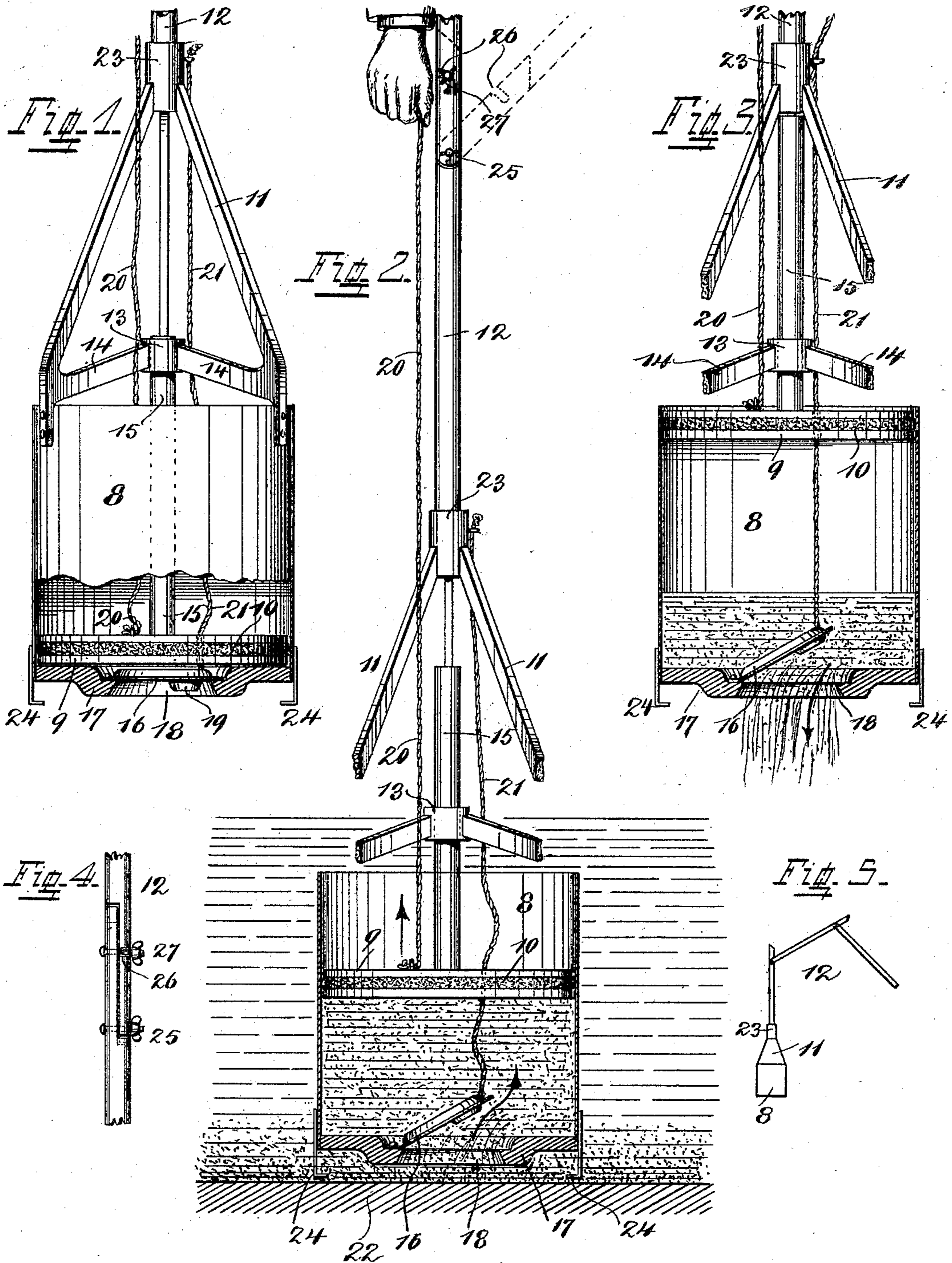


(No Model.) J. E. HARDER & J. H. FOX.
 DEVICE FOR REMOVING SEDIMENT FROM BOTTOMS OF LIQUID STORAGE
 VESSELS.

No. 500,742.

Patented July 4, 1893.



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UNITED STATES PATENT OFFICE.

JAMES E. HARDER, OF NILES, MICHIGAN, AND JOHN H. FOX, OF SPRINGFIELD, OHIO.

DEVICE FOR REMOVING SEDIMENT FROM THE BOTTOMS OF LIQUID-STORAGE VESSELS.

SPECIFICATION forming part of Letters Patent No. 500,742, dated July 4, 1893.

Application filed February 15, 1893. Serial No. 462,401. (No model.)

To all whom it may concern:

Be it known that we, JAMES E. HARDER, residing at Niles, in the county of Berrien and State of Michigan, and JOHN H. FOX, residing at Springfield, in the county of Clark and State of Ohio, citizens of the United States, have invented certain new and useful Improvements in Devices for Removing Sediment from the Bottoms of Liquid-Storage Receptacles; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to devices to be used for the purpose of removing and cleaning mud and sediment out of wells, cisterns, storage-tanks, reservoirs and similar receptacles used for the storage of liquids. It is particularly intended for receptacles of considerable depth, like cisterns or wells for instance, used for the storage of water, and of which the bottom cannot be conveniently reached, except by a descent into them, which is sought to be avoided.

The objects of our improvement on devices of this kind, are to permit their use, for the purpose designated, on receptacles wholly or partly filled, without removing their contents, and reducing whatever portion of the latter has to be unavoidably removed, to the possible lowest minimum, thereby not only preventing its waste, but also saving the time and labor which such unnecessary removal requires.

Other parts of our invention consist of the association with such a device, of a sectional handle which may be collapsed, to permit its manipulation inside of houses where ceilings are overhead, and of the general and specific features of the construction, all of which will appear more fully hereinafter.

In the following specification and particularly pointed out in the claims, is found a full description of our invention, its operation, parts, and construction, the latter being also illustrated in the accompanying drawings, in which—

Figures 1, 2 and 3, illustrate our invention

in vertical side elevations partly in section, showing position of its parts before, during and after use. Fig. 4, is a detailed view of one of the joints of the sectional handle, and Fig. 5, is a diagrammatic view of the whole device, illustrating particularly the manner in which the handle may be manipulated.

Referring to the drawings, 8 is a cylinder of convenient size into which is fitted a piston 9, provided with packing 10. 11 is a frame which connects this cylinder to the lower end of the handle 12.

13 is a central guide, supported by arms 14, running inwardly from the periphery of the upper edge of the cylinder, and which arms preferably form a part of frame 11.

15 is a piston-rod connected to piston 9, passing through guide 13, whereby said piston is caused to move evenly up and down.

16 is a foot-valve, hinged to the inside of head 17, and controlling passage through an opening 18, in said head. It is provided with a weight 19, to accelerate its closing.

Piston 9, and valve 16, are operated for their respective purposes by pliable connections or ropes 20 and 21, the latter passing through the piston, and through an opening therein, which snugly fits this rope.

Before use, the parts of the device are in a position, as shown in Fig. 1, in which condition it is precipitated into the receptacle to be cleaned. It is lowered until it reaches the bottom 22, of such receptacle, respectively the top of the strata of the sediment. Piston 9, is now pulled up by means of rope 20, whereupon valve 16 opens by reason of the suction caused by the movement of the piston, which suction also causes the cylinder to fill with the matter lying immediately near its opening 18. The upward movement of piston 9, is limited by the upper part of frame 11, where said frame forms the socket 23 for handle 12, which stops the further rise of the piston-guide rod, and prevents the piston from being completely pulled out of cylinder 8. At this point the implement is withdrawn, the now closing valve 16 confining the contents within the cylinder. The latter is emptied by opening valve 16, which is done by means of rope 21, after which the device is ready for re-insertion. As will be noticed, the lower part of this cylinder is capable of being

brought directly on top of the sediment or mud, whereby, when the operation of the device commences, such sediment is at once drawn in. This reduces very much the quantity of water drawn up with it, and the action of the device becomes at once effective in the desired manner, and no unnecessary labor has to be performed.

Another advantage of the device is that when put once in position, its further operation for the purpose of filling it, leaves it motionless, whereby all agitation of the sediment and mud is prevented. As the stratum of the latter grows gradually less, the device follows it with each successive insertion, until the bottom is reached. A complete contact with this latter is however for obvious reasons not desirable, wherefore legs 24, have been provided which keep the head of the cylinder sufficiently clear of the bottom to maintain access to opening 18.

To make the use of this device possible, within houses, as for instance in kitchens containing cisterns, the handle is composed of sections, hinged together by thumb-screws 25. That part of each of the adjoining sections which overlaps the other, is reduced to one-half of the thickness of the handle as shown in Fig. 4. One section is provided with a slot 26, which engages with a thumb-screw 27, on the other section, whereby, when said screws are tightened, after the handle has been straightened, the joints become rigid.

The operation of this part of the device is best understood from an observation of Fig. 5.

Having described our invention, we claim as new—

1. In a device of the kind and for the purposes described, the combination of a cylinder capable of being set with its head upon the sediment accumulating at the bottoms of liquid storage receptacles, an opening in this cylinder head, a weighted foot-valve controlling passage through its opening, a piston, means to actuate it from above, means to guide the piston evenly during its movements, means to hold the foot-valve open to permit the cylinder to discharge its contents, a frame 11 connecting to cylinder 8, and forming at its upper end the socket 23, a handle capable of connection to this socket, such handle consisting of sections hinged together by thumb-screws 25, one section at each joint provided with a slot 26, adapted to engage with a thumb-screw 27 on the other section, for the purpose of rendering the joint rigid.

2. In a device of the kind and for the purposes described, the combination of a cylinder capable of being set with its head upon

the sediment accumulating at the bottoms of liquid storage receptacles, an opening in this cylinder-head, a weighted foot-valve controlling passage through its opening, a piston, means to guide it evenly during its movements, a rope connected to it, and passing upwardly for the purpose of actuating the piston, another rope connected to the foot-valve and passing through the piston for the purpose of holding the foot-valve open, to permit the cylinder to discharge its contents, a frame 11, connecting to cylinder 8, and forming at its upper end the socket 23, and a handle capable of connection to this socket, such handle consisting of sections hinged together by thumb-screws 25, one section at each joint provided with a slot 26, adapted to engage with a thumb screw 27, on the other section, for the purpose of rendering the joint rigid.

3. In a device of the kind and for the purposes described, the combination of a cylinder capable of being set with its head upon the sediment accumulating at the bottoms of liquid storage receptacles, an opening in this cylinder-head, a weighted foot-valve controlling passage through its opening, a piston, means to actuate it from above, means to hold the foot-valve open to permit the cylinder to discharge its contents, a frame connecting to cylinder 8, consisting of parts 11, and 14, running up and inwardly and forming and supporting at their junction, the former a handle-socket 23, and the latter a guide 13, for the piston.

4. In a device of the kind and for the purposes described, the combination of a cylinder capable of being set with its head upon the sediment accumulating at the bottoms of liquid storage receptacles, an opening in this cylinder-head, a weighted foot-valve controlling passage through its opening, a piston, means to actuate it from above, a guide-rod connected to the piston, a guide 13, supported on frame 14, which receives this rod, means to hold the foot-valve open to permit the cylinder to discharge its contents, a frame 11, connecting to cylinder 8, forming and supporting at its upper end the socket 23, which latter is so located as to be in the path of the piston guide-rod, whereby said socket forms a stop to limit the upward movement of the piston.

In testimony whereof we affix our signatures in presence of two witnesses.

JAMES E. HARDER.
JOHN H. FOX.

Witnesses:

W. E. COLTON,
F. E. HUBBARD.