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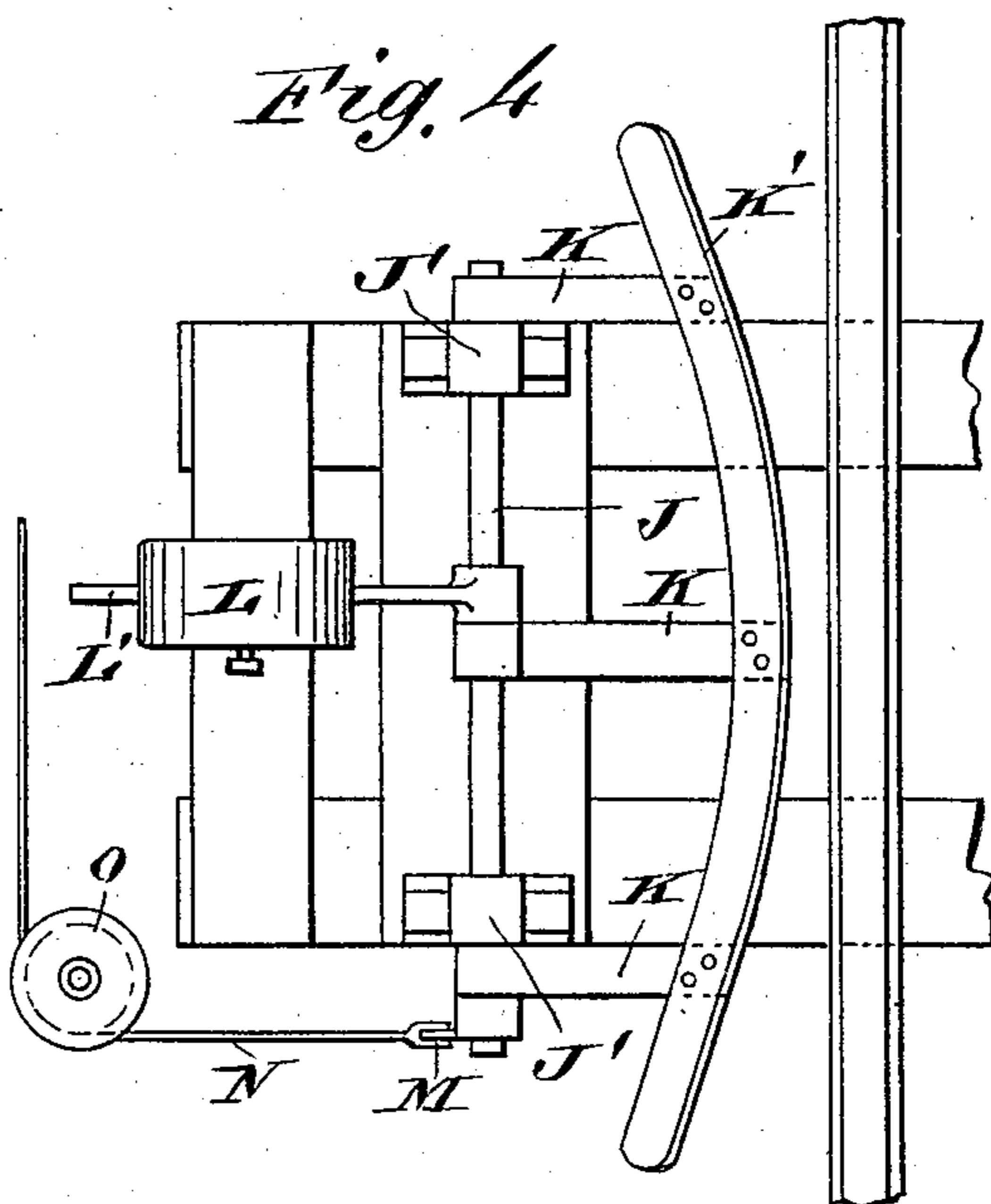
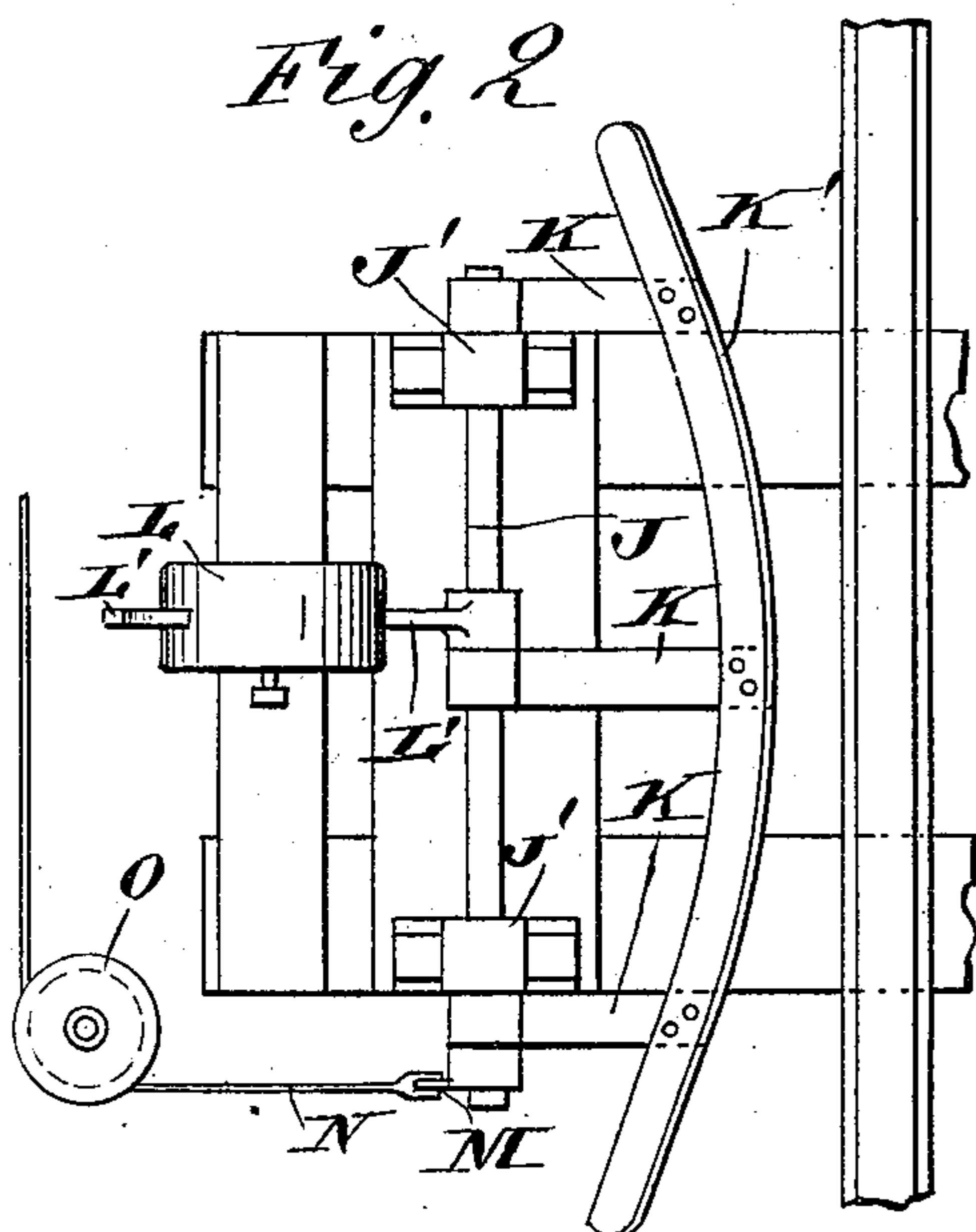
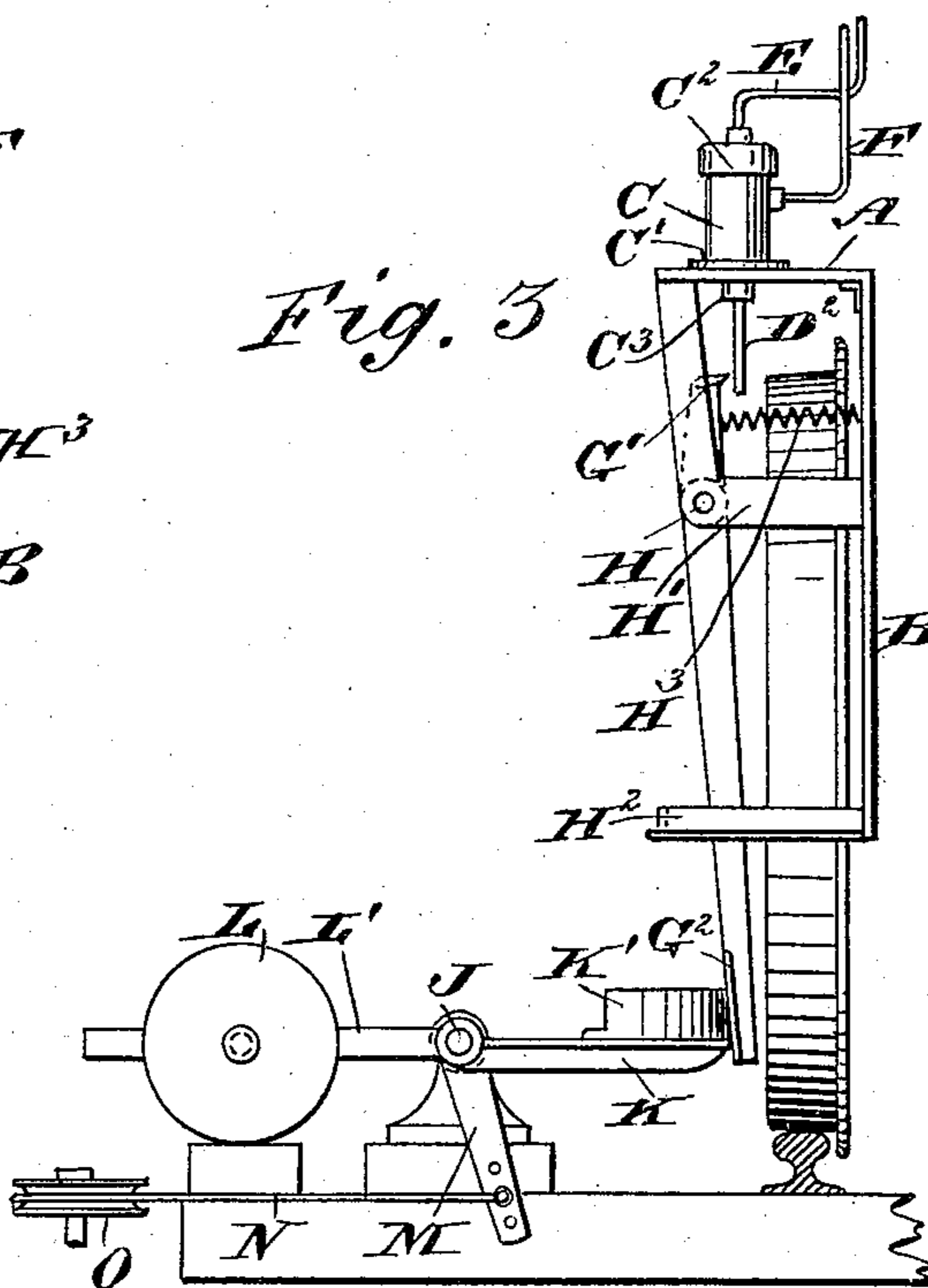
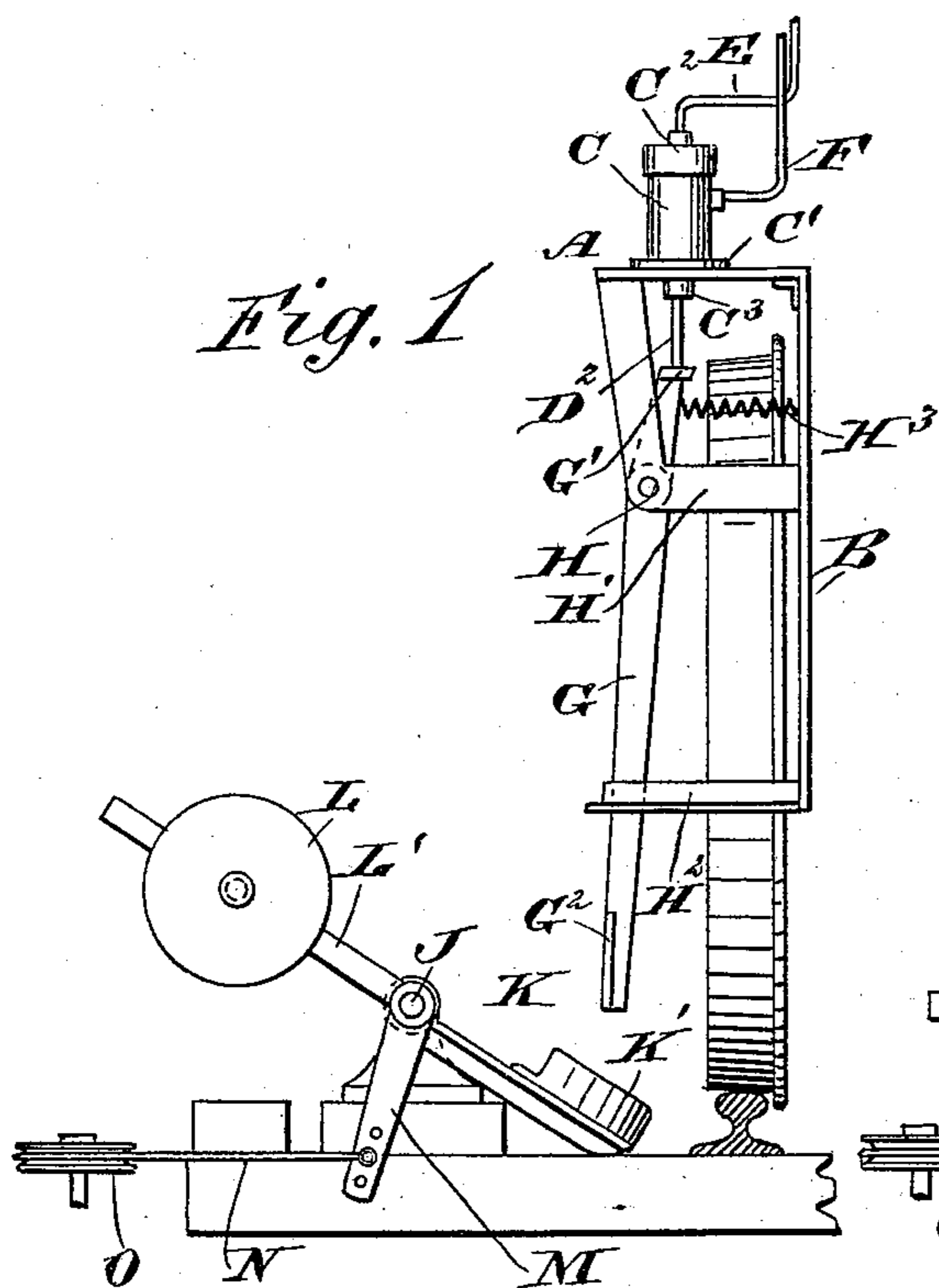
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S. J. K. HASSALL.

AUTOMATIC SIGNAL AND BRAKE MECHANISM FOR LOCOMOTIVES.

No. 488,892.

Patented Dec. 27, 1892.



WITNESSES:

C. Neveu

E. M. Clark

INVENTOR

S. J. K. Hassall

BY

Munn & Co

ATTORNEYS.

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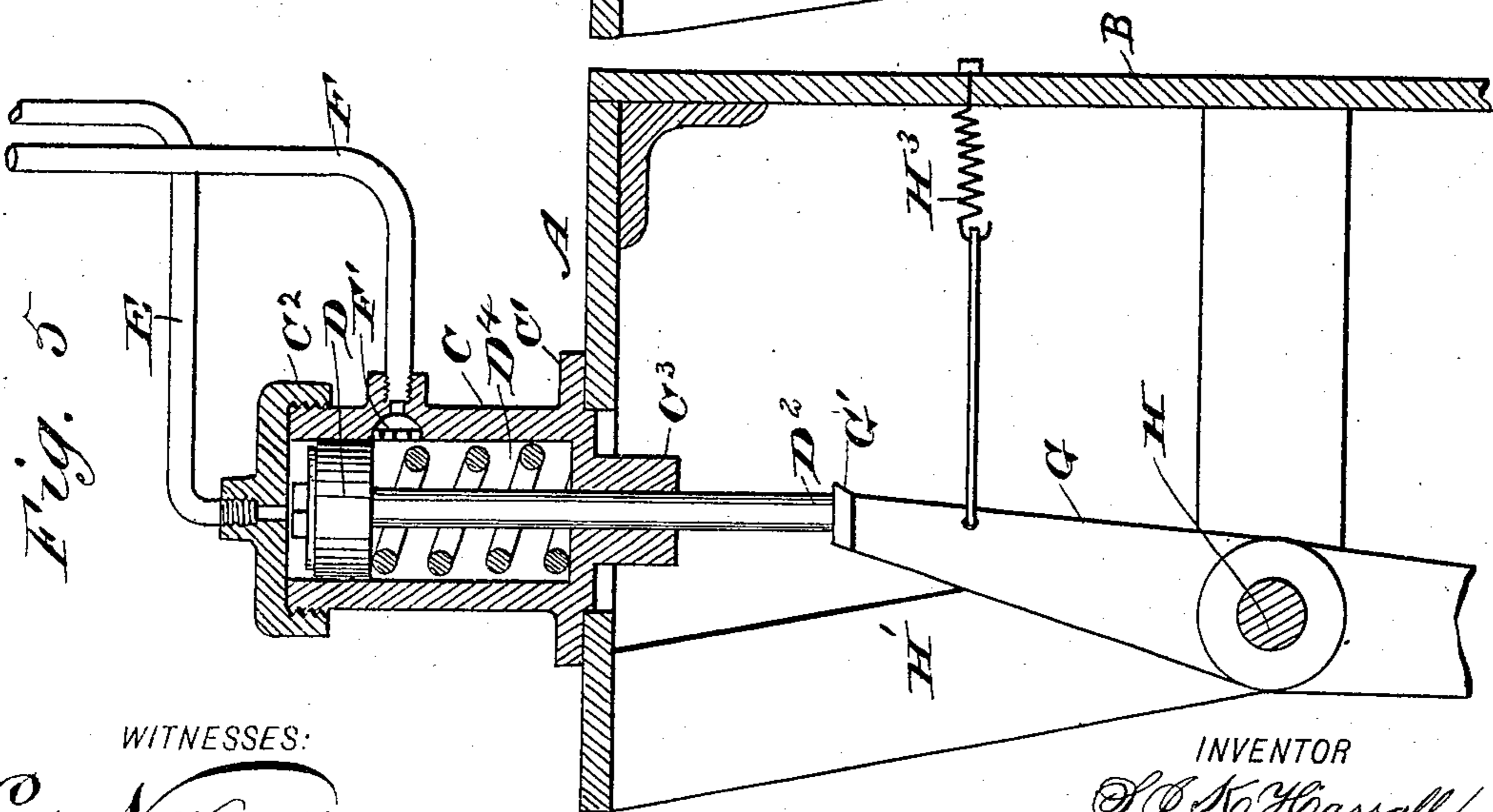
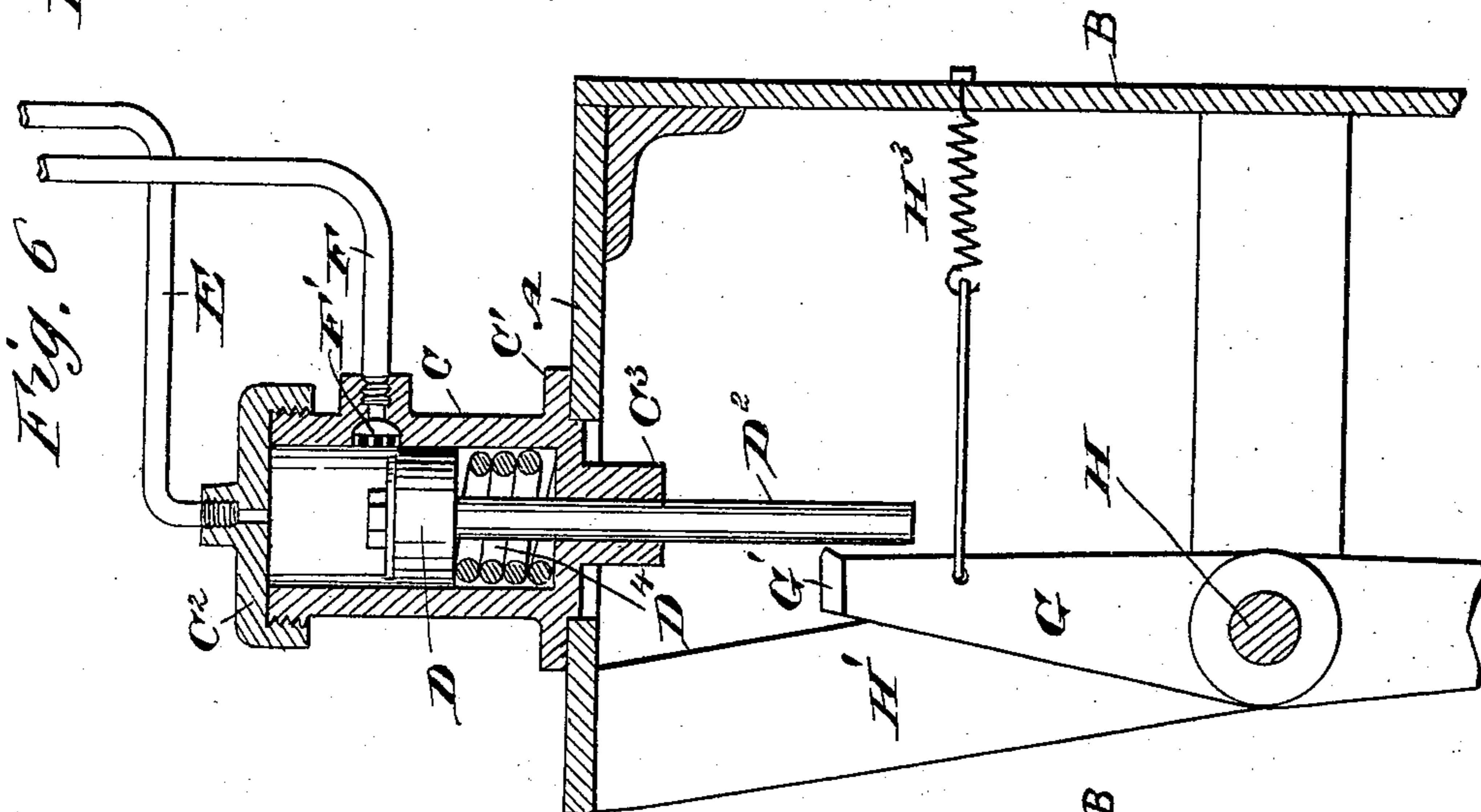
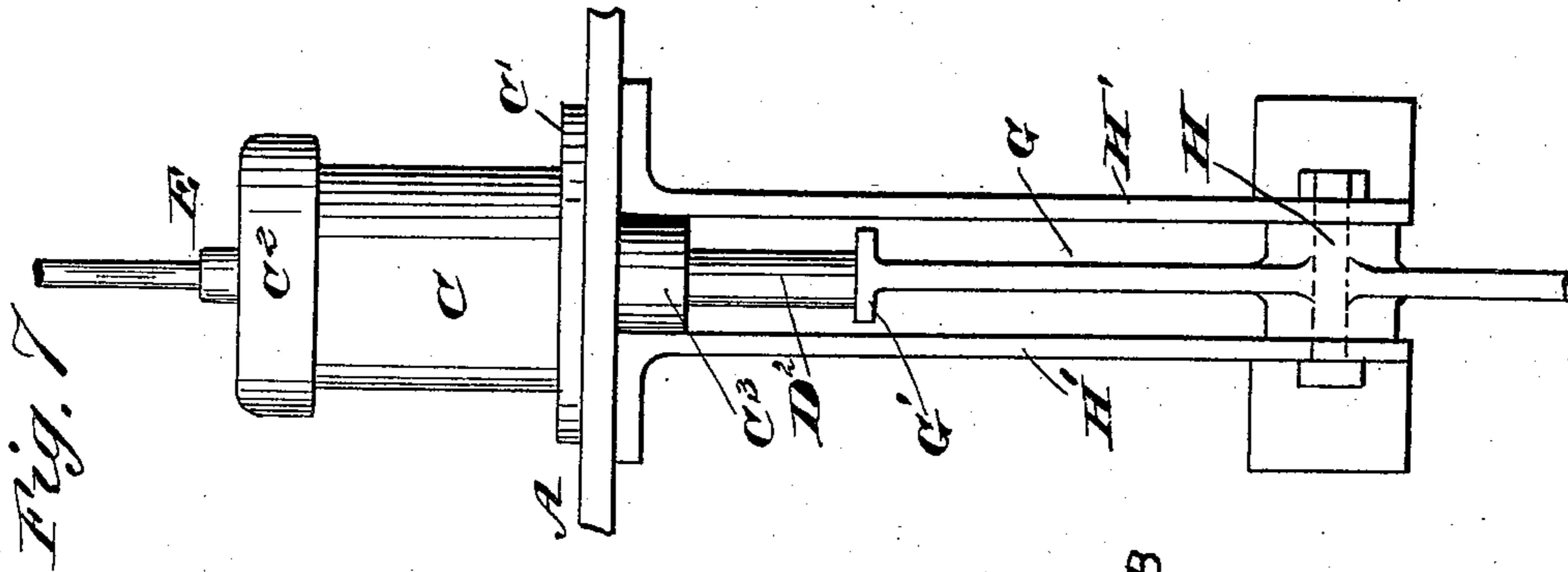
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UNITED STATES PATENT OFFICE.

SAMUEL JOHN KNOWLES HASSALL, OF PENRITH, NEW SOUTH WALES.

AUTOMATIC SIGNAL AND BRAKE MECHANISM FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 488,892, dated December 27, 1892.

Application filed June 22, 1892. Serial No. 437,582. (No model.) Patented in New South Wales December 3, 1891, No. 3,446, and in Victoria December 18, 1891, No. 9,327.

To all whom it may concern:

Be it known that I, SAMUEL JOHN KNOWLES HASSALL, of Penrith, in the Colony of New South Wales, have invented a new and Improved Automatic Signal and Brake Mechanism for Locomotives, (for which I have obtained patents in New South Wales, dated December 3, 1891, No. 3,446, and in Victoria, dated December 18, 1891, No. 9,327,) of which the following is a full, clear, and exact description.

The object of my invention is to cause brakes on a train to be applied automatically by means of a danger signal, if the same should not be observed by the engine driver. It comprises an apparatus to be fixed upon and applicable to any locomotive, having in connection with it a brake actuated by air pressure, as for example the Westinghouse brake. It is designed to apply the brake to the locomotive and train and to sound a whistle to arrest the attention of the driver, whenever a portion of the apparatus comes in contact with an adjustable or removable obstruction or striking plate on the side of the line, the construction of which also forms part of my invention. This obstruction consists of an adjustable plate or bar with connections placed on the side of the railway line at a point some distance in advance of any ordinary signal or semaphore, which is so connected with it that when the signal is lowered so as to indicate that the line is clear, the plate or bar is clear of the apparatus on the locomotive, while if the signal indicates danger, the plate or bar is in such a position that a lever, being part of the apparatus on the locomotive, comes in contact with it.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 shows a cross section of the side frame of a locomotive, and the apparatus, the subject of my invention, fixed thereon in its ordinary position; it also shows the striking plate lowered into the position it occupies when the signal indicates that the line is clear for the train to proceed; Fig. 2 is a plan showing the position stated in Fig. 1 of the striking plate and connections; Fig. 3 represents the apparatus shown in Fig. 1, with the strik-

ing plate raised, and the lever of the apparatus on the locomotive in the position it assumes when forced on one side by the striking plate, when the whistle would be sounded and the brakes applied; Fig. 4 is a plan showing the position stated in Fig. 3, of the striking plate and connections; Fig. 5 is a cross section of the apparatus on the locomotive when not actuated by the striking plate; Fig. 6 is a similar view, showing the position of the various parts when the lever has been struck as in Fig. 3; Fig. 7 is a front elevation of the apparatus.

In the parts of the drawings showing the apparatus in connection with the locomotive, A is the platform of a locomotive.

B is the side frame.

C is a cylinder made preferably of brass or gun metal, having a flange C' by means of which it is secured to the platform A, and closed at its upper end by the cover C² and having a boss C³ at the lower end thereof.

D is a common leather cup piston, having a rod D².

D⁴ is a spring pressing against the under side of the piston D.

E is a pipe screwed into the top of the cylinder C and connected to the brake pipe of the locomotive just below the driver's valve.

F is a pipe also screwed into the cylinder C and leading to a whistle fixed in the cabin of the locomotive the inlet to the pipe F being covered by a screen F'.

G is a lever having a flattened end G', upon which the end of the piston rod D² rests when the lever is in its usual position, the other end having a rounded edge G². This lever is supported by a bolt H, passing through the brackets H' which are fastened to the platform and frame of the engine as shown. The lever G in its usual position, is kept from moving laterally by the bracket H² against the end of which it is held by the spring H³.

When the apparatus is in its usual position, as shown in Fig. 5, the upper part of the cylinder C, above the piston D, being connected with the train pipe by means of the pipe E, there is full pressure of the air from the train pipe, upon the piston D, which would drive it downward if it were not kept in position by the lever G, on the upper part of which

the piston rod rests, but should the lever G be removed the pressure of the air will instantly force the piston downward as low as the spring D⁴ will admit. When the lower
 5 end of the lever G is moved from its ordinary position by contact with the obstruction or striking plate before mentioned, the piston will be lowered below the pipe F. The mouth of the pipe E will thus be in communication
 10 with the mouth of the pipe F allowing the air from the train pipe to escape. The brakes will thus be applied, while at the same time the whistle at the end of the pipe F will be sounded. Should the driver find that either through the
 15 signal dropping or by other means he is at liberty to proceed, he can cause the apparatus to return to its former position by simply opening the brake valve and allowing more air to escape. As soon as the pressure of the
 20 air in the brake pipe, and therefore in the cylinder C, is so reduced as to exert a less pressure upon the piston D than the spring D⁴, this spring forces the piston to its original position and the lever G is pulled into its
 25 place by the spring H³. The communication between the mouths of the pipes E and F will thus be closed, and when the engine driver reverses his valve handle, air under pressure is again admitted to the brake pipe and the
 30 brakes are removed. The whole operation is completed in a few seconds and the train proceeds as before.

In order that the apparatus as above described may be actuated when any signal indicates danger and only then, I have invented
 35 the striking plate and connections shown in Figs. 1, 2, 3, and 4. In the part of the drawings showing the same J is a wrought iron shaft turning in bearings J', and having fixed
 40 upon it the arms K, on which is securely fixed the segmental piece K' forming the striking plate. This, as well as the arms, is preferably made of wrought iron. An adjustable weight
 45 L and lever L', secured on the shaft J is so adjusted as to bring the segment or striking plate into a horizontal position as shown in Figs. 3 and 4. M is a lever upon the shaft J. N is a wire rope connected thereto. O is a
 50 guiding pulley round which the rope N runs. The rope N is connected to the lever which actuates the arm of a signal, in such a manner that the striking plate K' follows the motions of the signal arm, rising into the horizontal position shown in Fig. 3 when the arm
 55 of the signal is at danger, and falling into the position shown in Fig. 1 when the signal indicates an open road. The whole apparatus is securely fixed upon a suitable framing of timber, and is so adjusted as to allow for the
 60 vibration which occurs with a locomotive traveling with great velocity, which will cause

a displacement in the position of the end of the lever G of as much as one and a half inches on each side of its position when in rest. When the signal to which the striking plate is con- 65
 1 and there is no contact with the lever G, while, if the signal indicates danger, the plate K' is in the horizontal position shown in Fig. 70
 3, and the lever coming into contact with it, the apparatus on the locomotive is actuated as described.

From the foregoing description, it will be seen that the engine's driver has the advantage of an audible as well as a visible signal, as the whistle will blow in unison with the operation of the signal, and the driver cannot well neglect both signals.

Having thus fully described my invention, 80
 I claim as new and desire to secure by Letters Patent,—

1. The combination with the cylinder having pipe connections with the air brake apparatus and whistle, and the spring pressed 85
 piston mounted within the cylinder, of a swinging lever mounted beneath the rod of the piston and adapted to contact therewith, and a movable striking plate held upon the track, in the path of the lever, said striking 90
 plate having operative connections with the railway signals, substantially as described.

2. The combination with the cylinder having pipe connections with the air brake apparatus and with the whistle, and the spring 95
 pressed piston held to slide in the cylinder and having a depending piston rod, of a spring pressed lever pivoted beneath the cylinder and having its upper end arranged to contact with the piston rod, and a swinging striking 100
 plate mounted upon the track and adapted to extend into the path of the lever, substantially as described.

3. The combination with the cylinder having pipe connections with the air brake apparatus and a whistle, as described, and the spring pressed piston held to move in the cylinder, the piston having a depending piston rod, of a spring pressed lever pivoted beneath 105
 the cylinder and having its upper end arranged to contact with the piston rod, and a weighted and vertical swinging striking plate mounted upon the track and adapted to extend into the path of the lever, the striking 110
 plate having an operative cable connection 115
 with the swinging signal arms along the track, substantially as described.

SAMUEL JOHN KNOWLES HASSALL.

Witnesses:

ROBERT MILNE,
 ALEXR. M. MILNE.