

No. 859,316.

PATENTED JULY 9, 1907.

W. S. MAYER.

SNAP SWITCH.

APPLICATION FILED APR. 4, 1907:

FIG. 1.

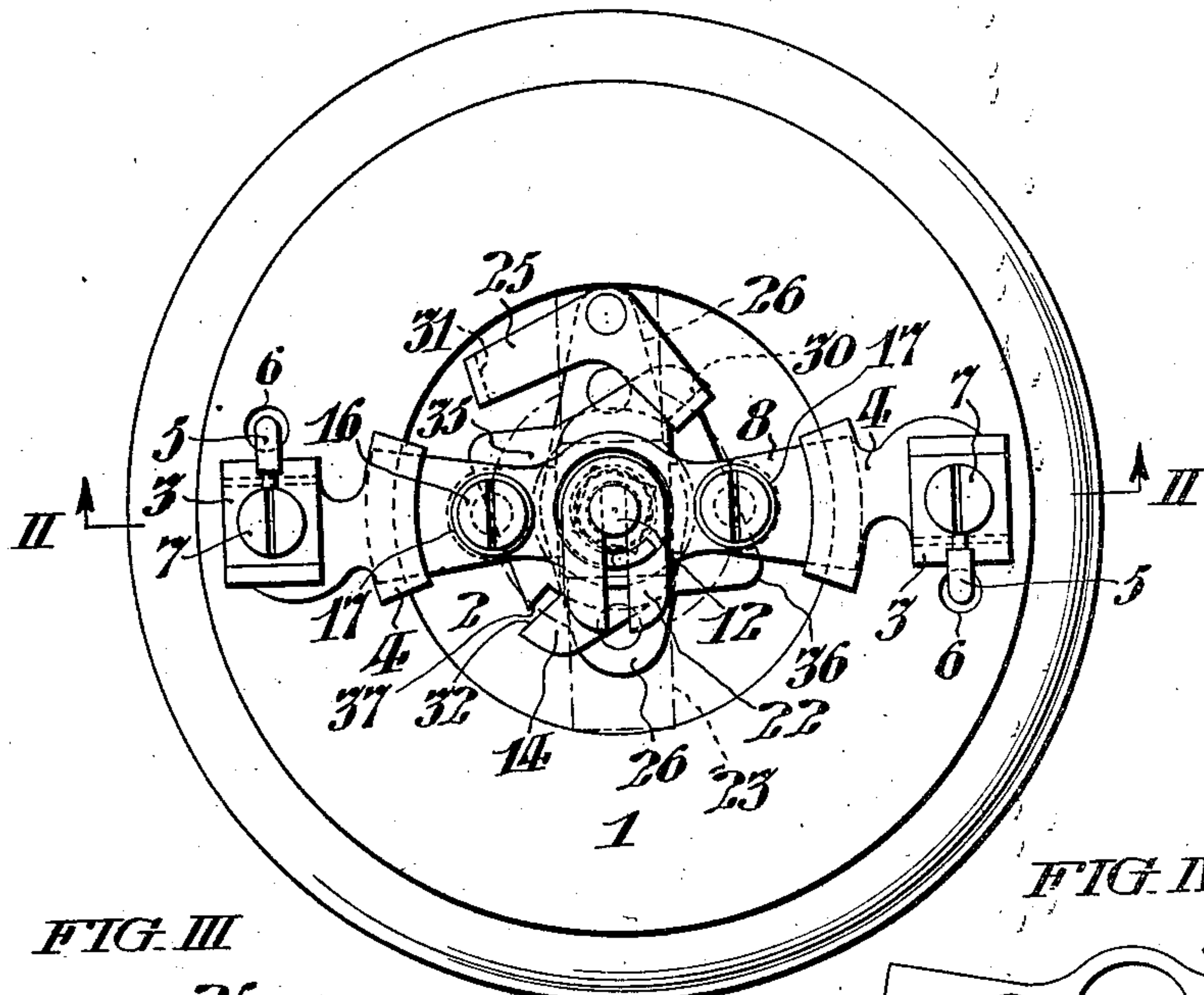


FIG. III

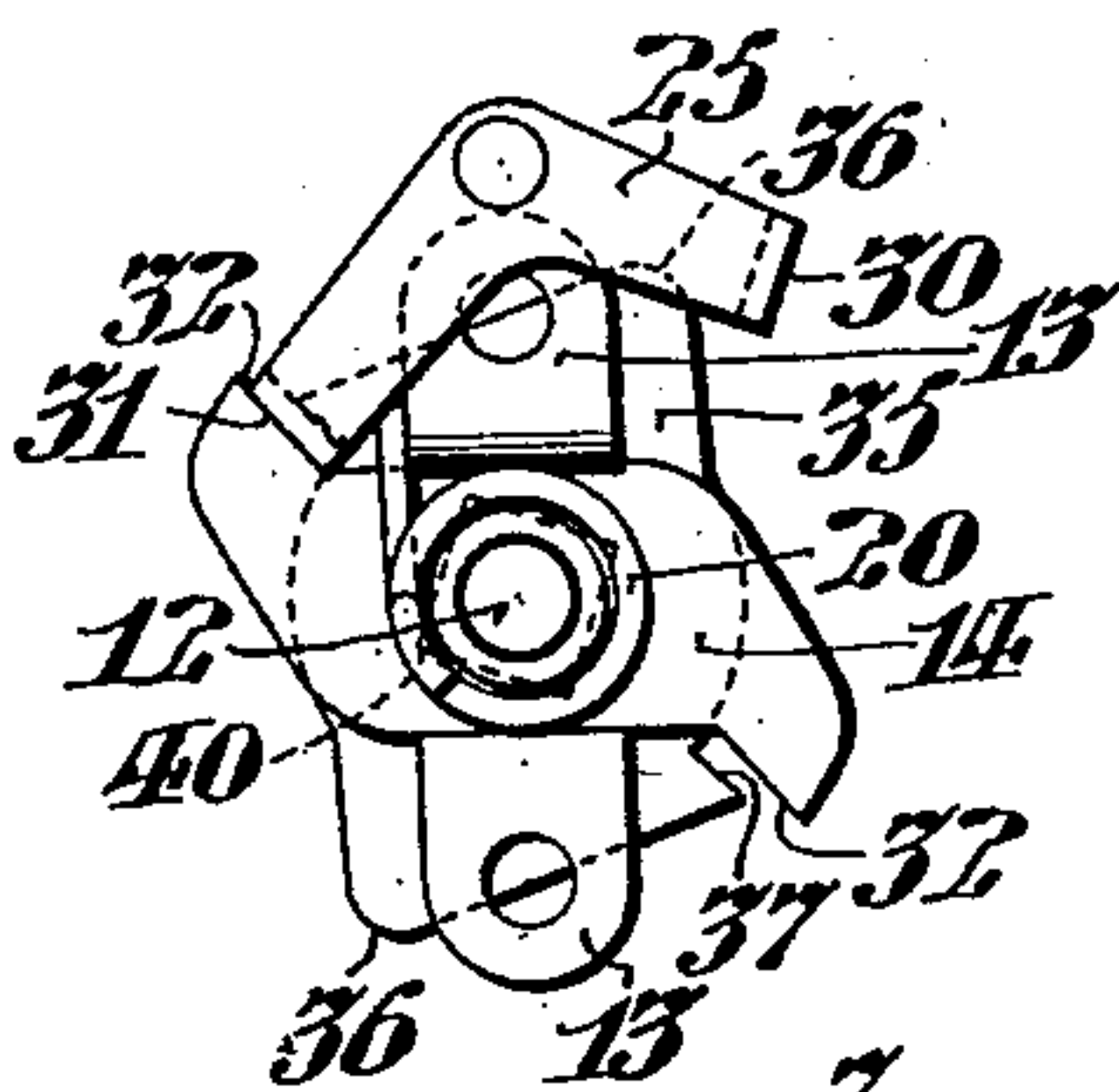


FIG. II.

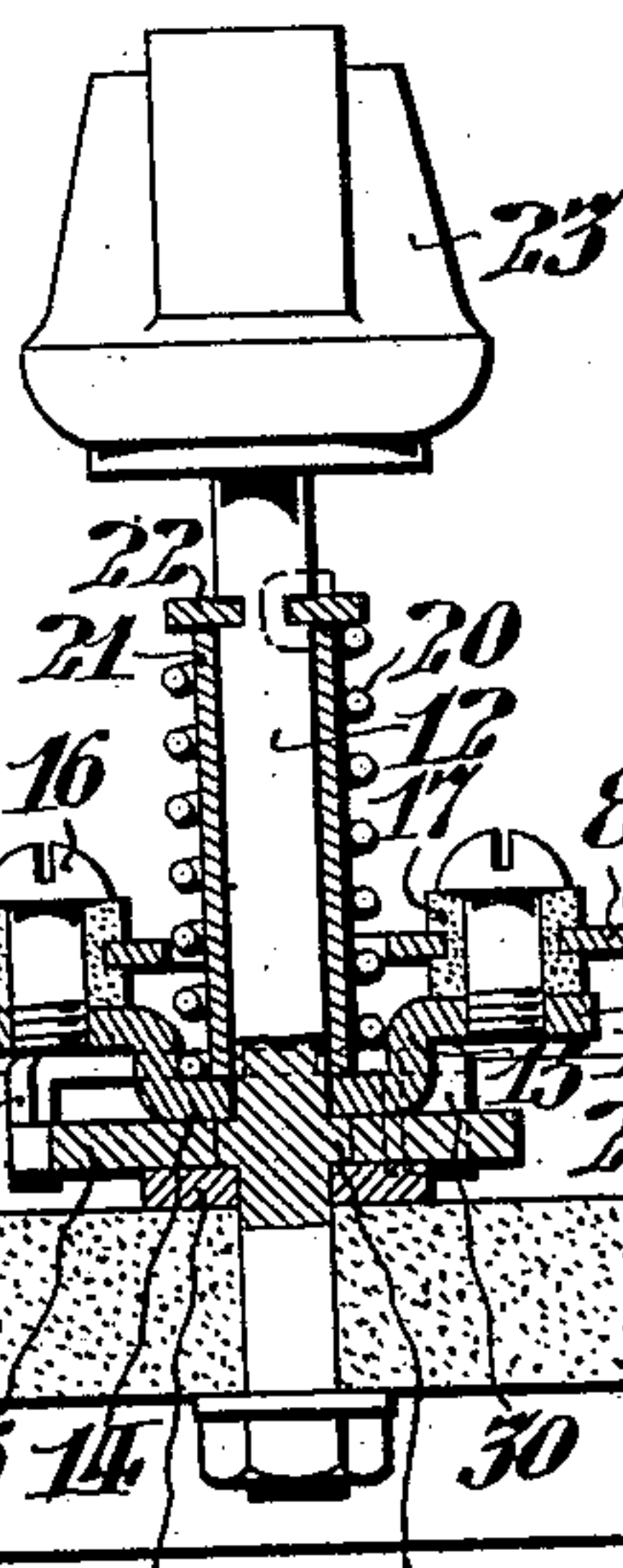


FIG IV

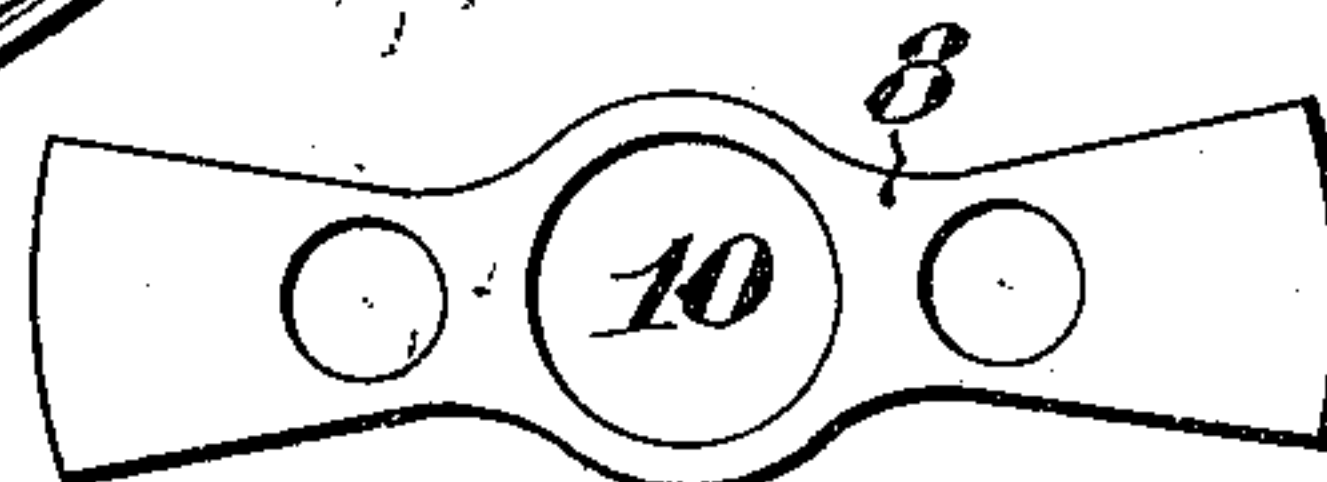


FIG V

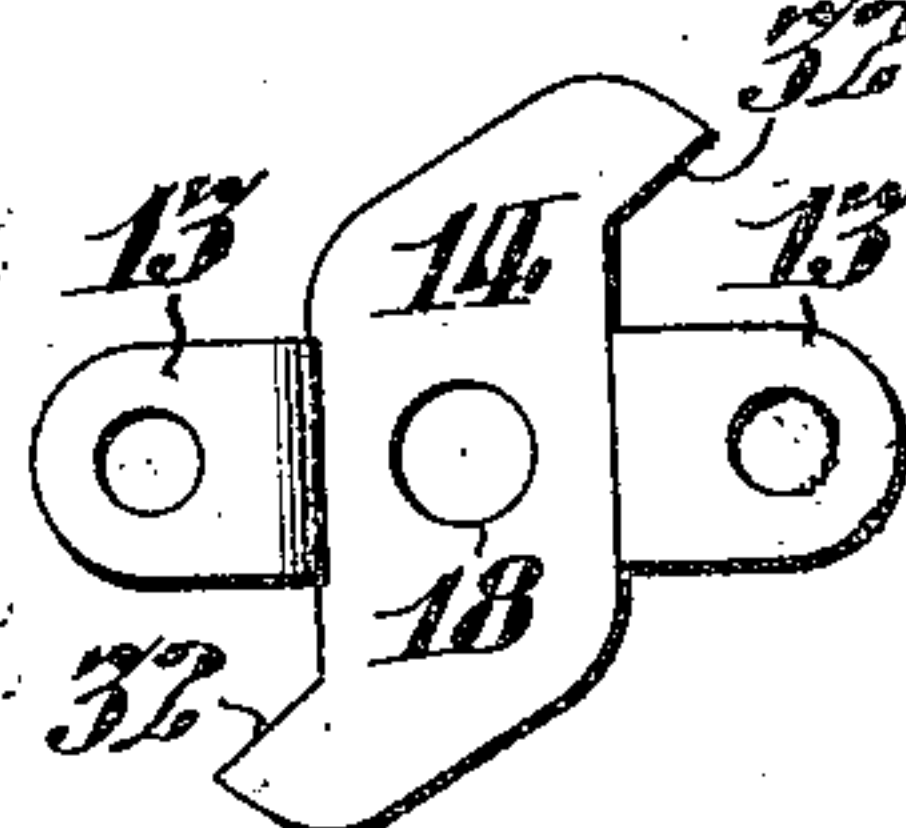
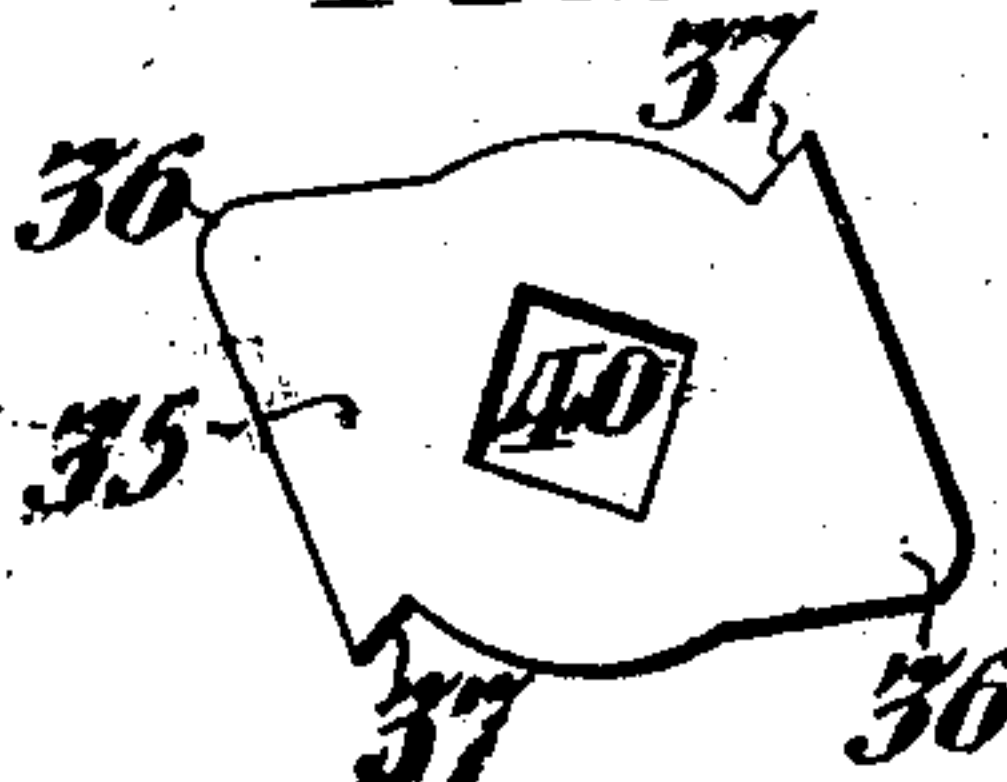


FIG. VI



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UNITED STATES PATENT OFFICE.

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SNAP-SWITCH.

No. 859,316

Specification of Letters Patent.

Patented July 9, 1907.

Application filed April 4, 1907. Serial No. 366,401.

To all whom it may concern:

Be it known that I, WALTER S. MAYER, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Snap-Switches, of which the following is a specification.

My invention relates to improvements in snap switches, designed to make and break electric circuits, and its object is to provide a device of this character which is simple in construction, and which is effective for the purpose for which it is designed.

A convenient embodiment of my invention is illustrated in the accompanying drawings, but it is to be understood that changes in the details of construction, which are within the scope of the claims, may be made without departing from my invention, and in order that the same may be more readily understood, reference is to be had to the accompanying drawings, in which,

Figure I is a top plan view of the device; Fig. II is a transverse section thereof; Fig. III is a top plan view of certain of the operative parts of the device, other parts thereof being omitted; Fig. IV is a plan view of a plate constituting a contact member; Fig. V is a top plan view of a part termed hereinafter the shifter; and Fig. VI is a top plan view of a part termed hereinafter the controller.

In the drawings,—1 designates a base of suitable insulating material, as, for instance, porcelain, which is provided with a depression 2 for the reception of certain of the operative parts of the device to be hereinafter referred to in detail.

3 designates binding posts secured to the base of insulating material to which the contact springs or brushes 4 are connected, and 5 designates the ends of line wires which extend through openings 6 in the base 1 and are connected to the binding posts by means of headed screws 7. Connection between the contact springs or brushes 4 is made by means of a contact member 8, the opposite ends of which are adapted to contact with the contact springs or brushes 4. The member 8 is provided with a relatively large opening 10 at its central portion through which the revoluble shaft 12 extends. The opening 10 should be large enough to prevent its edges from contacting with the parts of the device which extend therethrough.

The contact member 8 is connected to a shifter consisting of the arms 13 which are connected to an oblong plate 14. Portions 15 of the arms extend transversely of the plate 14 and the remaining portions of the arms and constitute what may be termed shoulders. The contact member 8 is connected to the arms 13 by means

of screws 16, the said contact member being separated from the screws and from the said arms by means of a bushing 17 of suitable insulating material.

The shifter is rotatably supported upon the shaft 12, the latter extending through a hole 18 in the oblong plate 14.

20 designates an energizing member consisting of a spring coiled around a sleeve or bushing 21 upon the shaft 12. The upper end of this energizer is connected to a relatively stationary collar 22 secured to the shaft 12 and the lower end of the said spring is adapted to engage or contact with some part of the shifter, as, for instance, one of the portions 15 of the arms, as illustrated in Fig. III of the drawings.

The energizer 20 being connected at its upper end to the relatively stationary collar 22 upon the shaft 12, while the lower end thereof is in engagement or contact with a portion of the shifter, it is evident that if the shaft 12 were turned by any means, as for instance the button 23, upon the outer end thereof, the shifter would be carried around with the shaft under the influence of the energizing spring 20. It becomes necessary, therefore, to provide means to act as a stop to interrupt the continuity of the movement of the said shifter. For that purpose, I have provided an angular lever 25 which is pivoted at its angle. In the construction shown, this lever is pivoted to a bar or plate 26 which is connected to the base 1, the said bar or plate being provided with a hole through which the shaft 12 passes. It is not necessary, however, that the said lever 25 be pivoted upon a plate, as, obviously, it may be pivoted directly to the base 1. The angle between the portions of the said lever on opposite sides of its pivot is greater than 90°, for a purpose which will be hereinafter explained. The opposite ends of the said lever are provided with downwardly extending projections 30 and 31 which are adapted to be brought alternately into the line or path of movement of the outer ends of the portion 14 of the shifter and are adapted to contact with the shoulders or contact portions 32 thereof, the said shoulders being adapted to engage the inside of the projection 30 and the outside of the projection 31. As a means for occasioning movement of the ends of the said lever about its pivot, I have provided a controller 35 which has cam acting projecting portions 36 and shoulders or contacting portions 37. The latter are adapted to contact with the inside of the projection 31 and the outside of the projection 30. The contact or engagement of the shoulders 37 with the respective projections 30 and 31 is made at the same time that the shoulders or contact portions 32 of the shifter are in engagement with the same projection, such projection being located inter-

mediate or between the said contact portions 32 and 37, as is clearly indicated in Figs. I and III of the drawings. The controller is supported upon the shaft 12 and is provided with a square or rectangular opening 40, which is adapted to engage a correspondingly formed enlargement 41 upon the shaft.

Assuming that the several parts are in the relative positions indicated in Fig. 1 of the drawings, if the shaft 12 is rotated, the energizing spring 20 is placed under tension by reason of the fact that its upper end is carried around with the shaft while the lower end is held against movement by reason of its contact or engagement with the shifter which is held against movement because one of the contact portions 32 of the shifter 14 is in engagement with the inside of the projection 30 upon the angular levers 25. Such rotation of the shaft 12 occasions movement of the controller 35 to bring one of the cam projections 36 into engagement with the projection 30 and occasion its outward movement to disengage the same from the shifter 14. By this time the energizer has been placed under considerable tension, in consequence of which the shifter 14 is moved rapidly under the influence of the said energizer, until the opposite end thereof is brought into contact with the outside of the projection 31, as indicated in Fig. III of the drawings, which was moved inwardly at the same time that the projection 30 was moved outwardly.

By reason of the fact that the angle between the portions of the lever 25 on opposite sides of its pivot is obtuse, when one of its ends is moved into the path of travel of the shifter, the other end will at the same time move outwardly beyond the path of travel of the same. Reverse movement of the controller and of the shaft 12 under the influence of the energizing spring 20 or other force is prevented by reason of the fact that when the several parts are in the relative positions indicated in Fig. I, one of the contact shoulders 37 is in contact with the outside of the projection 30, while in the relative positions of the parts as indicated in Fig. III, one of the said shoulders is in contact with the inside of the projection 31. It will thus be seen that the shaft 12 and the controller 35 can move in one direction only, which is to the right, as in the case of the hands of a watch. It is to be noted that the shifter and consequently the contact member 8 makes substantially a quarter turn at each movement.

Having thus described my invention, I claim:—

1. In a device of the character described, in combination, contact brushes, a contact member adapted to contact with the said brushes, a revolubly supported shifter operatively connected to the said contact member, means for supporting the said shifter, movable means located to one side of the pivotal point of the said shifter and adapted to be engaged by the said shifter, and a controller operatively revoluble in a continuous circuit and being adapted to occasion movement of the said means.

2. In a device of the character described, in combination, a revolubly supported shifter, a contact member operatively connected to the said shifter, means for occasioning movement of the said shifter, a movable device located to one side of the pivotal point of the said shifter, the said device being adapted to be moved into the path of travel of the shifter, and a controller operatively revoluble in a continuous circuit and being adapted to occasion movement of the said device to permit movement of the said shifter.

3. In a device of the character described, in combination, a revolubly supported shifter, a contact member op-

eratively connected to the said shifter, means for occasioning movement of the said shifter, an angular lever pivoted some distance to one side of the pivotal point of the said shifter, a revoluble controller adapted to engage portions of the said lever and occasion movement of the opposite ends thereof alternately into the path of travel of the said shifter, the said controller revolving in a continuous circuit.

4. In a device of the character described, in combination, a shaft which in operation revolves completely on its axis, a shifter movably mounted on the said shaft, a contact member operatively connected to the said shifter, an energizer connected to the said shaft and being in engagement or contact with the said shifter, a lever pivoted some distance to one side of the said shaft and having a portion thereof adapted to be moved into the path of travel of the said shifter, and a device supported upon the said shaft and revolving therewith, the said device being adapted to occasion outward movement of the portion of the said lever which is in the path of travel of the said shifter.

5. In a device of the character described, in combination, a revoluble shaft, a shifter rotatably supported upon the said shaft, a contact member operatively connected to the said shifter, an energizer connected to the said shaft and being in operatively relation to the said shifter, a lever pivoted intermediate its ends and located to one side of the said shaft, the opposite end portions of which lever are angularly related to each other, a controller supported upon the said shaft and revolving therewith, the said controller being adapted to engage the said lever successively on opposite sides of its pivot to occasion movement of its opposite ends alternately into the path of travel of the outer end portions of the said shifter.

6. In a device of the character described, in combination, a shaft, a shifter pivotally supported upon the said shaft, a contact member operatively connected to the said shifter, an energizing spring connected to the said shaft, and being in engagement or contact with a portion of the said shifter, an angular lever being located to one side of the said shaft, the said lever being pivoted at its angle, a controller having cam acting projections which are adapted to engage the said lever and occasion alternate movement of the opposite ends thereof into and out of the path of travel of the said shifter, and the said controller being provided with shoulders which are adapted to engage portions of the opposite ends of the said lever whereby reverse movement of the controller is prevented.

7. In a device of the character described, in combination, a shaft, a shifter movably supported upon the said shaft, a contact member operatively connected to the said shifter, an energizing spring connected at one end to the said shaft, and having its other end in contact with the said shifter to occasion movement thereof, an angular lever pivoted at its angle and located to one side of the said shaft, the angle between the portions of the said lever on opposite sides of its pivot being greater than ninety degrees, and the said lever being provided with projections at its opposite ends, which projections are adapted to be moved into the path of travel of the outer ends of the said shifter and to be engaged thereby, a controller supported upon the shaft and adapted to move therewith, the said controller being provided with cam projections which are adapted to engage with the end portion of the said lever which is nearest to the said shaft and which is in engagement with one of the ends of the said shifter to occasion outward movement thereof, and the said controller being provided with shoulders which are adapted to engage the said projections, whereby reverse movement of the said controller and the said shaft is prevented.

8. The combination of a revoluble shaft, a shifter supported upon the said shaft and adapted to have a movement of rotation in a continuous circuit with relation thereto, a contact operatively connected to the said shifter, an energizer adapted to occasion rotatory movement of the said shifter, a lever pivoted a distance to one side of the said shifter and having portions which are adapted to be moved into and out of the path of move-

ment of the said shifter, a controller secured to the said shaft and revolving therewith, the said controller having cam acting projections which are adapted to engage the said lever and occasion movement of portions thereof upon opposite sides of its pivot into and out of the path of movement of the said shifter, the said controller being revoluble in a continuous circuit.

9. The combination of a shaft, a shifter supported upon the said shaft and adapted to have a movement of rotation with respect thereto, a contact operatively connected to the said shifter, an energizer adapted to occasion movement of the said shifter, a lever pivoted a distance to one side of the said shaft, portions of the said lever being adapted to be moved into and out of the path of move-

ment of the said shifter, a controller secured to the said shaft and being adapted to engage the said lever upon opposite sides of its pivot to occasion movement of different portions of the said lever into the path of movement of the said shifter, the said controller having a movement of rotation in a continuous circuit.

In testimony that I claim the foregoing as my invention, I have hereunto signed my name this 2nd day of April, A. D. 1907.

WALTER S. MAYER.

In the presence of—

IRVIN SHUPP, Jr.,

CYRUS N. ANDERSON.