

Oct. 22, 1940.

A. W. GERBER

2,219,226

GRAIN DISTRIBUTION

Filed June 12, 1939

3 Sheets-Sheet 1

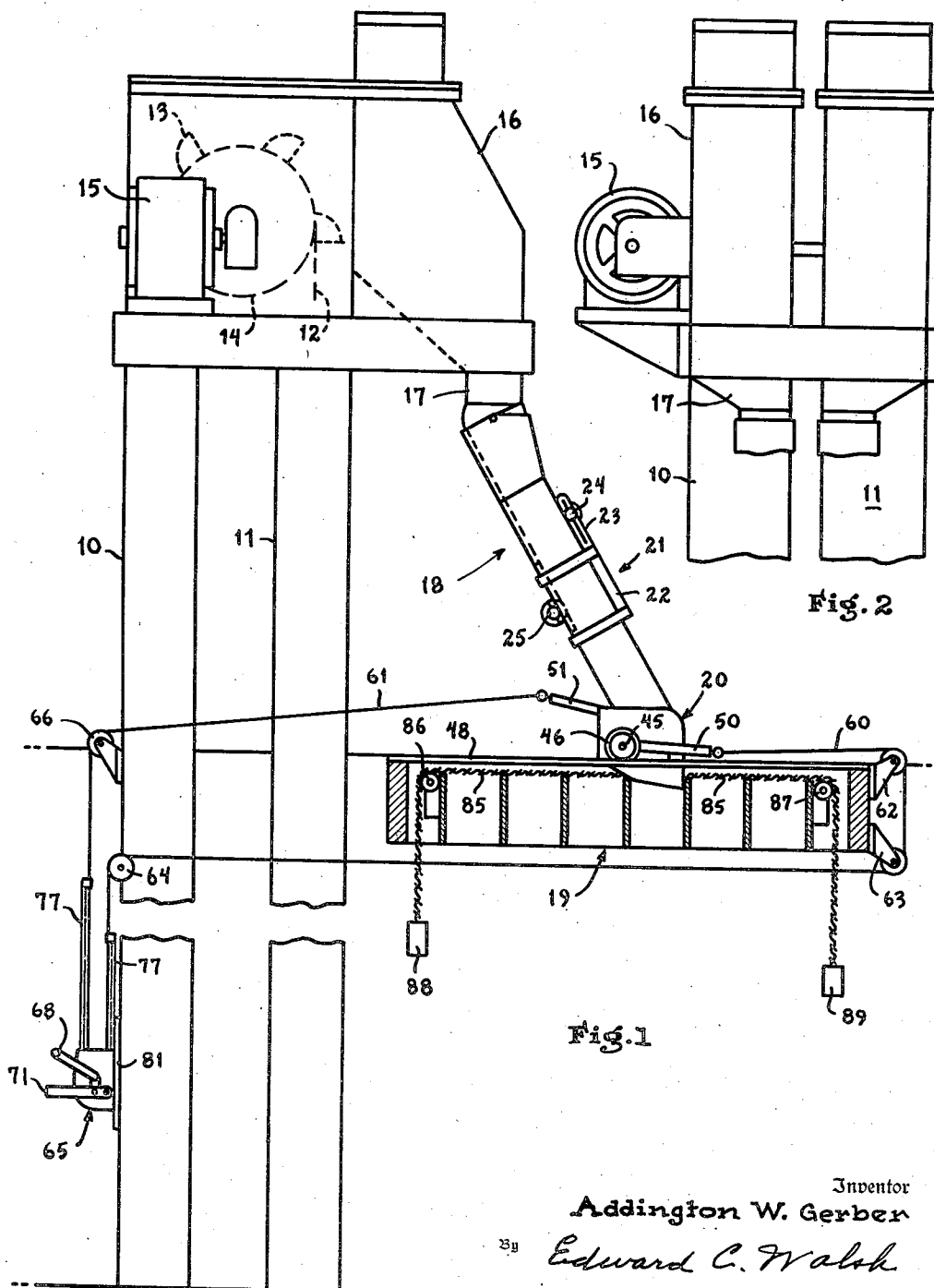


Fig. 1

Fig. 2

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3 Sheets-Sheet 2

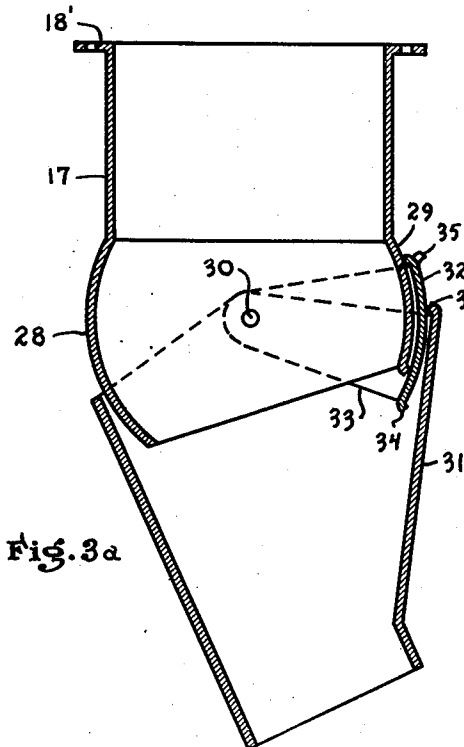


Fig. 3a

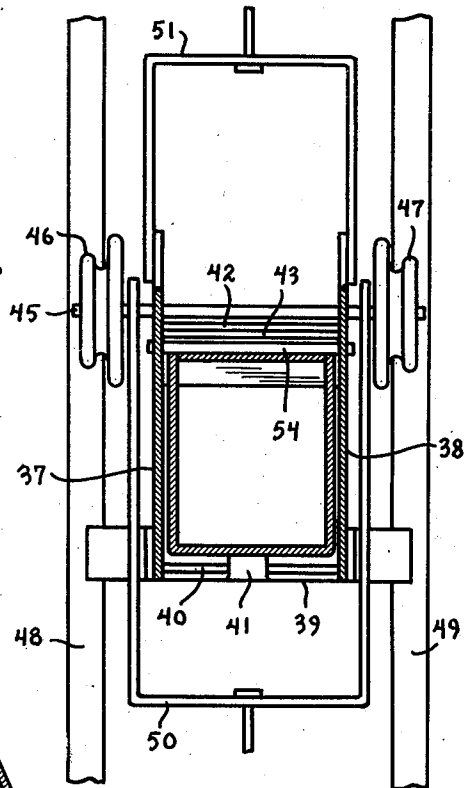


Fig. 4

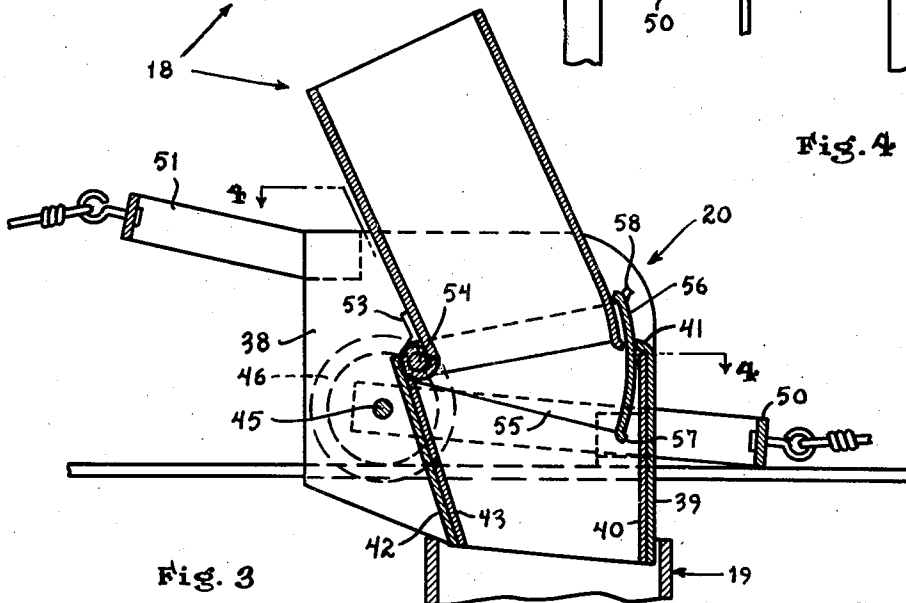


Fig. 3

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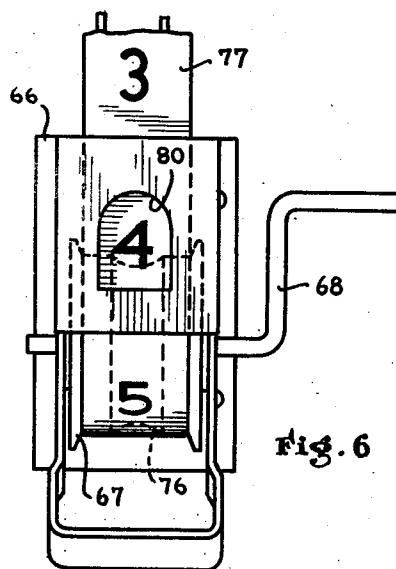
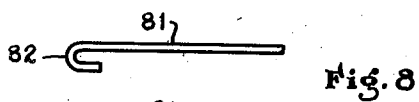
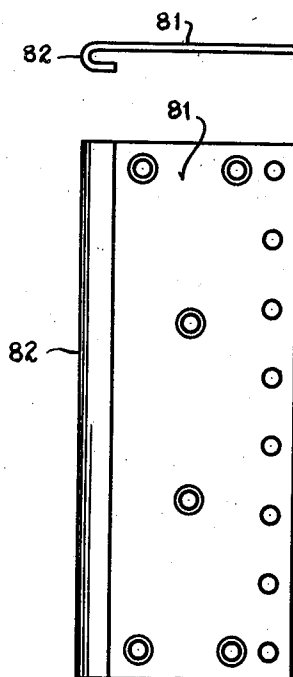
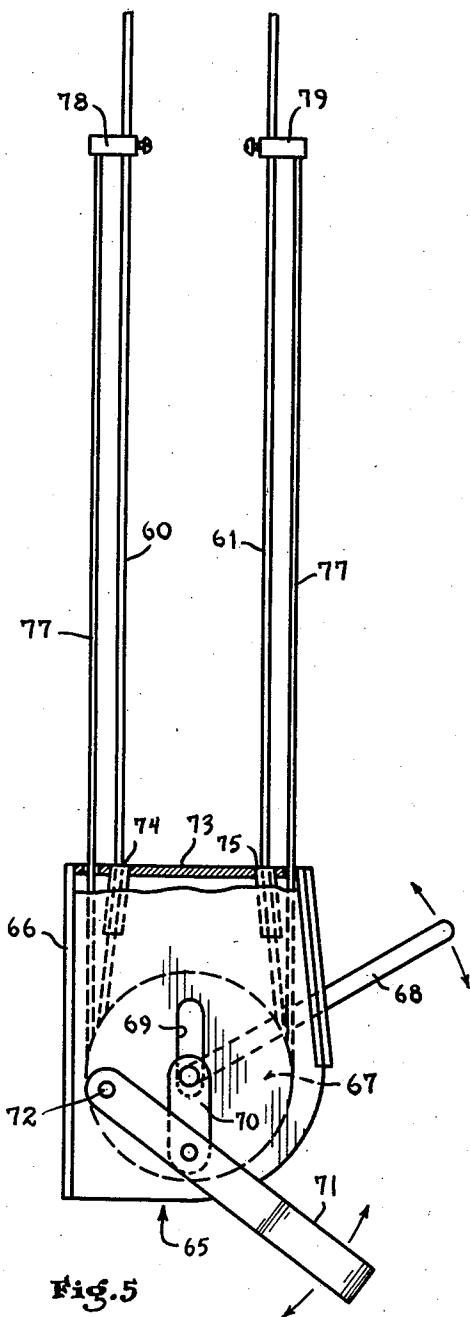
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,219,226

GRAIN DISTRIBUTION

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Application June 12, 1939, Serial No. 278,605

10 Claims. (Cl. 193—17)

My invention relates to grain handling equipment and deals particularly with improvements in means for distributing grain selectively to one or more of a plurality of bins.

5 In grain elevators, customarily the grain is elevated to a high point and is then delivered from a hopper to selected bins. This necessitates usually the use of extensible spouting adjustable from one bin inlet to another as desired. In
10 this type of equipment it is of paramount importance that the delivery spout be brought into registry with the desired bin inlet and positively stopped and that the position of the delivery end of the spout be indicated to the operator to as-
15 sure him that the grain is being properly delivered. The primary object of my invention is to provide improved means for adjusting the delivery spout from one bin inlet to another from a remote point, in this instance a work floor at a
20 low level in the elevator structure.

Another object is to provide improved means for stopping the downspout in registry with the desired bin inlet and assuring the operator of correct registry.

25 Because of the adjustability of the downspout and the need of having flexible joints therein it is difficult to keep the equipment closed to the escape of dust which of course may present a fire hazard and the presence of which as is well known
30 is detrimental to health as well as contributing to deterioration of equipment. It is another object of my invention to improve the dust tightness of flexible joints in grain spouting and to improve the wearing qualities of spouting hav-
35 ing flexible joints.

Another object of my invention is to provide a plurality of inlet openings arranged in a plane in combination with a delivery spout movable
40 relatively to the openings and having a flexible curtain arrangement for keeping the openings into which grain is not being delivered, covered.

Another object of my invention is to provide a manual remote control arrangement wherein
45 flexible cables are attached to the front and rear of a movable element, the cables passing around a drum at a remote point, the drum being bodily movable to simultaneously draw one or both
50 cables taut for releasing the element for movement whereby the drum can be rotated to move the element.

While my invention is particularly adapted to and has primary utility in the art of grain handling, in certain of its aspects it has broader utility and it is not to be entirely limited to
55 grain distribution.

For a more complete understanding of my invention reference may be had to the following detailed specification and annexed drawings wherein,

Figure 1 is a complete assembly of the equip- 5 ment.

Figure 2 is another view of the upper part of Figure 1.

Figure 3 is a detailed cross sectional side view of the truck on which the lower end of the down- 10 spout is connected.

Figure 3a is a detailed view of the upper flexible joint of the downspout.

Figure 4 is a view taken along the line 4—4 of 15 Figure 3.

Figure 5 is a detail side view of the manual control drum.

Figure 6 is a front view of Figure 5.

Figure 7 is a front view of the mounting plate for the drum assembly, and 20

Figure 8 is an end view of Figure 7.

Referring to Figure 1 of the drawings, numerals 10 and 11 indicate elevator legs of a type commonly employed in elevators wherein grain is elevated to a high point in the elevator. The 25 legs 10 and 11 serve as housings for an endless conveyor belt 12 having uniformly spaced grain buckets 13 attached thereto, the conveyor belt passing over a suitable pulley or the like 14. The conveyor belt is driven by any suitable 30 means such as an electric motor 15 and delivers the elevated grain into a hopper designated at 16. In equipment of this type it is customary to have a pair of hoppers of similar construction located adjacent each other as shown in Figure 2, there being separate conveying appa- 35 ratus for each of the hoppers.

The lower portion of the hopper 16 is tapered and connects to a vertical spout or conduit section 17 into which the grain is fed from the 40 hopper. Numeral 18 designated generally a downspout for conveying grain from the hopper to any one of a plurality of bin inlets arranged in a horizontal plane as designated at 19. The upper end of the downspout 18 is pivotally connected to the spout section 17 to permit relative 45 movement of the downspout with respect to the section 17. It is to be understood of course that the lower end of the downspout is adjustable to the right and left, being carried on a truck 50 so that the lower end of the downspout may be brought into registry with any one of the bin inlets 19. To provide for movement of the lower end of the downspout with respect to the bin inlets an extensible joint or coupling 21 is pro- 55

vided in the downspout. The details of the extensible coupling 21 form no part of my invention and reference may be had to the patent of F. W. Cooley No. 1,395,947 for a more detailed showing of the extensible coupling. As disclosed, the coupling comprises a bracket member 22 fastened to the lower section of the downspout and having an arm 23 carrying a roller 24 with respect to which the upper section of the downspout is adapted to move relatively. The lower section of the downspout also carries a roller 25, part of which extends through an opening in the lower spout section and with which the upper spout section is adapted to move in contact.

For the details of the flexible joint in the upper end of the downspout and the truck assembly reference may be had to Figures 3, 3a and 4 of the drawings. Figures 3 and 3a show the upper and lower ends of the downspout without showing the intermediate section having the extensible coupling 21. In Figure 3a it will be seen that the spout section 17 is generally circular and has a flange 18' attachable to the lower end of the hopper. The lower part of the section 17 has surface portions 28 and 29 of curved configuration, the center of curvature being at the pivot point 30. The curved portion 28 is of slightly greater extent than the curved portion 29. The sides of the section 17 in which the ends of the pivot 30 are journaled are flat. The upper end of the downspout 18 is tapered as shown as 31, the upper end of the downspout also having flat sides similarly to the section 17 in which the ends of the pivot 30 are journaled. It will be seen that the upper end of the downspout 18 has an edge portion which is closely juxtaposed to the surface portion 28 of the curved configuration and remains closely juxtaposed thereto when the downspout 18 is rotated relatively to the section 13 about the pivot 30. The tapered portion 31 of the downspout 18 is spaced somewhat from the portion 29 of curved configuration and interposed therebetween is a curved surface portion 32 forming part of an element or member 33 having flat side portions in the shape of sectors which are also carried on the pivot 30. The curved surface portion 32 is contiguous to the surface portion 28 and as seen on Figure 3a is closely juxtaposed thereto. The tapered portion 31 of the downspout 18 has an inturned flange or ear 36 adapted to engage corresponding ears 34 and 35 on element 33. It will be seen, therefore, that when the downspout 18 is rotated in a clockwise direction sufficiently so that there would otherwise be an open gap between the upper edge of the portion 31 and the lower edge of the curved portion 29, the ear 36 will have engaged the ear 34 of the member 33 and moved said member in a clockwise direction about its pivot so that the curved surface portion 32 spans the gap between the upper edge of portion 31 and the lower edge of portion 29. It is to be seen, therefore, that by reason of the structure just described, the downspout 18 may be rotated a substantial amount to the right with the parts of the flexible joint remaining substantially dust tight and that the downspout 18 may be adjusted a substantial amount to the left with the parts of the flexible joint still maintaining the joint as a whole substantially dust tight. It is pointed out that the curved portion 29 is not of the same extent as the curved portion 28 to avoid placing an undue amount of obstruction to the flow of grain from the section 17 into the downspout 18 which it would otherwise do. With the con-

struction shown, the downspout is adjustable a considerable amount to the left of a vertical line through the pivot 30 without the elements of the flexible joint presenting an undue amount of obstruction to the flow of grain from the section 17 into the downspout. By avoiding having portions of the flexible joint extend unduly into the path of flowing grain, the wearing qualities of the joint and the conveying means as a whole are considerably improved.

As stated above, Figure 3 of the drawings shows the details of the lower end of the downspout and the truck which supports it and by which it is adjustable. The truck 20 comprises a chassis composed of a frame having sides 37 15 and 38 (see Figure 4). The front of the frame is formed of two superimposed sheets of metal 39 and 40 of slightly less vertical extent than the side walls 37 and 38, the sheet 39 having an inturned ear 41. The truck frame has a rear wall 20 or side portion comprised of two superimposed sheets of metal 42 and 43 lying in a plane perpendicular to the plane of the side walls 37 and 38 but disposed at an angle to the plane of the front wall as shown. The chassis or frame 25 of the truck may preferably be of welded construction or any other suitable method of fabrication may be utilized. Journalled in the side walls 37 and 38 are the ends of an axle 45 30 on the ends of which are carried caster wheels 46 and 47 adapted to run upon tracks 48 and 49 (see Figures 1 and 4). The axle 45 passes through the ends of a U-shaped bail 50, the sides of the bail being disposed on opposite sides of the truck frame. Numeral 51 designates a similar 35 bail, the legs of which are attached to the side walls 37 and 38 at their upper rear portions by welding or the like. The bails 50 and 51 may be also seen on Figure 1.

Formed at the lower part of the left side of the end of the downspout 18 is a bracket 53 formed so as to journal therein a shaft 54, the ends of which are also journaled in the side walls 37 and 38 of the truck frame. Obviously by reason of the structure just described the downspout 18 is pivotally 45 connected to the truck 20. The end of the downspout 18 fits fairly snugly between the side walls 37 and 38 of the truck frame, but the front edge of the downspout 18 is spaced slightly from the front wall of the truck as shown. Numeral 55 50 designates a member pivoted on the shaft 54 and corresponding very much in structure to the member 33 of Figure 3a, the member 55 having a curved surface portion 56, the center of curvature being at the shaft 54. The surface portion 56, as shown, is interposed between the leading edge of the lower end of the downspout 18 and the front wall of the truck 20. The member 55 has an ear 57 at the lower edge of the curved surface portion 56 and an ear 58 at the upper edge of the curved surface 60 portion 56. Thus similarly to the action of the flexible joint of Figure 3a, when the truck 20 is moved forward so that the downspout rotates in a counter-clockwise direction with respect to shaft 54, the ear 41 may engage the ear 57 so as to move 65 the member 55 about shaft 54 in a direction to cause the curved surface portion 56 to bridge or span the gap between the upper edge of the front wall of the truck and the leading edge of the lower end of the downspout 18. This construction, as described more in detail with respect to Figure 3a, maintains the flexible connection between the downspout and the truck substantially dust tight without unduly interposing obstructions in the 75

path of flow of the grain from the downspout into the truck.

Normally the front wall of the truck 20 abuts against a partition between the various bin inlets 19 as shown on Figures 1 and 3. The bottom of the rear portion of the side walls 37 and 38 slants upwardly somewhat as seen in Figure 3, and rests on one of the partitions between adjacent bin inlets 19.

Referring again to Figure 1, it will be seen that there are flexible cables designated 60 and 61 attached to the bails 50 and 51 respectively at the front and rear of the truck 20. Any suitable flexible means may be used for the cables, and swivels or turn buckles are preferably used at the point where the cables are attached to the bails as in Figure 3. The cable 60 passes over pulleys 62 and 63 as well as a pulley 64 and down to a drum contained within a housing 65 mounted on the elevator leg 10. The cable portion 61 passes over a pulley 66 and also extends down to the drum within the housing 65, it being understood that the cable is continuous and that it has several turns passing over the drum. The pulleys of course may be suitably mounted in any well-known manner so as to bring the cables into the positions shown in Figure 1. However, it is pointed out that the pulley 66 is mounted at a lower level than the point of attachment to the bail 51 so that when a pull is exerted on the cable 61 the force on bail 51 will tend to bodily rotate the body or frame of the truck 20 around the axle 45.

For the details of the drum assembly over which the cable portions pass, reference is now had to Figures 5, 6, 7, and 8 of the drawings. In Figure 5 the housing for the drum is shown at 65, it having parallel spaced metal side portions and a flange 66 for attaching it to the elevator leg in the desired position. The drum designated 67 is best seen in Figure 6 and is rotatably carried on a crank 68 which extends through vertical slots in the side walls of the drum housing 65, one of the slots 69 being visible on Figure 5. The portions of the crank 68 adjacent opposite sides of the drum but externally of the side walls of the drum housing are journaled in a pair of vertical links, one of which is seen at 70 on Figure 5. Both links are pivoted to a U-shaped operating handle 71 as seen on Figures 5 and 6, the ends of the legs of the operating handle 71 being pivoted to the side walls of the drum housing 65 as may be seen at 72. Drum housing 65 has a top plate 73 with openings through which the cable portions 61 and 60 extend, there being sleeves 74 and 75 in these openings to facilitate the passage of the cables there-through. The drum 67 has a groove around its central portion, as seen at 76 in Figure 6, this groove being of a sufficient depth to carry several turns of the cable without any portion of the cable becoming flush with the adjacent flat surfaces of the drum.

Numerals 77 designate an indicator band having uniformly spaced numbers thereon as seen in Figure 6. The band passes through openings as shown in the top plate 73 of the drum housing and passes over the drum, the band being of substantially the same width as the drum and the ends of the band being attached to the cable portions 60 and 61 by means of collars 78 and 79, as shown on Figure 5, the collars being well known devices having adjustable screws for purposes of securely fastening them to the cable portions. The front of the drum housing 65 has an opening 80 through which the spaced numbers on the band 75 are visible. The spacing of the numbers on the band

77 is such that a number is brought into registry with the opening 80 whenever the truck 20 is brought into registry with one of the bin inlets 19.

Figure 7 shows a plate 81 having a flanged portion 82 along its left edge into which the left edge of the flange 66 of the drum housing is adapted to interfit. The plate 81 has a plurality of counter-sunk holes for purposes of attaching it by means of screws to the elevator leg 10 at any desired level on the elevator leg 10 which would be at a suitable height above a work floor as may be seen on Figure 1. The plate 81 also has a plurality of uniformly spaced openings along its right edge which are arranged so as to correspond with openings in the flange 66 of the drum housing 65 so as to permit of mounting the drum housing at adjustable heights on the plate 81 by means of screws or any other suitable attaching means.

In order to prevent the escape of dust from bin inlets into which grain is not being delivered I provide a flexible curtain 85 (see Figure 1), portions of which are attached to the front and rear of the truck 20 and which passes over suitably mounted rollers 86 and 87 adjacent to the front and rear of the series of bin inlets. Weights 88 and 89 are attached to the ends of the curtain 85 so that as the truck 20 is moved in one direction or the other the curtain is moved at the same time, always remaining closely adjacent to the tops of the partitions separating the bin inlets and preventing the escape of dust therefrom. This feature of my invention is particularly important in many well-known types of elevator equipment wherein bin inlets are arranged adjacent each other, the said bin inlets communicating with the same bin. For instance, in the type of apparatus shown in Figure 2 where there are two hoppers and two downspouts, correspondingly there are two series of bin inlet openings, the two series being arranged side by side with each pair of bin inlets which are beside each other communicating with the same bin. Thus when a downspout is delivering grain into a bin inlet a certain amount of dust is raised in the bin and by reason of the curtain 85 this dust is prevented from escaping from the corresponding bin inlet in the other series. The curtain 85, however, has general utility in keeping the bin inlets covered to prevent the escape of dust therefrom.

From the foregoing description of the structure employed in my invention its operation and its objects should be clearly understood by those skilled in the art. Referring to Figure 1 it will be seen that the truck 20 is in registry with one of the bin inlets 19, it being understood that the bin inlets 19 may be connected by spouts of any suitable conformation with a plurality of different bins located at different positions in the elevator. When it is desired to adjust the downspout 18 for delivering grain into a different bin inlet an operator at the work floor in the elevator manually grasps the lever 71 with his left hand, moving it in counter-clockwise direction as seen in Figure 1. Obviously this action bodily moves the drum 67 downwardly so as to draw both the cable portions 60 and 61 taut. As previously pointed out, when the cable portion 61 is drawn taut the frame of the truck 20 is rotated slightly in a counter-clockwise direction about the axle 46 to bring the lower edges of the side walls out of engagement with the adjacent partition between bin inlets 19 to permit of forward movement of the truck, the tension in cable 60

preventing backward movement of the truck. While retaining the handle 71 in a depressed position the operator then grasps the crank 68 with his right hand and rotates it in a clockwise direction as seen on Figure 1, which unwinds the cable portion 61 and winds the cable portion 60, drawing the truck 20 and of course the lower end of the downspout 18 with it. As soon as the truck has passed over the partition between bin inlets with which it was in engagement the operator may release the handle 71 to permit the frame of the truck 20 to rotate somewhat in a clockwise direction, it doing so by the effect of gravity on the truck. The lower front edges of the side walls of the truck body then drop down into the next succeeding bin inlet and as the operator continues to turn the crank 68 in a clockwise direction, winding up the cable portion 60 and unwinding the cable portion 61, the truck 20 will move forward until the lower leading portions of the side walls of the truck engage the next partition between adjacent bin inlets. This will positively stop the truck with the lower end of the downspout 18 in exact registry with that bin inlet and the operator will be apprised of this registry because he will no longer be able to move the truck forward by turning the crank 68. Before the truck can be adjusted forward to the next succeeding bin inlet it is necessary to again depress the handle 71 to free the truck for forward movement. Each time that the truck is brought into registry with one of the bin inlets one of the numbers on the indicator band 77 will be brought into registry with the opening 80 to indicate to the operator which bin inlet and subsequently into which bin grain is being delivered. The downspout 18 may be adjusted to the left by turning the crank 68 in a counter-clockwise direction.

From the foregoing it should be apparent to those skilled in the art that I have provided a novel and efficient manner of adjusting a downspout relatively so as to deliver grain into any one of a plurality of bins. The adjustments are made manually from a remote point and the nature of the structure is such as to positively assure the operator that the lower end of the downspout is in exact registry with a bin inlet and that it is in registry with the desired bin inlet as indicated to him by the indicator means. My improvements provide a simplified means of adjusting the downspout having the advantage that the use of unwieldy and cumbersome counter-weight arrangements and wells for the counter-weights is obviated. The construction of the downspout and its joints are of such a nature to permit the maximum in flexibility without destroying the dust tightness of the apparatus and without interposing an undue amount of obstruction to the passage of grain through the spout sections.

The curtain arrangement which I have provided contributes to the general utility and desirability of my arrangement in reducing the amount of dust and thereby contributing to the health of the operators and ease of maintenance and upkeep of equipment.

The form of my invention which I have disclosed is representative of a preferred manner of practicing it, and discloses it in sufficient detail so that those skilled in the art will be enabled to make, use and compound the same. It is to be understood that there are various departures from the structure as shown which may be made by those skilled in the art but which clearly fall

within the realm of my invention. It is to be understood, therefore, that I am to be limited only by the scope of the appended claims rather than by my disclosure.

I claim as my invention:

1. In apparatus of the character described, in combination, means forming a container for grain or the like located at a relatively high point, means comprising an adjustable downspout for conveying grain from said container to a lower level, means having a plurality of inlet openings adapted to communicate with grain bins, means for adjusting said spout means with respect to said openings and bringing it into registry therewith, said adjusting means comprising flexible cable means attached to said spout means, said cable means being so arranged that by exerting a pull on one portion thereof said spout means is moved in one direction and by exerting a pull on another portion said spout means is moved in a reverse direction, and means associated with said spout means constructed and arranged to stop its movement when it is in registry with an inlet opening, said last means being arranged to be made ineffective to stop movement of the downspout when a pull is exerted on the cable means tending to reverse the spout means.
2. In apparatus of the character described, in combination, means forming a container for grain or the like located at a relatively high point, means comprising an adjustable downspout for conveying grain from said container to a lower level, means having a plurality of inlet openings adapted to communicate with grain bins, means for adjusting said spout means with respect to said openings and bringing it into registry therewith, said adjusting means comprising flexible cable means attached to said spout means, said cable means being so arranged that by exerting a pull on one portion thereof said spout means is moved in one direction and by exerting a pull on another portion said spout means is moved in a reverse direction, means associated with said spout means constructed and arranged to stop its movement when it is in registry with an inlet opening, said last means being arranged to be made ineffective to stop movement of the downspout when a pull is exerted on the cable means tending to reverse the spout means, and means associated with said cable portions for simultaneously exerting a pull on one portion for freeing the downspout for movement and on the other portion for moving the downspout.
3. In apparatus of the character described, in combination, means forming a container for grain or the like located at a relatively high point, means comprising an adjustable downspout for conveying grain from said container to a lower level, means having a plurality of inlet openings adapted to communicate with grain bins, means for adjusting said spout means with respect to said openings and bringing it into registry therewith, said adjusting means comprising flexible cable means attached to said spout means, said cable means being so arranged that by exerting a pull on one portion thereof said spout means is moved in one direction and by exerting a pull on another portion said spout means is moved in a reverse direction, means associated with said spout means constructed and arranged to stop its movement when it is in registry with an inlet opening, said last means being arranged to be made ineffective to stop movement of the downspout when a pull is exerted on the cable means tending to reverse the spout means, and means

associated with said cable portions for simultaneously exerting a pull on one portion for freeing the downspout for movement and on the other portion for moving the downspout, said last means including a pulley over which said cable means are passed and means for rotating the pulley.

4. In apparatus of the character described, in combination, means forming a container for grain or the like located at a relatively high point, means comprising an adjustable downspout for conveying grain from said container to a lower level, means having a plurality of inlet openings adapted to communicate with grain bins, means for adjusting said spout means with respect to said openings and bringing it into registry therewith, said adjusting means comprising flexible cable means attached to said spout means, said cable means being so arranged that by exerting a pull on one portion thereof said spout means is moved in one direction and by exerting a pull on another portion said spout means is moved in a reverse direction, means associated with said spout means constructed and arranged to stop its movement when it is in registry with an inlet opening, said last means being arranged to be made ineffective to stop movement of the downspout when a pull is exerted on the cable means tending to reverse the spout means, and means associated with said cable portions for simultaneously exerting a pull on one portion for freeing the downspout for movement and on the other portion for moving the downspout, said last means comprising a drum around which said cable means are wound, said drum being rotatable and mounted so that it can be bodily moved in a direction to exert a pull on both said cable portions.

5. In apparatus of the character described, in combination, means forming a container for grain or the like located at a relatively high point, means comprising an adjustable downspout for conveying grain from said container to a lower level, means having a plurality of inlet openings adapted to communicate with grain bins, means for adjusting said spout means with respect to said openings and bringing it into registry therewith, said adjusting means comprising flexible cable means attached to said spout means, said cable means being so arranged that by exerting a pull on one portion thereof said spout means is moved in one direction and by exerting a pull on another portion said spout means is moved in a reverse direction, and means associated with said spout means constructed and arranged to stop its movement when it is in registry with an inlet opening, said last means being arranged to be made ineffective to stop movement of the downspout when a pull is simultaneously exerted on both portions of said cable means.

6. In apparatus of the character described, in combination, means forming a container for grain or the like located at a relatively high point, means comprising an adjustable downspout for conveying grain from said container to a lower level, means having a plurality of inlet openings adapted to communicate with grain bins, means for adjusting said spout means with respect to said openings and bringing it into registry therewith, said adjusting means comprising flexible cable means attached to said spout means, said cable means being so arranged that by exerting a pull on one portion thereof said spout means is moved in one direction and by exerting a pull on another portion said spout means is moved in a reverse direction, means associated with said

spout means constructed and arranged to stop its movement when it is in registry with an inlet opening, said last means being arranged to be made ineffective to stop movement of the downspout when a pull is simultaneously exerted on both portions of said cable means, and means comprising a drum having said cable means wound thereon, said drum being mounted to provide for bodily movement thereof in a direction to exert a pull on both said cable portions for freeing said spout means for movement, and means for rotating said drum in a manner to wind up one cable portion and unwind the other cable portion for moving the downspout.

7. In apparatus of the character described, in combination, means having a plurality of openings therein, means comprising a device movable with respect to said openings and adapted to be brought into registry therewith, control means associated with said device arranged to stop its motion whenever said device is substantially in registry with one of said openings, means comprising flexible cables attached to the front and rear of said device and cooperably associated with said control means, means for manipulating said cables from a remote point whereby by drawing one cable taut said control means frees said device for motion and by exerting a pull on the other cable said device is moved.

8. In apparatus of the character described, in combination, means having a plurality of openings therein, means comprising a device movable with respect to said openings and adapted to be brought into registry therewith, control means associated with said device arranged to stop its motion whenever said device is substantially in registry with one of said openings, means comprising flexible cables attached to the front and rear of said device and cooperably associated with said control means, means for manipulating said cables from a remote point whereby by drawing one cable taut said control means frees said device for motion and by exerting a pull on the other cable said device is moved, said manipulating means comprising a drum having portions of said cable means wound thereon, means for drawing one of said cables taut and means for simultaneously rotating said drum to exert a pull on the other cable.

9. In apparatus of the character described, in combination, means having a plurality of openings therein, means comprising a device movable with respect to said openings and adapted to be brought into registry therewith, control means associated with said device arranged to stop its motion whenever said device is substantially in registry with one of said openings, means comprising flexible cables attached to the front and rear of said device and cooperably associated with said control means, means for manipulating said cables from a remote point whereby by drawing one cable taut said control means frees said device for motion and by exerting a pull on the other cable said device is moved, said manipulating means comprising a drum having portions of said cable means wound thereon, means for moving said drum in a direction to draw both cables taut and means for rotating the drum.

10. In apparatus of the character described, in combination, means having a plurality of openings therein, means comprising a device movable with respect to said openings and adapted to be brought into registry therewith, control means associated with said device arranged to stop its motion whenever said device is substantially in

registry with one of said openings, means comprising flexible cables attached to the front and rear of said device and cooperably associated with said control means, means for manipulating said cables from a remote point whereby by drawing one cable taut said control means frees said device for motion and by exerting a pull on the

other cable said device is moved, said manipulating means comprising a drum having portions of said cable means wound thereon, said drum having a movable axle, lever means for bodily moving said axle and means for rotating the drum. 5

ADDINGTON W. GERBER.