Feb. 3, 1953 J. F. COMER 2,627,282

LEVER HOSE SAND VALVE

Filed May 1, 1950 2 SHEETS—SHEET 1

Fig. 1

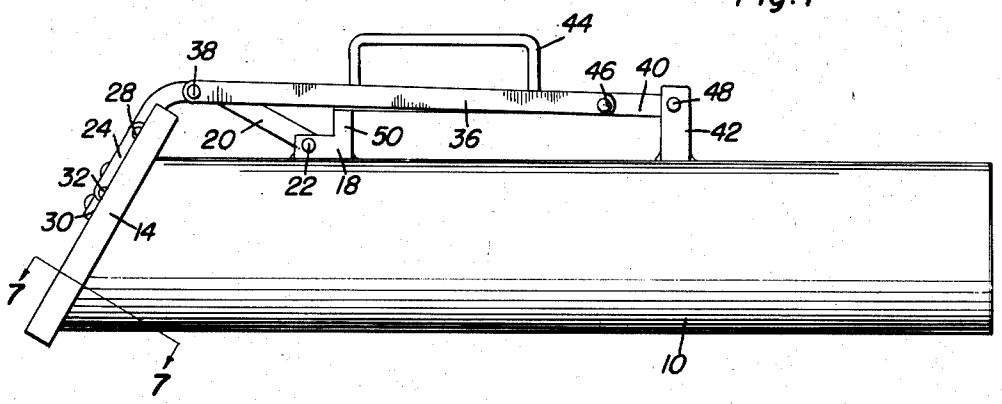


Fig. 2

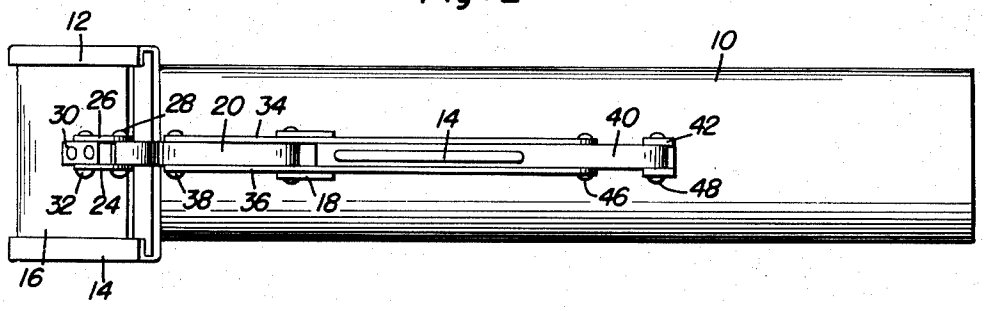
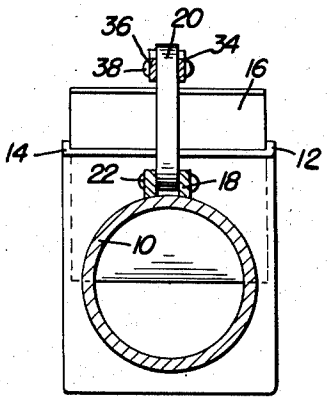


Fig. 6



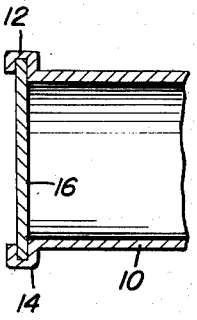


Fig. 7

John F. Comer

INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

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Fig. 3

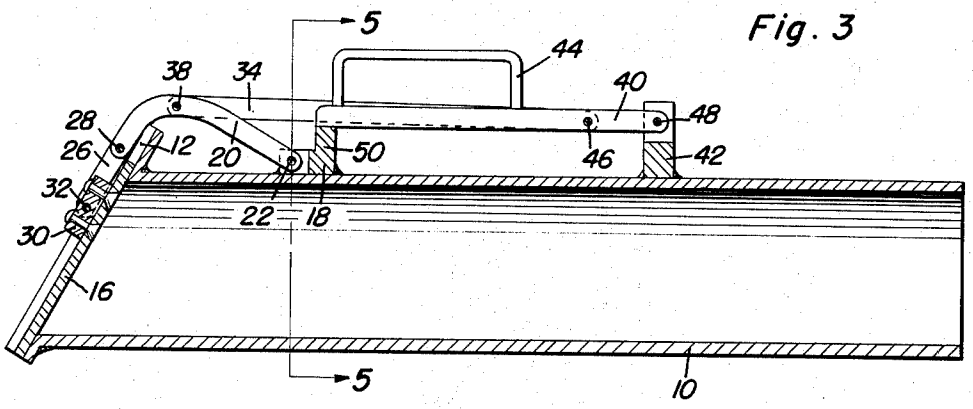


Fig. 4

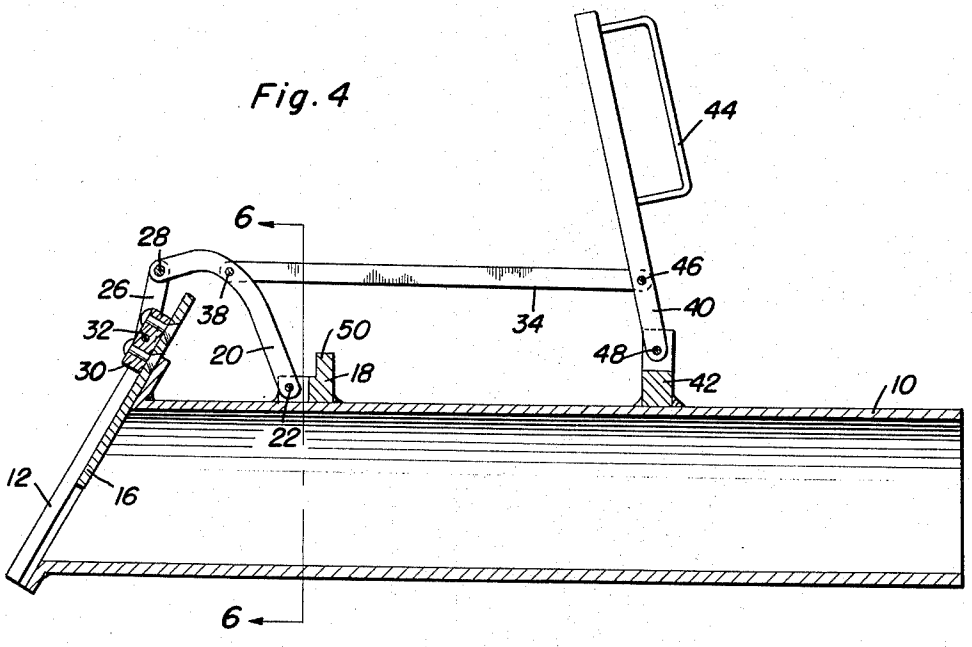
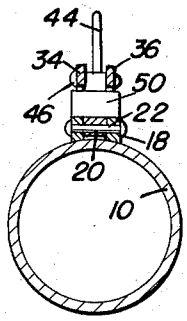


Fig. 5



John F. Comer

INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

Patented Feb. 3, 1953

2,627,282

UNITED STATES PATENT OFFICE

2,627,282

LEVER HOSE SAND VALVE

John F. Comer, Mechanicville, N. Y.

Application May 1, 1950, Serial No. 159,342

4 Claims. (Cl. 137—701)

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This invention relates to improvements in a valve assembly and an operator therefor and has particular utility in connection with devices for supplying sand to be received in the sand boxes of railway apparatus.

An object of this invention is to provide an improved means for operating a valve at the end of a tube, said tube being adapted for connection with the flexible hose extending from the hopper or other sand box type receptacle, said means having incorporated therewith the feature of an over-center locking arrangement whereby, when the valve member is in the closed condition, it cannot open until positively operated to the open condition.

Another object of this invention is to incorporate in the foregoing means a safety feature whereby the handle for operation of the valve member is disposed in nested relation between a pair of pitman rods so as to prevent inadvertent opening of the valve member. There is also provided a stop which limits the travel of the handle toward the tube at the time that the handle is depressed to such condition that the valve member is in the tube-closing position and the handle is in nested relation with the pitman rods.

Ancillary objects and features of importance will become apparent in following the description of the illustrated form of the invention.

In the drawings:

Figure 1 is an elevational side view of the device;

Figure 2 is a top view of the device of Figure 1;

Figure 3 is a longitudinal sectional view of the device in Figure 1;

Figure 4 is a sectional view of the structure, showing the valve operator in the position whereby the valve member is in the tube opening condition;

Figure 5 is a transverse sectional view taken on the line 5—5 of Figure 3 and in the direction of the arrows;

Figure 6 is a transverse sectional view taken substantially on the line 6—6 of Figure 4 and in the direction of the arrows; and

Figure 7 is a fragmentary sectional view taken substantially on the line 7—7 of Figure 1 and in the direction of the arrows.

The illustrated assembly is adapted to be used at the end of a hose which conducts sand to the sand boxes of railway equipment. It is important that no sand drip from the hose after the valve has been closed inasmuch as the blowers on certain types of railway equipment, as diesel engines, will draw the loose sand thereinto, causing injury to the machinery of the engines. It is also important that the valve assembly be capable of proper operation during all weather conditions, as when icing is prevalent. It is

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equally important that the valve assembly be satisfactorily operative insofar as safety is concerned whereby the user of the device will not injure his fingers.

The instant invention has been developed with a view to these and other features of practical importance. The tube 10 is of usual construction and has a beveled end opening for the discharge of sand therefrom, the tube being adapted to be connected to a conduit or hose extending from a sand box. A pair of guide rails 12 and 14, respectively, are fixed to the beveled end of the tube 10 which slidably mount the valve member 16, which is operable to open and close the discharge end of the tube.

A bracket 18 is welded or otherwise rigidly fixed to the exterior surface of the tube. This bracket has an opening therein and one end of the lever 20 is disposed in this opening. Said end of the lever is mounted for pivotal movement by means of the pivot pin 22 which passes through openings in the bracket 18 and through an opening in one end of the lever 20. The opposite end of the lever 20 is pivotally connected to the valve member 16 through the medium of the pair of links 24 and 26 which are pivoted by means of the pin 28 to the end of the lever 20 opposite the end which is pivoted to the bracket 18. A block 30 is welded or riveted or otherwise rigidly fixed to one surface of the valve member 16 and has the pivot pin 32 passed therethrough, this pivot pin also passing through the free ends of the links 24 and 26.

A pair of pitman rods 34 and 36 are pivoted by means of the pin 38 to the lever 20 intermediate its ends, said lever being curved (Figure 1) and the pin passes through the portion thereof which is most distant from the tube 10.

An arm 40 forming a handle is pivoted at one end to a support or bearing 42, said bearing 42 being fixed to the outside surface of the tube 10 and remote from the bracket 18. A hand receiving member 44 is fixed to one side of the handle 40 so that it may be easily reached and operated by a person.

The ends of the two pitman rods 34 and 36 which are opposite those pivoted to the lever 20 are pivoted by means of the pivot pin 46 to the handle 40 intermediate the ends of the handle and adjacent the pivot pin 48 which pivotally attaches the handle 40 to the bearing 42.

The handle 40 is of such width that it fits in nested relation with the two pitman rods 34 and 36 when it is in the "down" position, the "down" position corresponding to the valve member 16 closing condition for the tube 10. Inasmuch as the lever 20 is smoothly curved, as disclosed in Figure 1, and the bracket 18 and bearing 42 are of appreciable height, there is a clearance between the pitman rods 34 and 36 and the handle

40 with respect to the outer surface of the tube 10 whereby the user of the device may easily grasp the tube in order to move it from one place to another and whereby it will be impossible for the user of the device to injure his fingers by having the operator or operator elements press the fingers against the outer surface of the tube 10.

An upwardly extending projection forming a stop 50 is fixed integrally with the bracket 18 and may be considered as forming a part thereof. This stop is engaged by the handle 40 (see Figure 3) to provide a limit for the pivotal movement of the handle toward the tube 10. It will be noted that the lower edge of the handle is slightly below the lower edges of the pitman rods 34 and 36 when the valve member 16 is in the closed condition. A definite over-center condition is thus arrived at in connection with the pivotal points of the handle 40, the pitman rods 34 and 36, and lever 20. It is then, of course, impossible to open the valve member 16 by pushing or pulling or attempting to slide the valve member, it being necessary first to positively operate the handle 40. Once the handle 40 has been pulled, preferably by the handle grip member 44 a small amount, then it is possible to to complete the operation by pushing the valve member 16.

Having described the invention, what is claimed as new is:

1. A sand valve assembly comprising a tube having a valve member at one end and means secured to the tube supporting the valve member for guided movement, an operator for said valve member comprising a bracket secured to said tube, a lever pivoted at one end to said bracket, a link pivoted to the opposite end of said lever and pivotably connected to said valve member, a bearing secured to said tube remote from said bracket, a handle pivoted at one end to said bearing, a pair of pitman rods pivoted to said lever between its ends and to said handle intermediate its ends so that when said handle is pivotally actuated, the valve member is operated through the movement of said link, lever and pitman rods, said pitman rods being spaced apart to form a pocket accommodating said handle which is adapted to be nested therebetween when said pitman rods and said handle are substantially parallel, and a stop secured to said tube beneath said handle to limit pivotal movement of said handle toward the tube and thereby define the closed position of the valve.

2. A sand valve assembly comprising a tube having a valve member at one end and means secured to the tube supporting the valve member for guided movement, an operator for said valve member comprising a bracket secured to said tube, a lever pivoted at one end to said bracket, a link pivoted to the opposite end of said lever and pivotably connected to said valve member, a bearing secured to said tube remote from said bracket, a handle pivoted at one end to said bearing, a pair of pitman rods pivoted to said lever between its ends and to said handle intermediate its ends so that when said handle is pivotally actuated, the valve member is operated through the movement of said link, lever and pitman rods, said pitman rods being spaced apart to form a pocket accommodating said handle

which is adapted to be nested therebetween when said pitman rods and said handle are substantially parallel, said lever being curved, and said curved lever and said bearing spacing said pitman rods from the outer surface of the tube to provide sufficient finger clearance, and the stop secured to said tube beneath said handle to limit the pivotal movement of said handle toward the tube and thereby define the closed position of the valve.

3. A sand valve assembly comprising a tube having a valve member at one end and means secured to the tube supporting the valve member for guided movement, an operator for said valve member comprising a bracket secured to said tube, a lever pivoted at one end to said bracket, a link pivoted to the opposite end of said lever and pivotably connected to said valve member, a bearing secured to said tube remote from said bracket, a handle pivoted at one end to said bearing, a pair of pitman rods pivoted to said lever between its ends and to said handle intermediate its ends so that when said handle is pivotally actuated, the valve member is operated through the movement of said link, lever and pitman rods, said pitman rods being spaced apart to form a pocket accommodating said handle which is adapted to be nested therebetween when said pitman rods and said handle are substantially parallel, said lever being curved, said curved lever and said bearing spacing said pitman rods from the outer surface of said tube to provide sufficient finger clearance, a stop fixed to the tube beneath said handle and providing a limit for the pivotal movement of said handle, and said limit being the over-center position of the pivotal connection of the handle to the bearing with respect to the pivotal connection of said pitman rods to said handle to thereby lock the valve member in one position.

4. A sand valve assembly comprising a tube having a valve covering one end and means secured to the tube supporting the valve for guided movement, a valve operator comprising a lever pivotally carried at one end by said tube, a link pivotally connected to said valve and to the opposite end of said lever, a handle pivotally connected at one end to said tube, a pitman pivoted to said lever intermediate the ends of the lever and to said handle, the pivotal connections of said handle and of said pitman to said handle being in an over center position with respect to one another when the valve is in closed position to lock the valve in such position, and a stop secured to said tube beneath said handle to limit the pivotal movement of the handle toward the tube.

JOHN F. COMER.

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