

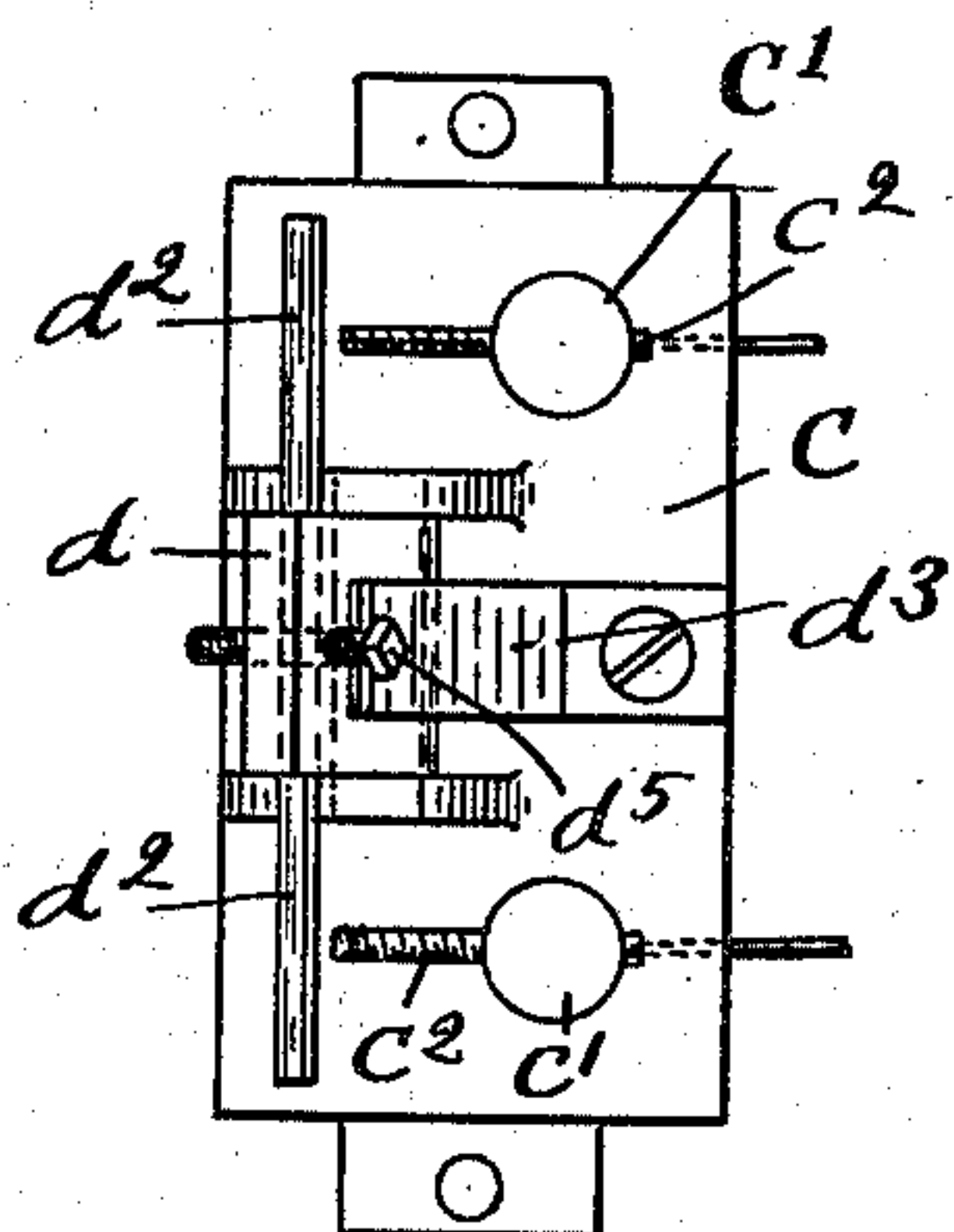
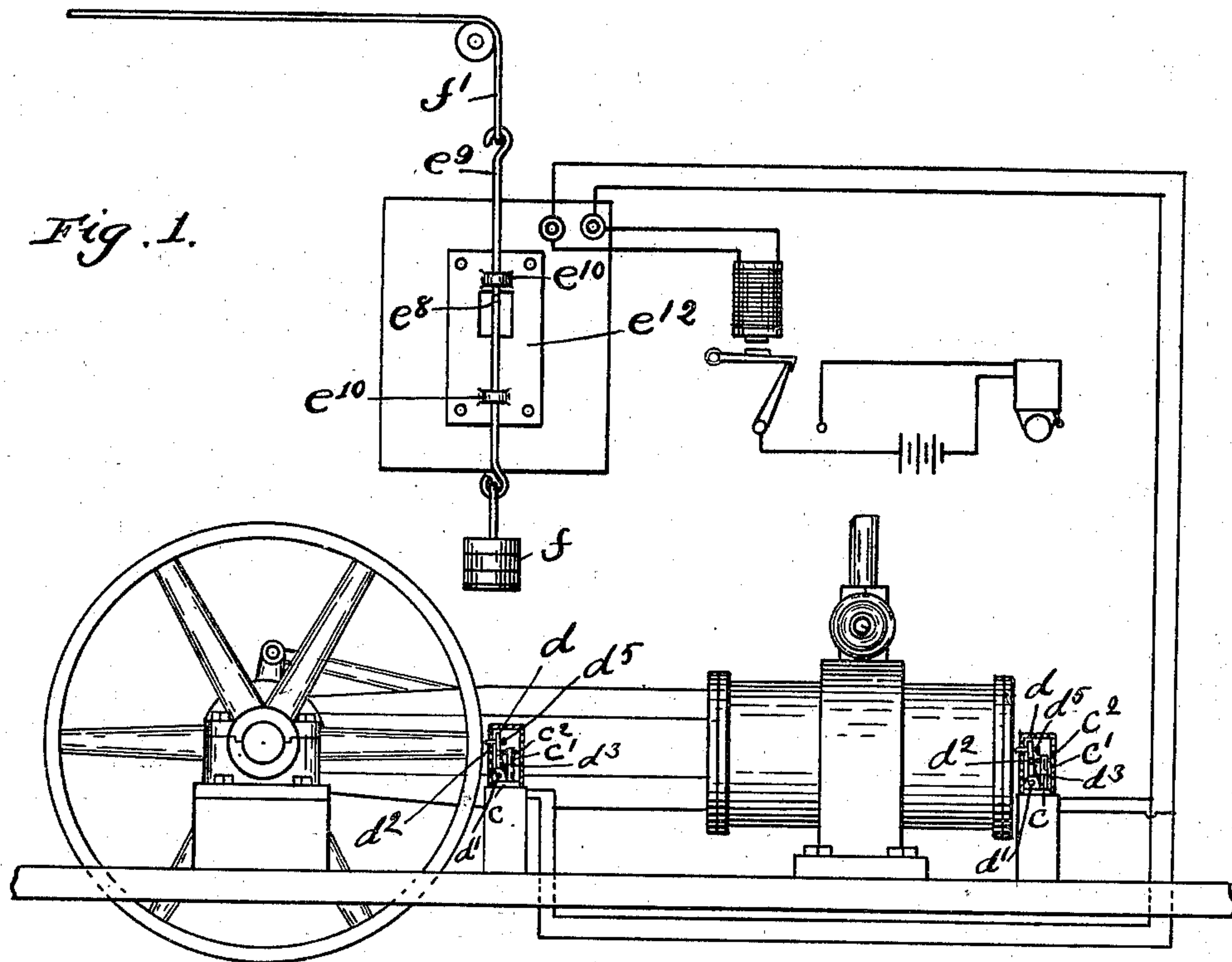
No. 708,372.

Patented Sept. 2, 1902.

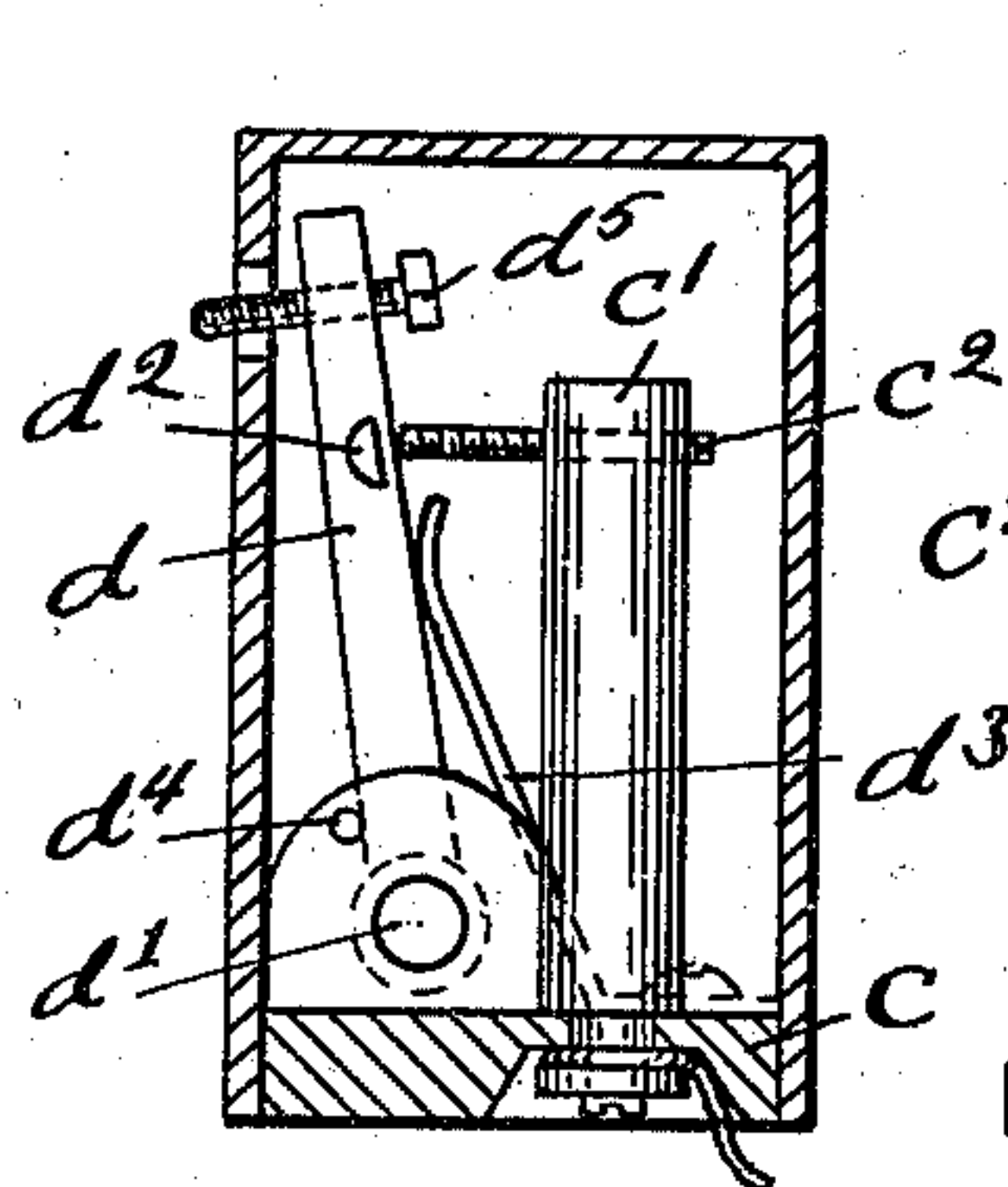
N. C. LOCKE.  
AUTOMATIC ENGINE STOP.

(Application filed Jan. 2, 1902.)

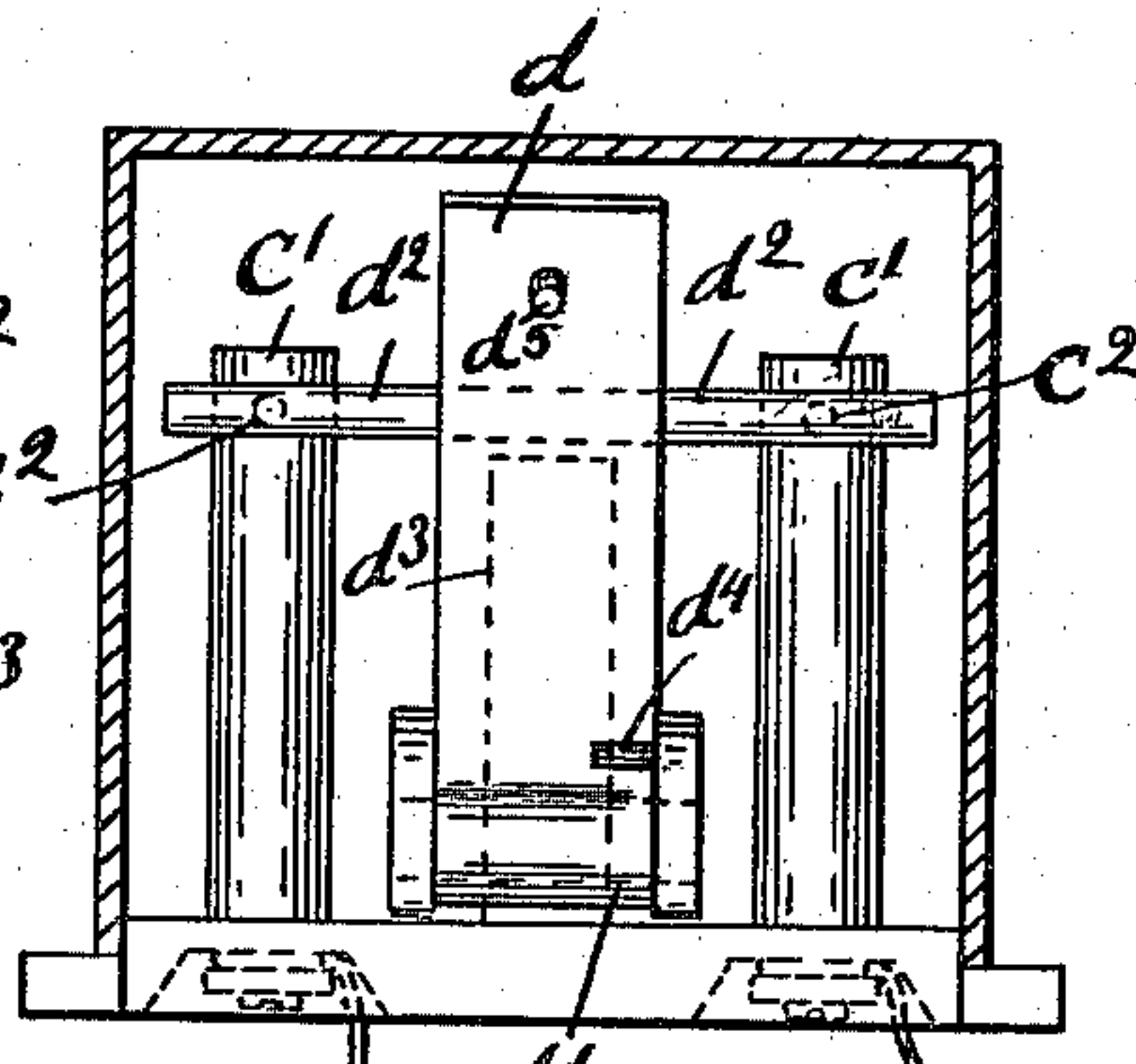
(No Model.)



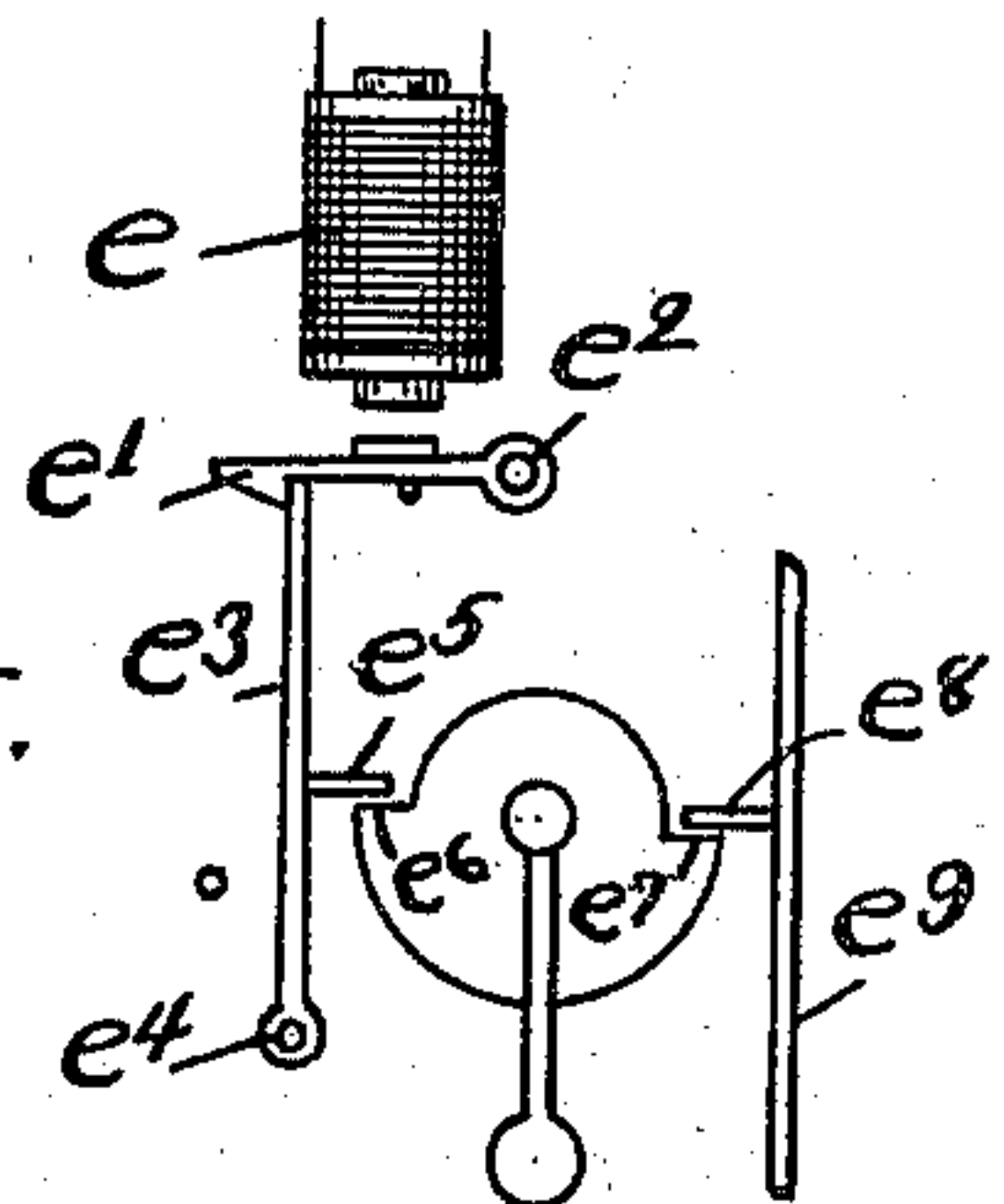
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



*Fig. 5.*

Witnesses:  
H. B. Davis.  
M. C. Bell

Inventor:  
Nathaniel C. Locke.  
by O. J. Hayes  
Atty



# UNITED STATES PATENT OFFICE.

NATHANIEL C. LOCKE, OF SALEM, MASSACHUSETTS, ASSIGNOR TO LOCKE  
REGULATOR COMPANY, OF SALEM, MASSACHUSETTS, A CORPORA-  
TION OF MAINE.

## AUTOMATIC ENGINE-STOP.

SPECIFICATION forming part of Letters Patent No. 708,372, dated September 2, 1902.

Application filed January 2, 1902. Serial No. 88,166. (No model.)

*To all whom it may concern:*

Be it known that I, NATHANIEL C. LOCKE, of Salem, county of Essex, State of Massachusetts, have invented an Improvement in Automatic Engine-Stops, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to construct an automatic stop for an engine adapted to operate to shut off steam to the engine—as, for instance, to operate a suitable shut-off valve, and preferably to also sound an alarm in case the fly-wheel of the engine or the cylinder becomes distorted.

It is well known that before the fly-wheel of an engine “bursts” it becomes distorted, more or less, and also that before the head of the cylinder “blows out” said cylinder becomes distorted, more or less, and the present invention provides for stopping the engine and sounding an alarm immediately either of these parts becomes distorted.

In carrying out my invention a circuit-operating device is located close to the fly-wheel and another circuit-operating device is located close to the cylinder-head, and in case either of these parts becomes distorted the circuit-operating device located adjacent to it will be operated, and electromechanical mechanism is provided which is operated by a circuit controlled by either of said circuit-operating devices, which in turn operates suitable means—as, for instance, a valve—and stops the engine. An electric bell is preferably connected with the circuit operated by the circuit-operating devices for sounding an alarm.

Prior to this invention a shut-off valve has been operated by electromechanical mechanism for stopping the engine; but, so far as I am aware, the circuit which operates said electromechanical mechanism has been operated by a circuit-operating device controlled by the governor of the engine or by a press-button operated by hand.

Figure 1 shows in side elevation a sufficient portion of an engine to illustrate my invention having circuit-operating devices located

adjacent the fly-wheel and cylinder and also shows in diagram a circuit which is operated by said circuit-operating devices. Fig. 2 is a plan view of a circuit-operating device which I may employ for carrying out my invention. Fig. 3 is a side elevation of the circuit-operating device shown in Fig. 2. Fig. 4 is a front elevation of the circuit-operating device shown in Fig. 2, and Fig. 5 is a detail of one form of electromechanical mechanism which may be employed for releasing a weight which in turn operates a shut-off valve.

*a* represents the fly-wheel of an engine, and *b* the cylinder, said parts being shown in this manner merely for the sake of illustrating my invention.

The two circuit-operating devices which are employed may be made alike, or substantially so, so only one need be described.

*c* represents a base-plate of any insulating material, and upon said base-plate is erected two upright posts *c'* *c'*, to which the circuit-wires are connected. At the upper ends of said posts adjustable contact-pins *c<sup>2</sup>* *c<sup>2</sup>* pass through the posts.

*d* represents an upright arm pivoted at its lower end at *d'* to a suitable stand on the base, and at the upper end of said arm a cross-bar or plate *d<sup>2</sup>* is secured, which is located opposite the contact-pins *c<sup>2</sup>* *c<sup>2</sup>*. The arm *d* is held in its upright position by means of a spring bearing upon it, which quite firmly holds said arm against a stop-pin *d<sup>4</sup>* on a stand or frame. The arm *d* is held in a suitable position to support the cross-bar or plate *d<sup>2</sup>* a short distance away from the contact-pins *c<sup>2</sup>* *c<sup>2</sup>*. An adjusting-screw *d<sup>5</sup>* passes through said upright arm *d*. In operation when said arm is moved on its pivot *d'* in a direction toward the contact-pins *c<sup>2</sup>* *c<sup>2</sup>* and its cross-bar or plate *d<sup>2</sup>* engages said contact-pins the circuit will be closed.

One of these circuit-operating devices is located close to the fly-wheel—as, for instance, it may be bolted to a suitable stand or floor, as herein shown, the base-plate having slots for the bolts to provide for adjustment toward and from the fly-wheel, and when said base-plate is secured to the stand the screw



$d^5$  will be adjusted as close to the face of the rim of the fly-wheel as may be deemed desirable. Whenever the fly-wheel distorts its rim will engage the screw  $d^5$  and move the arm  $d$  on its pivot, and thereby bring the cross-bar or plate  $d^2$  into engagement with the contact-pins  $c^2$   $c^2$  and close the circuit. The other circuit-operating device will be disposed close to the cylinder-head, and being similarly constructed will be similarly operated by any distortion of the cylinder.

2 3 represent a pair of circuit-wires leading from one of the circuit-operating devices to an electromagnet  $e$ , so that in case either one of the circuits is closed said electromagnet  $e$  will be energized. As herein shown, the armature of said electromagnet  $e$  is borne by a latch  $e'$ , pivoted at  $e^2$ , disposed to engage the upper end of an arm  $e^3$ , pivoted at  $e^4$  and bearing a detent  $e^5$ , which is engaged by a detent  $e^6$  on a pivoted detent-carrier  $e^7$ , which is engaged by a detent  $e^8$  on a vertically-movable rod or bar  $e^9$ , adapted to slide in suitable guides  $e^{10}$  in a plate  $e^{12}$ , said detent  $e^8$  projecting rearwardly through a hole in the said plate to engage the electromechanical mechanism back of it. The vertically-movable rod or bar  $e^9$  has connected to its lower end a weight  $f$ , by which it is moved when released, and the upper end of said rod or bar is connected by a suitable cord or chain  $f'$  with any suitable shut-off valve (not shown) which may be employed.

An electric bell may be connected with the circuit which is operated by the circuit-operating devices, which, as herein shown, will be included in a local circuit adapted to be operated by a drop, which in turn is operated by an electromagnet included directly in the

circuit which is operated by the circuit-operating devices.

I do not desire to limit my invention to any particular construction of circuit-operating device, or to any particular construction of electromechanical mechanism operated by the circuit which is operated by the circuit-operating device, or to any particular kind of valve for shutting off the steam from the engine, or to any particular kind of alarm which may be employed.

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

1. In an automatic engine-stop, the combination with an engine, means for shutting off steam to the engine comprising an electromechanical actuating mechanism and a circuit therefor, of a circuit-operating device for said circuit located close to said engine and arranged to be operated by contact with a distorted part thereof, substantially as described.

2. In an automatic engine-stop, the combination with an engine, means for shutting off steam to the engine comprising electromechanical actuating mechanism and a circuit therefor, and an alarm also operated by said circuit, of a circuit-operating device for said circuit located close to said engine, and arranged to be operated by contact with a distorted part thereof, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

NATHANIEL C. LOCKE.

Witnesses:

FRANK E. LOCKE,  
LILLIE V. HARDING.