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DOOR CONTROLLING SWITCH LOCK APPARATUS

Filed March 28, 1928

Fig. 1.

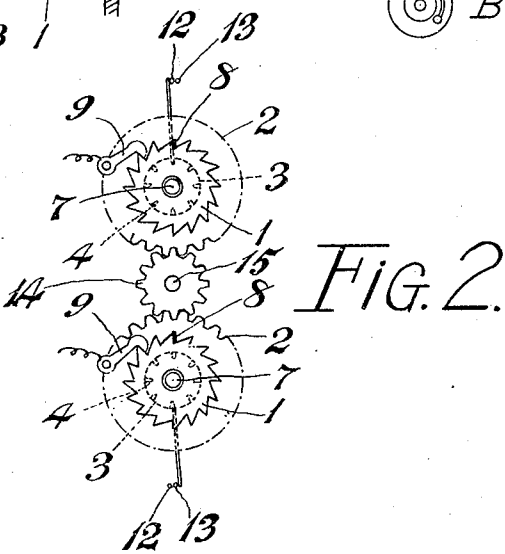
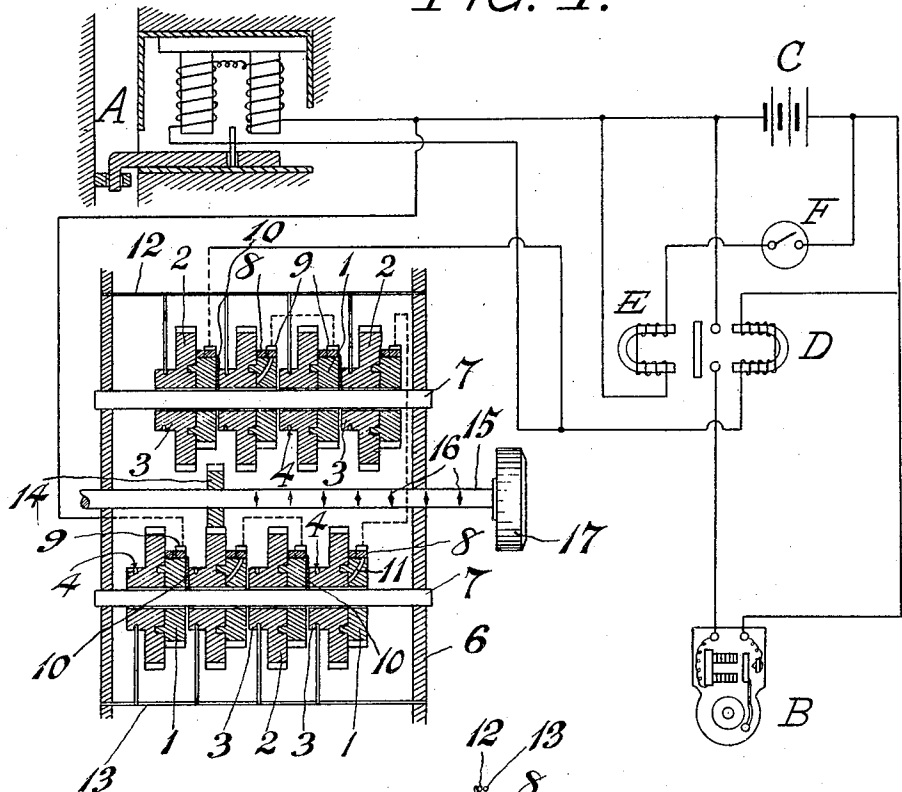


Fig. 2.

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UNITED STATES PATENT OFFICE

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DOOR-CONTROLLING SWITCH-LOCK APPARATUS

Application filed March 28, 1928, Serial No. 265,512, and in Japan December 23, 1927.

This invention relates to improvements in door controlling apparatus, and more particularly door controlling apparatus in which an electric circuit which acts to open locks for doors or the like is closed by suitably rotating revolving members arranged in series, and has an alarm circuit to ring bell when the revolving members are connected electrically to constitute a part of the said electric circuit.

One object of this invention is to provide a door controlling apparatus in which the lock cannot be opened if the revolving members are not rotated to connect them electrically. Another object of this invention is to provide a door controlling apparatus which reports the opening of the door by ringing a bell, whereby robbery may be prevented.

My invention is illustrated more or less diagrammatically in the accompanying drawings, wherein:

Fig. 1 is a diagram showing a sectional elevation of the door controlling apparatus and its electric connection.

Fig. 2 is a side view of the revolving members.

1 is a ratchet wheel made of insulating material, 2 a metallic spur wheel attached to a side of the ratchet wheel 1, 3 a projected portion formed integral with the spur wheel 2 and has recesses 4 spaced suitably around the periphery of the said projected portion. A revolving member is formed by this ratchet wheel and spur wheel. 7 is a shaft both ends of which are fixed in a frame 6. As these revolving members are loosely mounted upon the shaft 7, each revolving member can be rotated independently. A metallic sheet 8 is fitted on one of the teeth of the ratchet wheel 1 as shown in Fig. 2.

When one of the revolving members is rotated and the metallic sheet 8 upon it contacts with the metallic claw 9, the said metallic sheet will be electrically connected to the other metallic sheet on the adjacent revolving member through its spur wheel and wires 10 and 11. Therefore, when all these metallic sheets 8 are brought to contact with the corresponding claws 9 by suitably rotating the revolving members, these revolving members

constitute a portion of an electric circuit which operates a lock A.

4' is a rod one end of which is fixed in one of the recesses 4 and the other end is caused to strike wires 12 and 13 stretched between the frame 6 once in one revolution of the revolving member. A controlling shaft 15 upon which a pinion 14 is mounted to be able to engage with any of the spur wheels 2 by sliding the said controlling shaft has a scale 16 and hand wheel 17 at its end.

The operation of the apparatus according to this invention is as follows:—

By sliding the shaft 15 by means of the hand wheel 17, the pinion 14 can be engaged with any of the spur wheels 2. Then rotating the hand wheel 17, the metallic sheet 8 on the revolving member meshed with the pinion 14 will be brought to contact with the corresponding claw 9. When all metallic sheets are brought to contact with the corresponding claws, the electric circuit which operates the lock A will be closed so as to open the said lock. At this moment a bell B provided in the said electric circuit will be rung.

The revolving members are enclosed in a casing and the metallic sheets 8 upon the said revolving members are previously set in predetermined angular positions with respect to the claws 9, whereby one except the owner does not know how to control the hand wheel 17 to close the electric circuit for operating the lock, and it will be impossible to open the said lock. Moreover, even if the lock may be opened, the bell B is struck and the owner will become aware of the opening of the lock. When the rod 4' strikes the wires 12 and 13 with its end in one revolution of the revolving member, the said wires produce sound, so that by suitably setting the metallic sheet and claw with respect to the wires, the position to connect the metallic sheet electrically to the claw can be easily found by the sound of the said wires.

It is preferable to provide an electro-magnetic switch D through which the bell may be continuously sounded, a cut off member E to interrupt the bell circuit, and a switch button F to actuate the said cut off member. C

is an electric source arranged in the electric circuit to operate the lock A.

Having now particularly described the invention and in what manner the same is to be performed, I declare that what I claim is:—

5 1. A combination electric switch including spaced units each comprising a plurality of independently movable elements, the elements of the respective units being adapted for series connection, and a single operating
10 member adapted for selective operation of any of the elements of the respective units.

2. A combination electric switch including spaced units each comprising a plurality
15 of independently movable elements, each element including a circuiting member and an operating member, and a single means co-operating with the operating members of the respective elements selectively to arrange the
20 circuiting members of the respective elements in predetermined position.

3. A combination electric switch including spaced units each comprising a plurality of independently movable elements, each element
25 including a ratchet of insulating material and a gear fixed with relation to the ratchet, a contact plate on one of the teeth of the ratchet, a pawl cooperating with the contact plate in a predetermined position of
30 the ratchet, the pawls of all operating members being connected in series, and means whereby the respective members may be selectively operated through their gear parts to move the ratchets to predetermined po-
35 sitions.

4. A combination switch including spaced parallel units each comprising coaxial independent circuit closing members having a
40 gear, the gears of one unit being out of line with the gears of the other unit, and an operating member including a pinion movable to selectively and independently engage the gear of any one circuit closing member, whereby said circuit closing members may be
45 selectively and independently operated to circuit closing position.

In testimony whereof I have affixed my signature.

HOZUMI KITA.

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