(No Model.) 2 Sheets—Sheet 1.

# H. C. STOUFFER.

## DOUBLE ACTING PUMP.

No. 306,036. Patented Sept. 30, 1884.

Fig. 1.

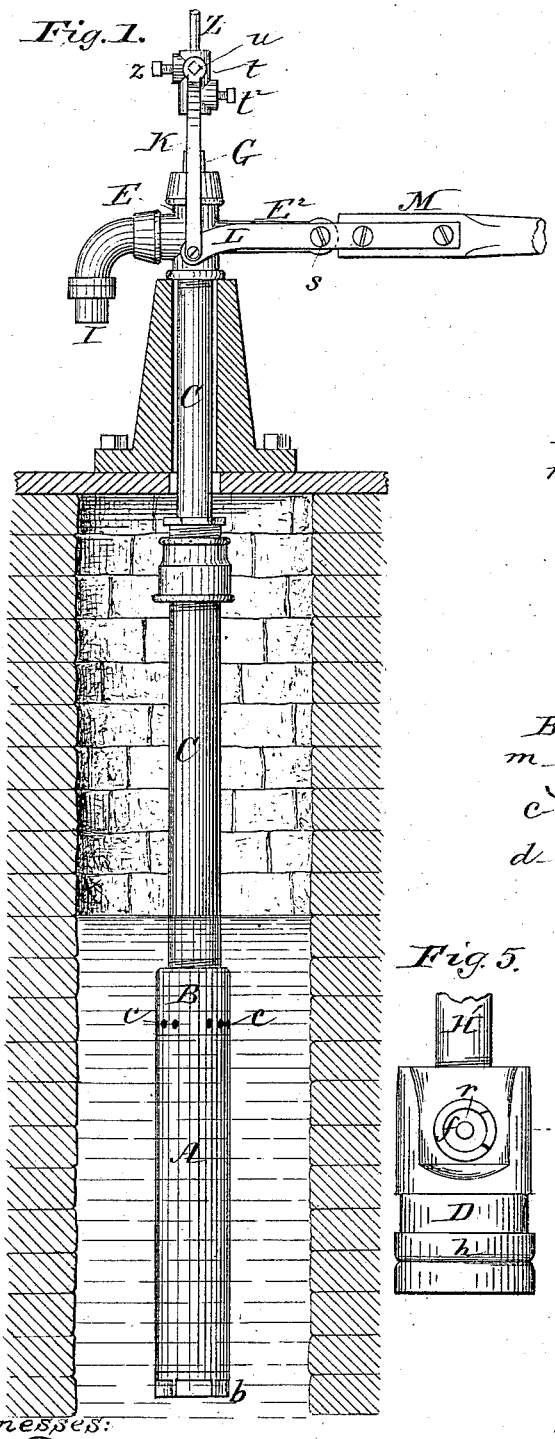



Fig. 2.

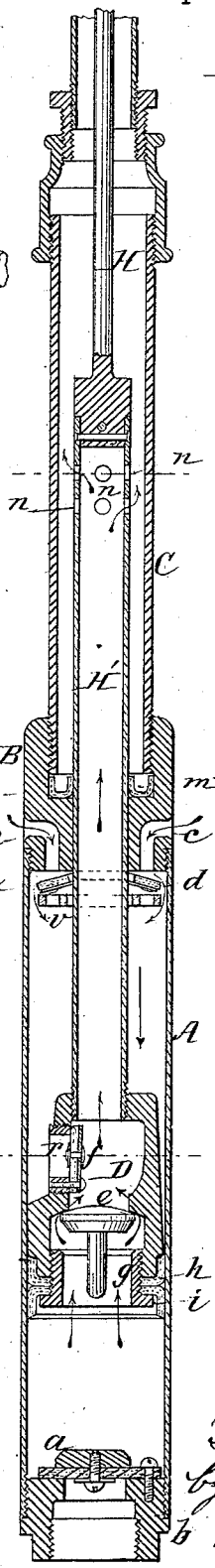



Fig. 7.

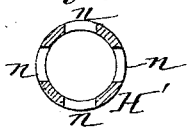



Fig. 6.

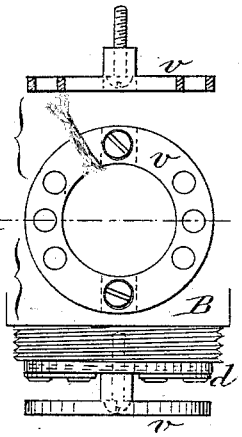
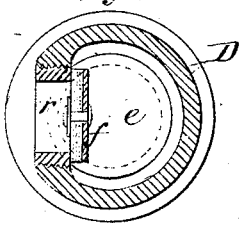



Fig. 5.




Fig. 4.




Witnesses:
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Lytle Morris.

Inventor:
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Att'ys.

(No Model.) 2 Sheets—Sheet 2.

# H. C. STOUFFER.

## DOUBLE ACTING PUMP.

No. 306,036. Patented Sept. 30, 1884.

Fig. 3.

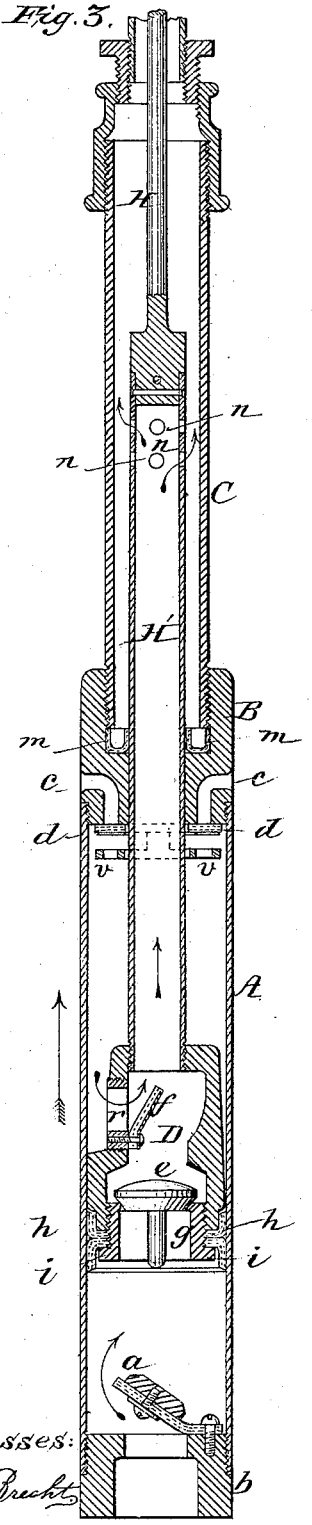



Fig. 11.

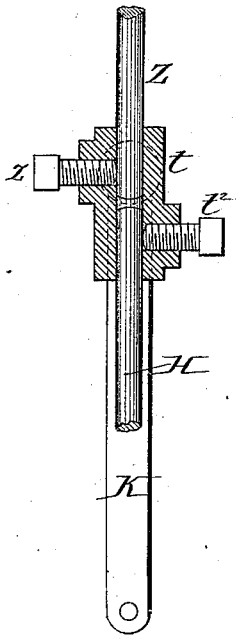



Fig. 10.

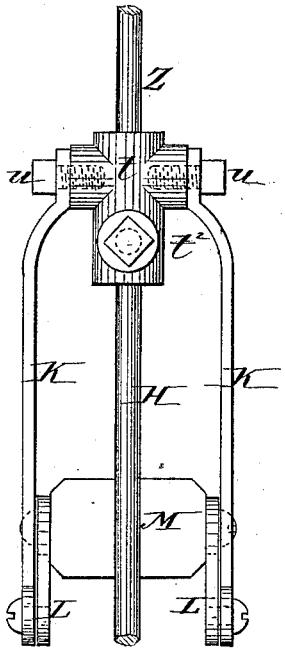



Fig. 9.

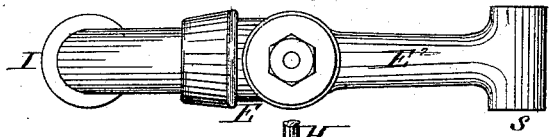
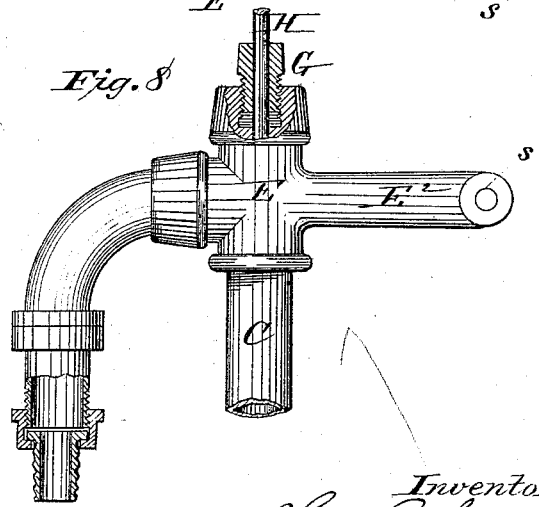



Fig. 8.




Witnesses:
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Lottie Morris.

Inventor:
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Attorneys.

# UNITED STATES PATENT OFFICE.

HIRAM C. STOUFFER, OF CORTLAND, OHIO.

## DOUBLE-ACTING PUMP.

SPECIFICATION forming part of Letters Patent No. 306,036, dated September 30, 1884.

Application filed February 26, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, HIRAM C. STOUFFER, a citizen of the United States, residing at Cortland, in the county of Trumbull and State of Ohio, have invented new and useful Improvements in Double-Acting Pumps, of which the following is a specification.

I have improved the double-acting submerged force-pump in which a valved plunger operates to raise and discharge water through a hollow plunger-rod on both the up and down strokes of the plunger in a single pump-barrel, and the objects of my improvements are to provide a continuous inflow and discharge of water from a single pump-barrel by a construction having special regard to effectiveness, access for cleaning and repairs, and for easy working.

The improvement I have made in this construction of this kind of pump will be specifically pointed out in the claims.

Referring to the accompanying drawings, Figure 1 represents in elevation my improved pump suspended in a well; Fig. 2, a vertical section of the pump, the double-valved plunger being shown on its downstroke; Fig. 3, a similar section, the valved plunger being shown on its upstroke; Fig. 4, a horizontal section through the side valve of the plunger. Fig. 5 shows a side view of the same; Fig. 6, details of the valved plug; Fig. 7, a horizontal section of the hollow plunger-rod, taken through its top ports. Fig. 8 shows in side view the T-union of the discharge-pipe, and Fig. 9 a top view of the same. Fig. 10 shows the plunger-operating device, and Fig. 11 a section of the same.

The pump-barrel A has a foot-valve, *a*, opening inward, and preferably secured by a screw-plug, *b*, as shown. Its upper end is closed by a screw-plug, B, in which are formed the top inlet-ports, *c*, of the barrel, which open into the well at the side of said plug, and are provided with valves *d*, adapted to open within the barrel. The discharge-pipe C screws into the upper end of this valved plug B, and serves as the means for suspending the barrel in a submerged position in the well, which may be either driven, bored, or otherwise formed. The plunger D is hollow, and has two valves, *e f*, the lower valve, *e*, being adapted to open upward, and is carried by an open screw-plug, *g*, having a bottom ring, shoulder, or collar, *i*, between which and the lower end of the plunger is clamped a double leather packing, *h*. This construction places the packing at the lower end of the plunger, and gives the advantage of securing it by the same screw-plug which forms a seat for the valve *e*, and affords facility for quickly and easily removing the packing when required. The valve *f* is arranged at one of the vertical sides of the plunger, which is made flat for that purpose, and opens inward above the valve *e*, and the plunger is carried by a hollow plunger-rod, H′, through which the discharge from both valves is effected from the barrel above and below the plunger into the discharge-pipe C. This pipe is screwed into the upper end of the valved plug B upon a packing, *m*, which packs the hollow plunger-rod which passes centrally through said plug and terminates in the discharge-pipe C above the pump-barrel, and communicates with said discharge-pipe by the ports *n*, which form the only communication of the discharge-pipe with the pump-barrel. Above the ports *n* the hollow plunger-rod H′ terminates in a solid section, H, which passes up through the discharge-pipe and through a stuffing-box, G, at the top of a T-union, E, and is connected above the latter to a cross-head, *t*, by a binding-screw, $t^2$, as in Fig. 11, or by any suitable means. The cross-head *t* is mounted by trunnions or pivots *u* upon the upper ends of two arms, K K, which stand on each side of the T-union, and are pivoted at their lower ends to the ends of the forks or arms L of the handle M, the arms of which are pivoted at *s* to an extension, $E^2$, of the T-union, which projects from the latter between the arms L. This construction places the handle-pivot *s* on the side of the T-union opposite to the discharge-spout I, which gives the advantage of raising the plunger by depressing the handle, and thus lessen the labor in pumping. The flattening of the plunger D on one side gives free access to its side valved opening, *r*, from the barrel-chamber above the plunger. The valve *d* is preferably a leather ring secured to the plug B by a ring-guard, *v*, which serves to keep the valve in proper position to be closed. The plunger is down in the normal condition of the pump, and the barrel above the plunger fills with water through

the ports *e*, and upon raising the plunger, the valves *e d* being closed, the water is forced into the plunger through its side valve, *f*, and up the hollow plunger-rod, through the ports *e* into the discharge-pipe, the water meanwhile filling the barrel below the plunger. The descent of the plunger opens the valves *e d* and closes the side valve, *f*, and forces the water up through the hollow plunger-rod and into the discharge-pipe. Meanwhile the water enters the barrel through the ports *e*.

Provision is made for operating the pump by a windmill by connecting the pitman-rod Z of the latter with the cross-head *t*, by means of a binding-screw, *z*, as shown in Fig. 11, the said pitman-rod being clamped in a socket in line with the rod H.

The pump can be used for driven, bored, and oil wells.

I claim—

1. The combination of the barrel A and the top plug, B, having an interior screw, an interior-formed seat for the packing *m*, ports *c*, opening at the side, and the valve *d* with the discharge-pipe, a valved plunger, and a hollow plunger-rod, all constructed as shown and described.

2. The plunger D, having the bottom screw-collared plug, *i g*, the packing *h*, the bottom valve, *e*, and a flat vertical side having the valved port *r f*, combined with the pump-barrel A, a valved plug at the top thereof, a hollow plunger-rod, and the discharge-pipe C, all constructed and arranged as shown and described.

3. The combination, with the pump-barrel having the discharge-pipe C, and a valved plunger, of a plunger-operating device consisting of the cross-head *t*, the pivoted arms K K, and the handle M, having arms L, pivoted to the union E at *s* and to said arms K, as shown, and for the purpose described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HIRAM C. STOUFFER.

Witnesses:
A. E. H. JOHNSON,
J. W. HAMILTON JOHNSON.