

No. 709,607.

Patented Sept. 23, 1902.

H. J. PODLESÁK.

ELECTRICAL RELEASER FOR FIRE DOORS, &c.

(Application filed Mar. 16, 1897.)

(No Model.)

2 Sheets—Sheet 1.

FIG. 1.

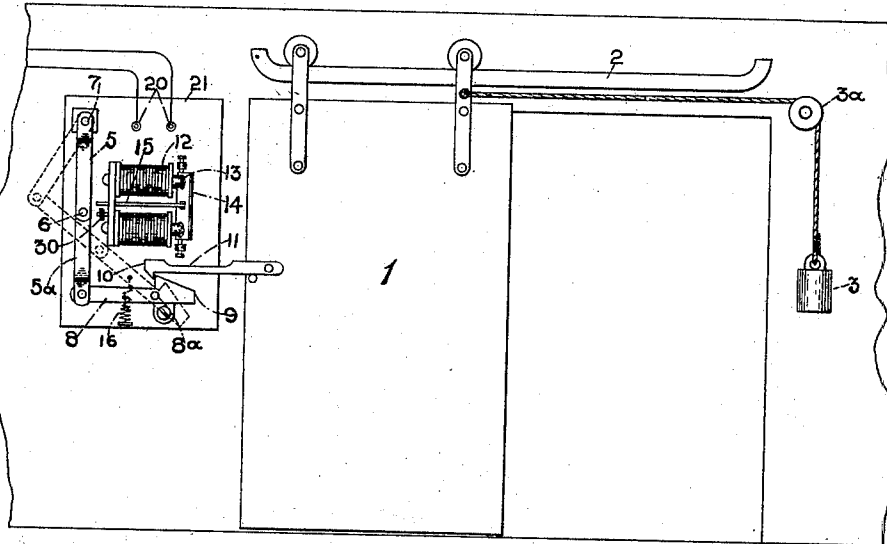
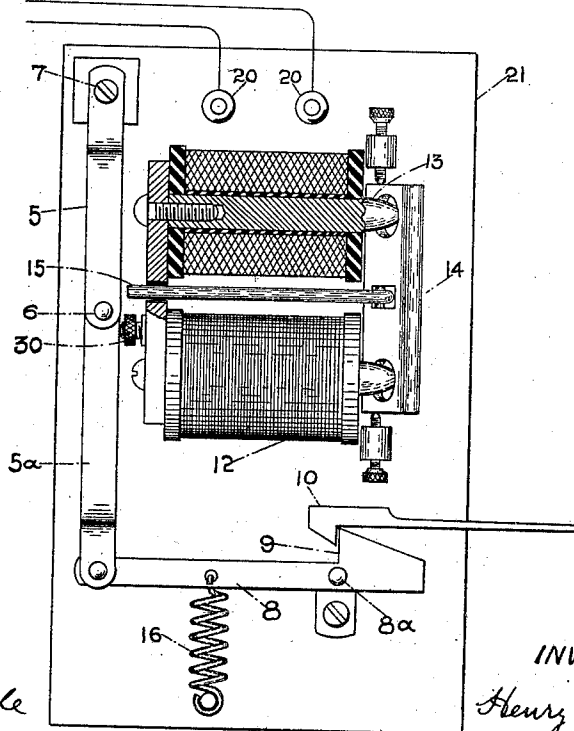


FIG. 2.



WITNESSES

Frank J. Handle
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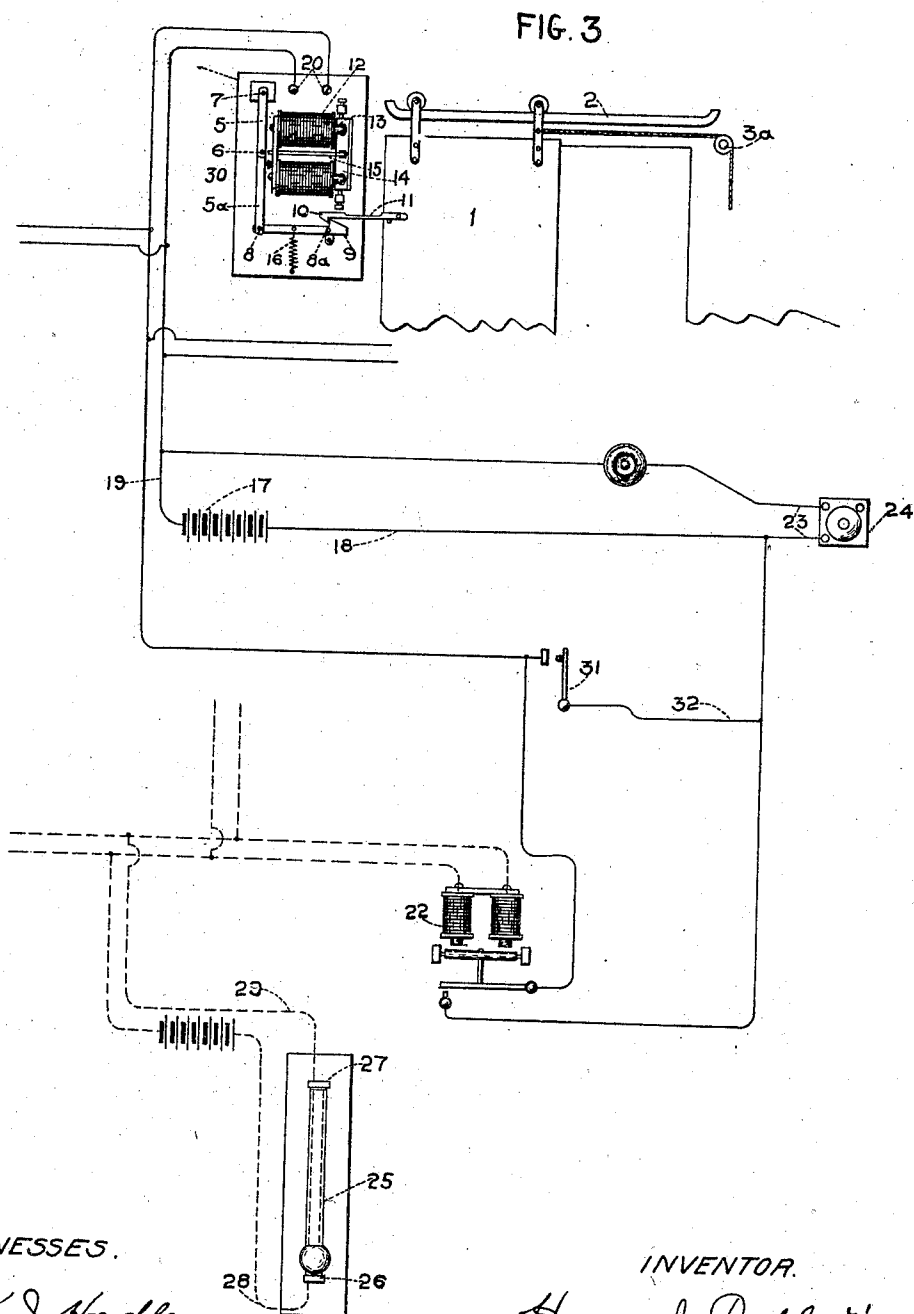
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2 Sheets—Sheet 2.



WITNESSES.

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UNITED STATES PATENT OFFICE.

HENRY JOSEPH PODLESÁK, OF LINCOLN, NEBRASKA.

ELECTRICAL RELEASER FOR FIRE-DOORS, &c.

SPECIFICATION forming part of Letters Patent No. 709,607, dated September 23, 1902.

Application filed March 16, 1897. Serial No. 627,770. (No model.)

To all whom it may concern:

Be it known that I, HENRY JOSEPH PODLESÁK, a citizen of the United States, and a resident of Lincoln, in the county of Lancaster and State of Nebraska, have invented certain new and useful Improvements in Electrical Releasers for Fire-Doors, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in automatic releases for fire-doors, fire-shutters, &c., the object being to provide improved mechanism for normally holding the door or shutter open and to release the same in order to allow it to close in case of a fire breaking out in a building in order that all draft-openings may be closed and hermetically sealed to prevent the spreading of the flames.

To this end my invention consists in certain novel constructions, combinations, and arrangements of parts in a device of the class described, as will be hereinafter more fully described, and specifically pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a side elevation view of a door embodying my invention. Fig. 2 is a side elevation and partial view of the electromagnet and release mechanism on an enlarged scale. Fig. 3 is a diagrammatic view showing the release and thermostat circuits and the electromagnetic switch.

Like numerals designate like parts throughout the several views of the drawings.

Referring to the drawings, the numeral 1 designates a door or shutter to which my invention is applied. This is arranged in the present instance to slide on horizontal tracks 2 and is shown open. A weight 3 is attached to the door by means of a rope passing over the pulley 3^a. As will be apparent, the gravity of the weight 3 will produce a pull on the door, and thus tend to close it, the latter being free to move.

My invention can readily be applied to any desired construction of automatically-closing doors and shutters.

A toggle-lever consisting of two levers or sections 5 and 5^a, jointed together at 6, is pivoted to a suitably-arranged base having

a suitable position near the door. A locking-lever 8, having one arm pivoted to lower end of toggle-section 5^a, is fulcrumed to the base at 8^a. The other arm 9 of the locking-lever 8 is adapted to engage with a locking-lip 10 on a locking-link 11, connected with the automatically-closing door. In Fig. 1 the position of the toggle-lever and locking mechanism indicated by full lines shows the parts in locking engagement to hold the door open, while the position indicated by the broken lines shows the locking mechanism released to permit the door to close. It will be apparent on reference to Fig. 1 that as long as the toggle-lever retains the position shown by the full lines (when the middle joint will have a slight "set," which set is adjusted and sustained by set-screws 30) it matters not how much force or how great a pull may be applied on the arm 9 of the locking-lever 8, provided, of course, that the force is not great enough to break the device, in a direction tending to bring said lever into the position shown by dotted lines, the combination will remain rigid; but if a slight push be given to the toggle-lever at the middle joint 6, bending this away from the screw 30, then the pull on the arm 9 will bring the combination to some such position as shown by the dotted lines until the locking-link 11 is released and the door free to close.

In order to effect the bending of the middle joint 6 of the toggle-lever, I have provided an electromagnet 12, suitably mounted upon and fastened to the base. This electromagnet has extended conical cores or poles 13 projecting through openings in a movable armature 14. This type of electromagnet is used in order to secure a greater throw of the armature and at the same time securing a stronger and almost uniform attraction throughout the entire travel of the armature. By using this type of electromagnet I am enabled to bend the middle joint of the toggle with a much smaller and lighter electromagnet, and hence requiring only a very small current. A releasing-rod 15, connected with the armature, extends toward the middle joint 6 and has its free end suitably placed to abut or strike it, and thus bending the toggle when the armature is attracted by the electromagnet. When the toggle-lever is

bent out of the rigid position, the pull of the door will cause the lever-sections to assume the position shown by the dotted lines in Fig. 1, thus releasing the locking-link 11 on the door, leaving the latter free to close. A small spring 16 is connected to the locking-lever 8 and serves to return said lever and toggle to their normal or rigid position after the locking-link 11 has been released, thus providing a self-setting device. The spring 16 may be attached to section 5 of the toggle-lever and so attached as to bring the same into the rigid position. If the reversed form of the toggle is used, spring 16 must be attached to the pivoted section (section 5) of the toggle-lever.

Fig. 3 shows a diagrammatic view of the release applied to the door, the release-circuits, and the thermostat-circuits. The thermostat-circuit is shown by dotted lines. Both release and thermostat circuits are provided with batteries or other source of current. The numeral 17 represents batteries of the release-circuit. This circuit is closed in case of a fire breaking out by an electromagnetic switch 22, which in turn is operated by the thermostats. 23 designates an auxiliary circuit leading to door-bells, &c., for which the batteries may be used at the same time. The electromagnetic switch may be so constructed and arranged as to ring an electric alarm alternately with closing the release-circuit. The thermostats 25, as shown, are of the open-circuit type, being closed by any abnormal rise in temperature. The closing of any one of the thermostats causes the electromagnetic switch to close the release-circuit, thus energizing the electromagnets of the releaser, which will in turn attract the armature and release the fire doors or shutters, as above described. Any thermostatic device may be used, the Montauk multiphase cable being the most reliable and convenient.

A hand-switch 31 may be provided for closing the fire-doors at will from any point within or without the building. Similarly alarm-circuits may be attached to give the alarm within or without the building.

As before shown and stated, only a very slight push is necessary to bring the toggle-lever out of the rigid position, and hence it is apparent that with an electromagnet of the type above described a comparatively small amount of current will suffice to bend the lever at the joint 6 enough to release the door. An ordinary bell-battery is more than adequate to operate the mechanism for the heaviest fire-doors. As before stated, the same

batteries may be used to operate call-bells, fire-alarms, &c.

I do not limit my invention to employment on fire-doors and shutters, as it may be employed to release a movable member whenever it is desirable to permit such a member to move or close. The above application to fire-doors is for convenience of illustration only.

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

1. In automatic release devices the combination of a toggle-lever pivoted to a frame or base, a locking-lever pivoted to said base and having one arm jointed to said toggle-lever, the other arm adapted to engage and hold a hook when the toggle-lever is in the rigid position, said hook being attached to the door or other device to be released, an electromagnet mounted upon said frame and provided with a movable, pivoted armature having a rod or a bar connected therewith and, adapted, upon movement of said armature, to shift or bend the toggle-lever to allow the locking-link to be withdrawn from locking engagement, an electric battery and an electric circuit for energizing said electromagnet to effect the movement of said armature substantially as described and for the purpose as described above.

2. In automatic release devices the combination of a toggle-lever, a locking-lever jointed to said toggle-lever, an electromagnet having a pivoted movable armature, a rod or bar connected to said armature and thus adapted to transmit the movement of the armature to the joint of the toggle-lever sections, and to shift or bend same out of the rigid position, to allow the locking-link to disengage the locking-lever, an electric circuit deriving electric current from a battery or other source of electricity for energizing said electromagnet, to produce movement of the armature, a second electric circuit containing a source of electricity, an electromagnetic switch, and thermostatic devices, whereby, when the temperature in the proximity of the thermostatic devices reaches a dangerous point or degree the release-circuit is closed, substantially as and for the purpose described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

HENRY JOSEPH PODLESÁK.

Witnesses:

FRANK E. ROMANDORF,
V. SYGIEL.