

No. 632,824.

Patented Sept. 12, 1899.

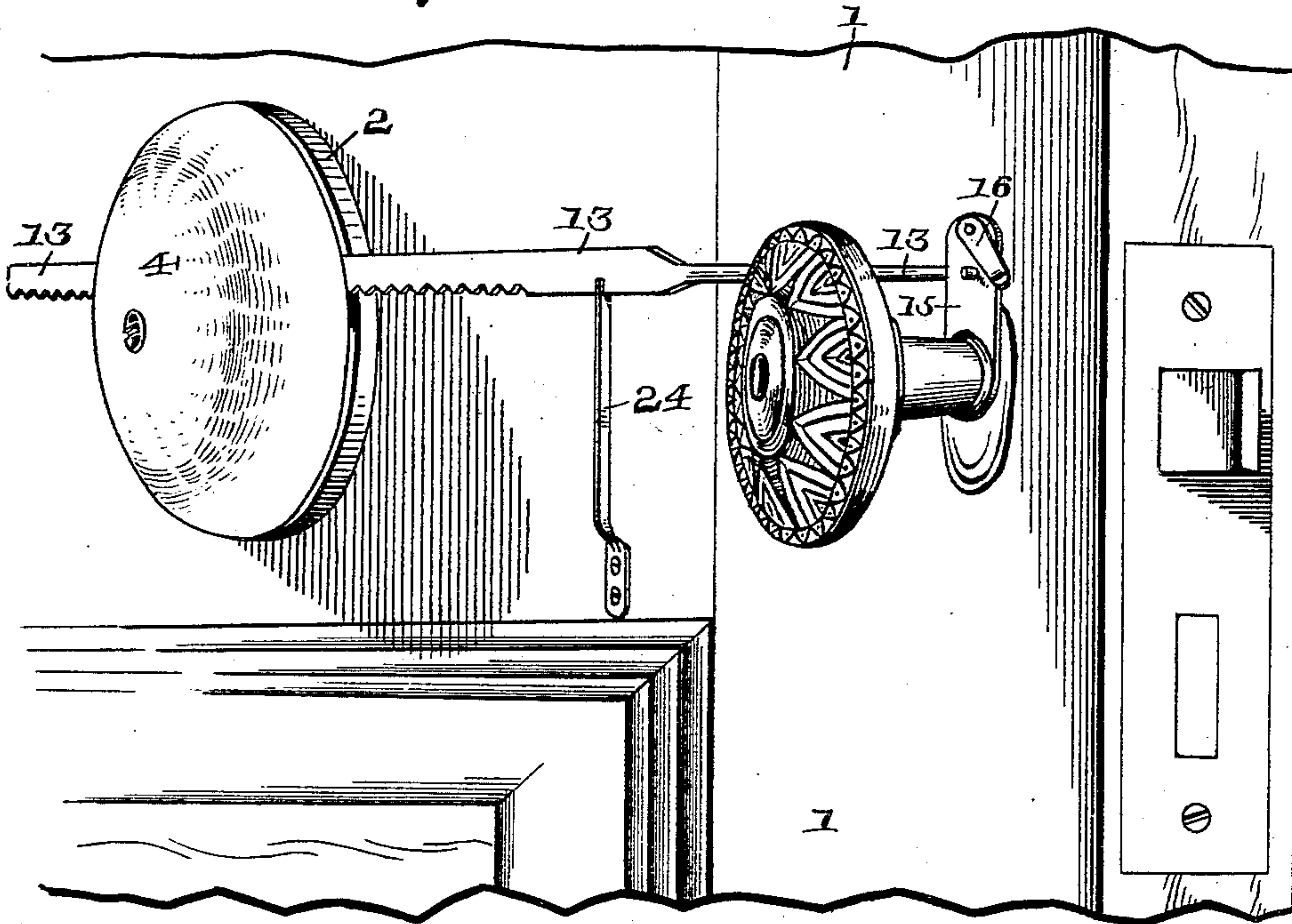
J. D. RATLIFF.

DOOR BELL.

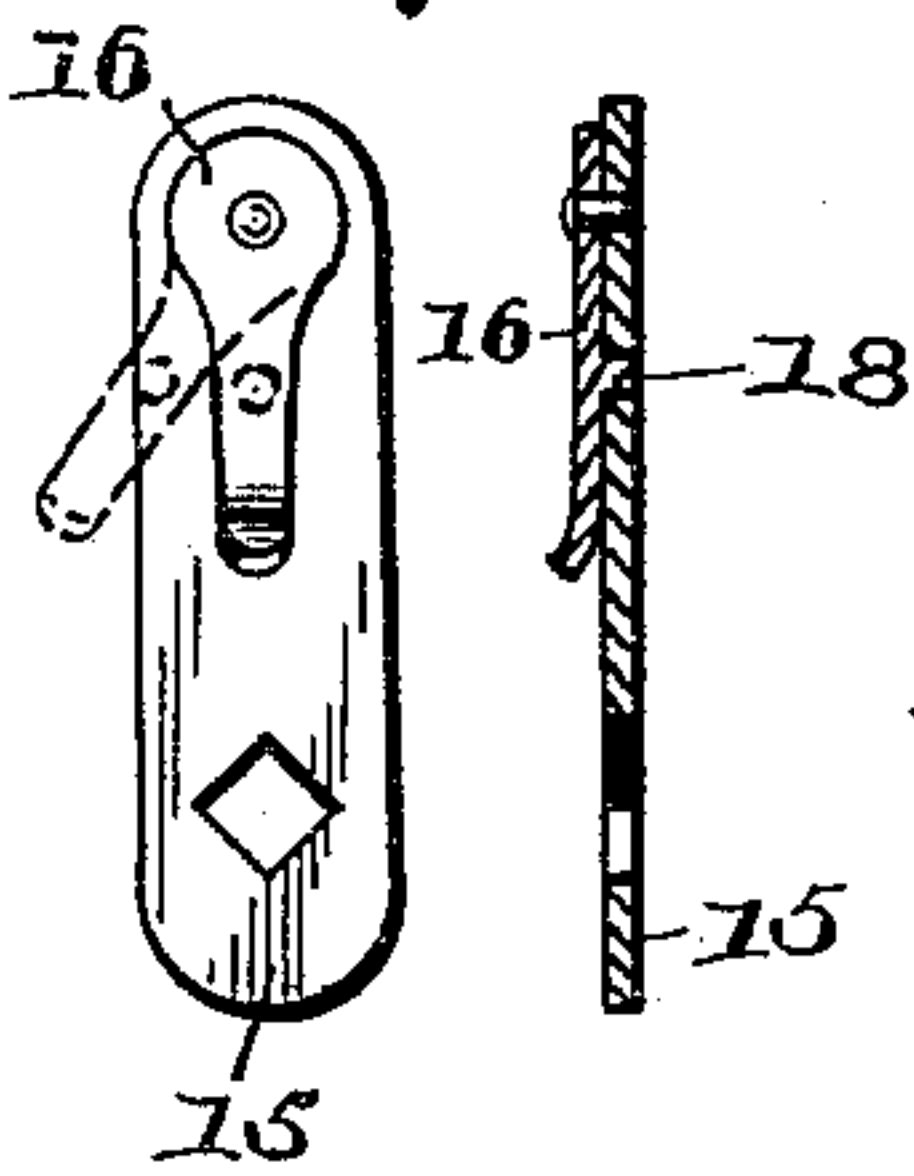
(Application filed May 11, 1899.)

(No Model.)

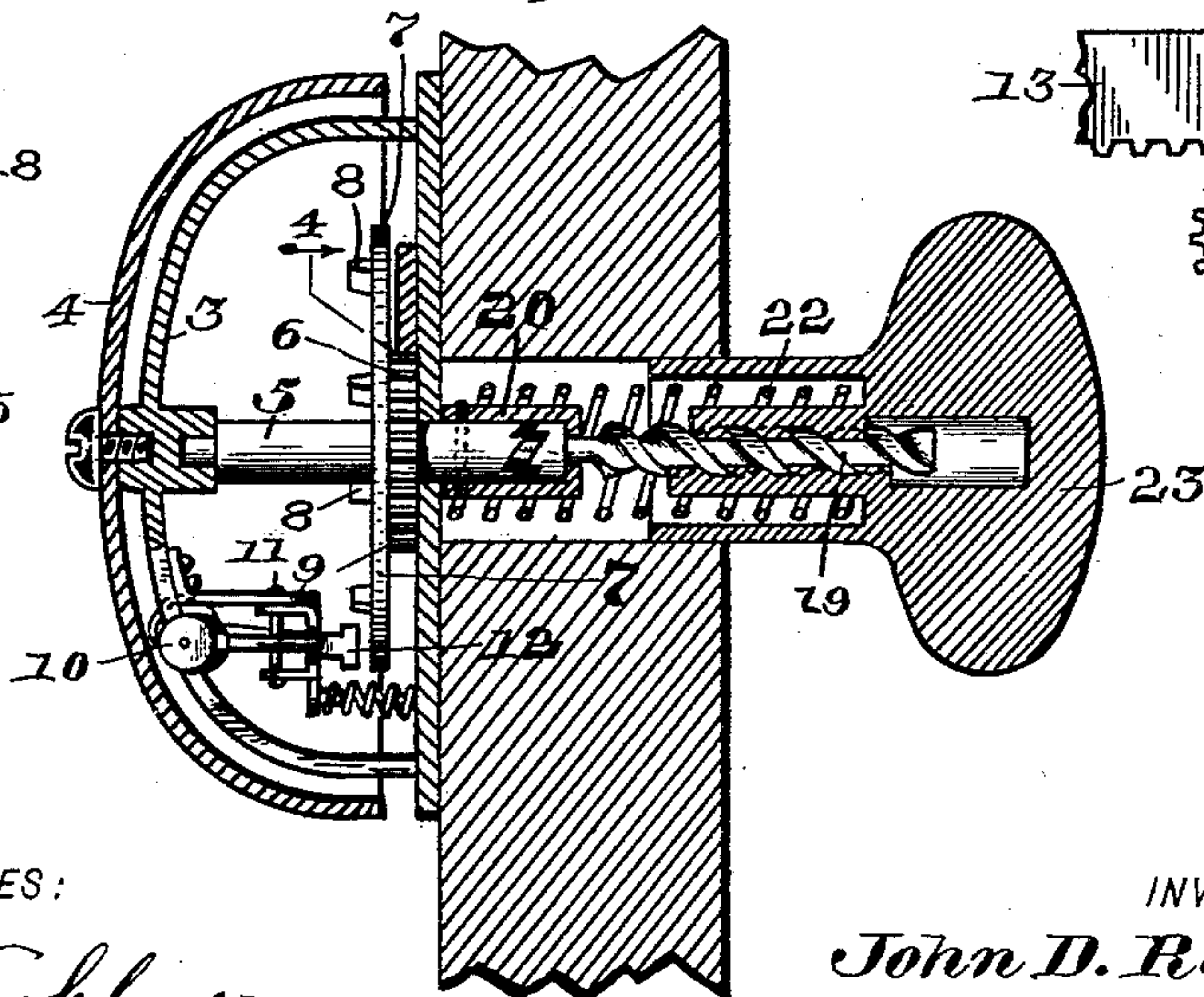
*Fig. 1.*



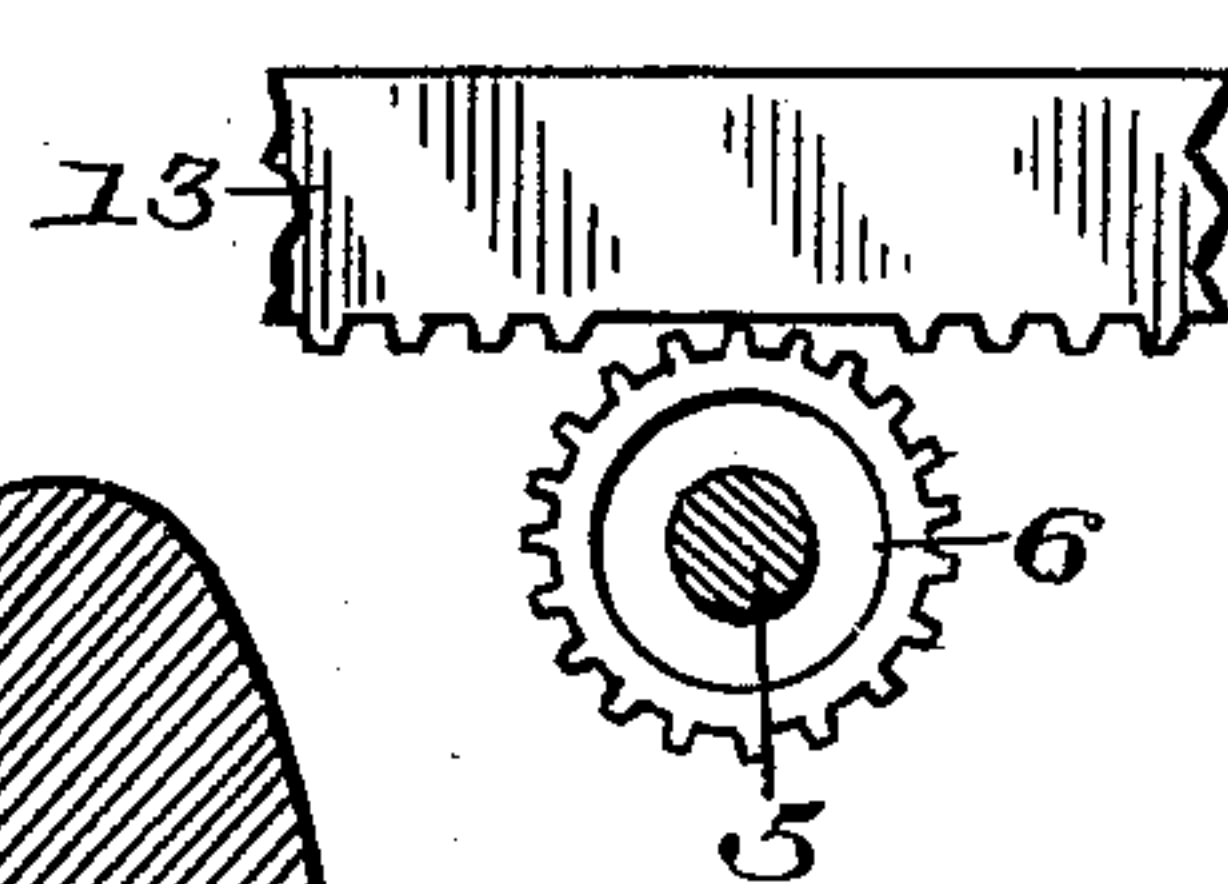
*Fig. 3.*



*Fig. 2.*



*Fig. 4.*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## DOOR-BELL.

SPECIFICATION forming part of Letters Patent No. 632,824, dated September 12, 1899.

Application filed May 11, 1899. Serial No. 716,359. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN D. RATLIFF, a citizen of the United States, residing at Muncie, in the county of Delaware and State of Indiana, have invented certain new and useful Improvements in Door-Bells, of which the following is a specification.

The object of my said invention is to produce a combined door-bell and burglar-alarm and one that will be simple in construction, durable, and cheap to manufacture. The object is to have the bell so connected that it may be rung when the door-knob is turned. There are other features that will be herein-  
after described and claimed.

Referring to the accompanying drawings, which are made a part hereof, and on which similar numerals of reference indicate similar parts, Figure 1 is a fragmentary perspective view of a portion of a door, showing the location of my bell as well as the means by which the bell is operated from the knob. Fig. 2 is a central vertical section of the same. Fig. 3 shows in plan and central section the crank which is secured to the lock-shaft the same to which the door-knob is secured. Fig. 4 is a detail of the gear-wheel and rack which rides on said gear and operates the same, as seen from the dotted line 4 4 in Fig. 2.

In the drawings, 1 is the door, 2 the base forming the base for the bell, and 3 a bridge rigidly secured to the base 2 and to which the bell 4 is secured. A shaft 5 passes centrally through the bed-plate and is shouldered at its upper end, which finds a bearing in the bridge 3. The inner end of the shaft 5 is formed in a ratcheted manner, which corresponds to a ratchet formed on the end of the auger-shaped shaft 19. Rigidly secured to the shaft 5 are the wheels 6 and 7. The wheel 7 has as smooth periphery and has on its outer face at intervals integral teeth 8. A hanger 9 is rigidly secured to the bridge 3, which forms a bearing for the hammers 10. The hammers are pivotally secured to the hanger 9 by means of the pivot 11, which pivot allows the hammers oscillatory movement when the integral extension 12 is acted upon by the teeth 8 on the surface of the wheel 7. The gear-wheel 6 is rigidly mounted on the shaft 5 and is positioned adjacent to the bed-plate of the bell. A toothed rack 13 overlies and

rides on the gear 6 and extends to the door-knob. The rack 13 at its inner end toward the knob is reduced and rounded into a rod, the end of which is bent at a right angle to the main body thereof. The nose thus formed by bending the rod is inserted into a hole 14 in the crank 15. The crank 15 is composed of a thin flexible metal, steel being preferable, and is secured to the lock-shaft to which the door-knob is secured.

When the door-knob is turned in either direction and then released, it immediately returns, carrying with it the rack 13, to its normal position under the tension of the spring in the door-lock, the same being old and well known in door-lock construction. By adding the rack 13 to the lock, however, an additional strain is placed on the lock-spring, which might eventually impair the longevity of the spring. Then were the lock-spring to break the knob after being turned would remain in that position and which would interfere with the working of the bell when desired to ring the same by the knob 23. The rack 13 must always be in its normal position, the said position being when the central portion of the rack where the teeth are cut away rides directly over the gear 6, before the knob 23 can be used to operate the bell. Therefore to insure in a positive manner that the parts will return to their normal position after being acted upon I add a second spring 24. The spring 24 is of the leaf variety and is secured to the door proper at its lower end. The upper end of the spring is embedded into a notch cut into the under side of the rack 13 and stands vertically when in normal position. When, however, the rack 13 is turned or moved to the right or left, the spring 24 will bend a distance equal to the amount of throw given the rack 13. The notch in the rack 13, in which the end of the spring 24 is seated, is of sufficient depth to prevent the escapement of the spring when the rack 13 is moved into its extreme outer position. It will thus be seen that the spring 24 insures to a greater degree of certainty the proper working of all parts in case the spring in the door-lock were broken.

As before stated, the crank 15 is secured to the lock-shaft, to which the door-knob is secured. A lever 16 is pivotally secured to



the crank 15 by means of the pivot 17. The lever 16 has an integral stud 18 on its rear surface which corresponds with the hole 14 in the crank 15. As shown in Fig. 1, when the rack 13 is connected to the crank 15 the lever 16, which is flexible, is raised until the stud 18 is withdrawn from its seat, when the lever 16 is then swung to the side and out of the way. When the rack 13 is disconnected from the crank 15, the lever 16 is turned in the position as shown in Fig. 3. In this position the stud 18 is engaged with the hole 14 in the crank 15, and during which time it prevents the nose on the rack 13 from reseating itself when the crank 15 is turned during the use of the door-knob. When these parts are disconnected, the door-knob is free to be used without ringing the door-bell.

By examining Fig. 4 it will be seen that the portion of the rack 13 which overlies or rides on the gear 6 has a smooth surface, the teeth of the rack having been removed, the object of this being that the bell may be used independent of the rack 13 by the use of the knob 23, which knob is common to all door-bells. It will be readily understood that if the rack 13 were in direct engagement with the gear 6 at all times the knob 23 would be superfluous.

As before stated, the shaft 5 is toothed in a ratcheted manner at its inner end, the said end engaging with a corresponding ratchet on the end of the auger-shaft 19 and through which means the shaft 5 is operated. The ratchet ends of the shafts 5 and 19 are incased in a hood 20, which is drawn over the inner end of the shaft 5 and is rigidly secured by means of the pin 21. The shaft 19 is formed like an auger and extends through the door. A knob 23, with its inner surface that conforms to the shaft 19, is secured thereto, and through which means the shaft 19 is operated. A coil-spring 22 surrounds the inner ends of the shafts and extends through into the push-knob 23. (See Fig. 2.) The tendency of the spring 22 is to keep the ratchet ends of the shafts 5 and 19 separated normally, thus allowing the shaft 5 to be operated when acted upon through the rack 13 by the door-knob. The ringing of the bell through the knob 23 is accomplished by simply pushing on said knob, which revolves the shaft 19, and which shaft at the same time engages with the shaft 5 and through which the hammers are operated. The shaft 19 operates the shaft 5 only on the inward stroke, for when the pressure on the knob is relaxed the spring 22 forces the ends of the shafts apart. The shaft 5 remains stationary, while the shaft 19 revolves while the knob travels backward to its normal position.

It will be readily seen that I have a door-

bell which can be operated in the usual manner or by use of the door-knob, the two movements being entirely independent of each other. The main object in having the door-knob to actuate the bell is to reduce to a minimum the losses incurred through house-breakers, who usually through the use of a skeleton key unlock the door and effect an entrance in this manner. With the use of my device, however, any perceptible movement of the door-knob is recorded on the bell.

Having thus fully described my said invention, what I desire to secure by Letters Patent is—

1. In a combined door-bell and burglar-alarm, in combination with the bed-plate, a main shaft centrally mounted therein, a gear-wheel rigidly secured thereto, a rack overlying said gear at which point the teeth are cut away, the said rack being pivotally secured at one end to a crank which is secured to the lock-shaft, whereby the shaft-rack is reciprocated, thereby actuating the bell-hammers in both directions, a leaf-spring rigidly secured at its lower end to the door proper, and engaging at its upper end with a notch cut in the rack, whereby the return of said rack to its normal position is insured, substantially as shown and described.

2. In a combined door-bell and burglar-alarm, in combination with the bed-plate, a main shaft having at its inner end a ratchet-face, an auger-shaft having a corresponding ratchet-face, the two ends being incased in a hood rigidly secured to the main shaft, a push-knob having an internal surface that corresponds with the shaft and whereby rotary movement is imparted to said shaft, a coil-spring surrounding the ratchet ends of the shafts and designed to hold the said shaft apart when not in use, substantially as shown and described.

3. In a combined door-bell and burglar-alarm, a crank rigidly secured to the lock-shaft, a lever pivotally secured to said crank, an integral stud on the rear side of the lever which registers with a hole in the crank, a toothed rack-bar having a right-angle portion which engages with the hole in the crank, a portion of the rack having teeth, the central portion which overlies the gear on the main shaft, having a smooth surface the teeth being cut away, substantially as shown and for the purposes set forth.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 1st day of April, A. D. 1899.

JOHN D. RATLIFF. [L. S.]

Witnesses:

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