

No. 755,908.

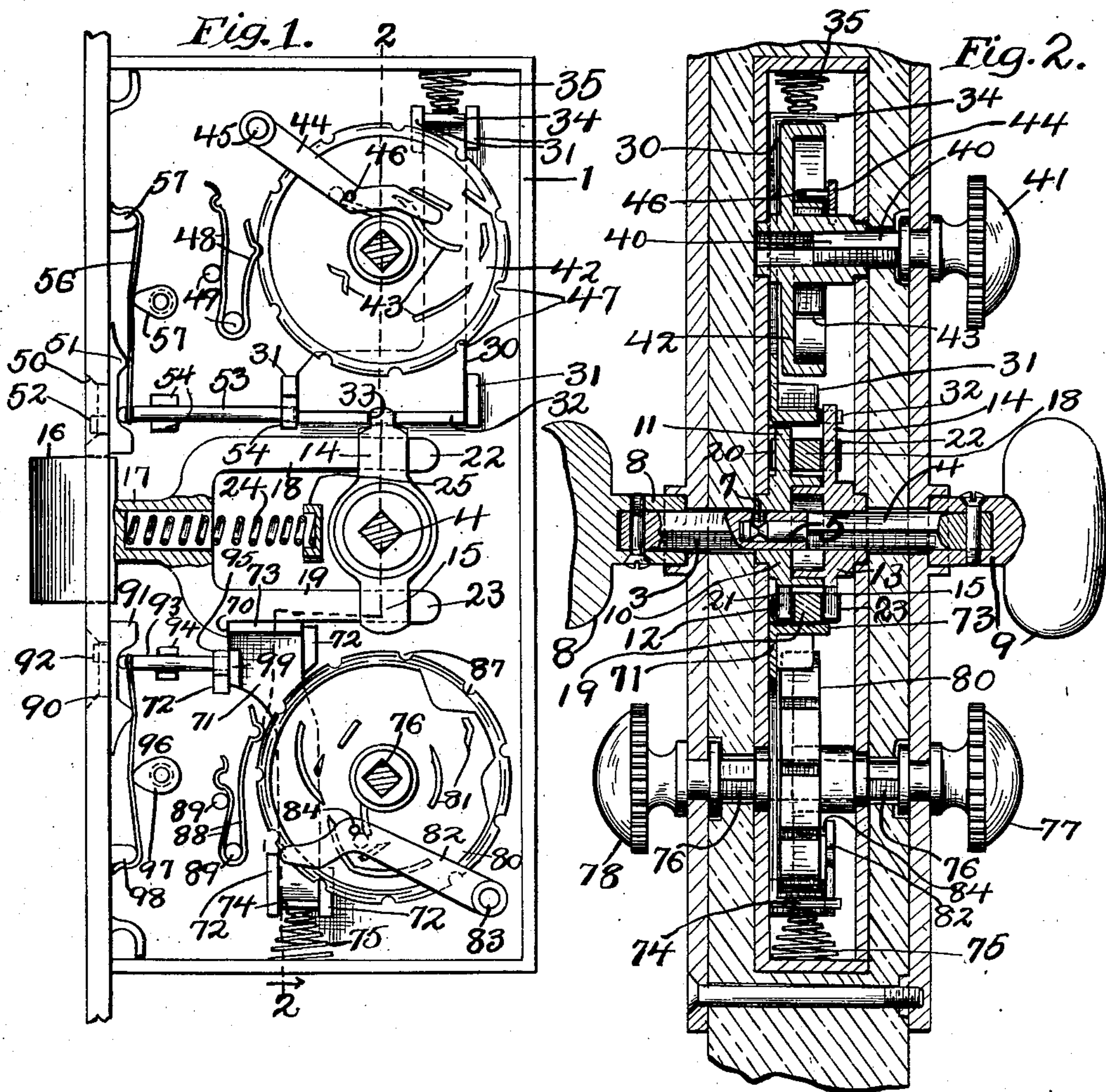
PATENTED MAR. 29, 1904.

J. B. MILLER.
LOCK.

APPLICATION FILED DEC. 4, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

Daniel E. Daly.
Victor C. Lynch.

INVENTOR

James B. Miller
BY
Lynch & Dorr
ATTORNEYS.

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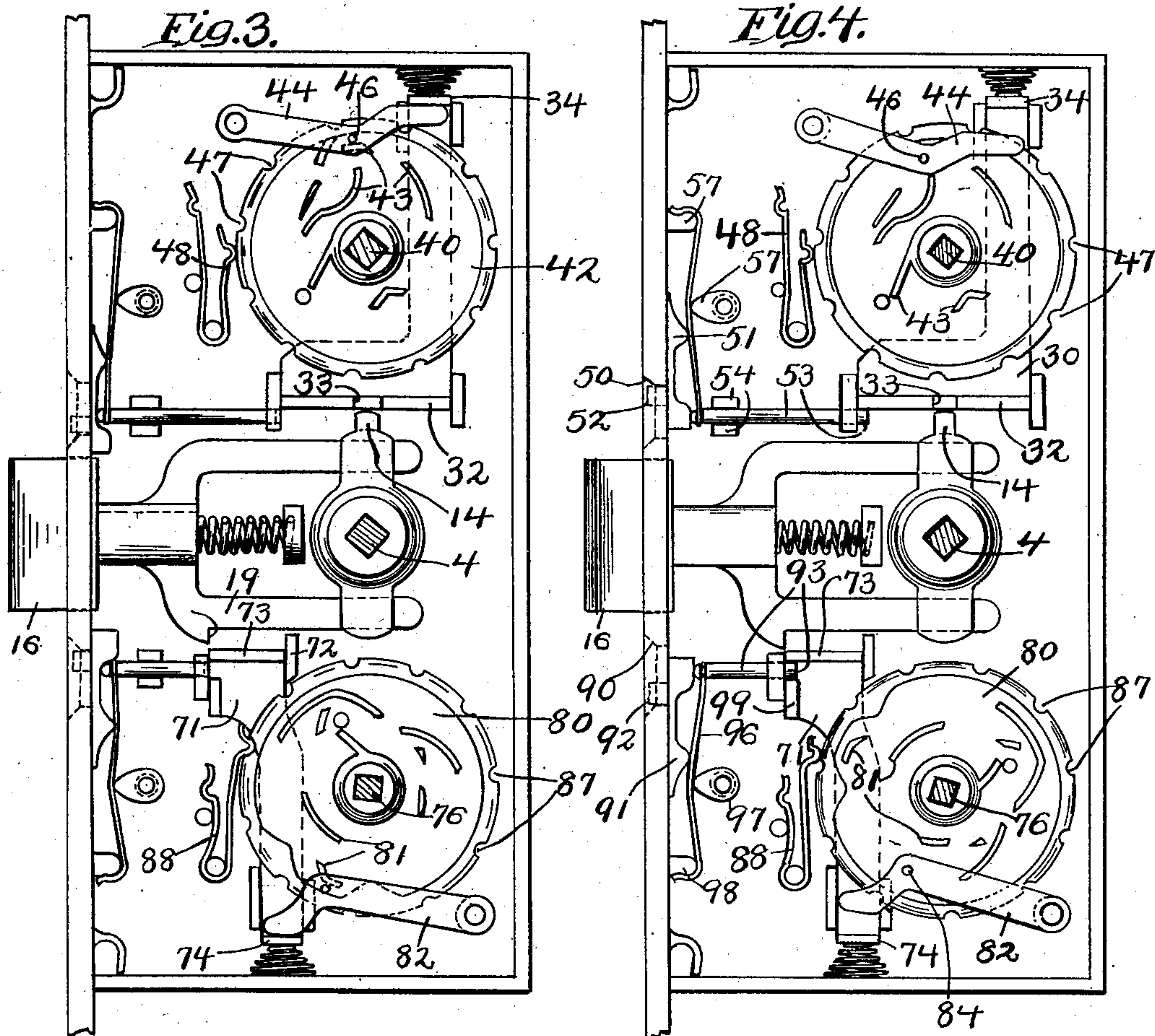
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UNITED STATES PATENT OFFICE.

JAMES B. MILLER, OF KENT, OHIO.

LOCK.

SPECIFICATION forming part of Letters Patent No. 755,908, dated March 29, 1904.

Application filed December 4, 1903. Serial No. 183,816. (No model.)

To all whom it may concern:

Be it known that I, JAMES B. MILLER, a citizen of the United States of America, residing at Kent, in the county of Portage and State of Ohio, have invented certain new and useful Improvements in Locks; and I 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 pertains to make and use the same.

This invention relates to improvements in locks, and especially to the class of locks termed "keyless" or "combination" locks.

An object of this invention is to provide a lock of this character which will be strong, simple in construction, and comprise a small number of parts.

Another object of this invention is to provide a spring-latch lock and dead-bolt all in one.

A further object of this invention is to provide independent combination mechanism for controlling the latch-lock and the dead-bolt, so that when both combinations are set in order to operate the lock it will be necessary to work two combinations from the outside or one combination from the inside.

With these objects in view my invention consists in providing two independent tumblers, one of which is arranged to lock the outer spindle and the other is arranged to engage directly with the bolt, independent levers for operating the said tumblers, separate combinations for operating the said levers, and means for holding either or both of the tumblers in their inoperative positions.

My invention further consists in the features of construction and combination of parts, as illustrated in the drawings, described in the specification, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view of the lock with the cover removed, showing the arrangement of mechanism with both tumblers in their operative positions. Fig. 2 is a section on line 2 2, Fig. 1. Fig. 3 is a view of the lock with the cover removed, showing the arrangement of mechanism with both combinations worked so that the bolt can be operated from the outer side of the door. Fig. 4 is a similar view showing the

lock serving as a latch, both tumblers being held out of operation by means of stops.

In the accompanying drawings, 1 represents the casing, which holds the lock mechanism. The spindles 3 and 4, which operate the bolt, are of the usual construction and are secured together by means of a neck portion 5, which is formed integral with the spindle 4 and enters a socket 6, formed in the spindle 3 and is held in the socket by means of a screw 7, so that it is free to turn. This arrangement allows one spindle to be turned while the other spindle remains stationary. The respective spindles are provided with the usual knobs 8 and 9. On the spindle 3, which carries the inner door-knob, is arranged a hub which is provided with a square bore, so that it will turn with the said spindle 3. The hub 10 is provided with two arms 11 and 12, preferably of the same length. On the spindle 4, which carries the outer door-knob, is mounted a hub 13, which is likewise provided with arms 14 and 15, and the arm 14 is formed longer than the arm 11 on the hub 10.

The bolt 16 has a hollow shank portion 17, which is provided with arms 18 and 19, arranged to straddle the spindles. At the end of said arms 18 and 19 at each side thereof are formed lugs 20, 21, 22, and 23, respectively. One end of a coil-spring 24 is arranged in the hollow shank 17 and the other end abuts against a lug 25 formed on the casing, so as to normally hold it in its outer position. When the knob 8 on the inside of the door is turned, the arm 11 on the hub 10 will engage with the lug 20, or the arm 12 will engage with the lug 22, according to the direction in which the knob is turned, and the bolt will be pulled back in the casing against the action of the spring 24. Also when the knob 9 on the outside of the door is turned the arm 14 on the hub 13 will come in contact with the lug 22, or the arm 15 will come in contact with the lug 23, thus drawing the bolt back in the casing against the action of the spring 24. Above the bolt is arranged the tumbler 30, which slides vertically in a guideway formed by the lugs 31, formed integral with the casing. The tumbler 30 is provided with

a flange 32, in which is formed a notch 33, arranged to receive the end of the arm 14, when the tumbler is in its lowest position, thereby preventing any movement of the said arm 14, and thereby preventing the outer door-knob from being turned. On the upper end of the tumbler 30 is formed a flange 34, and between the flange 34 and the side of the casing is arranged a coil-spring 35, so as to normally hold the tumbler in its lowest position.

Above the lock-spindle is journaled the combination-spindle 40, which is provided on the outside of the door with a knob 41. On the combination-spindle is mounted the combination-disk 42, so as to turn therewith. On the face of the disk 42 are arranged a series of cams or ridges 43. A lever 44 for lifting the tumbler 30 is pivoted at one end on a lug 45 in the upper part of the casing, and the other end is arranged to come into contact with the flange 34 of the tumbler. A peg 46 is secured on the lever 44 and extends in toward the face of the disk 42, so as to come into contact with the ridges 43. The ridges are so arranged that when the combination-disk is turned back and forth through a whole or part of a revolution a number of times, according to a predetermined plan, the peg 46 will travel from ridge to ridge, constantly moving farther from the center of the disk, and the free end of the lever 44 is raised, which in turn lifts the tumbler 30 against the spring 35 and away from the arm 14, so that the bolt can be operated from the outer side of the door. Around the perimeter of the combination-disk are formed notches 47, and at the side of the combination-disk is arranged a spring 48, which is supported by lugs 49, formed integral with the casing. One end of the spring 48 is held in contact with the perimeter of the combination-disk, and when the combination-disk is turned the end of the spring passing over the notches 47 indicates both to the sense of hearing and touch what portion of a revolution the combination-disk has been turned through.

In the side of the casing above the bolt is formed an opening 50, and within the casing a cam-faced block 51 is arranged to travel across the said opening. A lug 52 is formed on the block 51, and it extends into the opening 50, by means of which the block 51 can be moved up or down. A bar 53 is slidably supported in lugs 54 and 55, formed integral with the casing. A flat spring 56 is supported at one end between lugs 57 and 58, and at its other end it engages with the bar 53. This spring 56 serves both to hold the block 51 in position and to hold the end of the bar 53 against the cam-face of the block 51. The object of this arrangement is to hold the tumbler 30 out of engagement with the arm 14, so that the lock can be used simply as a latch, and to effect this result the combination is first

worked lifting the tumbler 30, and before the bolt 16 is moved the lug 52 is shoved up in the opening 50, which carries up the block 51, and the block in turn moves in the bar 53 until the end thereof comes under the tumbler 30, locking it in its upper position.

On the arm 18 of the bolt 16 is formed a lug or projection 70. Below the bolt 16 is arranged a tumbler 71 in a guideway formed by lugs 72. On the tumbler 71 is arranged a flange 73, and when the tumbler is in its operative position the flange 73 will come into contact with the lug 70 on the bolt 16 and prevent the bolt 16 being drawn back. A flange 74 is formed on the lower end of the tumbler, and between this flange and the casing is arranged a spring 75. The mechanism for operating the tumbler 71 is similar to the mechanism for operating the first-mentioned tumbler 30, and comprises a combination-spindle 76, which extends through from side to side of the door, and is provided at each side of the door with a knob 77 and 78, respectively. On the combination-spindle 76 is mounted the combination-disk 80, which is provided with a series of cams or ridges 81. A lever 82 for pulling down the tumbler 71 is pivoted on a pin 83 and is provided with a peg 84, arranged to engage with the ridges on the face of the disk 80. The ridges are so arranged so that when the combination-disk is turned back and forth through a whole or part of a revolution a number of times, according to a predetermined plan, the peg 84 will travel from ridge to ridge, constantly moving farther from the center of the disk, and the free end of the lever 82 is depressed, which in turn pulls down the tumbler 71 against the action of the spring 75 and away from the lug 70 on the arm 18 of the bolt 16. Around the perimeter of the combination-disk 80 are formed notches 87, and at the side of the combination-disk is arranged a spring 88, which is supported on lugs 89 formed integral with the casing. One end of the spring 88 is held in contact with the perimeter of the combination-disk 80.

In the side of the casing just below the bolt 16 is formed an opening 90. Within the casing a cam-faced block 91 is arranged to travel across the said opening 90, and a lug 92 is formed on said block 91 and extends into said opening 90. A bar 93 is slidably supported in lugs 94 and 95, formed integral with the casing. A flat spring 96 is supported between lugs 97 and 98, and its other end is arranged to engage with the bar 93, so as to hold one end of said bar against the said block 91. The object of the bar 93 is to hold the tumbler 71 out of engagement with the lug 70 on the arm 18. When it is desired to hold the tumbler 71 out of engagement with the said lug 70, the combination is first worked drawing down the tumbler, and the lug 92 is then moved down in the opening 90, which

carries down the block 91, which in turn moves in the bar 93 until the end thereof engages with a small lug 99, formed on the tumbler 71, which prevents the said tumbler from moving up and again engaging with the lug 71.

What I claim is—

1. A combination-lock comprising a casing, inner and outer bolt-operating spindles, means for preventing the outer spindle from being turned, a combination-disk arranged to operate said means, means for forming a dead-bolt, a second combination-disk arranged to operate said means for forming the dead-bolt and means for preventing the operation of said first-mentioned means so that the lock can be operated from either side without working the combination, substantially as described and for the purpose set forth.

2. A combination-lock comprising a casing, inner and outer bolt-operating spindles, arms mounted on the respective spindles, a bolt mounted in said casing and arranged to be engaged by the arms on the said spindles, a tumbler arranged above the said bolt for locking the arm on the outer spindle, a combination-disk, a lever arranged to be operated by said combination-disk so as to lift the said tumbler, a tumbler arranged below the said bolt and adapted to engage a lug formed on the said bolt, a combination-disk, and a lever arranged to be operated by said combination-disk so as to draw the said tumbler out of engagement with the said lug, substantially as described and for the purpose set forth.

3. A combination-lock comprising a casing, inner and outer bolt-operating spindles, arms mounted on said spindles, a bolt mounted in said casing and provided with lugs arranged to be engaged by the arms on the respective spindles, a tumbler arranged to engage with the arm on the outer spindle, a lever arranged to operate said tumbler, a combination-disk arranged to operate said lever, a cam-faced block arranged in said casing and provided with a lug arranged to project through an opening in said casing, a bar slidably supported in said casing and having one end abutting against the cam-face of said block and having its other end arranged to extend under the said tumbler when in its operative position, a spring arranged to hold the end of said bar against the cam-face of said block, a projection formed on said bolt, a tumbler arranged to engage with said projection, a lever

for withdrawing the said tumbler from engagement with said projection, a combination-disk for operating said lever, a cam-faced block arranged in said casing and provided with a lug arranged to project through an opening in said casing, a bar slidably supported in said casing and having one end abutting against the cam-face of said block and having its other end arranged to come into engagement with the last-mentioned tumbler when in its operative position, and a spring arranged to hold the end of said bar against the cam-face of said block, substantially as described and for the purpose set forth.

4. A combination-lock comprising a casing, a bolt, inner and outer bolt-operating spindles, means for preventing the outer spindle from being turned, a combination-disk arranged to operate said means, means for forming a dead-bolt, a second combination-disk arranged to operate said means for forming dead-bolt and means for holding both of the said first-mentioned means in their inoperative positions.

5. A combination-lock comprising a casing, inner and outer bolt-operating spindles, arms mounted on said spindles, a bolt mounted in said casing and extending between the arms on the respective spindles and provided with lugs on its inner end, a tumbler arranged to receive the end of the arm carried by the outer spindle, said tumbler having a flange formed on its upper end, a coil-spring arranged between said flange and the top wall of said casing, a combination-disk provided with a series of ridges, a lever for operating said tumbler and provided with a pin arranged to come into contact with the ridges on said combination-disk, an opening formed in said casing, a cam-faced block having a lug projecting in said opening, a bar slidably supported in said casing and having one end abutting against the cam-face of said block and its other end arranged to extend in under the said tumbler and a spring for holding the end of said bar in contact with the cam-face of said block, substantially as described and for the purpose set forth.

In testimony whereof I sign the foregoing specification in the presence of two witnesses.

JAMES B. MILLER.

Witnesses:

VICTOR C. LYNCH,
GERTRUDE M. HAYES.