

E. M. BENHAM.  
TIME LOCK ACTUATING MECHANISM.  
APPLICATION FILED JAN. 13, 1908.

976,028.

Patented Nov. 15, 1910.

Fig. 1

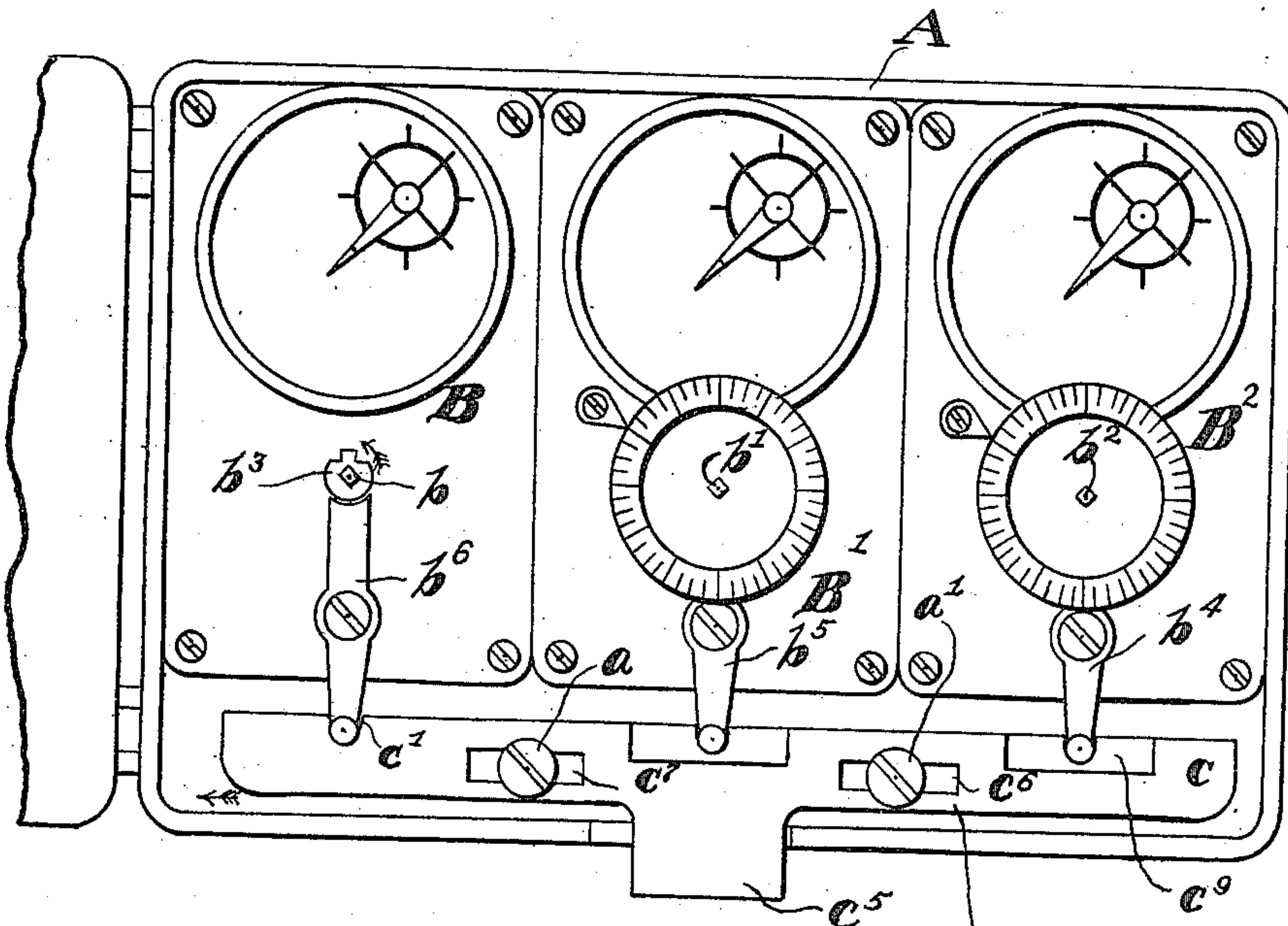


Fig. 2

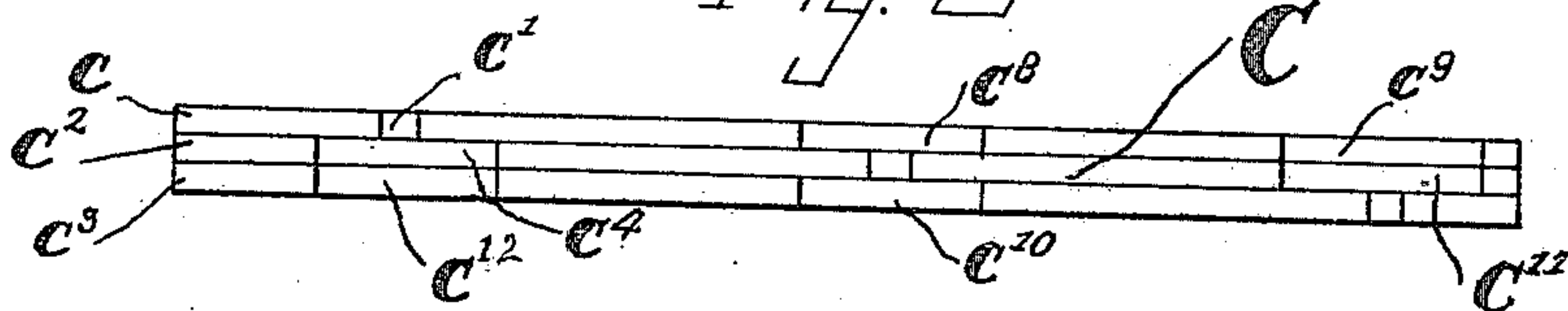
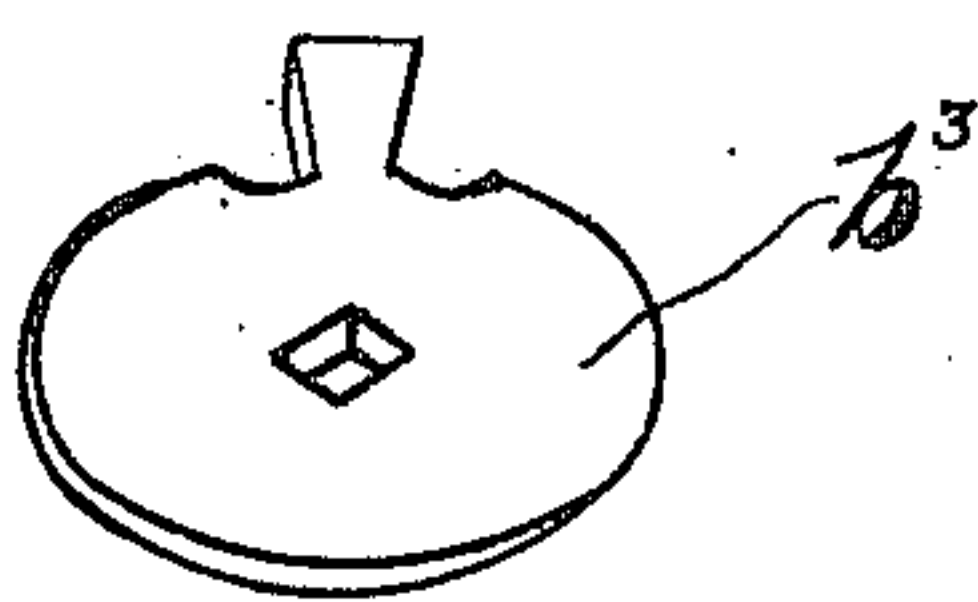


Fig. 3



WITNESSES.

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# UNITED STATES PATENT OFFICE.

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## TIME-LOCK-ACTUATING MECHANISM.

976,028.

Specification of Letters Patent. Patented Nov. 15, 1910.

Application filed January 13, 1908. Serial No. 410,652.

*To all whom it may concern:*

Be it known that I, EDGAR MORTON BENHAM, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented new and useful Improvements in Time-Lock-Actuating Mechanism, of which the following is a specification.

This invention relates to new and useful improvements in time-lock actuating mechanisms.

Heretofore mechanisms of this type have not been absolutely positive in their operation, and have been so constructed as to make it possible to throw the bolts by a blow or heavy jar on the outside of the safe.

The object of this invention is to provide such means as will make the operation absolutely positive and eliminate all danger of throwing the bolts by accident or external violence; while affording a positive operation of the tripping lever, if any, whether all or less than all of the time movements are in commission. To secure this feature in mechanisms of this type, a throw bar formed of a series of plates and novel dog and lever have been provided in the construction of the time actuating mechanism, all of which will be fully explained in that which follows.

For the purpose of illustration of my invention are the following drawings, in which:

Figure 1 is a plan view of a time actuating mechanism in its case, with part of the case door broken away and one of the dials removed, revealing the novel dog and lever. The mechanism is shown as wound and set. Fig. 2 is a side elevation of a bar formed of a series of plates adapted to form a part of a time actuating mechanism, and showing the relative position of the plates when the mechanism has been set to operate at some predetermined time. Fig. 3 is an enlarged view in perspective, of the novel dog.

Referring to the drawings, A is the case of the time actuating mechanism and B, B<sup>1</sup> and B<sup>2</sup> are the time mechanisms. Mandrels b, b<sup>1</sup> and b<sup>2</sup> rotate simultaneously with their dials by which the time actuating mechanism is set. Dog b<sup>3</sup> is rotatively attached to the mandrel b and engages with one of the ends of the lever b<sup>6</sup> in a curved recess of the same, and in such a manner to allow substantially no loose play between the two.

Said lever b<sup>6</sup> is pivoted near the center of its length and engages at one of its ends with the throw bar C formed of a series of plates in a notch c<sup>1</sup> of one of the plates c. Each section of the bar C is capable of independent longitudinal motion and all sections are held in place by screws a and a<sup>1</sup>, threaded in the case A and piercing said plates through the slots c<sup>6</sup> and c<sup>7</sup>. Notches c<sup>4</sup>, c<sup>12</sup>, c<sup>8</sup>, c<sup>9</sup>, c<sup>10</sup> and c<sup>11</sup> facilitate the movement of levers b<sup>4</sup>, b<sup>5</sup> and b<sup>6</sup> without their interfering with any plate except the one they are designed to operate. Each plate is provided with a projection c<sup>5</sup>, whose function is to connect the device with the motor, employed to retract the bolts. The dog b<sup>3</sup> is disk shaped, and is provided with a projection which is integral with it. Said dog is also sufficiently cut away near its projection to eliminate all danger of locking with the lever b<sup>6</sup>, in event of which its time actuating mechanism would cease to operate.

It will be seen from the drawings, (especially brought out in Fig. 2) that each time mechanism, by means of its connecting lever, operates one plate of the throw bar C and does not interfere with the operation of the others. Any one of the plates as c may operate the tripping mechanism.

The connection of the levers b<sup>4</sup>, b<sup>5</sup> and b<sup>6</sup> are all made in such a manner as to avoid loose play, thus facilitating accurate and positive operation.

The operation of the device is as follows:—The mandrel b rotates with the dial in the direction indicated by the arrow and carries with it the dog b<sup>3</sup>. After a sufficient rotation, the projection of the dog b<sup>3</sup> contacts with lever b<sup>6</sup> and causes said lever to turn about its pivoted point and transmit motion to the plate c of the throw bar C in the direction indicated by the arrow. The projection c<sup>5</sup> of plate c will then move longitudinally with said plate and cause the safe bolts to be cast.

A description of the operation of the other time mechanisms and their connections would be a repetition of the foregoing. If all the movements were set to operate at the same time as the one just described, and all operated normally, the action of all of the plates of the throw bar would be simultaneous. If any one or two of the time mechanisms were out of commission the operation of retracting the bolts would go on just the same.



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

1. In a time-lock device the combination of a plurality of time movements; a throw bar composed of corresponding plates arranged to be moved independently in relation to one another; and operative connections between each plate and one of the time movements whereby the plates may be moved synchronously, or independently.

2. A time actuating mechanism comprising a plurality of time movements, a throw bar formed of as many plates as there are movements, and each plate connected to one movement only, and levers and dogs adapted to make each of the said connections and transmit power to the throw bar.

3. A time actuating mechanism comprising a plurality of time movements, each adapted to be connected to a throw bar formed of a series of plates by means of a disk shaped dog having a projection, and a part cut away near the projection, and a lever adapted to be operated by the move-

ment of said dog and transmit power to said throw bar, formed of a series of plates.

4. A time actuating mechanism comprising a plurality of time movements adapted to be connected to a throw bar formed of a series of plates, by means of a disk shaped dog, having a projection, and a part cut away near the projection and a lever adapted to be operated by the movement of said dog, and transmit power to said throw bar, each time movement being connected to only one plate of the throw bar and capable of operating only its plate and not interfering with the operation of the others, and any one of the plates of the throw bar being adapted to operate the tripping mechanism of a motor used to retract safe bolts.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

EDGAR MORTON BENHAM.

Witnesses:

JOSEPH R. GARDNER,  
BENJAMIN H. EDWARDS.