

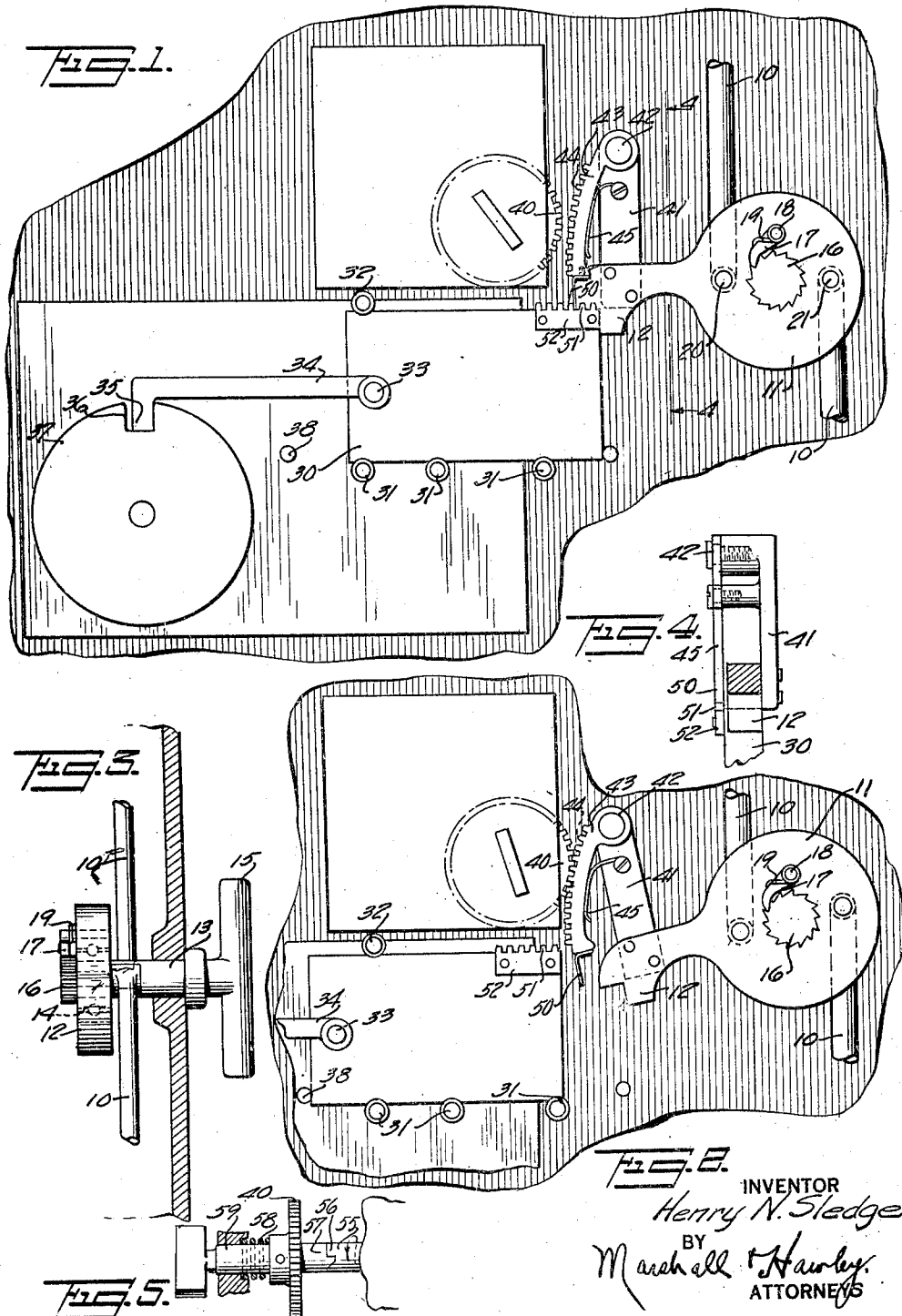
Feb. 9, 1926.

1,572,449

H. N. SLEDGE

LOCK MECHANISM

Filed July 6, 1925



INVENTOR
Henry N. Sledge
BY
Marshall Hawley
ATTORNEYS

UNITED STATES PATENT OFFICE.

HENRY N. SLEDGE, OF JERSEY CITY, NEW JERSEY.

LOCK MECHANISM.

Application filed July 6, 1925. Serial No. 41,483.

To all whom it may concern:

Be it known that I, HENRY N. SLEDGE, a citizen of the United States, and a resident of Jersey City, county of Hudson, and State of New Jersey, United States of America, have invented certain new and useful Improvements in Lock Mechanisms, of which the following is a specification.

This invention relates to locks.

At the present time when holdups are prevalent, bandits will enter a store and compel the clerk or cashier to operate the combination of a safe lock and open the safe. In such holdups, speed is essential since the bandits obviously want to make a quick getaway.

This invention has for its salient object to provide a lock so constructed and arranged that a considerable period of time must elapse after the combination of a lock has been worked before the lock bolts can be withdrawn and the safe door or other door can be opened.

Another object of the invention is to provide a lock so constructed and arranged that the manual operation of a combination lock or equivalent mechanism will set in operation slow moving power driven means so constructed and arranged as to release the locking bolt after a period of time has elapsed.

Another object of the invention is to provide lock mechanism combining a manually operable device with slow moving power driven means for controlling and withdrawing a locking bolt or detent.

Another object of the invention is to provide lock mechanism combining a manually operable device and power driven mechanism within the control of the operator but set in operation by the manually operated device, said power driven means completing the release of the locking bolt.

Another object of the invention is to provide lock mechanism comprising a locking bolt and detent with power driven means set in operation by the withdrawal of the detent for releasing the locking bolts from locking position.

Further objects of the invention will appear from the following specification taken in connection with the drawings, which form a part of this application, and in which

Fig. 1 is an elevational view of mechanism constructed in accordance with the invention, the parts being shown in locking position;

Fig. 2 is an elevational view similar to Fig. 1, the parts being broken away and the detent being withdrawn and the locking bolts being shown as partially released and under operation by the power driven mechanism;

Fig. 3 is a sectional elevation showing the connection between the handle for throwing the locking bolts into locking position and the control disk or dog, which is operated in one direction by the handle and in the opposite direction by the power driven mechanism;

Fig. 4 is a sectional elevation showing the details of the connecting means between the power driven mechanism and the dog or arm which controls the locking bolts; and

Fig. 5 is a detail section showing the connection between the power shaft and gear shaft.

The invention briefly described consists of a lock comprising locking bolts, a dog or disk for throwing said bolts into locking position, a detent arranged to prevent the operation of said dog to withdraw the bolts, power driven means and means under the control of the detent for connecting the power driven means to the dog when the detent is withdrawn whereby the locking bolts will be released from locking position. The power driven means may be operated by any suitable source of power and is operated slowly and gradually so that a considerable period of time must elapse during the withdrawal of the locking bolts from locking position. Further details of the invention will appear from the following description.

Locking bolts.

In the embodiment of the invention illustrated, the lock mechanism comprises locking bolts 10 which may be carried by a door or other structure and are adapted to engage the casing and prevent the opening of the door. The bolts 10 are carried by a disk 11 having a laterally extending arm 12, the disk and arm being known in the art as a dog.

The disk 11 is rotatably mounted on a

shaft or spindle 13, roller bearings 14 preferably being interposed between the spindle and the disk so that the disk can rotate freely on the spindle. The outer end of the spindle has a handle 15 secured thereto and the inner end has formed thereon or secured thereto, ratchet teeth 16 which are engaged by a pawl 17 pivoted at 18 to the disk and resiliently forced into contact with the ratchet by means of the spring 19.

The locking bolts are pivoted at 20 and 21 to the disk at points laterally offset from the center of the disk and when the handle 15 is rotated in a clockwise direction, the ratchet teeth of the ratchet 16 and the pawl 17 will cause the disk to be rotated in a direction to throw the bolts into locking position.

Detent mechanism.

A detent 30 is slidably mounted on rollers 31 and is guided at its upper edge by a roller 32. The detent has pivoted thereon at 33, an arm 34 which has an offset end 35 adapted to enter peripheral notches 36 in a series of tumblers 37 (one of which is shown) when the proper combination has been worked and the notches of the various tumblers are disposed in alinement with each other. When the end 35 of the arm 34 drops into the notches, the tumbler disks can be rotated in an anti-clockwise direction (viewing Fig. 1) thereby moving the detent 30 to the left against a stop 38.

Power driven means and connections for operating dog.

A gear wheel 40 is mounted above the detent 30 and it is contemplated that the gear wheel will be rotated continuously from a suitable source of power and at a slow rate of speed.

The arm 12 has secured thereto and extending upwardly therefrom an arm 41 to which there is pivoted at 42 a curved rack 43 having teeth 44. A spring 45 is carried by the arm 41 and tends to force the rack 43 in a clockwise direction about its pivot. The rack 43 is so positioned that when the rack is swung to the left or in a clockwise direction, the teeth 44 thereof will mesh with the teeth of the gear wheel 40.

The rack 43 has secured to its lower end a downwardly extending strip 50 preferably resilient and adapted to extend between the teeth 51 of a rack 52 mounted on the upper right hand end of the detent 30.

When the detent 30 is withdrawn or moved to the left, the rack 43 will be moved about its pivot 42 by reason of the engagement of the strip 50 with the rack teeth 51, causing the teeth 44 of the rack to move into mesh with the teeth of the gear 40. The gear 40 will then slowly and gradually swing the dog or arm 12 in an anti-clock-

wise direction, thus gradually withdrawing the locking bolts 10 from locking position and releasing the lock.

In order to permit the resetting of the lock or the throwing of the locking bolts into locking position, the gear 40 is connected to its power driven shaft 55 by means of a clutch 56, 57, one of these clutch members 56 being connected to the shaft 55 and the other clutch member being resiliently pressed into engagement with the member 56 by means of a spring 58. The clutch member 57 is carried by a shaft 59, slidably mounted in the door.

Operation.

When the door or other device on which the lock is mounted is swung to closed position, the handle 15 will be rotated in a clockwise direction (viewing the front of the door) and the locking bolts 10 will be thrown into locking position by reason of the pawl and ratchet connection between the spindle 13 and the disk 11. The detent 30 will then be moved to the right, preventing any operation of the bolt releasing means and moving the rack 43 out of mesh with the gear 40.

When the door is to be unlocked, the detent 30 will be withdrawn by the tumblers, causing the rack 43 to be moved into mesh with the gear 40. The gear 40 will then slowly and gradually withdraw the locking bolts and it will be obvious that no manipulation of the handle 15 can cause the release of the locking bolts or hasten the action of the power driven mechanism.

Although one specific embodiment of the invention has been particularly shown and described, it will be understood that the invention is capable of modification and that changes in the construction and in the arrangement of the various cooperating parts may be made without departing from the spirit or scope of the invention, as expressed in the following claims.

What I claim is:

1. Lock mechanism comprising a locking bolt, means for moving said bolt into and out of locking position, a detent for preventing the movement of said bolt from locking position, means for withdrawing said detent and power driven mechanism under the control of said detent for operating said bolt moving means to move the bolt to unlocking position.

2. Lock mechanism comprising locking elements movable to locking and unlocking positions, a detent for preventing the movement of said elements to unlocking position, power driven means for moving the locking elements to unlocking position and means controlled by said detent for operatively connecting said power driven means to said locking elements.

3. Lock mechanism comprising locking bolts movable to locking and unlocking positions, a detent for preventing the movement of said bolts to unlocking position, a
5 power driven member, a member operatively connected to said bolts and adapted to operatively engage said power driven member and coacting means on said detent and said second member for moving said second
10 member into operative engagement with said power driven member as said detent is moved to bolt releasing position.

4. Lock mechanism comprising locking bolts movable to locking and unlocking positions, a detent for preventing the movement of said bolts to unlocking position, a
15 power driven gear, a rack operatively connected to said bolts and adapted to operatively engage said power driven gear and coacting means on said detent and said rack
20 for moving said rack into operative engagement with said power driven gear as the detent is moved to bolt releasing position.

5. Lock mechanism comprising locking bolts movable to locking and unlocking positions, manually operable means for moving the bolts to locking position, power
25 driven means for moving the bolts to unlocking position and manually operable means including a detent for operatively connecting said power driven means to said bolts.

6. Lock mechanism comprising locking bolts movable to locking and unlocking positions, manually operable means for moving
35 the bolts to locking position, power driven means for moving the bolts to unlocking position, a detent for preventing the movement of said bolts to unlocking position and means carried by the detent adapted to operatively connect said power driven means
40 to the bolts as the detent is moved to bolt releasing position.

In witness whereof, I have hereunto set my hand this 30th day of June, 1925.

HENRY N. SLEDGE.