorneys

UNITED STATES PATENT OFFICE.

JULIUS H. SCHLAFLY, OF CANTON, OHIO, ASSIGNOR TO THE CANTON CULVERT & SILO COMPANY, OF CANTON, OHIO, A CORPORATION OF OHIO.

SILO-CHUTE.

1,184,385. Specification of Letters Patent. Patented May 23, 1916.

Application filed January 31, 1914. Serial No. 815,628.

To all whom it may concern:

Be it known that I, JULIUS H. SCHLAFLY, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invened a new and useful Silo-Chute, of which the following is a specification.

My invention relates to improvements in sheet metal structures and more particularly to a chute for a silo, being especially adapted for a sheet metal silo such as shown and described in my application for United States patent on silos, Serial No. 768,239, filed May 17, 1913.

The objects of the invention are, to generally improve constructions of the character indicated, to provide an inclosure sufficiently large to permit a man to climb a ladder inside thereof, said inclosure being connected to the silo and extending upwardly over the vertical series of doors therein, so that access to any one of said doors may be gained by climbing through said inclosure, said inclosure also acting as a chute to direct ensilage thrown out of any of said doors downwardly and prevent the same being blown about or becoming scattered.

Further objects are the construction of said chute from sections, which may be shipped in knocked-down condition and conveniently erected in connection with the erection of the silo itself or after said silo has been completed, as may be desired, the mode of connection of the various sections constituting the chute, also the connection of said sections to the silo proper being important features.

The objects thus indicated, together with other objects which will be readily apparent to those skilled in the art, may be attained by the construction illustrated in the accompanying drawings, although the invention may be embodied in other forms, the construction illustrated being chosen by way of example.

In the drawings Figure 1 is a fragmentary perspective view, illustrating a portion of a sheet metal silo and a portion of the silo chute connected therto, and embodying my invention. Fig. 2 is a side elevation of a completed silo, including the chute. Fig. 3 is a fragmentary perspective view illustrating a part of the silo sections, also a silo door frame, and the chute attaching bars connected to said sections and portions of the flanges broken away. Fig. 4 is a perspective view of two of the sections of the chute, portions of the joint supporting strips, being broken away. Fig. 5 is a perspective view of one of the chute braces. Fig. 6 is a perspective view of one of the chute attaching bars. Fig. 7 is a horizontal section view on the line 7—7 of Fig. 1. Fig. 8 is a fragmentary perspective view illustrating portions of the silo sections, a portion of the chute section, and its connection to the silo section, parts being broken away. Fig. 9 is a vertical sectional view on the line 9—9 of Fig. 4.

Throughout the several views similar reference numerals indicate similar parts.

More specifically describing the construction disclosed in said drawings, the numeral 1 indicates the roof and the numerals 2 the sheet metal sections forming the side wall of the silo. The said sections 2 are provided with the horizontal, outstanding, plain flanges 3 at their upper edges and the horizontal, outstanding flanges 4 at their lower edges, the depending flanges 5 being formed integrally with said flanges 4. In the construction of the silo the sections 2 are arranged one upon another and the flanges 3 and 4 connected, as by means of bolts 6, as clearly described in my said application Serial No. 768,239. The sections 2 are thus arranged in a vertical series of tiers or courses, and preferably in alternate tiers are arranged appropriate doors, one of the frames, 7, of which is shown in Fig. 3. No claim, however, is herein made for the construction of said doors or frames. The alternate sections between the doors are preferably provided with ladder rungs 8 and the doors are provided with similar ladder rungs, as disclosed in my said specification, Serial No. 768,239, thus producing a continuous ladder extending up the side of the silo.

It is of importance that in connecting the chute to the silo the walls of said silo shall not be interrupted by apertures or fastening means of any kind and for the purpose of forming a frame or anchor to which said chute may be connected, the chute attaching bars 9 are provided. These bars are preferably formed of sheet metal and constitute an angled body portion having one flange 10 adapted to extend outwardly from the body of the silo, and the

other flange 11 extending parallel with and lying closely adjacent to the body of the section 2. At both ends of each bar the flange 10 is bent over at right-angles to form the attaching flanges 12, and said attaching flanges are provided with bolt apertures 13 preferably somewhat transversely elongated for convenience of adjustment of the parts in erecting the sections. The bars 9 are of such a length that the flanges 12 engage the under-sides of the flanges 3 and the upper sides of the flanges 4 of the various wall sections and bolts 14 extending through the flanges 3, 12 and 4 serve to connect the bars to the silo wall. In arranging the bars 9, they are preferably disposed end to end in vertical series at the two sides of the doors, so that one bolt 12 will extend through the lower flange of the bar 9, the flange 4 of the section on which the bar is arranged, the flange 3 of the subjacent section and the upper flange 12 of the subjacent bar 9, as clearly illustrated in Fig. 3. The outstanding flanges 10 of the bars 9 are provided with bolt apertures 15 for the chute section attaching bolts, as hereinafter described.

The chute preferably does not extend entirely to the ground, but terminates at a sufficient distance thereabove to give easy access to the interior and to permit arranging an ordinary wagon beneath the lower end to receive the ensilage in cases where it is desired to haul the same away from the silo.

Each chute section is preferably formed of sheet metal, having a body portion 16, which extends outwardly from the silo wall at one side of the doors, is provided with a curved, outer portion and returns to the silo wall in a substantially straight portion at the opposite side. At the two ends of each section are provided the inturned flanges 17 and in the walls of the body portion 16 are provided a plurality of bolt apertures 18 corresponding to the apertures 15 in the chute attaching bars 9. The flanges 17 adapted to be arranged between the flanges 11 of the bars 9 and the silo sections 2 with the bars 9 arranged within the interior of the angle produced by the flange 17. Bolts 19 are employed, extending through the apertures 15 and 18 to secure the chute sections to the bars 9. At their horizontal meeting edges the various chute sections over-lap each other for a short distance and on the outside at each horizontal joint so formed is arranged a joint supporting strip 20, preferably of light channel iron conforming to the contour of the chute sections, bolts 21, with their nuts arranged within the channel of the strip 20, being provided for connecting the chute sections together and to said strip.

For the purpose of preventing any lateral movement of the chute with relation to the silo, and to strengthen and support the structure, the chute braces 22 are provided, said braces being formed of sheet metal, with horizontal portions 23 provided with apertures 24 and with integral depending flanges 25, also preferably provided with apertures 26. The flanges 25 are adapted to be arranged intermediate the joint supporting strips 20 and the body of the chute section, one of the bolts 21 passing through the aperture 26 for the purpose of firmly connecting the brace to the chute. The horizontal portion 23 over-lies the flange 4 of the adjacent silo section and certain of the bolts 6 used in fastening the silo sections together extend through the apertures 24, completing the fastening of the brace. One of said braces is preferably employed at each joint between chute sections and at each side of the chute.

The uppermost chute section differs from the remaining chute sections in that its upper edge is not parallel to its lower edge, but is declined from the ends where the flanges 17 are arranged to the outer curved portion of the body 16. For the purpose of inclosing the top of the chute the sheet metal roof section 27 is provided, the inner end of which engages the outer side of the sections 2 and the other edges of which are formed with a flange at 28 bent down over the outer side of the uppermost section, bolts 29 extending through said flange and the body of the uppermost chute section to hold the roof in place.

In that part of the roof section 27 adjacent the silo is arranged a trap door 30, preferably provided with hinges at 31 so as to open outwardly and downwardly, away from the main roof of the silo. This trap door is sufficiently large to permit a man to pass therethrough in order to emerge from the top of the chute in order to reach the manholes in the roof 1, one of the same being illustrated at 32.

In addition to the trap door 30 the roof section 27 is also provided with a small skylight 33, which will permit sufficient light to enter the chute to make the doors and ladder rungs visible.

While the drawings and above specification disclose the best mode in which I have contemplated embodying my invention, I desire to be not limited to the details of such disclosure, for many changes in form and construction may be made, as circumstances require or experience suggests, without departing from the spirit of the invention, within the scope of the appended claims.

I claim:—

1. In combination with a silo formed of sheet metal sections joined together in vertical series by exterior, spaced, horizontal flanges, a chute comprising bars arranged end toward end in two parallel series on the

outside of said sections and being secured to said silo by having only their ends connected to said horizontal flanges, and sheet metal chute sections arranged and connected together in vertical series and attached to said bars.

2. In combination with a silo formed of sheet metal sections joined together in vertical series by exterior, spaced, horizontal flanges, a chute comprising angle-bars arranged end toward end in two parallel series on the outside of said sections, having their ends connected to said horizontal flanges and having the first flange of each angle-bar extending outwardly from the body of the adjacent silo section and the second flange extending parallel with and slightly spaced from said body, and sheet metal chute sections having outwardly extending body portions and in-turned vertical end flanges, said sections arranged and connected together in vertical series with said end flanges between said second flanges of said angle-bars and the bodies of said silo sections, and fastening means for connecting said chute sections to said first flanges of said bars.

In testimony that I claim the above, I have hereunto subscribed my name in the presence of two witnesses.

JULIUS H. SCHLAFLY.

Witnesses:

PERRY VAN HORNE,

M. C. MASON.