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 AUTOMATIC MECHANICAL BURGLAR ALARM.  
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Fig. 1.

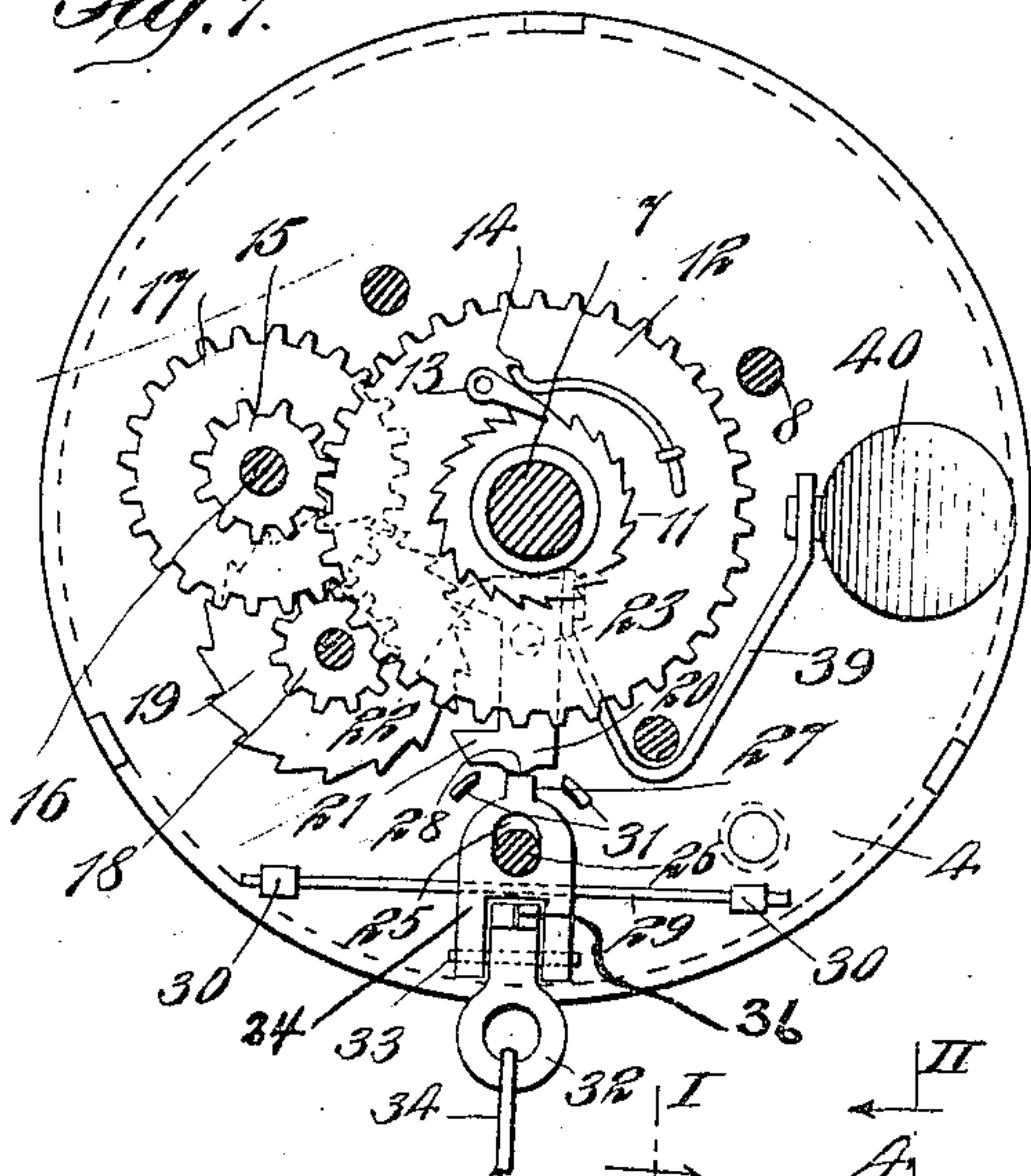


Fig. 2.

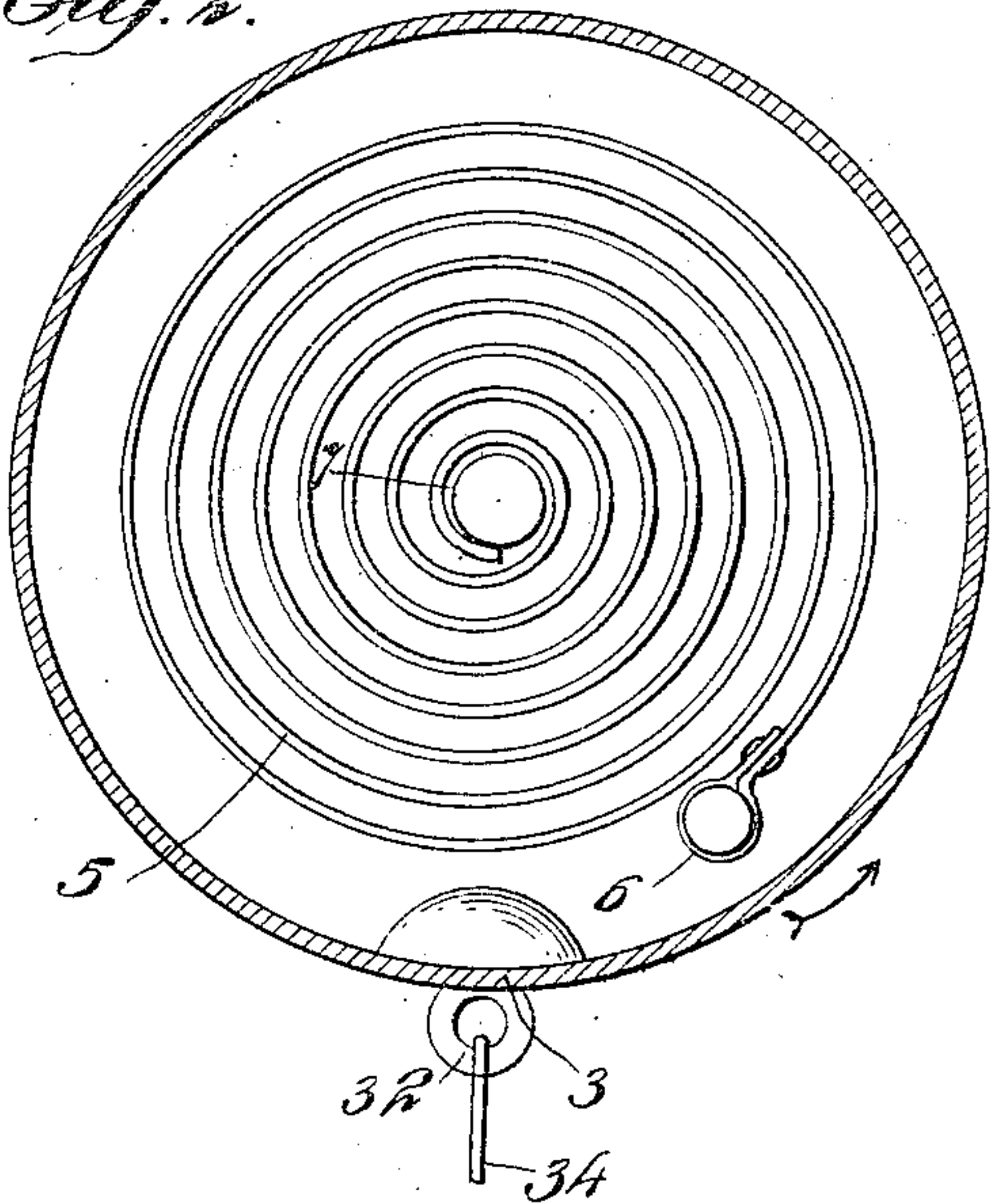
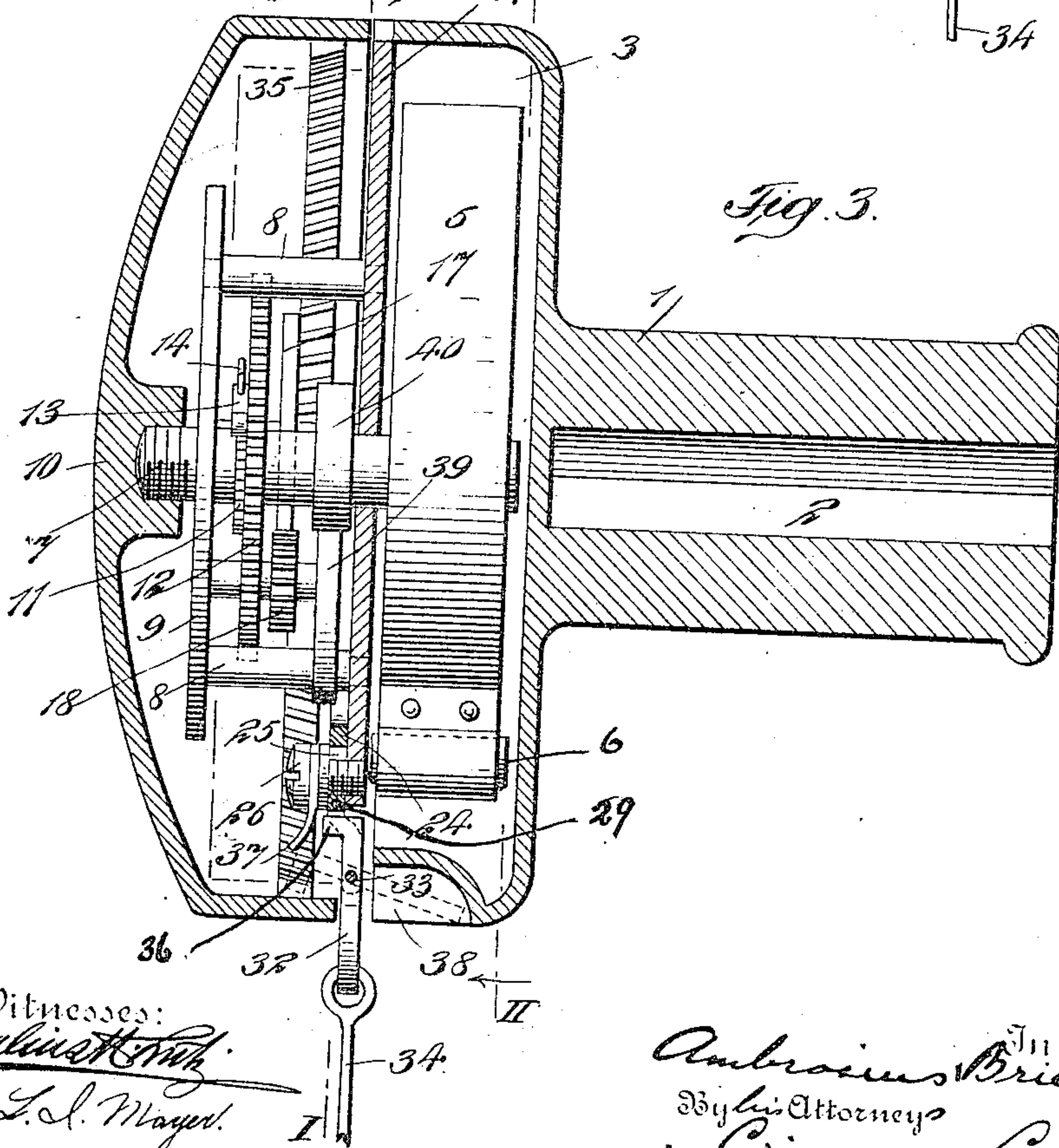


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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AUTOMATIC MECHANICAL BURGLAR-ALARM.

990,423.

Specification of Letters Patent.

Patented Apr. 25, 1911.

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*To all whom it may concern:*

Be it known that I, AMBROSIUS BRIECHLE, a subject of the Emperor of Germany, and a resident of New York, county and State of New York, have invented certain new and useful Improvements in Automatic Mechanical Burglar-Alarms, of which the following is a full, clear, and exact description.

The main object of this invention is to provide a mechanically operated burglar alarm which will be automatic in operation, and to provide means whereby the device will be tripped, or set in operation, by the movement of a door knob, window frame or like movable part.

Another object of the invention is to provide a simple device by means of which the alarm may be rendered inoperative.

A further object of the invention is to provide such an alarm in the form of a door knob, which, when not in use as an alarm, will serve as an ordinary knob for doors and the like.

With these and other objects in view, the invention will be hereinafter more particularly described with reference to the accompanying drawings, which form a part of this specification, and will then be pointed out in the claims at the end of the description.

In the drawings, Figure 1 is a vertical sectional view on the line I—I of Fig. 3; Fig. 2 a sectional view on the line II—II of Fig. 3; and Fig. 3 a longitudinal sectional view of the bell and casing.

Referring to the various parts by numerals, 1 designates a socket formed with an angular longitudinal opening 2 to receive the angular end of the knob spindle. The outer end of this socket carries a spring receptacle 3, said receptacle being in the form of a circular shallow cup, concentric with the axis of the spindle socket. This receptacle is closed by a plate 4 and contains a spiral spring 5, whose outer end is connected to a rigid post 6, its inner end being connected to the main operating shaft 7. Carried by the plate 4 is a supporting frame consisting of the posts 8 and a face plate 9. The shaft 7 extends through the face plate 9 and carries at its outer end a bell 10. Between the face plate 9 and the plate 4, the operating shaft 7 is enlarged, said enlargement serving as a means for holding the shaft in position. It will, of course, be understood, however, that said shaft may be

mounted in any suitable manner. The bell 10 serves as a means for rotating the shaft 7 in the proper direction to wind up the spring 5 for the purpose of setting the alarm.

Secured rigidly to the main operating shaft is a ratchet wheel 11, and loosely mounted on said shaft adjoining said ratchet wheel is a large gear 12. This gear carries a pawl 13 which is adapted to engage the teeth of the ratchet wheel and is held yieldingly in contact therewith by a spring 14. The ratchet and pawl are so disposed that the shaft may turn freely on its axis in the proper direction to wind up the spring 5 but cannot turn in the reverse direction without also rotating the gear 12 through said ratchet and pawl connection. Meshing with the large gear 12 is a small pinion 15, on the shaft 16 of which is carried a spur gear 17. This gear 17 in turn meshes with a small pinion 18, the shaft of which carries a ratchet wheel 19 which serves as an escapement wheel. It will thus be seen that when the shaft 7 is free to rotate through the influence of the spring 5, it will carry with it the gear 12 and said gear will operate the escapement wheel through the train of gears just described. In turning the shaft in the proper direction to wind up the spring 5 the pawl 13 will slip on the ratchet.

Engaging the escapement wheel is an escapement dog 20 formed with two teeth 21 and 22, the upper tooth being larger than the lower one, as shown clearly in Fig. 1. This escapement dog is pivoted on the face plate 4 directly below the center of the shaft 7, the pivot 23 thereof being just above the middle of the dog, whereby the depending part of said dog is slightly longer than the part above the pivot. The teeth of the escapement dog are arranged to engage the teeth of the escapement wheel, and the upper tooth 22 is of such length that it will engage the escapement wheel when the escapement dog is in a vertical position, the lower tooth being of such length that it will not engage the escapement wheel when the dog is vertical. The teeth are so arranged that when one is in engagement with the escapement wheel the other one will be released therefrom for a purpose which will fully hereinafter appear.

Below the escapement dog and directly in line with the pivot thereof and the axis of



the shaft 7 is a pivoted or swinging locking-dog 24, said dog being slightly slotted, radially, at 25, and being pivotally supported on the face plate by a screw 26, said screw passing through the slot 25 and into the face plate. The locking dog is formed at its upper end with a locking lug 27 which is adapted to engage a downwardly curved cam part 28 formed on the lower end of the escapement dog. To hold the locking dog in a true radial position and to maintain the locking lug in engagement with the enlargement 28 of the escapement dog, the locking dog is mounted on a transversely extending spring 29, said spring being shown in the drawings in the form of a wire passing through the locking dog, its ends being rigidly connected to lugs 30 on the face plate. It will be readily seen that any strain tending to swing the locking dog on its pivot will be yieldingly opposed by means of the spring, said spring permitting the locking dog to be swung on its pivot when sufficient strain is applied thereto in the proper direction. It is also manifest that when the strain is removed the spring will return the dog to its normal position radially with respect to the operating shaft. The purpose of the short slot 25 in the locking dog is to permit said dog to yield slightly downwardly when it is being returned to its radial position to engage the locking lug 27 under the cam or enlargement 28 on the escapement dog. Stops 31 are provided to hold the locking dog released. When said dog is swung laterally to release the escapement the end of the lug 27 will bind against the lower side of one of the stops and hold the dog in an inclined position against the tension of the spring 29 until it is forcibly released and returned to its normal vertical position. Until the dog is released from the engaged stop 31 the bell will continue to ring, until, of course, the spring is exhausted.

It is manifest when the parts are arranged as shown in Fig. 1, the escapement dog and the escapement wheel are locked and there can be no rotative movement of the operating shaft. To release the escapement dog I connect to the locking dog a pivoted latch 32. The lower end of the locking dog is bifurcated, and between the two arms thus formed, the latch 32 is mounted on its pivot 33. The lower end of this latch is formed with an aperture to which is connected an operative cord 34, the other end of said cord being adapted to be connected to a door or to a stationary part of a window frame should the device be used as a window alarm.

To lock the alarm in inoperative position, the bell is provided on its inner surface with an annular toothed rack 35, and the upper end of the latch 32 is formed with a locking

tooth 36 which is adapted to engage the rack when the latch is swung to its inner position as indicated in dotted lines in Fig. 3. To yieldingly hold the latch in position to lock the bell against rotation a spring 37 is secured in place by means of the screw 26, the free end of said spring being in position to engage the end of the latch and to hold it yieldingly in its locked position. The spring receiving cup or barrel is formed with a recess 38 to receive the outer end of the latch when said latch is thrown to its locked position, as shown clearly in Fig. 3. To the upper end of the escapement dog is connected a suitably bent hammer-carrying spring 39, to the outer end of which is connected the hammer 40, said hammer being in position to strike the bell.

The operation of the device may be briefly described as follows. By turning the bell in the direction indicated by the arrow in Fig. 2, the spring 5 will be wound upon the shaft. The escapement wheel, and consequently the shaft 7, will be held against rotative movement by the escapement dog, said dog being held stationary by means of the locking lug 27 engaging the cam surface 28. The operating cord 34 is connected to the door in any suitable position, the latch 32 being in its radial position as indicated in Figs. 1 and 3. It is, of course, to be understood that the alarm is to be secured to the inner end of a knob spindle, that is to say on the end which extends into the room, the outer door knob being of the ordinary, or of any suitable construction. With the parts in the position just described, it is manifest that if the outer door knob be turned in either direction, the pull on the operating cord will swing the locking dog on its pivot and against the tension of the spring 29 and will free the locking lug 27 from the cam surface 28 and permit the escapement dog to vibrate under the influence of the escapement wheel. It is manifest that as the escapement dog vibrates the hammer will strike the bell. It is manifest that the bell ringing will continue until the locking dog is again brought into position to bring the locking lug under the cam 28 to arrest the movement of the escapement dog. When the latch 32 is thrown into its locked position, as indicated in dotted lines in Fig. 3, the alarm may be used as, and will operate in the same manner, as an ordinary door knob.

It is manifest that any suitable form of escapement or bell ringing device may be used, it being only necessary that said ringing device be released by a pull on the locking dog. It is also manifest that any suitable form of alarm releasing device may be employed in place of the specific form of device shown in the drawings and described herein.

I have shown the invention as designed



particularly for use as a door knob. It is manifest that it may be used as an alarm in other places than on door knobs without material modification and it is not intended to limit the scope of the present invention to the use thereof simply on door knobs.

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

10 1. A burglar alarm comprising a spring, spring holding means, a shaft connected to said spring and adapted to be rotated thereby, a bell carried by said shaft, a hammer operating mechanism operated from said  
15 shaft, a locking dog to hold said mechanism inoperative, a spring arranged within the bell and on which said locking dog is mounted, a latch pivoted to said locking dog, a pull cord connected to said latch, the latch and  
20 dog being relatively movable with respect to each other, and means within the bell adapted to be engaged by said latch when it is turned on its pivot to lock the bell against rotation.

25 2. A burglar alarm comprising a knob spindle socket, a spring a spring receiving cup connected to said socket, a plate closing said cup, a hammer operating mechanism supported on said plate, said mechanism including a train of gears, an escapement and  
30 a hammer carried by said escapement, a bell secured to the end of said shaft, a hammer operating mechanism within said bell and comprising a train of gears operating from the shaft, an escapement wheel connected to  
35 and operated from said train, a pivoted escapement operating on said escapement wheel, a bell hammer carried by said escapement and adapted to strike the bell when said escapement is vibrated, a locking  
40 dog for holding said escapement stationary, a straight spring extending through said locking dog, its end being rigidly supported on the closing plate whereby said locking  
45 dog will be normally held in a position radially with respect to the operating shaft, a latch pivoted to said locking dog, a pull cord connected to the lower end of said latch and means within the bell adapted to be engaged by said latch when it is turned on its  
50 pivot to lock the bell against rotation.

3. A burglar alarm comprising a knob spindle socket, a spring receiving cup con-

nected to said socket, a plate closing said cup, a hammer operating mechanism sup- 55 ported on said plate, said mechanism including a train of gears, an escapement and a hammer carried by said escapement, a bell secured to the end of said shaft, a hammer operating mechanism within said bell and  
60 comprising all gears operating from the shaft, an escapement wheel connected to and operated from said train, a pivoted escapement operating on said escapement wheel, a bell hammer carried by said escapement and  
65 adapted to strike the bell when said escapement is vibrated, a locking dog for holding said escapement stationary, a straight spring extending through said locking dog, its end being rigidly supported on the closing plate  
70 whereby said locking dog will be normally held in a position radially with respect to the operating shaft, a latch pivoted to said locking dog, a pull cord connected to the lower end of said latch and an annular rack  
75 within the bell adapted to be engaged by said latch when it is turned on its pivot to lock the bell against rotation.

4. A burglar alarm comprising a spring-containing cup, a spindle socket connected 80 thereto, a spiral spring within said cup, a shaft extending into said cup and connected to said spring and adapted to be operated thereby, a plate inclosing said spring, a train of gears supported by said plate and oper- 85 ated from the said shaft, an escapement wheel operated by said train, a pivoted escapement arranged to be operated by said wheel, a hammer carried by said escapement, a locking dog formed with a locking lug 90 adapted to engage said escapement and to hold it against movement, a straight spring extending through the locking dog and rigidly supported at its ends, a pivoted latch connected to said locking dog, the outer end 95 of said latch extending beyond the bell in convenient position to receive an operating cord, an annular toothed rack within the bell and adapted to be engaged by the inner end of the latch. 100

This specification signed and witnessed this 3rd day of May A. D. 1910.

AMBROSIUS BRIECHLE.

Witnesses:

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