

(Model.)

2 Sheets—Sheet 1.

O. VOLKERTS.
LOCK.

No. 408,447.

Patented Aug. 6, 1889.

Fig. 1.

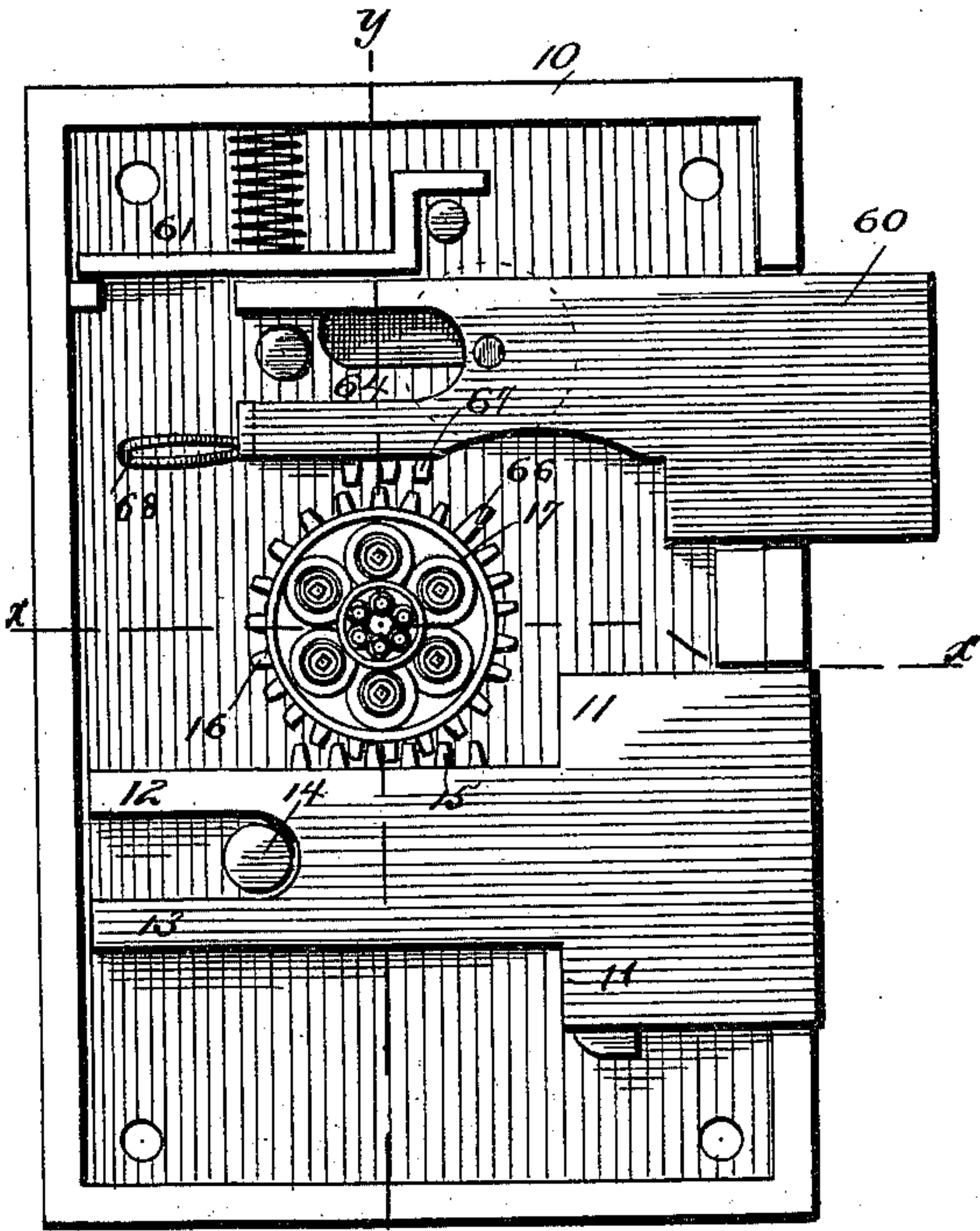


Fig. 2.

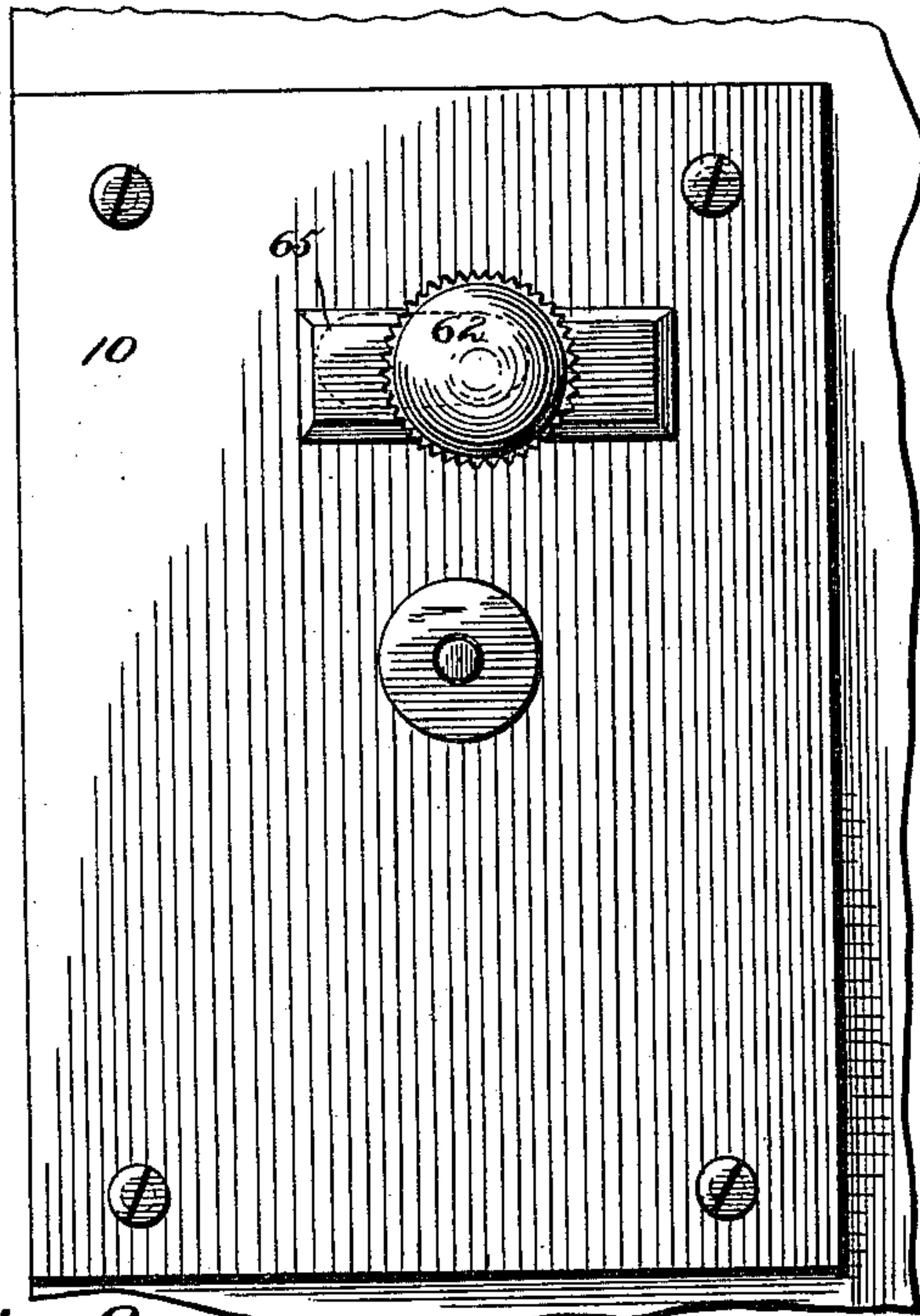


Fig. 3.

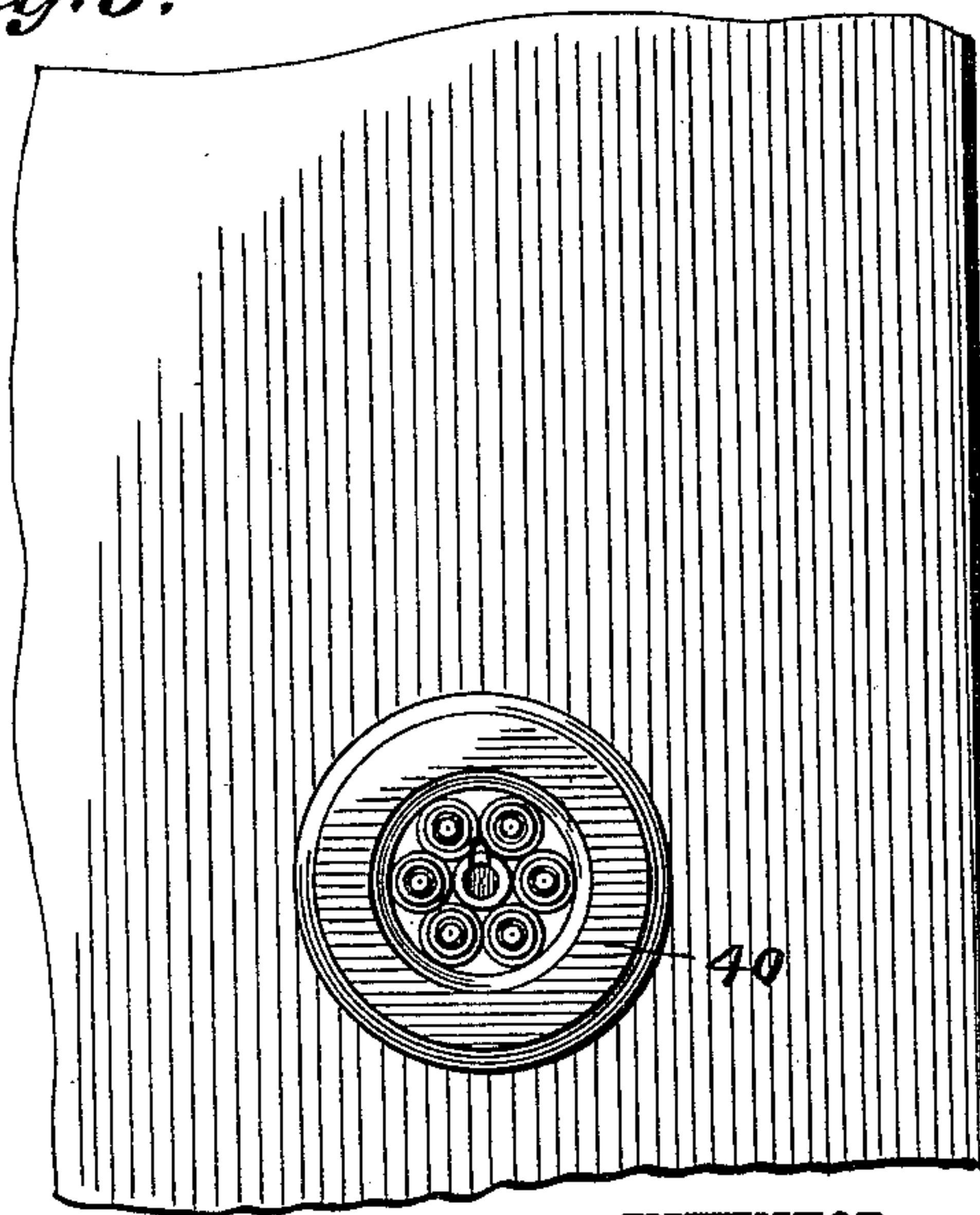
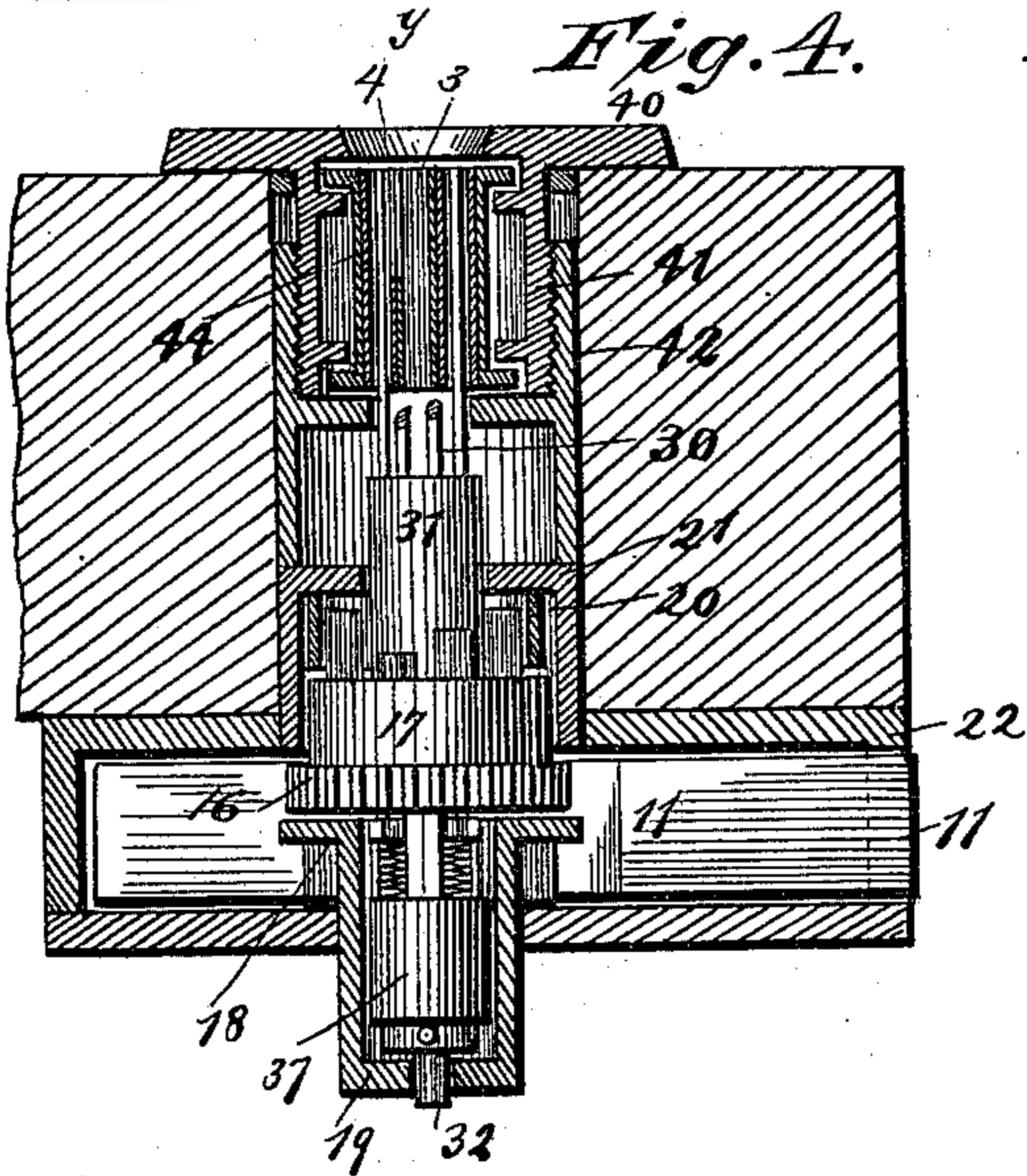


Fig. 4.



WITNESSES:

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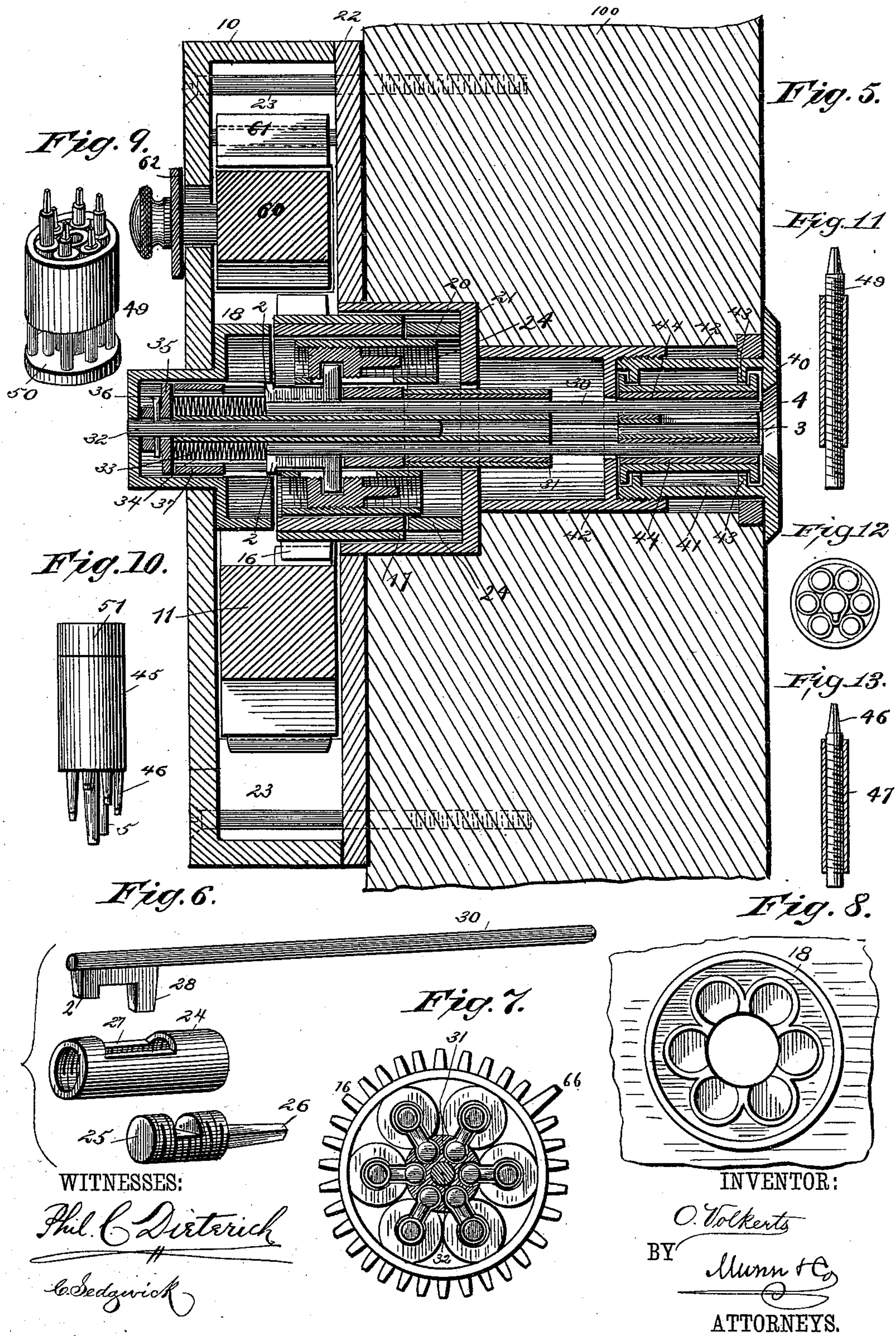
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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

OLUF VOLKERTS, OF SAC CITY, IOWA.

LOCK.

SPECIFICATION forming part of Letters Patent No. 408,447, dated August 6, 1889.

Application filed February 2, 1888. Serial No. 262,739. (Model.)

To all whom it may concern:

Be it known that I, OLUF VOLKERTS, of Sac City, in the county of Sac and State of Iowa, have invented a new and Improved Lock, of which the following is a full, clear, and exact description.

The object of this invention is to provide a lock wherein all corresponding parts as originally made may be used interchangeably in all locks of the same size, provision being made for the setting of the lock to any desired combination, which combinations are innumerable, as will be hereinafter explained.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a view of the lock with the face-plate removed. Fig. 2 is a view of the outer face of the lock. Fig. 3 is a view of the escutcheon employed in connection with the lock. Fig. 4 is a cross-sectional view taken on line *x x* of Fig. 1, the lock, however, being represented as it appears when applied to a door. Fig. 5 is an enlarged sectional view taken on line *y y* of Fig. 1. Fig. 6 is a detail perspective view of one of the tumblers, with its adjustable plug and operating-stem, the parts being represented as they appear separated. Fig. 7 is a face view of the tumbler-case and the parts contained therein. Fig. 8 is a view of one of the keepers. Fig. 9 is a perspective view of the key-setting device. Fig. 10 is a side view of the key. Fig. 11 is a detail view of one of the tubes of the key-setting device, the adjustable plug being represented as in position within the tube. Fig. 12 is a view of the operating end of the key; and Fig. 13 is a detail view of one of the key-plugs and its housing, the housing being shown in section.

In the drawings, 10 represents a lock-case, in which there is mounted a bolt 11, the inner end of the bolt-shank being recessed to form arms 12 and 13, which pass upon either side of a guiding-pin 14, that is rigidly connected to or made integral with the lock-case. Upon one edge of the bolt-shank there is formed a rack 15, which is engaged by teeth 16, which extend out from the peripheral face of a tumbler-case 17. This tumbler-case 17 is

placed between a keeper 18, that is provided with recesses to receive the ends of the tumblers and formed with a projection 19, which passes out through the back of the lock-case, and a keeper 20, having recesses to receive the other ends of the tumblers, and which is held within a housing 21, that is carried by the facing-plate 22 of the lock-casing 10, the lock-case and the facing-plate being apertured to receive the shanks of retaining-screws 23, which engage with the body of the door or other article 100 in connection with which the lock is to be employed.

The tumblers 24 are internally threaded to receive threaded recessed plugs 25, that are formed with projections 26, arranged so that they may be engaged by a key-socket, and in the sides of the tumblers there are openings 27, that are entered by gibs 28, formed upon stems 30, which gibs also enter the recesses of the plugs 25. The tumblers are mounted within recesses formed about the axis of the tumbler-case just outside of a center block 31, said center block being apertured to receive the stems 30 and centrally apertured to receive the central guiding-pin 32, one end of which is stepped in a recess formed in the head of the projection 19.

In connection with each of the stems 30, I arrange a spiral spring 33, which springs are mounted in housings 34, that are formed in the outer portion of the center block, the springs abutting against the stems and against a collar 35, that is held to the pin 32 by a collar 36, and in order to prevent any undue compression of the springs I arrange a sleeve 37 as shown clearly in Figs. 4 and 5, which sleeve acts as a stop to limit the inward throw of the stems 30, said stems being provided with projections 2, which strike against the sleeve, and thus prevent undue compression, the projections, however, not extending beyond the line of the peripheral face of the sleeve.

The stems 30 and the center block 31 extend out through a central aperture formed in the housing 21, the stems, however, extending beyond the center block, so that when the lock is placed in position they will closely approach the inner face of the escutcheon 40. This escutcheon 40 is provided with an in-

wardly-extending flange 41, which is threaded to engage with a sleeve 42, said sleeve abutting against the housing 21. The flange 41 is formed with laterally-extending flanges 43, which serve as guides for a flanged and apertured block 44, through which the ends of the stems 30 pass, this block being formed with a central aperture 3, from one side of which there extends a recess 4, that is arranged to receive the bit 5 of the key 45.

In applying the lock the thickness of the part 100 is taken and the sleeve 42 is cut to a proper length, so that when connected with the escutcheon it will abut closely against the housing 21. The tumblers 24 are then adjusted to various positions, the springs 33 at this time being thrown out of action by withdrawing the colter 36, and, the tumblers having been adjusted as desired, the parts are connected to the ends of the stems 30, which are then cut off so that they will be just in line with the inner face of the escutcheon, and the key 45, which contains as many pins 46 as there are stems 30, is adjusted by turning its pins so that they will act, when brought to bear against the stems 30, to force the tumblers 24 within the case 17, this adjustment of the key being brought about by turning the pins 46 within their housing 47 until each pin has been brought to a position to operate properly in connection with its particular stem, the relative position of the key-pins being determined by means of the bit 5. After the key has been adjusted a key-keeper—such as the one shown in Fig. 9—is set—that is, its plugs 49 are moved to a position so that when the pins of the key are inserted they will all bear closely against said plugs—the sleeves surrounding the key-pins at this time abutting squarely against the outer plate 50 of the key-setter. To prevent any accidental turning of the key-pins, I provide a cap 51, which is put over those ends of said pins which are arranged so that they may be engaged by the setting-key.

To operate the lock, the key is inserted through the escutcheon-aperture and the stems 30 are pressed in, which movement of the stems will carry the tumblers within their case. Then by imparting a rotary movement to the key a corresponding movement will be imparted to the tumbler-case, and the teeth 16 carried by said case, engaging with the teeth 15 of the bolt 11, will carry said bolt inward or outward, as the case may be.

It will be noticed that an exact adjustment of the key is necessary in order to properly operate the lock, for if any one of the key-pins be too long the tumblers will be pressed within the keeper 18, and thus prevent the turning of the case 17.

In certain cases it may be desirable that the door or other part should be secured from the inside, and to this end I provide a second bolt 60, which is normally held depressed by a spring-pressed plate 61, which is held against

one face of the bolt, the bolt being provided with a knob 62, which extends through a wide aperture 64, formed in the lock-case, the aperture, however, being covered by a plate 65, that is carried by the knob. In operation the knob is grasped and moved so as to throw the bolt in the direction of the arrow shown in Fig. 1, whereby a lug on its under side is disengaged from the spring 68. Then by forcing the bolt forward it will slide into its keeper, thus securing the door or other part; but if, after being locked from the inside, the door should be locked from the outside the turning of the tumbler-case 17 would bring a long tooth 66 into engagement with one of the teeth 67 of the bolt 60, and such bolt 60 would be moved inward, so that when the bolt 11 was again thrown to open the door or other part the bolt 60 would not oppose such opening.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a lock, the combination, with a bolt provided with a rack, of a tumbler-case provided with teeth which engage said rack, tumblers mounted within the case, adjustable plugs mounted within the tumblers, stems which engage said plugs, springs arranged in connection with the stems, and keepers, substantially as described.

2. In a lock, the combination, with a bolt provided with a rack, of a tumbler-case provided with teeth which engage said rack, tumblers mounted within said case, threaded plugs mounted within the tumblers, stems which engage said plugs, springs arranged in connection with the stems, and keepers mounted at each side of the tumbler-case, substantially as described.

3. In a lock, the combination, with a bolt provided with a rack, of a tumbler-case provided with teeth arranged to engage said rack, tumblers adjustably mounted within said case, stems arranged in connection with the tumblers, springs arranged in connection with the stems, an escutcheon, and a sleeve mounted within said escutcheon and provided with apertures adapted to receive the stem, substantially as described.

4. In a lock, the combination, with a bolt provided with a rack, of a tumbler-case provided with teeth which engage said rack, tumblers mounted within the case, stems connected to the tumblers, springs arranged in connection with the stems, a sleeve surrounding the springs, limit projections carried by the stems and arranged to strike against the edge of the sleeve, an escutcheon, and a sleeve mounted within the escutcheon and arranged to receive the extending ends of the stems, substantially as described.

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Witnesses:

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THOS. BATIE.