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LOCOMOTIVE CONTROL THROTTLE HANDLE

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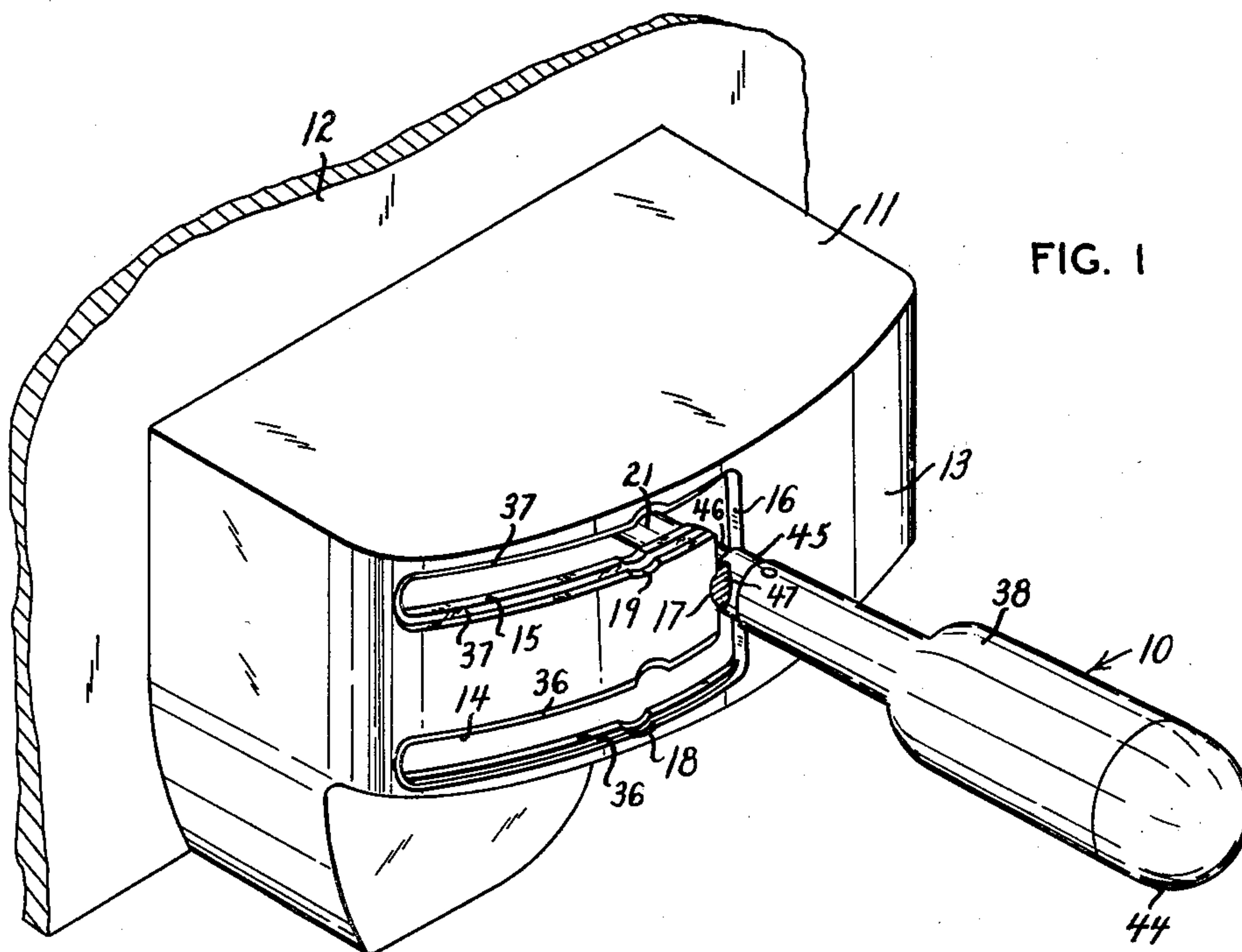


FIG. 1

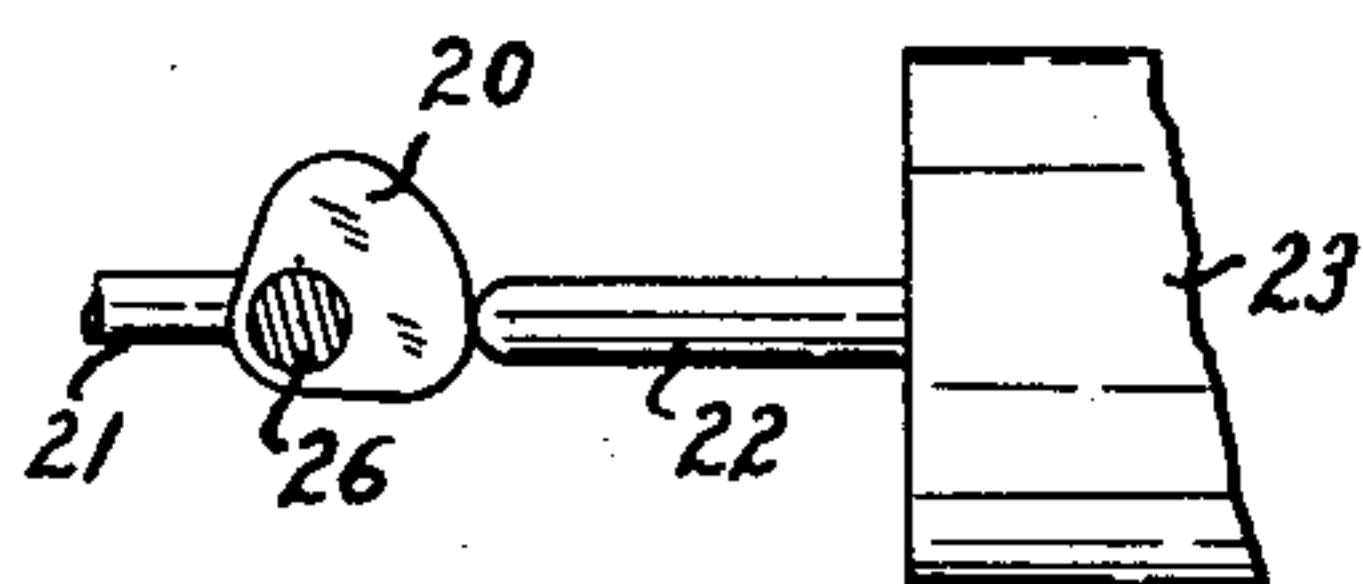


FIG. 3

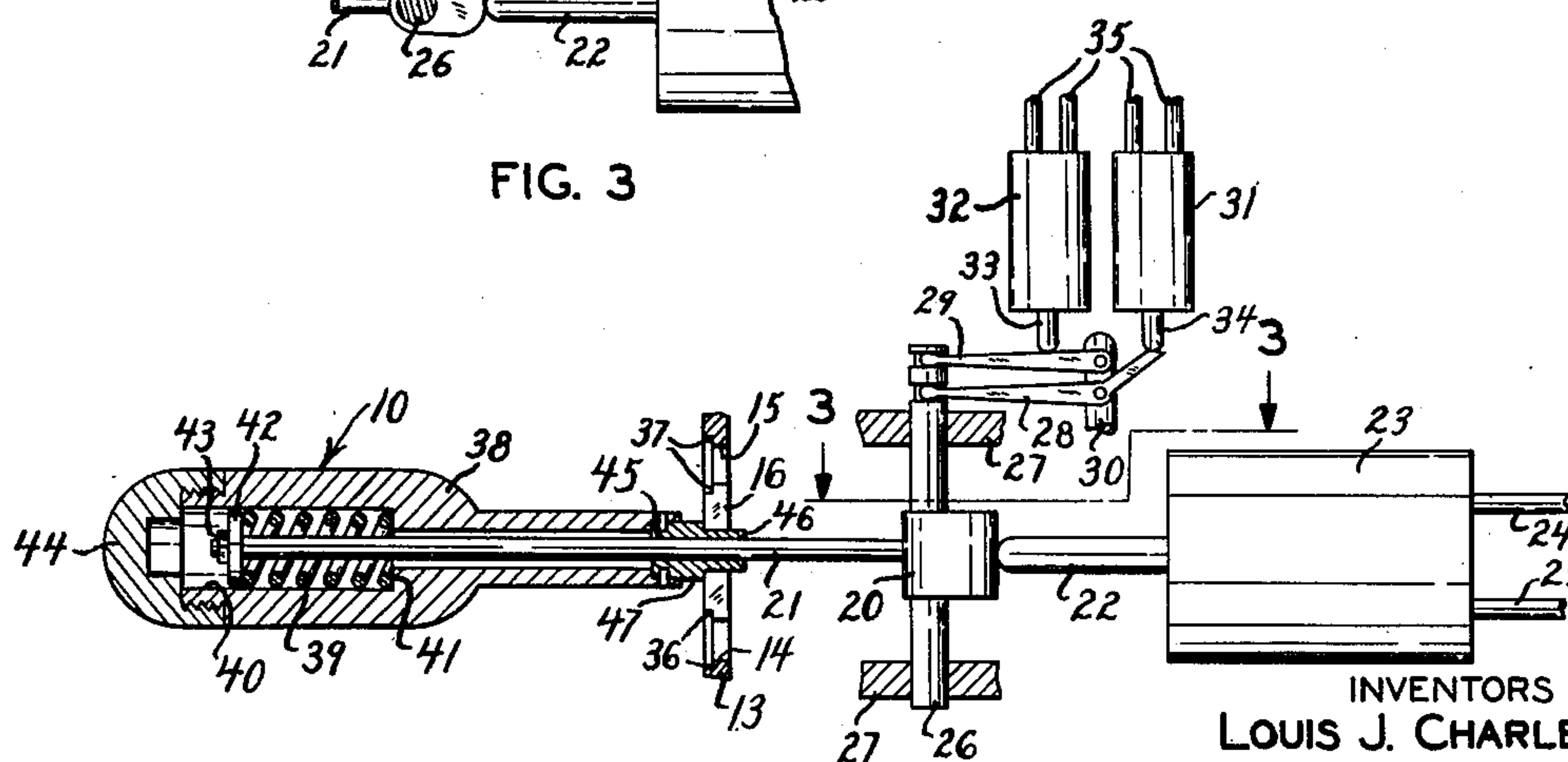


FIG. 2

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## UNITED STATES PATENT OFFICE

2,540,427

## LOCOMOTIVE CONTROL THROTTLE HANDLE

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## 2. Claims. (Cl. 74-491)

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This invention relates to improvements in control means for use in connection with Diesel-electric locomotives.

The growing demand for locomotives of the Diesel-electric type in replacement of the steam locomotives has introduced certain problems in the arrangement of controls such that an engineer long accustomed to the controls of the steam locomotive frequently experiences difficulty when confronted with the controls usually found in the Diesel-electric locomotives.

The most important problem, and one which directly affects the safe operation of the locomotive for the protection of passengers and the train generally, involves the arrangement and operation of the throttle lever. In the older steam locomotives, the throttle lever was arranged such that its forward motion reduced speed and its rearward motion increased speed, and for reversing the direction of locomotive movement the engineer was required to shift a separate reversing lever which did not alter the above described throttle lever motion. Thus a uniform motion of the throttle lever was established for either direction of movement of the locomotive. This same uniform throttle lever motion has not been followed in the Diesel-electric locomotive practice with the result that it has been difficult to overcome the long standing habit of the "steam" engineers when transferred to the Diesel-electric locomotives. In this connection, it should be noted that the latter locomotives are generally provided with the throttle lever arranged to move in either direction from a neutral position, and that the direction of movement from this neutral position is utilized to determine the direction of locomotive movement and also the speed of such movement. This is a fundamentally different throttle lever motion and one which has caused considerable confusion among the "steam" engineers who have been transferred to Diesel-electric locomotives.

Accordingly, it is a principal aim and object of the present invention to provide control means for determining the motion of the throttle lever such that the long standing practice in the steam locomotive field may be adhered to with only slight differences whereby confusion among "steam" engineers will be obviated to the greater safety of all concerned.

Other important objects and attendant advantages will be made to appear in the following description of a presently preferred embodiment of the invention which is clearly shown in the accompanying drawing, wherein:

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Fig. 1 is a perspective view of the usual throttle lever and the panel mounted control means for determining the motion of the lever according to the preferred practice hereinabove stated;

Fig. 2 is a fragmentary elevational view partly in section, of the throttle lever, control means and the mechanism employed for effecting both speed and direction of motion relay devices or servo-motors, and

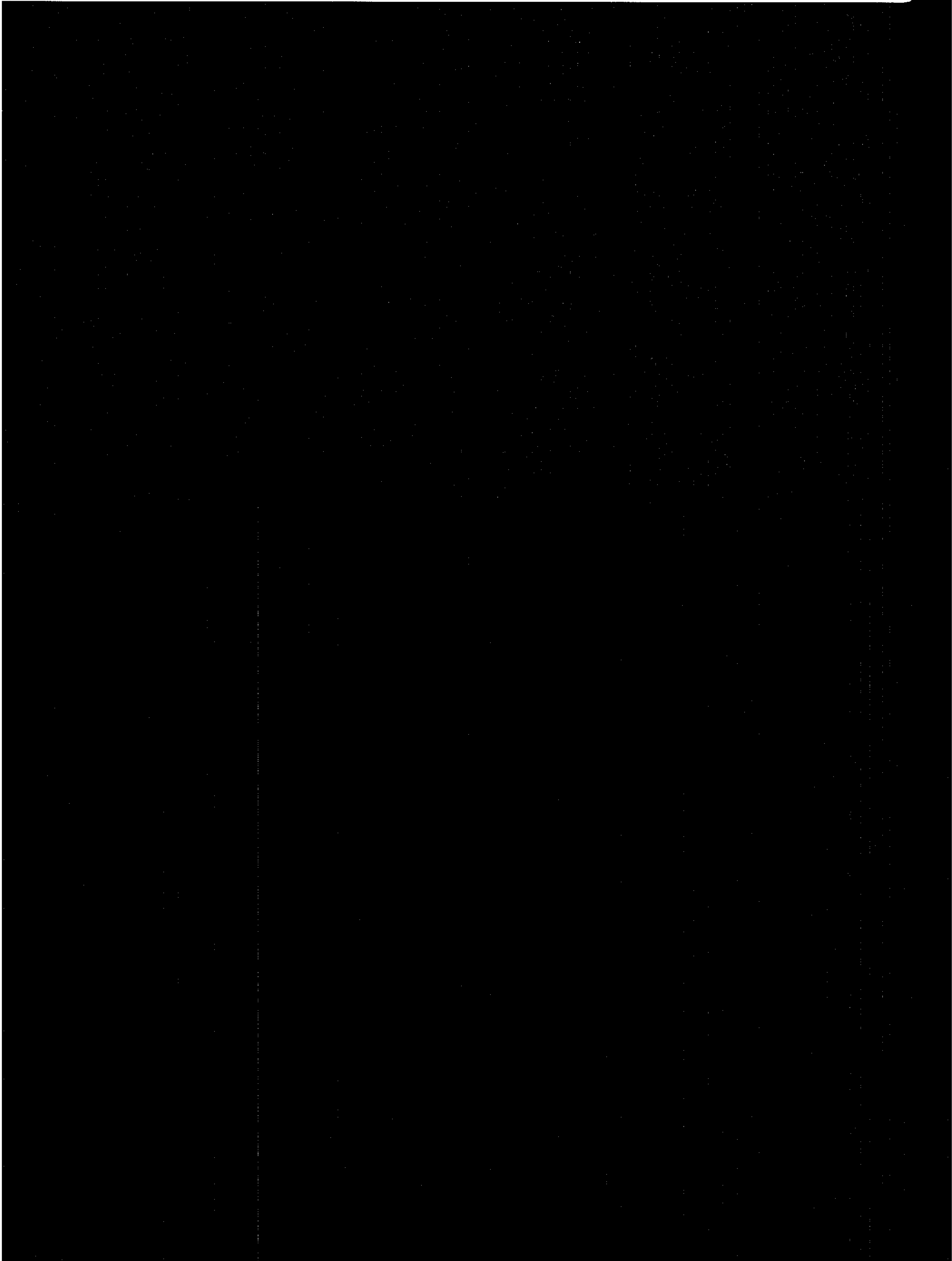
Fig. 3 is a fragmentary plan view of a portion of the assembly as seen at line 3-3 in Fig. 2.

In the drawing, the preferred control means for the throttle lever 10 comprises a housing structure 11 suitably mounted on a control panel 12 to extend forwardly of the front face of the panel to a position of prominence in the general area of the engineer's station. The throttle housing 11 is formed with an arcuate front wall 13 in which a slotted aperture is provided to permit outward extension of the throttle 10.

In its preferred form, the slot in wall 13 is given a U-shaped configuration in which the leg portions 14 and 15 of the slot extend in a generally horizontal direction and to one side of the base or interconnecting slot portion 16. Thus, the throttle lever motion is positively confined to movement vertically in the slot portion 16 and to horizontal motion in either of the elongate slot portions 14 or 15. It is also important to observe that the throttle motion in slot portions 14 and 15 is always in the same direction or sense relative to the slot portion 16.

A further feature of the throttle lever control housing 11 is found in the provision of a recessed zone 17 intermediate the ends of the slot portion 16, and in the provision of a similar recessed zone 18 in slot portion 14 and recessed zone 19 in slot portion 15. In a control housing of this type it is here preferred that the slot portion 16 be utilized to guide the lever 10 in its movement to select the direction of locomotive travel, as forward or reverse. Thus, the recessed zone 17 thereof becomes the neutral position for the lever and this position can be found easily and with little or no need for visual observance during its movement. The recessed zones 18 and 19 in slot portions 14 and 15 respectively are spaced from the slot portion 16 a distance which is determined by the necessary response of the speed control relay without increase of engine speed above its normal idling condition. In this manner, the motion of the lever 10 from its neutral recess 17 in slot portion 16 into either of the recesses 18 or 19 will not affect the idling speed of the engine, but the direction of travel relays





ferred that the throttle lever 10 be moved rearwardly in slots 14 or 15 for increase of speed.

The hereindescribed relay system which is responsive to throttle motion forms no part of the present invention except as it may serve to illustrate more clearly the preferred nature and controlling effect of the slotted housing structure 11. While the latter housing structure is shown in its presently preferred form, it should be understood that the spirit and scope of the invention is to be limited only by the appended claims.

**We claim:**

1. In a locomotive throttle control, the combination of a throttle housing structure having a wall provided with a first slot of uniform width throughout its length, and a pair of slots opening from said first slot and directed in parallel relationship, each of said pair of slots having a width equal to the width of said first slot and further being marginally grooved to provide a channel therealong having a width appreciably greater than the adjacent slot, a throttle rod projecting through said housing wall for movement in said slots, a throttle handle displaceably carried by said rod, a follower element fixed to said handle and sleeved on said rod, said follower element having a first portion adapted to move in said slots of uniform width for guiding the throttle rod therealong, and a second portion adapted to move in said slot channels, and spring means operatively positioned between said rod and handle for urging the latter in a direction to maintain said follower element in working engagement selectively in said slots and channels, said second follower portion, when engaged in either of said

pair of slot channels under the urging of said spring means, acting to prevent throttle movement into said first slot, and the displacement of said handle against said spring means acting to move said second follower portion out of the selected slot channel whereby the throttle rod may be moved into said first slot for guidance therein by the working engagement of said first follower portion in said first slot.

2. The combination as defined in claim 2, and further characterized in that said follower element is provided with a first portion of a uniform dimension to move in said slots with a close working fit and a second portion of an increased and uniform dimension to move in said slot channels with a close working fit, and said spring means urges said handle at all times toward the wall of said housing structure whereby to maintain said second portion of the follower element in frictional engagement against the marginal zones of said slots to retain the throttle rod in its selected position.

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The following references are of record in the file of this patent:

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