Sept. 26, 1933. H. H. GILBERT 1,928,485

PNEUMATIC DUMP BUCKET

Filed Jan. 4, 1933 3 Sheets-Sheet 1

Fig. 1.

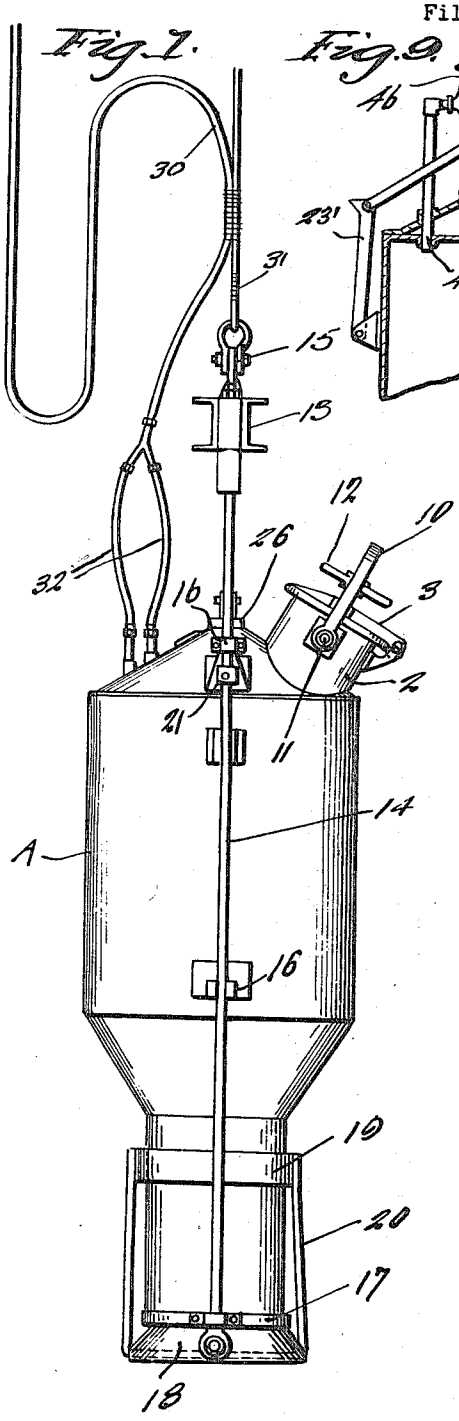


Fig. 9.

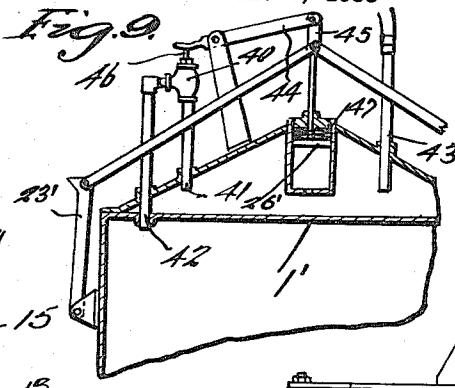
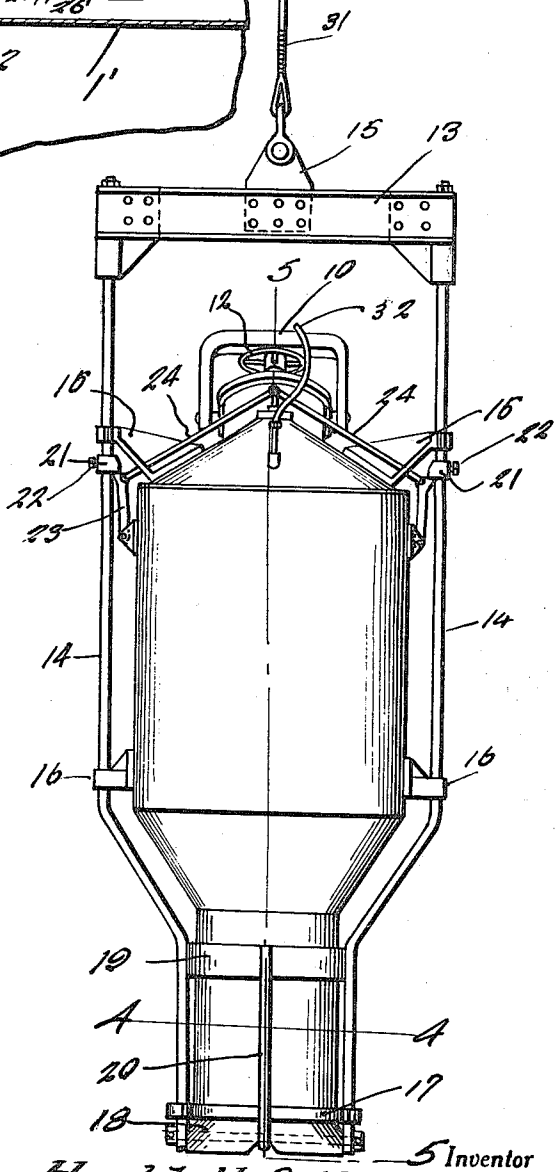


Fig. 2.



Inventor

Harold H. Gilbert

By Clarence A. O'Brien

Attorney

Sept. 26, 1933. H. H. GILBERT 1,928,485

PNEUMATIC DUMP BUCKET

Filed Jan. 4, 1933 3 Sheets-Sheet 2

Fig. 3.

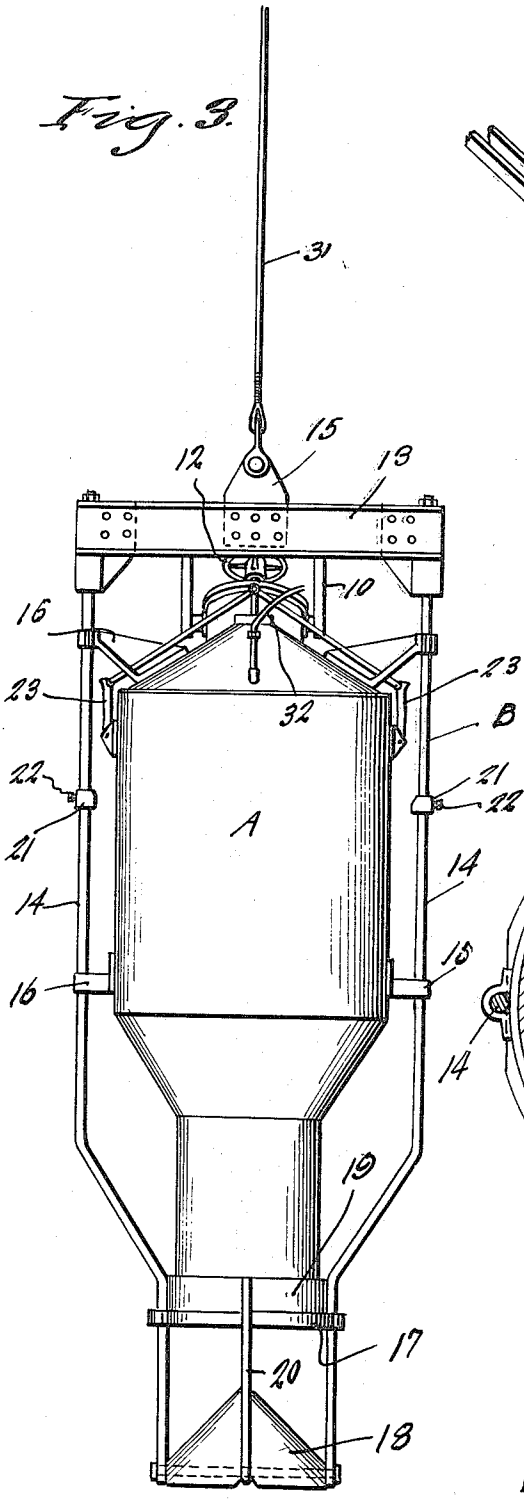


Fig. 7.

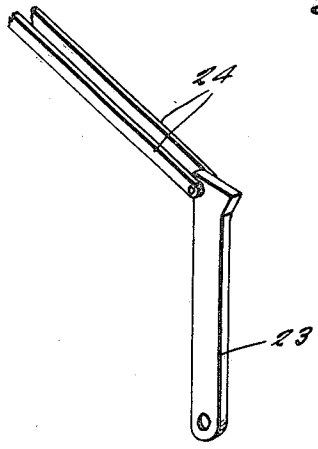
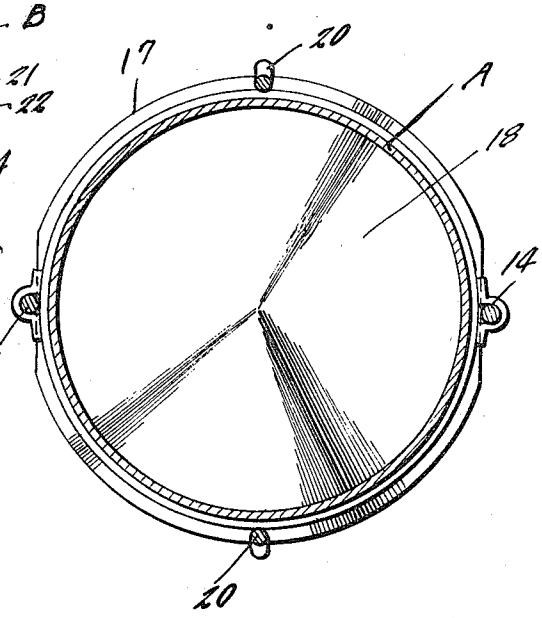


Fig. 4.



Inventor
Harold H. Gilbert

By Clarence A. O'Brien
Attorney

Sept. 26, 1933. H. H. GILBERT 1,928,485

PNEUMATIC DUMP BUCKET

Filed Jan. 4, 1933 3 Sheets-Sheet 3

Fig. 5.

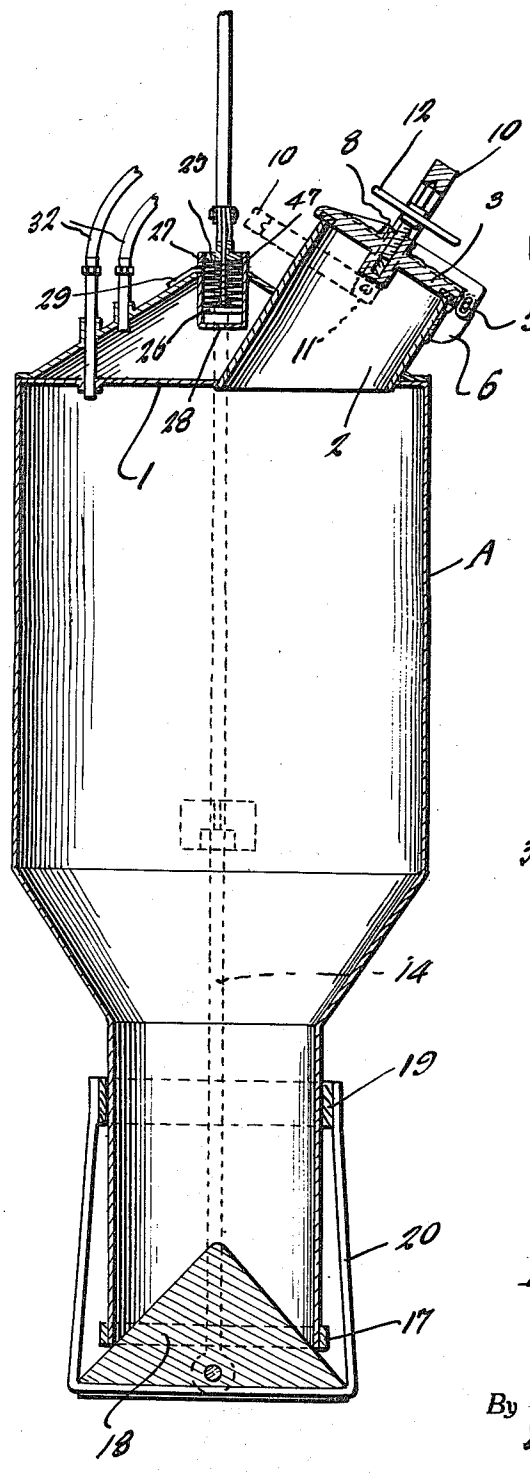


Fig. 6.

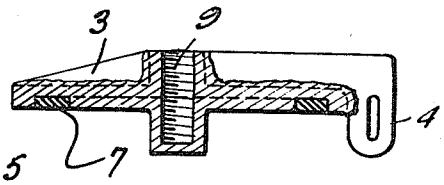
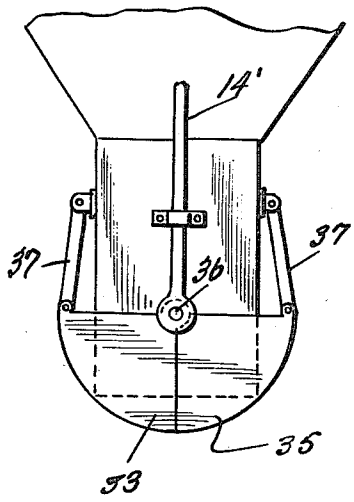


Fig. 8.



Inventor

Harold H. Gilbert

By Clarence A. O'Brien

Attorney

Patented Sept. 26, 1933 1,928,485

UNITED STATES PATENT OFFICE

1,928,485

PNEUMATIC DUMP BUCKET

Harold H. Gilbert, Alameda, Calif.

Application January 4, 1933. Serial No. 650,171

6 Claims. (Cl. 294—68)

This invention relates to a dump bucket mainly designed for depositing concrete on surfaces below water, the general object of the invention being to provide a frame, a bucket slidably arranged in the frame and having a closure member at its bottom supported by the frame, lock means for holding the bucket in lowered position in the frame, with its lower end closed by the closure member and pressure means for releasing the locking means and introducing pressure into the bucket above the concrete to cause the bucket to move upwardly in the frame which results in the moving of the open lower end of the bucket from the closure so that the concrete can pass from the bucket.

Antoher object of the invention is to provide means whereby the concrete can be placed in the bucket from the upper end thereof.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is an elevation of the invention.

Fig. 2 is a similar view but taken at right angles from Fig. 1.

Fig. 3 is a view similar to Fig. 2 but showing the bucket in raised position.

Fig. 4 is a secion on line 4—4 of Fig. 2.

Fig. 5 is a section on line 5—5 of Fig. 2.

Fig. 6 is a sectional view through the closure member for the inlet at the upper end of the bucket.

Fig. 7 is a view of one of the locking members and the link connected therewith.

Fig. 8 is a fragmentary view showing a modified form of bottom closing means.

Fig. 9 is a detail view showing a slight modification.

In these drawings, letter A indicates the bucket which is preferably formed with a conical upper end, a reduced lower end and an inwardly and downwardly intermediate part connecting the major portion of the bucket with said reduced lower part. A horizontal partition 1 separates the conical upper part of the bucket from the major portion thereof and a filling spout 2 passes at a slight angle through said conical part through the partition so that material can be introduced into the bucket through this spout.

A lid or cover 3 is provided for closing the upper end of the spout and this lid has a slotted edge part 4 through the slot of which a pin 5 passes into a stationary hinge part 6 on the spout. This hinged means permits the cover to be swung to open position or to be pressed tightly upon the upper end of the chute, a gasket 7 being placed in a groove in the lid and engages the upper end of the chute to insure an airtight joint. The shaft 8 extends into a threaded socket 9 formed in the lid and said shaft has its upper end pointed for engaging a recess in a yoke 10 which has its limbs pivoted to opposite sides of the chute as shown at 11. A hand wheel 12 is fastened to the shaft. Thus by raising the yoke and turning the shaft until the pointed upper end thereof engages the recess of the yoke, and then slightly turns the shaft a pressure will be produced on the lid 3, to press the gasket tightly against the upper end of the chute. When the shaft is turned in an opposite direction a certain amount, the yoke 10 can be swung to the dotted line position shown in Fig. 5 so the lid can be swung to open position to permit concrete to be placed in the bucket.

The bucket is slidably supported by a frame B which consists of a cross piece 13, a pair of rods 14 fastened at their upper ends to the ends of the cross piece, and the cable engaged member 15 attached to the central part of the cross piece. The bucket is provided with the guiding means 16 which slidingly engage the rods 14 and a ring or flange 17 is fastened to the lower end of the bucket and has guide holes therein through which the lower parts of the rods 14 pass.

As shown, these rods have their lower portions offset inwardly so as to conform to the shape of the lower part of the bucket. A conical closing member 18 is supported by the lower ends of the rods 14 and this member will close the open lower end of the bucket when the same is in lowered position. A ring 19 surrounds the lower reduced part of the bucket and the extremities of a U-shaped member 20 are con-

nected with this ring with the bight of the member extending through a notch in the lower face of the cone 18. This ring and the member acts as means for limiting the upward movement of the bucket, for when the flange 17 strikes the ring 19, further movement of the bucket is prevented. As will be seen the member 20 is arranged a quarter turn from the rods 14.

Adjustable stops in the form of collars, as shown at 21 are placed on the rods 14 and are held in adjusted position by the set screws 22. Latch members 23 are pivoted to the upper portions of the sides of the bucket and these members are adapted to engage the collars 21 to hold the bucket in lowered position in Fig. 2. A pair of links 24 is pivoted to each latch member 23 and the inner ends of these two sets of links are pivoted to the piston rod 25 of a piston 26 located in a small cylinder 27 carried by the tip of the conical top of the bucket.

This cylinder 27 has a port 28 in its bottom which places the cylinder in communication with the chamber formed by the conical top of the bucket and the partition 1, and a bent discharge pipe 29 is in communication with the upper end of the cylinder and extends downwardly a short distance along the outer face of the conical top, as shown more particularly in Fig. 5.

A hose 30 leading from a suitable source of compressed air is fastened to the cable 31 and has the branches 32 one of which is in communication with the chamber formed by the conical top and the partition 1 and the other branch leads into the upper part of the bucket as also shown in Fig. 5.

Thus it will be seen that the bucket is held in lowered position by the latch members 23 engaging the collars 21 and in this position the cone 18 closes the lower end of the bucket. After the material has been placed in the bucket through the chute 2 and the lid 3 is closed, the entire device is lowered into the water by means of the cable 31 and when the desired point has been reached for the discharge of the concrete, air is introduced into the hose 3 and some of this air will enter the port 28 in the bottom of the cylinder 27 and thus raise the piston 26 so that the piston rod will move the links and thus cause the links to move the lock means 23 into releasing position as shown in Fig. 3.

The rest of the air will enter the bucket above the concrete, and the resultant pressure will cause the bucket to rise or move upwardly on the rod 14, thus causing its lower end to leave the conical closing member 18 so that the concrete will discharge from the bucket.

Instead of providing the conical closing member for the lower end of the bucket, I may use the clam shell closing means shown in Fig. 8. Such means consists of the two sections 35 pivoted at their upper inner corners to the rods 14', as shown at 36 and having the links 37 connecting the outer upper corners with the reduced part of the bucket so that as the bucket moves upwardly the links 37 will swing the sections 35 outwardly on the pivot 36 and thus open the lower end of the bucket. As shown in Fig. 8 I prefer to make the sections 35 and the lower end of the bucket of rectangular shape.

Fig. 9 shows a slight modification in which a valve 40 is placed in a pipe 41 which connects the chamber above the partition 1' with a pipe 42 which leads into the top of the bucket below the partition. This figure also shows the pipe for introducing air into the apparatus at 43 and as seen in communication with the chamber. A lever 44 is pivotally supported from the top of the bucket but is connected with the top of the piston rod by a link 45 with the outer end of the lever engaging the stem 46 of the valve so that when the piston 26' is forced upwardly by the air entering the cylinder, the latch means 23' will be moved to releasing position and then the valve 44 opened so that some of the air in the chamber above the partition 1' will flow into the top of the bucket through the pipe 42 and thus exert pressure upon the contents of the bucket so as to raise the bucket and force the concrete or other material from the lower end of the bucket. The piston in both forms of the invention is normally held in lowered position by a spring 47.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

Having thus described my invention, what I claim as new is:—

1. A device of the class described comprising a vertically arranged portable frame, a closure member at the lower end of the frame, a bucket slidably supported by the frame and when in lowered position having its open lower end closed by the closure member, latch means for holding the bucket in lowered position, means for releasing the latch means, and means for raising the bucket to space its lower end from the closure means.

2. A device of the class described comprising a vertically arranged portable frame, a closure member at the lower end of the frame, a bucket slidably arranged in the frame and having its open lower end closed by the closure member when the bucket is in lowered position, latch means for holding the bucket in lowered position, air pressure means for releasing the latch means and for introducing compressed air into the upper part of the bucket to raise the same to space the lower end thereof above the closure means.

3. A device of the class described comprising a vertically arranged portable frame, a closure member at the lower end of the frame, a bucket slidably arranged in the frame and having its open lower end closed by the closure member when the bucket is in lowered position, latch means for holding the bucket in lowered position, air pressure means for releasing the latch means and for introducing compressed air into the upper part of the bucket to raise the same to space the lower end thereof above the closure means, inlet means for introducing material into the bucket from the upper end thereof, and closure means for said inlet means.

4. A device of the class described comprising a portable frame, a bucket carried by the frame and having its lower end open, a closure member for said open end, means for moving one part relative to the other to permit the contents to pass from the open end of the bucket and means for introducing compressed fluid into the upper end of the bucket to force the contents therefrom.

5. A device of the class described comprising a portable frame, a closure member at the lower end of the frame, a bucket slidably arranged in the frame and having its lower end open but

closed by said closure member when the bucket is in lowered position, latch means for holding the bucket in lowered position, and fluid pressure means for releasing the latch means and for creating a pressure in the upper part of the bucket to raise the same and to force the contents therefrom.

6. A device of the class described comprising a vertically arranged portable frame, a closure member at the lower end of the frame, a bucket slidably arranged in the frame and having its lower end open but closed by the closure member when the bucket is in lowered position, latch means for holding the bucket in lowered position in the frame, and air pressure means for first releasing the latch means and then introducing pressure into the top part of the bucket to raise the same and to force the contents from the open end thereof.

HAROLD H. GILBERT.