(No Model.)

# H. G. SMITH.

## WELL BAILER.

No. 492,117. Patented Feb. 21, 1893.

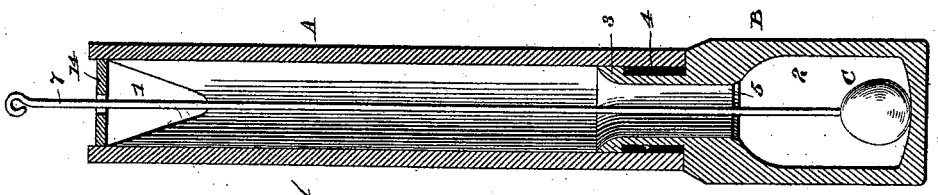

Fig. 4

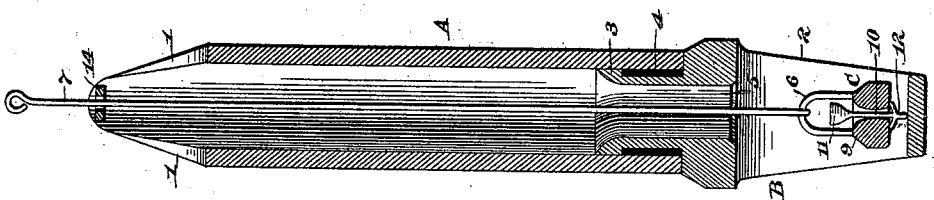

Fig. 3

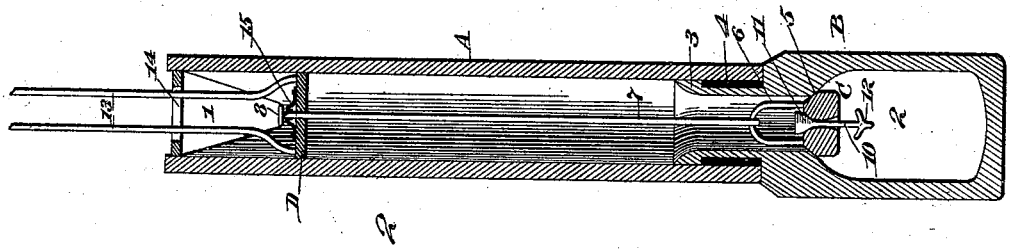

Fig. 2

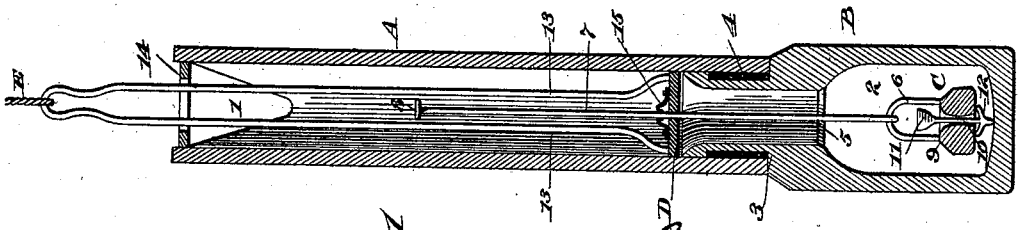

Fig. 1

Witnesses.
J. F. Coleman
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# UNITED STATES PATENT OFFICE.

HERBERT G. SMITH, OF CLAYSVILLE, PENNSYLVANIA.

## WELL-BAILER.

SPECIFICATION forming part of Letters Patent No. 492,117, dated February 21, 1893.

Application filed October 1, 1892. Serial No. 447,525. (No model.)

*To all whom it may concern:*

Be it known that I, HERBERT G. SMITH, a citizen of the United States, residing at Claysville, in the county of Washington and State of Pennsylvania, have invented a new and useful Improvement in Well-Bailers, of which the following is a specification.

My invention relates to an improvement in bailers for bored wells; and it has for its object the production of an apparatus that will be simple, easily operated, and readily repaired.

A further object of my invention is to provide a bailer with a removable foot-piece, which may be easily and quickly withdrawn from the tube when necessary, to clean the apparatus.

Another object of my invention is to produce a bailer that will have a large valve-opening in order that the sand and water may readily flow into the bailer.

The invention will first be described in connection with the accompanying drawings, and then pointed out in the claim.

In the drawings, Figure 1 is a central vertical sectional view of my improved bailer in its lowered position. Fig. 2 is a similar view showing the well-bailer as it appears when being hoisted to the surface. Fig. 3 is a similar view of one modification of my improved bailer, taken in a plane at right angles to Figs. 1 and 2. Fig. 4 is a view of another modification of my improved bailer, taken in a manner similar to Figs. 1 and 2.

Referring to Figs. 1 and 2, A is a tube, having its sides cut away near the top, as shown at 1. To the lower end of the tube is removably attached a foot-piece B, having a lateral opening 2, an extension 3, and a recess 4 filled with suitable packing, which serves to prevent leakage of tube A and also to frictionally hold the foot-piece in the tube.

5 is a valve-opening adapted to be closed by a main-valve C, which is attached to the bifurcated end 6 of a valve-rod 7, which passes through an opening in a piston D and is headed at 8. The valve C has a central auxiliary valve-opening through which passes a valve-stem 10, provided at its upper end with an auxiliary valve 11, adapted to close the central opening. The lower end of the auxiliary valve-stem projects below the main valve C and is provided with stops 12 to limit the upward movement of the auxiliary valve. The piston D is attached to a pair of piston-rods 13, which pass through a guide 14 at the upper end of the tube A, being united at the upper ends and attached to a hoisting rope E, as shown. The valve-rod 7 passes through the apex of a leather cone 15, secured at its circumference to the upper side of the piston D, whereby air is prevented from leaking into the lower part of the tube A when the piston is being raised.

The operation of this apparatus is as follows: The bailer is lowered into the well by means of the rope E, its weight sufficing to sink it beneath the water. When it has reached the bottom, the rope is still lowered to allow the piston to drop to the bottom of the tube, and at the same time to permit the main valve C to drop from its valve-seat. If, however, the main valve should stick, or if it should be held up to its seat by the pressure of the water outside the tube, the auxiliary valve will be forced open by the pressure outside, thereby permitting the water to flow in and force the main valve open. The hoisting rope is now drawn up, raising the piston and sucking the water and sand into the tube. As soon as the piston reaches the upper end of the valve-rod it engages the head on said rod and closes the valve. The continued hoisting of the rope pulls the whole apparatus to the surface, where it is readily emptied by slacking the hoisting rope to allow the main valve to drop.

The modifications shown in Figs. 3 and 4 are without pistons, the pressure of the water being relied upon to fill the tube with sand and water. Fig. 3 has the auxiliary valve, while Fig. 4 shows the bailer without an auxiliary valve. The construction and operation of these forms of bailers will be apparent from the foregoing description of Figs. 1 and 2.

As the valve of my improved bailer opens downward, and drops entirely clear of the valve-opening, a free passage is given for the sand and water to enter the tube. Furthermore, as the foot-piece is held in the bottom of the tube by friction, it is readily removed when necessary to clean the tube.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a bailer, a tube having side openings near its top, a guide secured to the tube near its upper end, a foot-piece having a valve-seat and an extension provided with a circumferential recess, packing adapted to fill the recess and frictionally hold the foot-piece in the lower end of the tube, a piston provided with a packed central opening, a pair of piston-rods passing through the guide and united at their upper ends, a downward-opening valve, and a valve-stem passing through the packed central opening in the piston and provided with a head at its upper end, substantially as described and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

HERBERT G. SMITH.

Witnesses:
JAMES A. WILEY,
J. F. MCFARLAND.