

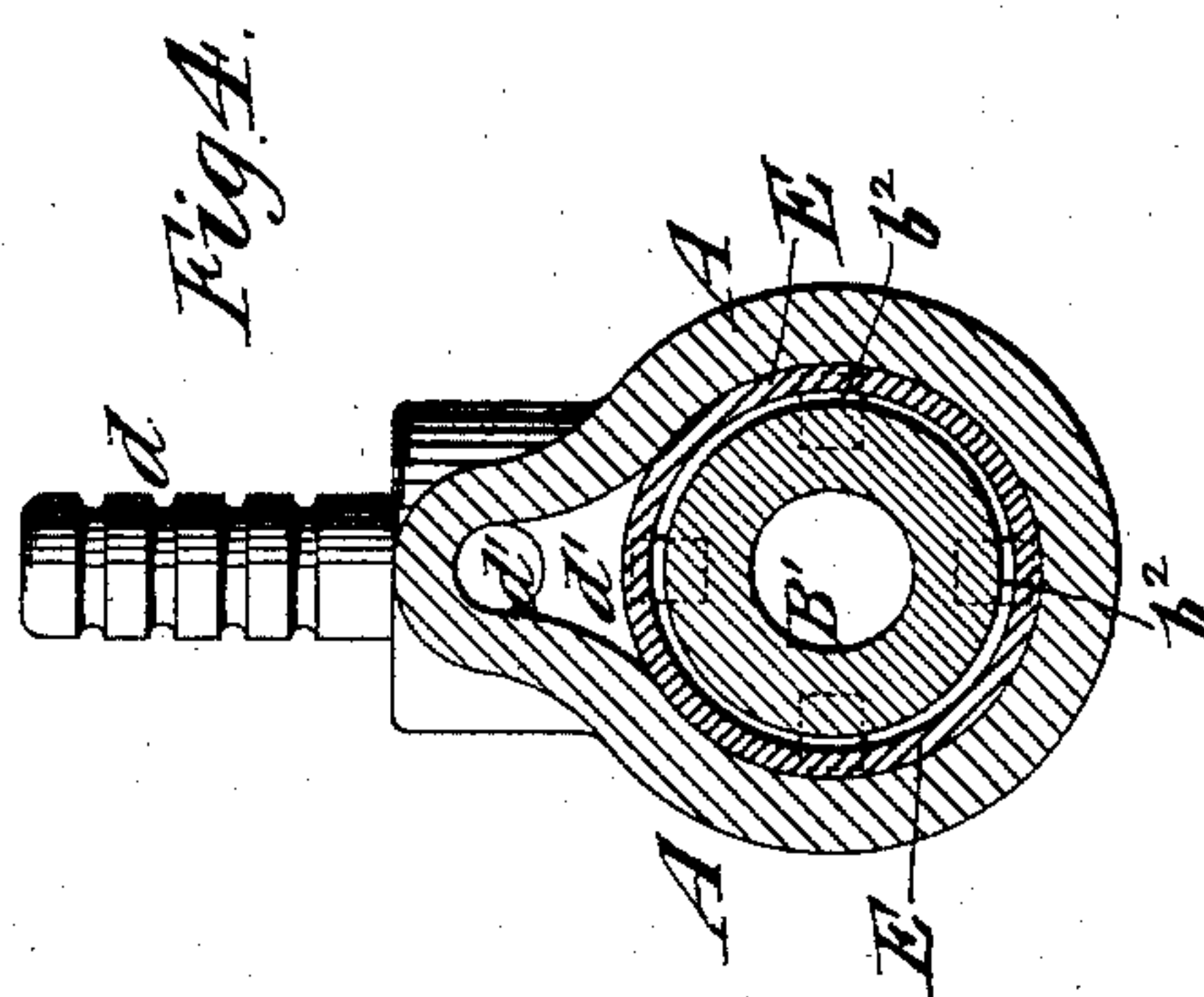
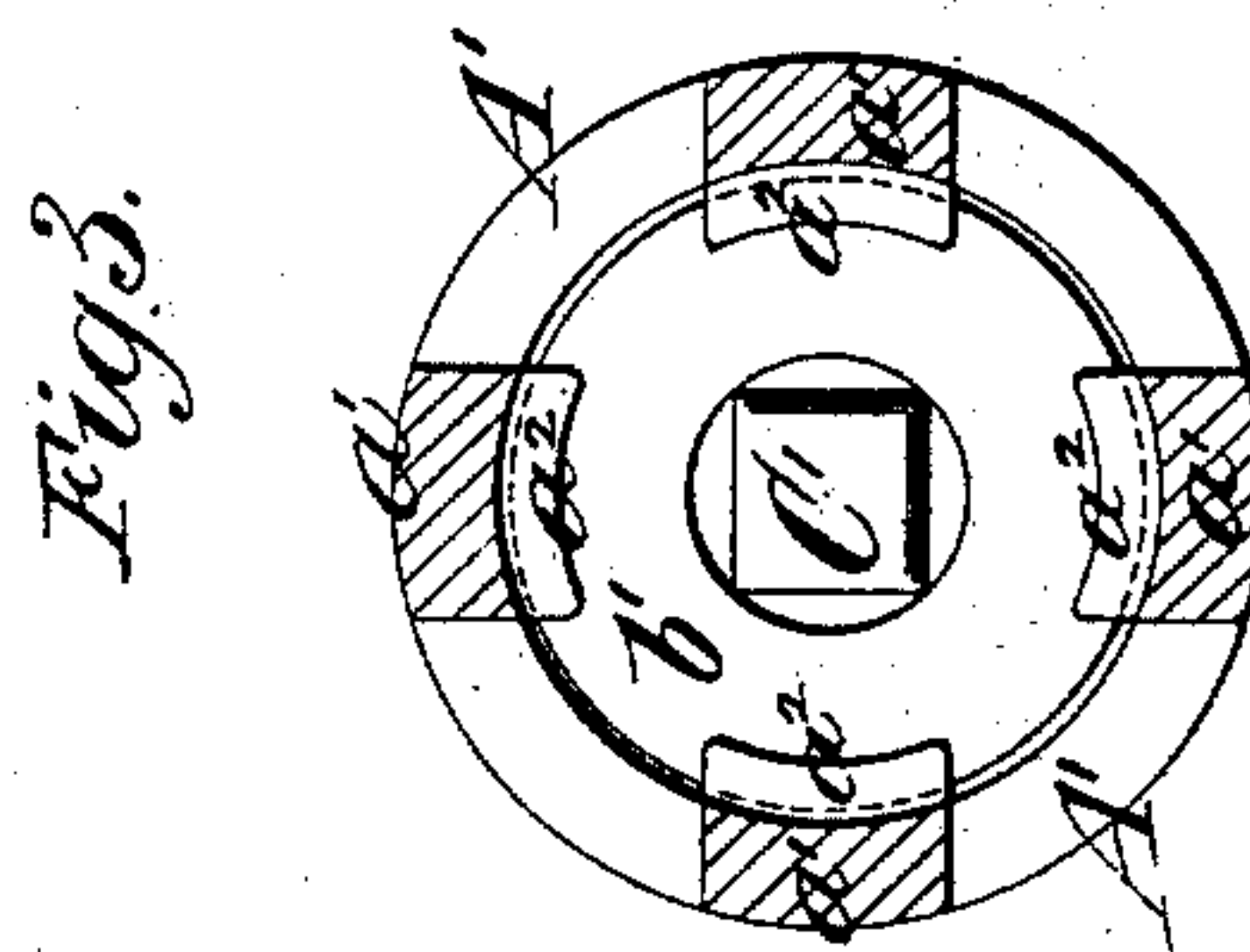
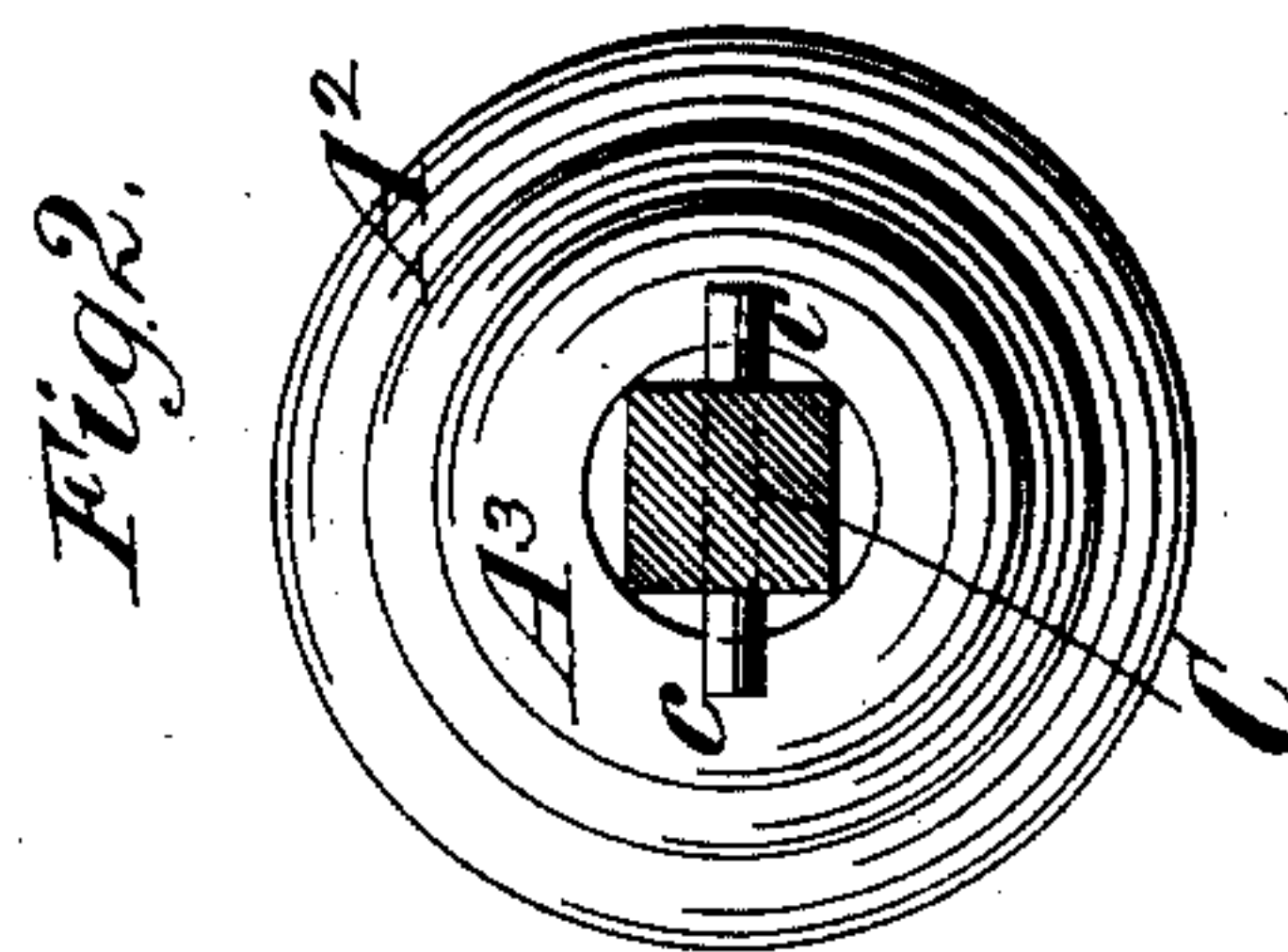
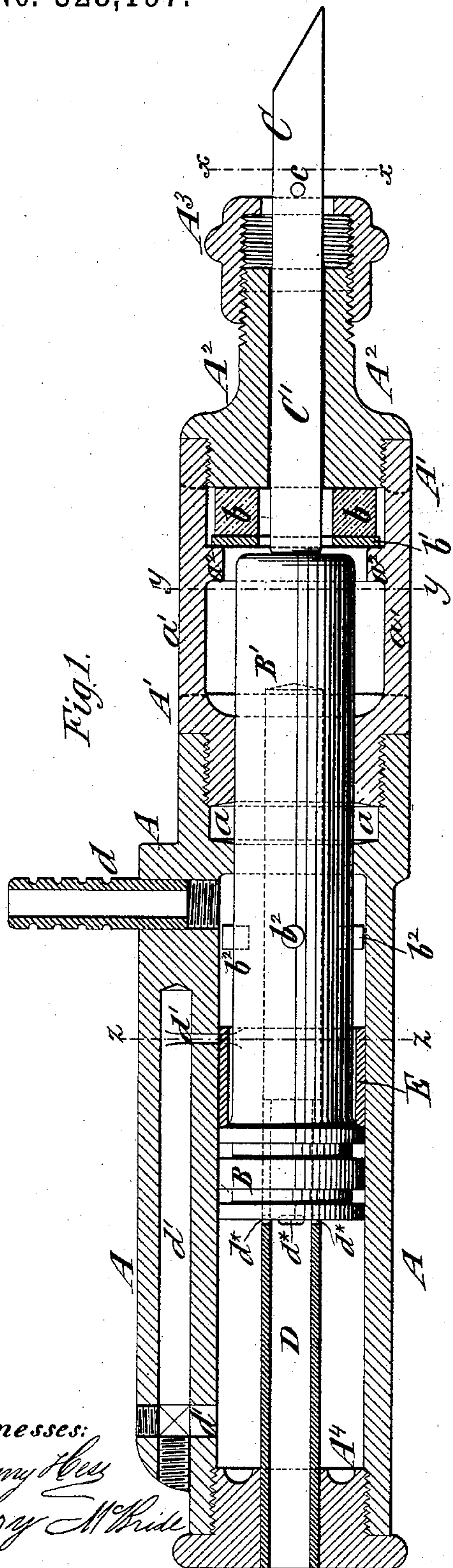
(No Model.)

G. R. CULLINGWORTH.

MACHINE FOR CUTTING, CHIPPING, &c.

No. 328,197.

Patented Oct. 13, 1885.



Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

GEORGE R. CULLINGWORTH, OF NEW YORK, N. Y.

MACHINE FOR CUTTING, CHIPPING, &c.

SPECIFICATION forming part of Letters Patent No. 328,197, dated October 13, 1885.

Application filed April 3, 1885. Serial No. 161,107. (No model.)

To all whom it may concern:

Be it known that I, GEORGE R. CULLINGWORTH, of the city and county of New York, in the State of New York, have invented a
5 new and useful Improvement in Machines for Cutting, Chipping, Calking, and Analogous Uses, of which the following is a specification.

The object of my invention is to provide a
10 small hand-machine in which the tool or implement is operated by steam or air, and which may be readily grasped in the hand and used as a substitute for the ordinary hand-tool and mallet or hammer.

The invention is more particularly intended
15 for machines for cutting or dressing stone, but may be embodied in machines for chipping iron, for calking boilers or vessels, and for performing various kinds of work ordinarily performed by simple hand-tools and mallet or
20 hammer.

The machine comprises a cylinder in the lower head of which is fitted the tool or implement, and which contains a piston capable of operation by steam or air pressure, and
25 serving to deliver rapid hammer-like blows upon the tool or implement. The shank of the tool or implement which fits in the head of the machine is square, polygonal, or of corresponding form, and fits a socket of similar transverse section; and the invention consists in a novel combination of parts whereby the machine is rendered capable of adjustment to diminish or increase the effect of the hammer-like blows of the piston upon the end
30 of the tool or implement.

In the accompanying drawings, Figure 1 is a longitudinal section of a machine embodying my invention. Fig. 2 is a transverse section upon the plane of the dotted line $x x$,
40 Fig. 1. Fig. 3 is a transverse section upon the plane of the dotted line $y y$, Fig. 1; and Fig. 4 is a transverse section upon the plane of the dotted line $z z$, Fig. 1.

Similar letters of reference designate corresponding parts in all the figures.

A designates the cylinder, which is preferably of cylindrical form externally, so that it may be conveniently grasped in the hand and shifted from place to place during the operation of the machine.

B designates the piston, which may be pro-

vided with suitable packing, and which is fitted to the cylinder, and B' designates a large piston-rod or piston-extension working through a stuffing-box, a , at the lower end of
55 the cylinder.

A' designates the lower end portion of the cylinder or an extension of the machine, which is screwed into the stuffing-box a , so as to form a gland therefor, and into the lower end
60 of which is screwed a head or plug, A². This portion A' is of skeleton-like construction, its upper and lower end portions being cylindrical and joined by bridges or arms a' . As best shown in Fig. 3, these bridge portions or arms
65 a' are provided with inwardly-projecting ears or lugs a^2 , forming a shoulder therein, and between such shoulder and the head A² are secured a cushion or buffer, b , of india-rubber or other analogous yielding material, and a
70 metal washer or facing-piece, b' , therefor.

The tool or implement C, which has an edge or end suitably shaped for the work to be performed, has a shank, C', fitting a socket in the head A², and extending inward through
75 the buffer and facing-piece $b b'$. This tool-shank and its socket should be locked together so as to prevent them from turning independent of each other, and so that the tool-shank may move lengthwise in the socket.
80 As here shown, they are square in transverse section, but they may be of polygonal or other form, or they may be round and provided with a groove and spline or feather.

Upon the outer end of the head A² is
85 screwed a cap, A³, and the tool C has a shoulder which bears against this cap. As here shown, the shoulder is formed by a pin, c , inserted transversely through the tool and bearing against the outer side of the cap A³.
90

The piston and rod B B' are intended to strike rapid hammer-like blows upon the end of the tool-shank C', and thereby produce the cutting or other action which the tool is intended to perform. During the operation of
95 the machine the latter is held with the tool pressed or placed against the work in proper position, whether the machine be used for cutting or dressing stone, or for chipping or cutting iron, or for calking vessels, boilers,
100 or other articles composed of sheet metal.

It will be observed that by adjusting the

cap A^3 relatively to the head the shank C' of the tool may be made to project more or less into and through the buffer $b\ b'$, and in this way the force of the blow upon the tool may be regulated. If the cap A^3 is screwed outward so that the shank of the tool will be entirely within and shielded by the buffer, then the piston extension or rod B' will expend a portion of its force in compressing the buffer before it reaches the shank of the tool and a light blow will be struck. If the cap A^3 be adjusted inward so as to allow the shank of the tool to project through and beyond the buffer $b\ b'$, then the piston rod or extension will strike with full force upon the shank of the tool and cause it to exert its maximum effect.

The cylinder is provided near its lower end with a nipple, d , to which a flexible hose may be attached for supplying the machine with steam or compressed air under pressure, and a port or passage, d' , formed in the cylinder A connects the latter above and below the piston B .

The cylinder A is closed at its inner or upper end by a head, A^1 , in which is fixed an exhaust-pipe, D , projecting into a central cavity or bore in the piston and piston-extension $B\ B'$, and provided with side openings, d^* .

E designates a valve, which consists of a ring fitting within the cylinder and through which the piston-rod B' moves freely without friction. The length of free movement of the piston-rod without moving the valve is limited by shoulders, one of which is formed by the piston and the other of which is formed by studs or projections b^2 on the rod B' .

Suppose that the parts are in the position shown in Fig. 1. The port or passage d' below the piston being covered by the valve E , steam or air admitted continuously through the nipple d will force the piston upward until the projections b^2 strike the end of the valve E and move it so as to uncover the lower end of the port d' . The steam or air then passes freely through the port d' to the upper end of the cylinder, and acting on the upper end of the piston forces it downward and causes it to deliver a hammer-like blow upon the tool. This downward movement of the tool terminates when the side openings, d^* , in the exhaust-pipe D are un-

covered, as shown in Fig. 1, thus permitting the fluid from the upper end of the cylinder to exhaust from said pipe; and just before this occurs the piston will strike the valve E and move it sufficiently to cover the lower end of the port d' . The piston will then be forced upward again by the pressure on its lower end, and will deliver blows in rapid succession upon the tool or implement.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a machine for use as herein described, the combination, with a cylinder and piston, and piston-rod movable therein, of a socketed head applied to the end of the cylinder, a cushion or buffer supported by said head, and a tool the shank of which is fitted to the socket in said head, and which is adjustable lengthwise therein to bring its inner end more or less within range of the hammer-like blows of the piston-rod, substantially as and for the purpose herein described.

2. The combination, with a cylinder and piston, and piston-rod movable therein, of a socketed head applied to the lower end of the cylinder, a buffer or elastic cushion at the lower end of the cylinder, a shouldered tool or implement the shank of which is fitted to a socket in said head, and an adjustable cap applied to the head and serving to hold the tool in position lengthwise by acting against the shoulder thereof, whereby the tool may be adjusted to bring its inner end more or less within range of the hammer-like blows of the piston-rod, substantially as and for the purpose herein described.

3. The combination, with the cylinder A and its piston and piston-rod $B\ B'$, of the portion A^1 , screwed into the lower end of the cylinder and forming a stuffing-box gland therein, the head A^2 , secured in the portion A^1 , a buffer or elastic cushion, $b\ b'$, confined in place between a shoulder in the portion A^1 and the head A^2 , the adjustable cap A^3 , and a tool or implement, C , provided with a shoulder bearing against said cap, substantially as and for the purpose herein described.

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Witnesses:

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