

(No Model.)

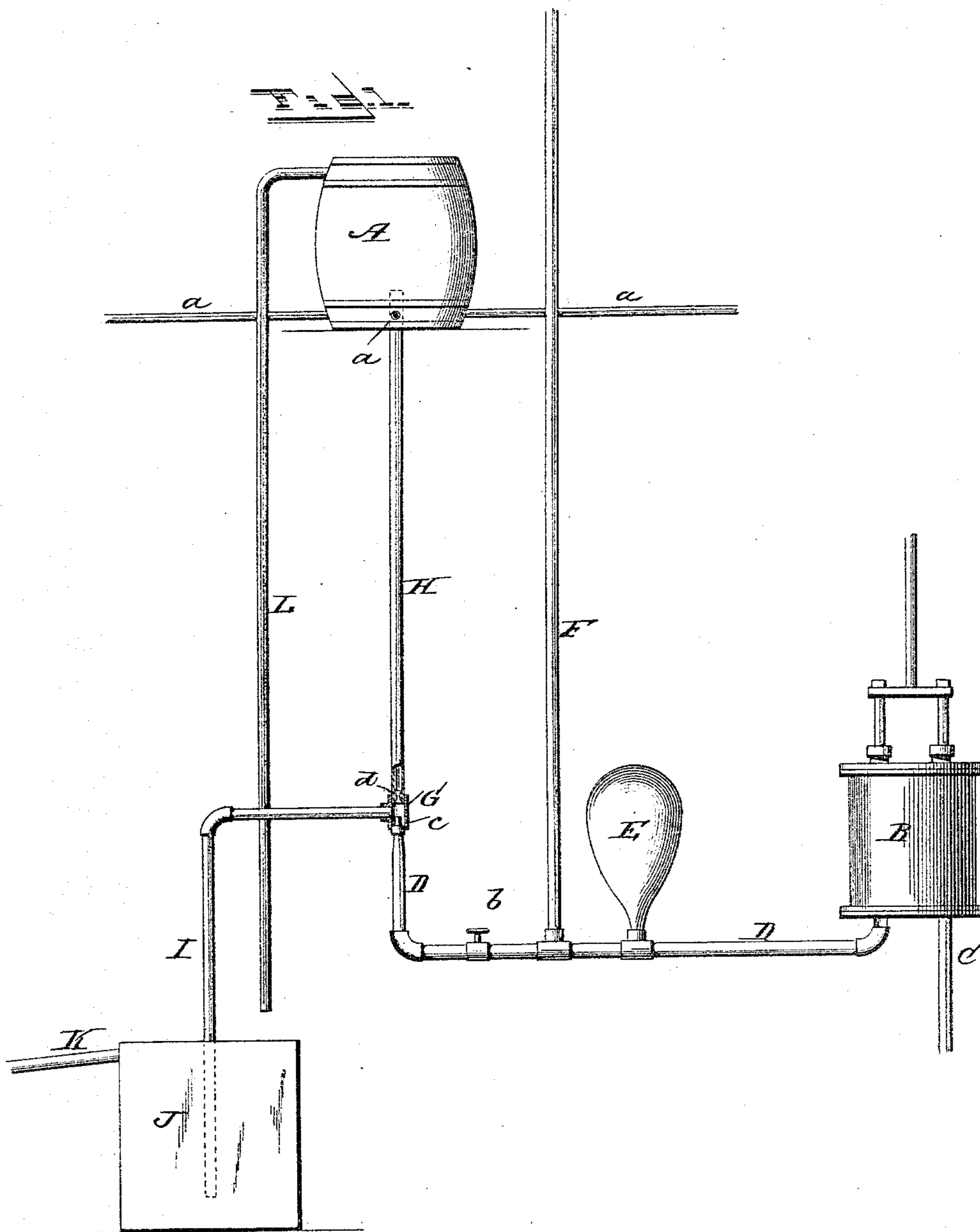
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B. M. & M. R. HALL.

DEVICE FOR SUPPLYING WATER AND SAND TO STONE  
SAWING MACHINES.

No. 414,529.

Patented Nov. 5, 1889.



Witnesses

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Inventors.

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By their Attorneys

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Chas. W. Fowler.

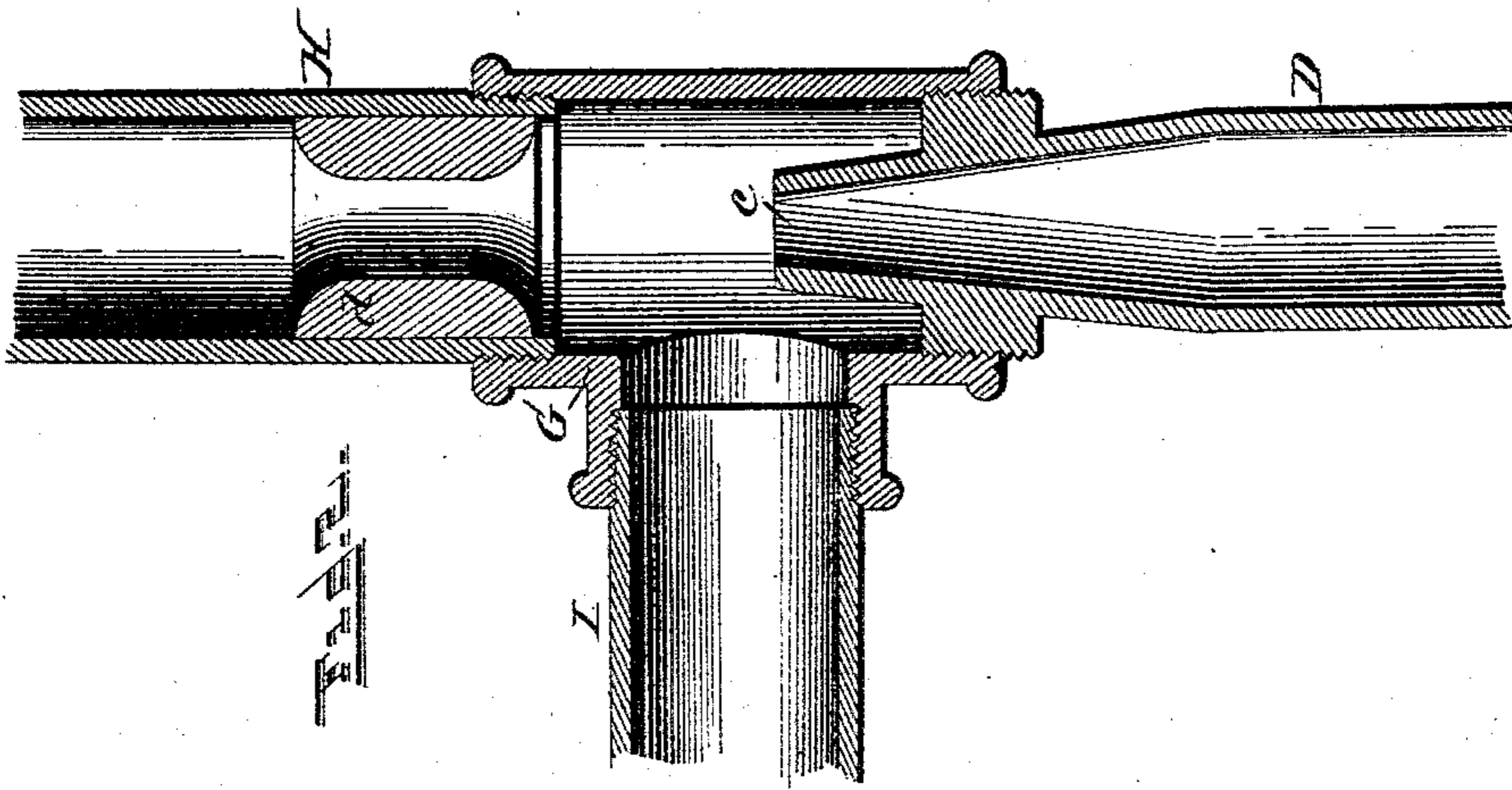
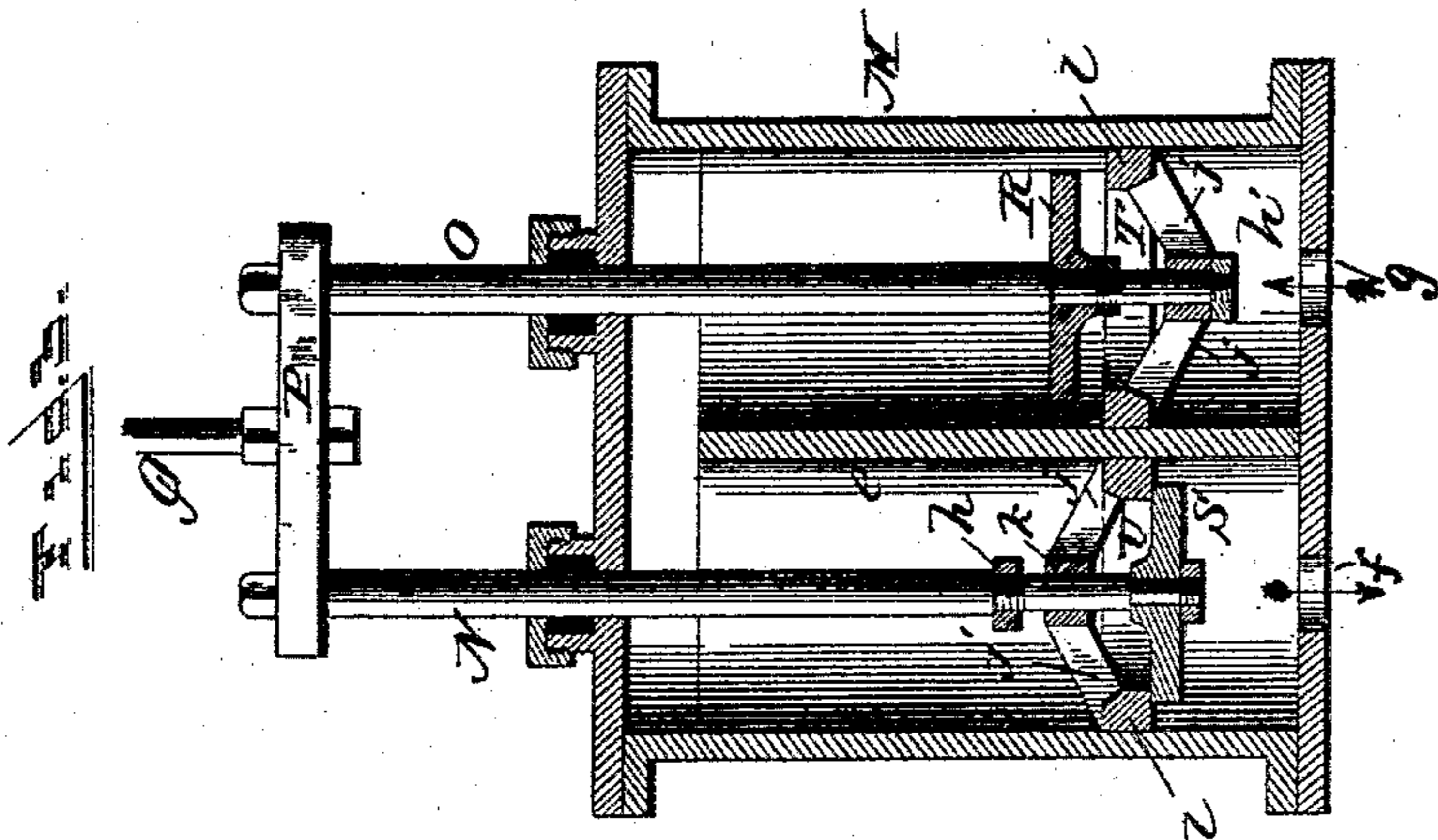
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# UNITED STATES PATENT OFFICE.

BENJAMIN M. HALL, OF TATE, AND MAXCY R. HALL, OF COLIMA, GEORGIA.

DEVICE FOR SUPPLYING WATER AND SAND TO STONE-SAWING MACHINES.

SPECIFICATION forming part of Letters Patent No. 414,529, dated November 5, 1889.

Application filed March 27, 1889. Serial No. 304,964. (No model.)

*To all whom it may concern:*

Be it known that we, BENJAMIN M. HALL, residing at Tate, in the county of Pickens, and MAXCY R. HALL, residing at Colima, in the county of Gordon, and State of Georgia, citizens of the United States, have invented certain new and useful Improvements in Devices for Supplying Water and Sand to Stone-Sawing Machines; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

This invention relates to certain new and useful improvements in devices for supplying water and sand to stone-sawing machines, and it aims at cheapness and durability of parts and the perfect working with little care on the part of the operator.

The novelty resides in the peculiar combinations and the construction, arrangement, and adaptation of parts, all as more fully hereinafter described, shown in the drawings, and then particularly pointed out in the appended claims.

The invention is illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a side view, partly in section, of the parts embodying our invention. Fig. 2 is a vertical section on an enlarged scale, showing the nozzle and throat, hereinafter more particularly referred to by letters of reference. Fig. 3 is a central vertical section through the pump.

Referring now to the details of the drawings by letter, A designates a barrel or other suitable receptacle, into which the sand and water are to be deposited and from which the same is distributed to the different gangs of saws, (not shown,) where it sprinkles on the block of stone that is being sawed by the gangs of saws, for a purpose well understood by those skilled in the art. Pipes *a* are shown, through which the sand and water flow to the gangs of saws.

B is the pump; C, the connection with the source of water-supply, and D the outlet-pipe from the pump, which pipe is provided with

an air-chamber E and air-vent F, also with a cock *b*. The upper end of this pipe terminates in or is provided with a nozzle *c*, which is arranged within the T of an ordinary gas-fitting G. Connected with the opposite end of this T is the pipe H, which we term the "uptake-pipe," which empties into the barrel A.

I is a suction-pipe, with its lower end within the sand-receptacle J and its other end connected with the horizontal branch of the T, as shown. This suction-pipe extends nearly to the bottom of the sand box or receptacle, so as not to take up any of the lighter particles therein, which are allowed to pass off through the overflow-pipe K, which connects with the interior of the said sand-box near the top thereof for this purpose. Within the lower end of the uptake-pipe, within the T, is a detachable throat *d*, as shown more clearly in Fig. 2.

L is an overflow-pipe to the barrel A, to prevent said barrel from overflowing and serving to carry any surplus therein back to the sand-box, so that it may not be lost. Any suitable back stop may be provided to prevent the receptacle A from emptying itself into the sand-box when the pump is stopped.

In mountainous regions we may dispense with the pump and connect the pipe D with a suitable source of supply at a great height, so as to get the supply of water to the uptake pipe under great pressure, and have found this to work with good results.

The pump, as shown in enlarged section in Fig. 3, is constructed as follows:

M is the cylinder, divided into two equal compartments by means of the vertical diaphragm *e*, which, however, does not extend entirely to the top, but terminates a short distance below said top, so as to allow a passage from one compartment to the other.

*f* is the outlet communicating with the pipe D, and *g* is the inlet from the source of water-supply.

N and O are the piston-rods, connected at their outer ends by means of the cross-bar P, to which the operating-rod Q is attached, so that both piston-rods move simultaneously in the same direction. These piston-rods pass through suitable stuffing-boxes on the cylin-

der, and within the cylinder are provided with the adjustable tappets  $h$  and  $h'$  and with the disks  $R$  and  $S$ . The pistons  $T$  and  $U$  are formed with ribs  $j$ , which connect the  
 5 outer rim  $l$ , and through the central hub or ring  $k$  the lower ends of the piston-rods pass loosely.

The operation is simple. The pump supplies the water under high pressure, which,  
 10 as it passes out at the nozzle, issues with great force in a small solid stream which shoots through the throat and up the uptake-pipe. This produces a great draft and suction, which brings up sand and water from  
 15 the sand-receptacle through the pipe  $I$ , where it unites with the water passing through the pipe  $H$  and passes up into the receptacle  $A$ , from whence it is carried to the desired places by means of the distributing-pipes  $a$ . When  
 20 the receptacle  $A$  becomes too full, the water and sand flow through the overflow-pipe  $L$  back into the sand-receptacle  $J$ , which also has an overflow-pipe  $K$ , that takes off the surplus water, carrying with the same the  
 25 very fine sand, that is no longer useful in sawing.

The peculiar form of pump is important in this connection. It operates without any flap-valves, that have to be lifted by water-pressure while the full pressure of the rising main  
 30 is on top of them. The pistons are so constructed and arranged that one is effective while the water passes freely through the other. The change takes place at the end of  
 35 the stroke, or, rather at the beginning of the stroke, and is effected by the movements of the piston-rods and not by the water. The water flows in the same direction, having only a momentary stoppage as change in the  
 40 pistons takes place. The movement of the piston-rods through the pistons is checked in one direction by the tappets and in the other by the disks  $R$  and  $S$ . When the disk fits  
 45 against the piston and makes it a solid piston, as shown at the left of Fig. 3, it becomes effective; but when the disk is moved away from the piston, as at the right of said figure, the piston becomes non-effective and the water passes freely through it. When the stroke  
 50 is in one direction, one piston is effective, and

when the stroke is changed the other piston becomes effective.

What we claim as new is—

1. The combination, with the receptacle  $A$  and the sand-receptacle, of the pump, the pipe  
 55 leading from the pump to the receptacle  $A$ , the nozzle on said pipe, the contracted throat, and the suction-pipe, all arranged and operating substantially as shown and described.

2. The combination, with the receptacle and  
 60 the pipes leading therefrom, of the sand-receptacle, the pump, the pipe leading from the pump and provided with a nozzle, as shown, the uptake-pipe, the contracted throat therein, and the suction-pipe connected with the  
 65 sand-receptacle and with the uptake-pipe between said nozzle and throat, substantially as shown and described.

3. The combination, with the receptacle  $A$ , the sand-receptacle, and the pump, of the pipe  
 70 leading from the pump and provided with a nozzle, the uptake-pipe, the contracted throat therein, the suction-pipe leading from the sand-receptacle and communicating with the uptake-pipe between the throat and nozzle,  
 75 and the overflow-pipe to the receptacle  $A$ , leading to the sand-receptacle, substantially as shown and described, and for the purpose specified.

4. The combination, with the receptacle  $A$ ,  
 80 the sand-receptacle, and the pump and suction-pipe, substantially as described, for forcing the water and drawing the sand into the receptacle  $A$ , of the overflow-pipe leading from the receptacle  $A$  to the sand-receptacle, and  
 85 the overflow-pipe to the sand-receptacle, connected near the top thereof, substantially as shown and described, and for the purpose specified.

In testimony that we claim the above we  
 90 have hereunto subscribed our names in the presence of two witnesses.

BENJAMIN M. HALL.

MAXCY R. HALL.

Witnesses as to Benjamin M. Hall:

T. G. SIMMONS,

W. B. MINCEY.

Witnesses to Maxcy R. Hall:

J. H. JONES,

METELLUS B. HALL.