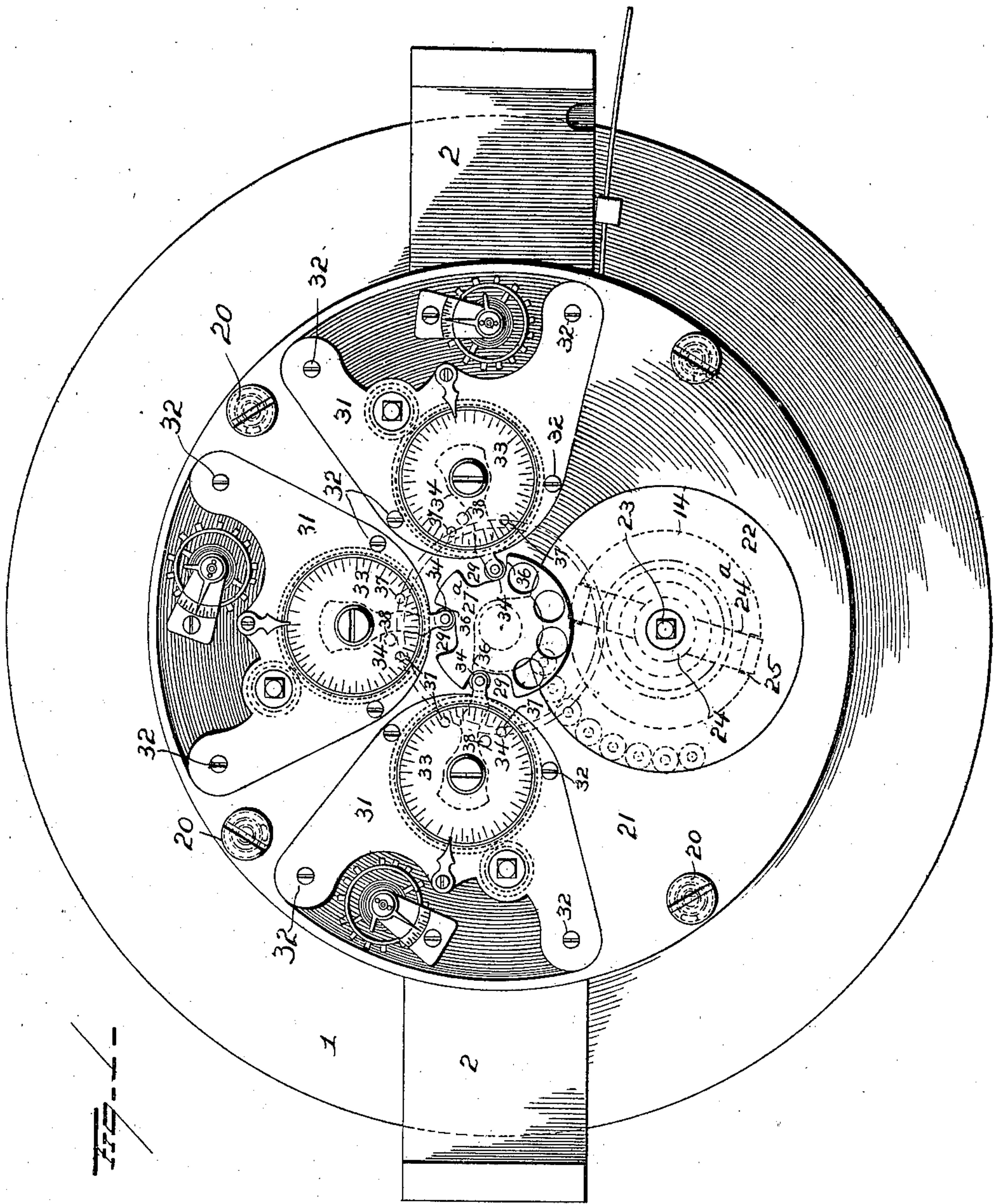


995,814.

W. H. TAYLOR.
TIME LOCK.
APPLICATION FILED JULY 14, 1908.

Patented June 20, 1911.
3 SHEETS—SHEET 1.



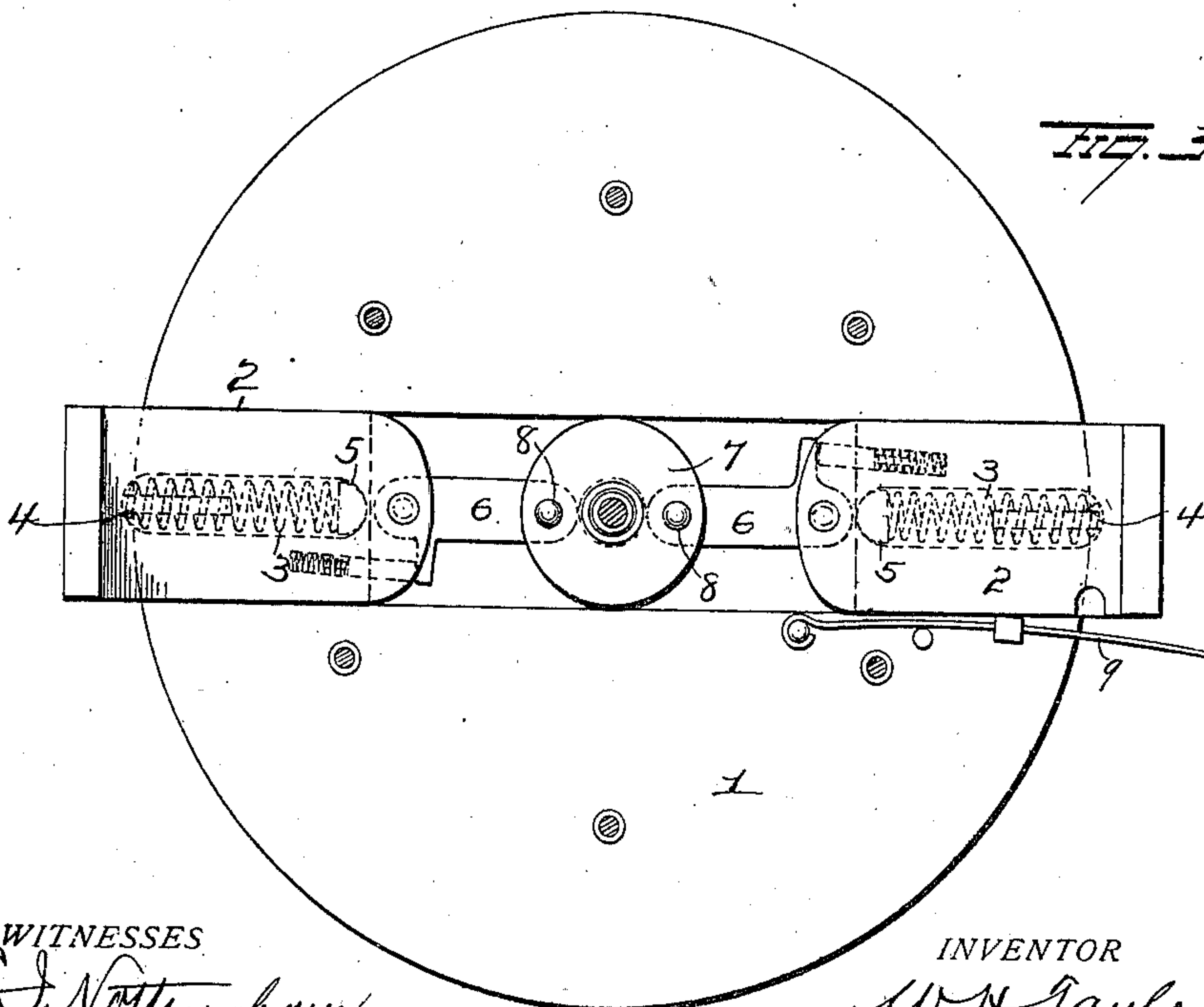
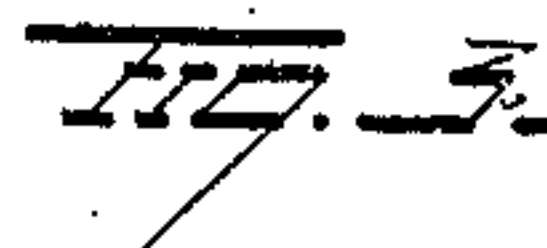
WITNESSES
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

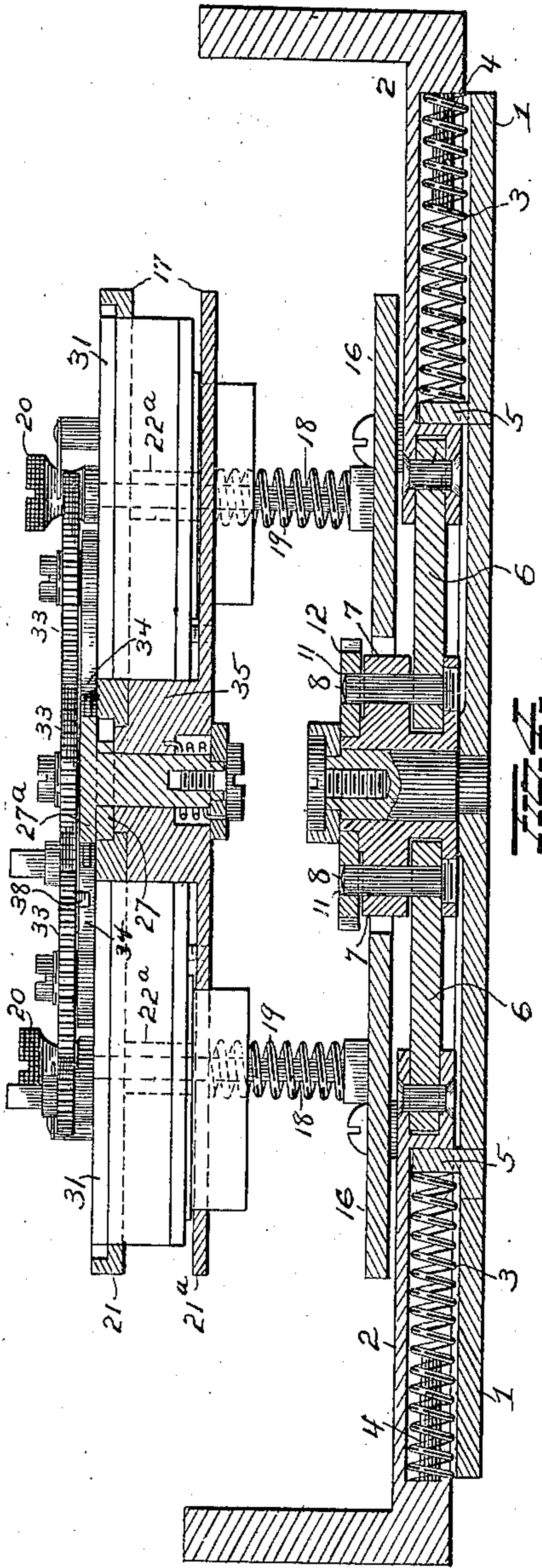


Fig. 5.

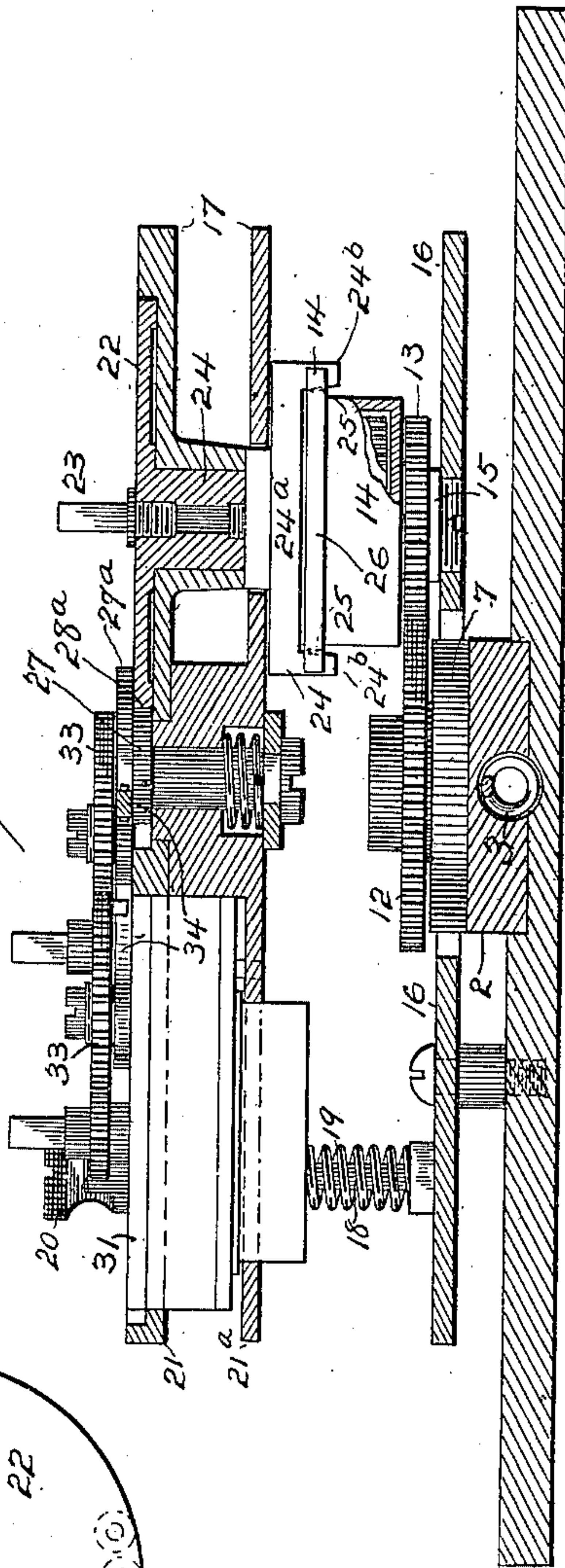
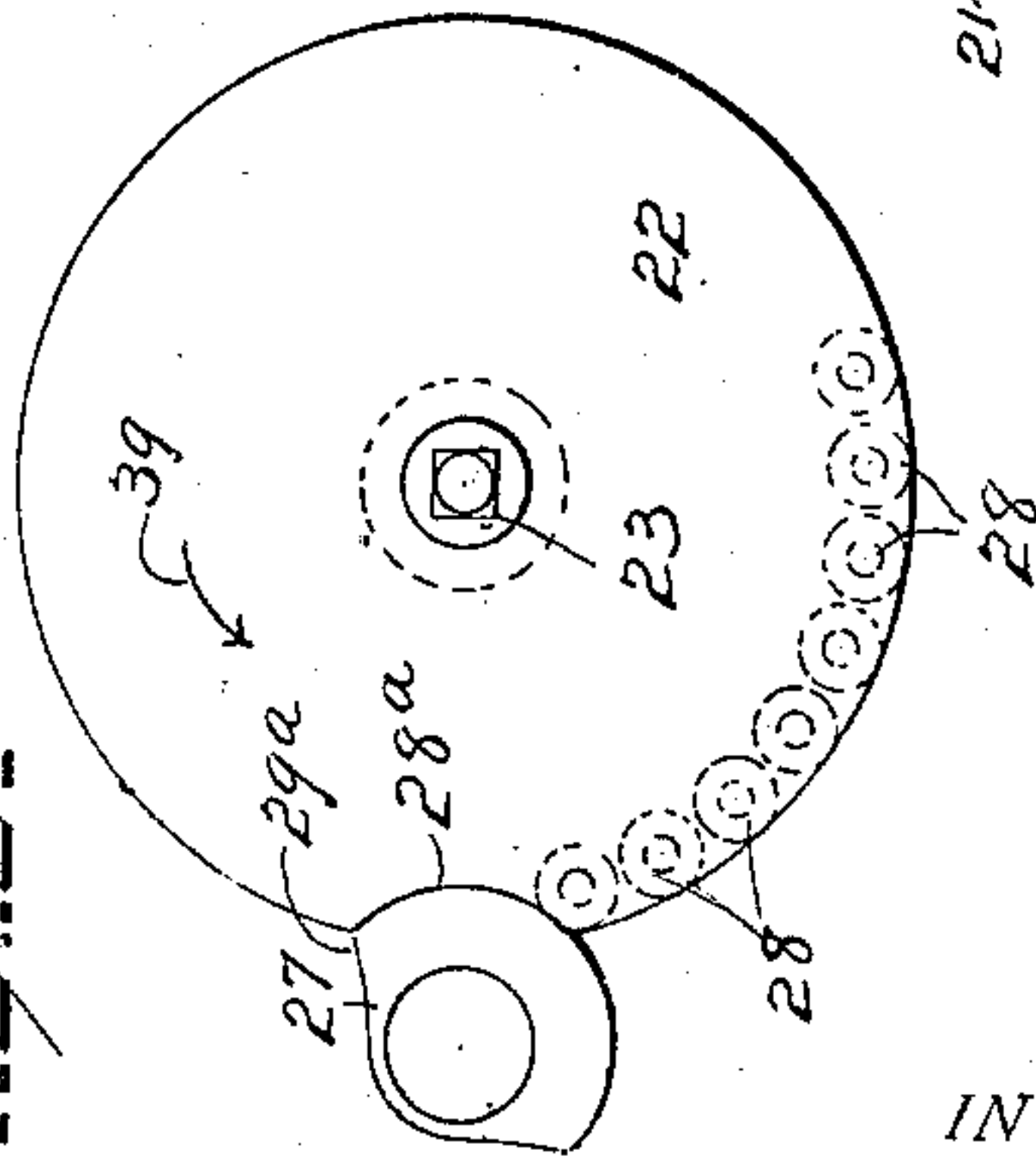


Fig. 6.



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UNITED STATES PATENT OFFICE.

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TIME-LOCK.

995,814.

Specification of Letters Patent. Patented June 20, 1911.

Application filed July 14, 1908. Serial No. 443,473.

To all whom it may concern:

Be it known that I, WARREN H. TAYLOR, of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Time-Locks; 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 timelocks, the object being to provide a lock wherein all the parts which actuate or control the releasing and retracting movements of the bolts, have rotary movements, thus practically insuring a construction, the parts of which cannot be jarred, by an explosion or other shock into unlocked positions.

A further object is to provide a time lock with a plurality of time movements, the several movements being independently operable and so connected that any one, or more than one can be removed without removing any other parts, or affecting the efficiency of the remaining movements, the parts being so constructed that the time movements may be replaced by an unskilled person.

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

In the accompanying drawings, Figure 1 is a view in elevation of my improved lock showing the bolts projected. Fig. 2 is a similar view with the two plates carrying the time movements, removed. Fig. 3 is a similar view with the movement plates and cushion plate removed showing the base or frame plate and bolts. Figs. 4 and 5 are views in transverse section of the lock and Fig. 6 is a view in elevation of the key actuated disk and its locking segment.

1 represents the base or frame plate which may if desired be a part of the door, but which is preferably circular in shape and forming a part of the lock. This plate is provided with grooves in which the bolts 2 rest and move, and when projected into locking position, rest with their ends in a plane beyond the edge of base or frame 1. Each bolt 2 is forced outwardly by a spring 3, one end of which bears against a shoulder 4 on the bolt, and the other end against a stud 5 on the base or frame 1, and each is

connected by a link 6 with the centrally located wheel 7 by pins 8. With this arrangement, the springs 3, tend to normally hold the bolts projected, and they are automatically retracted by the mechanism to be hereinafter described, and when retracted are so held by the trigger 9 which is operated to release the bolts.

The centrally located wheel 7 is provided with the diametrically disposed pins 8 which latter rest in the slots 11 in pinion 12. These slots are diametrically disposed on opposite sides of the axis of pinion 12, are concentric to said axis, and of a length to permit of the necessary movement of the pinion 12 independently of the bolts.

After the parts, including the holding disk 22, to be hereinafter referred to have been wound up or set, the bolts must be free to be moved to their locking position, while the pinion 12 remains at rest, and this is provided for by the slots 11 in pinion 12, and the pins 8 on wheel 7. As the bolts move to the locking position these pins move in the slots, the latter being of a length sufficient to permit the bolts to be fully projected. Pinion 12 meshes with pinion 13 secured to the drum 14, mounted on the stud 15 secured to the plate 16. This plate 16 is provided with a central opening in which the wheel 7 rests and moves, the pinion 12 resting in a plane in front of the plane of the outer face of plate 16. The drum 14 is connected to one end of a spring, the opposite end of which is connected to the stud 15, hence when the spring is under tension and the drum released by the time mechanism, the spring through pinions 13 and 12, and the links 6 operates to retract the bolts.

Secured to plate 16 is the cushioned frame 17 which latter carries the time movements. This frame is mounted on the threaded posts 18 secured to plate 16, and each post carries a coiled spring 19, against the ends of which the frame 17 rests, the latter being secured in place on the posts 18 by the nuts 20.

The frame 17 comprises two plates 21^a and 21, secured together by sleeves 22^a through which the posts 18 pass. The outer plate 21 is provided with a circular recessed seat in which the bolts holding disk 22 rest, and in which it turns. This disk 22 is provided centrally with a key stem 23 by which it is turned by the key employed for winding up

the time movements, and is also provided on its rear face with a hub 24 mounted in an opening in the plate 21 and provided in rear of said plate with the yoke 24^a, the two arms 24^b of which detachably rest in the slots 25 in the rim flange 26 of drum 14, hence when the parts are assembled, the disk 22 is coupled up to the spring actuated drum 14 so as to turn the same in a direction to put its spring under tension when the disk 22 is turned by the key.

The disk 22 is preferably provided on its edge which moves in contact with the catch 27, with a series of anti-friction rollers 28, the peripheries of which project slightly beyond the edge of the disk so as to make contact with the segment and with the side wall of its seat, and thus reduce the friction incidental to the turning movements of the disk. The disk is provided at its periphery with crescent shaped cut away section 28^a adapted to receive a portion of the catch 27, which, when in one position overlaps the disk seat and engages the latter. The catch 27 is also disk shaped and when turned to present its cut away portion adjacent to disk 22 permits the latter to turn on its axis. The catch is seated in a recessed seat formed in the outer face of plate 21, and is provided on its outer face with an actuating disk 27^a having a series of recesses 29 corresponding in number and position to the several time movements of the lock.

Each time movement which may be of any approved construction, is carried by a triangular frame 31 set into a slot in the outer plate 21 and secured to the inner plate 21^a by screws 32, the dials 33 of each movement being in front of and slightly in advance of the movements carrying frames and also the plate 21.

Pivotaly mounted on each time movement frame 31, is a lazy arm 34 the free end of which rests within its recess 29 in the plate 27^a. In the present instance, I have shown three time movements, and three lazy arms, each of the latter resting within a recess 29 in the plate 27^a. This actuating plate is provided with a rearwardly projecting hub inclosed within a casing 35 intermediate the plates 21 and 21^a the said hub being engaged by a spring which tends to hold the shoulders 36 of the recesses in actuating plate against the lazy arms 34, and the edge of the catch 27 within the cut away portion 28^a in the disk 22. The lazy arms 34 are limited in their movements by the pins 37, and each dial 33 is provided with a pin 38 adapted to engage its lazy arm 34 and move it against the action of the spring controlling the catch 27 and thus turn the latter in a direction to bring its cut away portion 29^a adjacent to the concave edge 28^a of the disk 22 thus releasing the latter and permitting it to be turned by its spring.

This catch operates as a lock for the disk 22, hence when the spring for retracting the bolts 2 is under tension, it is so held by the engagement of the catch 27 with the disk 22, and when the catch is turned by one or more of the time movements, it releases the disk 22 thus permitting the bolt retracting spring within drum 14, to retract the bolts through the gearing 12 and 13 and links 6.

In the operation of the lock any one of the time movements has ample power, under normal condition, to move its lazy arm 34 and thus shift the catch 27 in a direction to release the disk 22, and when the latter has been released the spring in drum 14 then exerts its power through the gearing before described to retract the bolts 2. I use a plurality of time movements, so that in event of an accident or stoppage to one, or even two of the time movements, there will still be one or more to release the bolts at the proper time. Ordinarily all the time movements are set up to release the bolt at a predetermined time, hence all assist in shifting the catch 27 and it is only when one or more of the movements is not working, that the work is thrown on the others or other one.

In setting up the lock, after the several time movements have been wound up, the key is placed on the key stem 23 on disk 22, and the latter turned in the direction of the arrow 39. When the cut away portion 28^a of the disk reaches the catch 27, the latter will be turned by its spring, thus causing a shoulder of the catch 27 to enter the cut away portion in the disk 22, and hold the latter against retrograde movement. The turning of the disk 22 puts its spring in the drum 14 under tension sufficient to retract the bolts 2. By now closing the door and tripping the trigger 9, the bolts 2 will be projected and lock the door. The revolution of the dials 33 carry the pins 38 toward the lazy arms 34, and as the time approaches for the bolts to be retracted, shift the lazy arms, and the catch 27 until the latter is clear of the recess in the disk 22, thus permitting the spring in drum 14 to act through the gearing 12 and 13 and links 6 and retract the bolts.

With this construction all the moving parts except the bolts have a rotary motion, and being circular or nearly so are practically balanced, which prevents the parts from being operated by jarring or shocks.

Another feature which is of importance, is the fact that any one of the time movements may be removed from the cushion frame 17, by simply taking out the screws 32 which secure it in place, without removing any other parts or affecting their efficiency, and it may be again secured in place by any one, as the lazy arm has such a limited movement between the pins 37 that

when the movement is put in place its lazy arm will fall naturally into its recess 29 in the segment.

It is evident that many slight changes might be resorted to in the relative arrangement of parts 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 and arrangement of parts shown and described but consider myself at liberty to make such slight changes and alterations as fairly fall within the spirit and scope of my invention.

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

1. In a lock the combination with a sliding bolt and means constantly tending to project the bolt, a retracting spring, and gearing intermediate the spring and bolt and operatively connected with both, the connection between the bolt and gearing being such that the bolt will be free to move from its retracted to its projected position after the retracting spring has been put under tension, of a rotatable disk operatively connected with the retracting spring and adapted when rotated by a key to put said spring under tension, a rotary device engaging said disk for holding the latter against movement and a time movement for imparting a rotary movement to said rotary device in a direction to disengage the same from the rotatable disk.

2. In a time lock, the combination with a sliding bolt, yielding means tending to hold said bolt projected, a retracting spring and means intermediate the retracting spring and bolt for retracting the bolt, of a rotatable disk operatively connected with the retracting spring and having an arc shaped recess in its edge, a rotatable device having an edge formed in the arc of a circle concentric with the arc shaped recess in the disk, and adapted when within said recess to hold the retracting spring under tension, and time mechanism for actuating said rotatable device.

3. In a time lock, the combination with a bolt, means for projecting same, a retracting spring and gearing intermediate the spring and bolt and operatively connecting both, the said gearing being constructed to permit the bolt to be projected after the re-

tracting spring has been put under tension, of a rotary disk operatively connected with the spring and provided with a recess in its periphery, a rotary device having a member adapted to enter said recess and hold the disk against rotation and a time movement for imparting movement to said rotary device.

4. In a time lock, the combination with a bolt, bolt shifting means, a retracting spring and gearing intermediate the spring and bolt shifting means for actuating the latter, of a rotatable disk operatively connected with the retracting spring and adapted when rotated by a key to put said spring under tension, a rotary device engaging said disk for holding the latter against movement, and a series of time movements each independent of the other, and each adapted to actuate said rotary holding device, whereby the retracting spring will be released at a predetermined time by one or more of the time movements.

5. The combination with a bolt means for projecting same, a bolt retracting spring and gearing operatively connecting the spring and bolt, the said gearing being constructed to permit the bolt to be projected after the retracting spring has been put under tension, of a key rotated disk operatively connected with the retracting spring for putting same under tension, rotary means for holding the disk against movement, and a time movement for actuating said disk rotary means to release the disk.

6. The combination with a bolt and means for projecting same, of a spring for retracting the bolt, devices connecting said spring and bolt, a rotary disk operatively connected with the retracting spring, a rotary member for locking the disk against movement when the retracting spring is under tension, a pivoted lazy arm acting directly against the rotary locking member for moving the rotary locking member out of the path of the disk and a time movement for actuating the pivoted arm.

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

WARREN H. TAYLOR.

Witnesses:

CHARLES E. VAIL,
F. M. FAUCETT.