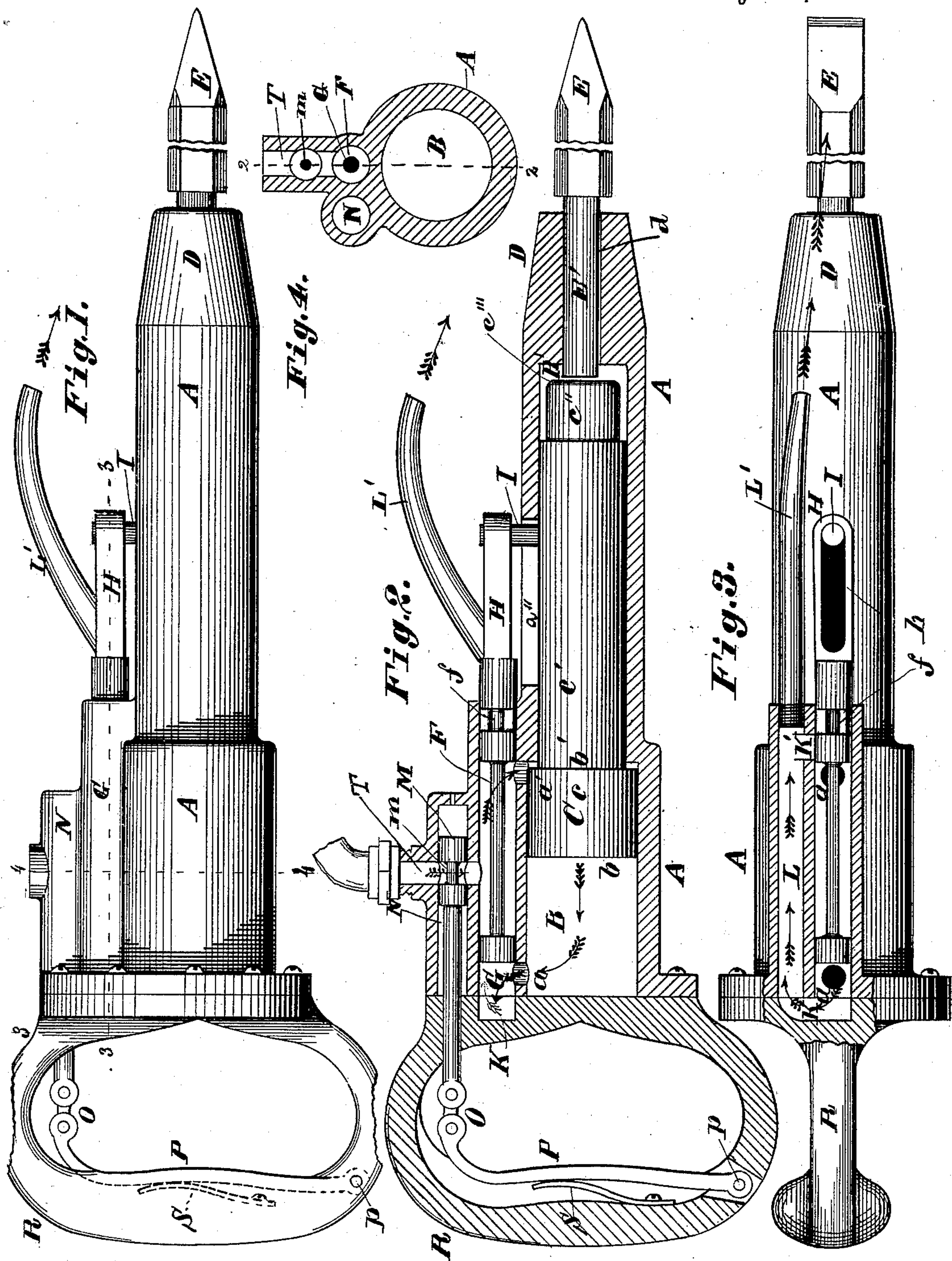


(No Model.)

J. BOYER.
CHIPPING MACHINE.

No. 277,448.

Patented May 15, 1883.



Attest:
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UNITED STATES PATENT OFFICE.

JOSEPH BOYER, OF ST. LOUIS, MISSOURI, ASSIGNOR OF FORTY-NINE ONE-HUNDREDTHS TO OSCAR BRADFORD, OF SAME PLACE, AND JOHN F. GOLDING, OF CHICAGO, ILLINOIS.

CHIPPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 277,448, dated May 15, 1883.

Application filed May 4, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH BOYER, of the city of St. Louis, in the State of Missouri, have invented a Chipping-Machine, of which the following is a full, clear, and exact description.

The machine is constructed with a piston of peculiar construction working in a cylinder conforming thereto, said piston acting as a hammer upon the shank of a chisel held in one hand of the operator, the shank of the chisel being inserted in one end of the cylinder, which is held by a handle in the other hand.

The machine can be operated by compressed air or steam which exhausts through an external pipe, which directs the same to the edge of the chisel to blow away the chips. The throttle-valve is closed by a spring, and is opened by means of a lever within the handle.

In order that the invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a side view of the machine. Fig. 2 is a vertical section at 2 2, Fig. 4. Fig. 3 is a top view with part in horizontal section at 3 3, Fig. 1. Fig. 4 is a transverse section at 4 4, Fig. 1.

A is the cylinder, having a chamber, B, of larger, and a chamber, B', of smaller, diameter. C is the piston, having parts c c' c'' , the parts c c' fitting, respectively, the chambers B B' of the cylinder.

I will describe my machine as driven by compressed air, although steam may be used.

B is the compressed-air chamber of the cylinder, the chamber B' acting as a guide to the part c' of the piston, the latter serving to close this end of the chamber B against the escape of air in any material quantity.

c'' is the hammer-face on the reduced end c'' of the piston C. As the end of the piston is reduced in diameter there is room in the cylinder for the broadening of the end, caused by battering against the chisel-shank.

D is the front end of the cylinder, having a central bore or orifice, d , in which the shank E' of the chisel E is inserted. The shank of

the chisel fits snugly but easily in the bore or orifice.

F is a balanced slide-valve working in a valve-chamber, G.

a and a' are air-ports, through which air is admitted to and exhausted from the cylinder.

The valve-stem H extends out through the end of the chamber G, and is longitudinally slotted at h for the reception of a valve-operating pin, I, that extends from the part c' of the piston through a slot, a'' , in the cylinder. The pin acts upon the ends of the slot h to reverse the slide-valve when the piston reaches the ends of its stroke. The stem H is connected to the valve F by a neck, f , leaving an annular chamber through which the exhaust-air passes from the cylinder to the exhaust-port K' when the piston is making its forward stroke. The exhaust-ports K K' discharge from the ends of the chamber G into a contiguous chamber, L, leading to a blast or blow pipe, L', which directs the exhaust-air to the edge of the chisel to blow away the chips and dust.

M is the throttle-valve, working in a cylindrical chamber, N, and operated by a lever, P, by means of a link, O, connecting the free end of the lever to the valve-stem. The lever is fulcrumed at p to the handle R, so that it can be drawn backward to open the throttle-valve by the pressure of the fingers while grasping the handle.

S is a spring acting to force the lever outward when it is relieved from the pressure of the fingers. The outward movement of the lever closes the throttle-valve.

T is the induction-port.

The throttle-valve M has two heads, between which is a neck, m , around which the compressed air passes in entering the cylinder.

It will be seen that the area of the rear end, b , of the piston much exceeds that of the annular collar b' at the front end of the chamber B', so that the forward movement of the piston will be made with much greater force than the return or rearward movement, as is required.

In operation the chisel is held in one hand,

as usual, and manipulated by the hand, as ordinarily, and the machine applied to the shank of the chisel with the other hand, the machine taking the place of the common hammer, and not holding the tool as a drill-point is held.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a chipping-machine, the combination of a cylinder formed with front end, D, having a circular orifice, *d*, a reciprocating piston, and a hand-chisel having straight circular shank, the front end of the cylinder adapted to be applied over the shank of the chisel, while the latter is held by the hand, as usual, as set forth.

2. The combination of cylinder A, having large chamber B, smaller chamber, B', slot *a''*, front end, D, having bore *d*, adapted to receive the shank of a chisel, the piston C, having

part *c*, body *c'*, and reduced end *c''*, pin I, valve F, stem H, having slot *h*, and suitable operating mechanism, as set forth.

3. The combination, in a chipping-engine, of cylinder A, exhaust-passages K K', chamber L, and external pipe, L', connected to said chamber, and adapted to direct the exhaust to the edge or end of the chisel, for the purpose set forth.

4. The combination of cylinder A, having chambers G L and ports *a a'* and K K', valve F *f*, and blow-pipe L', as set forth.

5. The combination, with the cylinder of a chipping-machine, of handle R, spring-lever P, and throttle-valve M, for the purpose set forth.

JOSEPH BOYER.

Witnesses:

SAML. KNIGHT,

GEO. H. KNIGHT.