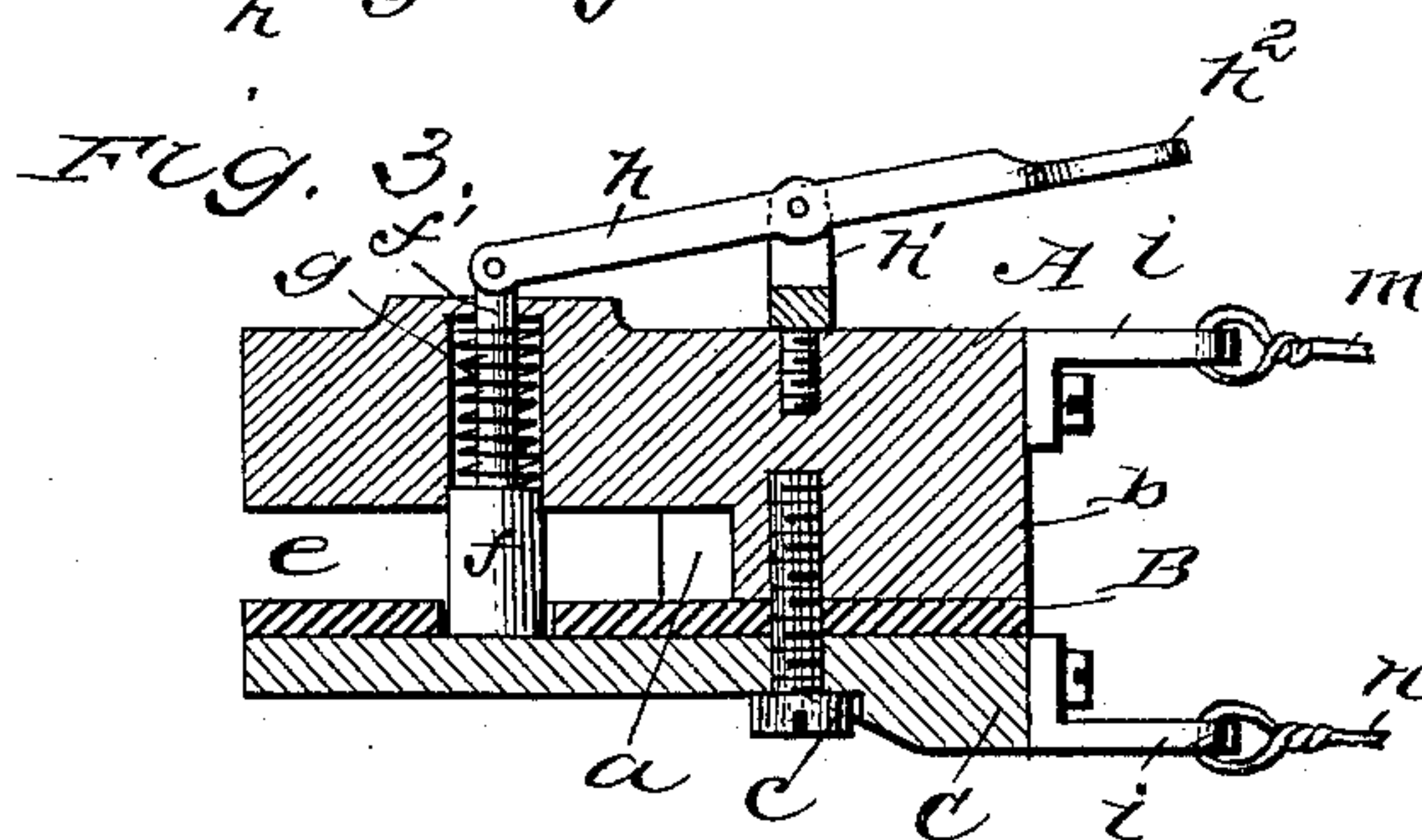
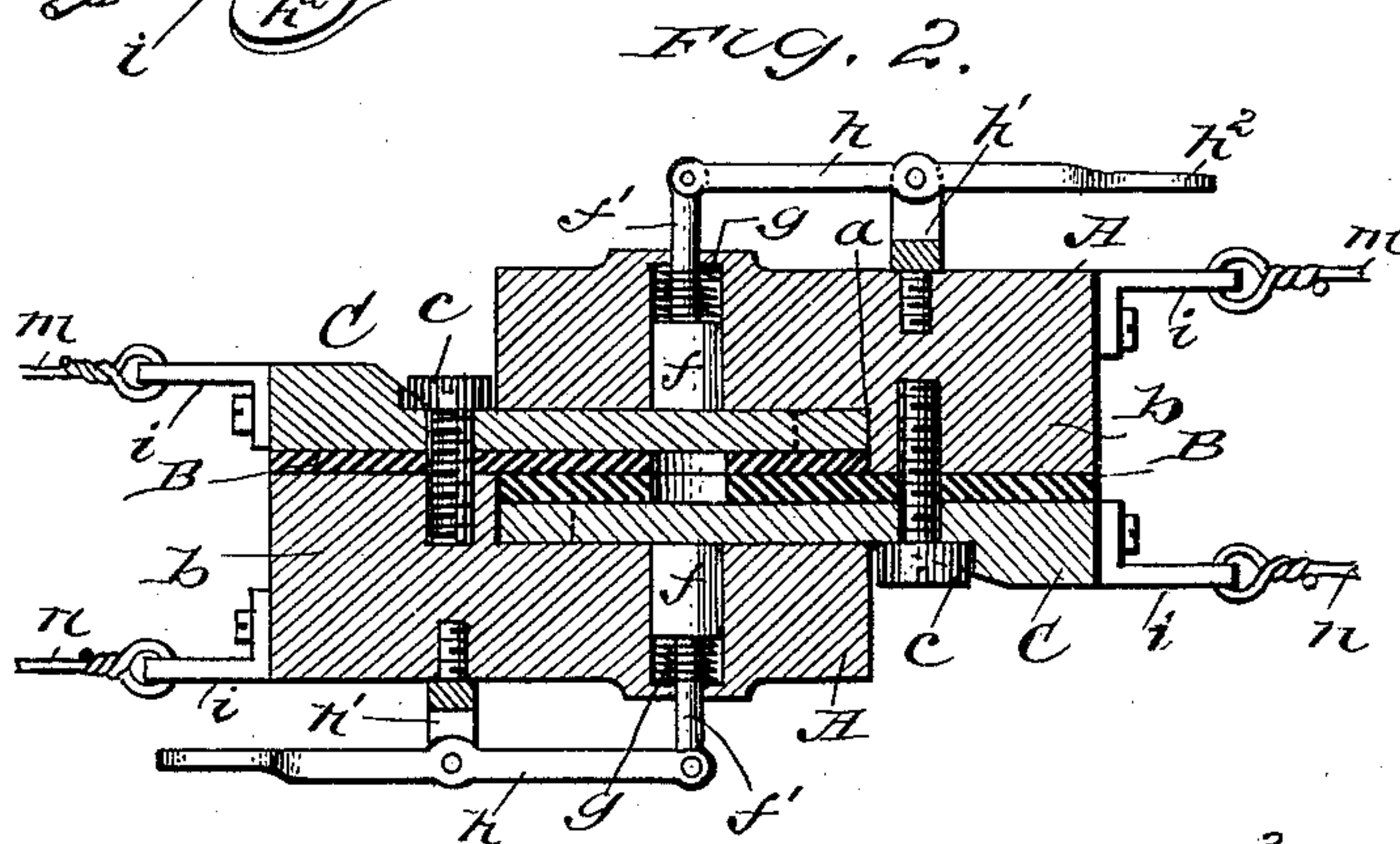
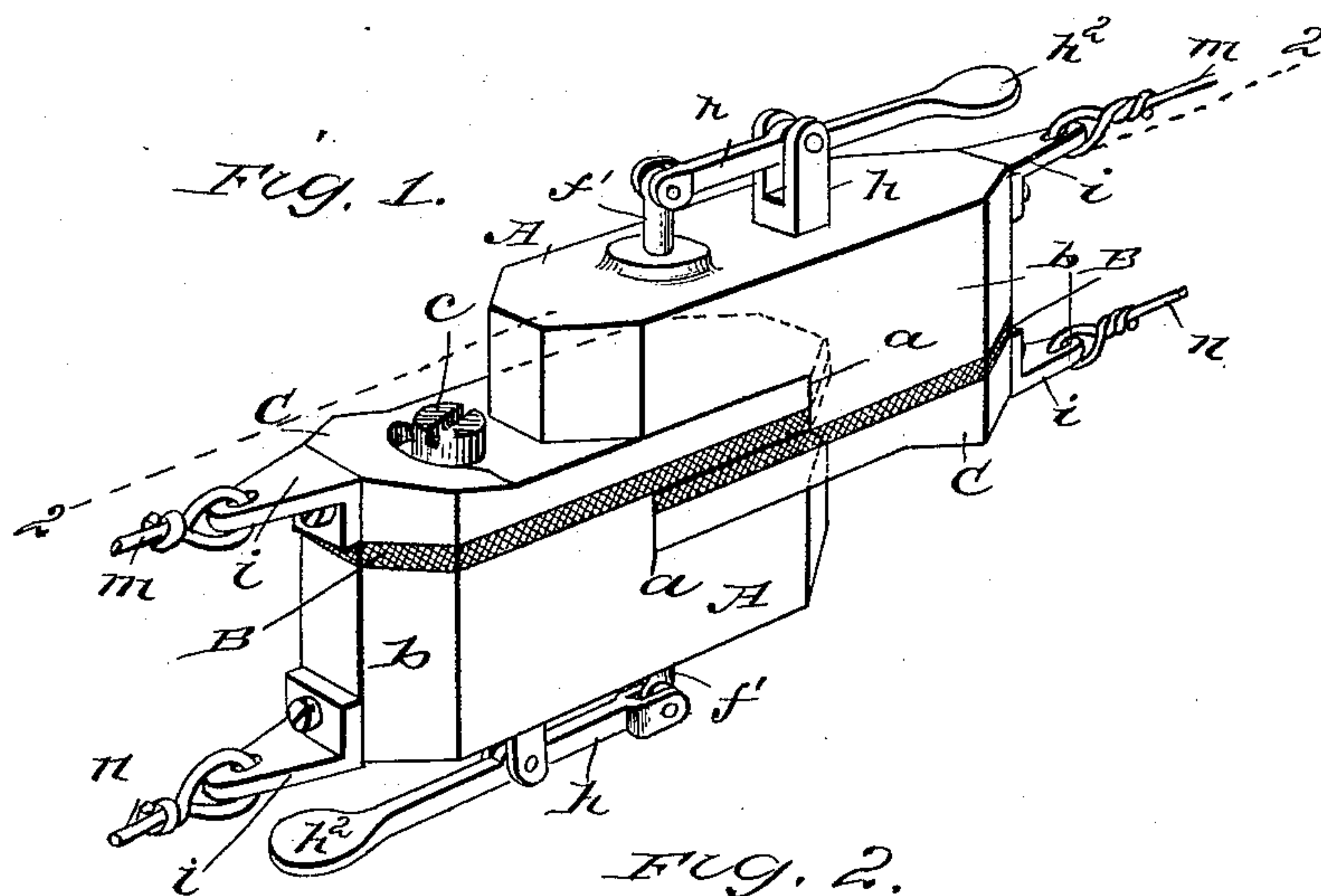


(No Model.)

J. J. HINPHEY.  
COUPLING FOR ELECTRIC WIRES.

No. 437,116.

Patented Sept. 23, 1890.



**WITNESSES:**

W. R. Harris.  
C. Sedgwick

*INVENTOR:*

J. J. Murphy

BY

Munn & Co

ATTORNEYS



# UNITED STATES PATENT OFFICE.

JAMES J. HINPHEY, OF BOUND BROOK, NEW JERSEY, ASSIGNOR OF ONE-HALF TO BENJAMIN B. MATTHEWS, OF SAME PLACE.

## COUPLING FOR ELECTRIC WIRES.

SPECIFICATION forming part of Letters Patent No. 437,116, dated September 23, 1890.

Application filed March 5, 1890. Serial No. 342,728. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES J. HINPHEY, of Bound Brook, in the county of Somerset and State of New Jersey, have invented a new and useful Coupling for Electric Conductor-Wires, of which the following is a full, clear, and exact description.

My invention relates to improvements in couplings for electrical conductors, and particularly to such as are employed to detachably connect conductor-wires that extend through a train of cars, to furnish means for transmission of signals from any car of the train to the engineer or other party at a different point on the train.

In transmission of signals from the cars of a train to the engineer on the locomotive, an electric signal-bell is placed upon the engine, and conductor-wires are led therefrom rearward through all of the cars. Usually these conductor-wires are unconnected, and as this leaves the circuit open signals given in accordance with a prearranged code may be transmitted from any car by a "make" and "break" of the circuit on said car, a simple and efficient key being usually employed to close the circuit at the desired point, and by its manipulation convey the proper signals to the engineer. One of the first essentials for the transmission of signals in the manner indicated is to provide means for the attachment of wires between the several cars of a train in a way that will permit two independent lines to be rendered intact, and also to transmit a signal distinct from the ordinary signals when the train is broken accidentally or by design, so that the engineer will become aware of the rupture of the train.

Heretofore the provision for signaling an accidental break of the train and consequent detachment of the signal-wires at the point of rupture, did not signal to the engineer in a manner to insure attention, and consequently was defective in service.

The objects of this invention are to provide a simple and reliable means for the speedy connection of the electric conductors used for train-signaling or other purposes of like nature, which will permit the wires to be disconnected between two cars of a train, and, fur-

ther, to afford an automatic circuit-closer at their points of connection, whereby a continuous ringing signal will be produced on the locomotive or at any other desired point where an electric signal-bell may be located when adjacent cars are separated.

To these ends my invention consists in certain features of construction and combinations of parts, as is hereinafter described, and indicated in the claims.

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 is a perspective view of the complete coupling in connected adjustment, whereby two independent lines of electric-conductor wires are rendered intact, the end portions of said wires being shown attached to the coupling-blocks. Fig. 2 is a longitudinal section of the coupling in closed adjustment of the coupling-blocks, taken on the line 2 2 in Fig. 1, the conductor-wires being insulated from each other; and Fig. 3 is a longitudinal vertical section of one coupling-block, adjusted to close the circuit by establishment of electrical connection between conductor-wires which lead to an electric signal-bell.

Any suitable electric signaling device may be employed which will operate to sound an alarm continuously when the circuit is closed—as, for instance, a magneto call-bell may be utilized—and in the matter of signaling from any car on the train, it is not necessary to particularize any special device for such a purpose, as this is not a feature of the present invention, it being understood that the preferred use of the coupling is to afford a reliable adjunct to such a device.

In the drawings, A A represent coupling-blocks which are of similar form, and as the parts that are combined with each of said blocks are alike it will only be necessary to describe those that are provided for one half-section of the complete coupling device.

The block A is made of any suitable metal which is a good conductor of electricity. In form it is preferably made rectangular and suitably elongated, the corners being cut away



at each end to form blunt wedges, thus avoiding sharp corners that would be objectionable in handling the blocks to make connections.

Upon one side the block A is cut away for a portion of its length, leaving a thinner portion with substantially parallel sides. The shoulder at *a*, where the reduction of the block terminates, is cut into V-form for the accommodation of other parts that may engage the notched wall of the block, as will presently be explained.

Upon the portion *b* of the block A, which is left of full thickness, an insulating-slab B is secured by clamping it thereon. To effect this, and also to furnish a complementary piece for the block A, the metal conductor-plate C is superimposed upon the insulating-slab B, both the slab and conductor-plate being firmly attached to the block A by a screw *c*, that is made of non-conducting material—such as hard rubber—the insulating-slab B being preferably constructed of like material.

The form of the slab B and conductor-plate C, considered edgewise, is the same as that given to the block A, the insulating-slab being of an equal thickness throughout its area.

The metal conductor-plate C is of such a proportionate thickness that when combined with the insulating-slab B both will fit loosely between the block A and insulating-slab of a mating coupling-section, as shown in Fig. 2, there being a slot *e* produced by the combination of parts, which is more plainly exhibited in Fig. 3.

Each block A of the mating coupling-sections is perforated at about the center of length and width of the reduced portion produced on the blocks, said perforations being formed transversely in the blocks of a suitable depth and diameter to receive the cylindrical plugs *f*, which are made to slide freely therein.

The socket-perforations in the blocks A are extended nearly through said blocks, and from their bottom surface smaller holes are drilled through the remaining material concentric with the sockets, these small orifices being designed to receive reduced extensions *f'* of the plug *f*, which project outside of the blocks a proper distance. Opposite the socket-holes in the blocks A, aligning perforations are made through the insulating-slabs B, so that the ends of the plugs *f* may be projected through these holes in the insulating-slabs and have electrical contact with the conductor-plates C, as will be further explained. Upon the reduced portions or shanks *f'* of the plugs *f* spiral springs *g* are placed, which, when introduced within the socket-holes of the blocks A along with the plugs, will, by their expansive force, normally project the plugs across the slots *e* through the orifices in the insulating-slabs B and enforce a contact of the plug ends with the conductor-plates C. The outer ends of the shanks *f'* are flattened and transversely perforated for pivotal engagement with the rocking levers

*h* that are pivoted upon the posts *h'*, said levers having thumb-pieces *h<sup>2</sup>* formed on their free ends, whereby the plugs *f'* may be withdrawn from their position across the slots *e* when the two sections of the coupling are to be slid together endwise, and thus connect the wires of the signaling device.

Upon the ends of the blocks A and conductor-plates C, which are nearest to the clamping-screws *c*, L-shaped bracket-plates *i* are affixed by screws or other means, and are perforated to adapt them for attachment to the conductor-wires *m n* that are inserted in the holes in the projecting flanges of the bracket-plates and tightly twisted, so as to form a proper contact electrically and a substantial connection mechanically. If preferred, binding-posts of the usual form may be substituted for the plates *i*.

In operation the sections of the coupling are adjusted together, as shown in Figs. 1 and 2. The plugs *f*, being held forcibly against the conductor-plates C, bind the parts together with sufficient stability to insure a reliable connection under ordinary conditions of use. If, however, there should be a separation of two cars in a train which is provided with a signaling device and couplings for conductor-wires of the construction herein described, the two coupling-sections will be separated without injury to either of them or the wires attached thereto.

It will be seen that the lines of conductor-wires *m n* are rendered continuous by the construction of the coupling device and insulated from each other while the sections are in connection.

When a separation of the sections is produced simultaneously with the detachment of cars in a train, the force of the spiral springs *g* will project the ends of the contact-plugs *f*, so that these will bear upon the conductor-plates C, which will electrically connect the wires *m n* on the car or cars of a train that are still attached to the engine, so that by an establishment of a closed circuit the signaling device on the engine or forward portion of the train will ring continuously and notify the engineer of the rupture of the train.

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

1. The combination, with a metallic block, which is an electric conductor, having a portion of its body reduced on one side to form an offset, an insulating-slab imposed upon the thick portion of the block, an electric conductor-plate on said insulating-slab, a longitudinal slot intervening said block and slab, and means for securing said block, plate, and slab together, of a spring-actuated plug adapted to electrically connect the block and conductor-plate when said slot is open, substantially as set forth.

2. The combination, with a metallic block, which is an electrical conductor, having one side reduced longitudinally to produce an off-



set on it, an insulating-slab imposed upon the thick portion of the block, an electrical conductor-plate on said slab, and a non-conducting screw connecting said block, plate, and slab together, of two line conductor-wires, one attached to the block and the other to the plate and insulated from each other, and a spring-actuated plug adapted to form an electrical connection between the block and conductor-plate when not restrained, substantially as set forth.

3. The combination, with a coupling-section for electric conductor-wires, consisting of a block, a perforated insulator-slab, a conductor-plate, a non-conducting screw, a spring-actuated plug adapted to form an electrical connection between the block and plate, and two terminals of separate line-wires, of a mating section having terminals of line-wires attached thereto, each joined electrically with a corresponding wire on the first-named section when

said coupling-sections are connected, whereby a normally-open circuit is closed by the spring-actuated plugs when the coupling-sections are separated, substantially as set forth.

4. The combination, with a metallic block having one side reduced in thickness, an insulating-slab on said block, a conductor-plate in contact with the insulating-slab, and a non-conducting screw holding said block, slab, and plate aligned and connected, of a contact-plug adapted to reciprocate in a socket-hole formed in the metal block, a spiral spring pressing upon the plug to project it inwardly, a pivoted lever adapted to move the plug, and line-wires secured at their terminal ends, one wire to the block and the other to the conductor-plate, substantially as set forth.

JAMES J. HINPHEY.

Witnesses:

JAS. A. OLAHAN,  
MONTFORT MATTHEWS.