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SELF-CLEANING GRAIN GATE CONSTRUCTION

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Fig. 3

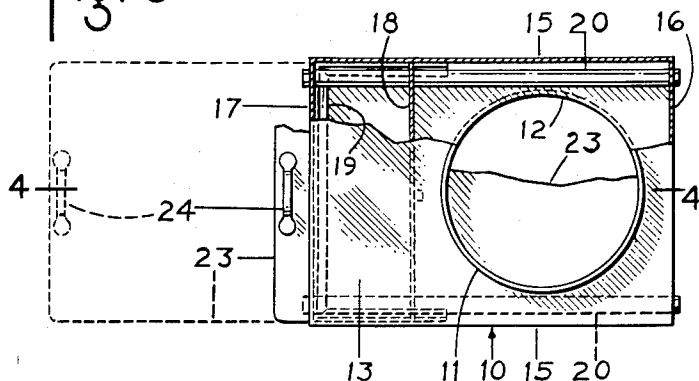


Fig. 2

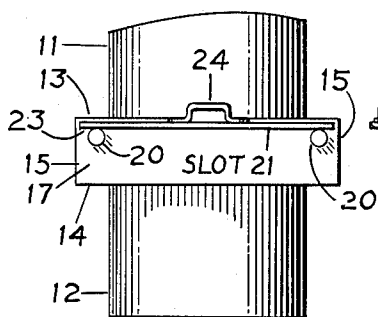


Fig. 4

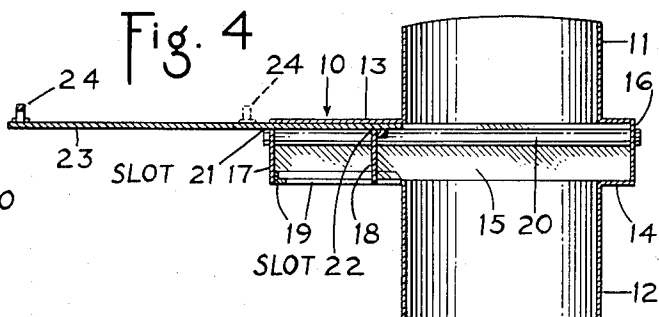


Fig. 1

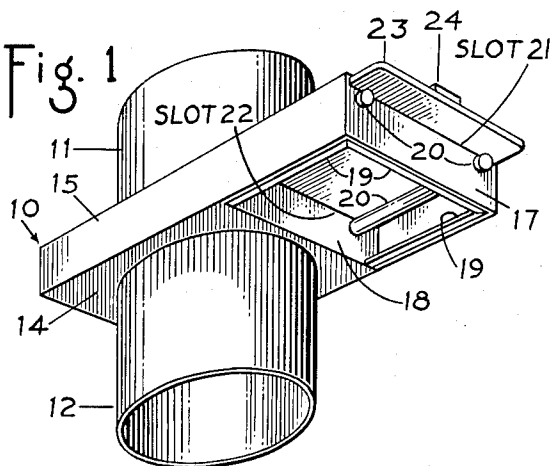
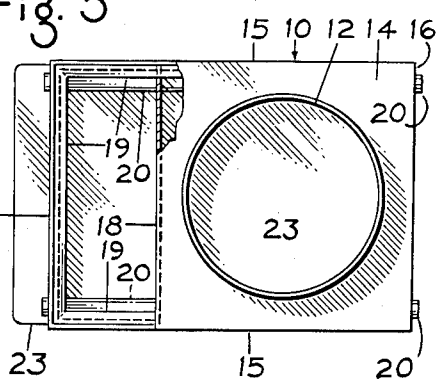


Fig. 5



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SELF-CLEANING GRAIN GATE CONSTRUCTION

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4 Claims. (Cl. 222—561)

This invention relates to a self-cleaning grain gate construction.

The invention is more particularly concerned with a manually operable gate construction interposed in a grain delivery conduit for controlling the flow of grain there-through from a point of supply to a point of delivery.

Gate constructions for the above noted purpose have long been in use but all of such prior constructions to the inventor's knowledge presented a common objection which in an effort to overcome same led to the present invention.

Gate constructions of the above noted general character comprise a frame or housing interposed in a grain delivery conduit and a manually operable gate slidably disposed within such frame or housing adapted to intercept the flow of grain through the conduit.

In such prior constructions, means were provided in the frame or housing for slidably supporting the gate therein and such means were of such form as to intercept a part of the grain flowing through the open conduit with a resulting deposit of such grain on the gate supporting means. This grain deposit on the gate supporting means or on any portion of the frame or housing contacted by the gate resulted in binding of the gate in its sliding movements to control the flow of grain through the conduit.

In such prior constructions the deposit of grain on the gate contacting means has in fact operated so adversely to the free sliding action of the gate that it was necessary to frequently remove the gate, clean it, and then restore it to its operating position, which required an undue expenditure of time and effort.

It is accordingly a primary object of this invention to provide a gate construction for the above noted purpose which wholly overcomes the above noted objections to prior gate constructions for such purpose.

A further object of the invention is to provide a gate construction including a housing interposed in a grain delivery conduit and a slidable gate supported by the housing, and wherein means are provided within the housing for slidable support of the gate which offer no obstruction to the free flow of grain through the conduit.

Other objects and advantages of the invention will become apparent in the course of the following detailed description, taken in connection with the accompanying drawing, wherein—

Fig. 1 is a perspective view as observed from the bottom and front end of the gate construction and showing same in position within a grain delivery conduit, the gate being shown in closed grain flow intercepting position.

Fig. 2 is a front elevational view showing the gate construction at the operating end thereof.

Fig. 3 is a broken top plan view with the gate shown closed in solid lines and open in dotted lines.

Fig. 4 is a vertical longitudinal sectional view in the

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plane of line 4—4 on Fig. 3 and showing the gate in open position.

Fig. 5 is a broken bottom plan view.

Referring now in detail to the drawing,

The improved gate construction includes a housing 10 which as shown may be formed unitary with the conduit or chute which includes an upper tube 11 of any desired predetermined length and a lower tube 12 also of any predetermined length.

The housing 10 comprises a top wall 13, a bottom wall 14 disposed vertically beneath the top wall in parallel relation thereto, opposite side walls 15, a rear end wall 16 and a front end wall 17, together with a transverse partition wall 18 disposed in parallel longitudinally spaced relation to the front wall 17 and on the same side of tubes 11 and 12 as the said front wall.

The top wall 13, side walls 15 and rear end wall 16 all act as complete closures for the housing. The bottom wall 14, however, is open between the side walls 15 and the front end wall 17 and partition wall 18 as is clearly shown in Fig. 5. The lower edges of the side walls 15 and the front end wall 17 within the said opening in the bottom wall are reinforced by angle irons 19.

A pair of cylindrical gate supporting rods 20 extend longitudinally within the housing with each thereof disposed adjacent to but in spaced relation to a respective side wall 15 and the opposite ends of the rods are suitably secured to the rear and front walls 16 and 17 respectively.

The rods 20 at points intermediate their ends extend through corresponding apertures in the partition wall 18. The uppermost surfaces of the pair of rods 20 are in a horizontal plane and the front wall 17 and partition wall 18 are provided with transversely extending slots 21 and 22 respectively whose lower edges are in the said plane.

A relatively thin rectangular gate 23 extends through the slots 21 and 22 and has its lower face in bearing engagement with the uppermost surfaces of the rods 20.

The gate 23 is provided with a suitable hand engageable handle 24 at the front end thereof.

As will be seen upon inspection of Fig. 3, the cylindrical space within the aligned tubes 11 and 12 is wholly unobstructed when the gate 23 is in its open position whereby the grain will not be interrupted in its downward flow. However, upon choking of the flow as at the point of delivery of the grain, some thereof will move into the housing and into contact with the gate supporting and guiding means.

The construction in accordance with the present invention, however, is such that the gate will not be subjected to binding action as the result of accumulated grain on or in the vicinity of the supporting and guiding means for the following reasons. The rods 20 which form the major support for the gate 23 are cylindrical and consequently grain cannot lodge thereon. Furthermore by spacing the said rods from the side walls 15, grain cannot cake up between the rods and side walls.

Also the edges of the gate guide slots 21 and 22 act as scrapers for maintaining both the upper and lower surfaces of the gate free of grain deposits which may be discharged through the opening in the bottom wall.

While I have disclosed my invention in accordance with a single specific structural embodiment thereof, such is to be considered as illustrative only, and not restrictive, the scope of the invention being defined in the subjoined claims.

What I claim and desire to secure by U. S. Letters Patent is:

1. A gate construction for controlling the flow of grain through a conduit including a hollow rectangular housing

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member disposed between adjacent inner ends of tubes, said housing member being of greater width and length than the diameter of the tube ends connected therewith, said housing member including a top wall connected with the inner end of one tube, said top wall covering the remainder of the rectangular housing member, side walls and end walls for the housing member of length and width respectively of the top wall of the rectangular housing member, a bottom wall for the housing member connected to the inner end of the other tube, said bottom wall extending from one end wall of the housing member around the last mentioned tube but short of the other end wall of the housing member, a partition wall extending from adjacent the top wall to the end of the bottom wall, the last mentioned end wall of the housing member having a slot therein substantially the width of the inner width of the housing member and a slidable rectangular gate supported in said slot of the end wall and supported on the top of the partition wall to close communication between the pipe ends.

2. The structure according to claim 1, wherein the sliding gate is also supported on cylindrical rods in lateral spaced relation to each of said side walls, the rods being out of alignment with the openings of the inner ends of said tubes so as not to obstruct the flow of grain between the tube ends when the gate is open.

3. The structure according to claim 8, wherein the uppermost surface of said rods is in a plane including the lower surface of said slot in said front wall and the top of said partition wall.

4. A gate construction for controlling the flow of grain through a conduit including a hollow rectangular

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housing member disposed between adjacent inner ends of tubes, said housing member being of greater width and length than the diameter of the tube ends connected therewith, said housing member including a top wall connected with the inner end of one tube, said top wall covering the remainder of the rectangular housing member, side walls and end walls for the housing member of length and width respectively of the top wall of the rectangular housing member, a bottom wall for the housing member connected to the inner end of the other tube, said bottom wall extending from one end wall of the housing member around the last mentioned tube but short of the other end wall of the housing member, a partition wall extending from adjacent the under side of the top wall to the end of the bottom wall, reinforcing angle irons at the lower edges of said side walls and said front end wall between said last mentioned front end wall and said partition wall, the last mentioned end wall of the housing member having a slot therein substantially the width of the inner width of the housing member and a slidable rectangular gate supported in said slot and on the top of the partition wall to close communication between the pipe ends.

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