

No. 647,998.

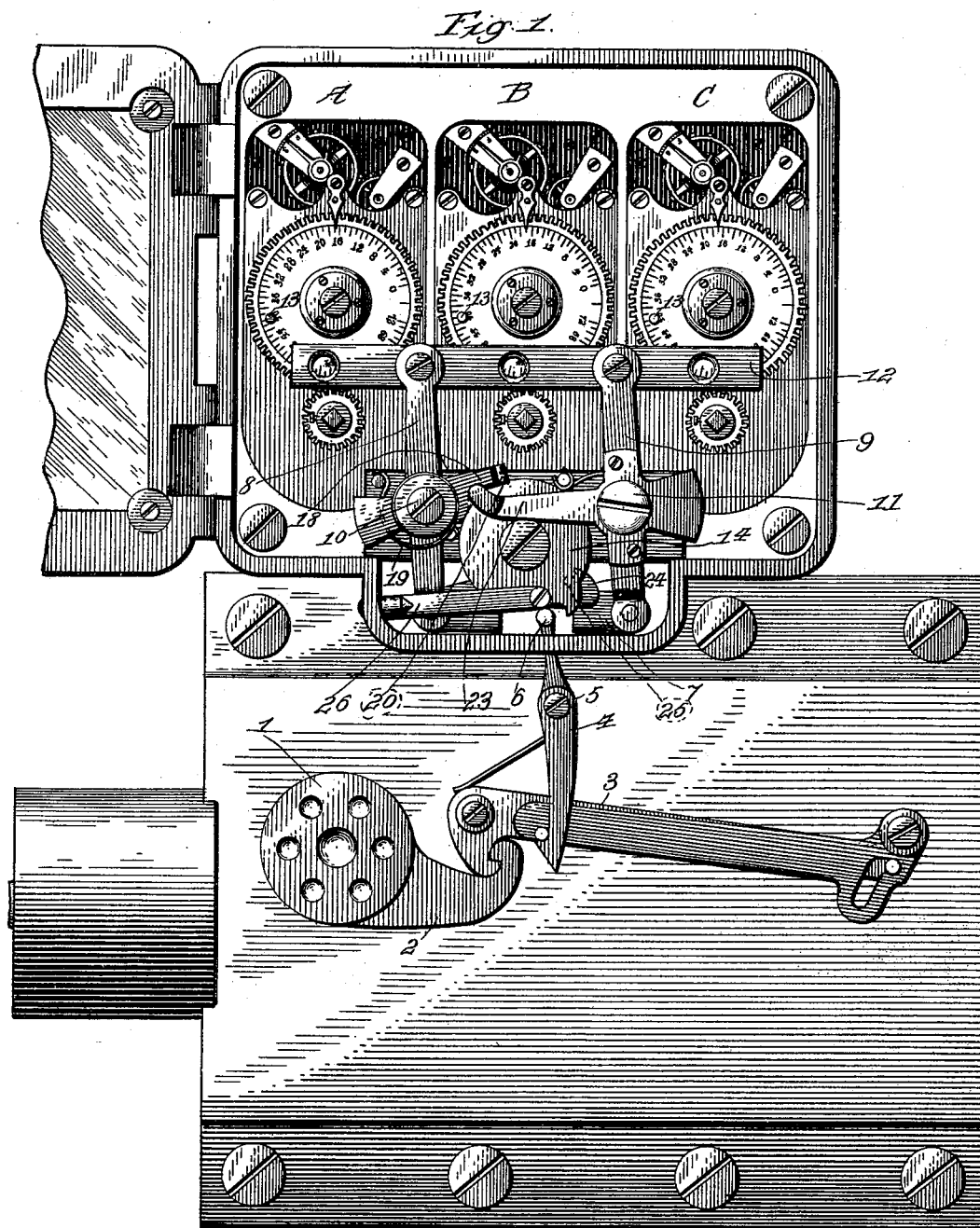
Patented Apr. 24, 1900.

W. H. TAYLOR.  
TIME UNLOCKING MECHANISM.

(No Model.)

(Application filed Mar. 2, 1899.)

2 Sheets—Sheet 1.



WITNESSES:

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Fig. 2.

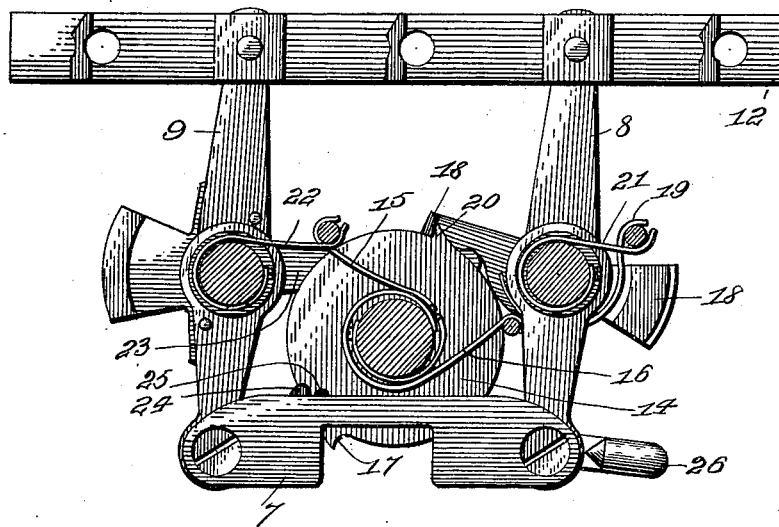


Fig. 3.

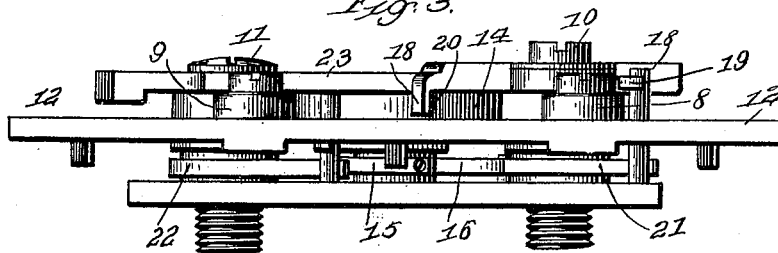
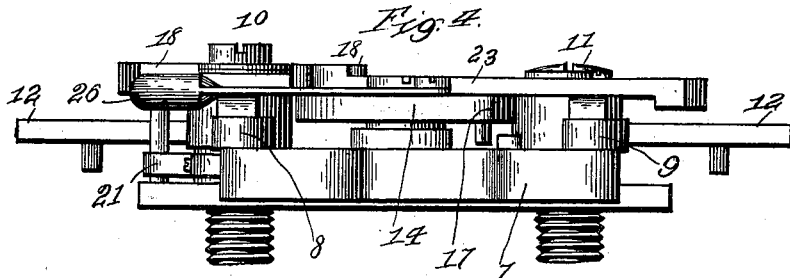


Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## TIME UNLOCKING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 647,998, dated April 24, 1900.

Application filed March 2, 1899. Serial No. 707,513. (No model.)

*To all whom it may concern:*

Be it known that I, WARREN H. TAYLOR, a citizen of the United States, and a resident of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Time Unlocking Mechanism, of which the following is a specification.

Heretofore it has been customary in time-locks to effect the unlocking through direct or continued operation of the time-movements, the motion of which is necessarily slow, so that a considerable period would intervene between the time when the movements first formed a connection with and began to move the unlocking mechanism and when the actual unlocking occurred. This mode of controlling the unlocking is open to two serious objections: First, for some time previous to the moment of releasing the boltwork by the unlocking mechanism controlling the same the mechanism stood in a condition which rendered it possible to effect an accidental or unauthorized opening by a jar or concussion, and, secondly, it was not practicable to fully lock the safe or vault for a short period, as for an hour, when it might be desired to close the bank, as at noon-time. Some objection to the old system also arose from the fact that the actual work of tripping the unlocking mechanism was imposed on the time-movements. My present invention overcomes the recited difficulties and objections by introducing between the time-movements and the mechanism to be released an auxiliary automatic unlocking device in addition to the former positively-operated unlocking connections and so arranging the parts that the auxiliary automatic unlocking device is normally held ineffective by a detent which is wholly disconnected from the time mechanism until the time of unlocking arrives, at which time it is tripped to release the auxiliary automatic unlocking device, while the old form of unlocking connection is thereafter positively moved into a position to insure unlocking in the event that the auxiliary automatic device has failed. These parts are so arranged that the positive unlocking connection remains out of contact with the means

for holding the bolts locked until after the time for unlocking has arrived, it being obvious that should the positively-moved unlocking connection be called into play it will only be after the auxiliary automatic unlocking device has failed. Hence it follows that at no time up to the hour of unlocking, or during a short interval for which it may be desired to have the time mechanism act, is there any such connection between the parts as would render it practicable to release the bolts by a shock or jar. Nor is there any undue work imposed upon the time-movements in the ordinary operation of the mechanism. As will hereinafter appear, the detent commonly used for preventing unlocking of the bolts and that which I have adopted in my present invention for restraining the automatic unlocking device are constructed and arranged so as not to be subject to movement by jar, and may, if desired, even be arranged so that jarring would tend to throw them into rather than out of engagement with the parts which they respectively control.

My invention will be fully understood upon reference to the accompanying drawings, in which—

Figure 1 is a view showing my present invention interposed between a well-known type of time controlling mechanism and an automatic unlocking mechanism, which latter is employed simply as illustrative of locking parts to be controlled. Figs. 2, 3, and 4 are views of that part of the mechanism in which my present invention resides, Fig. 2 being a plan of the opposite side to that shown in Fig. 1, and Figs. 3 and 4 being opposite edge views thereof.

Referring to Fig. 1, 1 represents the setting-hub of an unlocking-power employed for withdrawing the bolts of a safe or vault, said hub being provided with an arm 2, which when the bolts are cast is engaged by a system of peculiarly-formed levers 3, which so reduces the power of rotation of the unlocking-hub 1 that it may readily be held in check by a latch 4. To permit retraction of the boltwork, it is simply necessary to trip the latch 4, and to bring said latch under the control of the time mechanism it is pivoted, as at

5, and has an end 6 projecting into the casing of the time unlocking mechanism.

Heretofore it has been the practice to trip the latch 4 by means of a reciprocating yoke 7, connecting the ends of primary levers 8, 9, which are fulcrumed, respectively, at 10 and 11 and carry at their inner ends a bar 12, which extends across the time-movements A B C in such position that it will be moved by the stud 13 of either of them; but this plan of operation is open to the objections hereinbefore recited. According to my present invention I employ an auxiliary automatic unlocking mechanism comprising a tripping-disk 14, which is rotated by a spring 15 or springs 15 16 so as to bring a peripheral horn 17 into engagement with the end 6 of the latch 5 to trip the latter. The tripping-disk 14 is held normally in opposition to its springs by means of a detent 18, which may be, for convenience, mounted upon the same pivot 10 as the lever 8, though free to move independently of said lever, and provided with a spring 19, which holds it into engagement with a tooth 20 on the periphery of the disk. (Shown by dotted lines in Fig. 1 and full lines in Fig. 2.) By this means the tripping-disk can be held ineffective as to the latch 4 until the detent 18 is released, and when said detent is released the disk will be moved instantaneously by its spring and cause the tripping of the latch; but until the disengagement of the detent it is impracticable to move the parts by jarring or shock. Moreover, the engaging end of the latch 4 and the engaging face of the tooth 20 and detent 18 may be so formed that shock or jar will tend to throw them into rather than out of engagement. As seen in Fig. 2, the primary levers 8 and 9 are provided with springs 21 and 22, which throw the levers and the parts carried by them in the direction opposite to that by which they are moved by the time-movements. To disengage the detent 18 at the proper time, one of the primary levers—for instance, the lever 9—carries a rigidly-attached releasing-arm 23, which forces the detent outward when the levers are rocked by the time-movements; but the levers 8 and 9, with the parts carried by them, are substantially balanced on their fulcrums or overbalanced in a position to hold the releasing-arm out of contact with detent 18, and hence it is impracticable to move them by jar or shock. As a safeguard against failure of the automatic tripping-disk 14 the yoke 7 is made to effect the tripping of the latch 4 by a continued movement in the direction in which it moves to release the detent 18. This is conveniently arranged by having the yoke 7 provided with a boss 24, which engages a stud 25 on the side of the disk 14, as shown by dotted lines in Fig. 1 and by full lines in Fig. 2; but the boss 24 is normally out of contact with the stud 25 and does not come into contact with it until completion of the movement which releases the detent 18, which would

only take place after the expiration of the time for operation of the automatic unlocking through the disk 14.

The disk 14 may be set up in position by a convenient means. I have shown for this purpose a push-rod 26.

I am aware of United States Letters Patent No. 186,177, granted January 9, 1877, to Emory Stockwell, wherein it has been proposed to employ a spring-actuated disk for the purpose of releasing the unlocking mechanism, which disk is held normally inactive until released by an abnormal condition of the time-movements; but this is not the equivalent of my invention, for the arrangement was in the nature of a supplementary unlocking mechanism which was brought into play only after the failure of the normal releasing mechanism. My present invention is substantially different from this, in that the automatic tripping-disk is the normal unlocking mechanism, which serves every purpose under ordinary conditions and secures the several advantages already referred to at length, which were not attained by the arrangement disclosed in the Stockwell patent. The auxiliary automatic tripping-disk in my present invention is followed by a positively-moved supplementary or safety unlocking connection between the time-movements and the latch, and thus makes available all the advantages of the previously-used positive unlocking connection without the disadvantages thereof. A further advantage arising from the embodiment employed for illustrating my present invention is that the automatic tripping-disk is tripped by the same connections which subsequently move into a position to positively release the latch. A further distinction between the Stockwell patent referred to and my present invention is that the former employed a continuously-running time-lock for controlling the unlocking mechanism and which actuated the disk only in the event that the movement ran down contrary to the intended operation, whereas in my present invention I employ a movement which is set to run for a certain number of hours and releases the lock by the act of running down—that is to say, in my invention the automatic tripping-disk is a normally-operating automatic element released by the time-movement, followed by a supplementary or safety element positively moved by the time-movement, whereas the Stockwell patent employs a normally-operating unlocking connection positively controlled by the time-movement, followed by an automatically-operating auxiliary or safety element released only by an abnormal condition of the time-movement.

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

1. A time unlocking mechanism comprising a spring-controlled tripping-disk having a peripheral horn and a peripheral tooth, a

spring-detent normally in engagement with the peripheral tooth, and a primary spring-lever having a rigid releasing-arm adapted to disengage the detent from the tooth, the peripheral horn being normally out of contact with, and adapted to engage the latch of, an automatic unlocking mechanism; substantially as described.

2. A time unlocking mechanism comprising  
10 a spring-controlled tripping-disk having a peripheral horn and a peripheral tooth, a push-rod for setting the tripping-disk a spring-detent normally in engagement with the peripheral tooth, and a primary spring-lever  
15 having a rigid releasing-arm adapted to disengage the detent from the tooth, the peripheral horn being normally out of contact with, and adapted to engage the latch of, an automatic unlocking mechanism; substantially as  
20 described.

3. A time unlocking mechanism comprising a spring-controlled tripping-disk having a stud on its side and a peripheral tooth, primary spring-levers, an operating-bar carried on the inner ends of the primary spring-levers, a yoke having a boss, and carried on the lower  
25 ends of the primary spring-levers, a spring-detent normally in engagement with the peripheral tooth, and a rigid releasing-arm, secured to one of the spring-levers, and adapted to disengage the detent from the peripheral  
30 tooth; the boss being normally out of contact with, and adapted to engage the latch of, an automatic unlocking mechanism; substantially as described.

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Witnesses:

SCHUYLER MERRITT,  
W. C. FELL.