

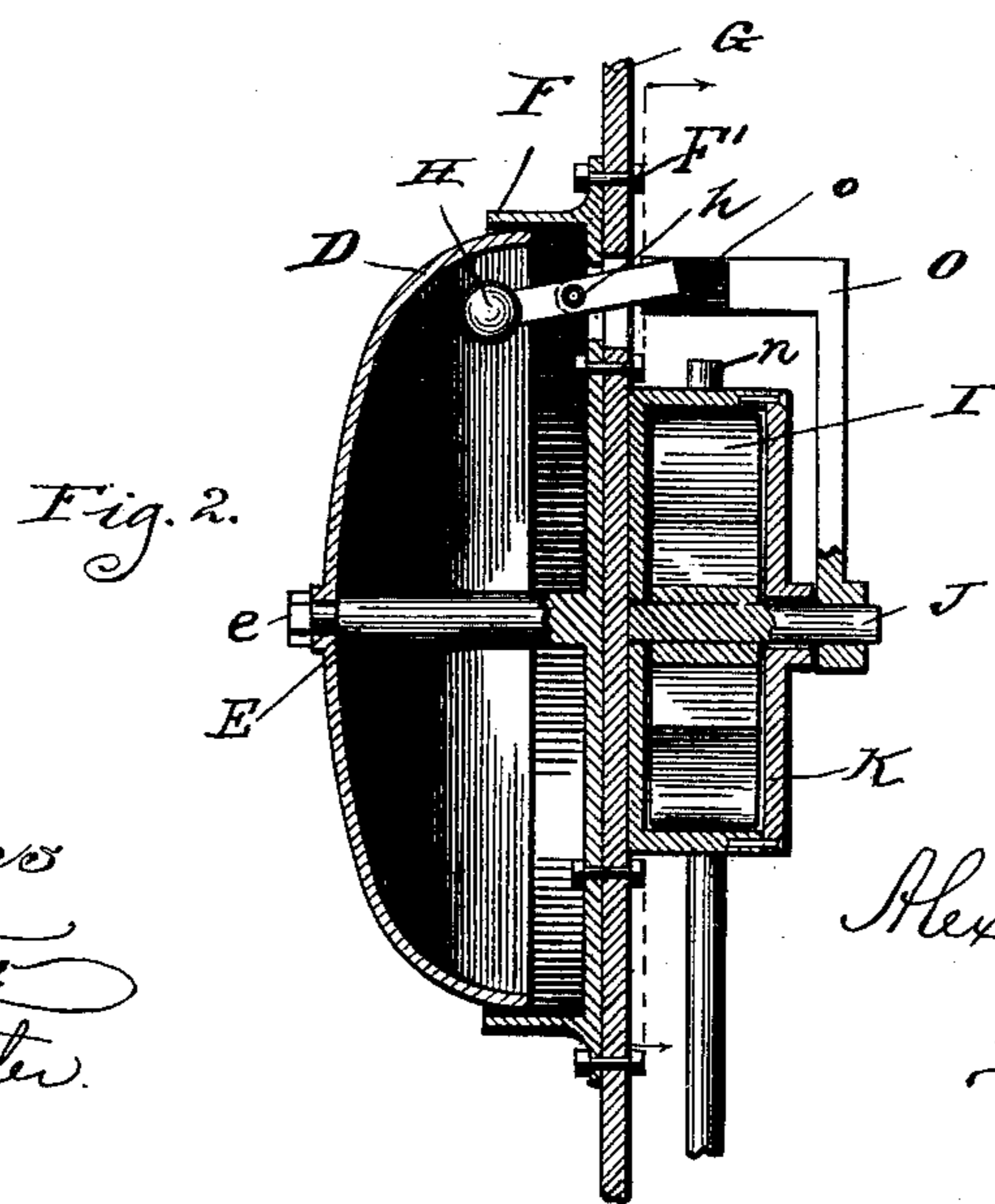
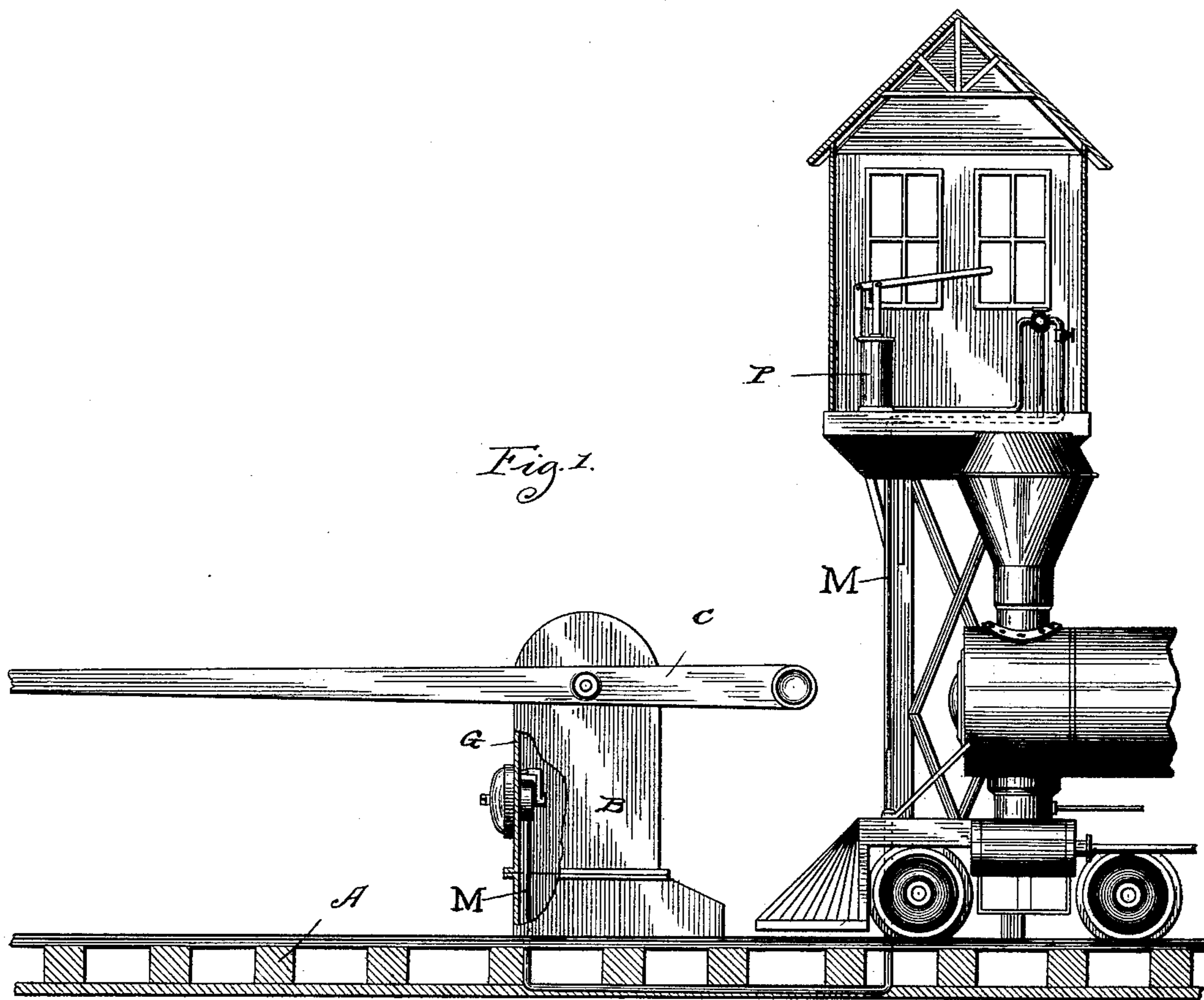
(No Model.)

2 Sheets—Sheet 1.

A. J. McDONALD.
DANGER SIGNAL FOR RAILWAY CROSSINGS.

No. 406,937.

Patented July 16, 1889.



Witnesses
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

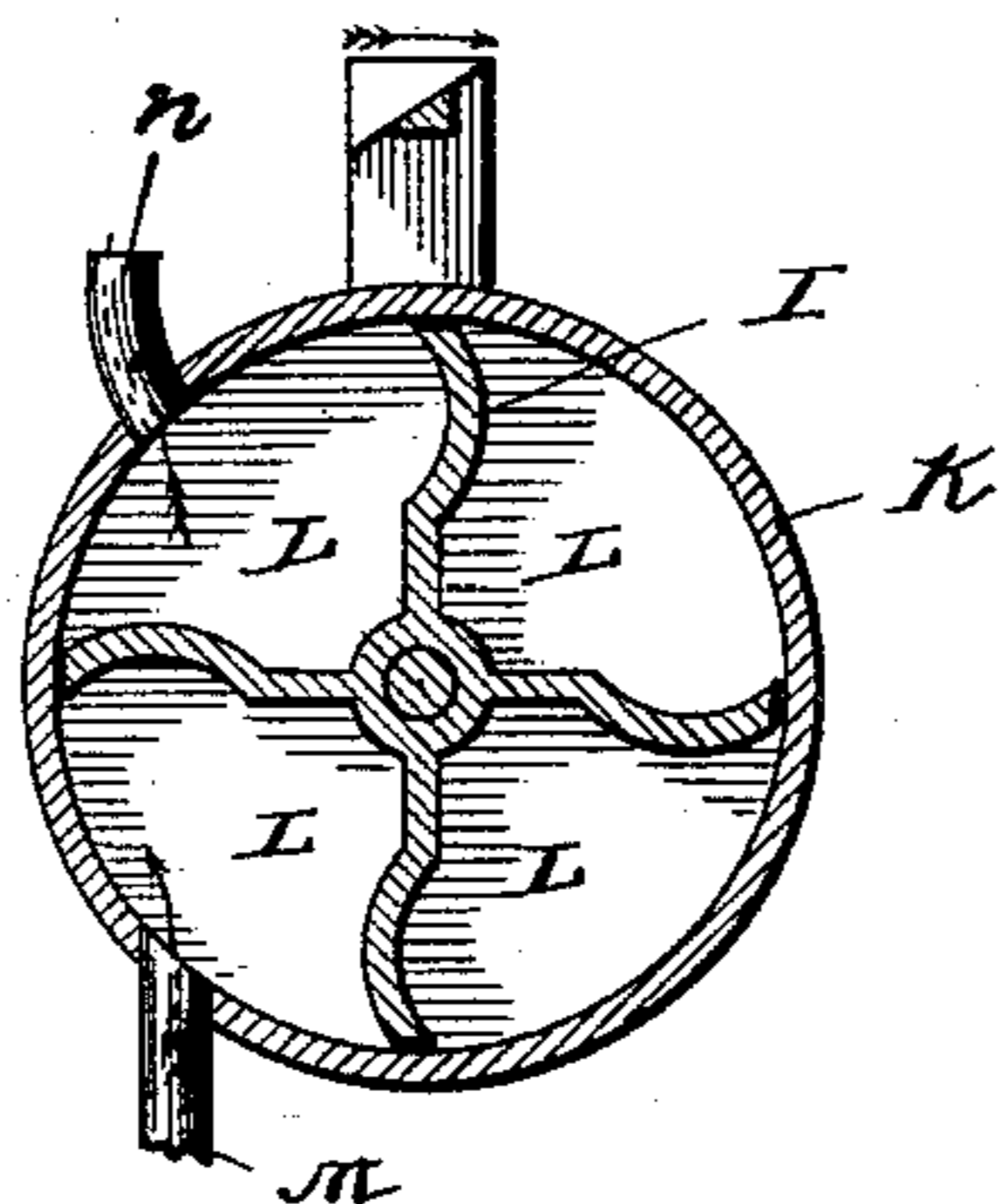


Fig. 4.

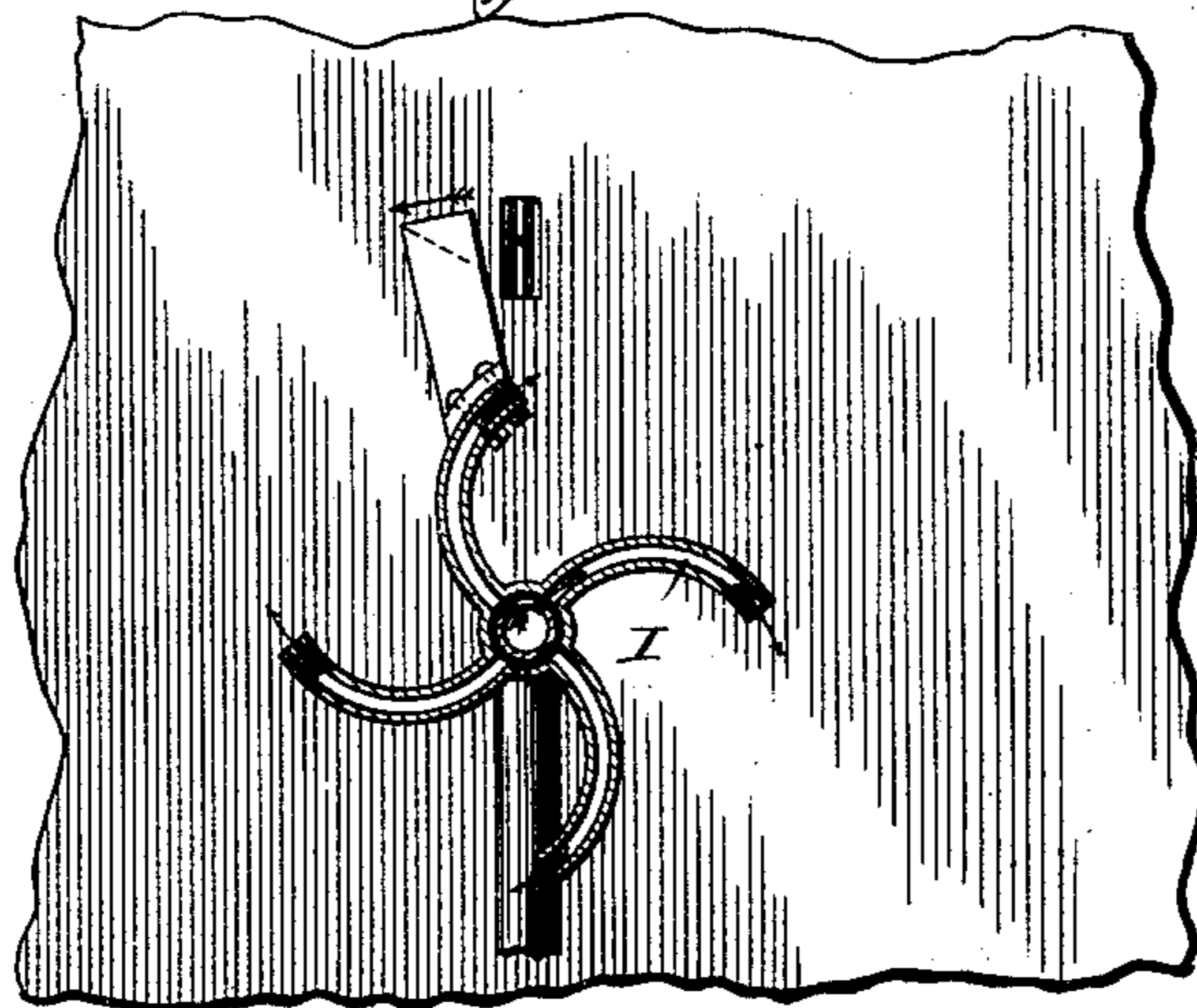
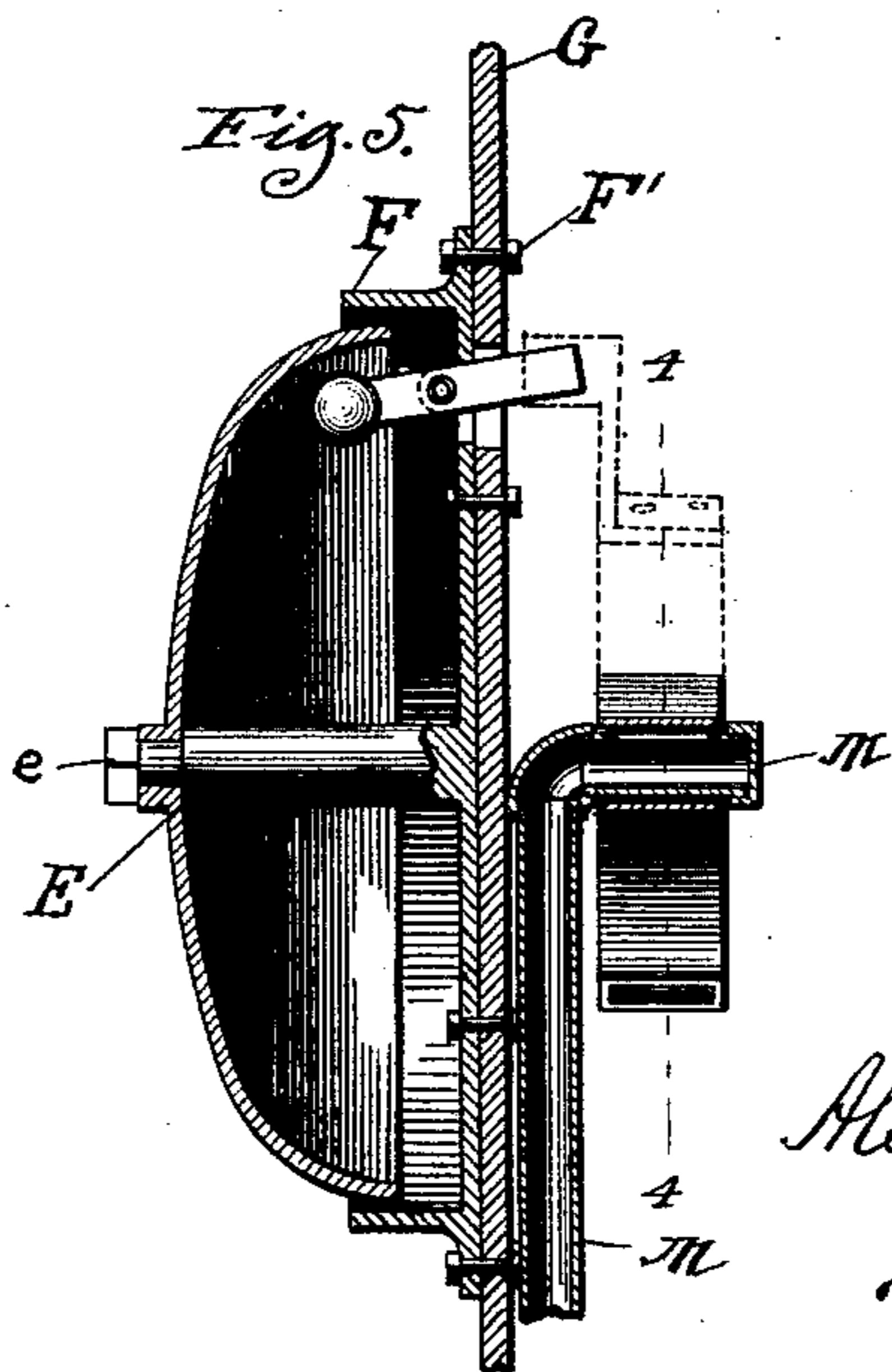


Fig. 5.



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UNITED STATES PATENT OFFICE.

ALEXANDER J. McDONALD, OF CHICAGO, ILLINOIS.

DANGER-SIGNAL FOR RAILWAY-CROSSINGS.

SPECIFICATION forming part of Letters Patent No. 406,937, dated July 16, 1889.

Application filed November 3, 1888. Serial No. 289,902. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER J. McDONALD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Danger-Signals for Railways, of which the following is a specification.

The object of my invention is to provide a danger-signal for use at railway-crossings, whereby to warn persons of the approach of railway-trains; and my invention is illustrated in the drawings, forming a part of this specification, as applied to a railway-gate, with which it may be conveniently used not only to signal the approach of the train but likewise the closing of the gate.

It has been proposed heretofore to employ bells attached to some portion of the gate-posts, which bells are rung by the gate-arm during its downward movement. This method of operating the bell is open to the objection that the bell is rung only after the gate-arm has commenced its movement and during said movement, and the signal is given when it may be too late for the driver of an approaching vehicle or foot-passengers to observe that the gate-arms are being lowered.

In a perfect signal system some alarm should be given in advance of lowering the gate-arms, so that persons approaching the crossing may have ample notice of the danger, and pause before approaching near enough to be caught by the gate-arm or be struck by the train on the crossing. These provisions are particularly needed in cities, where the streets at railway-crossings are often crowded with teams and foot-passengers, and because of such crowding vehicles are often forced quite close to the crossing and sometimes under the descending gate-arm before the teams can be stopped.

It is the object of my invention to obviate the above-named difficulties, and this I do by providing a bell, whistle, or other danger-signal, adapted to be sounded on the approach of a train and before the gate-arms are moved. The preferred form of signal is a bell, which may be conveniently attached to some portion of one of the stationary posts which support the pivoted gate-arms, and the preferable method of sounding such bells is the employment of compressed air, forced by the air-pump usually provided for operating the gate-arms themselves, and conducted through suitable pipes to means connected with the bell and adapted to operate its clapper.

In the accompanying drawings, Figure 1 is a view in elevation, partly in section, of a section of railway-track—say, at a crossing—with a railway gate-post and pivoted arm, and showing in side elevation the signal bell and a part of the means for operating it, and also showing a portion of the approaching locomotive and a tower in which the operator stands, said tower containing the air-pump, from which a pipe is run to the gate-post for operating the bell. Fig. 2 is a vertical cross-section through a wall of the gate-post, and to which is attached on the inside a case for a power-wheel. A part of the bell-standard, of an operating-lever, and of the fan-shaft are shown in side elevation, and a bell-clapper having a pivoted support and an operating-arm is also shown in side elevation. Fig. 3 is a longitudinal vertical section through the power-wheel and showing inlet and outlet pipes to the interior of said wheel, and the bell-operating lever in side elevation. Fig. 4 shows a modified construction of the power-wheel, and in side elevation an operating-lever for the bell connected to said wheel, a pipe for supplying it with air, and a section of the gate-post in side elevation. Said figure is a section taken on the line 4 4 of Fig. 5. Fig. 5 is a transverse vertical section through a portion of the gate-post, through the bell, and through a supply-pipe for the power-wheel shown in Fig. 4, said wheel being shown in face elevation.

In the drawings, A represents the railway-track at a crossing, B a gate-post placed at the side of said crossing, and C a gate-arm pivoted upon said post. Upon the wall of the gate-post B, I have shown a bell, comprising a bowl D, secured upon the end of the post or standard E by a nut *e*. The opposite end of said post is secured to a circular flanged base F, which latter may be bolted through the wall G of the gate-post by means of bolts F'. H is the bell-clapper, which is pivoted at *h* and has the free end of its arm extended through slots in the flanged base F and the

wall G of the gate-post, and projects into the interior of said post, as shown in Figs. 1, 2, and 5.

The means for operating the bell comprises
 5 a rimless power-wheel having curved radial spokes I, and an axle J, journaled in a case K, which latter may be secured to the inner side of the wall G of the gate-post opposite the bell. The casing K is circular in form, as
 10 shown in Fig. 3, and conforms closely to the exteriors of the spokes I, so as to form with the said spokes air-chambers L. Air under pressure is admitted to said chambers successively through the inlet-pipe M, and, im-
 15 pinging upon said spokes, imparts rotating motion to the wheel. An outlet for the air, after it has done its effective work, is provided in the pipe n. An arm O is secured upon the shaft J, outside the case K, and ro-
 20 tates with said shaft. The free end of the arm of clapper H is projected into the path of the arm O, so as to be engaged by it at each of its revolutions. Arm O is beveled, as shown at o, so that it will pass by the clapper-
 25 arm, but will oscillate it sufficiently to cause the clapper to strike the bowl of the bell. Air is supplied to the power-wheel through the pipe M, as stated, which pipe will be con-
 30 nected to an air-pump P in the tower. This same pump may supply air to operate the gate-arms, suitable pipes and cocks being provided and so set that a stroke of the pump will first force the air through the pipe M and ring the bell, and then the valves being ad-
 35 justed a further operation of the pump will move the gate-arms.

Of course a separate pump for supplying the air to ring the bell may be employed, and it need only be of small capacity for this pur-
 40 pose. I deem it essential, however, that the bell shall be first operated, and that it shall be operated independently of the gate-arm.

In Figs. 4 and 5 are shown modifications of the construction above described, in this that
 45 instead of depending upon the operation of the air in chambers L the case K may be omitted and the spokes I may be made hollow and curved in longitudinal section, so that when the air is admitted to their interiors it
 50 will move in the direction as indicated by the arrows in spokes I in Fig. 4, rotary motion in the direction opposite that indicated by said arrows will be imparted to the wheel. In this illustration the operating-arm O is
 55 connected directly to one of the spokes I, and the hub to which said spokes are connected is journaled upon a bend m of the pipe M.

I do not limit my invention to the particular mechanism herein shown for utilizing the

air-pressure to ring the bell, as modifications 60 in such mechanism may be made within wide limits without departing from the spirit of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. A danger-signal for railway-crossings, comprising, in combination, a bell secured at the crossing, a power-wheel having radial curved spokes and adapted through suitable mechanism and by its rotation to operate the 70 bell-clapper, and an air-pump and connections whereby to rotate said power-wheel, substantially as described.

2. A danger-signal for railway-crossings, comprising, in combination, a railway gate- 75 post, a bell secured thereto, a power-wheel having radial curved spokes and inclosed in a case attached to the gate-post, an arm secured upon the axle of said wheel and adapted to engage the bell-clapper, an air-pump hav- 80 ing a pipe communicating with the interior of said case whereby to deliver air under pressure to said power-wheel to impart motion thereto, and said arm adapted to engage with the bell-clapper, substantially as de- 85 scribed.

3. A danger-signal for railway-gates, comprising, in combination, a bell secured to the gate-post and having a clapper secured upon a pivoted arm projected to the interior of said 90 post, a power-wheel secured within the gate-post and adapted to be rotated by pneumatic pressure and having an arm or lever secured to its axle and rotating therewith and adapted to engage the arm of the bell-clapper when 95 the power-wheel is rotated, substantially as described.

4. A danger-signal for railway-crossings, having, in combination, a power-wheel hav- 100 ing an arm or lever adapted to engage the bell-clapper, an inclosing-case surrounding said wheel and forming therewith air-chambers, and a suitable air-pump and connections whereby to supply said chambers with air under pressure to rotate the wheel, substan- 105 tially as described.

5. In danger-signals for railway-crossings, the combination, with a bell, of an inclosed power-wheel, an arm secured to the axle of said wheel, a clapper secured to an arm pro- 110 jected into the path of the axle-arm, an air-supply pipe, and a discharge-pipe, each communicating with the interior of said casing, substantially as described.

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