May 15, 1956 L. R. FULLER 2,745,573

GRAIN BIN HOPPER ATTACHMENT

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Fig. 1

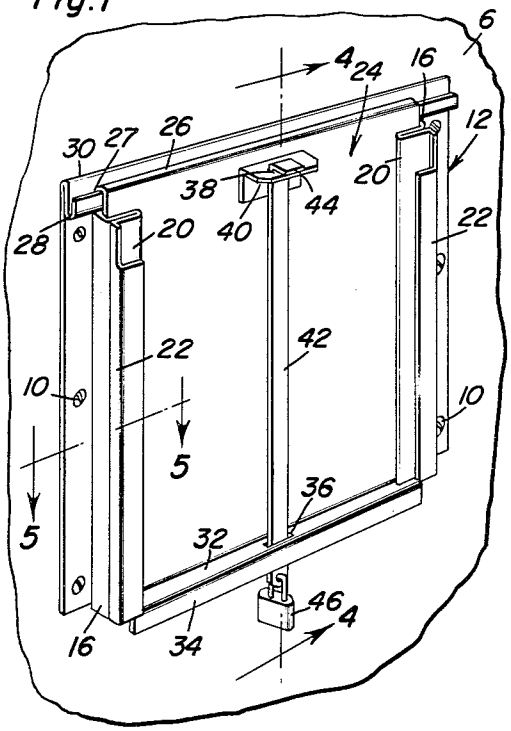


Fig. 3

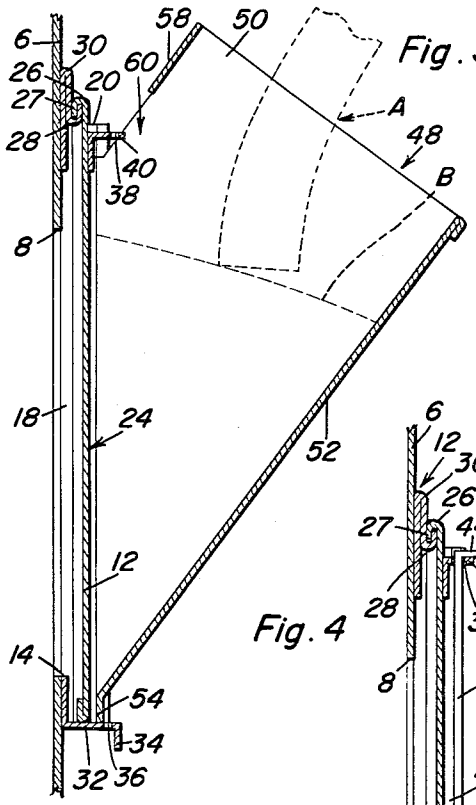


Fig. 4

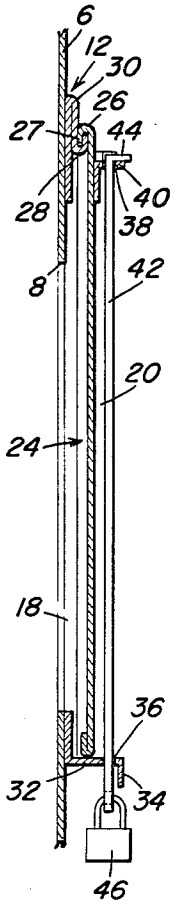
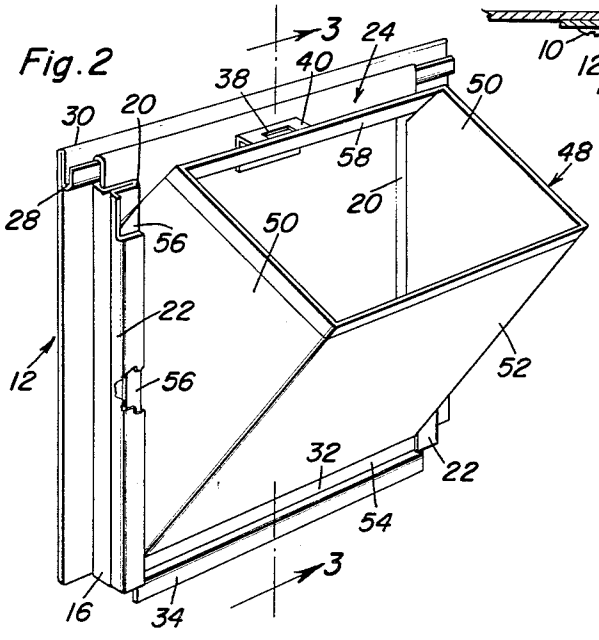


Fig. 2



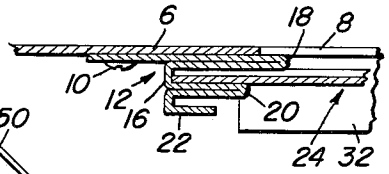


Fig. 5

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GRAIN BIN HOPPER ATTACHMENT

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3 Claims. (Cl. 222—153)

The present invention relates to an improved grain bin attachment which is characterized by an adapter frame which is suitably and expressly designed to be superimposed against the exterior surface of the wall of a grain bin and which has an opening in alignment with the discharge opening in said wall and is provided with track means, a sliding panel or door fitted removably into the track means, and a funnel-like member which is hereinafter treated as a hopper and is optionally usable and also detachably mounted on the track means.

A general object in carrying out the principles of the instant invention is to structurally, functionally and otherwise improve upon similarly constructed and performing grain bin attachments and, more particularly stated, to carry forward and thus advance certain structural adaptations in the Lyle R. Fuller et al. Patent No. 2,670,108 of February 23, 1954. That is to say, the instant invention and Patent 2,670,108 are directed to certain common accomplishments which may be treated structurally, as follows. Generically construed, the collective subjects-matter have to do with a non-spilling grain discharge attachment for a grain bin wall having a grain discharge opening therein. There is an adapter plate or frame provided and superimposed against and fastened to the exterior of the wall in a manner to register its discharge opening with the grain discharge opening in the stated wall. Cooperating tracks are mounted on the exterior of the frame and are situated along the vertical marginal portions of the respective discharge openings. These may be treated as inner and outer tracks arranged in appropriate parallel pairs. A plate which functions as a trap door is slidably mounted in the inner tracks and normally closes the respective openings. Stop means for the door is fixed at the bottom of the frame opening. Additional tracks are carried by the first named tracks and properly paired and these serve to accommodate attaching flanges on an open-ended funnel-like member which is sometimes treated as a chute and is hereinafter specifically treated in the instant case as a funnel-like hopper. This has side walls provided with outstanding flanges and the flanges are fitted into and releasably engaged with the stated additional tracks for removably supporting the funnel-like member on the adapter frame. The top or top wall of the multiwalled funnel-like member has a cut-away portion defining a hand grip and a hand hole, and the upper end portion of the sliding door panel has handle means which is cooperable with the handle and serves to facilitate opening and closing the trap door.

Experimentation with the construction specifically disclosed in Patent 2,670,108 has revealed the necessity for certain refinements and improvements.

One improvement in respect to the last named patent has to do with the upper edge of the sliding door which is provided with a lateral flange and which has sliding contact with the coacting exterior flat surfaces of the adapter frame with a view toward providing a more effective weather seal. This was calculated to overcome leakage occurring between the upper cooperating surfaces of

the sliding door and adapter frame. In the instant matter, a further improvement is provided in that the upper edge of the adapter frame has a downbent flange which is, in turn, bent upon itself to provide an open-ended channel-like gutter which constitutes a miniature rain gutter and which serves to accommodate a depending flange on the upper edge of the sliding door which, when the door is in its normal closed position, interlocks with the gutter.

Another feature in the instant matter has to do with an outstanding flange provided across the lower portion of the adapter frame and which serves as a ledge and stop for a cooperating flange on the attachable and detachable hopper and which has a keeper hole therein in registry with a keeper hole in a handle provided on the upper portion of the door with these keeper holes serving to accommodate an insertable and removable latch bolt held in place by a padlock so as to effect a simple and safe way to lock the trap door in closed position.

An outstanding improvement, as will be hereinafter more satisfactorily visualized, has to do with the unique funnel-like hopper which is attached and held in place on the outer pair of tracks by side wall flanges, which has a hand hole at the top to facilitate attaching and detaching the same and which is inclined upwardly and outwardly and, when the trap door is open, allows the grain to gravitate therein without overflowing so that farmers who have and use an auger-type grain elevator may insert the hose or elevator into the open top of the hopper and thus suck the grain out into a farm wagon or other equivalent conveyance for transportation and other requirements.

Features and advantages in addition to those touched upon may become apparent from the following description and the accompanying sheet of illustrative drawings.

In the drawings, wherein like numerals are employed to designate like parts throughout the views:

Figure 1 is a fragmentary elevational view showing a fragmentary portion of a grain bin wall having a grain discharge opening and showing, more importantly, the adapter frame fastened to the wall, the trap door closed and latched in its closed position;

Figure 2 is a perspective view with the latch bolt removed and with the hopper attached;

Figure 3 is a section on the vertical line 3—3 of Figure 2, looking in the direction of the arrows;

Figure 4 is a section on the vertical line 4—4 of Figure 1, looking in the direction of the arrows; and

Figure 5 is a horizontal fragmentary section on the line 5—5 of Figure 1, looking in the direction of the arrows.

The grain bin wall is denoted by the numeral 6 and has a grain discharge opening 8 therein. Superimposed against the exterior and fastened in place by screws or similar fastenings 10 is the aforementioned adapter frame 12. This has a grain discharge opening 14 which is lined up with the opening 8. It is also provided with opposed vertical track means. Actually, the "means", generally speaking, has to do with a pair of inner vertical spaced parallel tracks and a pair of additional or auxiliary outer tracks. The inner open-ended tracks are denoted by the numerals 16 and these are joined by way of bends 18 to the marginal edge of the frame. They, in turn, are provided with additional bends 20 which are fashioned into the outer open-ended channel-like tracks 22. The inner tracks serve to accommodate the slidable trap door or panel 24. This is provided on its upper edge with a return bend 26 fashioned into a lip or flange 27 which fits into the open-ended miniature channel-like rain gutter 28 carried by the upper edge of frame and joined thereto by way of the integrating return bend 30. Thus, we have here a sort of an interlocking fit between the flange 27 and the stated rain gutter. The adapter frame is also provided at its bottom with an outstanding flange which is treated

as a ledge and is denoted by the numeral 32 and has a reinforcing apron 34 and is centrally provided with a keeper hole 36. This registers with a keeper hole 38 in the horizontal grip of the angle clip or handle 40 which is attached to the upper end of the sliding trap door 24. There is a latch strip or bolt provided at 42 and this has its upper laterally bent end 44 fitting releasably in the keeper hole 38 and has its lower end passing through the keeper hole 36 and apertured to accommodate a padlock 46. Normally, the trap door is closed and latched and locked in position, as shown in Figure 1. When it is desired to empty grain from the bin by way of an auger, for example, the hose A in Figure 3, the latch bolt is, of course, removed, and the funnel-like hopper 48 is brought into play. This is a simple open-ended funnel or chute which has side walls 50 and an inclined bottom wall 52 with a flange 54 resting on the ledge 32, said side walls also having outstanding flanges 56 slidably keyed in the outer tracks 22. Notice that the top or wall 58 of the hopper is narrow and provides a sort of a hand grip and is spaced to provide an opening at 60. This opening is to provide clearance so that one may reach through the hole and have access to the handle 40 on the trap door. Assuming that the hopper is in position, as shown in Figures 2 and 3, the trap door is lifted and the grain flows into the hopper to the level shown approximately at B in Figure 3, where it is accessible for withdrawal by way of the hose A, in an obvious manner.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

What is claimed as new is as follows:

1. A grain bin attachment of the class described comprising an adapter frame provided with a grain discharge opening, provided at its top with an open-ended rain gutter, provided on its exterior side with tracks, a trap door having vertical edge portions slidably keyed in said tracks, the upper end of said trap door having a return bend provided with a depending flange, and said flange fitting into and being interlocked with said rain gutter, said door being provided adjacent its top with an L-shaped clip providing a handle, the horizontal flange thereof having a keeper opening, the lower end of said frame

being provided with an outstanding stop flange having a keeper opening registerable with the first named keeper opening, and a latch bolt removably mounted in the keeper openings.

2. The structure defined in claim 1 and the combination therewith of additional tracks carried by the first named tracks, and a readily attachable and detachable hopper having flanges fitting removably in the additional tracks, said hopper inclining upwardly and outwardly and the outer end thereof being open to accommodate a hose, auger-type elevator or the like.

3. A non-spilling grain discharge attachment for a grain bin wall having a grain discharge opening therein comprising an adapter frame provided with a grain discharge opening, said frame being designed to be secured to said wall in a manner to register its discharge opening with the grain discharge opening in said wall, cooperating tracks mounted on the exterior side of said frame and situated along the vertical marginal portions of the discharge opening in the frame, a trapdoor slidably mounted in said tracks and normally closing said discharge opening, stop means for said door fixed to the bottom of said frame, additional tracks carried by the first named tracks, a funnel-like hopper open at its respective intake and discharge ends and embodying bottom and side walls, the side walls having outstanding flanges and said flanges being keyed slidably and removably in the additional tracks in a manner to removably support the hopper on the frame, the top portion of said hopper adjacent the intake end having a cut-away portion defining a hand grip as well as a hand hole, the upper portion of said trapdoor having handle means for raising and lowering the door and registrable with said hand hole and accessible by way of the latter, said handle being an L-shaped member, the horizontal flange of which is provided with a keeper hole, said stop means being an integral outstanding ledge flange on said adapter frame having a keeper hole in registry with the first named keeper hole, and an insertable and removable latch bolt fitting through said respective keeper holes and provided at its lower end with an attachable and detachable padlock.

References Cited in the file of this patent

UNITED STATES PATENTS

917,649	Otto	Apr. 6, 1909
1,617,192	Barron	Feb. 8, 1927
2,670,108	Skogstad et al.	Feb. 23, 1954