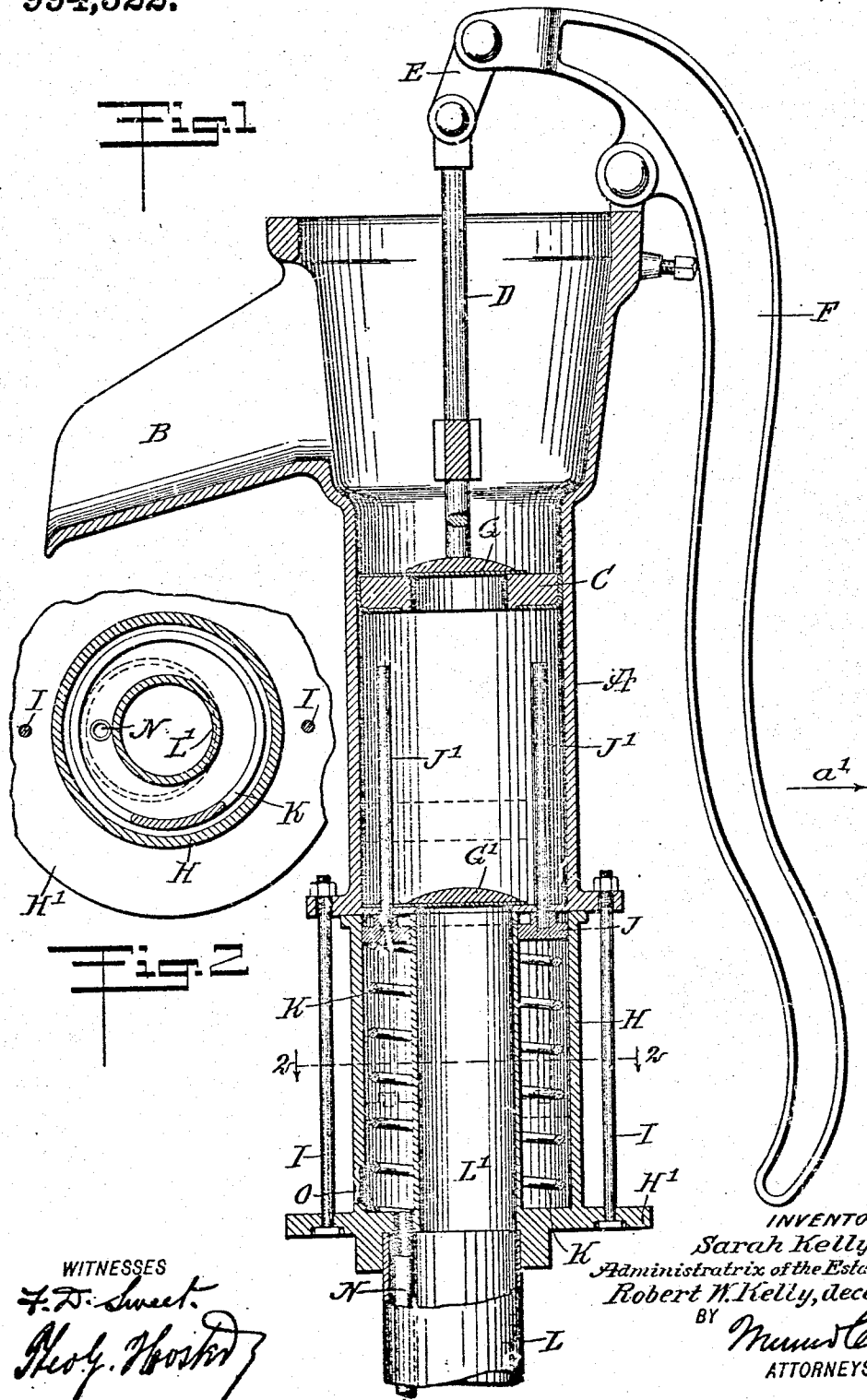


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COMBINED PUMP AND AERATOR.
APPLICATION FILED APR. 13, 1910.

994,522.

Patented June 6, 1911.



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UNITED STATES PATENT OFFICE.

ROBERT W. KELLY, DECEASED, LATE OF ATCHISON, KANSAS; SARAH KELLY,
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COMBINED PUMP AND AERATOR.

994,522.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed April 13, 1910. Serial No. 555,146.

To all whom it may concern:

Be it known that I, SARAH KELLY, a citizen of the United States, and a resident of Atchison, in the county of Atchison and State of Kansas, administratrix of the estate of ROBERT W. KELLY, deceased, late a citizen of the United States, and late a resident of Atchison, in the county of Atchison and State of Kansas, who did in his lifetime invent a new and Improved Combined Water-Pump and Aerator, do declare that the following is a full, clear, and exact description of said invention.

The object of the invention is to provide a new and improved combined water pump and aerator, for use on cisterns, wells and other water supplies and arranged to aerate the water whenever the pump is actuated for lifting or raising water.

The invention consists of novel features and parts and combinations of the same, which will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in both views.

Figure 1 is a sectional side elevation of the improvement, and Fig. 2 is a sectional plan view of the same on the line 2—2 of Fig. 1.

A hand-operated water pump of any approved construction is provided with a cylinder A terminating at its upper end in a water discharge spout B, and in the said cylinder A reciprocates a plunger C connected by the usual plunger rod D and link E with a hand lever F under the control of the operator, for imparting a reciprocating motion to the plunger C. The plunger C is provided with the usual valve G and a suction valve G' is arranged in the bottom of the cylinder A. To the bottom of the cylinder A is secured an air pump cylinder H by the use of bolts I or similar fastening devices, and in the said air pump cylinder H reciprocates a piston J provided with upwardly extending rods J' passing into the water pump cylinder A, to be engaged by the underside of the plunger C, so that when the plunger C moves downward it pushes the rods J' and consequently the piston J in a downward direction. A return movement is given to the piston J when the plunger C is raised, by a coil spring K arranged in the lower por-

tion of the air pump cylinder H, and pressing with its upper end against the under side of the piston J and resting with its lower end on the bottom head H' of the air pump cylinder H. To the bottom head H' is secured a main suction pipe L extending down into the water of the cistern, well or other water supply, and the upper end of the said main suction pipe L opens into an extension suction pipe L' formed integrally on the head H' and extending centrally through the air pump cylinder H, to connect with the suction valve G' in the bottom of the water pump cylinder A. An air discharge pipe N for the air pump cylinder H is attached to the bottom head H' and extends downward through the main suction pipe L into the water contained in the cistern, well or other water supply, so that when air is forced through the air pipe N by the action of the piston J in the air pump cylinder H, then this air passes into the water contained in the cistern, well or other water supply, so as to aerate the said water. The air pump cylinder H is provided with a suitable air inlet valve O for admitting air into the said cylinder H, to be forced out of the same by the piston J and through the pipe N into the water for aerating the same.

The operation is as follows: When the several parts are in the position illustrated in Fig. 1 and the operator imparts an upward swinging motion to the hand lever F in the direction of the arrow a', then the plunger C is caused to move downward, and in doing so engages the rods J' and pushes the same and the piston J downward against the tension of the spring K. The downward movement of the piston J forces the air contained in the air pump cylinder H down through the air pipe N into the water, to aerate the same. When the hand lever F is swung downward then the plunger C is raised to draw the water up the suction pipes L, L' into the lower end of the water pump cylinder A and to lift the water on top of the plunger C, to discharge the same through the spout B. During this upward movement of the plunger C the piston J is returned by the action of the previously pressed spring K, air now passing into the air pump cylinder H by way of the air inlet valve O. Now from the foregoing it will be seen that during the down stroke of the plunger C the piston J is actuated to

force air into the water contained in the cistern, well or other water supply previous to the water pump lifting water out of the said cistern, well or other water supply.

Thus the water is aerated while actuating the water pump.

By arranging the air pump on the lower end of the water pump, as described, and bringing the air pump cylinder H in axial alinement with the water pump cylinder A, it is evident that an exceedingly simple, strong and durable device is provided, composed of comparatively few parts, not liable easily to get out of order.

Having thus described the invention, I claim as new and desire to secure by Letters Patent:

1. A combined pump and aerator, comprising a water pump and an air pump, the piston of the air pump being separate from the plunger of the water pump and adapted to be moved in one direction thereby, and means for moving the said piston of the air pump in the opposite direction.

2. A combined pump and aerator, comprising a hand water pump, having a cylinder provided with a suction pipe, and an air pump having a cylinder at the lower end of the water pump cylinder and in axial alinement therewith, the suction pipe extending through the said air pump cylinder, the piston of the air pump being controlled by the plunger of the water pump.

3. A combined pump and aerator, comprising a water pump, and an air pump at the lower end of the said water pump and in axial alinement therewith, the piston of the air pump being spring-pressed in one direction and adapted to be moved by the plunger of the said water pump in the opposite direction.

4. A combined pump and aerator, comprising a water pump having a cylinder, plunger and suction pipe, and an air pump having a cylinder secured to the lower end of the said water pump cylinder, a piston in the said air pump cylinder and provided with rods extending up into the water pump cylinder to be engaged by the said plunger, and a spring pressing the said piston for returning the latter on the return of the plunger.

5. A combined pump and aerator, comprising a water cylinder having a suction pipe, a plunger reciprocating in the said cylinder, an air cylinder below the water cylinder and through which extends the said suction pipe, an air discharge pipe lead-

ing from the said air cylinder, and a spring-pressed piston in the said air cylinder and moved against the tension of its spring by the said plunger.

6. A combined pump and aerator, comprising a water pump having a cylinder, plunger and suction pipe, and an air pump having a cylinder secured to the lower end of the said water pump cylinder and through which extends centrally the said suction pipe, a piston in the said air pump cylinder and provided with rods extending up into the water pump cylinder to be engaged by the said plunger, and a spring pressing the said piston for returning the latter on the return of the plunger, the spring being coiled around the suction pipe.

7. A combined pump and aerator, comprising a water pump and an air pump in axial alinement with the said water pump, the piston of the air pump being actuated by the plunger of the water pump at the time the plunger is on the down-stroke and the piston is on the compression stroke, and a spring for returning the said piston at the time the plunger is on the lifting or suction stroke.

8. A combined water pump and aerator, comprising a water pump having a cylinder with a suction valve in its bottom, and a hand actuated plunger reciprocating in the said water pump cylinder, an air pump cylinder fastened to the lower end of the said water pump cylinder and having a central water suction pipe for the said suction valve, a piston in the said air pump cylinder slidable on the said suction pipe and provided with rods extending up into the said water pump cylinder to be engaged by the said plunger, a coil spring in the said air pump cylinder for pressing the said piston upward, a main suction pipe extending downward from the lower head of the said air pump cylinder and in register with the said suction pipe, and an air discharge pipe extending downward from the lower head of the said air pump cylinder and passing through the said main suction pipe.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SARAH KELLY,

Administratrix of the estate of Robert W. Kelly, deceased.

Witnesses:

FERD. GLIEM,

NELSON J. FLETCHER.