

No. 629,662.

Patented July 25, 1899.

E. M. CRANDALL.
BELL RINGER FOR LOCOMOTIVES.

(Application filed Mar. 24, 1899.)

(No Model.)

Fig. 1.

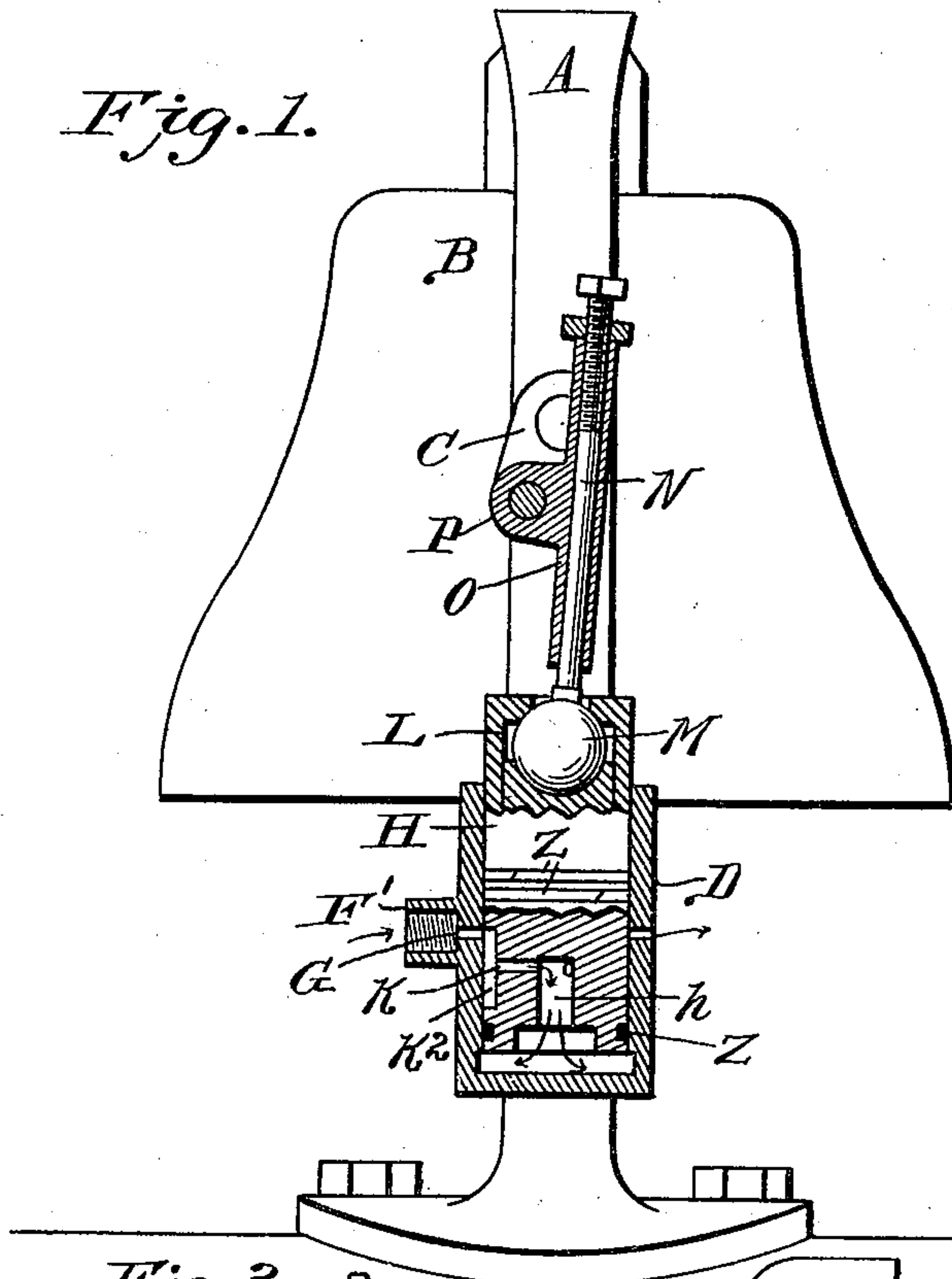


Fig. 6.

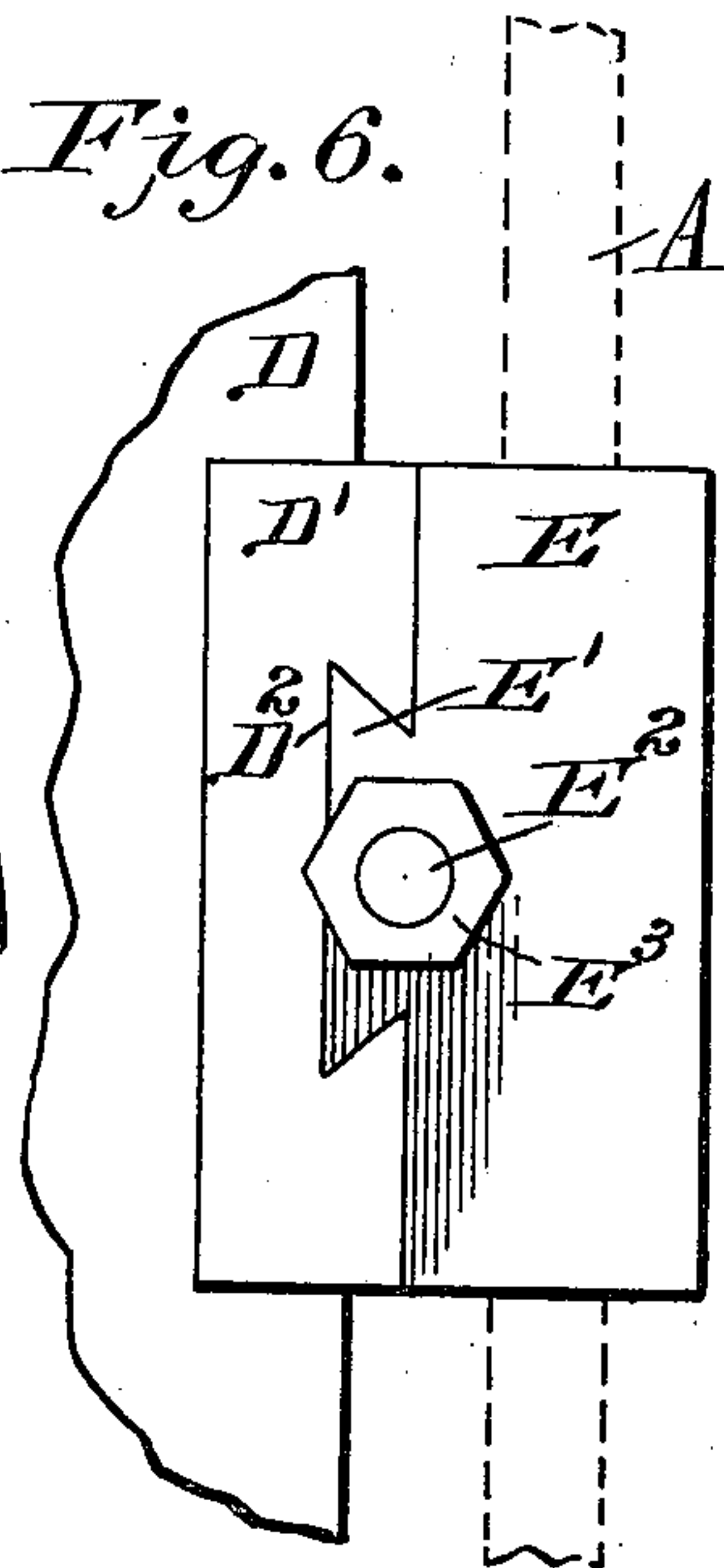


Fig. 2.

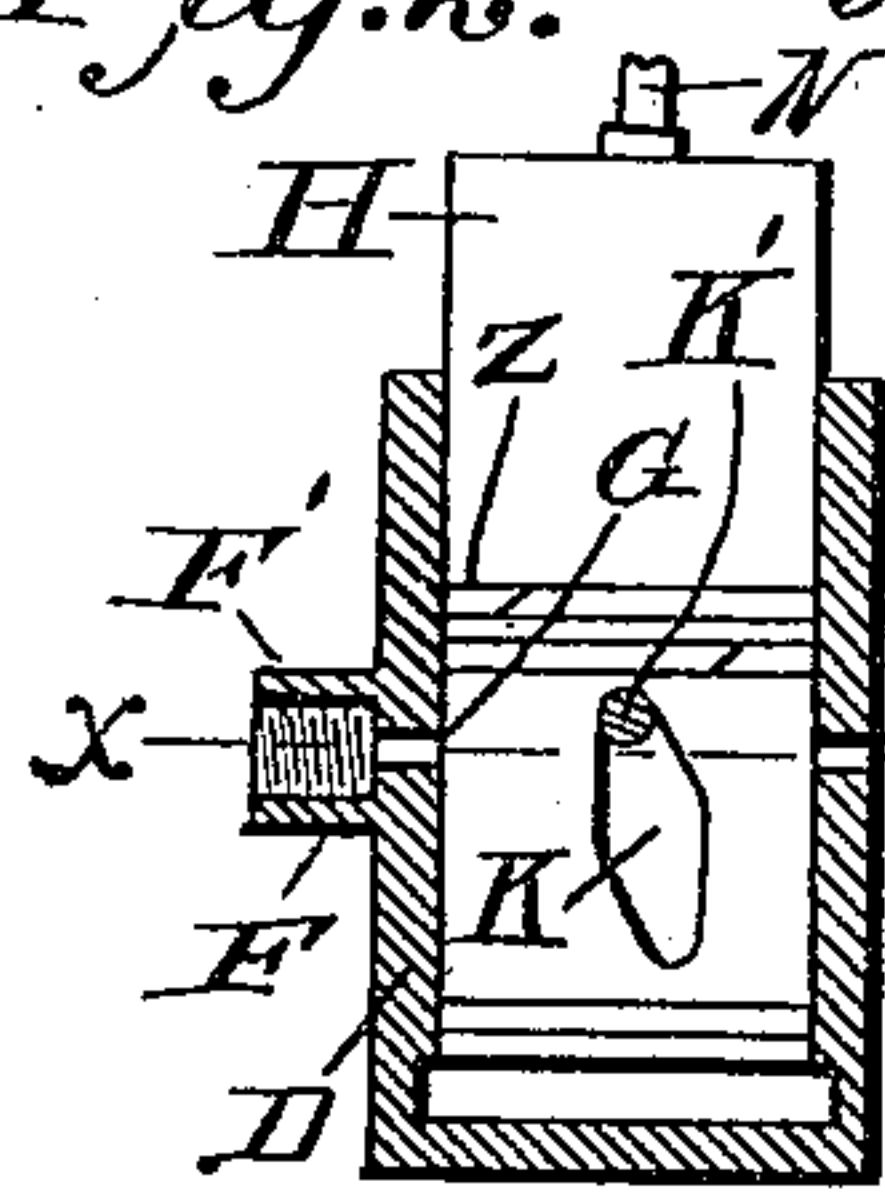


Fig. 3.

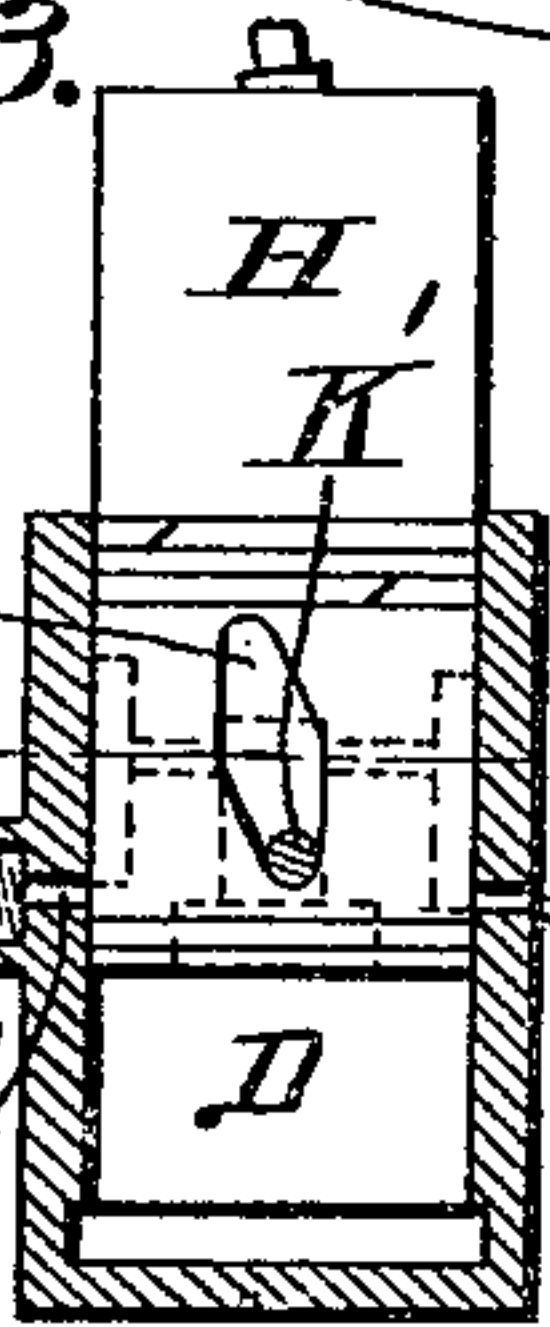


Fig. 4.

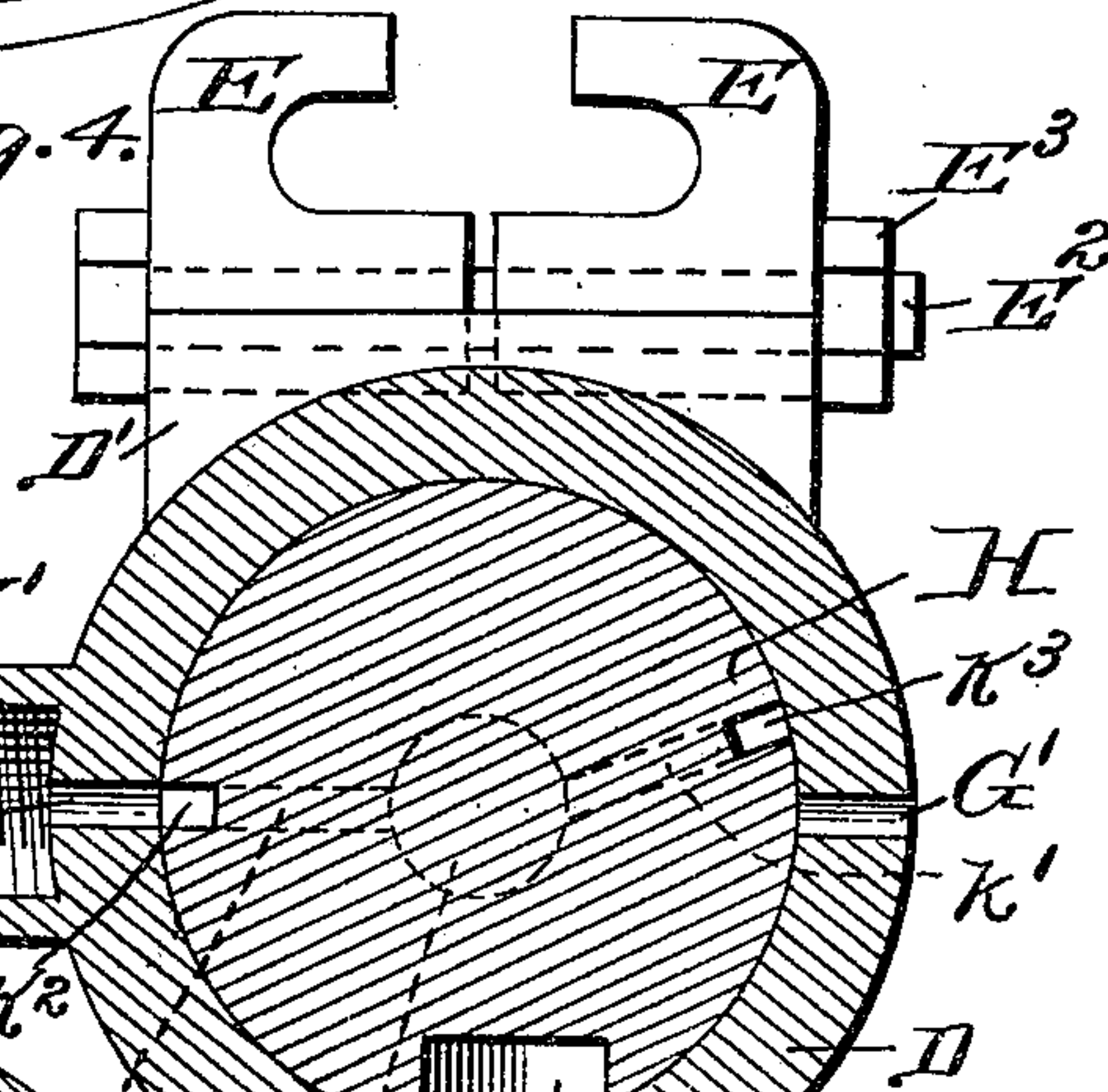
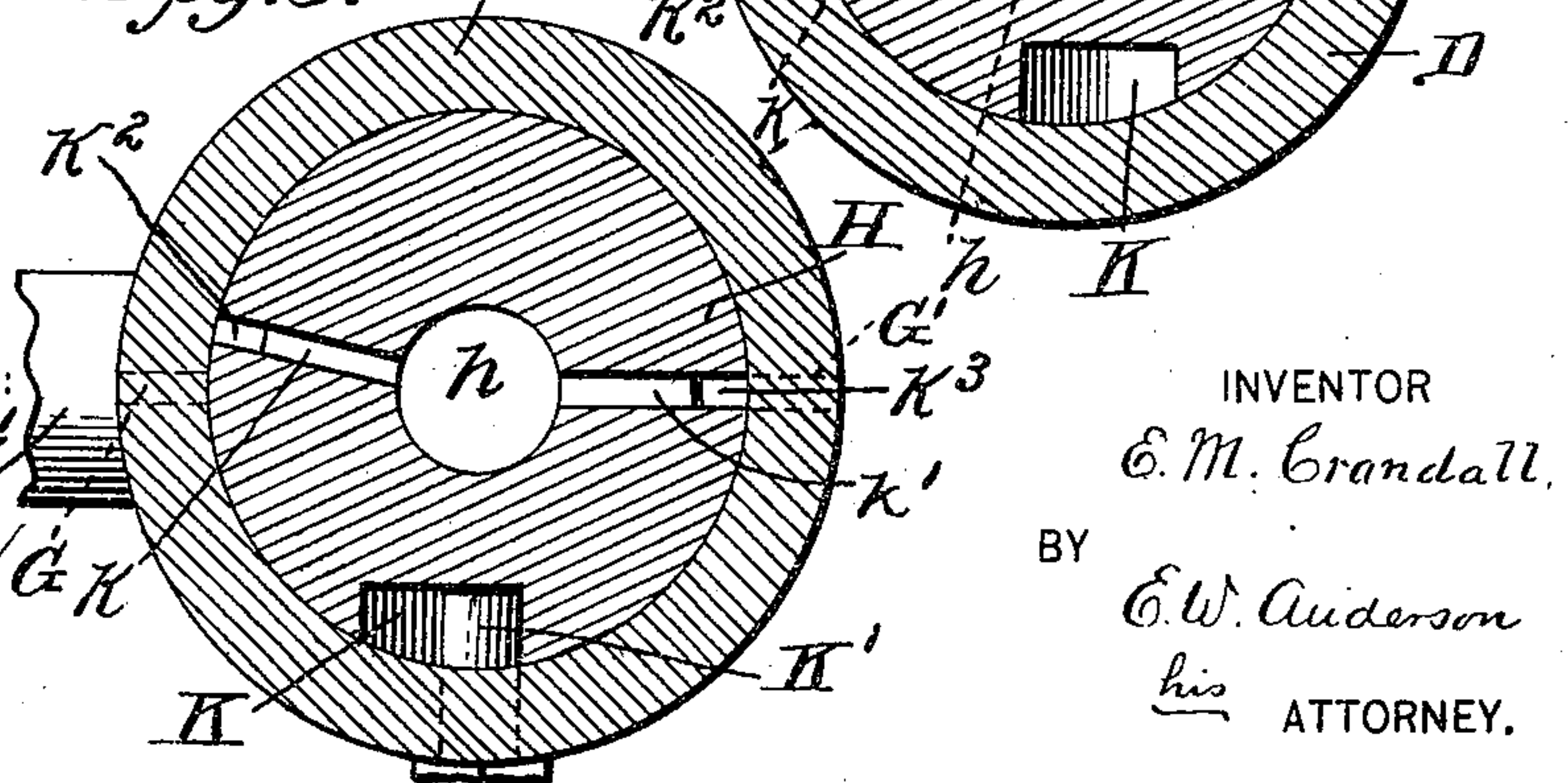


Fig. 5.



WITNESSES:

E. G. McKee
Geo. M. Anderson

INVENTOR

E. M. Crandall,

BY

E. W. Anderson
his ATTORNEY.

UNITED STATES PATENT OFFICE.

EMMET M. CRANDALL, OF ST. JOSEPH, MISSOURI.

BELL-RINGER FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 629,662, dated July 25, 1899.

Application filed March 24, 1899. Serial No. 710,348. (No model.)

To all whom it may concern:

Be it known that I, EMMET M. CRANDALL, a citizen of the United States, and a resident of St. Joseph, in the county of Buchanan and State of Missouri, have invented certain new and useful Improvements in Bell-Ringers for Locomotives, &c.; and I do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a representation of a side view partly showing the invention as in application. Figs. 2 and 3 are sectional views showing the piston in its extreme positions. Fig. 4 is an enlarged section on line *x x*, Fig. 2. Fig. 5 is an enlarged section on the line *y y* of Fig. 3. Fig. 6 is a detail view of the means for securing the cylinder to the bell-frame.

This invention is designed to provide an improved bell-ringer which can be started at any time without pulling the bell-rope, while at the same time it permits the bell to be rung by means of said rope without disconnection from the ringer; also, to provide a device of this character which is simple in construction, inexpensive, and durable, which can be operated with but little air or steam, and which can be readily attached to any engine.

With these objects in view the invention consists in the novel construction and combination of parts, all as hereinafter described, and pointed out in the appended claim.

Referring to the accompanying drawings, the letter A indicates the usual bell-frame, B a bell hung therein, and C the bell-crank.

D designates a cylinder having at one side a lug or projection *D'*, formed with a transversely-extending dovetailed groove *D²*, which is engaged by the dovetailed ribs *E'* of a pair of clamps E, the whole being secured by a bolt *E²* and nut *E³*. The cylinder D is provided at F with a nipple *F'* for connection with an air or steam inlet pipe, (not shown,) and leading from said nipple to the interior of the cylinder is an inlet-port G. G' designates an exhaust-port at the opposite side of said cylinder. The cylinder is secured to the

upright portion of the bell-frame by means of the clamps E. Other suitable means for supporting or securing said cylinder may, however, be provided. Said cylinder is closed at the bottom and open at the top, and fitted to reciprocate vertically therein is a cylindric piston H. Said piston has in its lower portion a central vertical cavity *h*, open at the bottom, and communicating with this cavity are an inlet-port *k* and an exhaust-port *k'*. These two ports, which are designed to register, respectively, with the ports G G' of the cylinder, are at an angle to each other, as shown in Fig. 3, so that when the ports *k* and G are in registering positions ports *k'* and G' will be in non-registering positions, and vice versa, the change being effected by a partial rotation of the piston as it reciprocates. To effect this rotary movement, I form in one side of the piston an oblique cam-groove K, which is engaged by a stud K', seated in the wall of the cylinder. The outer portions of the ports *k k'* at the surface of the cylinder are enlarged or formed into chambers *k²* and *k³*, respectively, so as to take steam while the piston is moving. Formed in the upper end portion of said piston is a ball seat or socket L, in which is seated a ball M on the lower end of a rod N. Adjustably secured on said rod is a sleeve O, having a lug P, which is connected to the bell-crank C, as shown in Fig. 1.

The operation will be readily understood. Air or steam being admitted to the piston, the latter is raised by the pressure, being partially rotated at the same time (the ball and socket permitting this) by reason of the engagement of the stud K' with its groove K, thereby closing the inlet-port and opening the exhaust-port. The piston is returned by its own weight and the weight of the bell.

By reason of the ball-and-socket connection between the rod N and the piston and the angular position of said rod when the bell is at rest the device can be started without pulling the bell-rope and the bell may be rung by means of the rope without disconnecting it from the operating devices.

The piston is suitably packed at Z. The entire device, with the exception of the rod N and ball M, may be made of cast-iron. The rod N and ball M are preferably made of steel.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

5 In a bell-ringer, the combination with a cylinder having inlet and exhaust ports and its upper end open, a cylinder-piston in said cylinder, said piston having a cavity in its lower portion, and inlet and exhaust ports communicating with said cavity, and at an angle
10 to each other, and also having an oblique groove in its surface and a ball-seat in its upper end portion, a stud seated in the cylinder-

der-wall and engaging the said groove, and a rod adapted for connection with a bell-crank and having a ball at one end portion which
15 engages the ball-seat in the piston, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

EMMET M. CRANDALL.

Witnesses:

HERMAN A. SUTER,
JOHN V. DENNY.