D. C. BRAWLEY.

BAILERS FOR OIL-WELLS.

No. 194,215. Patented Aug. 14, 1877.

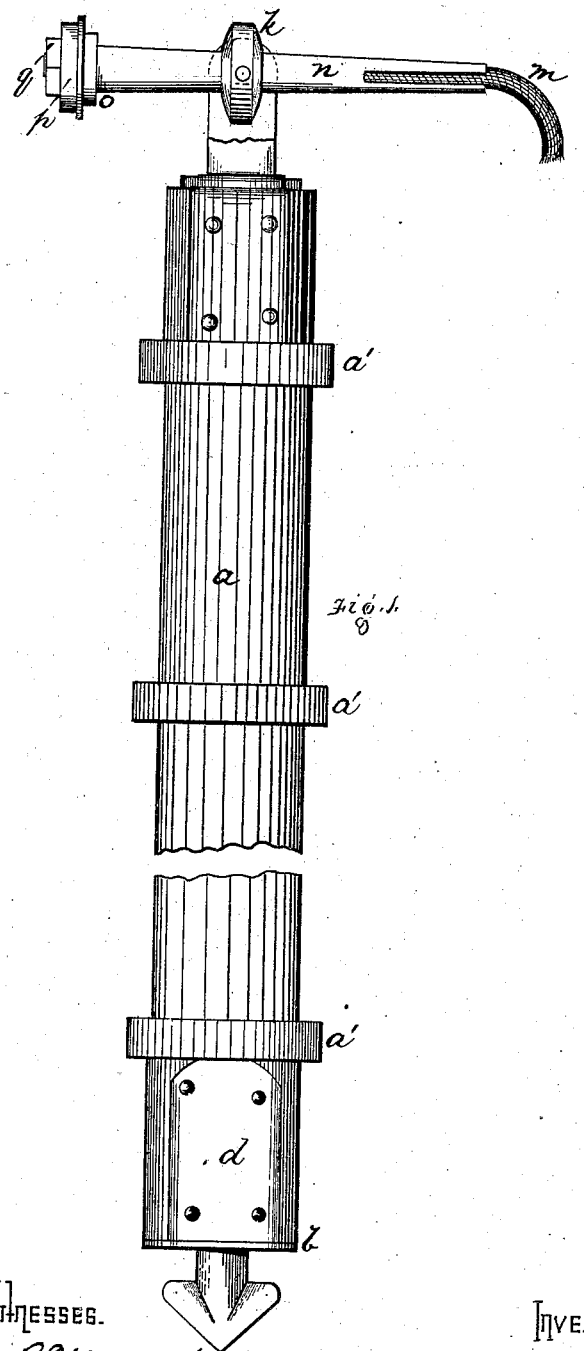

Fig. 1.

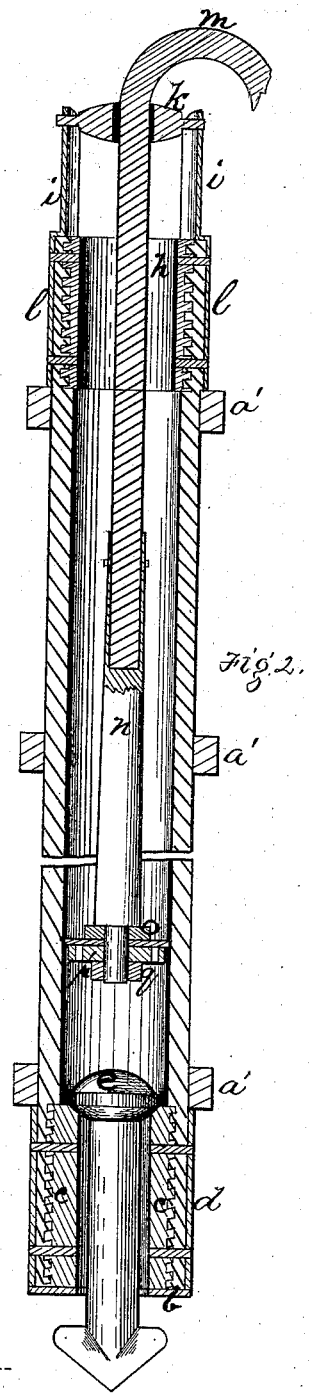

Fig. 2.

WITNESSES.

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UNITED STATES PATENT OFFICE.

DEWITT C. BRAWLEY, OF PETROLIA CITY, PENNSYLVANIA.

IMPROVEMENT IN BAILERS FOR OIL-WELLS.

Specification forming part of Letters Patent No. **194,215**, dated August 14, 1877; application filed July 19, 1877.

To all whom it may concern:

Be it known that I, DEWITT C. BRAWLEY, of Petrolia City, in the county of Butler and State of Pennsylvania, have invented a new and useful Improvement in Elastic Suction-Bailers for Artesian Wells; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is an elevation of a bailer embodying my invention, and Fig. 2 is a sectional view of the same.

Like letters refer to like parts wherever they occur.

My invention relates to the material employed for and the construction of what are termed bailers for removing the water, mud, and sediment from Artesian wells while drilling, and at other times; and consists, first, in forming the cylinder of flexible material, so that it can be transported readily and without injury, and can be introduced into and withdrawn from the well with facility; secondly, in combining with a bailer a piston, so as to convert the same into a suction-bailer which can be employed for the removal of sand as well as the usual slate-rock sediment and water; thirdly, in employing a short stem with the piston, whereby compactness is obtained, and a much longer bailer may be used and swung within the derrick; and, finally, in details of construction, hereinafter more specifically set forth.

In drilling Artesian wells water-veins are opened in the first few hundred feet, and as the drilling proceeds the accumulation of water and sediment in the well obstructs the operation of the tools, so that it becomes necessary, from time to time, to bail the well. For this purpose what is termed a "bailer" is employed, and has heretofore consisted of a tube or cylinder varying from fifteen to forty-five feet in length, about four inches in diameter, made from short sections of tinned sheet-iron, riveted together and soldered to form joints; was furnished at its top with a bail, and at the bottom with a valved opening. The cylinder is lowered into the well by means of a rope, and acts on the principle of a valved-bottom bucket.

Such a contrivance will weigh from one to three hundred pounds, and is objectionable in many respects: First, owing to its size, the material of and the manner in which it is made, it cannot be teamed across country or over rough roads without being injured, and oftentimes rendered unserviceable, and has, therefore, to be carried by hand from place to place; secondly, it is liable to be injured by blows while standing in the derrick; thirdly, if the well is irregular or bends somewhat, the bailer is liable to wedge while being lowered or raised therein, the joints to be thus separated, and the bailer caused to leak; fourthly, if the bailer is lowered into the well too rapidly it is liable, upon striking the bottom thereof, to break the bottom of the bailer, or cause the separation and loss of the valve; fifthly, as the bailer acts on the bucket principle, it becomes necessary to lower it several times to catch the sediment, which is only raised a little at a time thereby, and it is utterly useless while drilling through sand-rock, because it is necessary to make suction within the cylinder to raise or lift the sand; finally, it costs from one dollar and a quarter to one dollar and a half per foot, and, even if very carefully used, will last only while drilling a single well, or about one thousand feet.

To object of the present invention is to construct a bailer which will avoid the objections specified, and have greater durability and utility than any bailer at present in use or known to me.

I will now proceed to describe my invention, so that others skilled in the art to which it appertains may apply the same.

In the drawing, *a* indicates the tube or cylinder forming the bailer. This cylinder I form of some suitable flexible material—as, for instance, rubber, leather, heavy canvas properly waterproofed and otherwise prepared, and other materials well known, and which will readily suggest themselves as applicable for the purpose.

Surrounding the cylinder, and at proper distances apart, say from four to six feet, I secure rings or buffers a', to protect the tube from wear or abrasion in its passage up and down in the well. Said buffer-rings are preferably rounded, as shown, and, where the ma-

terial composing the tube will admit thereof, may be formed with the body *a*.

On one end of cylinder or tube *a* is an annular cap, *b*, with valve-opening, and having a threaded flange or ferrule, *c*, which screws within the bore of the tube, the whole being fastened by rivets, which pass through the ferrule, the tube, and through exterior plates *d*, which latter may be soldered or fastened to cap *b*, if desired.

Properly secured within this end of cylinder *a* is a valve, *e*, for controlling the valve-opening of the annular plate *b*.

The opposite end of the cylinder or the "head" is furnished with a short metallic tube, *h*, threaded upon its exterior, which is screwed within the flexible cylinder *a*. Upon the exterior of *a* are plates *l*, terminating in ears *i*, in which is pivoted a guide-ring or tumbler-head, *k*, for the passage of the rope *m*. The threaded tube *h* and plates *l* are secured to each other and to the tube *a* by rivets, or in other suitable manner, and constitute the bail or head by which the bailer is swung.

n represents a short piston-stem, formed hollow, or split at its upper end to receive the end of rope *m*. It is provided, near its lower end, with a shoulder or collar, *o*, between which and a perforated detachable disk, *p*, is secured a leather or other suitable flexible washer or disk, the whole tightened by a nut, *q*, to form the piston. The essential feature of the short stem *n* is, that it shall be sufficiently heavy to sink within the cylinder *a* by its own weight. The advantage thereof is, that the size of the stem renders it easy of transportation, permits a much longer bailer to be used without increasing the height of the derrick, and utilizes a portion of the rope in place of the long stem heretofore deemed necessary.

The operation of my device is as follows: The drilling-tools having been removed from the well, the bailer is lowered by the rope *m*, in the usual manner, until it strikes the bottom of the well. The valve *e*, rising, permits the bailer to fill, when, if the cylinder is not full, or sediment, sand, &c., has not entered, the rope *m* is slackened to allow the descent of the piston, after which tension is put on the rope, so as to operate the piston, and suck up into the cylinder any mud, sand, or sediment remaining in the bottom of the well.

In transporting my bailer, or when not in use, it can be coiled up like ordinary rope or hose, and will occupy comparatively little space.

The advantages of my invention are, that it is durable, not liable to be injured in transportation or in the well, cannot be wedged or obstructed in the well by falling rock or irregularities of the bore, can be made or any desired length without being unmanageable, can be used when drilling through sand-rock, and, owing to the swivel-connection of the piston and bailer, there is no strain either on the bail, the piston-head, or on the rope-socket during the removal of the pump from the derrick.

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

1. A bailer for Artesian wells, consisting of the flexible cylinder or body, substantially as and for the purpose specified.

2. In combination with the flexible cylinder of a bailer, the buffer-rings, substantially as and for the purpose specified.

3. The combination, in a bailer, of the flexible cylinder and threaded tube, and riveted plates forming the head or bail thereof, substantially as specified.

4. The combination, with a bailer, of a short-stemmed piston and rope, for operating the piston within the bailer, substantially as and for the purpose specified.

5. The combination, in a bailer, of the ears and pivoted guide-ring or tumbler-head with the piston or rope, substantially as and for the purpose specified.

6. The combination, with a flexible bailer, of the screw-socket bottom or valve-plate, substantially as and for the purpose specified.

In testimony whereof I, the said DEWITT C. BRAWLEY, of the city of Petrolia, county of Butler, and State of Pennsylvania, have hereunto set my hand.

DEWITT C. BRAWLEY.

Witnesses:
J. K. SMITH,
F. W. RITTER, Jr.