

(No Model.)

3 Sheets—Sheet 1.

E. STOCKWELL.
COMBINATION LOCK.

No. 533,753.

Patented Feb. 5, 1895.

Fig. 1.

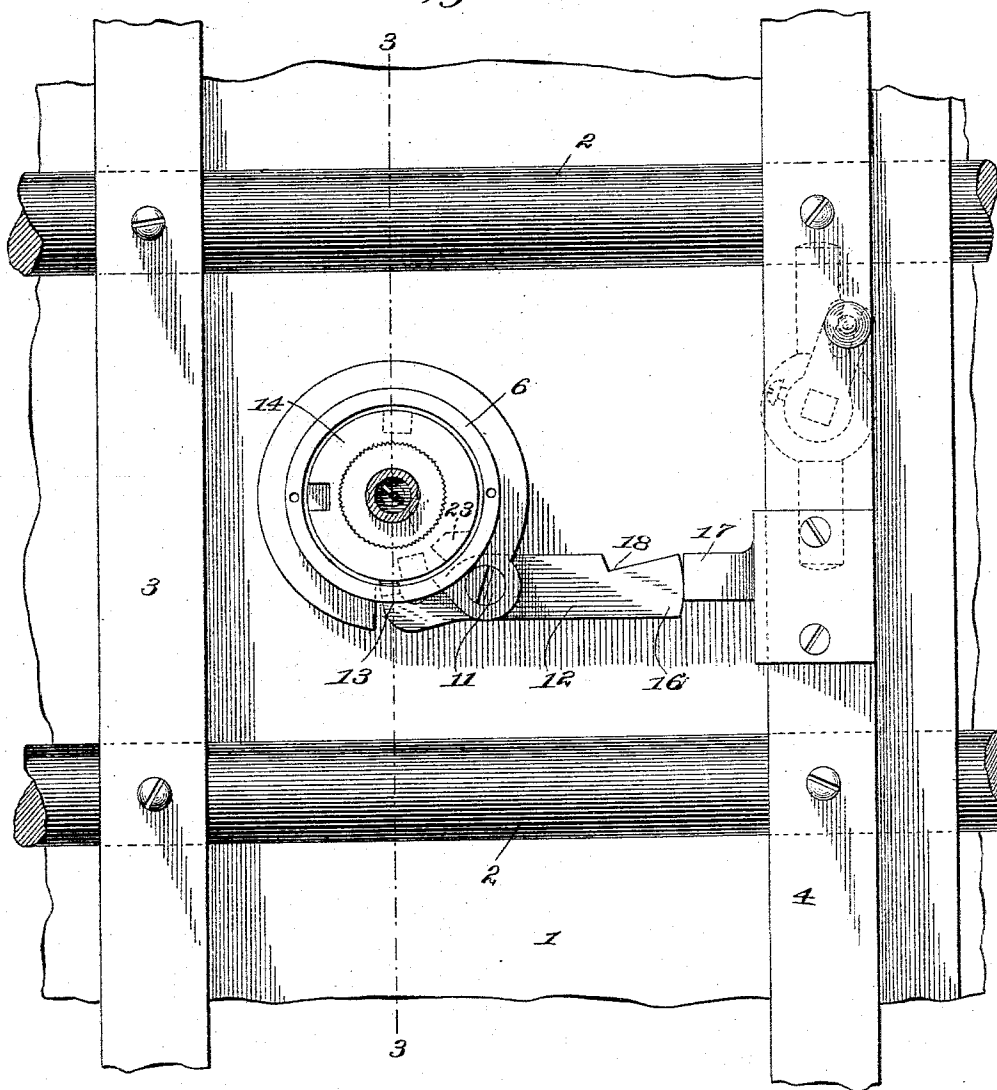
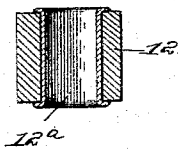


Fig. 6.



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Fig. 2.

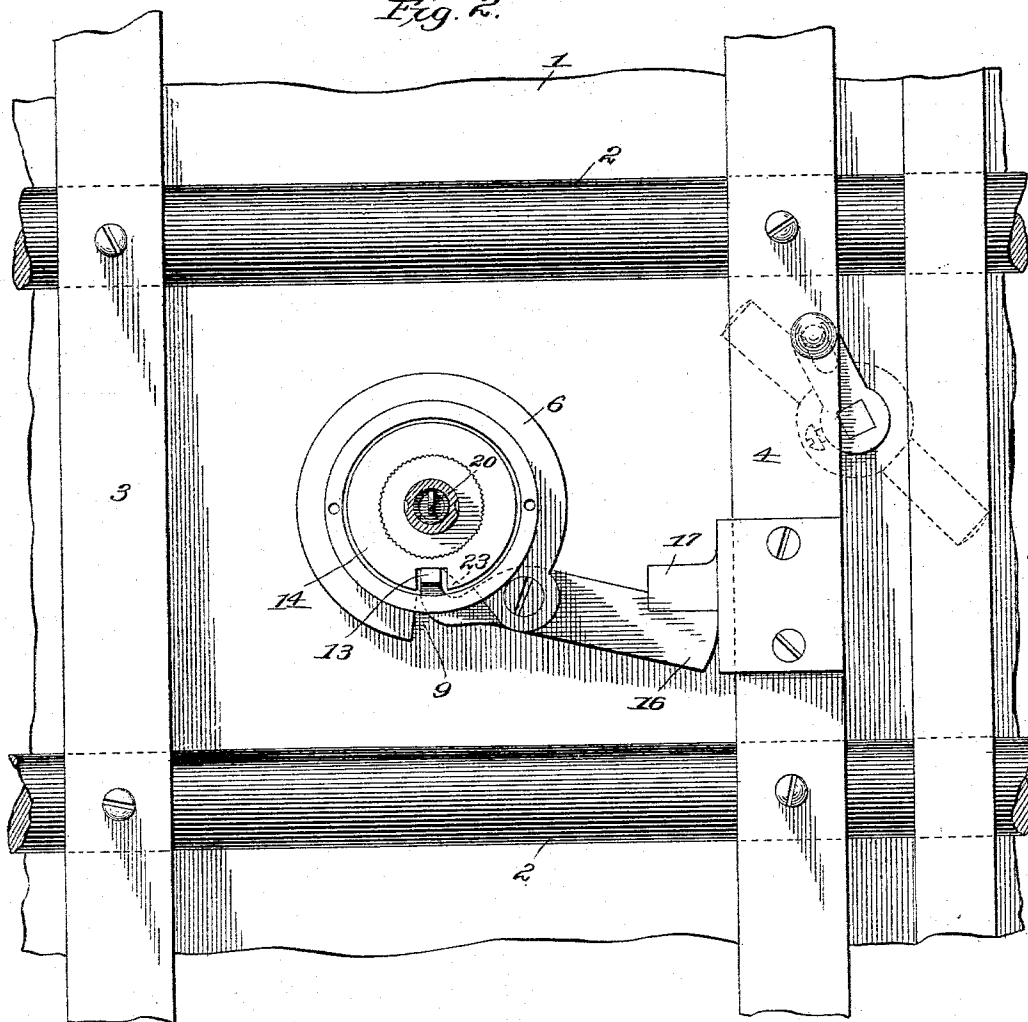
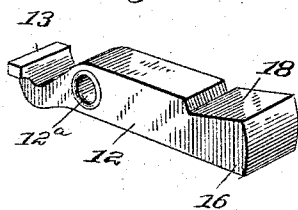


Fig. 5.



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Fig. 3.

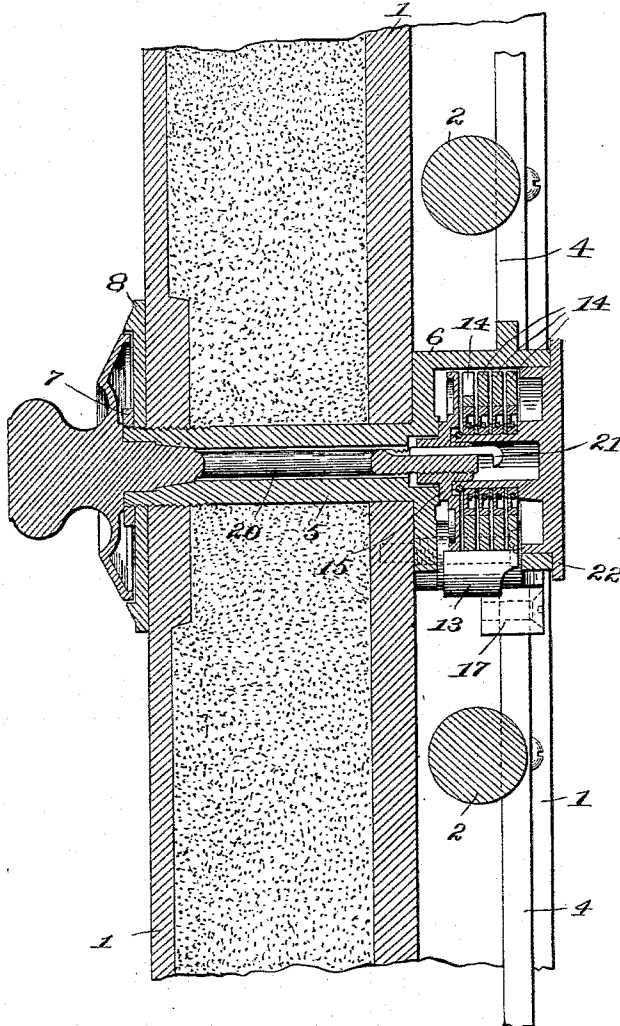
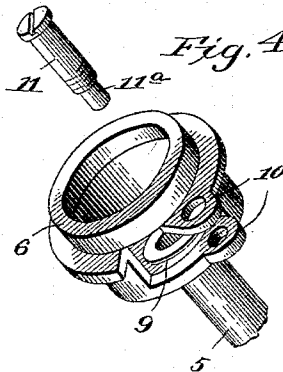


Fig. 4.



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UNITED STATES PATENT OFFICE.

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

COMBINATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 533,753, dated February 5, 1895.

Application filed March 2, 1894. Serial No. 502,134. (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 Combination-Locks; and I do hereby declare that the following specification, taken in connection with the accompanying drawings, is a full, clear, and exact description of my improvements.

The object of my present improvements is to produce a lock for fire-proof safes which shall be secure, easily and certainly manipulated, easy of application and economical in construction.

To accomplish these results the tube which passes through the door and forms a bearing for the spindle and means for attaching the lock, is formed in one piece with the case which contains the tumblers. The tube and tumbler case are preferably cast in an integral piece. Pivoted to the tumbler case is a combined dog and fence which tends by gravity to automatically unlock when the tumblers are set. The fence enters the gates or notches of the tumblers and driving-wheel, while the outer end or integral dog serves to directly dog the bolt-work. The pivot-screw upon which the combined fence and dog is pivoted passes through the case and projects into the safe door and thereby prevents the case from being unscrewed.

The manner of attaching the lock to the door is very simple and easy, as it is merely necessary to drill and tap a hole through the door, and by means of the screw-thread on the end of the lock tube to screw the lock in place. The dial ring is put over the end of the tube which projects through the door, and is held in place by a nut. It will be noted that the spindle as shown in the drawings is provided with a conical end, so that it cannot be driven through, but, on the contrary, any driving will tend to spread the tube, and perhaps split it, so that it cannot be forced off. The pivot screw, which forms the bearing for the dog, is then put in place and screwed into the safe door, preventing the lock from being unscrewed, and the attachment of the lock is thus made secure.

A further advantage is that the tube and

and tumbler case being formed in one piece, it is not possible to get the lock case and tumblers out of alignment with the spindle, as is very often done when the tube is made separate from the case, causing the lock to work badly. The tumblers are organized on a curb in the usual manner which is attached in any desirable way in the lock case.

In order that my invention may be fully understood I will first describe the same with reference to the accompanying drawings and afterward point out the novel features with more particularity in the annexed claims.

In said drawings: Figure 1 is a detail inside elevation of a combination lock mechanism constructed according to my invention and showing the parts in locked position and the outer plate of the lock case removed. Fig. 2 is a similar view showing the parts in unlocked position. Fig. 3 is a vertical sectional view taken on the line 3—3 of Figs. 1 and 2. Fig. 4 is a detail perspective view of the lock case and integral spindle tube on a similar scale. Fig. 5 is a detail perspective view of the gravitating combined fence and dog. Fig. 6 is a detail sectional view of a portion of the locking dog showing the independent bearing sleeve loosely interposed between the pivot-screw and the dog.

1 represents any preferred construction of safe door upon the inner face of which is mounted in the usual way the bolt-work, comprising essentially the bolts 2 and string pieces or carrying bars 3, 4.

5 is the spindle tube or sleeve which passes through an opening in the door 1, and is formed integral at its inner end with the tumbler case 6. The tube and tumbler case are secured in place by a screw-thread on the end of the tube, which is screwed into the outer plate of the door, and prevented from unscrewing by means of the pivot screw above referred to.

The tumbler case 6 is adapted to rest snugly against the inner face of the safe door and is formed with the opening 9 in its lower wall and the bifurcated lugs 10 in which is seated the pivot screw 11.

12 is the gravitating combined fence and dog, the nose 13 of which is adapted to engage the gates or notches of the tumblers 14 and the driving wheel 15, while the opposite end

16 is adapted to abut against the dog 17 secured to the carrying bar 4.

18 is a cut-away portion in the upper face of the dog 16 adapted to allow the movement of the dog 17 when the fence automatically drops into unlocked position and the bolt-work is drawn back.

The pivot screw 11 passes through the bifurcated lugs 10 and is formed with a threaded portion which engages with the threaded opening of the lower lug. The lower end 11^a of the pivot screw projects into the face of the door and secures the lock against unscrewing.

The ease and certainty of operation of the dog are assured by loosely inserting between said dog and the pivot screw the independent bearing sleeve 12^a shown in Figs. 5 and 6. This sleeve is made of less diameter than the hole in the dog, and is held in place by swaging or upsetting its ends so that it cannot drop out, and yet the dog can freely revolve about said sleeve. When, therefore, the sleeve is passed over the pivot screw, upon which it can also revolve, it is evident that the dog will operate either by revolving upon the sleeve, or the sleeve will revolve upon the pivot screw, so that any chance of sticking from corrosion or otherwise is eliminated.

20 is the dial spindle passing through the tube 5 and having secured to its inner end in the customary manner the driving wheel 15. The tumbler wheels 14 are organized upon the curb stump 21 which is formed integral with the curb-head 22 of the tumbler casing. The gate or notch of the driving wheel 15 is formed with a beveled shoulder 23 as indicated in dotted lines in Figs. 1 and 2 for the purpose of throwing the fence 13 out of engagement with the gates when it is desired to lock the door.

When the safe is locked as in Fig. 1 the dog 17 carried by the bolt-work abuts against the dog-end 16 of the combined fence and dog 12, it being held in this position by the face or nose 13 resting on the peripheries of the tumblers and driving wheel. When the com-

bination is set, the fence will enter the gates of the tumblers and driving wheel by reason of the heavy outer end 16 of the combined fence and dog, and this allows the bolt-work to be thrown back into the position shown in Fig. 2.

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

1. In a combination lock, the combination of suitable bolt-work, suitable tumbler mechanism, and a combined dog and fence formed in a single integral piece which directly dogs the bolt-work and which, when the tumblers are set, automatically moves into its unlocked position, substantially as described.

2. In a combination lock mechanism, the combination of the screw-threaded spindle tube and tumbler case formed in an integral piece, an independent fence and dog, and a pivot screw pivoting the fence and dog to the tumbler case and extending into the door for holding the tumbler case and tube from rotation, substantially as set forth.

3. In a combination lock mechanism, the combination of the spindle tube, the tumbler case formed integral with the spindle tube and provided with the opening and lugs, the combined fence and dog, and the pivot screw seated in said lugs for pivoting the fence and dog to the casing and adapted to extend into the door of the safe for preventing the rotation of the tumbler case, as set forth.

4. In combination with a combination lock, a combined fence and dog having a bearing sleeve loosely attached thereto, substantially as described.

5. In a combination lock, the combination of a combined fence and dog, the pivot screw, and a bearing sleeve loosely interposed between said dog and said pivot screw, substantially as described.

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Witnesses:

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