

No. 734,906.

PATENTED JULY 28, 1903.

T. A. LONG & G. W. COFRAN.

FIRE ALARM MECHANISM.

APPLICATION FILED JAN. 7, 1903.

NO MODEL.

3 SHEETS—SHEET 1

Fig. 2.

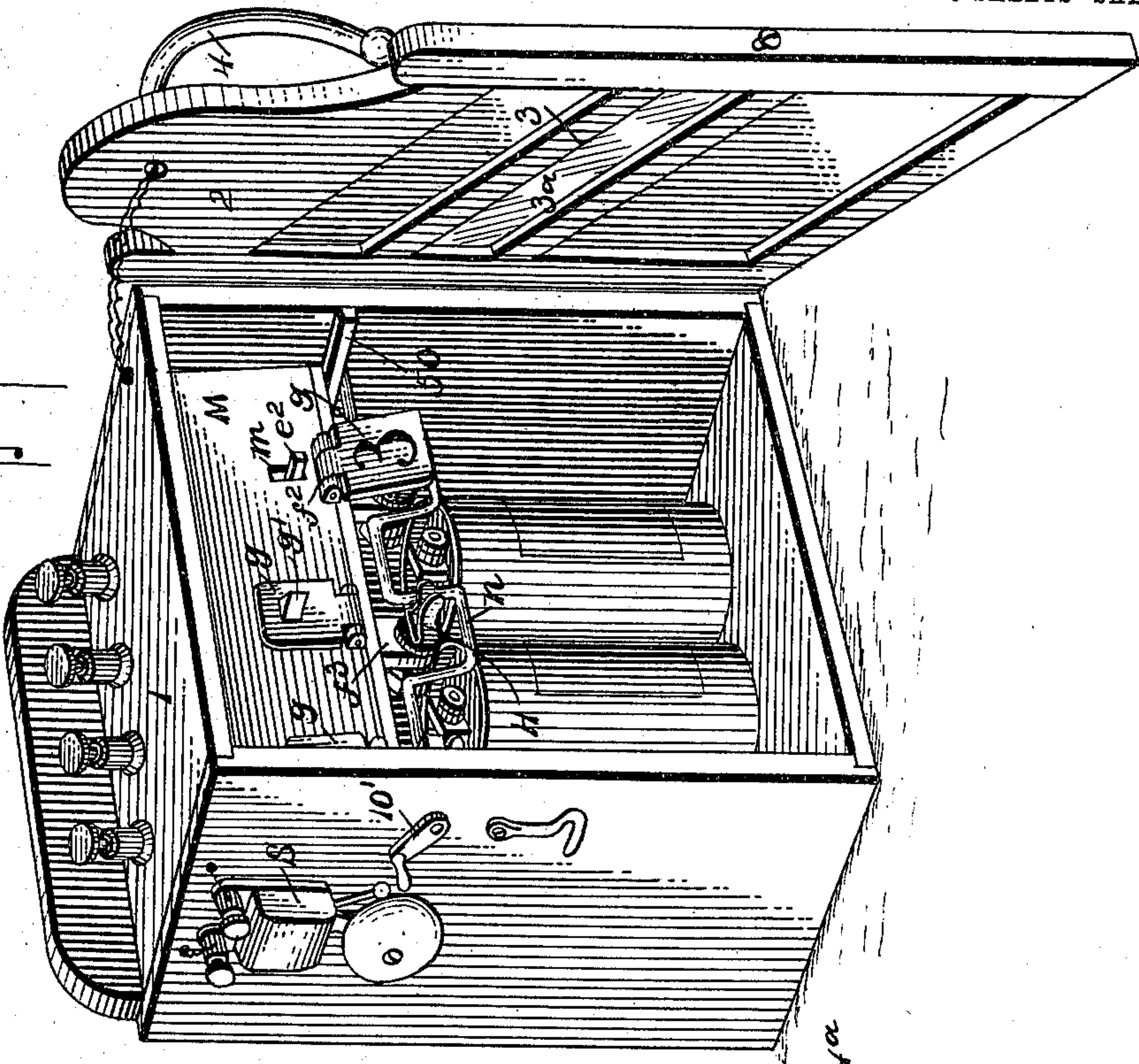
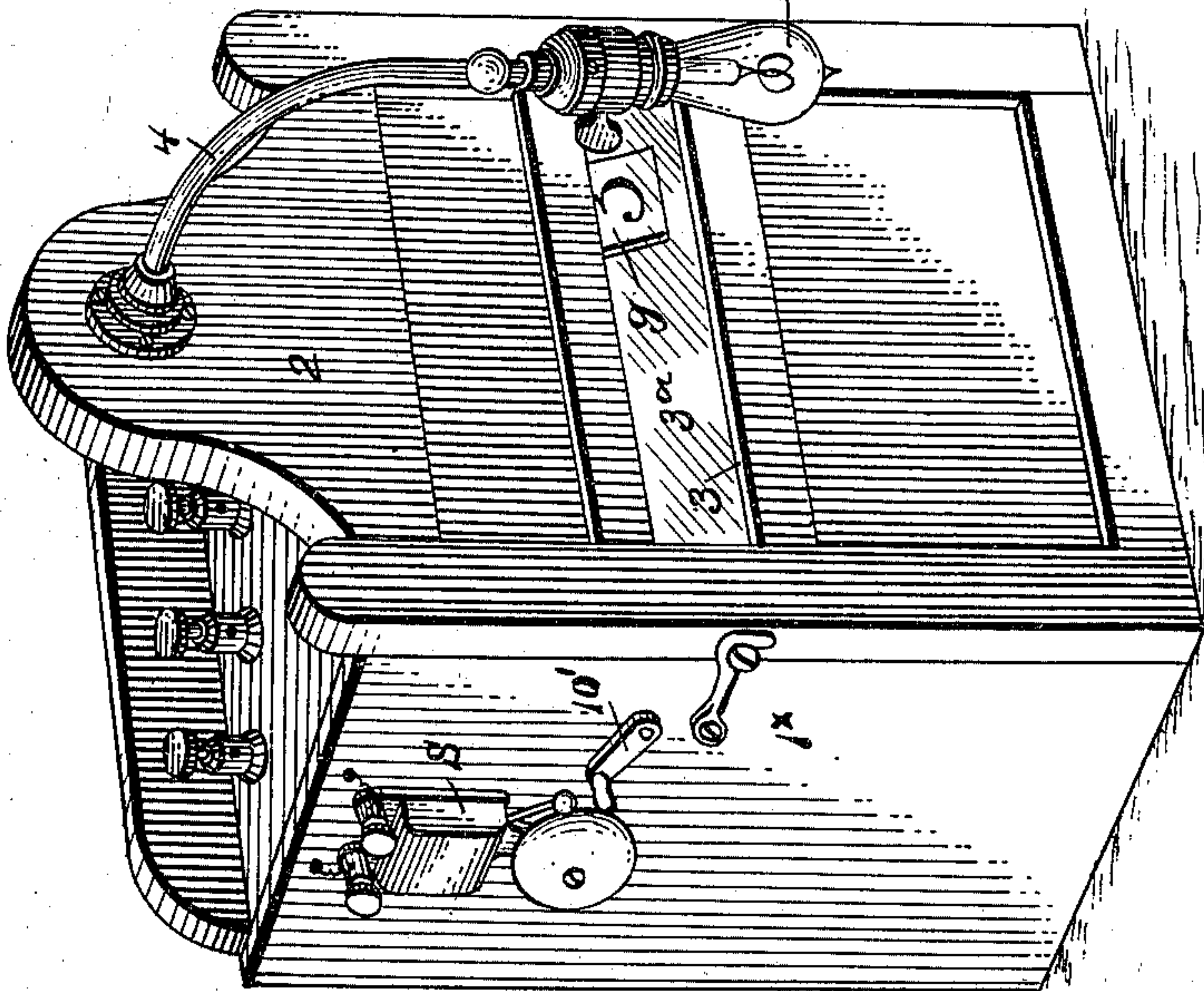


Fig. 1.



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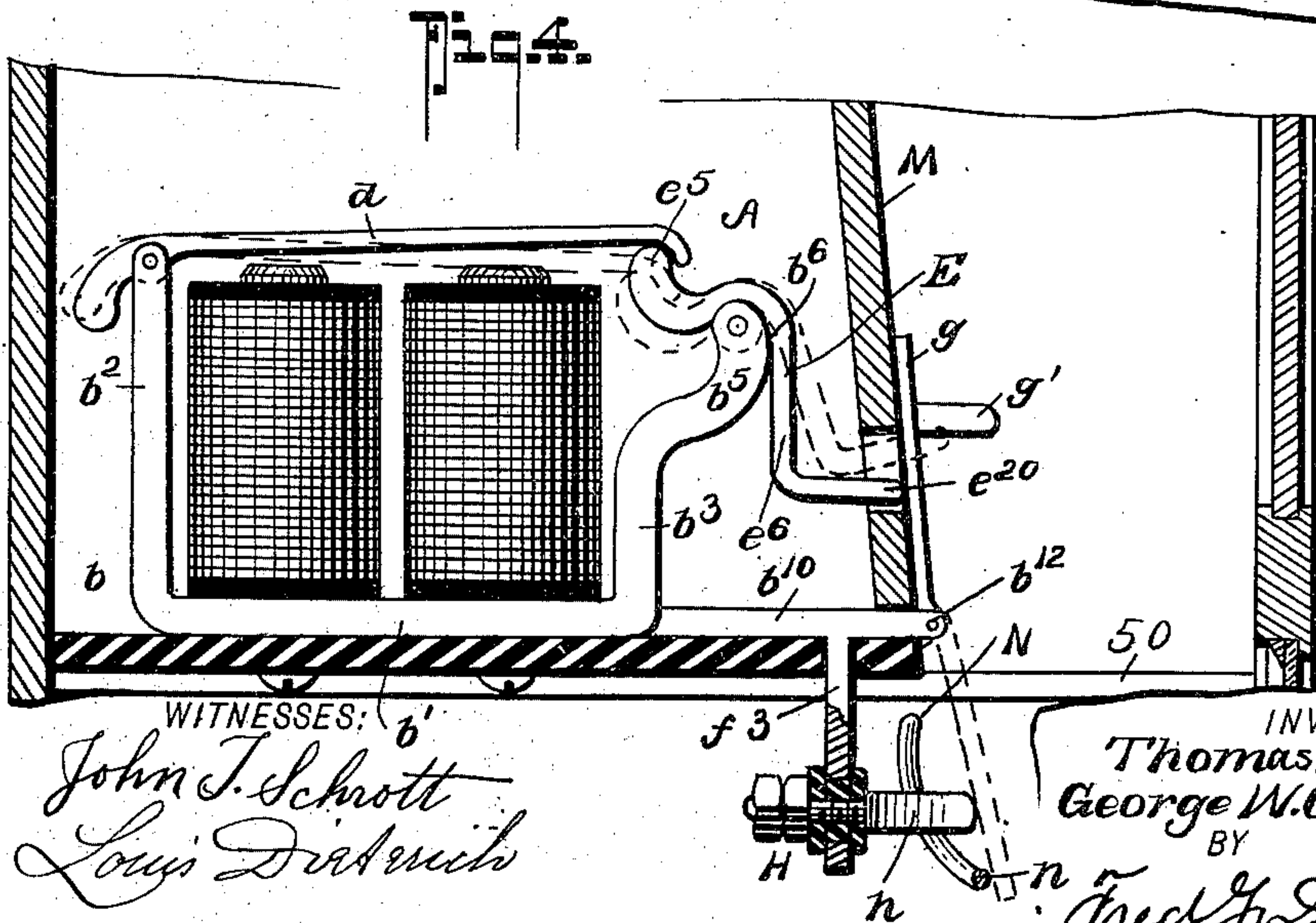
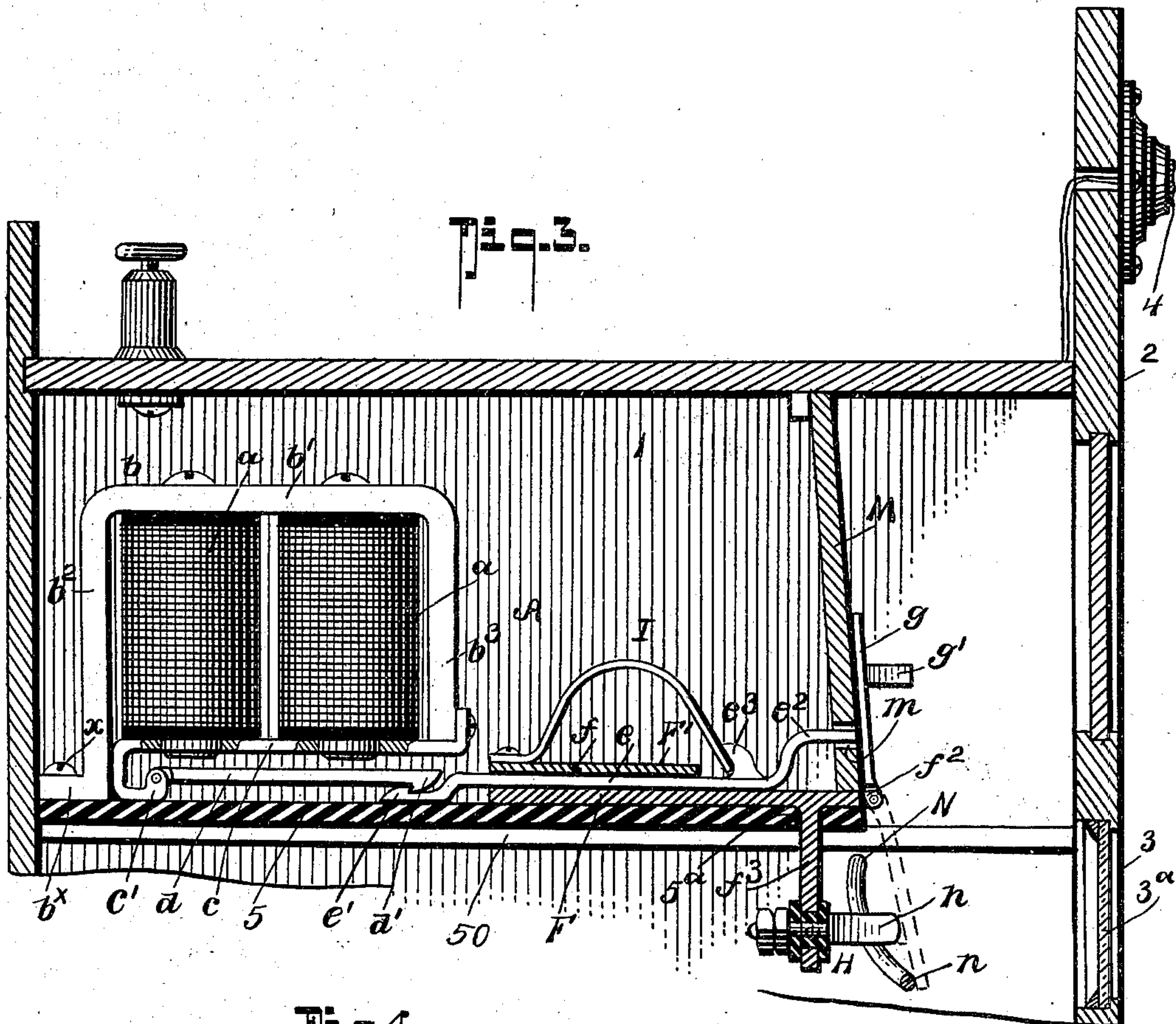
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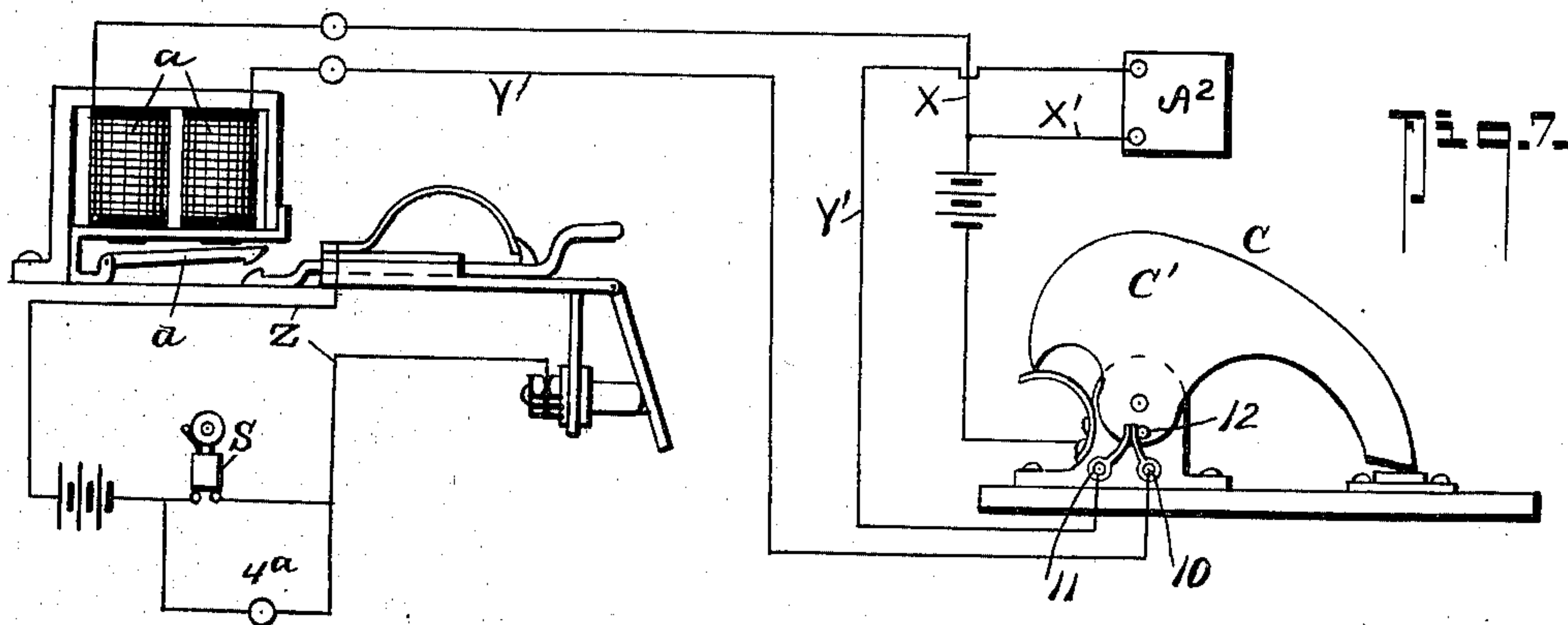
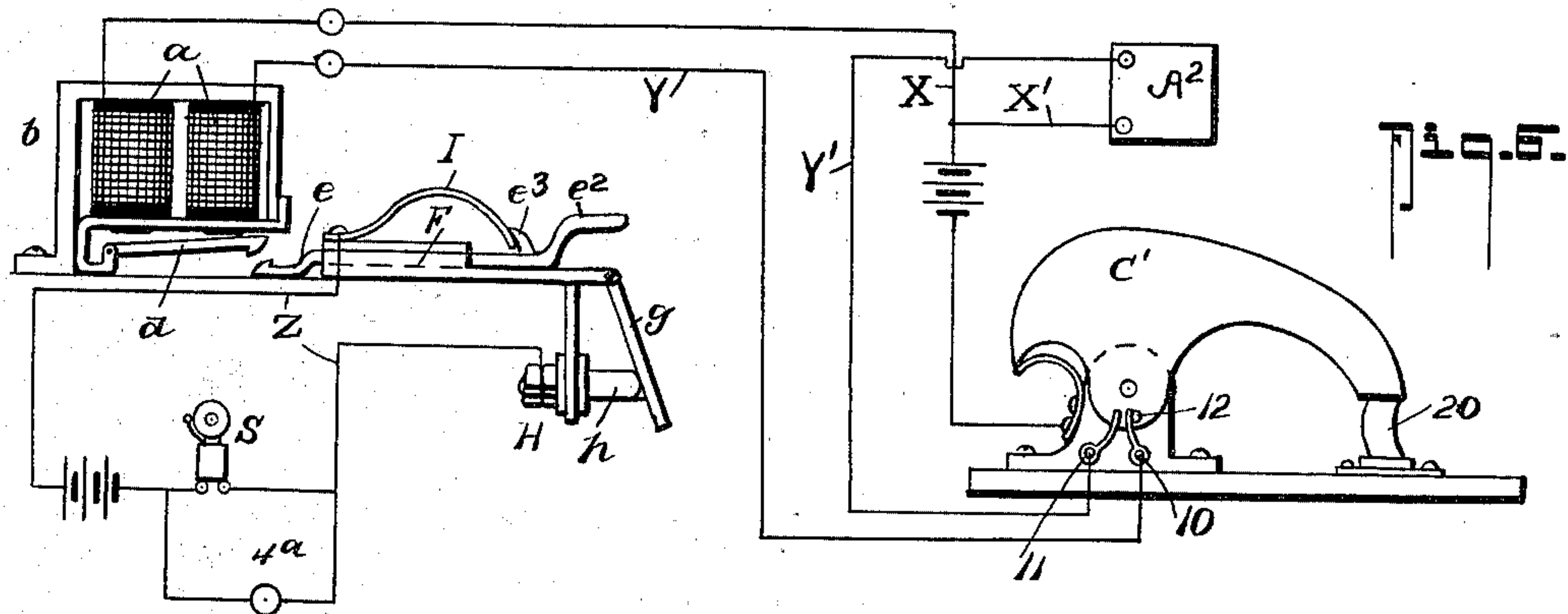
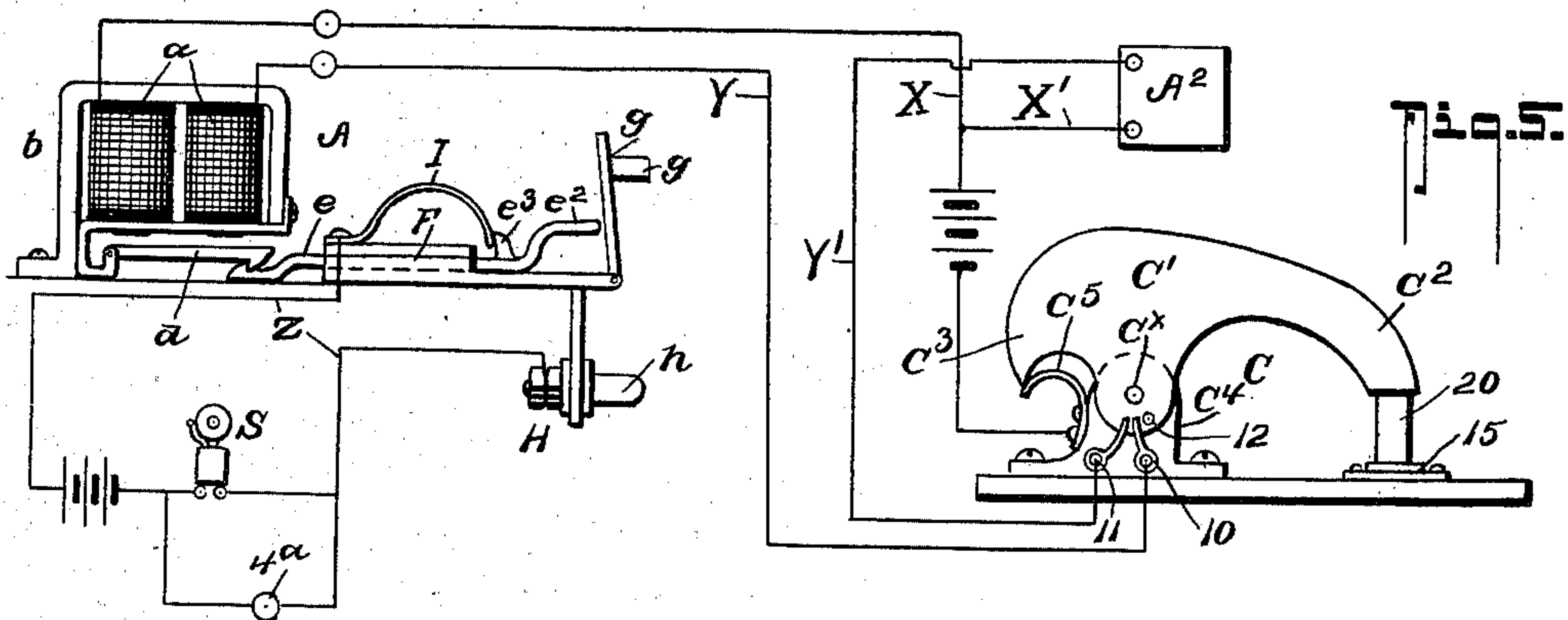
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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FIRE-ALARM MECHANISM.

SPECIFICATION forming part of Letters Patent No. 734,906, dated July 28, 1903.

Application filed January 7, 1903. Serial No. 138,139. (No model.)

To all whom it may concern:

Be it known that we, THOMAS A. LONG, of Sparrows Point, county of Baltimore, and GEORGE W. COFRAN, of Baltimore, Maryland, have invented certain new and useful Improvements in Fire-Alarm Mechanism, of which the following is a specification.

Our invention in its general make-up has for its object to provide a simple, cheap, and inexpensive mechanism which will effectively serve its intended purpose; and it primarily seeks to provide a device of this character which will indicate an excessive temperature or fire at any place desired.

We provide a fusible circuit-closing means for operating an annunciator to indicate the exact location of the fire and at the same time ring an alarm to call attention thereto.

In this application we shall confine ourselves particularly to the annunciator mechanism, while the fusible circuit-closing devices form the subject-matter to a copending application filed on even date herewith, Serial No. 138,138.

Our annunciator devices primarily seek to provide means whereby the closing of a main circuit in which is included a suitable circuit-closing mechanism will close a secondary or local circuit for operating the recording mechanism, and thereby recording, as it were, the exact location of the fire.

With other objects in view, which will hereinafter be made apparent, our invention consists of the arrangement and combination of parts, all of which will be first described in detail and then be specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which like numerals and letters of reference indicate like parts in all of the figures.

Figure 1 is a perspective view of our invention. Fig. 2 is a similar view, the front of the box or casing being opened. Fig. 3 is an enlarged sectional view of the upper portion thereof. Fig. 4 is a detail sectional view of a slightly-modified form. Fig. 5 is a diagrammatic view showing the location of the circuit, the parts being in their normal or inoperative position. Fig. 6 is a similar view, the parts being in the position they assume when

the fusible member becomes heated sufficiently to close the main circuit. Fig. 7 is a similar diagrammatic view hereinafter referred to.

Referring now to the accompanying drawings, 1 indicates the box or casing, having a door 2 hinged to the front face thereof in any approved manner. The door 2 has an opening 3, covered by a glass plate 3^a, while a bracket 4, carrying a lamp-bulb 4^a, is mounted upon the front face of the door and so located that the bulb will be in alinement with the opening 3 in the door 2 for a purpose presently explained.

Mounted upon a suitable base 5, preferably constructed of insulating material—such as wood, hard rubber, slate, or the like—is a series of indicator devices, designated generally by the letter A, and since each of the indicator devices is of like construction a detail description of one of them will suffice for all. In the preferred form the indicator devices A consist of a pair of electromagnets *a a*, fixedly mounted upon a \square -shaped yoke or bracket portion *b*, of soft iron. The yoke *b* consists of a portion *b'*, to which are fastened the electromagnets *a a* and the members *b*² *b*³, extending at right angles to the member *b'*, as will be clearly seen by reference to Figs. 3 and 4 of the drawings. In the preferred form the member *b*² has a foot portion *b*^x, through which is adapted to pass fastening-screws *x* to hold the yoke and its magnets upon the base portion 5. To the lower end of the member *b*³ and extending in a plane parallel to the portion *b'* is fastened a metallic strip *c*, of non-magnetic material, having a bracket portion *c'*, to which is pivotally fulcrumed a keeper or armature *d*, of soft iron. This keeper *d* has at its free end a hook portion *d'* to engage with the corresponding hook portion *e'* of a pusher member *e* for a purpose presently explained.

At the front end of the pusher member *e* is an extension *e*², adapted to move through an aperture *m* in a guard-plate M, as will be clearly seen by reference to Fig. 3 of the drawings. This pusher member *e* is mounted to slide in a suitable bearing *f* of the casting F, which has a portion *f*² extending through the

guard M, to which is fulcrumed a drop g , having a knife-contact g' rigidly connected thereto. Formed integral with the bearing F and projecting downwardly through the aperture 5 5^a in the base 5 is a member f^3 , to which is firmly fastened and insulated therefrom a spring-contact member H, having knife-receiving contacts $h h$. I designates a spring, which is fixedly mounted at one end to the upper face F' of the bearing member F, having its free end in engagement with the lug e^3 upon the upper face of the pusher member e .

N designates a shaft or rod having a series of fingers n for engaging with the drops g to return them to their normal position, the said shaft N projecting through the end l^x of the casing and having a crank member 10' attached to the end thereof for manipulating the rod and its drop-returning fingers.

20 In the modified form shown in Fig. 4 the armature d is pivotally joined to the portion b^2 of the yoke b , while the portion b^3 in this form is bent outwardly to form a bracket member b^5 , to which is fulcrumed a pusher member E. The pusher E in this arrangement has a heel or lever engaging portion e^5 , held to engage with the armature-lever d , and a downwardly-projecting portion e^6 , having a finger e^{20} for engaging the movable contact or drop member g , as will clearly be understood by reference to Fig. 4 in the drawings. The portion e^6 of the pusher E is adapted to engage with the bracket b^5 of the yoke b , as at b^6 , to hold it in its normal position to prevent the armature-engaging portion from becoming disengaged from the armature. The yoke b has a horizontal extension b^{10} , to which the movable contact or drop member g is hinged, as at b^{12} , and the extension b^{10} has a downwardly-projecting portion f^3 , which carries the fixed contact member in a manner similar to that shown in Fig. 3.

So far as described the operation of our invention will be best explained as follows, assuming the parts to be in the position shown in Fig. 5 and the annunciator being set to its normal or inoperative position and the circuit-closer C placed at a point desired, preferably some room, &c., in the place being protected: By referring to Figs. 5, 6, and 7 it will be seen the circuit-closer C has a member C', which is in the nature of a walking-beam. This member C' has a long arm C² and a heel portion C³, the member C' being fulcrumed, as at C^x, to a base-plate C⁴, to which is rigidly secured the spring C⁵ for engaging the heel portion C³ of the member C' to hold said member in its normal position. Insulated from and rigidly secured to the base member C⁴ is a plurality of contact members 10 11, which are adapted to engage under predetermined conditions with a contact-stud 12, carried by the beam member C'. Between the arm C² and a suitable holder 15 is placed a fusible member 20, which under normal conditions holds the beam C', with its contact-stud 12, out of engagement with the

contact 10 11, as will be clearly understood by reference to Figs. 5, 6, and 7 of the drawings. Now assuming the air where the circuit-closer C is placed to become excessively heated, the fusible member 20 will soften, and thereby yield sufficiently to allow the spring C⁵ to cause the member C' to move the contact-stud 12 into engagement with the first contact member 10 on the base C⁴, thereby closing the main circuit X Y through the electromagnets aa , energizing the same and causing the armature d to release the pusher member, and thereby move the movable contact or drop into engagement with the fixed contact H to close the secondary or supplemental circuit Z, operating the signaling-bell S and the lamp-bulb 4^a at the annunciator. At this time the parts assume the position shown in Fig. 6. Should the heat become so intense as to completely fuse the member 20, the circuit-closing arm C' of the circuit-closer C will cause the contact-stud 12 to bring both the contact members 10 11 into circuit with itself and cause an additional circuit X' Y' to be brought into operation to work a secondary annunciator mechanism A² at place of general alarm, it being understood that the first annunciator mechanism is preferably placed in a convenient place in all places wherein our improvements are used. When applied to hotels and the like, the annunciator mechanism has a sufficient number of indicator devices to connect with a separate circuit-closer in each room of the hotel, it being understood that, if desirable, we may connect a number of circuit-closers C' in multiple to each main circuit X Y. While we have described our invention as particularly adapted for use as a fire-alarm, yet we desire it understood that the same can be applied to other uses as the occasion may require, and we do not desire to limit ourselves to the exact details of construction herein shown and described, but desire it understood that slight modifications in the detail construction and arrangement of parts can be made without departing from the scope of the appended claims.

The base 5, carrying the annunciator mechanism, is supported upon guides 50, and the base, together with the annunciator mechanism, is bodily removable from the casing 1.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a fire-alarm mechanism of the character stated, main and supplemental circuits; means for closing the said main circuits at predetermined times; means operated by each main circuit for closing the supplemental circuit, said last-named means including a fixedly-held contact and a movable contact carrying an indicating member, said member having a contact-stud upon one face thereof for engaging with the fixedly-held contact, and an indicating-symbol upon its opposite face; a pusher member having direct engage-

ment with the movable contact-carrying and indicating member; a magnetically-releasable catch for engaging said pusher; and a magnet for releasing said catch, said pusher adapted when released, to move said movable contact-carrying and indicating member to its contacting and indicating position.

2. In a fire-alarm mechanism, a main circuit and a supplemental circuit, means for closing said main circuit at predetermined times, means controlled by the main circuit for closing the supplemental circuit, said means including a movable contact-carrying and indicating member, and a spring-operated pusher member for engaging with the movable contact-carrying and indicating member to move it to its circuit-closing position, said pusher member being normally held in engagement with said movable contact-carrying and indicating member, all being arranged substantially as shown and for the purposes described.

3. In a fire-alarm mechanism, a main circuit and a supplemental circuit, means for closing said main circuit at predetermined times, means controlled by the main circuit for closing the supplemental circuit, said means including a movable contact-carrying and indicating member, and a spring-operated magnetically-released pusher member for engaging with the movable contact-carrying and indicating member to move it to its circuit-closing position, said pusher member being normally held in direct engagement with said movable contact-carrying and indicating member, all being arranged substantially as shown and for the purposes described.

4. A fire-alarm mechanism of the class described comprising a main and a supplemental circuit said main circuit including a circuit-closing device adapted to close said main circuit at predetermined times, circuit-closing means controlled by the main circuit for closing the supplemental circuit said means including a movable contact-carrying and indicator member, said movable contact-carrying and indicating member having a contact-stud upon one face thereof and an indicating-symbol upon its opposite face, and a pusher member, said pusher member being spring-operated and adapted to move the movable contact-carrying and indicator member to its circuit-closing position, and said pusher member being normally held in direct engagement with the indicator-face of the movable contact-carrying and indicating member, means for releasing said pusher member, all being arranged substantially as shown and for the purposes described.

5. A fire-alarm mechanism comprising in combination with a main circuit including circuit-closing devices and a supplemental circuit including signaling devices, means for closing said supplemental circuit, said means including a fixedly-held contact member and a movable contact member having an indicating-face, means for moving said movable

contact member to engage said fixedly-held contact member whereby to close the supplemental circuit, said movable contact member operating means including a pusher normally held in direct engagement with the indicating-face of said movable contact member, said pusher having a hook-engaging portion at one end, a hook for engaging said pusher member, and electromagnets included in said main circuit for operating said pusher-engaging hook, said hook serving as an armature for said magnets as and for the purposes described.

6. In a fire-alarm mechanism, a main circuit and a supplemental circuit, means for closing said main circuit at predetermined times, said supplemental circuit including signaling devices, means for closing said supplemental circuit, said means including a fixed and a movable contact in the supplemental circuit, and electromagnets in the main circuit, a movable armature for said electromagnets, said armature having a hook portion at one end, a slidable pusher member having a hook portion for coacting with the hook portion of the armature and a finger for engaging with the movable contact, means for moving the pusher member to its operative position, whereby when the pusher member is released from engagement with the armature, the means for moving the pusher member to its operative position will force the movable contact into engagement with the fixed contact to close the supplemental circuit as and for the purposes described.

7. In a fire-alarm mechanism, an annunciator comprising a box or casing having a door said door having a sight-opening, a lamp-carrying bracket fastened upon the front face of said door and projecting downwardly to a point in alignment with said sight-opening, a base member, a series of indicator devices and a guard-plate mounted upon the base member, and said indicator devices and said base member being bodily removable from said casing substantially as shown and described.

8. In a fire-alarm mechanism of the character stated, an annunciator mechanism, comprising a box or casing, a plurality of magnetically-operated indicator devices, said indicator devices each including electromagnets within the main circuit, pusher devices controlled by said electromagnets, circuit-closing and indicator members operated and directly engaged by said pusher device said pusher devices being normally held in direct engagement with the said circuit-closing and indicator members, and a single supplemental or local circuit connected with and controlled by said circuit-closing and indicator members, a signaling device in said supplemental circuit substantially as shown and for the purposes described.

9. In a fire-alarm mechanism of the character described; an indicating mechanism including a box or casing having a door, guides mounted on the side walls of said casing; an

apertured base and an apertured guard-plate removably mounted within the said casing; castings mounted upon said base and having contact-carrying portions projected downwardly through apertures in said base, said castings having horizontal grooves; contact members mounted upon and insulated from said contact-carrying portions of the castings; pushers slidably mounted in the grooves of the said castings; said pushers having fingers at one end adapted to move in apertures in the guard-plate, for the purposes described.

10. In a fire-alarm mechanism of the character described; an indicating mechanism including a box or casing having a door, guides mounted upon the side walls of said casing; an apertured base and an apertured guard-plate removably mounted within the said casing; castings mounted upon said base and having contact-carrying portions projected downwardly through apertures in said base, said castings having horizontal grooves; contact members mounted upon and insulated from said contact-carrying portions of the castings; pushers slidably mounted in the grooves of the said castings; said pushers having fingers at one end adapted to move in apertures in the guard-plate, and hook portions at the other ends; and magnetically-released hooks for engaging said hook portions of said pushers, as specified.

11. In a fire-alarm mechanism of the character described; an indicating mechanism including a box or casing having a door, guides mounted on the side walls of said casing; an apertured base and an apertured guard-plate removably mounted within the said casing; castings mounted upon said base and having contact-carrying portions projected downwardly through apertures in said base, said castings having horizontal grooves; contact members mounted upon and insulated from said contact-carrying portions of the castings; pushers slidably mounted in the grooves of the said castings; said pushers having fingers at one end adapted to move in apertures in the guard-plate; and hook portions at the opposite ends of the pushers; levers having hook portions at one end for engaging the hook portions of the pusher, said levers being fulcrumed at their other ends; electromagnets for disengaging the said hook portions of the levers and pushers, substantially as shown and described.

12. In a fire-alarm mechanism of the character described; an indicating mechanism including a box or casing having a door, guides mounted on the side walls of said casing; an apertured base and an apertured guard-plate removably mounted within the said casing; castings mounted upon said base and having contact-carrying portions projected downwardly through apertures in said base, said castings having horizontal grooves; contact members mounted upon and insulated from said contact-carrying portions of the castings; pushers slidably mounted in the grooves of

the said castings; said pushers having fingers at one end adapted to move in apertures in the guard-plate, and hook portions at the other ends of the pushers; levers having hook portions at one end for engaging the hook portions of the pusher, said levers being fulcrumed at their other ends; electromagnets for disengaging the said hook portion of the levers and pushers, said pushers having lugs upon their upper sides; flat spring members secured to said castings at one end and having their free ends in engagement with said pusher-lugs, for the purposes described.

13. In a fire-alarm mechanism of the character described; an indicating mechanism including a box or casing having a door, guides mounted on the side walls of said casing; an apertured base and an apertured guard-plate removably mounted within the said casing; castings mounted upon said base and having contact-carrying portions projected downwardly through apertures in said base, said castings having horizontal grooves; contact members mounted upon and insulated from said contact-carrying portions of the castings; pushers slidably mounted in the grooves of the said castings; said pushers having fingers at one end adapted to move in apertures in the guard-plate, and hook portions at the other ends of the pushers; levers having hook portions at one end for engaging the hook portions of the pushers, said levers being fulcrumed at their other ends; electromagnets for disengaging the said hook portions of the levers and pushers, said pushers having lugs upon their upper sides; flat spring members secured to said castings at one end and having their free ends in engagement with said pusher-lugs, said castings also including portions adapted to project through apertures in the guard-plate; contact-carrying and indicating members hinged to the last-named projecting portions of the castings, substantially as shown and described.

14. In a fire-alarm mechanism of the character described; an indicating mechanism including a box or casing having a door, guides mounted on the side walls of said casing; an apertured base and an apertured guard-plate removably mounted within the said casing; castings mounted upon said base and having contact-carrying portions projected downwardly through apertures in said base, said castings having horizontal grooves; contact members mounted upon and insulated from said contact-carrying portions of the castings; pushers slidably mounted in the grooves of the said castings, said pushers having fingers at one end adapted to move in apertures in the guard-plate and hook portions at the other ends of the pushers; levers having hook portions at one end for engaging the hook portions of the pushers, said levers being fulcrumed at their other ends; electromagnets for disengaging the said hook portions of the levers and pushers, said pushers having lugs upon their upper sides; flat spring members

secured to said castings at one end and having their free ends in engagement with said pusher-lugs, said castings also including portions adapted to project through apertures in the guard-plate; contact-carrying and indicating members hinged to the last-named projecting portions of the castings, the said contact-carrying and indicating members being normally held in engagement with said pushers, for the purposes described.

15. In a fire-alarm mechanism of the character stated, an apertured base and an apertured guard-plate; castings mounted upon said base, said castings including portions adapted to project through apertures in said base and guard-plate; fixedly-held contacts insulated from and mounted upon one set of the projecting portions, contact-carrying and indicating members hinged to and in electrical engagement with the other set of projections of the castings; pusher members mounted to slide within said castings, said pusher members having fingers adapted to pass through apertures in the guard-plate and engage the contact-carrying and indicating members; means for causing the said pusher members to move said contact-carrying and indicating members to engage with said fixed contacts under predetermined conditions.

16. In a fire-alarm mechanism of the character stated, an apertured base and an apertured guard-plate; castings mounted upon said base, said castings including portions adapted to project through apertures in said base and guard-plate; fixedly-held contacts insulated from and mounted upon one set of the projecting portions; contact-carrying and indicating members hinged to and in electrical engagement with the other set of projections of the castings; pusher members mounted to slide within said castings, said pusher members having fingers adapted to pass through apertures in the guard-plate and engage the contact-carrying and indicating members; means for causing the said pusher members to move said contact-carrying and indicating members to engage with said fixed contacts under predetermined conditions, said means including spring members secured to the castings, and engaging the pusher members.

17. In a fire-alarm mechanism of the character stated, an apertured base and an apertured guard-plate; castings mounted upon said base, said castings including portions adapted to project through apertures in said base and guard-plate; fixedly-held contacts insulated from and mounted upon one set of the projecting portions, contact-carrying and indicating members hinged to and in electrical engagement with the other set of projections of the castings; pusher members mounted to slide within said castings, said pusher members having fingers adapted to pass through apertures in the guard-plate and engaging the contact-carrying and indicating

members, means for causing the said pusher members to move said contact-carrying and indicating members into engagement with said fixed contacts under predetermined conditions, said means including spring members secured to the casting and engaging the pusher members, and means for holding said pusher members in their normal position.

18. In a fire-alarm mechanism of the character described, an apertured base and an apertured guard-plate; a casting mounted upon said base, said casting including portions adapted to project through apertures in said base and guard-plate; a fixedly-held contact insulated from and mounted upon one of the projecting portions, a contact-carrying and indicating member hinged to and in electrical engagement with the other projecting portion of the casting; a pusher member mounted to slide within said casting, said pusher member having a finger adapted to pass through an aperture in the guard-plate and engage the contact-carrying and indicating member; means for causing the said pusher member to move said contact-carrying and indicating member into engagement with said fixed contact under predetermined conditions, said means including a spring member secured to the casting and engaging the pusher member; and means for holding said pusher member in its normal position, said means including a hinged hook for engaging said pusher.

19. In a fire-alarm mechanism of the character stated, an apertured base and an apertured guard-plate; a casting mounted upon said base, said casting including portions adapted to project through apertures in said base and guard-plate; a fixedly-held contact insulated from and mounted upon one of the projecting portions; a contact-carrying and indicating member hinged to and in electrical engagement with the other projecting portion of the casting; a pusher member mounted to slide within said casting, said pusher member having a finger adapted to pass through an aperture in the guard-plate and engage the contact-carrying and indicating member; means for causing the said pusher member to move said contact-carrying and indicating member into engagement with said fixed contact under predetermined conditions, said means including a spring member secured to the casting and engaging the pusher member; and means for holding said pusher member in its normal position, said means including a hinged hook for engaging said pusher; and means for disengaging said hook from said pusher member, said means including electric magnets mounted upon said base member and adapted to operate upon said hook, for the purposes specified.

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