

No. 680,686.

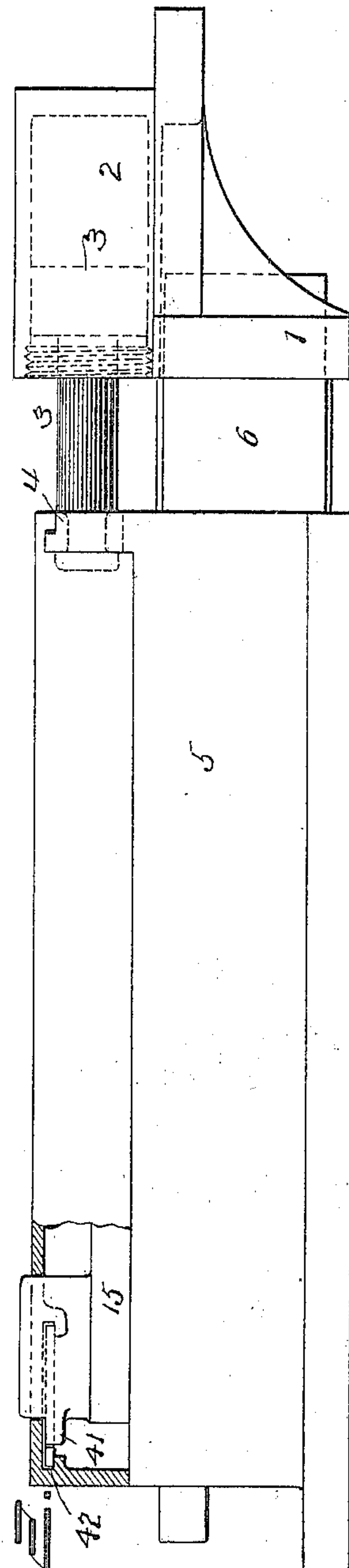
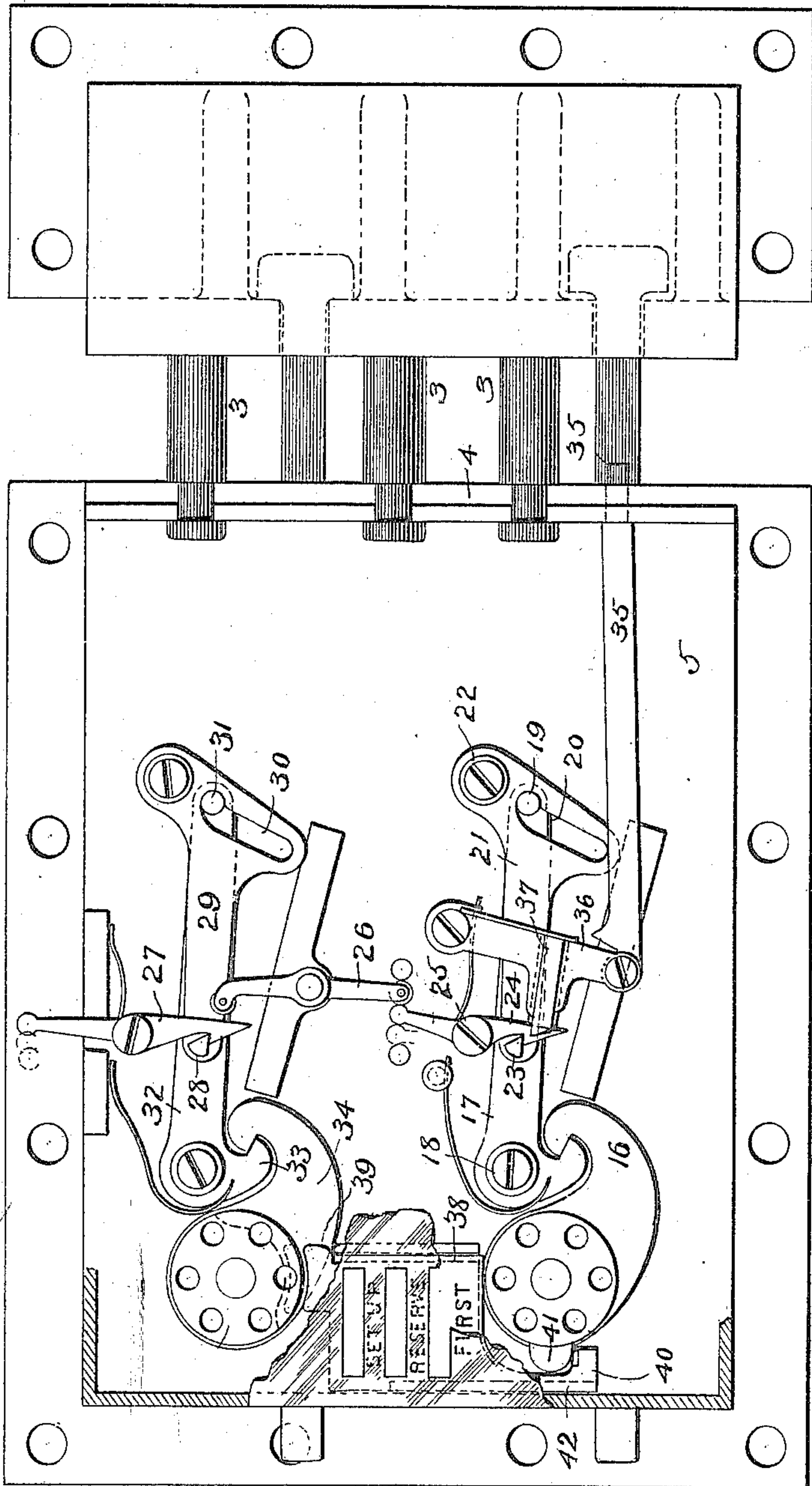
Patented Aug. 20, 1901.

C. A. BERRY.  
SAFE BOLTWORK MECHANISM.

(Application filed Apr. 22, 1901.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES  
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FIG. 3.

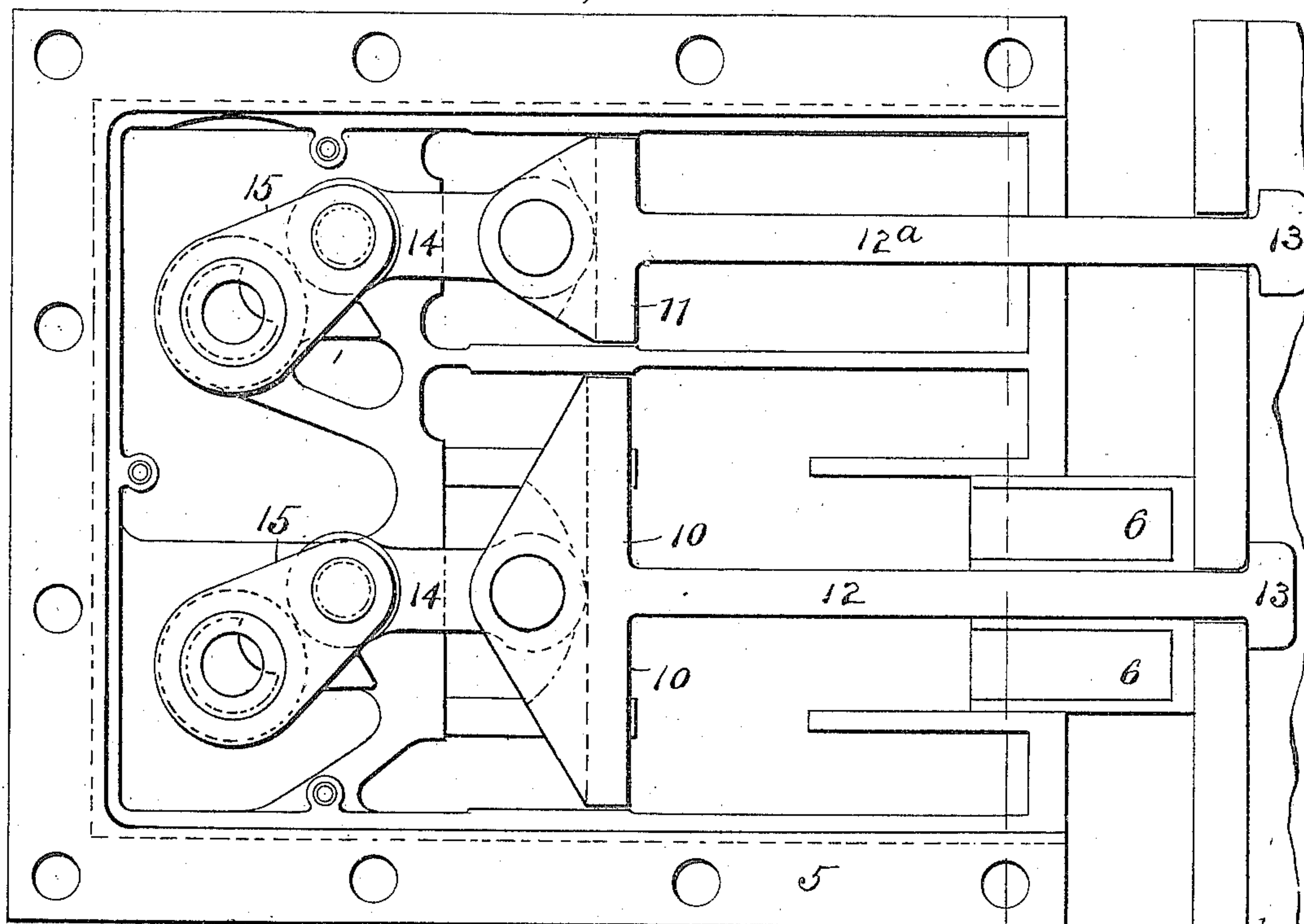
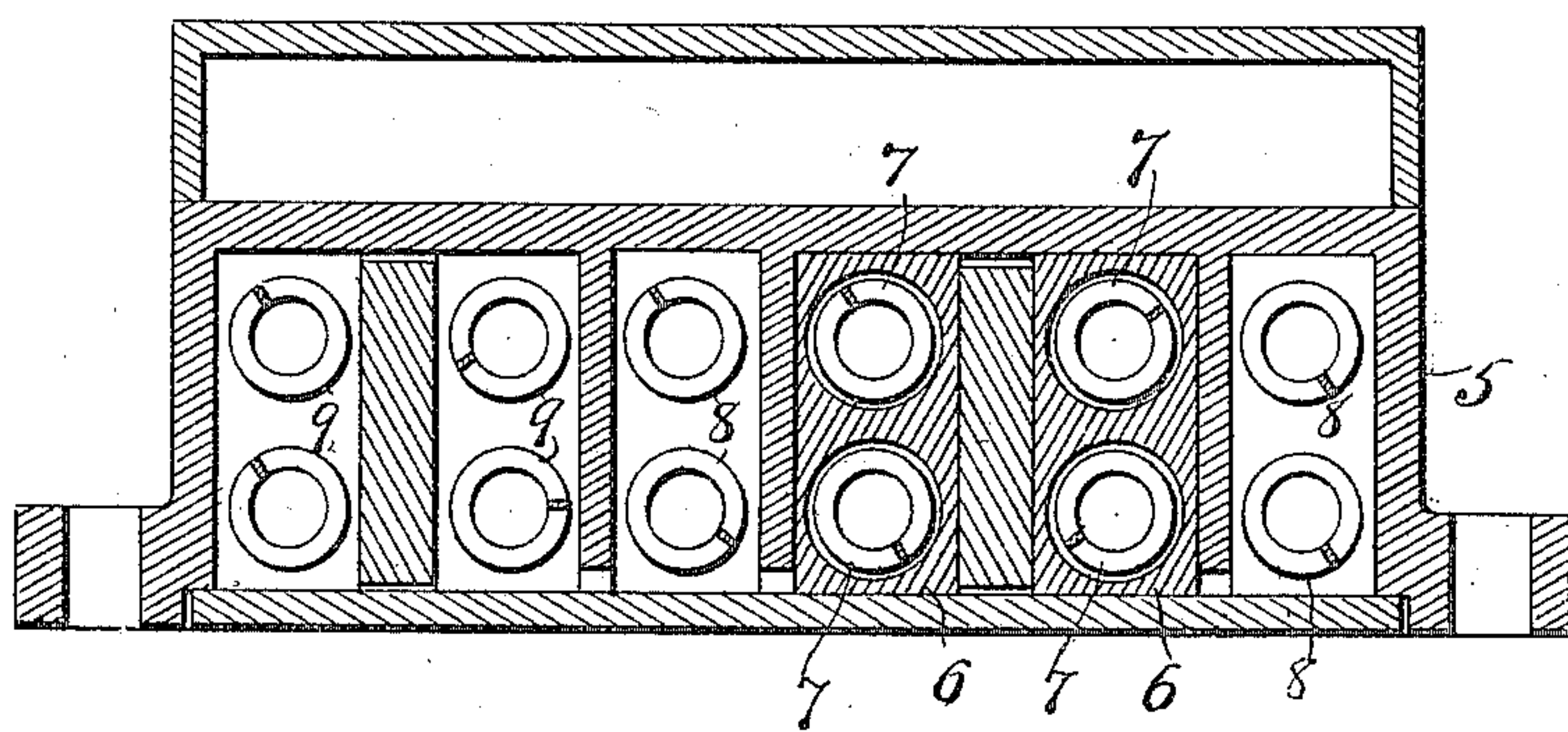


FIG. 4.



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# UNITED STATES PATENT OFFICE.

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## SAFE BOLTWORK MECHANISM.

SPECIFICATION forming part of Letters Patent No. 680,686, dated August 20, 1901.

Application filed April 22, 1901. Serial No. 56,967. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES A. BERRY, of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Safe Boltwork Mechanism; 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 an improvement in safe boltwork mechanism, and more particularly to improvements on the constructions disclosed in Patent No. 403,527, granted E. W. Fowler May 21, 1889, and Patent No. 403,563, granted E. Stockwell May 21, 1889. These patents disclose constructions wherein locking and unlocking springs are employed for casting and retracting the bolts, the casting-springs being released by a trip actuated by the closing of the safe-door, while the retracting-springs are released by time-lock mechanism. Both the locking and unlocking springs are set or put under compression by a setting-up wrench, and the compound levers, which operate to hold the unlocking-springs under tension until the time arrives for unlocking, are also set by the same operation which puts the springs under tension. These patents have, in addition to the locking or casting and unlocking or retracting springs above referred to, a reserve set of retracting-springs connected to the bolt mechanism, so that if for any reason the primary unlocking-springs should fail to operate the continued operation of the time-lock will within a stated time thereafter throw into operation the reserve unlocking-springs, which in order to make the operation certain are of much greater strength than the primary unlocking-springs, so that when the reserve unlocking-springs are tripped by the operation of the time-lock there will be power sufficient to surely retract the bolts. Normally this reserve power does not come into operation unless by reason of failure of the primary unlocking-springs to retract the bolts, and the power of the reserve unlocking-springs is great enough to overcome any resistance likely to occur. After the reserve unlocking-spring has been released it is essential, how-

ever, that it should be reset, because otherwise the user of the safe might set up his primary mechanism and imagine from the noise of the springs that his bolts had been shot forward, when as a matter of fact the reserve unlocking mechanism would absolutely prevent the bolts from assuming their locked position.

The object, therefore, of my invention is to provide means whereby the primary locking and unlocking springs cannot be set until after the reserve unlocking-springs have been set.

A further object is to provide means for preventing the reserve springs against operation until after the primary unlocking-springs have been released and failed to retract the bolts.

With these ends in view my invention consists in the parts and combinations of parts, as will be more fully explained and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in elevation of a portion of the boltwork-actuating mechanism, disclosing my invention applied thereto. Fig. 2 is a side view of same, partly in section. Fig. 3 is a view, in rear elevation, showing the spring-chamber and carriages; and Fig. 4 is a sectional view of same on the line *xx* of Fig. 3.

1 represents an angle-plate designed to be secured to the carrying-bar of the boltwork. This angle-bar is, as shown in Fig. 2, provided on its outer face with a plurality of air-cylinders 2, in which the pistons 3 rest. The pistons 3 are rigidly secured to the end wall 4 of the casing 5, and it will be seen that as the angle-plate 1 is moved toward and away from the casing 5, as it does in withdrawing and shooting the bolts, the air-cylinders and pistons therein serve to regulate and control the movements of the parts, thus preventing injurious shocks to the time and other mechanisms carried in the casing 5, as fully explained in the patents above referred to. Bearing against the face of the angle-plate 1, adjacent to the casing 5, are the push-blocks 6, which latter are slidingly mounted in the end of casing 5 and receive the ends of the locking-springs 7, while the primary unlocking-springs 8 are located within the casing on op-



posite sides of the springs 7, and the reserve unlocking-springs 9 are located in a compartment of the casing below the springs 7 and 8. Bearing against the ends of the springs 7 and 8 is the cross-head 10, and bearing against the springs 9 is the cross-head 11, the former of which carries a withdrawing-bar 12, while the latter carries withdrawing-bar 12<sup>a</sup>. These bars pass loosely through slots in the angle-plate 1 and are provided at their free ends with heads 13, which are adapted to engage the rear face of the angle-plate.

It will be seen from the above that when the cross-heads 10 and 11 are moved to compress the springs the push-blocks 6, bearing against the angle-plate, will tend to force it and the bolts (not shown) carried thereby out to a locked position, but are restrained by a trip or other well-known device, which prevents such movement until the door shall have been closed. The push-blocks being released, the locking-springs throw the bolts, thus locking the door. The primary and reserve retracting-springs are still retained under tension and are held so until the proper time arrives, when the time mechanism releases the primary unlocking-springs in the well-known and usual manner, which retracts or tends to retract the bolts. If the primary unlocking devices fail to operate, the reserve unlocking mechanism is after a predetermined time released by the time mechanism and adds its power to that of the primary unlocking device.

The two cross-heads 10 and 11 are connected by the links 14 with the cranks 15, the latter being mounted in the casing 5. The hubs of these cranks are provided on their outer faces, as shown in Fig. 1, with recesses for the entrance of the pins of the setting-wrench and are each also provided with a hook. The hook 16 on the reserve spring mechanism is engaged by the hook on the spring-actuated lever 17, which latter is pivoted at 18 and is provided at its free end with a pin 19, which rests in slot 20 in lever 21. This lever 21 is pivoted at 22 and carries a lug 23, which latter is designed to be engaged by the hook-lever 24, pivoted at 25, the upper end of said hook-lever resting in close contact with the lower end of pivoted lever 26. The upper end of this lever 26 rests in proximity to the pivoted hook-lever 27, which latter is actuated by the time mechanism of the lock, and its hooked end is adapted to rest under the lug 28 on pivoted lever 29. This lever 29 is provided with a slot 30, in which the pin 31 of the hook-lever 32 rests. This hook-lever is spring-actuated and is provided with a hook 33, which engages the hook 34 on the hub of the crank 15 of the primary unlocking devices.

The mechanism thus far described is substantially the same as that shown and claimed in the Stockwell and Fowler patents above referred to. In both of these patented devices provision was made whereby the casings or

carriages containing the primary and reserve springs were automatically disconnected when the primary bolts were retracted. This complicated the mechanism and at times caused trouble in operation. It would be objectionable, however, to have the two mechanisms absolutely independent, because after the reserve mechanism has been released it is essential that it should be again set up, because, as before stated, the user of the safe might set up his primary mechanism and imagine from the noise of the springs that his bolts had been shot forward, when in fact the reserve unlocking mechanism was holding them back, so that the door could not be locked. In the present devices the two cross-heads for the primary and reserve springs and their draw-bars are absolutely independent; but provision is made that when the primary unlocking-springs have thrown back the bolts the reserve springs cannot be unlocked. The means for accomplishing this comprises a connecting-bar 35, passing through casing 5 and adapted to be engaged by the angle-plate 1 when the bolts are withdrawn or are in an unlocked position. When the bar 35 is engaged by the angle-plate, it moves it longitudinally, thus carrying the pivoted lever 36 toward the lug 23 on lever 21. This pivoted lever 36 carries the sliding spring-pressed latch 37, which when the lever is pressed inwardly rests under the lug 23 and prevents the compound levers 17 and 21 from dropping and releasing the hook 16, which, as previously described, holds the reserve unlocking-springs under tension. If, however, for any reason the primary unlocking-springs fail to retract the bolts, then the continued movement of the time-lock will through the hook-lever 27 and lever 26 move the hook of lever 24 from under the tongue 23, thus releasing the reserve unlocking mechanism.

In order to prevent setting up or retracting the primary unlocking-springs until the reserve unlocking-springs have been first set up, I provide the slide 38, which latter is located under the face-plate of the casing and is provided thereon with the words "Set up reserve first," which words show through slots in the face-plate, while the reserve unlocking mechanism remains unset. When the reserve mechanism is properly set, the directions above quoted are obscured by the face-plate. The plate 38, carrying these directions, is provided at its upper end with a projecting toe 39, which latter when the reserve is not properly set projects over a hole in the hub of hook 34 of the primary unlocking mechanism, and this absolutely prevents the setting up of the primary unlocking mechanism until the reserve unlocking mechanism shall have first been set. The plate 38 is also provided with a depending leg 42, having a projection 40 thereon, which is engaged by the shoulder 41 on the hub of hook 16 and moves the plate downwardly and away from



the hub of the primary unlocking mechanism as the reserve unlocking mechanism is set. Obviously until the reserve is set up and the obstructing slide drops it is a mechanical impossibility to attach the wrench to the primary shaft-hub to set up the primary before the reserve is set up.

It is evident that many slight changes might be resorted to in the relative arrangement of parts herein shown and described without departing from the spirit and scope of my invention. Hence I would have it understood that I do not wish to confine myself to the exact construction of parts herein shown and described; but,

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

1. In an automatic bolt-operating mechanism the combination of devices for throwing the bolts, primary and reserve mechanisms for withdrawing the bolts, a series of fastening mechanisms adapted to release the unlocking mechanisms by the action of time mechanism and means for preventing the setting up of the primary unlocking mechanism until the reserve unlocking mechanism shall have been set up.

2. In an automatic bolt-operating mechanism the combination of devices for throwing the bolts, primary and reserve mechanism for withdrawing the bolts, fastening mechanisms adapted to release the unlocking mechanisms

by the action of time mechanism, and an indicator for visually indicating the position of the reserve unlocking mechanism.

3. In an automatic bolt-operating mechanism the combination of devices for throwing the bolts, primary and reserve bolt-unlocking devices, fastening mechanisms adapted to release the unlocking mechanisms by the action of time mechanism, and an indicator for visually indicating the position of the reserve unlocking mechanism and for obstructing the setting up of the primary unlocking mechanism until the reserve unlocking mechanism shall have been set up.

4. In an automatic bolt-operating mechanism, the combination of automatic devices for throwing the bolts, primary and reserve devices for withdrawing the bolts, fastening devices for holding the unlocking devices against operation until released by time mechanism, and a sliding plate actuated by the movements of the reserve unlocking device and adapted to prevent the attachment of the setting-up wrench to the primary unlocking mechanism until the reserve unlocking mechanism shall have been set up.

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

CHARLES A. BERRY.

Witnesses:

SCHUYLER MERRITT,  
WALTER C. ALLEN.