

(No Model.)

2 Sheets—Sheet 1.

R. H. DACUS.  
AERATING AND WATER PUMP.

No. 438,061.

Patented Oct. 7, 1890.

Fig. 2.

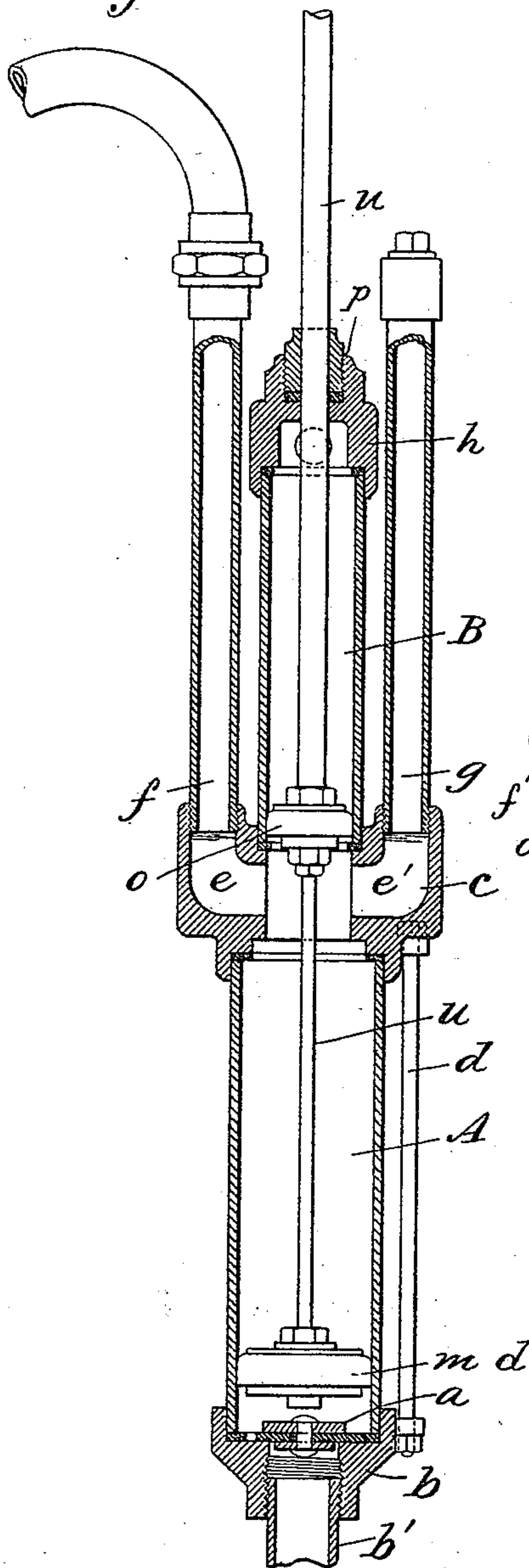


Fig. 1.

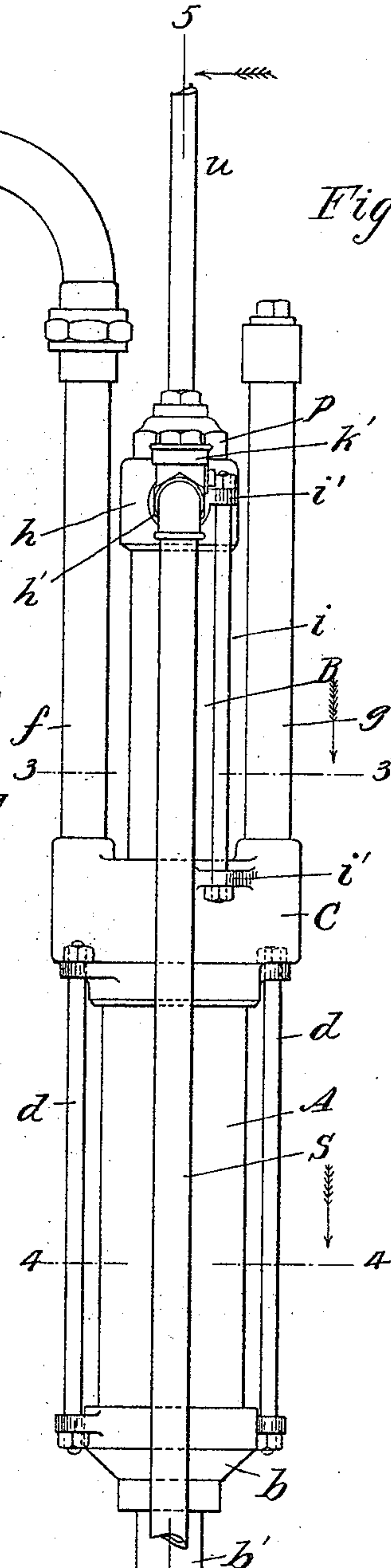


Fig. 3.

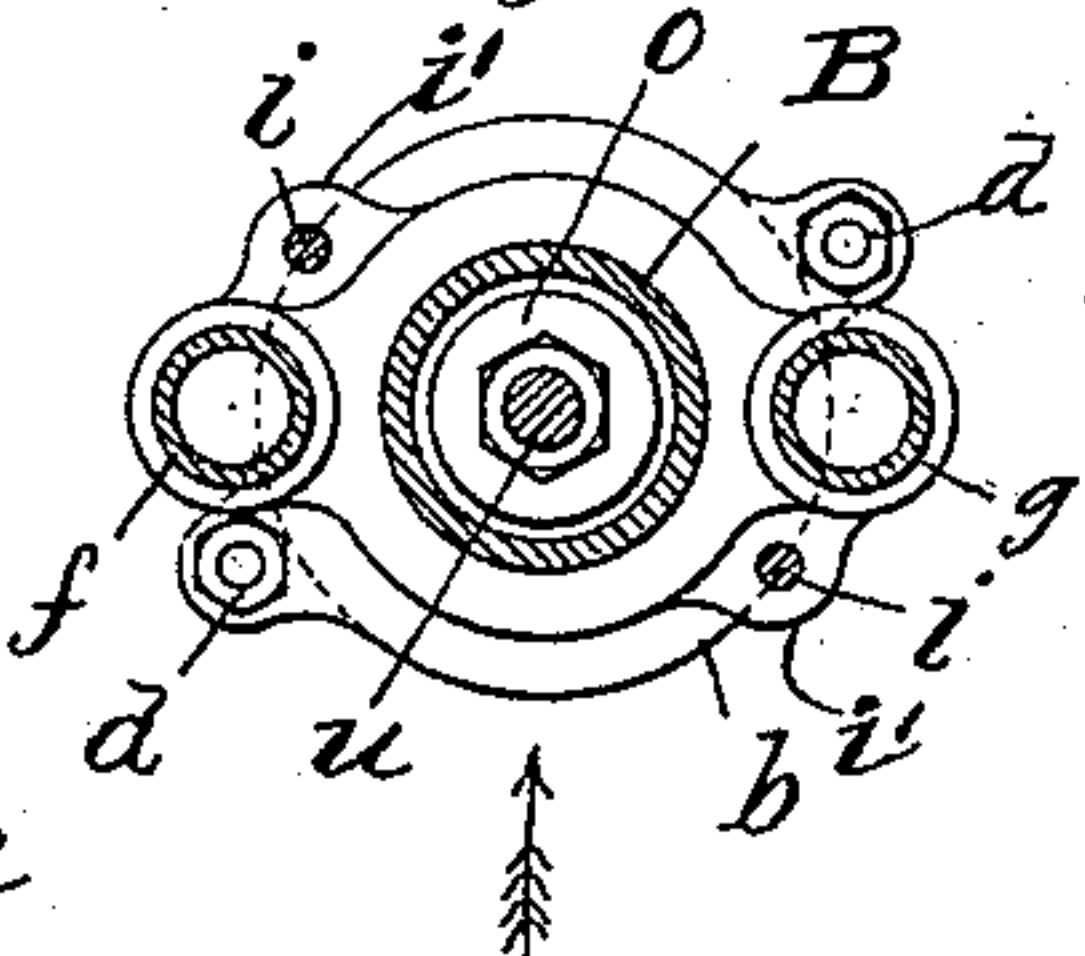
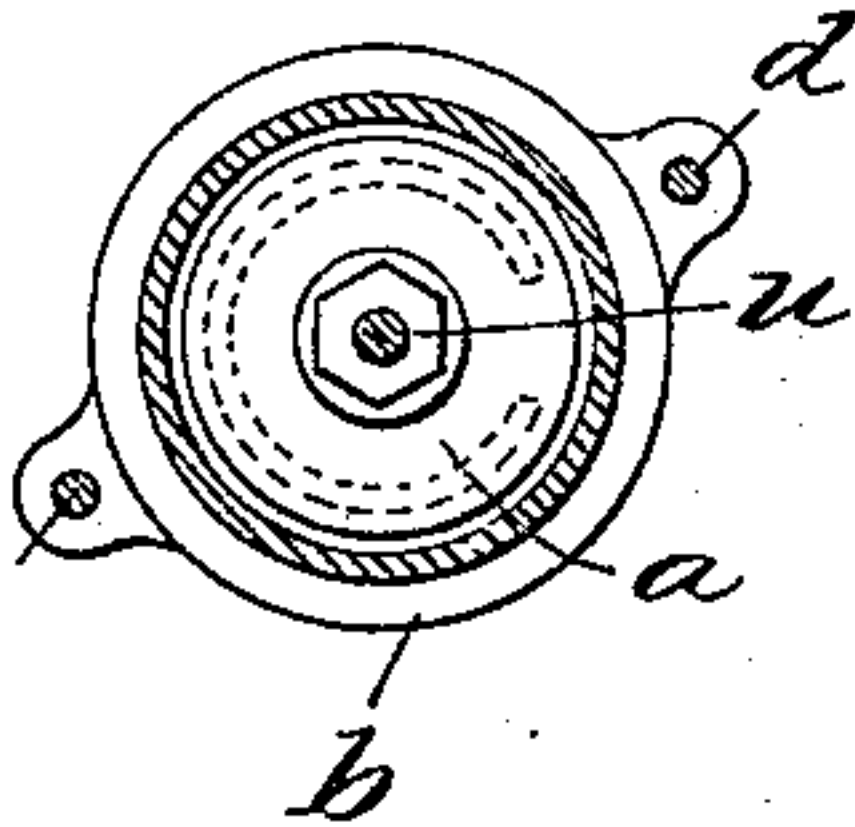


Fig. 4.



WITNESSES:

*J. Henry Hebrath*  
*C. Sedgwick*

INVENTOR:

*R. H. Dacus*  
BY *Munn & Co*  
ATTORNEYS

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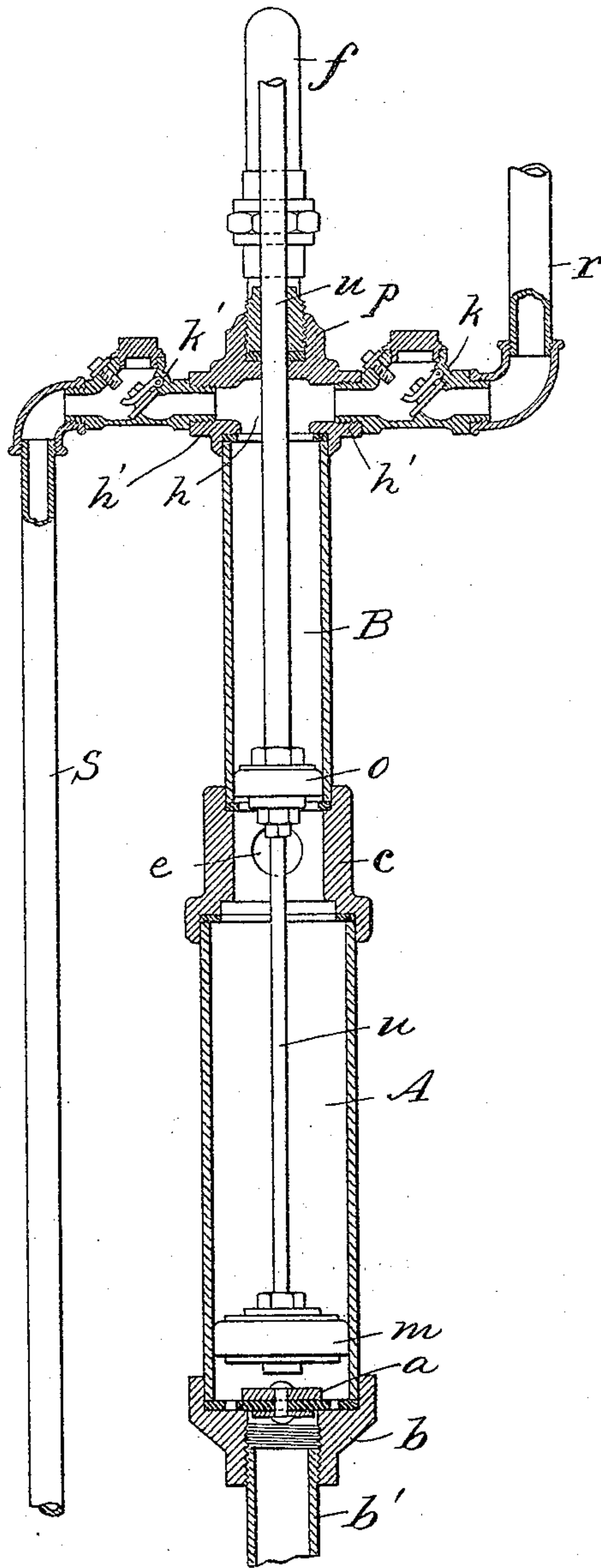
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Fig. 5.



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*C. Sedgwick*

INVENTOR:

*R. H. Dacus*  
BY *Munn & Co.*

ATTORNEYS



# UNITED STATES PATENT OFFICE.

ROBERT H. DACUS, OF DARDANELLE, ARKANSAS.

## AERATING AND WATER PUMP.

SPECIFICATION forming part of Letters Patent No. 438,061, dated October 7, 1890.

Application filed April 3, 1890. Serial No. 346,377. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT H. DACUS, of Dardanelle, in the county of Yell and State of Arkansas, have invented a new and Improved Aerating and Water Pump, of which the following is a full, clear, and exact description.

My invention is an improvement in that class of pumps which are adapted both for raising water and simultaneously introducing air into the tank or well from which it is drawn. Heretofore the pumps devised for this purpose have usually been too complicated, bulky, and expensive to adapt them to the economical and other requirements of ordinary use, and I have therefore devised an aerating attachment for an ordinary force-pump whose simplicity of construction enables it to be easily applied at small cost, and whose efficiency equals that of the most expensive apparatus for a like purpose.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the complete device viewed in direction of an arrow in Fig. 3. Fig. 2 is a side elevation viewed from the same point as Fig. 1, the main portion being broken into section showing the interior. Fig. 3 is a plan in section taken on the line 3 3 in Fig. 1. Fig. 4 is a plan in section taken on the line 4 4 in Fig. 1, and Fig. 5 is a sectional side elevation taken on the line 5 5 in Fig. 1 and viewed in direction of an arrow in said figure.

I will first briefly describe the parts of the pump to which my aerating attachment is applied.

Two cylinders A and B, having, respectively, pistons *m* and *o* and a common piston-rod *u*, are arranged in vertical alignment and screwed into an intermediate chambered union-coupling C. An ordinary water-discharge pipe *f* connects with one of the chambers *e* of this coupling and an air-tube *g* with the chamber *e* on the opposite side. A valve *a*, adapted to open upward, is arranged at the lower end of the water-cylinder A, and a water-lift pipe *b'* is attached to the lower head *b* of said cylinder. Two rods *d* connect

the head *b* and coupling *c*, as shown best in Figs. 1 and 4.

My aerating attachment is composed of the following parts, constructed and arranged as stated: A chambered cap-piece *h*, having a stuffing-box *p* for the piston-rod *n*, is applied to and forms the head of the air-cylinder B, and is secured in place by rods *i*, that pass through ears *i'* of the cap *h* and coupling C, as shown in Figs. 1 and 3. This cap-piece *h* has screw-threaded nipples *h'* on opposite sides to provide for convenient attachment of the valved tubes *k* and *k'*. To one *k'* of these tubes is attached an air-conducting pipe S, which extends downward and in practice enters the water alongside the lift-pipe *b'*, as best shown in Fig. 5. An upwardly-extending air-inlet pipe *r* is attached to the other valve-tube *k*.

It will be noted, Fig. 5, that the valves in tubes *k k'* open in the same direction and operate as check-valves to allow passage of air from pipe *r* into the cylinder B and from the latter into pipe S, but prevent its return.

In practical operation, when the rod *u*, with its attached pistons *m* and *o*, is reciprocated, water is drawn into cylinder A on the upstroke, and air is simultaneously expelled from cylinder B into pipe S, and by it conducted down into the water. On the return or down stroke air enters the cylinder B through pipe *r* to supply the vacuum behind the descending piston *o*, and the piston *m* of cylinder A allows the water therein (which entered on the upstroke) to pass above it. Then on the next upstroke the water is expelled through pipe *f*, (being cushioned by the air between the piston and in the standing tube *g*.) and air is again forced through pipe S into the body of water in the well or tank. This attachment—composed, essentially, of the parts *h S r k k'*, as above described—is simple and inexpensive, yet efficient, and may be applied with but slight changes, requiring nothing but ordinary mechanical skill and judgment, to the upper cylinders of pumps of various common kinds.

What I claim is—

1. The improved aerating attachment for pumps, the same consisting of the cap-piece *h* for a pump-cylinder, valved tubes *k* and *k'*,

attached to it laterally, and the pendent vertical tube S, connected to said tube  $k'$  for conducting air down into the water, and the opposite upwardly-extended air-inlet tube  $r$ ,  
5 all as shown and described.

2. The combination, with the vertically-aligned water and air cylinders A and B, their connected pistons  $m$   $o$ , and the water inlet and discharge pipes  $b'$  and  $f$ , arranged as  
10 specified, of the aerating attachment, con-

sisting of the cap-piece  $h$ , applied to cylinder B, the lateral valved tubes  $k$   $k'$ , the air-conducting tube S, arranged vertically pendent alongside said cylinders, and the air-inlet tube  $r$ , all as shown and described, and adapted  
15 to operate as specified.

ROBERT H. DACUS.

Witnesses:

J. L. DAVIS,  
M. KAUFMAN.