

June 9, 1931.

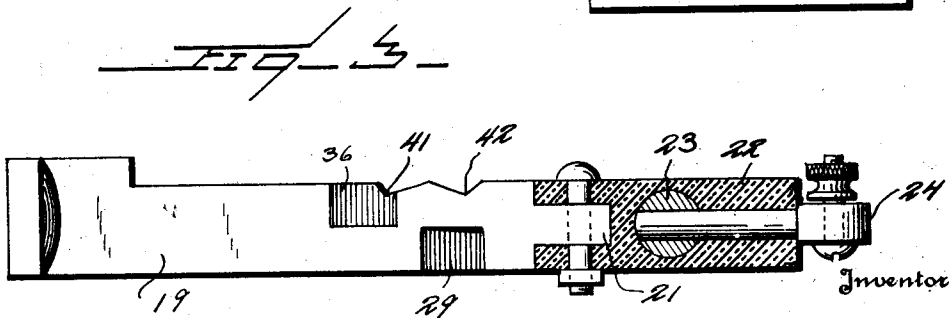
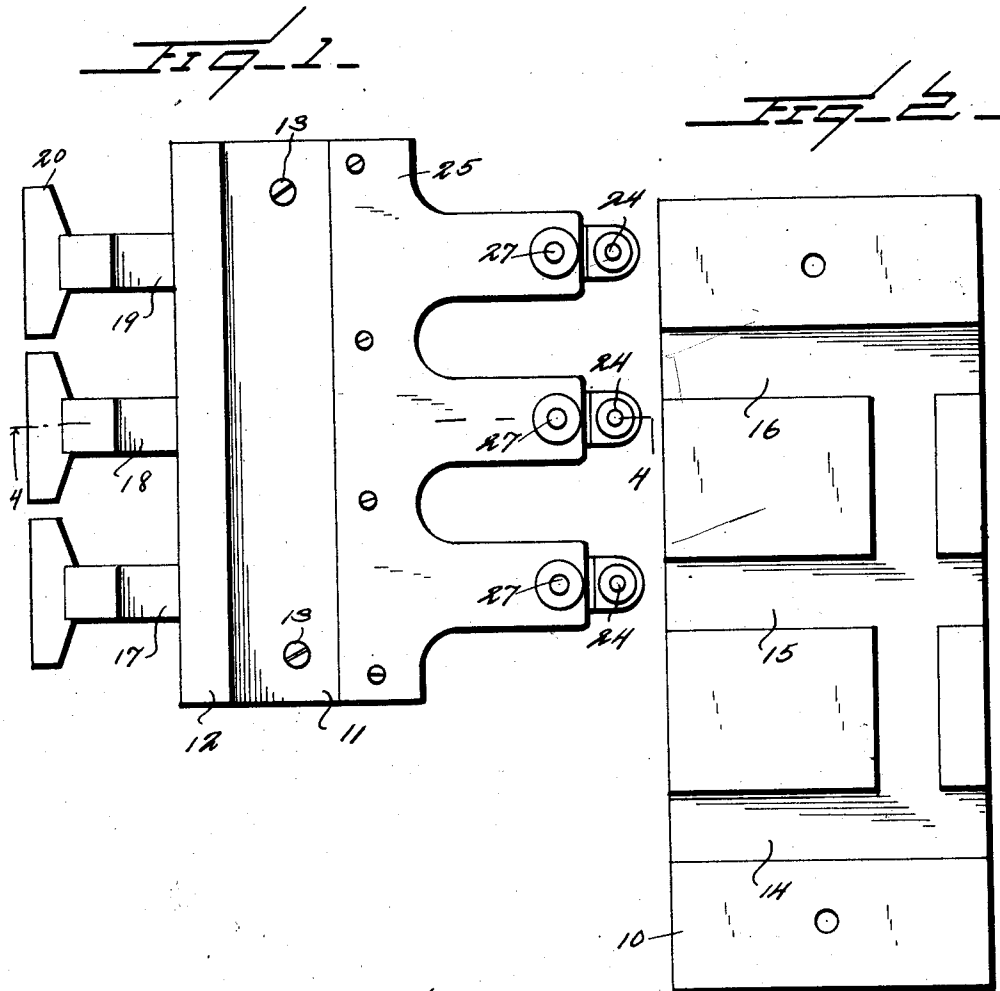
T. C. EVANS

1,809,778

INTERLOCKING CONTROL MECHANISM

Filed May 28, 1929

2 Sheets-Sheet 1



Inventor

T.C. Evans

804 Watson E. Coleman
Attorney

Attorney

June 9, 1931.

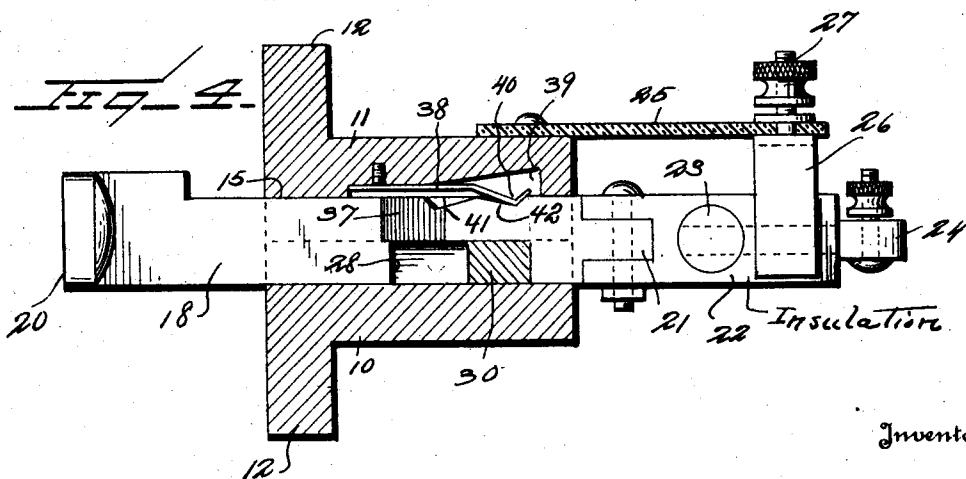
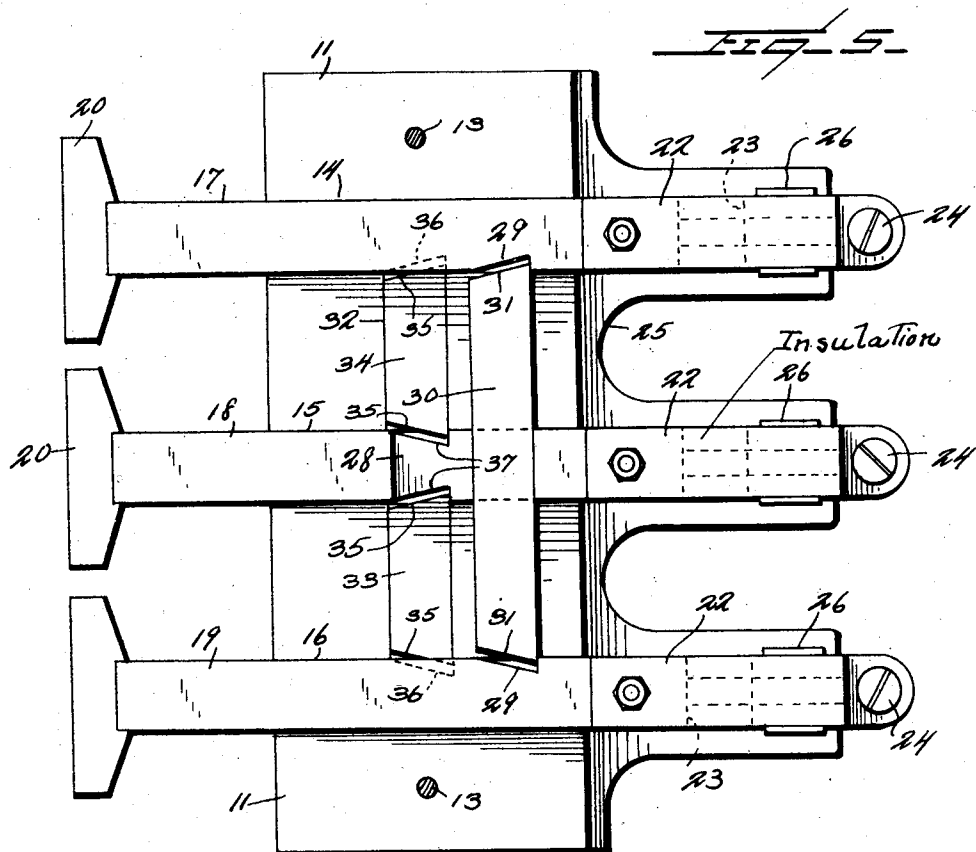
T. C. EVANS

1,809,778

INTERLOCKING CONTROL MECHANISM

Filed May 28, 1929

2 Sheets-Sheet 2



Inventor

T. C. Evans

By *Watson & Coleman*
Attorney

UNITED STATES PATENT OFFICE

THEODORE C. EVANS, OF TERRE HAUTE, INDIANA

INTERLOCKING CONTROL MECHANISM

Application filed May 28, 1929. Serial No. 366,758.

This invention relates to controlling devices in the nature of push buttons and particularly to means for interlocking a plurality of rectilinearly movable actuating elements to prevent the accidental or intentional actuation of any one of said elements which are out of actuated position while another of said elements is in an actuated position.

The general object of this invention is to provide an actuating device, particularly adapted as a switch actuating means comprising a plurality of push rods mounted for rectilinear movement and means operatively engaged by the push rods acting, when one rod is pushed inward, to lock the other rods of the series of rods against actuation, this means being particularly adapted for use in connection with automobile signals so that when one signal is set, the other signals cannot be set until the first signal has been returned to normal position or condition.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a top plan view of my controlling device;

Figure 2 is a top plan view of the lower member thereof;

Figure 3 is a side elevation partly in section of one of the push button members or rods;

Figure 4 is a longitudinal section on the line 4—4 of Figure 1;

Figure 5 is a bottom plan view of the structure shown in Figure 4.

Referring to these drawings, 10 designates a lower section of a support and 11 the upper section of the support, these sections being flanged at 12 and held to each other by screws 13. The upper section of the support is formed with three parallel channels 14, 15 and 16 and the lower section of the support is formed with like channels. Thus when the two sections of the support are connected to each other, three passages are provided 14, 15 and 16 rectangular in cross section, which extend entirely through the support.

Mounted in these channels are the three

rods 17, 18 and 19. These are push rods and carry push buttons 20 at their rear ends. The forward ends of the rods are reduced in thickness to form a tongue 21 and bolted upon this tongue is a block 22 of rubber or other insulating material. At the middle of this block, there is disposed the metallic contact 23 which extends transversely through the block and which is electrically connected to a binding screw 24 mounted upon the extremity of the block. Mounted upon the upper section is a plate 25 which may be of hard rubber, bakelite or any other suitable insulating material which carries upon it the U-shaped contact members 26 embracing each one of the blocks 22. When any one of the rods 17, 18 or 19 is forced forward, it will bring the contacts 23 of that rod into electrical engagement with these tongues 26, these tongues being connected in the usual manner to binding screws 27 to which circuit wires are connected. I have not illustrated the circuit wires, but it will be understood that where this device is used in connection with an automobile signal mechanism, the circuit wires of any one signal light or set of signal lights, are connected respectively to the binding posts 24 and 27. Thus the signal light is energized and when the corresponding rod 17, 18 or 19 is retracted, the signal light is de-energized. I do not wish to be limited to the use of this mechanism in connection with electric switches or signals, but have illustrated such use.

It is desirable, particularly where the device is to be used in connection with an electric signal, that some means be provided for locking the unactuated rods against movement when another of the rods has been actuated.

Thus if the rod actuating the signal to turn to the left is pushed inward, it is, of course, desirable to lock the other two rods so that contradictory signals cannot be given at the same time. To this end, the medially disposed rod 18 is formed in its upper face with a recess 28 and I form the inside faces of the rods 17 and 19 each with a ratchet recess 29, that is, the bottom of each recess 29 extends toward the forward end of the

rod and inward and then extends straight outward. This recess extends upward only partially into the rods 17 and 19.

Disposed transversely of the rod 18 and disposed to rest in this recess is a locking bar or bolt 30, the extremities of which are beveled as at 31. When the rod 18 is drawn rearward and all the heads 20 are disposed in the same plane, the bolt 30 can move transversely to carry either end into one of the notches 29. When, however, one of the rods 17 or 19 is forced forward, the inclined wall of the recess 29 will pass the extremity of the bolt 30 and if the bolt 30 be shifted toward the rod 17, this inclined wall 29 will force the bolt 30 in an opposite direction and into the recess 29 of the rod 19, thus locking the rod 19 from movement. If now the rod 17 be retracted, the parts once more return to their initial positions and if the rod 19 be forced forward the bolt 30 will be shifted toward the right in Figure 5 and will lock the rod 17 from movement. It will be seen that the bolt 30 merely affects the rod 17 or the rod 19, but does not lock the rod 18 nor is it actuated by the rod 18. For the purpose of locking the rods 17 and 19 when the rod 18 is shifted forward or locking the rod 18 when the rods 17 or 19 are either one shifted forward, I provide in a transverse groove 32 formed in the upper section 11 the two bolts 33 and 34.

These bolts are disposed one on each side of the rod 18 and disposed in the groove 32 which the rod 18 intersects. Each of these bolts 33 and 34 has beveled ends 35. Each of the rods 17 and 19 is formed upon its side face rearward of the recess 29 with a ratchet recess 36 adapted to receive the beveled end of the bolt 33 or 34 as the case may be. The rod 18 is also provided on sides with the ratchet recesses 37. When all the rods are retracted, the ratchet recess 37 on the rod 18 will be directly opposite the ratchet recesses 36 on the rods 17 and 19. Now if when the parts are in their normal position, the rod 18 be forced forward, it will force both of the bolts 33 and 34 laterally into the recesses 36 and lock both of the rods 17 and 19 from movement until the rod 18 is retracted. If on the other hand, either rod 17 or 19 be forced forward, assuming that all of the rods are initially retracted, the beveled face of the ratchet recess 36 will force the bolt 32 or 33 laterally into engagement with the rod 18, thus locking the rod 18 from movement. At the same time that the rod 18 is locked from movement by the lateral movement of one of the bolts 32 or 33, the bolt 30 will be shifted laterally in the manner heretofore described so, if the rod 17 is shifted forward, to lock the rod 19, or if the rod 19 be shifted forward to lock the rod 17. Thus it will be seen that when any one of these rods is shifted forward, the other rods are locked.

While I have illustrated three of these actuating rods 17, 18, and 19, I do not wish to be limited to this as the principle of the invention may be applied to any number of push rods wherever it is desired, upon the actuation of one rod, to prevent the actuation of the other rods.

In order to hold the rods in a projected or retracted position against accidental movement, I mount upon the top section 11 and in each of the grooves 14, 15 and 16 a spring 38. This spring is mounted in a recess 39 in the top wall of the passage 14, 15 or 16 as the case may be. The spring is forwardly and downwardly extended and then upwardly and forwardly extended so as to form a hump 40. The corresponding bar 17, 18 or 19 is formed upon its under face with two connected recesses 41 and 42 into which the hump of this spring is adapted to take. These connected recesses have a total length equal to the length of movement of the corresponding rod 17, 18 or 19 so that the hump of this spring 38 will hold the rod against accidental movement either in its projected position or its retracted position as the case may be.

The operation of this mechanism has been fully heretofore described and it is not believed necessary to recapitulate this description.

While I have illustrated this, as before stated, as applied to rods or push buttons for actuating electrical switches, I do not wish to be limited to this as the mechanism might be applied to many situations where a plurality of push rods are designed to be used and where it is desirable to operate one of said push rods and lock the others from operation until the other push rod was returned to its initial position.

Neither do I wish to be limited to the details of construction as these might be changed in many ways without departing from the spirit of the invention as defined in the appended claims.

I claim:—

1. A device of the character described including three rectilinearly movable rods, a support wherein the rods are mounted for rectilinear movement, the middle rod having a recess in one edge face and having ratchet recesses in its side faces, the lateral rods each having two ratchet recesses in the side face confronting the middle rod, a transverse bolt disposed in the recess of the middle rod, the recess being longer than the depth of the bolt and the bolt having beveled ends engageable in the corresponding ratchet recesses of the lateral rods, the middle rod having ratchet recesses in its side faces and bolts slidably mounted in said support on each side of the middle rod and having beveled ends adapted to fit into the ratchet recesses in the side faces of the lateral rods and into the ratchet re-

cesses in the side faces of the middle rod whereby to cause the locking of the middle rod against movement when either of the lateral rods are shifted in one direction or to cause the locking of the lateral rods when the middle rod is shifted in one direction or to cause the locking of the middle and one of the lateral rods when the other lateral rod is shifted in one direction.

2. A device of the character described including three rectilinearly movable rods, a support wherein the rods are mounted for rectilinear movement, the middle rod having ratchet recesses in its side faces, the lateral rods each having two recesses in the side face confronting the middle rod, a transverse bolt having beveled ends engageable in the corresponding recesses of the lateral rods, the middle rod being movable independently of said transverse bolt, and bolts slidably mounted in the support on each side of the middle rod and having beveled ends adapted to fit into the ratchet recesses in the side faces of the lateral rods and into the ratchet recesses in the side faces of the middle rod whereby to cause the locking of the middle rod against movement when either of the lateral rods are shifted in one direction or to cause the locking of the lateral rods when the middle rod is shifted in one direction or to cause the locking of the middle and one of the lateral rods when the other lateral rod is shifted in one direction.

In testimony whereof I hereunto affix my signature.

THEODORE C. EVANS.