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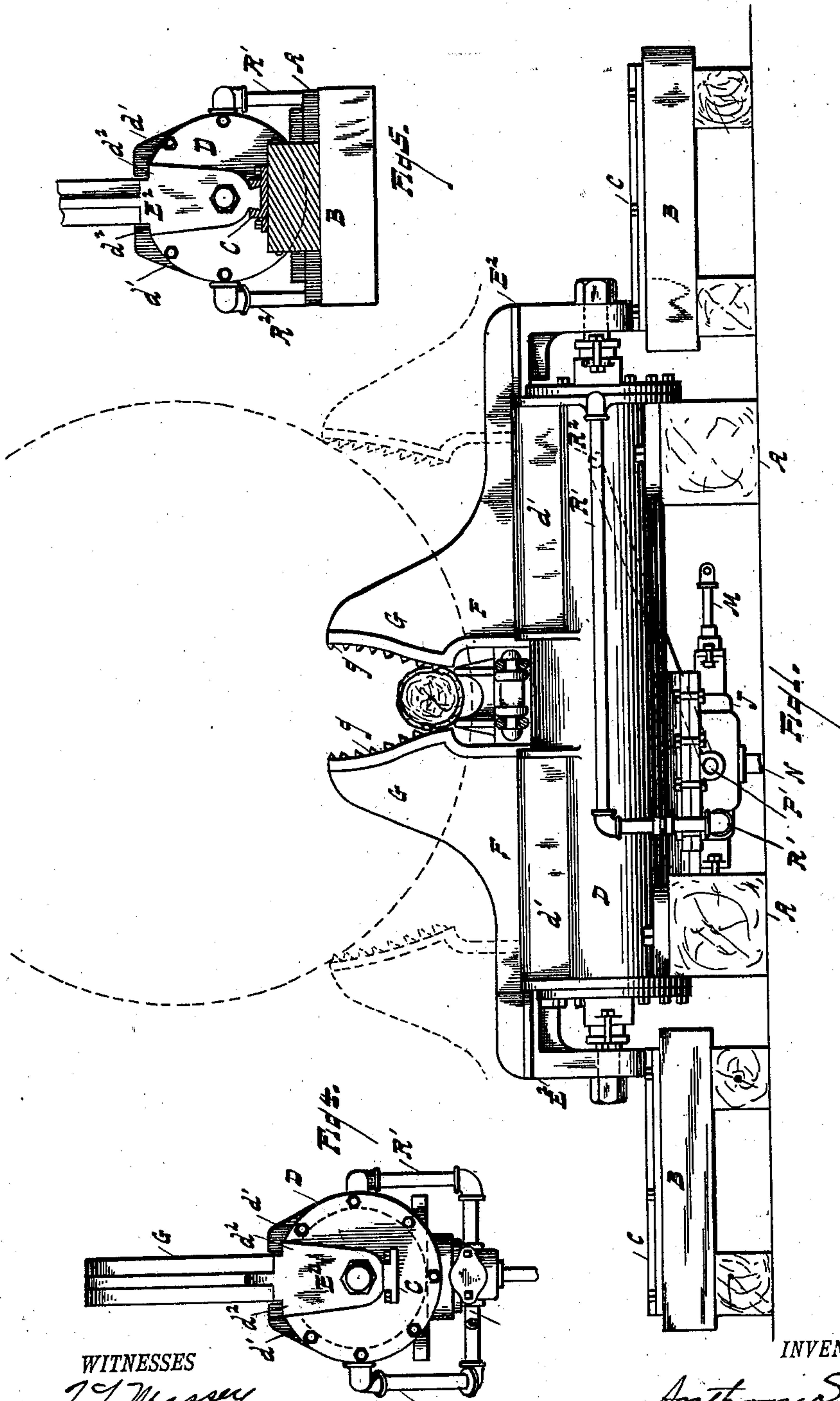
Patented June 17, 1902.

A. S. HILL.  
STEAM DOGGING MACHINE.

(Application filed June 26, 1901.)

2 Sheets—Sheet 1.

(No Model.)



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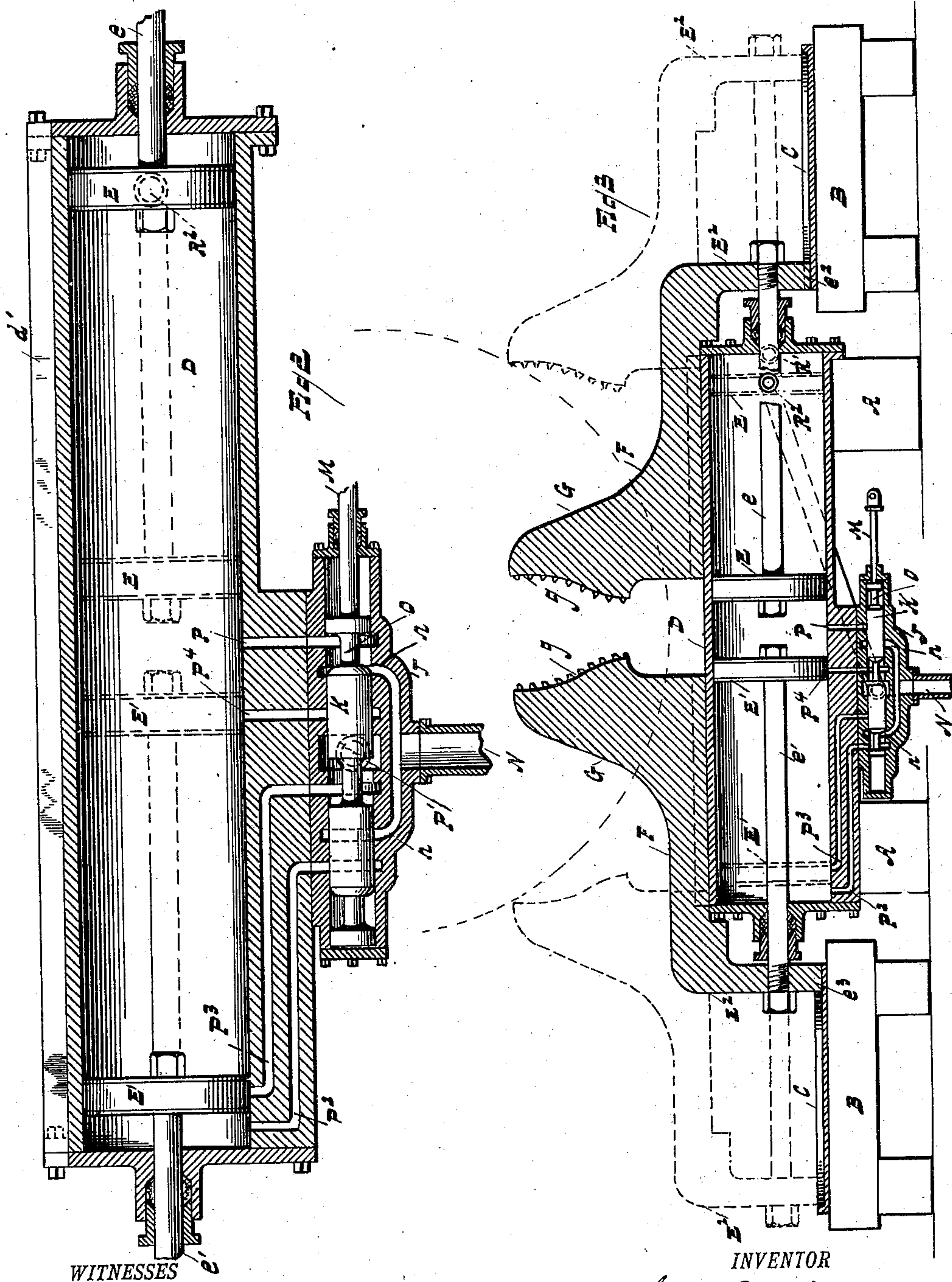
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# UNITED STATES PATENT OFFICE.

ANTHONY S. HILL, OF KALAMAZOO, MICHIGAN.

## STEAM DOGGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 702,727, dated June 17, 1902.

Application filed June 26, 1901. Serial No. 66,067. (No model.)

*To all whom it may concern:*

Be it known that I, ANTHONY S. HILL, a citizen of the United States, residing at Kalamazoo, county of Kalamazoo, State of Michigan, have invented a certain new and useful Improvement in Steam Dogging-Machines; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to steam dogging-machines for rigidly holding logs for the purpose of cross-cutting them into section; and it consists in the construction and various combinations hereinafter described and claimed.

In the drawings, Figure 1 is a vertical elevation of the machine with the dog shown engaging a small log and also representing in dotted lines a large log and the dogs in dotted lines withdrawn to a position preparatory to grasping the large log. Fig. 2 is a vertical longitudinal section of the cylinder with the pistons at the extreme end of the throw; also, the steam-chest, valve-ports, and valve. Fig. 3 is also a vertical longitudinal section of the cylinder and steam-chest with the piston shown in a central position, the extreme throw of the pistons and dogs being shown in dotted lines. Fig. 4 is an end view of the cylinder and guides looking from the left-hand end of Fig. 1. Fig. 5 is a cross-section of the guides and blocks employed.

Similar letters refer to similar parts.

A A represent two timbers, upon which rest the supported structure and which are arranged longitudinally with the log to be operated upon.

B B are auxiliary timbers, which may be connected or disconnected with the timbers A A and upon which rest the guides C C, which carry the outer ends of dog-arms  $E^2 E^2$  and also act as guides for the piston-rods  $e e'$ .

D is a steam-cylinder containing two pistons E E'. To these are connected, respectively, piston-rods  $e e'$ . For each of these rods the usual stuffing-boxes are provided and need no description. The outer ends of the piston-rods are respectively connected to exactly similar arms  $E^2 E^2$  by appropriate means of fastening. The lower extremities of these

arms at  $e^2 e^3$  slide on guides C C, as described. These are shown in cross-section in Fig. 5, but might be of any other convenient or desirable type. The upper portion of the cylinder D at  $d'$  is widened out in casting, as shown in Fig. 4, and grooved guides  $d^2 d^2$  are formed in the top thereof. Within these and shaped to fashion of cross-section thereof is the main body F F of respective dogs G G. The faces  $g g$  of these are somewhat peculiarly shaped for the purpose of enabling a grasp to be made upon all sizes of logs and are also fitted with teeth for the purpose of enabling them to get a secure hold thereon. Now the bodies F F of arms G G, working on slides  $d' d'$ , are connected to pistons at arms marked  $E^2 E^2$ , as hereinbefore stated. It is obvious that in the operations of the pistons the piston-rods and the dogs must move to and from each other as the pistons are forced to and from each other, thus causing the jaws G G to open when steam is admitted to center of cylinder and close when admitted to ends, thus dogging or releasing log, as may be desired. To accomplish this, I have devised a peculiar valve motion, which is illustrated in Figs. 2 and 3, particular attention being given the various ports.

J is a steam-chest which contains a valve K and into which at various points open certain ports. To the valve K is connected a valve rod or stem M, by which the valve is operated, the stem M being connected to proper handles or levers (not shown) by which the valve is manually operated. The induction-port is shown at N, and this branches and communicates with two ports  $n n$ , cut in the walls, in which the valve K reciprocates. On admitting steam through N there is a constant steam-pressure thereafter within the circumferential chamber  $n$  or chambers around the valve and which by virtue of certain restrictions in the valve may be made to communicate with other ports, as hereinafter described, or may alternately open and close, so far as any further connection with other pistons is concerned, as stated. As shown in Fig. 2, the right-hand steam-passage  $n$  by virtue of the rounded or globular section of the restriction O of the valve is placed in communication with the center port P, which admits steam into the interior centrally of



the cylinder and between the two pistons E E'. The obvious effect of thus admitting steam between the pistons would be to force them toward the ends of the cylinder, where they are shown in Fig. 2 and in dotted lines in Fig. 3. Obviously this would separate the jaws of the dogs G G to the extent shown in dotted lines in Fig. 3. In order to prevent the pistons from coming in contact with the cylinder-heads, two ports P<sup>2</sup> P<sup>3</sup> are run from valve-chest to end of cylinder—port P<sup>2</sup> from induction-port *n* and port P<sup>3</sup> from induction-port P'. With valve in position shown in Fig. 2 it will be readily seen that as soon as piston covers port P<sup>3</sup>, the plug part of valve closing port P<sup>2</sup> in steam-chest, the exhaust through P<sup>2</sup> is shut off and no steam can escape from between end of cylinder and piston-heads, and thus forms a perfect cushion. These passages in the steam-chest are also brought in communication with the ports R' R<sup>2</sup> at the opposite end of the cylinder, which are thus opened and closed simultaneously with P<sup>2</sup> P<sup>3</sup>. The admission of steam, therefore, to one set of these ports admits it simultaneously to the other set. The same result is obtained at center of cylinder by means of port P<sup>4</sup>, only one port necessary, as when valve is reversed the steam is admitted to the ends of cylinder through ports P<sup>2</sup> and port P<sup>1</sup> is covered by plug part of valve, and as soon as port P<sup>4</sup> is covered by piston E' the same result is obtained, the pressure of the confined steam being equal against both piston-heads. By means of this valve and the ports hereinbefore described the motions of the pistons, and consequently of the dogs G G, can be controlled to any desired extent.

This device is usually located at the end or between concave rolls or placed so that an endless-chain conveyer can move log lengthwise between the jaws. It is used in connection with some suitable cut-off device and the operation is as follows: The log is mounted on rolls or chain and moved forward to desired position for cutting off, the jaws in the meantime being in position by dotted lines in Fig. 3. As soon as the log is in desired position, steam is admitted to both ends of cylinder causing the jaws to close on the log and hold same firmly, the steam-pressure remaining until cut is made. As soon as the log is cut off steam is admitted to the center of cylinder and jaws release hold on log and move back out of the way of log, which can then be moved forward ready for another cut. This operation can be repeated as often as desired.

I am aware that dogs somewhat similar in construction, but rotating upon a bell-crank principle and having a curvature corresponding to one size of log, have heretofore been employed for dogging logs. Such a device is shown in Patent No. 655,573 to T. J. Neacy, dated August 7, 1900; but such a device is limited to a size under that of but little larger than the curvature of the dogs, as a very large

log would be simply lifted by the dogs and not grasped between them. Too, the lower portions of the dogs never approach each other, and hence there is always an assignable distance between the lower faces of the dogs, whereas in my construction where the dogs reciprocate in straight continuous lines the log, no matter how large, is compressed between some portion of their faces, and no matter how small is also compressed between the lower portion of their faces, which can approach very closely together. The peculiar curvature or shape of the faces of the dogging-blocks in my construction is also of advantage in the proper holding of logs of different sizes. This peculiar shape or reverse curvature is not found in the Neacy patent referred to above. This advantage is illustrated by the position of the dogs shown in dotted lines in Fig. 1, it being obvious that if dogs of a similar size were rotated upon fixed centers and these centers brought as close together as the dogs in the illustration in full lines they would merely lift the log and would not prevent it from rolling under the influence of a reciprocating saw in cutting it off.

What I claim is—

1. The combination with a steam-cylinder, two pistons working therein, each respectively actuated, a piston-rod connected to each piston, a pair of sliding jaws, means connecting each jaw to one of said piston-rods, a steam-chest and appropriate ports, a valve mechanism as described whereby the steam-pressure in said cylinder may be controlled.

2. In a steam dogging-machine, the combination of means for supporting and causing logs to travel longitudinally, a pair of steam-actuated jaws adapted to reciprocate transversely on straight lines and grasp the log between them, and means for controlling the application of steam thereto.

3. The combination of two movable jaws adapted to approach or recede from each other, a steam-cylinder located adjacent to said jaws, double pistons in said cylinder, and means connecting each of said pistons respectively with each of said jaws, and means for controlling the inlet and outlet of steam therefrom.

4. In a steam dogging-machine, the arrangement and combination of two movable jaws adapted to approach and recede from each other transversely on straight lines, the inner faces of said jaws being so constructed that their lower portions approach more nearly than the upper portions, means on said jaws to engage the logs to be operated upon and means for actuating said jaws.

In testimony whereof I sign this specification in the presence of two witnesses.

ANTHONY S. HILL.

Witnesses:

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