

No. 659,724.

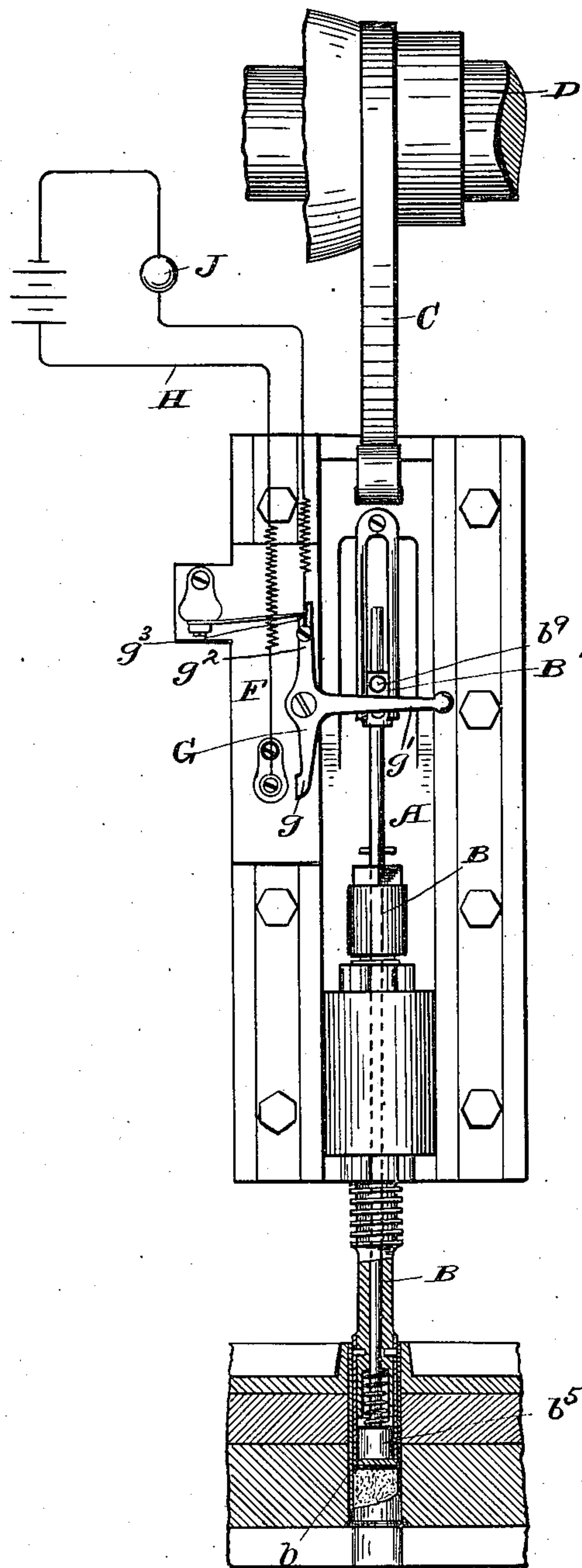
Patented Oct. 16, 1900.

C. M. WILLS.

ALARM FOR CARTRIDGE LOADING MACHINES.

(No Model.)

3 Sheets—Sheet 1.



-FIG. I-

Witnesses,  
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A. C. Merkel

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By J. D. Fay Atty.

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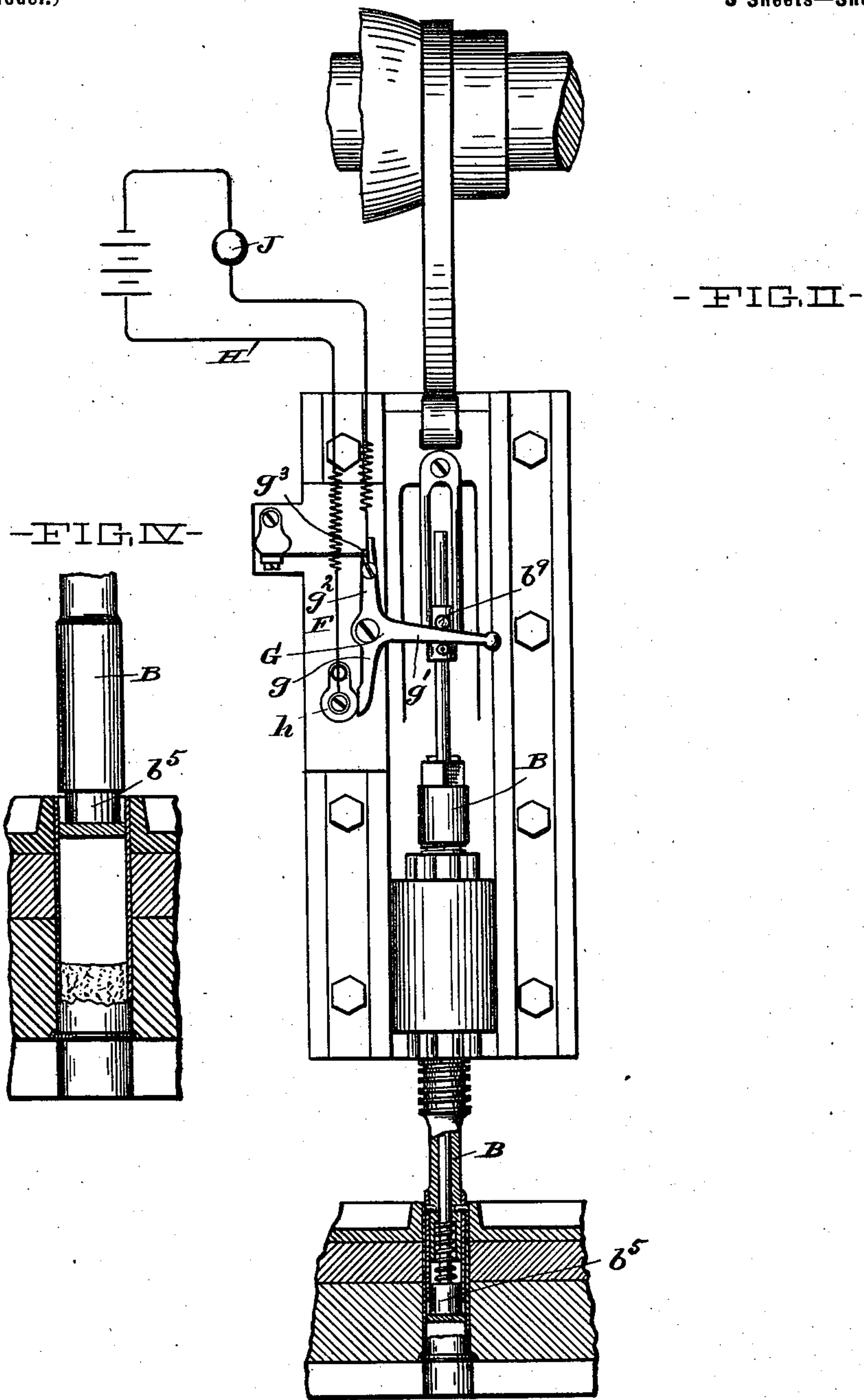
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(Application filed Jan. 9, 1900.)

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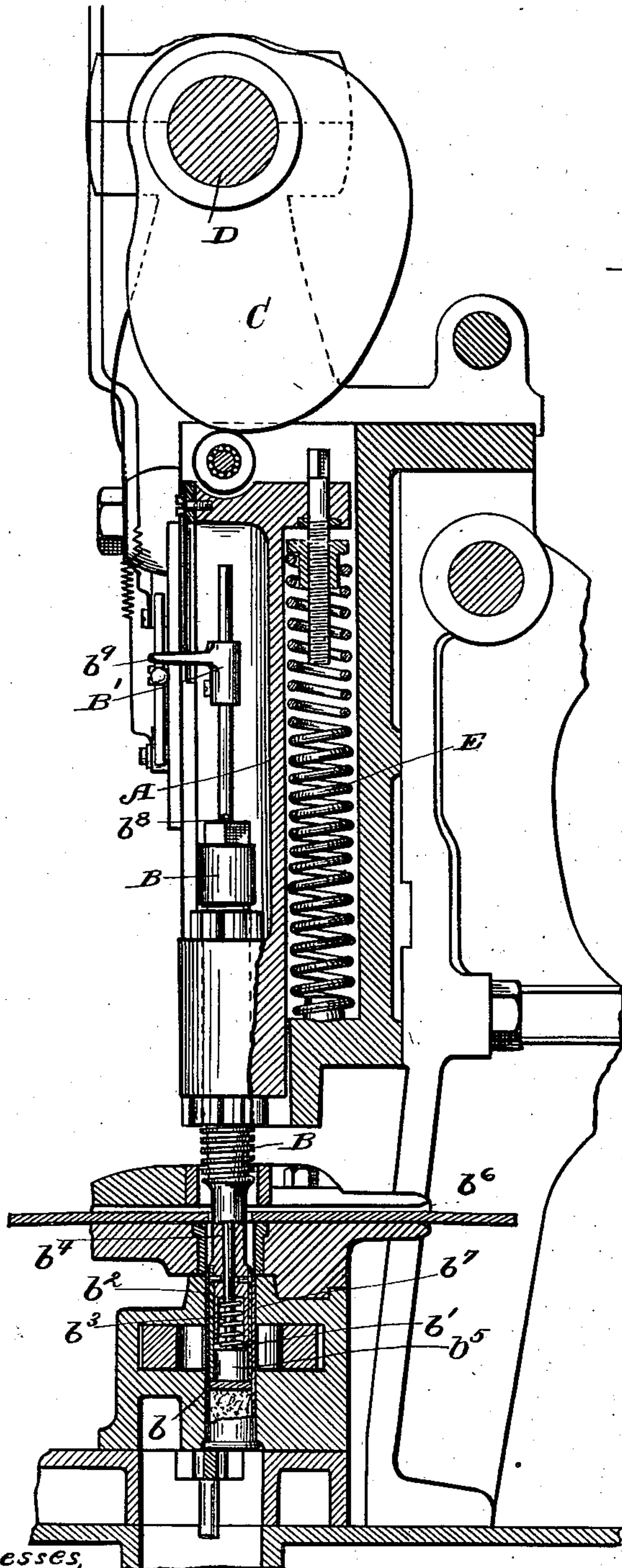
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3 Sheets—Sheet 3.



-FIG. III-

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# UNITED STATES PATENT OFFICE.

CASSIUS M. WILLS, OF CLEVELAND, OHIO, ASSIGNOR TO THE AUSTIN CARTRIDGE COMPANY, OF SAME PLACE.

## ALARM FOR CARTRIDGE-LOADING MACHINES.

SPECIFICATION forming part of Letters Patent No. 659,724, dated October 16, 1900.

Application filed January 9, 1900. Serial No. 832. (No model.)

*To all whom it may concern:*

Be it known that I, CASSIUS M. WILLS, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Alarms for Cartridge-Loading Machines, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to devices for making an alarm to indicate the improper loading of shells on the part of shell-loading machines; and it consists of means hereinafter fully described.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure I represents a front elevation of a portion of a shell-loading machine to which my improved device has been applied, showing the wad-rammer, a shell, and a portion of a shell-carrier in vertical central section. Fig. II represents a transverse vertical cross-section of such machine, showing my improvement partly in elevation and partly in section. Fig. III represents a view similar to that shown in Fig. I, illustrating the alarm mechanism in a second position. Fig. IV represents an enlarged vertical cross-section of a partially-loaded shell and the end of the rammer in elevation, illustrating the latter with my improvement attached and in the act of inserting a wad into the shell.

My improvement is illustrated in the drawings as applied to wad-ramming mechanism of a shell-loading machine of a construction such as is embodied in my invention shown and described in Letters Patent No. 639,080, issued December 12, 1899, and in which a reciprocating slide A is utilized, having a wad-rammer B secured to the lower end thereof, as shown. Said rammer and slide are actuated by a cam C, mounted upon an operating-shaft D, and a helical spring E, Fig. II. The shells in which the wads are to

be inserted are successively brought under the rammer, and wads for such insertion are supplied in the manner set forth in said Letters Patent. Any mechanism may, however, be used whereby wads may be inserted by a rammer into successive shells. The rammer-face *b* of such rammer is provided with an axial bore *b'*, which may be formed by boring the metal itself or by securing upon the outer cylindrical surface thereof a shell *b<sup>2</sup>*, as shown in the drawings. The rammer is further provided with a second bore *b<sup>3</sup>*, extending upwardly from the bottom of bore *b'*, and with a third bore *b<sup>4</sup>*, extending from bore *b<sup>3</sup>* upwardly throughout the remaining portion of the rammer.

Seated in bore *b'* is a plunger *b<sup>5</sup>*, to which is secured a stem *b<sup>6</sup>*, which projects upwardly through and beyond the upper end of the rammer, as shown. A helical spring *b<sup>7</sup>* is seated in bore *b<sup>8</sup>* and causes the plunger to normally project from the ramming-face of the rammer, as shown in Fig. IV, the extent of such projection being limited by a stop-pin *b<sup>8</sup>*, engaging the upper end of said rammer, as shown in Fig. III.

Upon the upper end portion of the stem *b<sup>6</sup>* is secured a sleeve *B'* by means of a set-screw, whereby the position of such sleeve may be adjusted as desired. Said sleeve is formed or provided with an arm or lug *b<sup>9</sup>*, which extends forwardly, as shown in Fig. IV.

Fulcrumed upon the guide F is a contact-lever G, having a contact-arm *g* and an arm *g'*, extending into the path of the lug *b<sup>9</sup>* of the sleeve *B'*. Said lever G is further provided with an upwardly-extending arm *g<sup>2</sup>*, provided with a notch *g<sup>3</sup>*. A contact-piece *h* is secured to said guide in the vicinity of the end of the contact-arm *g* of the lever G, as shown in Fig. I, said piece and arm forming a contact for opening or closing an electrical circuit H, containing a bell J. A spring *h'* is secured upon said guide, Fig. I, and rests in a notch *g<sup>3</sup>* in the upper end of arm *g<sup>2</sup>* of the contact-lever when the latter is in the open position. When said lever is in the closed position, said spring drops below said notch *g<sup>3</sup>* and locks the lever in said position, as shown in Fig. III.

The sleeve *B'* is given a position upon the



stem  $b^6$  such that the distance between the lower surface of that portion of the lug  $b^9$  which engages the lever G and the lower surface of the stop-pin  $b^8$  will be less than the distance between such engaged lever-surface when said lever is in its open position and the surface of the rammer engaged by said pin when said rammer is in the extreme lowermost position, as shown in Fig. I.

10 In operation the rammer descends, with the plunger projecting from its ramming-surface, and inserts a wad into the shell, as shown in Fig. IV, the spring  $b^7$  being made sufficiently strong to maintain such projecting position against the frictional and pneumatic resistance set up by the wad in its insertion. Said wad is pushed downwardly until it strikes the powder which has been previously inserted in the shell, whereupon the plunger yields and is pushed upwardly against the action of spring  $b^7$ . Such movement causes the sleeve  $b^6$  to move upwardly and the lug  $b^9$  to escape engagement with the contact-lever G should the latter be in its open position, the electrical circuit being thereby left open. Should, however, the charge of powder have been omitted or be deficient, the plunger will remain partially or wholly projecting from the ramming-face when the rammer reaches its lowermost position, as shown in Fig. III, in which case lug  $b^9$  engages lever G, closes the circuit, ringing the bell, and thereby giving an alarm indicating a deficient charge of powder in such shell. The spring  $b^7$  locks the contact, and the alarm continues to be sounded until such contact is again opened, such operation necessitating the attendance of the operator, who may then stop the machine and remove such deficient shell.

40 The above-described device may be used, as is readily seen, to indicate the omission of any of the wads which are inserted in the shell or of the charge of shot, its adaptation to such purpose being effected by changing the length of the rammer and altering the position of the sleeve  $B^1$ .

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as re-

gards the mechanism herein disclosed, provided the means covered by any one of the following claims be employed.

I therefore particularly point out and distinctly claim as my invention—

1. The combination of a reciprocable wad-rammer provided with a yielding member communicating with the ramming-face, an electrical circuit provided with a contact for opening and closing the circuit, said yielding member adapted to actuate said contact to close said circuit and a lock for locking it in such closed position, substantially as set forth.

2. The combination of a reciprocable wad-rammer provided with a yielding plunger projecting from its ramming-face, a rod passing through the rammer, an electrical circuit, and a lever-contact adapted to open or close said circuit, and projecting into the path of said rod, whereby the latter may be caused to engage said contact to close said circuit, substantially as set forth.

3. The combination of a reciprocable wad-rammer provided with a yielding plunger projecting from its ramming-face, a rod passing through the rammer, an electrical circuit, a lever-contact adapted to open or close said circuit and projecting into the path of said rod, whereby the latter may be caused to engage said contact to close said circuit, and a lock for locking same in such closed position, substantially as set forth.

4. The combination of a reciprocable wad-rammer provided with a yielding plunger projecting from its ramming-face, a rod passing through the rammer, an electrical circuit, a lever-contact adapted to open and close said circuit and projecting into the path of said rod whereby the latter may be caused to engage said contact to close said circuit, and a spring engaging said lever and adapted to lock same in such closed position, substantially as set forth.

Signed by me this 3d day of January, 1900.

C. M. WILLS.

Attest:

D. T. DAVIES,  
A. E. MERKEL.