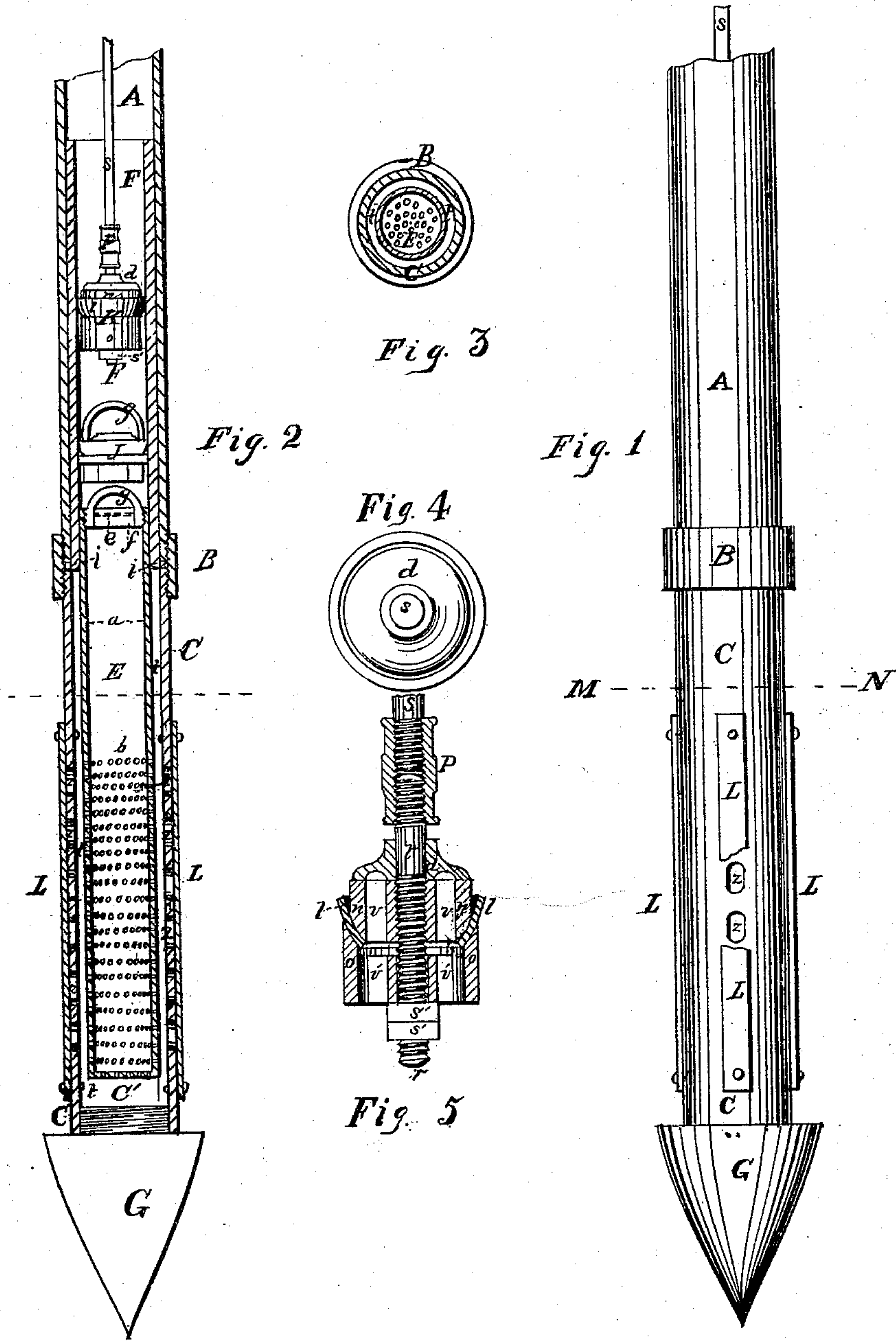


P. A. SPICER.
PUMPS FOR DRIVEN-WELLS.

No. 170,124.

Patented Nov. 16, 1875.



Witnesses
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UNITED STATES PATENT OFFICE.

PRATT A. SPICER, OF MARSHALL, MICHIGAN, ASSIGNOR OF ONE-HALF HIS
RIGHT TO MONTGOMERY CROSSMAN, OF SAME PLACE.

IMPROVEMENT IN PUMPS FOR DRIVEN WELLS.

Specification forming part of Letters Patent No. **170,124**, dated November 16, 1875; application filed
August 16, 1875.

To all whom it may concern:

Be it known that I, PRATT A. SPICER, of the city of Marshall, State of Michigan, have invented certain new and useful Improvements in Pumps, of which the following is a full and accurate description, reference being had to the accompanying drawing and the letters of reference thereon.

Like letters refer to like parts in the different figures.

Figure 1 is a general exterior view. Fig. 2 is a central vertical section. Fig. 3 is a cross-section through M N. Fig. 4 is a top view of the plunger K. Fig. 5 is a vertical section of the same.

My invention relates to that class of pumps used in what are termed "driven wells," though it may be used in any well.

In the drawing, A is an ordinary gas-pipe of suitable diameter, and forms the main tube of the pump. C is a short section of similar tubing, with several rows of holes or slots, *z*, and coupled to the section A by means of a plain straight coupling, B. Over each of these rows of holes *z* is laid a strip of sheet metal, L. These strips of metal are laid so close to the surface of C as to leave only a very narrow passage on each side of the strip to the holes *z*—indeed, are hammered or pressed so closely to the surface of C as to serve the purpose of a very fine strainer, and do away with the necessity of using wire-gauze for covering the openings. Through these openings the water at the bottom of the well is admitted to the pump. Inside the pump A is a cylindrical lining, F, of suitable material for a pump-cylinder. This lining is secured by turning a flange, *i*, upon its lower end, which lies between the ends of the two adjoining sections within the coupling B, as shown in section in Fig. 2. The filter E is accurately fitted to the inside of the pump-cylinder F, so that when pushed into its place, as shown in Fig. 2, it will be held securely by its friction against the inside of the pump-cylinder; or, when the pump-cylinder is placed higher up in one of the upper sections of the pump, a short lining, fitted in the same manner as the pump-cylinder, may take its place, to which the filter may be fitted; or the pump-cylinder may be entirely

dispensed with and the filter fitted directly to the main tubing of the pump. The filter is pierced with holes all around, as shown, and may be filled to *a* with any suitable filtering materials. The space above *a* is left clear for water-room. The top of the filter is closed with a removable cap, *f*. A large opening in the cap, covered with wire-gauze, permits the passage of the water to the valves J and K. Bails *g g* on the filter and lower valves are provided for convenience of removing them for repairs or cleaning. The plunger K is shown on a larger scale in Figs. 4 and 5, where Fig. 4 is a top view; and Fig. 5 a central vertical section. The stem *r* of the valve is screw-threaded at both ends, leaving a short distance plain, on which the valve *d* rises and falls easily. The valve-seat *n n* has passages *v v* for the flow of the water. Its central portion is screw-threaded internally to receive the stem *r*. The follower *o o* slips onto the stem *r*, and is secured in place by the nuts *s' s'*. The valve-seat *n n* has its lower edge beveled externally to correspond with the beveled edge of the follower *o o*, beveled internally. Between these beveled edges a ring, *l*, of leather, or other suitable material for packing, is placed and held securely by forcing up the follower *o o* by means of the nuts *s' s'*. The stem *r* is united to the pump-rod by means of the small screw-coupling P. This coupling serves the double purpose of uniting the plunger or valve K with the pump-rod *s*, and at the same time forming an adjustable stop for the valve *d*. The throw of the valve may be regulated by loosening the nuts *s' s'* and screwing the valve-seat *n n* up or down on its stem. G is a solid metallic point screwed into the bottom of the casing C for piercing the earth when used for a driven well, or for the pump to rest upon in an ordinary dug well.

I am aware that metallic strips have before been used to partially cover the holes in points or casings of driven pumps; but these have been used only as mere protections to the gauze covering of the holes, and have not been arranged in any such manner, or with any design to serve as strainers, while, with my arrangement, they form a strainer effectually excluding even the finest sand, which a wire-

gauze or other arrangements heretofore used fail to do. I therefore do not, broadly, claim the metallic strips.

I am aware that filters have been before used for pumps, but thus far no provision has been made for their removal when cleaning or repairs became necessary, except by the troublesome, and often expensive, process of drawing up the entire pump. I therefore do not, broadly, claim a filter.

I am aware that pump-plungers or buckets having a leather ring clamped between the two parts as a packing have been long in use; but the faces between which the packing materials have heretofore been placed have been plane flat surfaces with sharp square edges, necessitating the bending of the leather at right angles, and causing it to crimp badly, and at the same time liable to cut the packing. Mine, being beveled, brings the leather into shape before being introduced into the pump, with no liability to cutting on sharp square edges. I therefore do not, broadly, claim the packed plunger.

Heretofore the stop for the valve *d* has been

made by welding a collar or lug upon the stem *r*. I place the coupling *P* in a new position, so that it takes the place of a valve-stop, costing nothing, from the fact that a coupling is in all cases necessary. In this way I dispense with the expensive collar, using the coupling instead.

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

1. The combination, with the casing *C*, having vertical rows of holes *z*, of the metallic strips *L*, laid close to the casing over the holes therein, and leaving a narrow passage on both sides of each strip for the passage of the water to the holes, substantially as herein shown and described.

2. The combination of the valve *d* of a pump-plunger with the adjustable screw-coupling *P*, to form an adjustable stop for the valve, substantially as shown and described.

PRATT A. SPICER.

Witnesses:

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