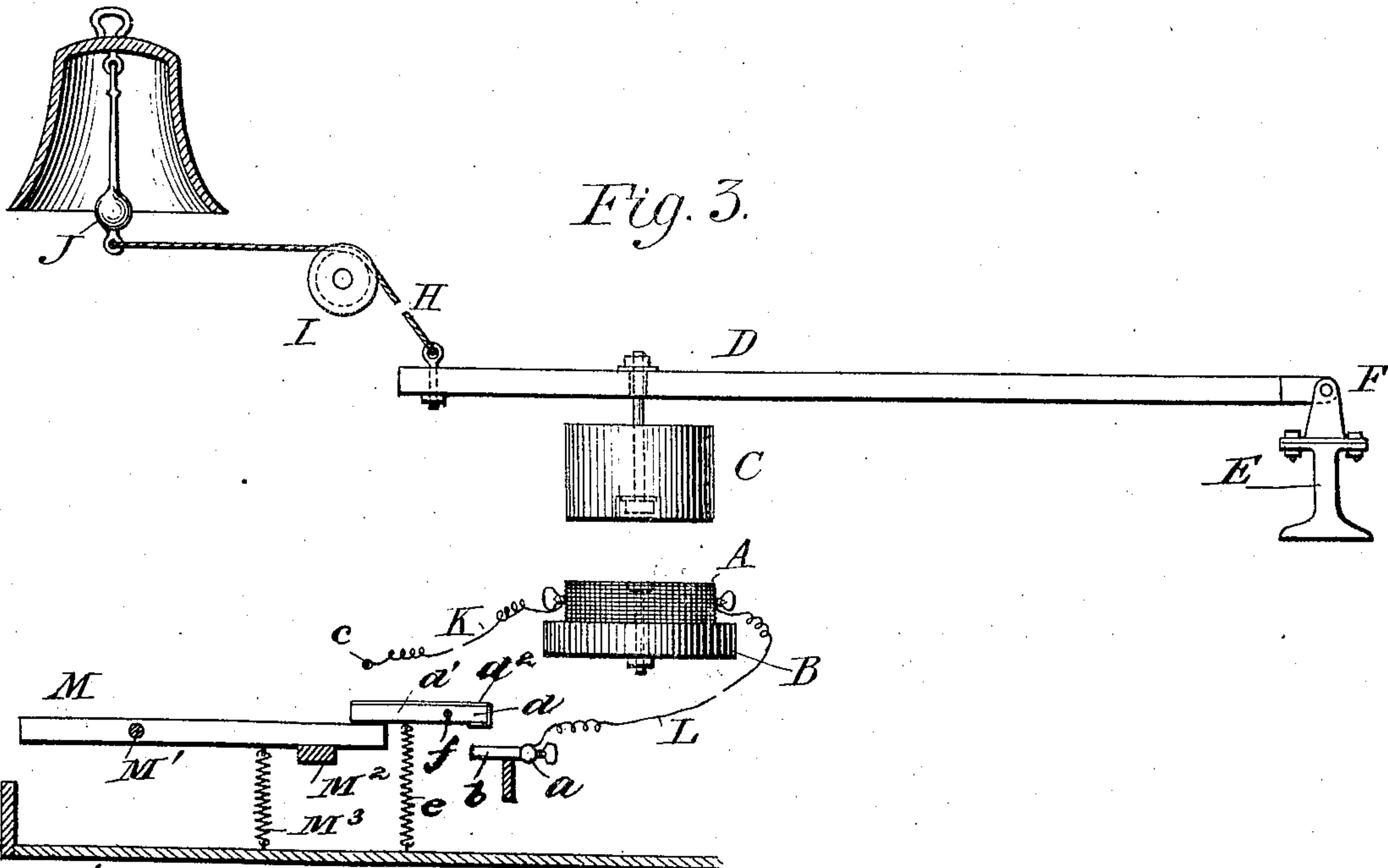
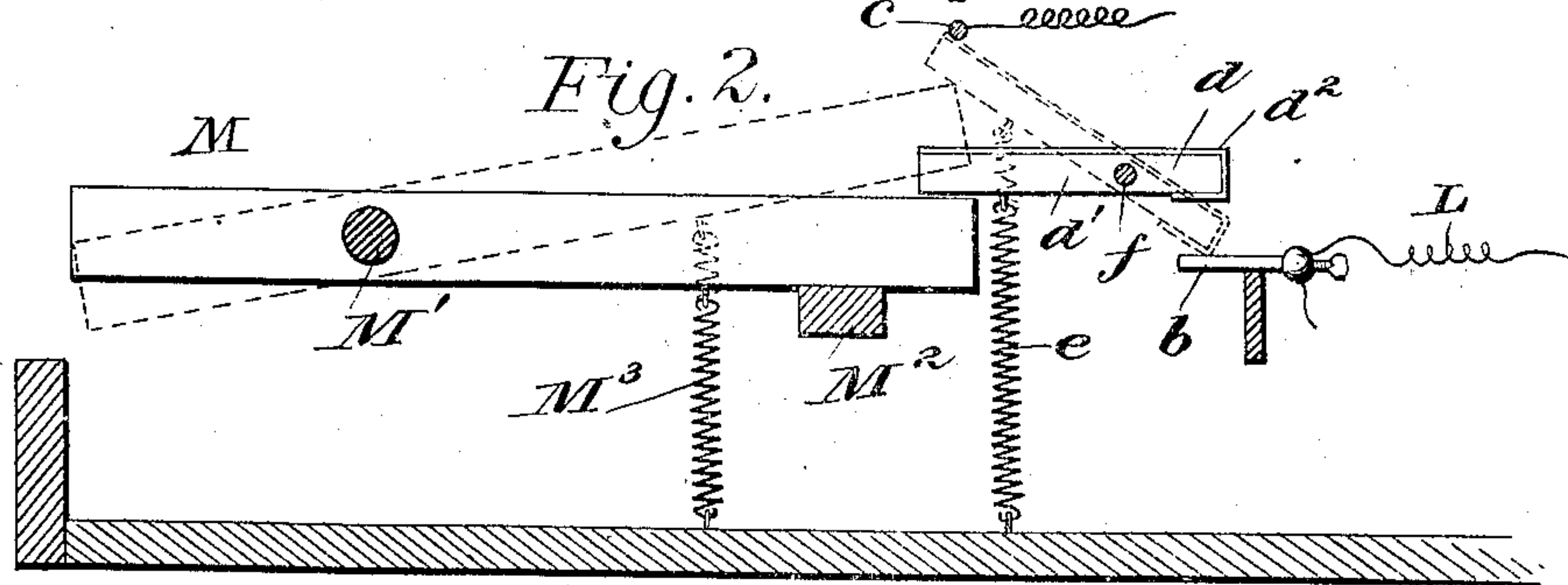
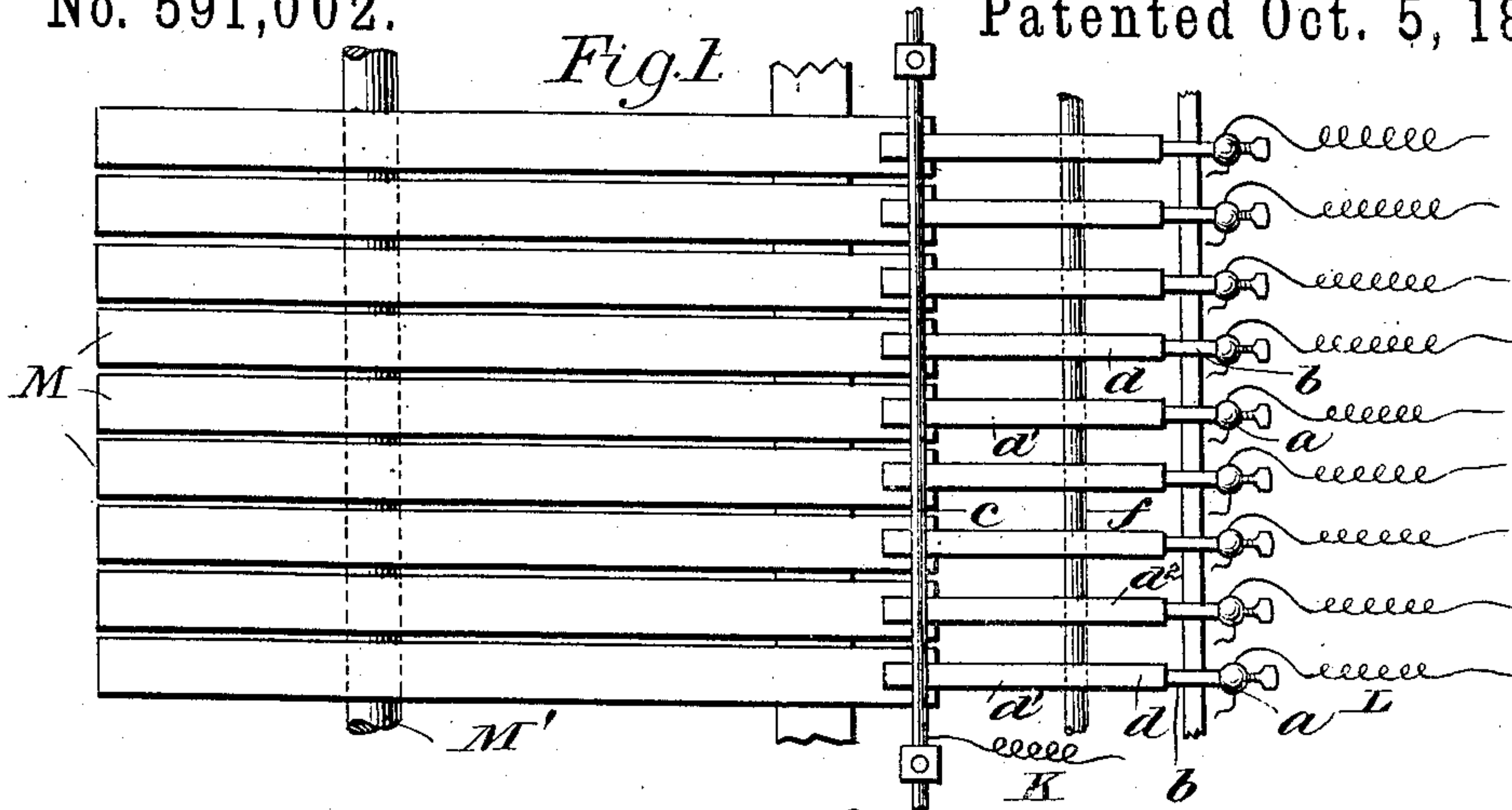


(No Model.)

N. McMENAMIN.
ELECTRIC BELL CHIMING APPARATUS.

No. 591,002.

Patented Oct. 5, 1897.



Witnesses:

Edwin D.
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UNITED STATES PATENT OFFICE.

NEAL McMENAMIN, OF TRENTON, NEW JERSEY.

ELECTRIC BELL-CHIMING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 591,002, dated October 5, 1897.

Application filed November 18, 1896. Serial No. 612,620. (No model.)

To all whom it may concern:

Be it known that I, NEAL McMENAMIN, a citizen of the United States, residing at Trenton, in the county of Mercer and State of New Jersey, have invented a certain new and useful Improvement in Electric Bell-Chiming Apparatus, of which the following is a full, clear, and exact description.

The object of my invention is to provide a simple and efficient means for chiming bells in belfries and to lighten the labor of the bell-ringer.

In my invention I employ a manual or keyboard with one key for each bell, and the bell clappers or strikers are connected with levers, each of which is operated by an electromagnetic arrangement, the making and the breaking of the circuit thereof being effected by a very simple arrangement under the control of the manual, all as I will proceed now more particularly to set forth and finally claim.

In the accompanying drawings, illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is a plan view of the manual and the circuit-closers. Fig. 2 is an elevation thereof. Fig. 3 is a diagrammatic elevation of the apparatus complete.

The manual M may be constructed in any approved manner and be composed of keys of non-conductive material and equal in number to the number of bells in the chime. These keys are shown as provided with a fulcral or pivotal rod M', common to all, and with a rest-bar M², and they are restored to and held in position for use by the operator by means of springs M³.

Binding-posts a, equal in number to the number of keys in the manual, are arranged adjacent to the keys and are provided with contact-pieces b. A conductor c is arranged above the keys, and these binding-posts and the conductor are connected with any suitable source of electricity—as, for instance, a light or power service. Between the contact-pieces b and the conductor c are arranged a number of circuit-closers d, which circuit-closers are normally held in parallelism with the keys of the manual by springs e. That portion of the circuit-closers which comes next to the keys is electrically non-conductive, and to this end the said circuit-closers

may be composed of a body d', of wood or hard rubber or other insulating material, with a facing d², of conductive material, and this facing may be applied to the body in such manner and to such extent as to complete the circuit between the contact-pieces b and the conductor c when each of the said circuit-closers is thrown into position by the depression of the respective keys in the manual, as indicated by the dotted lines in Fig. 2.

An electromagnet A, one for each circuit-closer, is provided with a base or pole piece B, preferably of metal, and in turn erected upon a suitable support, and each magnet is connected with the conductor c and its binding-post a by wires K and L, respectively, so that the electromagnet appropriate to the key depressed will be energized by the circuit-closer making contact between the contact-piece b and the conductor c.

C is a pole-piece secured to and depending from a lever D, the said pole-piece being arranged over the electromagnet and adapted to be attracted to it when the said electromagnet is energized.

E is a rail or support provided with stands F, in which the levers D are independently pivoted or fulcrumed at one end. At the other end each lever has connected to it a rope or cable H, which passes thence over a pulley I to the bell clapper or striker J.

The bells may be arranged in the belfry, while the operating mechanism may be arranged in the choir-loft or other convenient and easily-accessible place.

Inasmuch as my apparatus may be applied to the bells without change in the construction and arrangement of the bells, I have deemed it unnecessary to describe the arrangement of the bells. Suffice it to say that the clappers may be of the rebound variety.

If occasion require, the levers D may be supplied with a counterpoise to compensate for the weight of the pole-pieces C, these details not affecting the principle of my invention.

The operation is obvious from the foregoing, but it needs to be said that the making of the circuit is instantly effected by movement of the appropriate key in the manual, and said circuit is maintained as long as said key is depressed. Instantly that the key is

released the circuit is broken by the return of the circuit-closer under the action of its spring *e*.

As already stated, the depression of the key of the manual by the performer completes the circuit indirectly, and thereby is prevented the formation of the electric arc, the difficulty that has been encountered in the utilization of electric service heretofore in chimes. When in such utilization a direct make and break has been employed, the high voltage is more or less dangerous, very annoying, and very wasteful of current. By my indirect make and break these difficulties are remedied, and especially so when the voltage does not exceed five hundred.

As will be observed, the electric current is wholly disconnected from the key, and thus the performer is wholly safe from the current.

By my invention the labor of chiming bells or playing a chime of bells is rendered no more exacting than that of playing a piano or organ.

The cost of installation is comparatively small, and the space for the apparatus is quite small.

What I claim is—

1. Means for ringing bells and for other purposes, comprising essentially a circuit-closer, an operating lever or key for tilting the said circuit-closer to complete the circuit, and means to restore the circuit-closer to its normally inactive position when released from the influence of the lever or key, combined with a bell-actuating lever adapted to be connected with the bell, a pole-piece suspended from the bell-actuating lever, an electromagnet arranged adjacent to said pole-piece, and electric conductors wired with the electro-

magnet, the circuit-closer being arranged and operated to make and break the circuit between the said conductors, substantially as described.

2. A bell-chiming apparatus, comprising an actuating-lever adapted to be connected with the bell to be rung, a pole-piece suspended from the bell-actuating lever, an electromagnet arranged adjacent to said pole-piece, electric conductors wired with the electromagnet, a tilting circuit-closer arranged to complete the circuit between the aforesaid conductors and normally out of contact therewith, and a key arranged outside of the electric circuit, and adapted to operate the circuit-closer to complete the circuit, the circuit-closer being operated and the circuit broken automatically upon the release of the key, substantially as described.

3. A bell-chiming apparatus, comprising a bell, an actuating-lever and suitable connections between the two, a pole-piece suspended from the bell-actuating lever, an electromagnet arranged adjacent to said pole-piece, electric conductors wired with the electromagnet, a tilting circuit-closer arranged to complete the circuit between the aforesaid conductors and normally out of contact therewith, and a key by means of which the circuit-closer may be operated to complete the circuit, substantially as and for the purpose described.

In testimony whereof I have hereunto set my hand this 18th day of November, A. D. 1896.

NEAL McMENAMIN.

Witnesses:

WM. H. FINCKEL,
E. A. FINCKEL.