(No Model.) 3 Sheets—Sheet 1.

E. STOCKWELL.

AUTOMATIC LOCKING MECHANISM FOR PERMUTATION LOCKS.

No. 512,995. Patented Jan. 16, 1894.

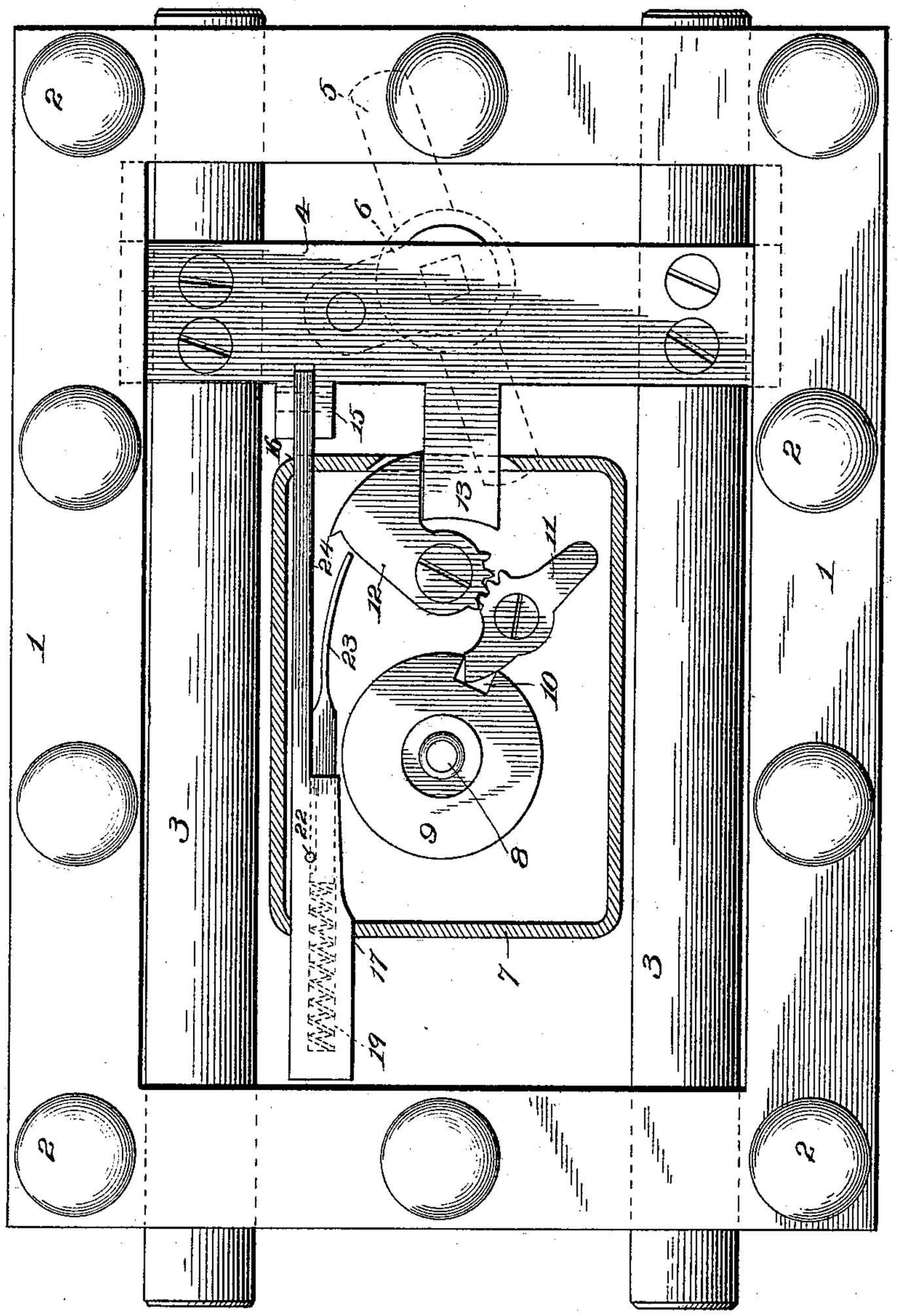

Fig. 1.

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No. 512,995. Patented Jan. 16, 1894.

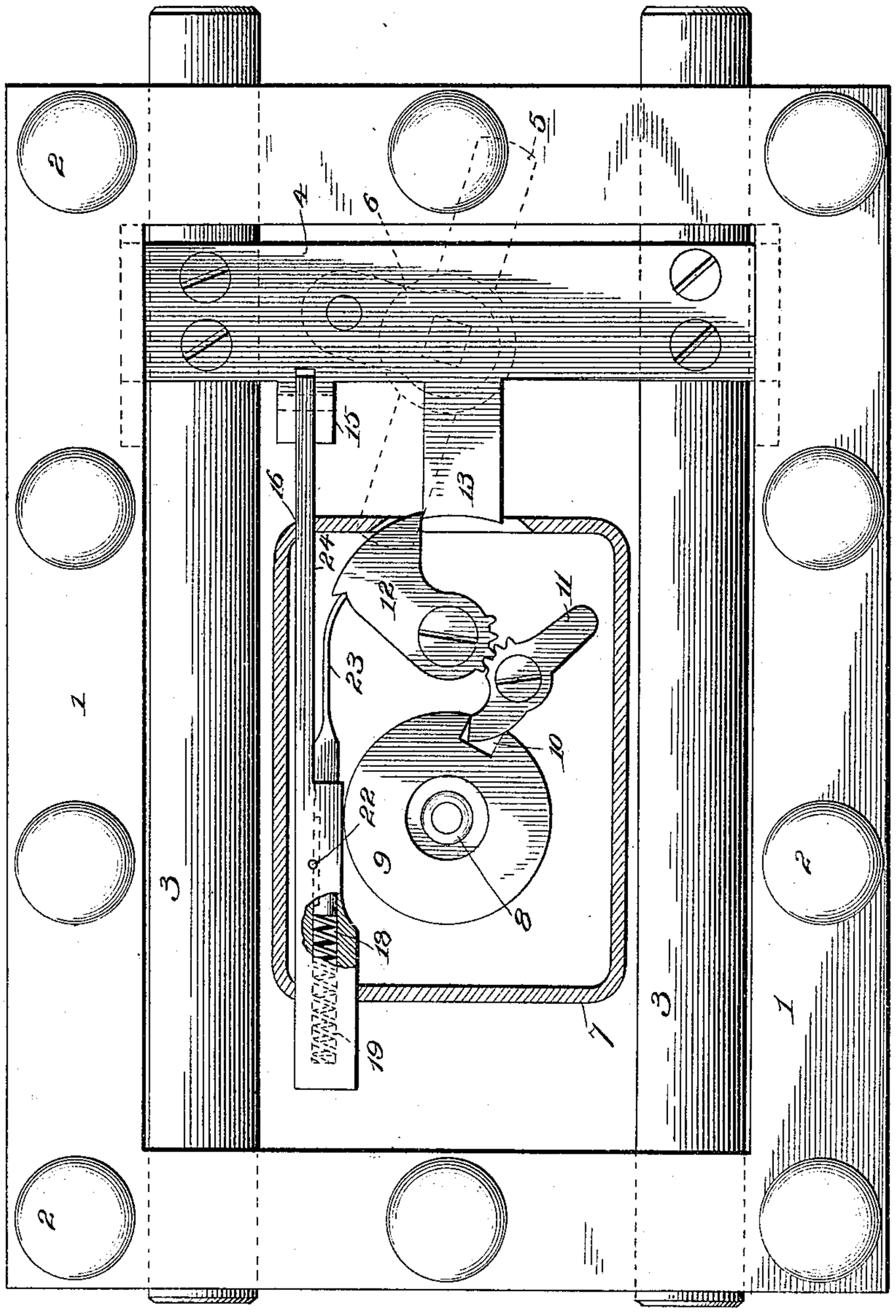

Fig. 2.

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E. STOCKWELL.

AUTOMATIC LOCKING MECHANISM FOR PERMUTATION LOCKS.

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Fig. 4.

Fig. 3.

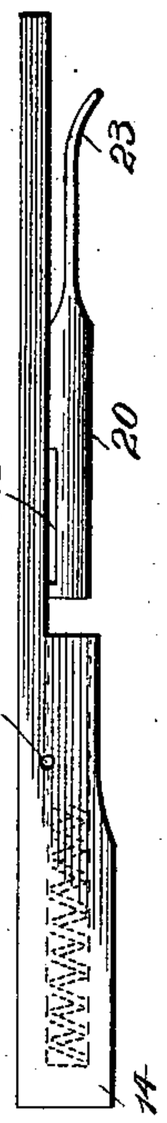

Fig. 5.

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UNITED STATES PATENT OFFICE.

EMORY STOCKWELL, OF STAMFORD, CONNECTICUT, ASSIGNOR TO THE YALE & TOWNE MANUFACTURING COMPANY, OF SAME PLACE.

AUTOMATIC LOCKING MECHANISM FOR PERMUTATION-LOCKS.

SPECIFICATION forming part of Letters Patent No. 512,995, dated January 16, 1894.

Application filed March 10, 1893. Serial No. 465,441. (No model.)

To all whom it may concern:

Be it known that I, EMORY STOCKWELL, a citizen of the United States, residing at Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Automatic Locking Mechanism for Permutation-Locks, of which the following specification, taken in connection with the accompanying drawings, is a full, clear, and exact description.

The operation of locking a safe provided with a permutation lock requires two distinct actions; viz.—first, the casting of the bolts by a partial rotation of the controlling handle, and second, the throwing off of the combination by disturbing or disconcerting the arrangement of the tumblers. As these two distinct actions are required for properly locking a safe it has frequently occurred through oversight or carelessness that the lock has failed to be locked. Experience has shown that this failure to lock safe doors has become a real danger and is sometimes the cause of robbery. In view of the above fact it is quite apparent that it is very desirable that the closing of the safe door and the casting of the bolt-work should automatically lock the lock, so as to avoid the result of any possible oversight or carelessness.

To this end my invention consists in providing the bolt-work with a spring plunger which is adapted to engage the permutation lock mechanism and forcibly throw the parts into locked position and thereby automatically disturb or disconcert the combination of the lock when the bolt-work is cast for locking the safe door.

In the accompanying drawings I have shown one form of mechanism which will very satisfactorily accomplish the desired result, but it is of course obvious that other forms of mechanism could be devised for accomplishing the same result.

In the drawings, Figure 1 is an inside elevation of a permutation lock mechanism and the bolt-work controlled thereby, embodying my invention, the face of the lock case being broken away to show the internal construction, and the bolt-work being represented in withdrawn or retracted position. Fig. 2 is a similar view to Fig. 1 representing the bolt-work partially cast. Fig. 3 is a similar view representing the bolt-work in cast position and the permutation lock mechanism disturbed or disconcerted. Fig. 4 is a detail end view of the permutation lock case looking in the direction of the arrow *x* and having a portion of the case broken away to show the combination disturbing mechanism. Fig. 5 is a detail side elevation of the combination disturbing mechanism, the parts being disconnected.

Like numerals of reference indicate the same parts throughout the several views.

1 is the ordinary steel frame-work adapted to be secured to the inside of a safe door by the bolts 2 or other means, and 3 are the locking bolts journaled in said frame 1 and connected by the carrying bar 4 so as to move longitudinally in unison in the supporting frame.

5 is the bolt-operating handle journaled in the safe door and connected to the carrying bar 4 by means of the crank arm 6, in the usual way.

The parts 5 and 6 are represented by dotted lines in the drawings.

7 is the lock case of the permutation lock mechanism which may be of any approved construction.

In the form represented in the drawings the permutation lock mechanism comprises the knob spindle 8 upon which are mounted the tumbler wheels 9 formed with the notches or gates 10, in combination with the pivoted fence 11 adapted to enter the gates of the tumbler wheels, and the pivoted dog 12 geared to the fence 11 and adapted to rest on top of the tongue-piece 13 of the bolt-work when it is in retracted position, or engage the end of said tongue-piece 13 and prevent the withdrawal of the bolt-work when it is cast.

14 is a bar rigidly attached to the carrying bar 4 at 15 and projecting through the end walls of the case 7 in which it has bearings at 16, 17, so that it may move forward and backward with the bolt-work. The rear end of the bar 14 is enlarged and formed with an inner cylindrical bore 18, in which is located a spiral spring 19.

20 is a cylindrical piston or plunger mounted in the cylindrical bore 18 of the bar 14, and adapted to rest against the spiral spring 19. The plunger 20 is formed with a cut-out portion 21 extending longitudinally along a portion of its upper surface, and the bar 14 is provided with a pin 22 which traverses a portion of its central bore and engages the cutout portion 21 of the plunger for limiting its movement in the bore of the bar.

Formed integral with, or otherwise attached to the forward end of the plunger 20 is a spring tongue 23 which is downwardly curved at its outer end and adapted to engage the notch 24 formed in the back of the dog 12.

The purpose and operation of the above-described mechanism will now be explained. The mechanism is shown in Fig. 1 with the bolt-work and permutation lock mechanism in unlocked position. In this position the bar 14 and the plunger 20 are at the left-hand end of their stroke, and the spring tongue 23 is in position behind the shoulder 24 of the dog 12. Now when the bolts are moved forward toward their locked position, the carrying bar 4 takes with it the bar 14 and brings the spring 23 in contact with the shoulder 24 of the dog 12; which dog is temporarily held against downward movement by the projecting tongue-piece 13 of the carrying bar 4. The result of this action, which brings the parts into the position shown in Fig. 2, is the compression of the spiral spring 19 carried by the bar 14. The compression of the spring 19 continues as long as the plunger 20 is held by the dog 12, but as soon as the tongue-piece 13 is carried fully forward out of engagement with the dog 12, by the bolts being thrown into locked position as shown in Fig. 3, the dog 12 will be thrown violently into its locked position and its rapid action communicated by the fence 11, to the tumbler wheels 9 and violently rotate them so as to thoroughly disturb or disconcert the combination as indicated by the dotted lines. This action will effectively lock the bolt-work and secure the safe door against any possible opening until the combination has again been worked out. When it is desired to open the safe, the combination of the tumblers is set up and the dog 12 raised by means of the fence 11 in the usual way. This brings the dog 12 directly under the spring 23 of the plunger 20, so that when the bolts are retracted the spring 23 springs over the shoulder 24 of the dog 12, and the tongue-piece 13 passes under the dog 12 for holding it in unlocked position. The position of the parts will then be as shown in Fig. 1 in readiness for locking up again in the manner explained.

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

1. The combination of a door, a permutation lock mechanism, and suitable independent bolt-work, with a spring plunger carried by the bolt-work and adapted to engage the permutation lock mechanism and forcibly throw the parts into locked position to automatically disturb or disconcert the combination of the tumblers when the bolt-work is cast, substantially as set forth.

2. The combination of a door, a permutation lock mechanism, the independent bolt-work on the door, an independent dog adapted to receive the pressure of the bolt-work, a fence forming an operative connection between said dog and the locking tumblers of the permutation lock, and a spring plunger carried by the bolt-work and adapted to engage the dog, whereby, when the bolt-work is cast, the spring of the plunger is compressed against the dog, and, upon the release of the dog by the bolt-work, throws it forcibly into locked position and disconcerts or disturbs the combination of the tumblers, substantially as described.

3. The combination of a door, a permutation lock mechanism, suitable bolt-work, a bar carried by the bolt-work, a spring plunger carried by the bar and adapted to engage the permutation lock mechanism, and means for holding the permutation lock mechanism in unlocked position when the bolts are withdrawn and releasing said mechanism when the bolts are cast whereby the parts of the permutation lock mechanism will be forcibly thrown into locked position when the bolts are cast, substantially as set forth.

4. The combination of a door, a permutation lock mechanism comprising a series of tumbler wheels, a fence, and a locking dog, suitable bolt-work provided with a tongue-piece for engaging the locking dog, a bar carried by the bolt-work, and a spring plunger carried by the bar and adapted to engage the locking dog and throw it violently into locked position and thereby disturb the combination of the tumbler wheels when the bolt-work is cast, substantially as and for the purpose set forth.

5. The combination of a door, the permutation lock mechanism comprising a series of tumblers, a fence and a locking dog, suitable bolt-work provided with the tongue-piece which is adapted to engage the locking dog, a bar carried by the bolt-work and formed with an internal bore or cavity, and a piston or plunger also mounted in said cavity and resting against the spring, said piston being adapted to engage the locking dog and throw it violently into locked position and thereby disturb the combination of the tumbler wheels when the bolt-work is cast, substantially as and for the purpose set forth.

6. The combination of a door, a permutation lock mechanism comprising a series of tumblers, a fence, and a locking dog formed with a notch or shoulder 24, suitable bolt-work adapted to engage the locking dog, the bar carried by the bolt-work, and the spring plun-

ger carried by the bar and formed with a spring finger which is adapted to spring over the shoulder 24 of the dog when the bolt-work is unlocked, and engage said shoulder and throw the locking dog violently into locked position for disturbing the combination of the tumbler wheels when the bolt-work is cast, substantially as and for the purpose set forth.

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