No. 766,865. PATENTED AUG. 9, 1904.

W. BAXTER, JR.

LOCKING DEVICE FOR ELECTROMAGNETS.

APPLICATION FILED SEPT. 22, 1903.

NO MODEL.

Fig. 1,

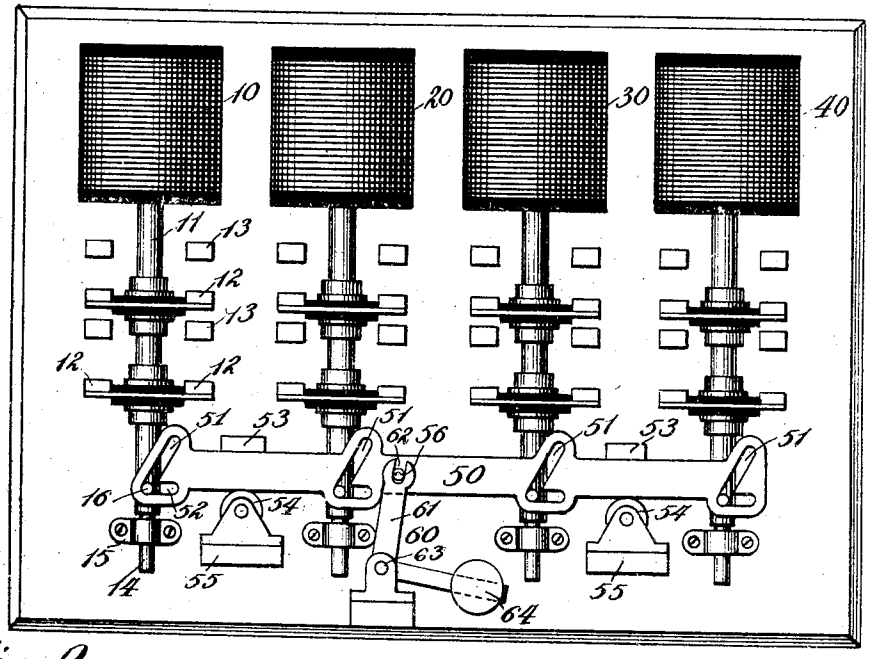
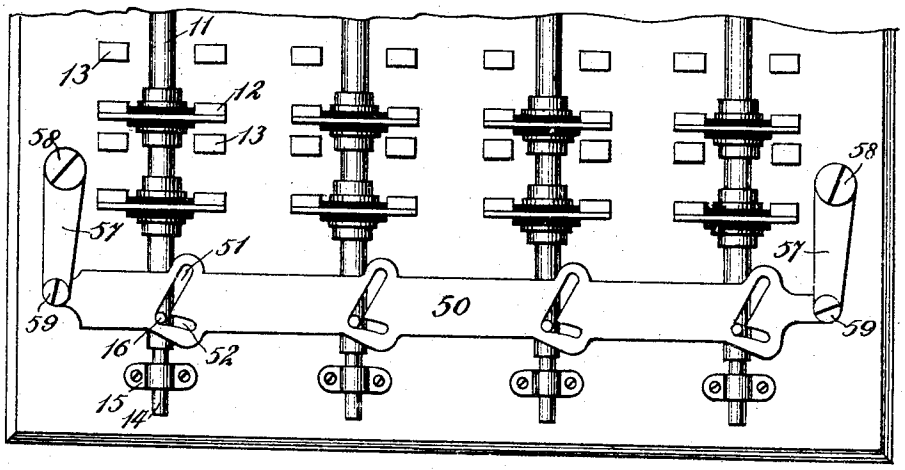



Fig. 2,




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No. 766,865. Patented August 9, 1904.

# UNITED STATES PATENT OFFICE.

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## LOCKING DEVICE FOR ELECTROMAGNETS.

SPECIFICATION forming part of Letters Patent No. 766,865, dated August 9, 1904.

Application filed September 22, 1903. Serial No. 174,209. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM BAXTER, Jr., a citizen of the United States, and a resident of Jersey City, Hudson county, New Jersey, have invented certain new and useful Improvements in Locking Devices for Electromagnets, of which the following is a specification.

My invention relates to a locking device for electromagnets where a plurality of magnets is used in conjunction with each other and where it is desired that when one of the magnets is operated the other magnet or magnets shall be locked.

Obviously this device is applicable to any device where it is desired to operate one or more of a series of electromagnets and to lock the others of the series against operation—such, for example, as in the case of the floor-relays of automatic electric elevators.

I will describe a locking device embodying my invention and then point out its novel features in claims.

In the accompanying drawings, Figure 1 represents in front elevation a plurality of magnets with their cores and electrical contacts which they are adapted to control and with my locking device attached. Fig. 2 is a front elevation of a modification of my locking device.

Similar numerals of reference indicate corresponding parts in both of the figures.

10, 20, 30, and 40 represent electromagnets.

11 is the core of magnet 10.

12 12 represent movable contacts connected to the core 11, but insulated from the latter.

13 13 represent stationary contacts with which the movable contacts are adapted to coact.

The lower end of the core 11 is shown smaller at 14 and runs through a guide 15. A pin 16 is attached to the core 11. Similar contacts, guides, and pins are shown under the magnets 20, 30, and 40.

50 represents a locking-bar. In Fig. 1 it is shown resting on antifriction-rollers 54 and guided by blocks 53. In the locking-bar 50 are provided a series of angular slots 51, and these are arranged to be engaged by pins carried on the magnet-cores like that shown at 16.

60 is a device for returning the locking-bar 50 to the position shown in the drawings after it has been moved and consists of a bell-crank lever 61, pivoted at 63. One end is weighted, as at 64, and the other end is provided with an opening 62, adapted to engage with a pin 56, attached to the locking-bar 50.

In the modification shown in Fig. 2 the locking-bar 50 is pivoted at 59 59 to two arms 57 57, which are pivoted at 58 58, so that the locking-bar 50 is hanging from and is adapted to swing upon the pivots 58 58.

The operation of this device may be described as follows: Whenever one of the magnets—as, for example, that shown at 10—is operated its pin 16 will engage with the part 51 of one of the angular slots in the locking-bar 50 and will cause the latter to move to the left. This will move the part 52 of the other angular slots over the pins on the other cores and lock them, so that they cannot be moved upward. As soon as the core of the magnet 10 is again lowered the locking-bar 50 will be returned by the weight 64 and the bell-crank lever 61 to the position shown in the drawings. When in this position any of the magnets can be operated; but as soon as one of them is operated the others will be locked.

In the modification shown in Fig. 2 the operation is similar. In this case, however, the locking-bar 50 is hanging and swings from the points 58 58. These points 58 58 are above and slightly to the right of the pivots 59 59 on the locking-bar to insure the latter returning to the position shown in the drawings when none of the cores of the magnets are drawn up.

It is obvious that if two or more magnets are energized simultaneously their cores will move together; but they will cause all the others in the series to be locked.

Other constructions than those shown can be used without departing from the spirit of my invention, so I do not wish to limit myself to those shown herein.

What I claim as my invention is—

1. The combination with a plurality of electromagnets having movable cores or armatures, of a locking-bar having a plurality of angular slots, pins connected to the cores or armatures and adapted to coact with said slots to move the locking-bar, or to be engaged by the slots upon a movement of the locking-bar.

2. The combination with a plurality of electromagnets having movable cores or armatures, of a locking-bar having a plurality of angular slots, pins connected to the cores or armatures and adapted to coact with said slots to move the locking-bar, or to be engaged by the slots upon a movement of the locking-bar, and means to return the locking-bar after it has been moved.

3. The combination with a plurality of electromagnets having movable cores or armatures, of a locking-bar moved by any of the cores or armatures to positively lock the other cores or armatures.

In witness whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM BAXTER, Jr.

Witnesses:

W. H. Brady,

Henry E. Kirby.