

June 19, 1923.

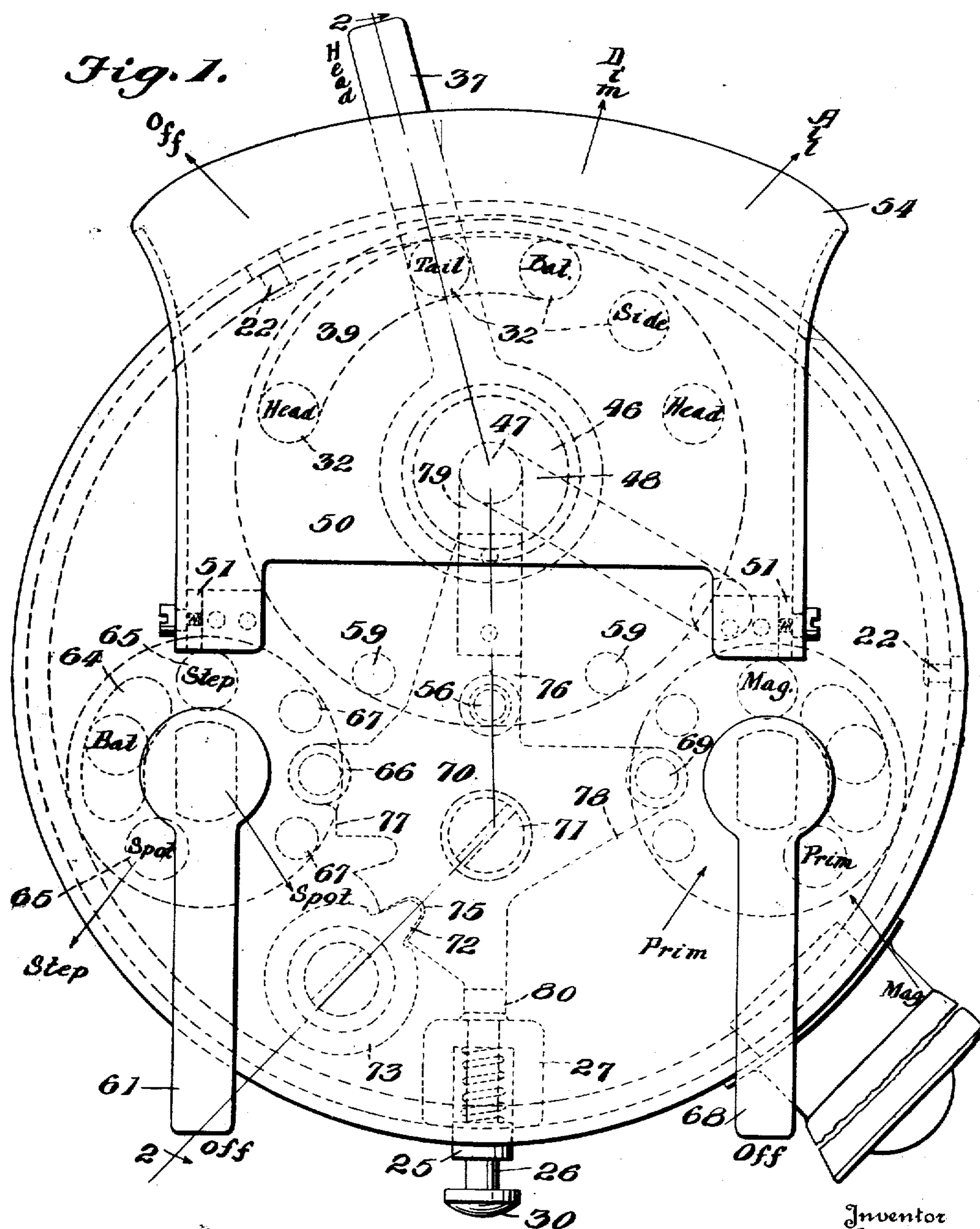
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W. J. SPIRO

MULTIPLE CONTROL SWITCH

Filed Sept. 16, 1920

3 Sheets-Sheet 1



Inventor

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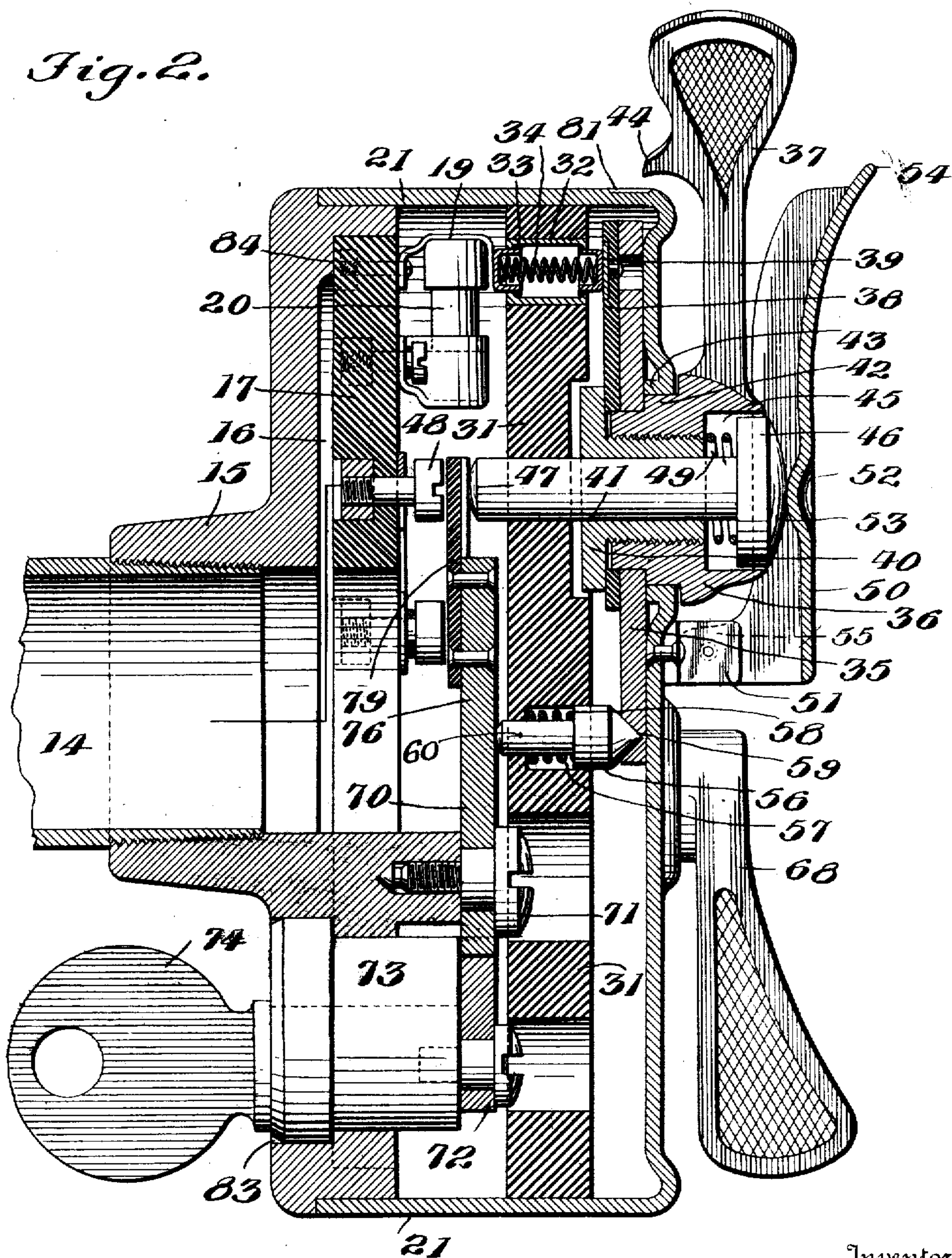
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Fig. 2.



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Fig. 3.

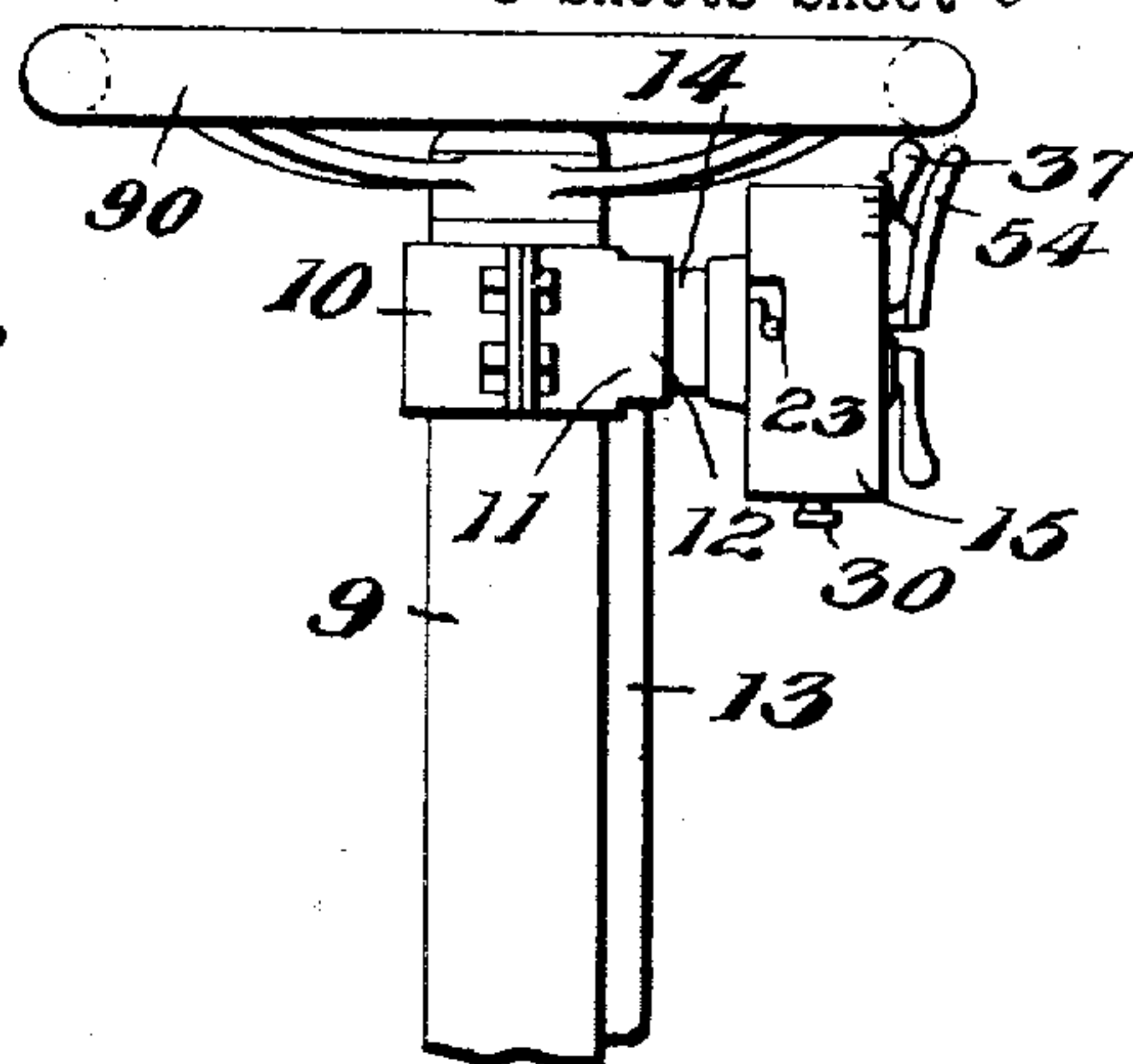
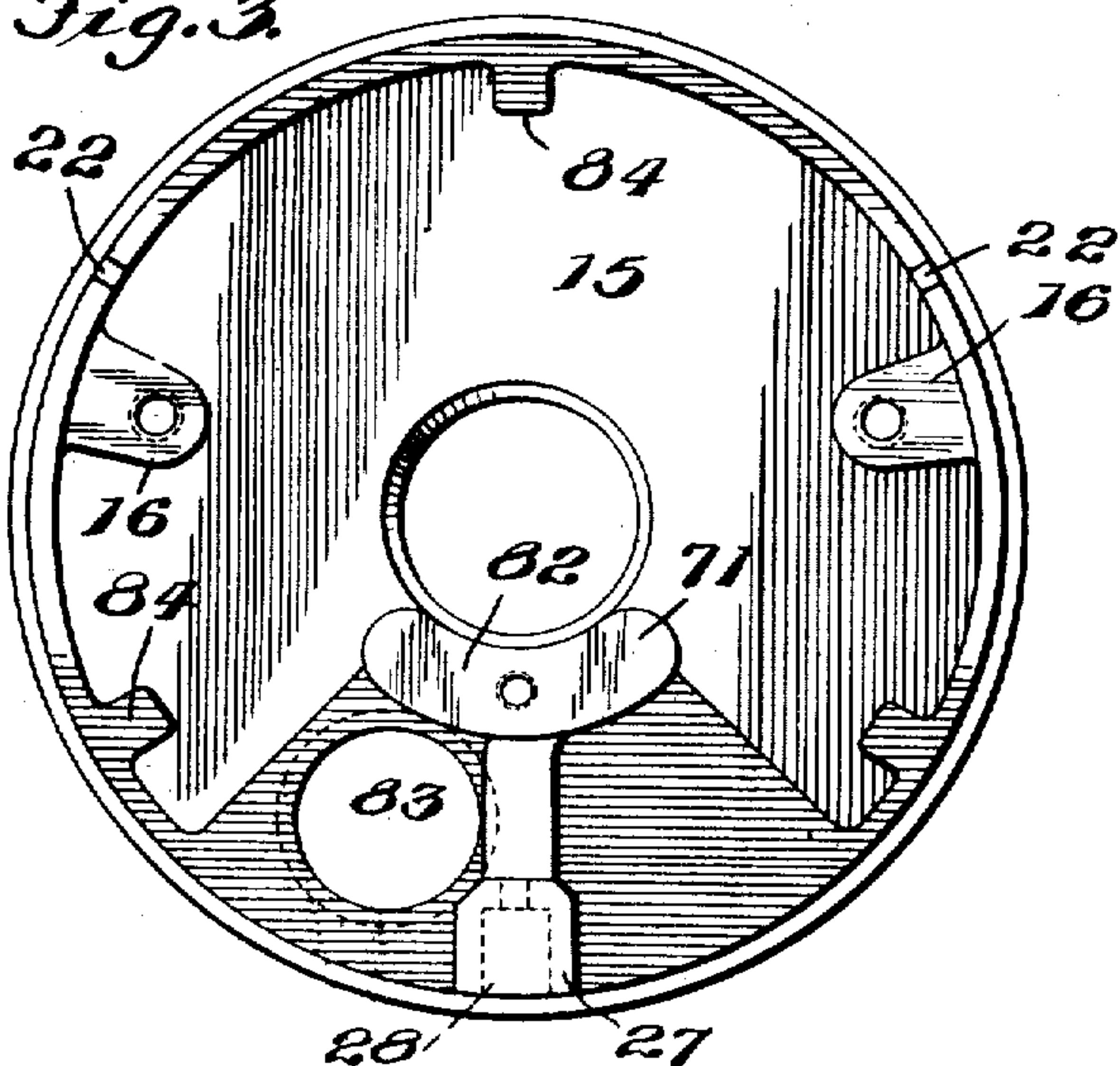


Fig. 4.

Fig. 5.

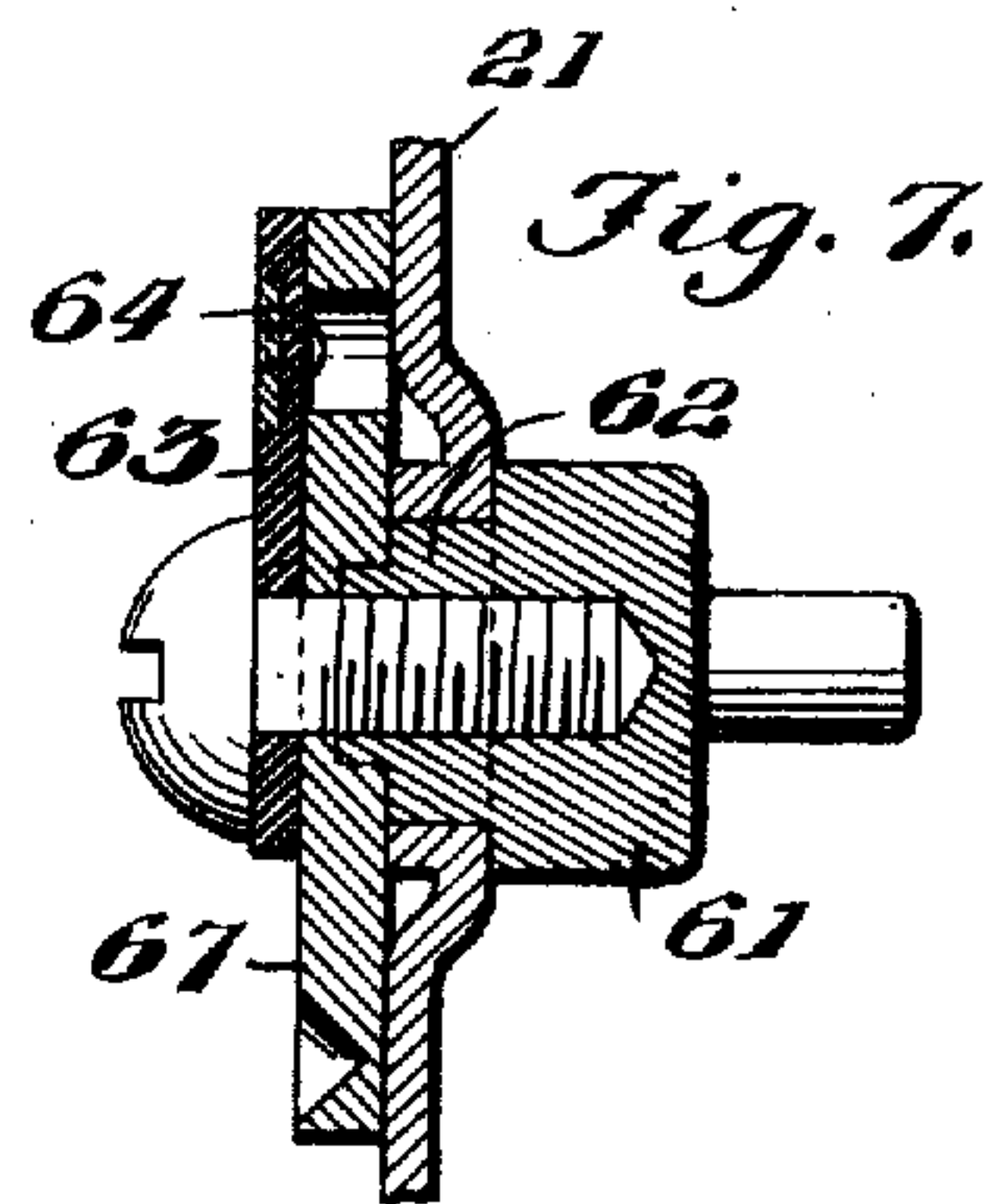
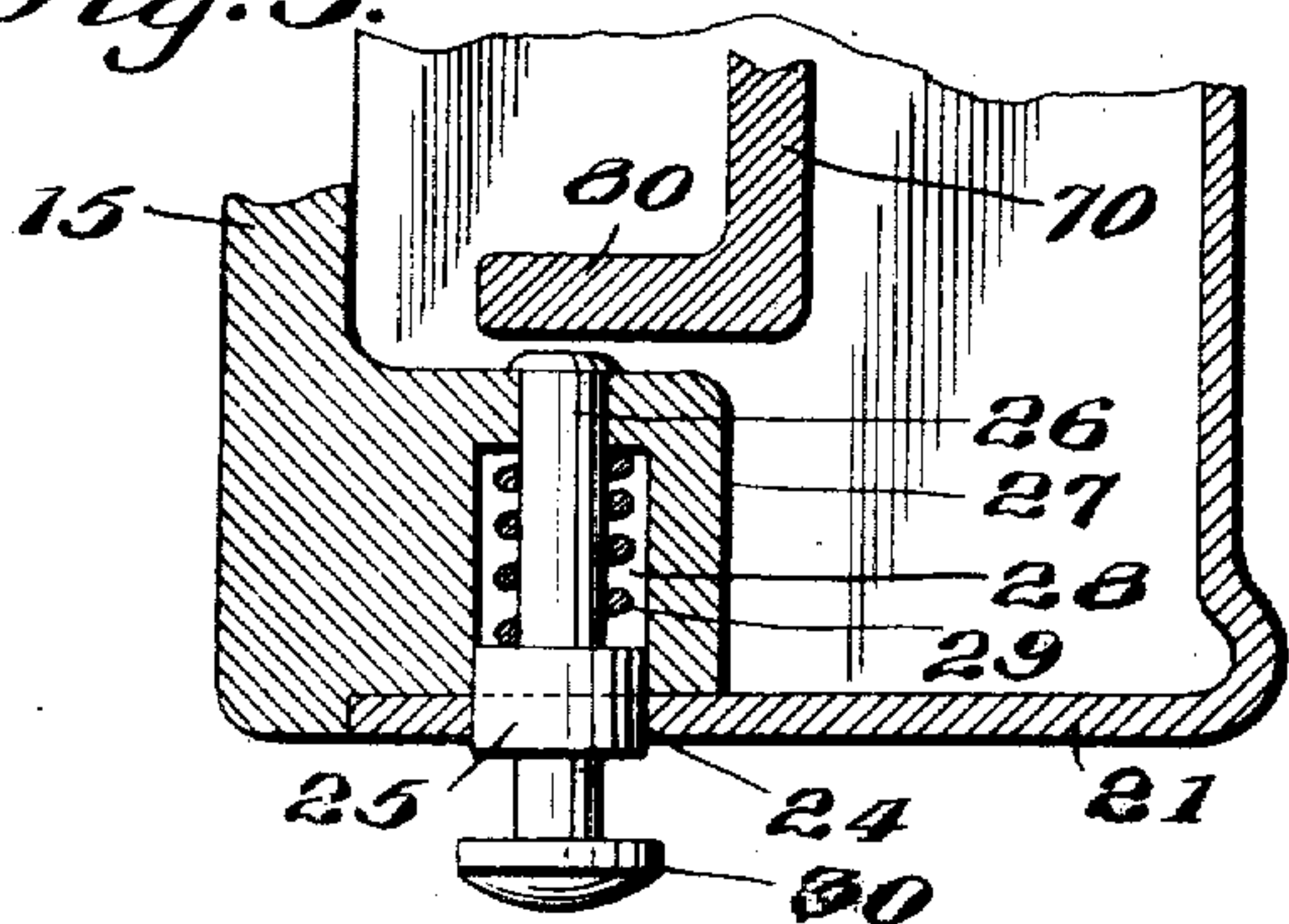


Fig. 7.

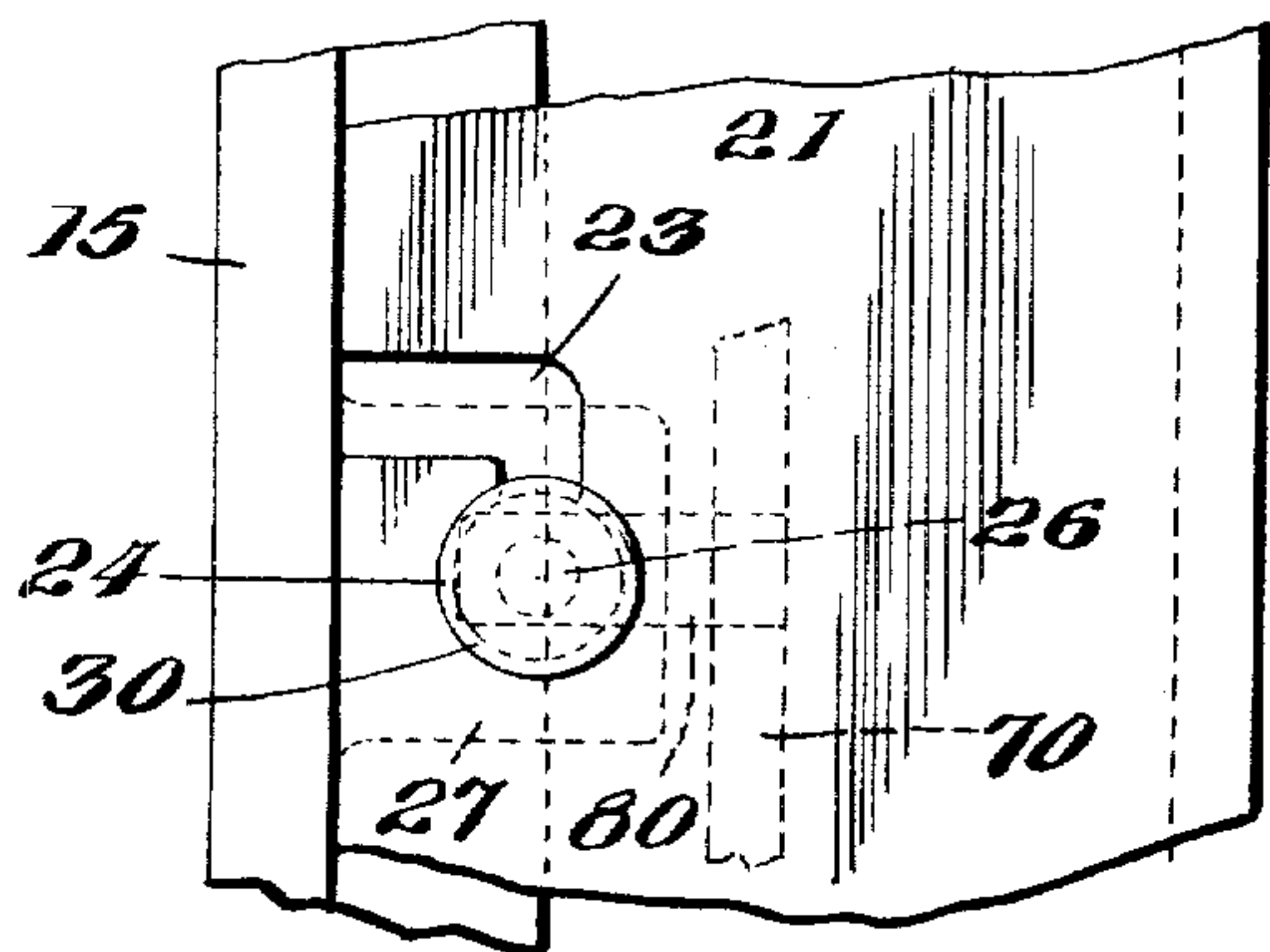


Fig. 6.

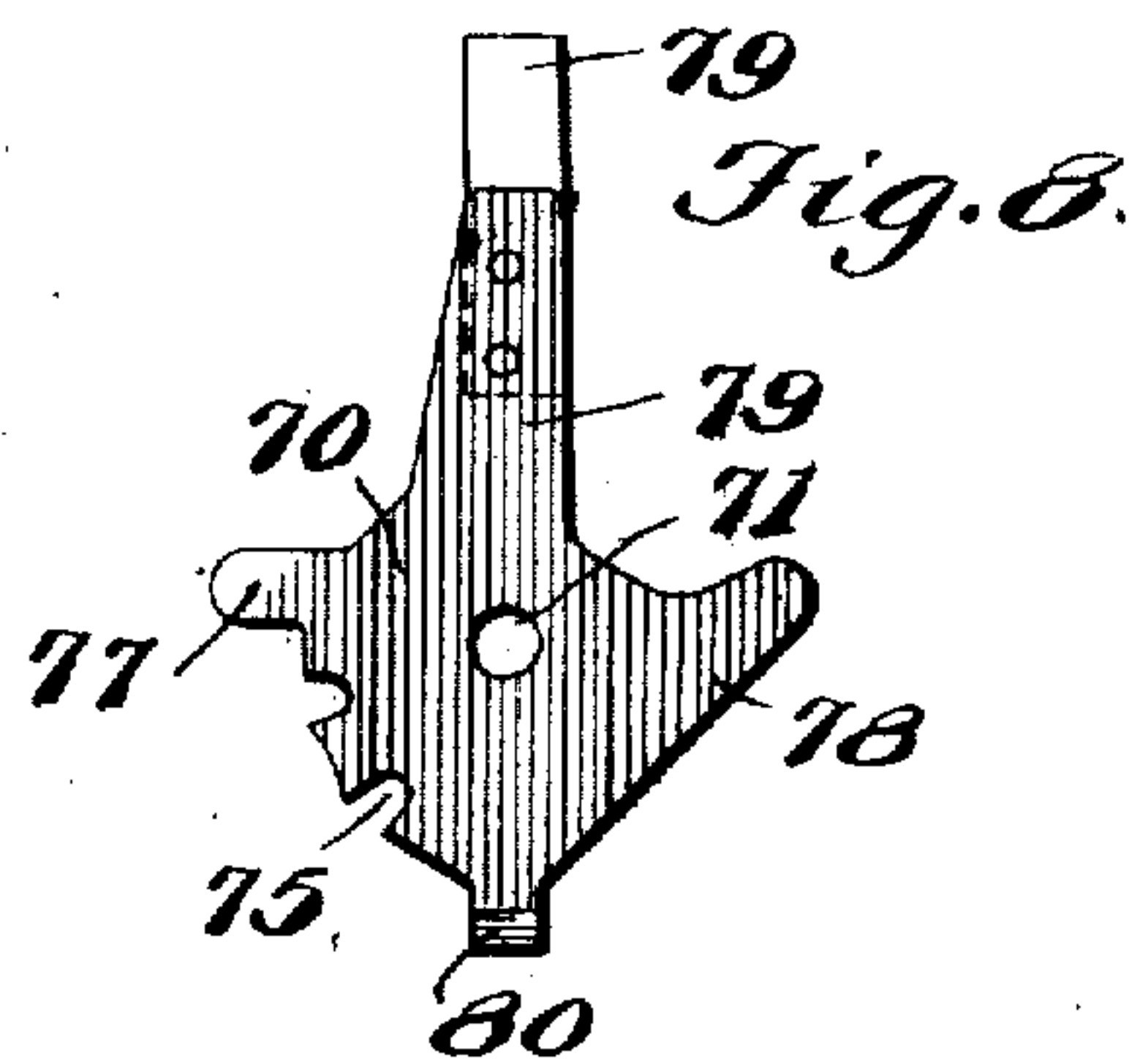


Fig. 8.

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UNITED STATES PATENT OFFICE.

WALTER J. SPIRO, OF WHITE PLAINS, NEW YORK.

MULTIPLE-CONTROL SWITCH.

Application filed September 16, 1920. Serial No. 410,729.

To all whom it may concern:

Be it known that I, WALTER J. SPIRO, citizen of the United States, residing at White Plains, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Multiple-Control Switches, of which the following is a specification.

This invention relates to a multiple control switch, and particularly to a construction adapted for application to motor vehicles where the control of the electrical connections is for convenient operation by the driver thereof, and comprises an improvement upon or development of the construction shown in my application filed April 7, 1920, Serial No. 372,069.

The invention has for an object to provide a novel and improved construction of switch mechanism enclosed within a shell which is removably mounted upon a supporting frame carrying the connecting fuses and adapted to be locked thereon when desired.

Another object of the invention is to present an improved construction and arrangement of the movable contact and signal horn members and their operating handles so that the latter will be disposed beneath and adjacent the hand hold of the steering wheel so as to be readily operated by the fingers of the hand of the driver resting upon said wheel.

A further object of the invention is to provide a unitary locking mechanism controlling all of the light and ignition switches, the horn button, and also the removable enclosing casing for such parts.

Another object of the invention is to present a novel construction of movable contact disk having seats cooperating with a spring detent to yieldingly retain the disk in shifted position, together with a locking member movable into the path of the detent to prevent its withdrawal from the disk seat.

Other and further objects and advantages of the invention will be hereinafter set forth and the novel features thereof defined by the appended claims.

In the drawings—

Figure 1 is a plan view;

Figure 2 is a vertical section on line 2—2 of Figure 1;

Figure 3 is an elevation of the shell frame;

Figure 4 is a side elevation of a steering post with the invention applied thereto;

Figure 5 is a detail section of the shell locking pin;

Figure 6 is a bottom plan thereof;

Figure 7 is a detail section of the movable members of an auxiliary switch; and

Figure 8 is a detail of the locking plate.

Like numerals refer to like parts in the several figures of the drawings.

This invention is capable of various forms of application, one of which is herein specifically shown and described but the invention is not confined thereto. In the form illustrated the switch is applied to the steering post of an automobile beneath the hand wheel thereof so that the light control lever is disposed adjacent the hand hold of the wheel, substantially as disclosed in my application filed April 7, 1920, Serial No. 372,069. In such form of the invention the clamp 10 is applied to the steering post 9 and provided with threaded sockets 11 and 12. The former receives a conducting tube 13 for electric wiring and the latter a laterally disposed supporting and conducting tube 14 upon which the casing frame 15 is threaded. This frame is provided at suitable intervals with threaded lugs 16 (Fig. 3) upon which the fuse carrier 17 is mounted and secured by any desired means. The carrier supports the fuse clips 19 carrying the fuses 20 and electrically connected in the usual manner to establish the desired circuits, as indicated in Figure 1.

The frame 15 supports a shell or casing 21 secured thereto in any preferred manner, for instance by the pins 22 upon the frame entering the bayonet joint slots 23 formed in the shell. For the purpose of retaining the shell against accidental disconnection one of the bayonet slots therein is formed at its inner end with an enlarged aperture 24 adapted to receive a head 25 upon the sliding pin 26 which is mounted in a recessed lug 27 from the frame 15. Between the head 25 and the base of the lug recess 28 a spring 29 is disposed to normally project the head into the aperture 24 while it is retracted from such position by a push button 30 upon the exposed end of the pin. Means cooperating with this pin to lock the shell in position will be hereinafter described.

The shell 21 supports and has removable

therewith the nonconducting contact carrier 31 having mounted therein the usual contact buttons 32 disposed to establish circuits through the fuse clips. The heads 33 of these buttons are pressed outwardly in opposite directions by a spring 34, as shown in Figure 2. Disposed within the shell parallel with the contact carrier is a shift-able conducting disk 35 secured upon the inwardly projecting collar 36 from the control lever 37. The disk 35 has mounted upon its inner face a non-conducting plate 38 having secured thereto a conducting segment 39 disposed to contact with two or more of the buttons 32 to establish the desired circuits. The disk 35 and plate 38 are secured in position by a clamp nut 40 having a central aperture 41 therethrough and exteriorly threaded into the collar 36 of the control lever. This collar is also formed with a bearing surface 42 resting upon an inturned edge 43 of an aperture in the face of the shell. The control lever is provided with a pointer 44 projected above the upper portion of the shell to cooperate with indications 81 thereon, Figs. 2 and 4, to determine the position of the switch.

The outer face of the control lever is formed with a recess 45 to receive the horn button 46 which has a shank 47 extending through the apertures in the clamping nut and contact carrier and disposed to engage a make-and-break contact 48 upon the fuse carrier from which the usual circuit connections extend. Between the base of the recess 45 and the button 46 any desired form of restoring spring may be disposed, such as shown at 49. For the purpose of operating the horn button without removing the hand from the wheel of the steering post an arm 50 is pivoted upon lugs 51 from the shell and is formed with a curved contact face 52 to engage the curved head face 53 of the button. This arm is in the form of a plate with a segmental upper edge 54 lying adjacent the control lever in position to be readily operated by the depending fingers of the driver's hand when resting upon the steering wheel and from any position to which the control lever may be shifted. The restoring spring for the horn button holds this arm plate normally outward and such travel is limited by a lip 55 extended beyond the arm pivots. While the specific structure of horn button has been described the invention is not limited thereto as other forms of signaling device may be used.

The conducting segment shifted by the control lever is frictionally held in its adjusted positions by a spring detent 56 mounted in a recess 57 in the contact carrier 31 and normally projected toward the disk by a spring 58 located between the base of the recess and the head of the detent. This detent seats in a series of depressions or

sockets 59 formed in the disks 35 and frictionally retains the same in position under normal conditions. The detent is also provided with a shank 60 projected through the contact carrier and adapted to cooperate with a locking mechanism to be hereinafter described.

The parts so far described comprise those for the control of the main lighting circuit and signal horn, but for the purpose of assembling in a single unit all of the electrical control mechanism for an automobile, supplemental switches may be arranged at opposite sides of the lower portion of the shell, as shown in Figure 1. These are substantially the same in construction and operation as the switch mechanism before described and need not be specifically referred to. At one side of the shell an auxiliary switch lever 61 is disposed and its inwardly projecting collar 62 carries a nonconducting plate 63 having a segmental contact plate 64 thereon arranged to engage contact buttons 65 carried by the contact carrier 31. These parts are normally frictionally held in their shifted position by a detent 66 seating in recesses in the disk 67 carried by the control lever 61 and similar in construction and operation to the detent 56 before described. This auxiliary switch is herein shown as connected to control the spot and step lights, but may be used for any desired purpose.

At the opposite side of the shell an ignition switch lever 68 is provided and controls a switch mechanism similar to the auxiliary switch just described, the parts being normally frictionally held in position by a detent 69. The circuits from this ignition switch are herein shown as controlling connections between the battery, magneto and primary coil, but may be otherwise connected.

For the purpose of effectually locking all parts of the circuit switches and also the shell in position whenever desired, a unitary locking mechanism is provided and comprises generally a pivotally mounted locking plate 70 disposed to engage and prevent movement of the several parts. This plate is pivoted at 71 upon the frame 15 and is shifted into locked and unlocked positions by a finger 72 carried by a rotatable part of any desired form of locking device, such as the cylinder lock 73 operable by a key 74 as shown. This finger is seated in a socket 75 in the plate 70 and oscillates the latter to a limited extent sufficient to engage the members to be locked. The upper arm 76 of the plate swings into the path of the shank 60 of the detent 56 and prevents a yielding retraction thereof and thus locks the light control lever and parts carried thereby in position. The plate 70 is also provided with a lateral arm 77 disposed to swing into the

path of the detent 66 controlling the auxiliary switch, and also with a similar arm 78 cooperating with the detent 69 for the ignition switch. The arm 76 of the locking plate also carries a nonconducting projection 79 which is interposed between the two conducting members of the make and break contact controlled by horn button 46. The lower portion of the plate 70 is provided with a lateral lug 80 disposed to swing over the sliding pin 26 for retaining the shell as the other parts are locked and prevents any inward movement of this pin for the purpose of releasing the shell. All parts are thus instantly locked in any position set by a simple movement of the locking key. For the purpose of supporting the locking plate against the tension of the detents bearing thereon, the shell frame 15 is formed with a segmental bearing face 82 upon which the plate is pivoted at 71. This frame is also formed with a seat 83 to receive the cylinder lock 73, and also with spacing lugs 84 for the fuse carrier to provide space for the electric wiring between the members.

In the description of the light control lever 37 no specific wiring connections for parts controlled thereby has been recited as such may be arranged as desired, but a preferable arrangement thereof is indicated by dotted lines in Figure 1. With the lever in the position shown the head and tail lights are in circuit with the battery, while if shifted to the left all lights are out of circuit. A shift one step to the right brings the tail and side or dim lights in circuit with the battery, and a further shift to the right brings all lights into circuit.

From the foregoing description the operation of the light control and ignition switches will be apparent, and the location of the control lever for the head and tail lights for operation by the fingers of the hand of the driver upon the steering wheel effects the most convenient and safe manipulation thereof in night driving as the hand of the operator is not removed from the wheel either in shifting the lights or in the operation of the signal horn. The extended finger piece for the horn button permits its operation from any point within the arc of travel of the light control lever. It will also be seen that the movable contact member is yieldingly held in any shifted position and positively locked therein by the locking plate when interposed into the path of travel of the retaining detent. This locking plate also controls all auxiliary switches, the horn button, and the removable enclosing shell by a single operation. Under normal conditions this shell with the contact members and switch elements carried thereby may be removed for access to the fuses mounted upon the shell supporting frame by inward pressure upon the headed pin entering one

of the bayonet slots in the shell. When the locking plate is shifted to lock, such movement is positively prevented, and the enclosing shell thus securely locked upon its frame. The locking plate thus comprises a unitary device controlling all movable parts of the switch mechanism. A special construction of frame to support the members of the locking device has been provided.

Changes and alterations may be made in the construction and arrangement of the several parts hereinbefore described without departing from the spirit of the invention as defined by the following claims.

What I claim is—

1. In a control switch, a frame, a fuse carrier mounted therein, a shell detachably supported upon said frame, a contact carrier secured therein, a movable conducting disk within the shell and cooperating with said carrier, and an operating handle for said disk having a bearing in one end of the shell.

2. In a control switch, a frame, a fuse carrier mounted therein, a shell detachably supported upon said frame, a contact carrier secured therein, a movable conducting disk within the shell and cooperating with said carrier, an operating handle mounted in one end of the shell, and an indicating finger upon the handle cooperating with the body of the shell.

3. In a control switch, a frame, a shell supported thereon and provided with a series of contact members in circuit, a movable member within the shell having a conducting surface to connect said members, an operating handle for said conducting member having an apertured hub, a horn button having a shank mounted in said hub, and opposite circuit contacts within the shell disposed to be connected by said shank.

4. In a control switch, a frame, a shell supported thereon and provided with contact members, a movable conducting member within the shell, an operating handle for said conducting member, a horn actuator mounted to engage an independent contact member, and a finger piece for said actuator pivoted upon the shell and having its free end disposed adjacent the handle for actuation in any position thereof.

5. In a control switch, a frame, a shell supported thereon and provided with contact members, a movable conducting member within the shell, an operating handle for said conducting member, a horn actuator mounted to engage an independent contact member, and a finger piece for said actuator pivoted upon the shell and having its free end adjacent the operating handle disposed in a plane parallel to the plane of travel of the handle and of sufficient length to cover all positions thereof.

6. In a control switch, a frame, a shell

supported thereon and provided with contact members, a movable conducting member within the shell, an operating handle for said conducting member, a horn actuator mounted to engage a contact member, and a finger piece for said actuator pivoted upon the shell at opposite sides of the button and provided at its free edge with an operating portion adjacent said handle extending for the range of travel thereof.

7. In a control switch, a frame, a shell supported thereon and provided with contact members, a movable conducting disk within the shell, an operating handle for said disk having an apertured hub recessed at its outer end, a sleeve nut engaging said disk and entering said hub, and a horn button disposed in said recess and having its shank extended through said hub and nut to engage a contact member.

8. In a control switch, a frame, a shell supported thereon and provided with contact members, a movable conducting disk within the shell, an operating handle for said disk having an apertured hub, a horn button having a shank extended through said hub to engage a contact member, and a locking member adapted to be interposed between said shank and its contact member.

9. In a control switch, a frame, a shell carrying switch mechanism, a bayonet joint connection between the frame and shell having an enlarged portion in the slot thereof, a yielding pin provided with a head to enter said enlarged portion and locking means adapted to be disposed in the path of travel of said pin.

10. In a control switch, a frame, a shell carrying switch mechanism, a pin and slot connection between the frame and shell having cooperating latching portions, and locking means adapted to engage said pin to prevent releasing movement thereof.

11. In a control switch, a frame having a recessed seat, a yielding latch pin mounted therein and provided with a head, a coiled spring within said seat disposed to project said head, a switch carrying shell formed with an angular slot having an enlarged aperture at its inner end to receive the head of said pin, and means for releasing the pin head from said aperture.

12. In a control switch, a frame provided with a recessed spring seat, a latch pin extending through said seat and having a head portion therein, a spring within said seat engaging said head to project the pin, and a shell supported upon the frame and having an aperture to receive the pin head when projected.

13. In a control switch, a frame provided with a seat, a latch pin slidably mounted therein and having a head portion, a projecting spring disposed between said portion and seat, a shell supported upon the

frame and having an aperture to receive the pin head when projected, and a locking device mounted upon the frame and movable into the path of the pin to prevent releasing movement thereof.

14. In a control switch, a frame, a shell supported thereon and provided with contact members, a movable conducting member cooperating therewith, a yielding detent entering seats in said conducting member to frictionally retain the same in shifted position, and means for engaging and locking said detent.

15. In a control switch, a frame, a shell supported thereon and provided with contact members, a movable conducting member cooperating therewith, a spring actuated sliding detent disposed to enter seats in said conducting member, and locking means movable into the path of the detent to prevent at will releasing action of said detent.

16. In a control switch, a frame, a shell supported thereon and provided with contact members, a movable conducting member cooperating therewith, a spring actuated sliding detent disposed to enter seats in said conducting member and having an extended shank, and locking means mounted to move into the path of said shank.

17. In a control switch, a frame, a shell separably mounted thereon, a movable contact member within the shell, and a unitary device for locking said shell upon the frame and said member against movement.

18. In a control switch, a frame, a shell separably mounted thereon, a movable contact member within the shell, a yielding device for retaining said member in adjusted position, and a unitary device for locking said shell upon the frame and said yielding device against movement.

19. In a control switch, a frame, a shell detachably mounted thereon, a yielding latch for retaining the shell in position, a movable contact member within the shell, a yielding device for retaining said member in adjusted position, and a locking member disposed to travel into the path of said yielding latch and device to prevent movement thereof.

20. In a control switch, a frame, a shell separably mounted thereon, a movable contact member within the shell, an auxiliary switch therein having a movable contact member, and a unitary device for simultaneously locking said shell and each of said contact members.

21. In a control switch, a frame, a shell separably mounted thereon, a movable contact member within the shell, an auxiliary switch therein having a movable contact member, a horn button mounted in the shell, and a unitary device for locking said shell, each of said contact members, and said button against movement.

22. In a control switch, a frame, a switch carried thereby and having a rotatable contact member, a reciprocating signal operating means, and a unitary device for simultaneously locking said member against rotation and said means against reciprocation.

23. In a control switch, a casing provided with a switch mechanism having a movable contact member, a signal operating device mounted therein, a contact cooperating with said device, and a lock actuated plate adapted to be interposed between the signal device and its contact.

24. In a control switch, a casing provided with a switch mechanism having a movable contact member, a sliding signal operating device mounted therein, a contact cooperating with said device, and a lock actuated pivoted plate having a non-conducting portion adapted to be interposed between the signal device and its contact.

25. In a control switch, a casing provided with a switch mechanism, a horn button slidably mounted therein, means to retract said button, a make and break contact cooperating with a rearwardly extended shank from said button, a lock mechanism, an oscillating plate actuated by said lock mechanism, and a lock face upon said plate disposed to be interposed between the shank of said button and its contact.

26. In a control switch, a frame, a lock mechanism mounted therein, a locking plate pivoted upon the frame and actuated by said mechanism, a switch mechanism having a movable member, and intermediate means disposed to engage at opposite ends with said member and plate when the latter is moved to locking position.

27. In a control switch, a frame, a lock mechanism mounted therein, a pivoted locking plate having a plurality of locking means and actuated by said mechanism, and a plurality of rotatable switch mechanisms having reciprocable retaining members disposed to be engaged by said means when in locking position.

28. In a control switch, a frame, a lock mechanism mounted therein, a plurality of switch mechanisms carried by the frame and having rotatable members, a signal device having a reciprocating contact member, and a pivoted locking plate actuated by said lock mechanism and having a plurality of locking means to simultaneously prevent movement of said switch mechanisms and signal device.

29. In a control switch, a frame, a lock mechanism mounted therein, a casing supported upon the frame and retained by a latch device, a switch mechanism carried by the casing and having a movable member, a signal device having a movable contact member, and a pivoted locking plate actuated by said lock mechanism and having a

plurality of lock faces to engage the casing latch and the movable members of the switch mechanism and signal device.

30. In a control switch, a frame, a lock mechanism mounted thereon, an oscillating finger carried by said mechanism, a locking plate pivoted upon the frame and having a seat to receive said finger, a plurality of radially disposed locking faces upon said plate, and independent mechanisms cooperating with said faces to be locked thereby.

31. In a control switch, a frame provided with a bearing face and a lock seat, a shell mounted upon said frame, switch mechanism disposed within said shell, a locking plate pivoted upon said face, and an actuating lock for said plate disposed in said seat.

32. In a control switch, a frame provided with supporting lugs at its periphery, a bearing face adjacent a central aperture therethrough, and a lock seat; a fuse block mounted upon said lugs, a shell carried by said frame, switch mechanism within said shell, a locking plate pivoted upon said face to cooperate with said mechanism, and an actuating lock disposed in said seat and having a member to engage said plate.

33. In a control switch, a frame, a shell mounted thereon, a locking member carried by the frame to engage said shell, a switch mechanism within the shell having a movable retaining device, a signal device mounted within the shell and having a movable contact member, a locking plate carried by the frame and having parts to engage said locking member, retaining device and contact member to prevent movement thereon, and an actuating lock for said plate mounted upon the frame.

34. The combination with a steering post and wheel, of a support extended laterally from the post and carrying a switch mechanism, a signal device carried by said support, and an actuating finger piece for said device disposed beneath and adjacent the hand hold of said wheel and having its free upper edge materially extended circumferentially thereof for operation by the fingers of the hand of the driver resting in normal position upon said wheel.

35. The combination with a steering post and wheel, of a support extended laterally from said post and carrying a switch mechanism, a finger piece for controlling said mechanism disposed beneath and adjacent the hand hold of said wheel, a signal device carried by said support, and an actuating member for said device disposed adjacent the finger piece and having its free edge extending laterally in opposite directions from said device and in substantially the arc of the wheel beneath and adjacent the hand hold of the wheel.

In testimony whereof I affix my signature.
WALTER J. SPIRO.