

(No Model.)

T. M. BEER.

FORCE PUMP.

No. 395,205.

Patented Dec. 25, 1888.

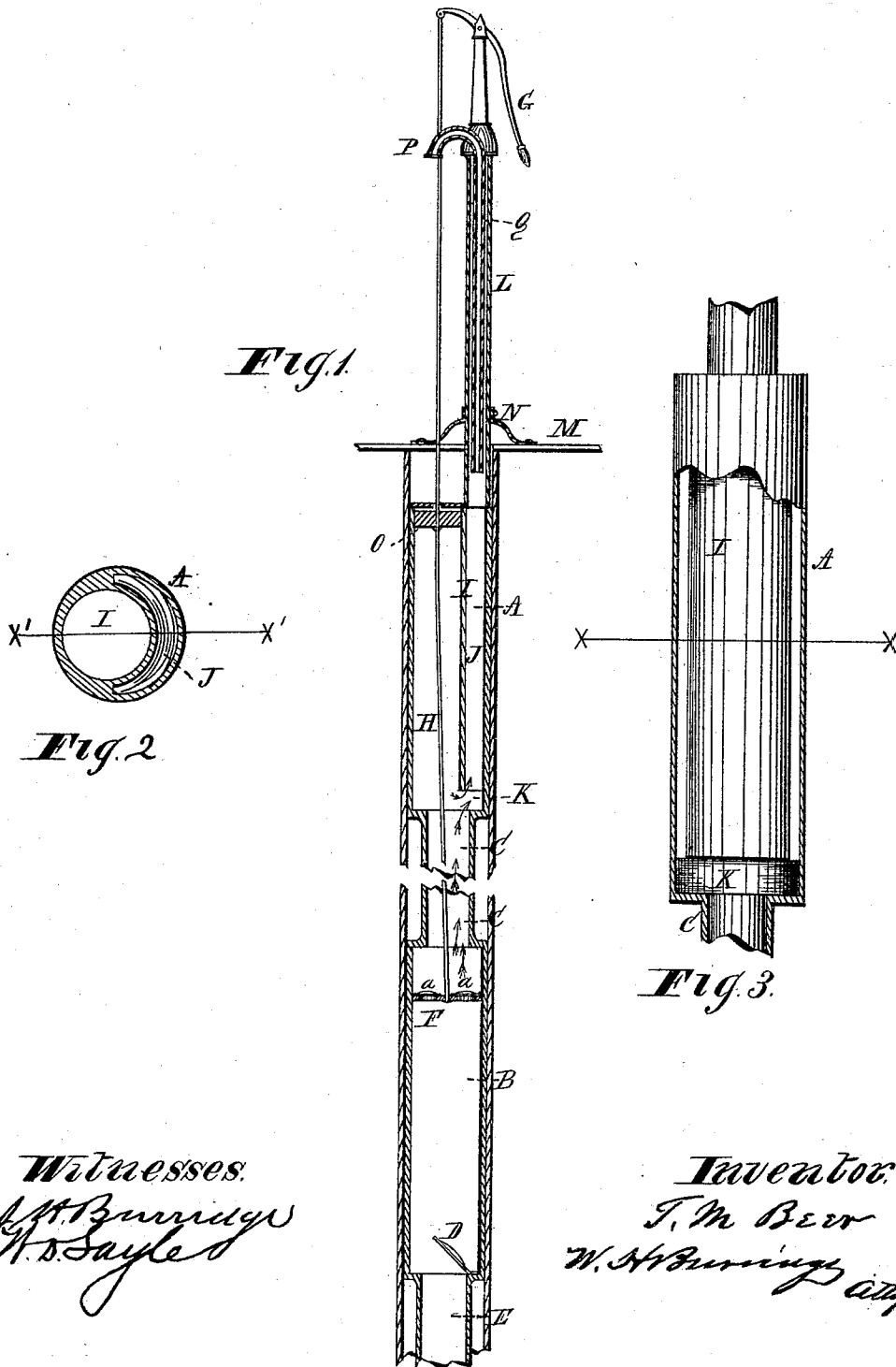


Fig. 1

Fig. 2

Fig. 3

Witnesses:

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UNITED STATES PATENT OFFICE.

THOMAS M. BEER, OF ASHLAND, OHIO, ASSIGNOR TO F. E. MYERS AND P. A. MYERS, BOTH OF SAME PLACE.

FORCE-PUMP.

SPECIFICATION forming part of Letters Patent No. 395,205, dated December 25, 1888.

Application filed May 27, 1884. Serial No. 132,960. (No model.)

To all whom it may concern:

Be it known that I, THOMAS M. BEER, of Ashland, in the county of Ashland and State of Ohio, have invented new and useful Improvements in Force-Pumps, of which the following is a description.

The abovesaid improvement relates to that class of pumps used in drill or drive wells, and which is fully described in the following specification, and shown in the accompanying drawings, making a part of the same, in which—

Figure 1 represents a transverse vertical section of the improved pump. Fig. 2 is an enlarged horizontal section through the line *ax*. Fig. 3 is an enlarged detached section, a portion of which is shown as broken away.

Like letters of reference refer to like parts in the several views.

The pump shown in the drawings is provided with two cylinders, A and B, connected to each other by a pipe, C, of any desirable length. In the lower end of the cylinder B is a valve, D, for opening and closing the induction-pipe E. In said cylinder B is a piston, F, provided with valves *aa*, and which is operated by the handle G, to which it is connected by the valve-rod H, passing upward through the cylinder A to the handle, as shown in the drawings.

The cylinder A alluded to consists of a shell having an interior pipe, I, forming an integral part thereof—that is to say, the cylinder and the pipe I are cast in one piece—but which, however, may consist of two separate parts and united to each other in any appropriate manner. It is preferred to have the cylinder and pipe in one piece. It will be observed in the drawings that the pipe I has an eccentric relation to the cylinder, thereby forming a crescent-shape passage, J, Fig. 2, between the interior side of the cylinder and the pipe. An open communication exists between the passage J and the pipe, as seen at K in Figs. 1 and 3, formed by making the pipe I shorter than the cylinder, so that a direct open relation exists between the lower cylinder, B, and the upper one and with the passage J, as indicated by the arrows. Said passage J extends to the discharging-pipe L,

and is connected thereto in any suitable way.

In this class of pumps as ordinarily constructed the cylinder A and the discharging-pipe corresponding to the passage J, above described, are two separate and distinct parts. The discharging-pipe is on the outside of the cylinder and connected thereto by an elbow and coupling. The addition of this pipe to the side of the cylinder prevents the said cylinder from following the lower one, B, into the bore of the well. Hence an enlargement of the bore at the surface of the ground must be made to receive the cylinder and the side pipe attached thereto. This enlarging of the bore or well for the purpose specified is attended often with much trouble and no little expense, as the enlargement requires curbing and a platform laid over it for protection. Furthermore, making the cylinder and the discharging-pipe in two separate parts adds to the expense of the pump in the manufacture thereof.

The objections above mentioned are avoided in making the cylinder and the discharging-passage J as herein shown and described, the two being of no larger diameter through the line *ax'* than the lower cylinder, B; hence the upper cylinder will follow the lower one into the bore of the well, thereby avoiding any enlargement of the bore for its admission therein, and for the reason that the cylinder and the pipe I, forming the passage J, are of one piece the pump is more simple in structure and more readily and easily placed in position for practical use.

The operation of the improved pump is substantially the same as those having the cylinder and the discharging-pipe in separate parts, and which is briefly thus: The two cylinders A and B are inserted in the bore of the well. The passage J, as aforesaid, is connected to the discharging-pipe L, projecting above the ground M, and is held in position by the brace N. On lifting the piston F to the position shown in the drawings the valve D opens and the water flows from the well into the cylinder B. A downward stroke of the piston closes the valve D and forces the water through the valves *aa* into the pipe C, thence into the pipe I, and a portion of which

is forced up the passage J by the piston O in the pipe I of the cylinder, as the said piston descends conjointly with the piston F. The water forced up the passage J fills also
 5 the discharging-pipe L and flows therefrom through the nozzle P. A now upward stroke of the piston opens the valve D and closes the valves *a a*. This upward action of the piston F continues the flow of water up the
 10 passage J, the water being forced from the pipe I and the pipe C, which have a much larger holding capacity than the passage J and the discharging-pipe, so that the excess of water in the pipe I is forced up the passage
 15 J and pipe L by the upward action of the piston F, thereby causing a continuous flow of water from the nozzle P while working the pump.

In the ordinary pump for drive-wells there
 20 is an air-chamber at the upper end of the side pipe, a continuation of which extends down around the discharging-pipe to facilitate the upward flow of water.

In this improved pump the air-chamber is
 25 dispensed with, but an air-space is retained

around the discharging-pipe, as shown at Q in Fig. 1, which produces the same result.

What I claim as my invention, and desire to secure by Letters Patent, is—

In a pump, a lower cylinder having a piston-chamber and piston therein, an upper cylinder of even exterior diameter with the lower cylinder and located above the same, a connecting-pipe between the two, a piston-chamber within the upper cylinder of smaller diameter than the lower chamber and arranged
 35 in an eccentric position therein, thus leaving one of the walls of the cylinder thicker than the other, and a discharge-passage formed in the thicker wall extending parallel to the piston-chamber and connected to the said chamber at its lower end and to the discharge-pipe at its upper end, substantially as described.
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In testimony whereof I affix my signature in presence of two witnesses.

THOMAS M. BEER.

Witnesses:

S. W. BEER,

J. H. BURRIDGE.