No. 667,936. Patented Feb. 12, 1901.

W. FINN.

STOPPING DEVICE.

(Application filed May 17, 1900.)

(No Model.) 3 Sheets—Sheet 1.

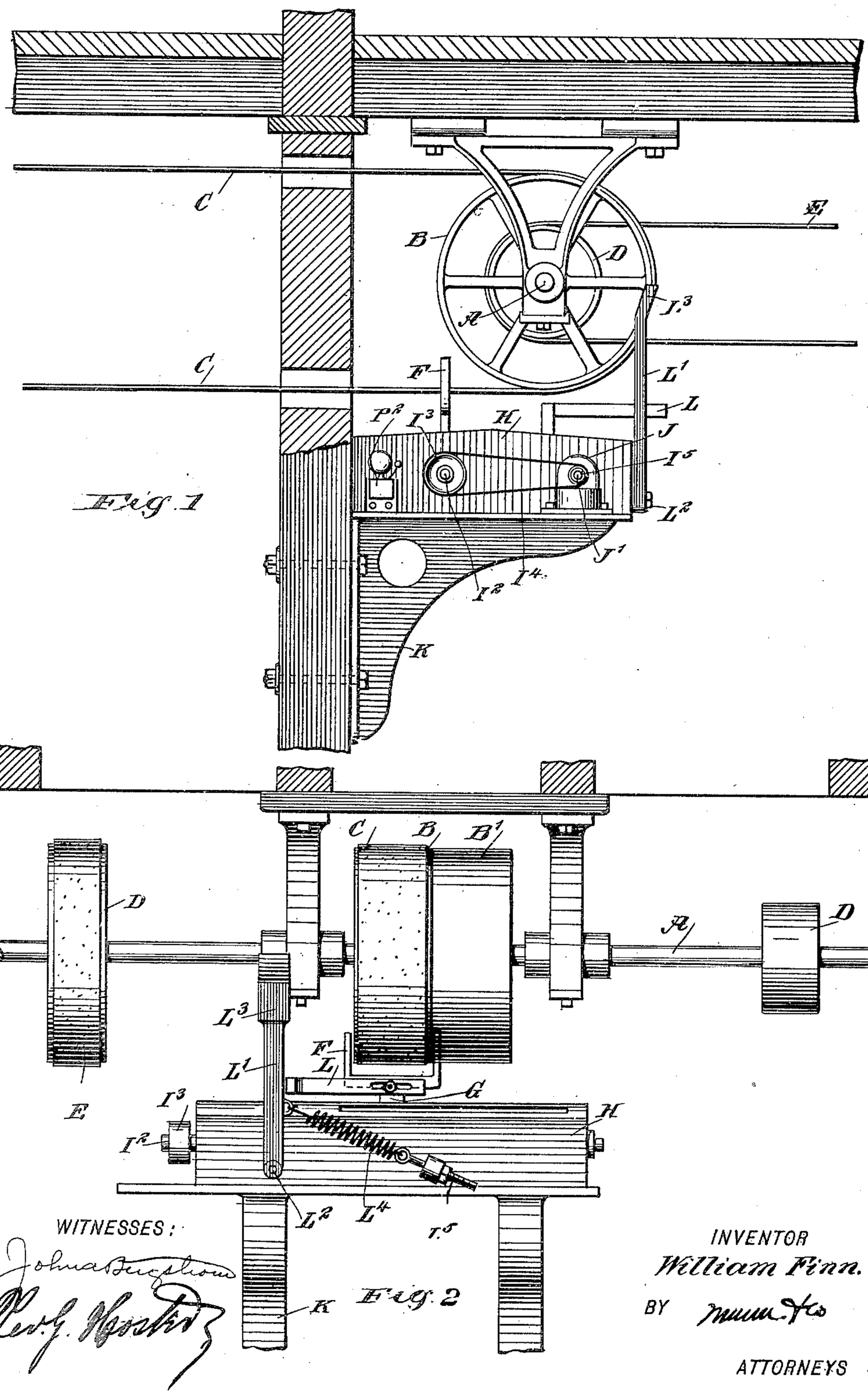

Fig. 1

Fig. 2

WITNESSES:

John A. Brighton

Rud. F. Hoster

INVENTOR

William Finn.

BY Munn & Co

ATTORNEYS

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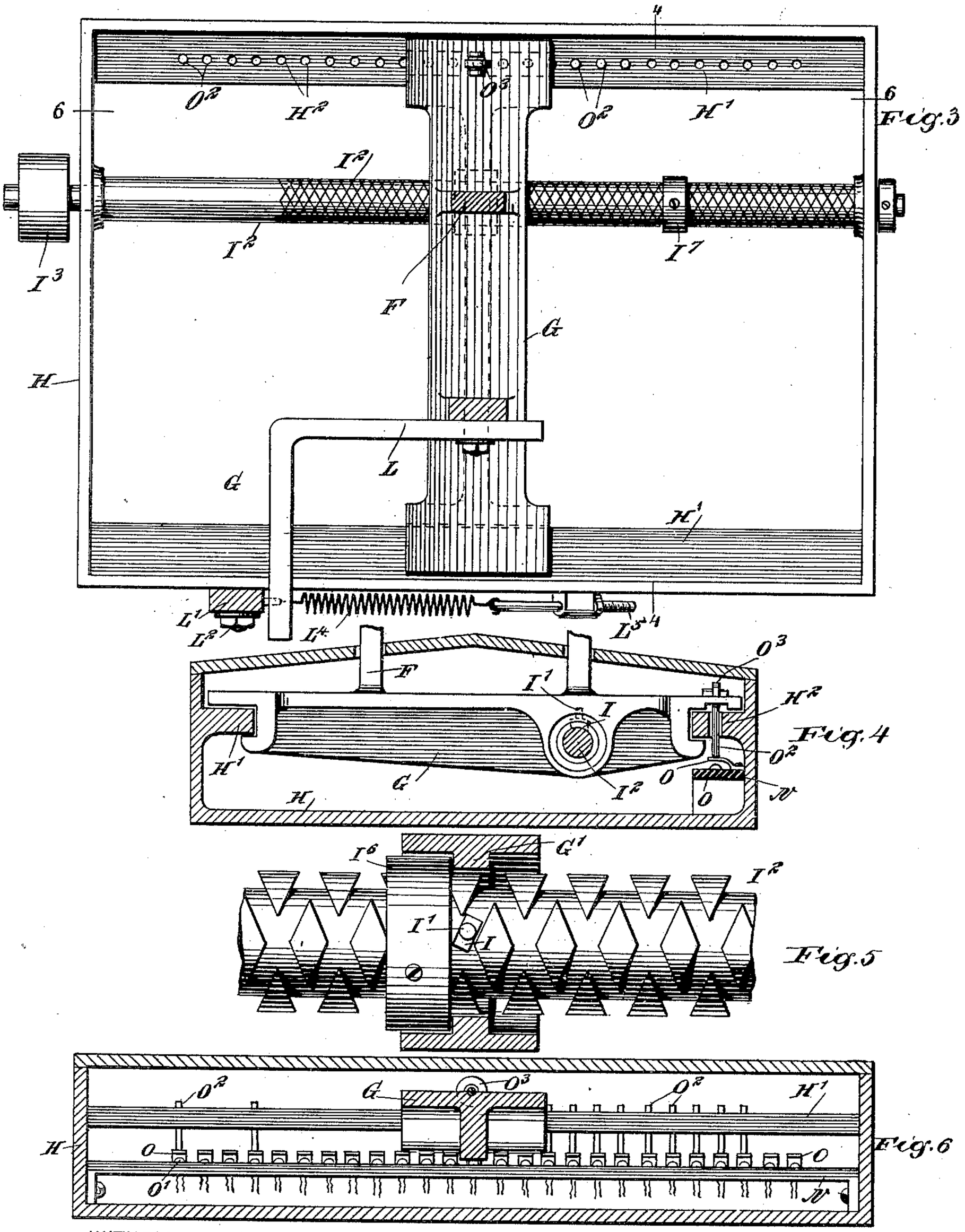

Fig. 3

Fig. 4

Fig. 5

Fig. 6

WITNESSES:

John A. Bergstrom

Rud. J. Hoos Jr.

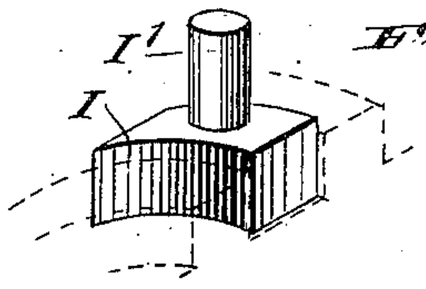

Fig. 7

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W. FINN.

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(No Model.) 3 Sheets—Sheet 3.

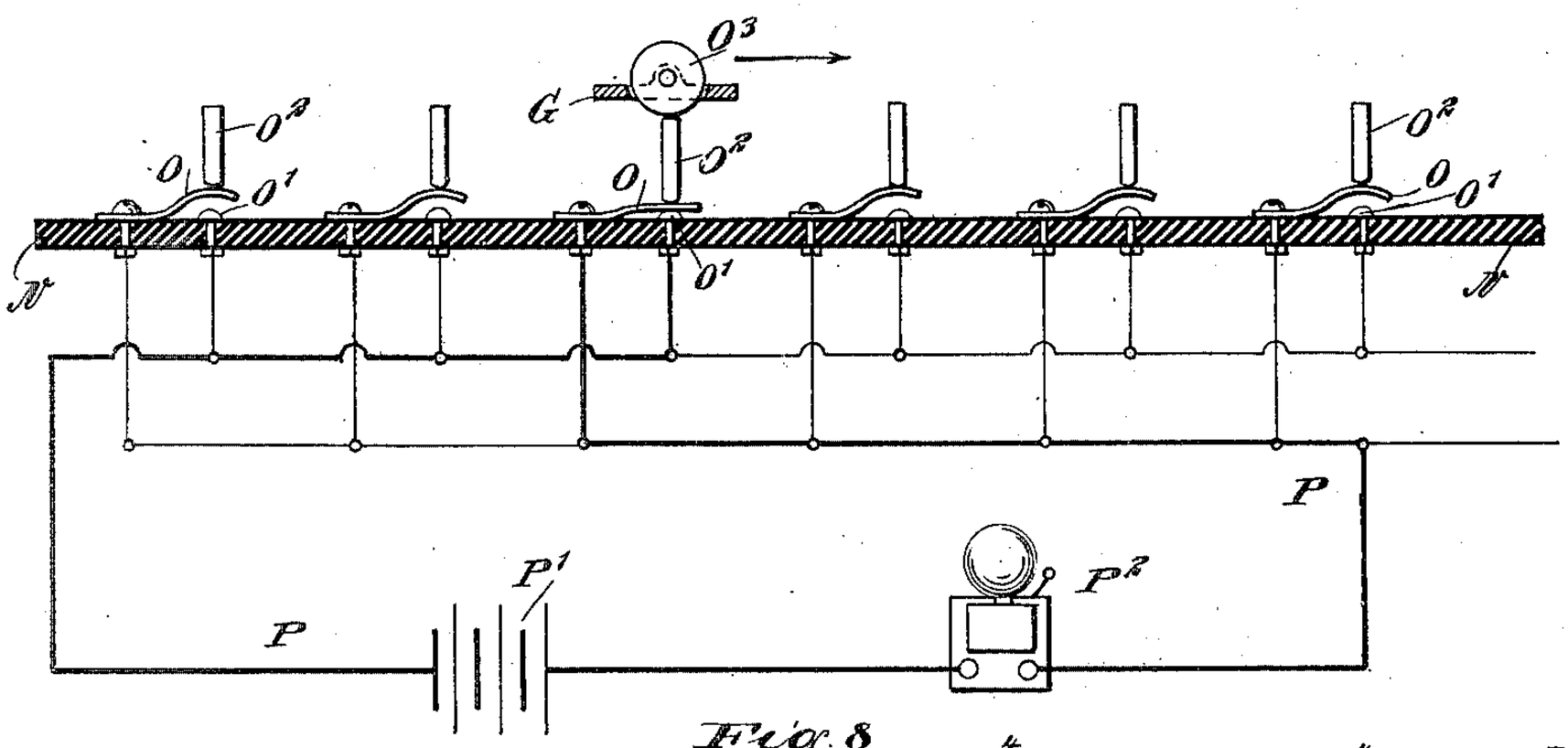

Fig. 8

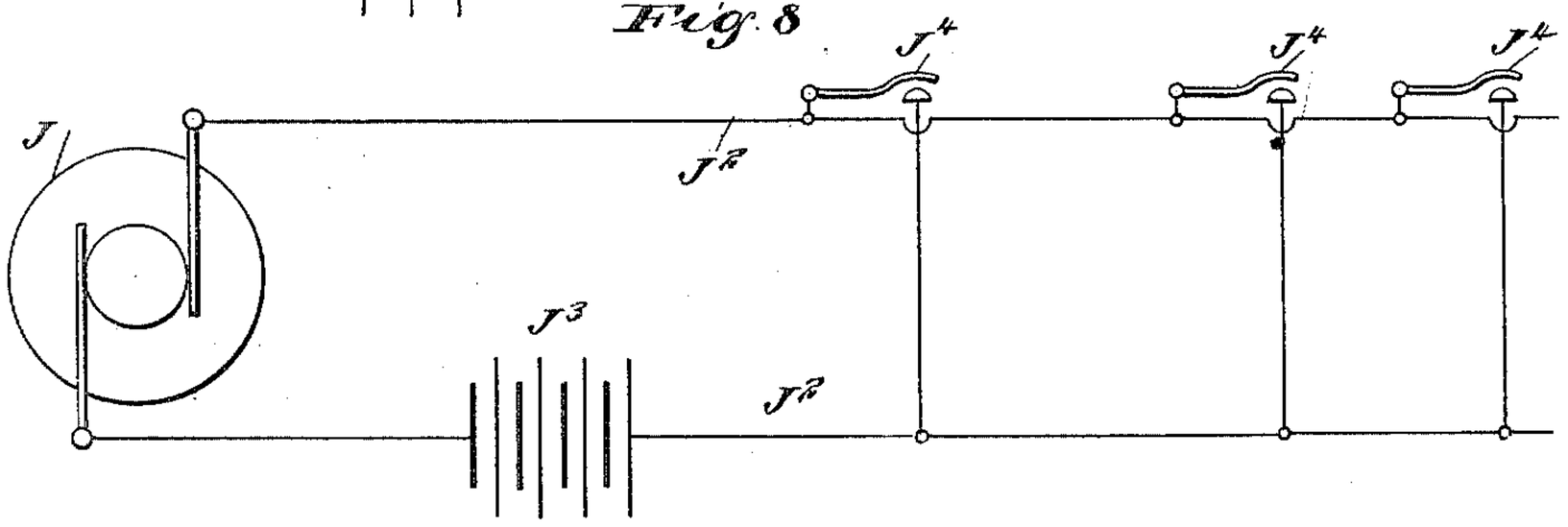

Fig. 9

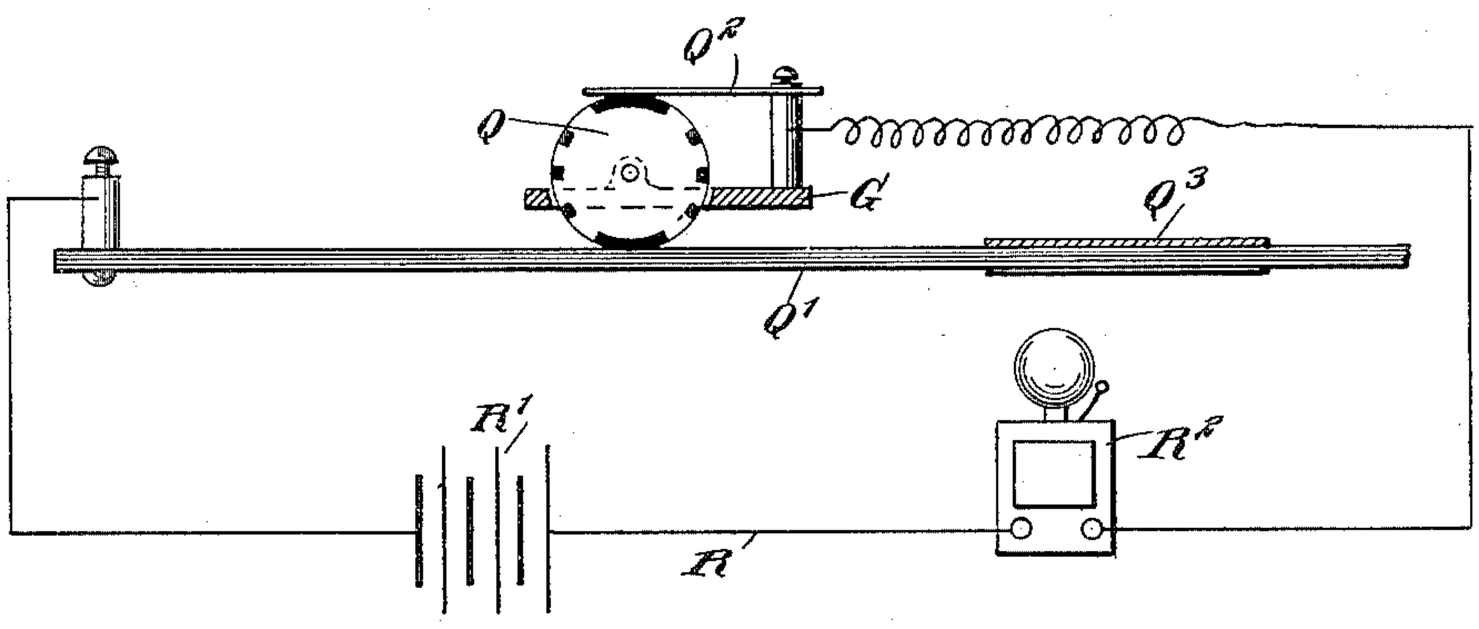

Fig. 10

WITNESSES:

Johnas Bergstrom

Geo. F. Hoster

INVENTOR

William Finn.

BY Munn & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM FINN, OF NEW YORK, N. Y.

STOPPING DEVICE.

SPECIFICATION forming part of Letters Patent No. 667,936, dated February 12, 1901.

Application filed May 17, 1900. Serial No. 17,031. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM FINN, a subject of the Queen of Great Britain, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Stopping Device, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved stopping device for use in factories, mills, and other places and arranged as an emergency stop to arrest the machinery in a particular part of a building when an accident occurs, the device being simple and durable in construction, very effective and positive in operation, and arranged to also give an alarm or signal.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement as applied to a line-shaft in a building, a portion of the latter being shown in section. Fig. 2 is a front view of the same. Fig. 3 is an enlarged plan view of the improvement. Fig. 4 is a transverse section of the same on the line 4 4 in Fig. 3. Fig. 5 is an enlarged plan view of the carriage-actuating screw-rod, part of the carriage being shown in section. Fig. 6 is a longitudinal section of the improvement on the line 6 6 in Fig. 3. Fig. 7 is an enlarged perspective view of the shoe for the carriage screw-rod. Fig. 8 is a diagrammatic view of the electric connections for the alarm-signal. Fig. 9 is a like view of the electric connections for the actuating-motor, and Fig. 10 is a sectional side elevation of a modified form of the improvement.

The improved device illustrated in the drawings, particularly in Figs. 1 and 2, is shown applied to a line-shaft A, carrying a fast pulley B and a loose pulley B′, connected by a belt C with the driving machinery, said line-shaft A carrying the usual pulleys D, connected by a belt E with the machinery to be driven. The driving-belt C is engaged by a shifting-fork F for moving the said belt from the fast pulley B to the loose pulley B′ in case of accident to the machine driven from the line-shaft A, so as to stop the machine, while the driving machinery remains in motion for driving machines in other parts of the building.

The shifting-fork F is secured to or forms part of a carriage G, mounted to travel on suitable guideways H′ H′, formed on a casing H, and the said carriage G forms a bearing for the pivot-pin I′ of a shoe I, adapted to engage the double thread of a carriage-actuating screw-rod I^2, journaled in suitable bearings in the frame H, (see Fig. 3,) the screw-rod carrying at one outer end a pulley I^3, connected by a belt I^4 (see Fig. 1) with a pulley I^5 on the shaft J′ of an electric motor J, supported, with the frame H, on suitable brackets K, attached to supports in the building, as is plainly indicated in Figs. 1 and 2.

The motor J is in a circuit J^2, (see Fig. 9,) containing a source of electricity J^3 and a plurality of push-buttons J^4, one for each machine driven from the shaft A, so that in case one of said machines becomes disarranged then the attendant of the machine on pressing the push-button J^4 closes the circuit J^2 to start the motor J and cause the latter to rotate the screw-rod I^2 by the pulleys I^5 I^3 and the belt I^4. When the screw-rod I^2 is rotated from the motor J, then the shoe I, traveling forward in the screw-rod, moves the carriage G in a like direction, so that the shifting-fork F, which moves with the carriage, pushes the belt C from the fast pulley B to the loose pulley B′, so that the shaft A comes to a stop and with it the machine usually driven therefrom.

In order to stop the shaft A as soon as possible after the belt C is moved from the fast pulley B to the loose pulley B′, a brake mechanism is provided consisting, essentially, of an arm L, adjustably held on the carriage G, (see Figs. 2 and 3,) the arm normally holding a brake-lever L′ in a vertical position out of engagement with the pulley B. The brake-lever L′ is fulcrumed at L^2 on the frame H and is provided with a brake-shoe L^3, adapted to engage the edge of the rim of the pulley B when the carriage G moves to the right and the arm L moves away from the brake-lever L′.

In order to move the brake-lever L′ in engagement with the pulley B, a spring L^4 pulls on the said brake-lever, said spring being attached to a screw-rod L^5, held on the frame H, and by means of a nut serving to increase or decrease the tension of the said spring to hold the brake-shoe L^3 with more or less force in frictional contact with the pulley B.

In order to automatically stop the forward movement of the carriage G and to cause a return movement thereof, I provide two stop-collars I^6 I^7, adjustably held on the screw-rod I^2 and adapted to abut on opposite sides of an annular rim G′, encircling the screw-rod I^2 and carried by the carriage G. The collars I^6 I^7 are adapted to turn the shoe I when the carriage moves with its annular rim in contact with the collar I^6 or I^7, whereby the shoe changes position in the double thread of the screw-rod, so that upon further rotation of the latter the carriage moves in an opposite direction. Thus when the carriage G travels from the left to the right then the shoe I finally comes in contact with the collar I^7 and is thereby turned to travel in the other thread of the screw-rod, and as the latter keeps on revolving the carriage is moved in the opposite direction—that is, from the right to the left—back to its former position, and when the shoe I moves against the collar I^6 then the shoe is again turned to cause a travel of the carriage G from the left to the right as soon as the screw-rod is rotated.

In order to give a signal or alarm when the carriage G receives a traveling motion, I provide the following device: On the frame H, below one of the guideways H′, is arranged a rail N, of rubber or other insulating material, and supporting a spring-contact O, normally out of engagement with a contact-point O′, held on the said rail N. A number of such contacts or contact-points O O′ are arranged along the rail N, and each contact O is engaged by a pin O^2, disposed vertically and mounted to slide loosely in holes H^2 in the guideway H′, the upper ends of the said pins being adapted to be engaged by a friction-roller O^3, carried by the carriage G, so that when the carriage moves from the left to the right then the friction-roller O^3 depresses the pins O^2 and closes the circuit P, with which the several contacts and contact-points O O′ are connected, so that the source of electricity in the said circuit causes a sounding of the alarm or signal P^2. It is evident that any number of pins O^2 may be used with each carriage—that is, the pins for the several carriages in a building be differently arranged, so as to give different alarms or signals, and thereby enable the engineer or other attendant in charge to at once determine in what part of the building the machinery is out of action, as above explained.

The signal and alarm arrangement may be differently arranged. For instance, as shown in Fig. 10, a wheel Q, journaled on the carriage G, travels on a rail Q′ in a circuit R, containing a source of electricity R′ and an alarm or signal bell R^2. The peripheral surface of the wheel Q is formed with insulated and non-insulated portions, and on the peripheral surface presses the free end of a spring-contact Q^2 in the circuit R. Now as the carriage G travels along the circuit is closed whenever the non-insulated portions of the peripheral surface of the wheel Q connect the rail Q′ with the spring-contact Q^2, so that the circuit is closed and the alarm or signal R^2 is sounded. When the carriage G moves into a right-hand position, then the wheel Q travels on an insulating-sleeve Q^3, held on the rail Q′, to break the circuit, and thereby stop further ringing of the alarm or signal R^2.

I do not limit myself to the particular construction of the various devices shown and described, as it is evident the same may be varied without deviating from the spirit of my invention.

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

1. A stopping device, comprising a carriage mounted to travel and having means for disconnecting the driving machinery and the driven working machines in case of accident to the latter, means under the control of the attendant of a driven working machine, for imparting a traveling motion to said carriage, and a signal and alarm device controlled by said carriage, for giving a distinctive signal, as set forth.

2. A stopping device, comprising a carriage mounted to travel, a belt-shifter thereon for shifting a belt from a fast to a loose pulley in case of accident to a working machine, a motor, for imparting a traveling motion to the said carriage, and a brake mechanism released by said carriage and adapted to engage the fast pulley to stop the same, substantially as shown and described.

3. A stopping device, comprising a carriage mounted to travel, a belt-shifter thereon for shifting a belt from a fast to a loose pulley, a screw-rod for imparting a traveling motion to said carriage, an electric motor for driving said screw-rod, and a circuit for said motor and adapted to be closed by the attendant of a working machine, to actuate the said motor and impart a traveling motion to the carriage to shift the belt, as set forth.

4. A stopping device, comprising a carriage mounted to travel, a belt-shifter thereon for shifting a belt from a fast to a loose pulley, a screw-rod for imparting a traveling motion to said carriage, an electric motor for driving said screw-rod, a circuit for said motor and adapted to be closed by the attendant of a working machine, to actuate the said motor and impart a traveling motion to the carriage to shift the belt, and a signal and alarm device controlled by said carriage, for giving a distinctive signal, as set forth.

5. A stopping device, comprising a carriage

mounted to travel, a screw-rod for imparting a traveling motion to the carriage, an electric motor for rotating said screw-rod, a belt-shifter on said carriage, and a brake mechanism controlled by said carriage, as set forth.

6. In a stopping device, the combination with a fast and loose pulley, a carriage, a belt-shifter carried by the carriage, and means for operating the carriage, of a spring-actuated brake adapted to engage the fast pulley, and means carried by the carriage for holding the brake out of engagement with said pulley, substantially as described.

7. In a stopping device, the combination with a fast and loose pulley, a carriage, a belt-shifter carried by the carriage, and means for operating the carriage, of a pivoted and spring-actuated brake-lever provided with a brake-shoe adapted to engage the fast pulley, and an arm carried by the carriage and engaging the brake-lever to hold it out of engagement with the pulley, substantially as described.

8. In a stopping device, the combination with a fast and loose pulley, a sliding carriage, a belt-shifter carried by the carriage and means for operating the carriage, of an electric circuit, a signal in the circuit, and contacts for making and breaking the circuit, said contacts being operated by the carriage, substantially as described.

9. In a stopping device, the combination with a fast and loose pulley, a carriage mounted to slide on guideways, a belt-shifter carried by the carriage, and means for operating the carriage, of an electric circuit, an alarm in the circuit, contacts for making and breaking the circuit, pins sliding in one of the guideways for the carriage, and a roller on the carriage for engaging the pins, substantially as described.

10. In a stopping device, the combination with a fast and loose pulley, a carriage mounted to slide, and a belt-shifter carried by the carriage, of a screw-rod for imparting traveling motion to the carriage, an electric motor, and gearing between the motor and the screw-rod, substantially as described.

11. In a stopping device, the combination with a fast and loose pulley, a carriage, and a belt-shifter carried by the carriage, of a screw-rod having a double thread, and with which the carriage is in operative connection, collars on the screw-rod, and a stop carried by the carriage and with which the collars alternately engage, substantially as described.

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

WILLIAN FINN.

Witnesses:
JAMES CHAPMAN,
WILLIAM K. LAMPKINS.