

1,001,932.

Fig.1.

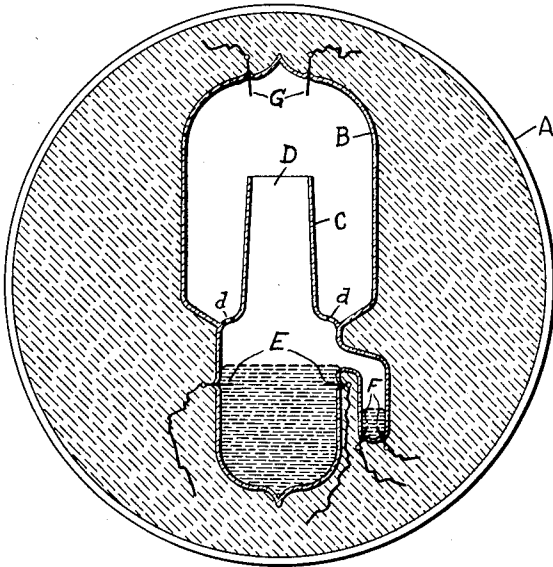
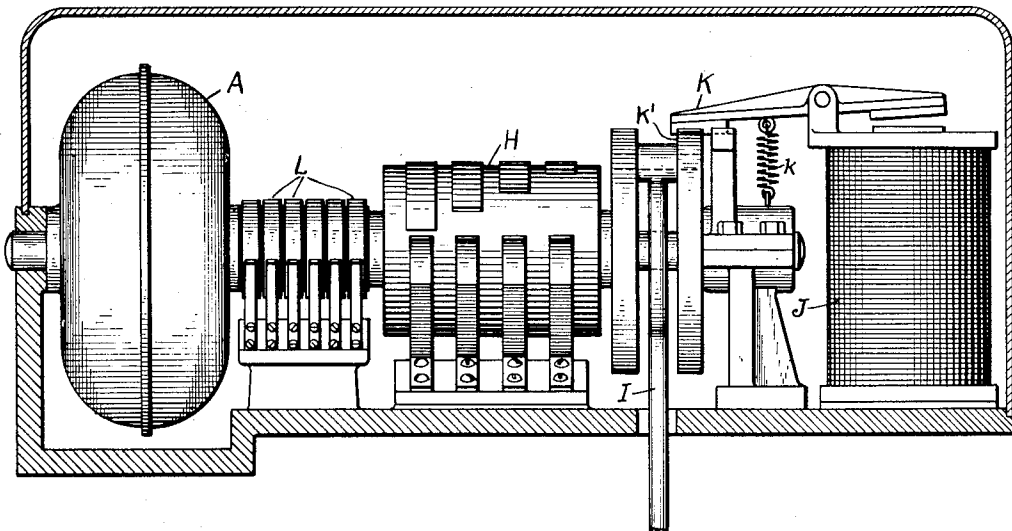


Fig.2.



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UNITED STATES PATENT OFFICE.

FRED B. COREY, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

TIME-LIMIT CIRCUIT-CLOSER.

1,001,932.

Specification of Letters Patent. Patented Aug. 29, 1911.

Application filed March 5, 1909. Serial No. 481,471.

To all whom it may concern:

Be it known that I, FRED B. COREY, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Time-Limit Circuit-Closers, of which the following is a specification.

My invention relates to time-limit circuit-closers, and is particularly applicable to electric interlocking machines.

In the electric control of railway switches and signals, it is frequently desirable that a certain time-interval should be fixed between the successive closing of certain circuits.

The object of my invention is to provide a simple time-limit circuit-closer for the purpose of fixing such an interval.

My invention consists in providing a pivotally-mounted receptacle, containing a conducting fluid, divided into two chambers by a partition which has a restricted opening through which the conducting fluid flows when the device is moved from one position to another, and placing in the chamber into which the fluid flows a plurality of independent sets of contacts so arranged that the fluid connects the contacts of each set successively, without connecting together the different sets. This is accomplished by arranging the chamber with a plurality of branches in which the independent sets of contacts are placed.

My invention will best be understood by reference to the accompanying drawings, in which—

Figure 1 shows in cross section a time-limit circuit-closer arranged in accordance with my invention, and Fig. 2 shows the circuit-closer applied to a well known form of lever lock.

In Fig. 1, A represents an inclosing casing in which is mounted the receptacle B, which is composed of glass or other suitable insulating material. The receptacle B may conveniently be mounted in the casing A by filling the casing with cement and embedding the receptacle in it, as is indicated in the drawing.

C represents a partition which divides the receptacle into two chambers. This partition is provided with a large opening D and at least one restricted opening *d*. One of the chambers is provided with two

branches, in the larger of which are placed a pair of contact terminals E, and in the smaller of which are placed a pair of contact terminals F. A third pair of contact terminals G may be placed in the other chamber.

When the device is rotated half a revolution from the position shown in Fig. 1, all the mercury runs through the large opening D in the partition C into the chamber containing the contacts G, and connects these contacts together. When the device is returned to the position shown in Fig. 1, the mercury can flow back only through the restricted opening or openings *d*. The smaller branch containing the contact terminals F is so arranged with respect to the opening or openings *d* that no mercury can flow into this branch until the other branch is filled. There is, thus, a certain time-interval between the breaking of contact at the terminals G and the closing of contact between the terminals E, due to the time required for filling the larger branch of the lower chamber up to the terminals E, and there is a further time-interval between the closing of contact at terminals E and the closing of contact at terminals F, due to the time required for the mercury to fill up the rest of the larger branch and then to overflow into the smaller branch so as to connect the contact terminals F together. Since the amount of mercury is not sufficient to fill both branches, the contacts E and F are not connected together, although the contacts of each set are connected together by the mercury.

In Fig. 2, the casing A is shown mounted on the shaft of the rotary switch H of a well known form of lever lock. This switch is actuated by a connecting rod I, which is operated in the usual manner by the latch on the lever of an interlocking machine (not shown). J represents the lock magnet, the armature of which is carried by a latch K, which is normally held by a spring *k* in engagement with a notch in the cam K¹, but which, when the magnet J is energized, is lifted from the notch so as to leave the switch H free to turn. Collector rings L may be placed on the shaft of the switch H for carrying current to the contact terminals within the casing A.

I do not desire to limit myself to the particular construction and arrangement of

parts here shown, but aim in the appended claims to cover all modifications which are within the scope of my invention.

What I claim as new, and desire to secure
5 by Letters Patent, of the United States,
is,—

1. A time-limit circuit-closer comprising
a pivotally mounted receptacle, a conduct-
ing fluid therein, a partition dividing the
10 receptacle into two chambers and provided
with a large opening and a restricted open-
ing through which respectively the fluid
flows from one chamber to the other when
said receptacle is moved, one of said cham-
15 bers having a plurality of branches, one
branch being located to receive the flow
direct from the openings, and a plurality
of independent sets of contact terminals in
said branches adapted to be connected suc-
20 cessively by the flow of fluid into said
chamber.

2. A time-limit circuit-closer comprising
a pivotally-mounted receptacle, a conduct-
ing fluid therein, a partition dividing the
receptacle into two chambers and provided 25
with a restricted opening through which the
fluid flows when the receptacle is moved
from one position to another, one of said
chambers having two branches so arranged
with respect to said opening that the fluid 30
can enter one branch only after filling the
other and the amount of fluid being insuf-
ficient to fill both branches, and a set of
contact terminals in each branch adapted to
be connected by the fluid. 35

In witness whereof, I have hereunto set
my hand this 2nd day of March, 1909.

FRED B. COREY.

Witnesses:

BENJAMIN B. HULL,
HELEN ORFORD.