

March 18, 1941.

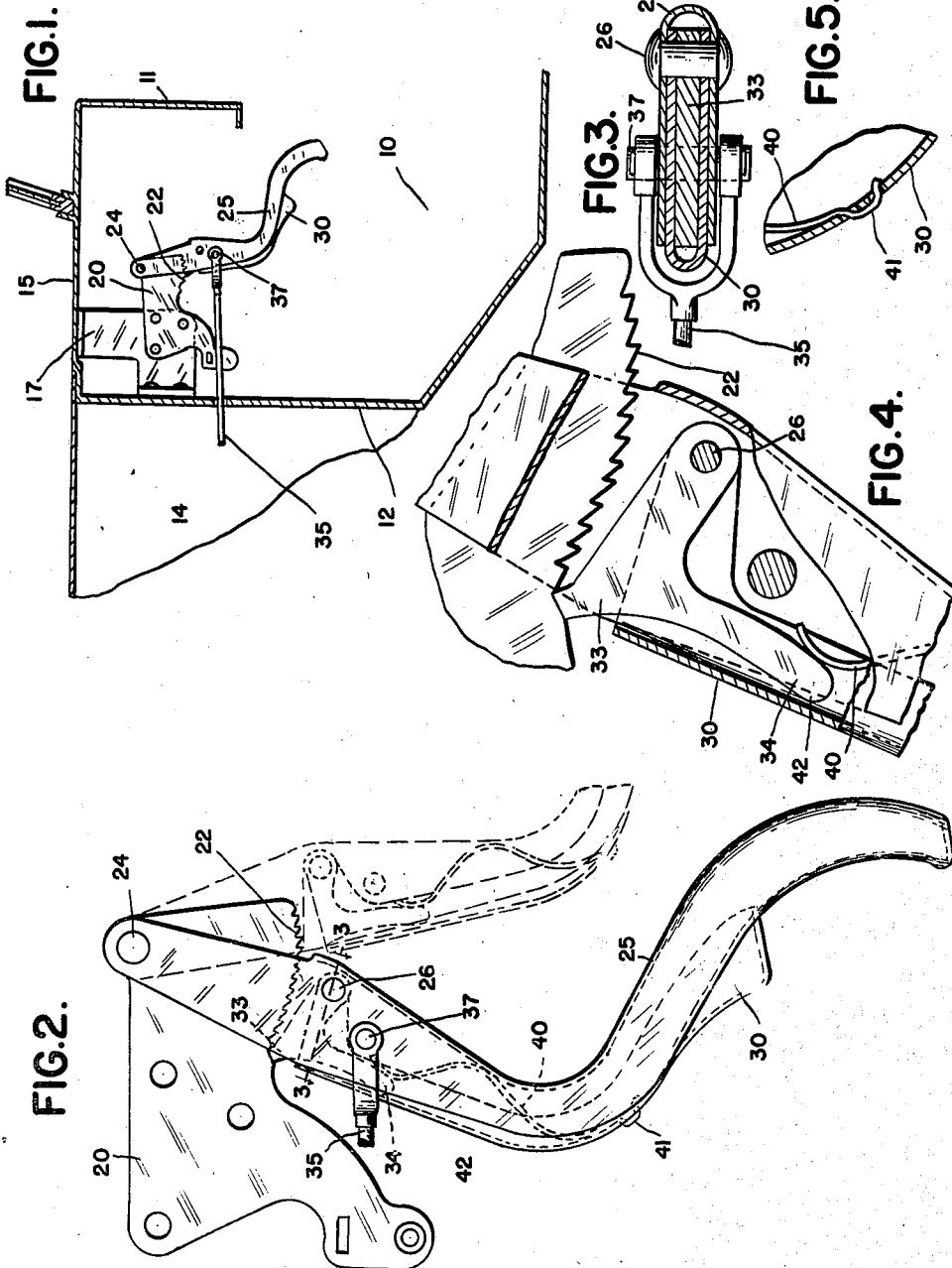
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2,235,238

OPERATING LEVER MECHANISM

Filed May 15, 1939

2 Sheets-Sheet 1



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FIG. 6.

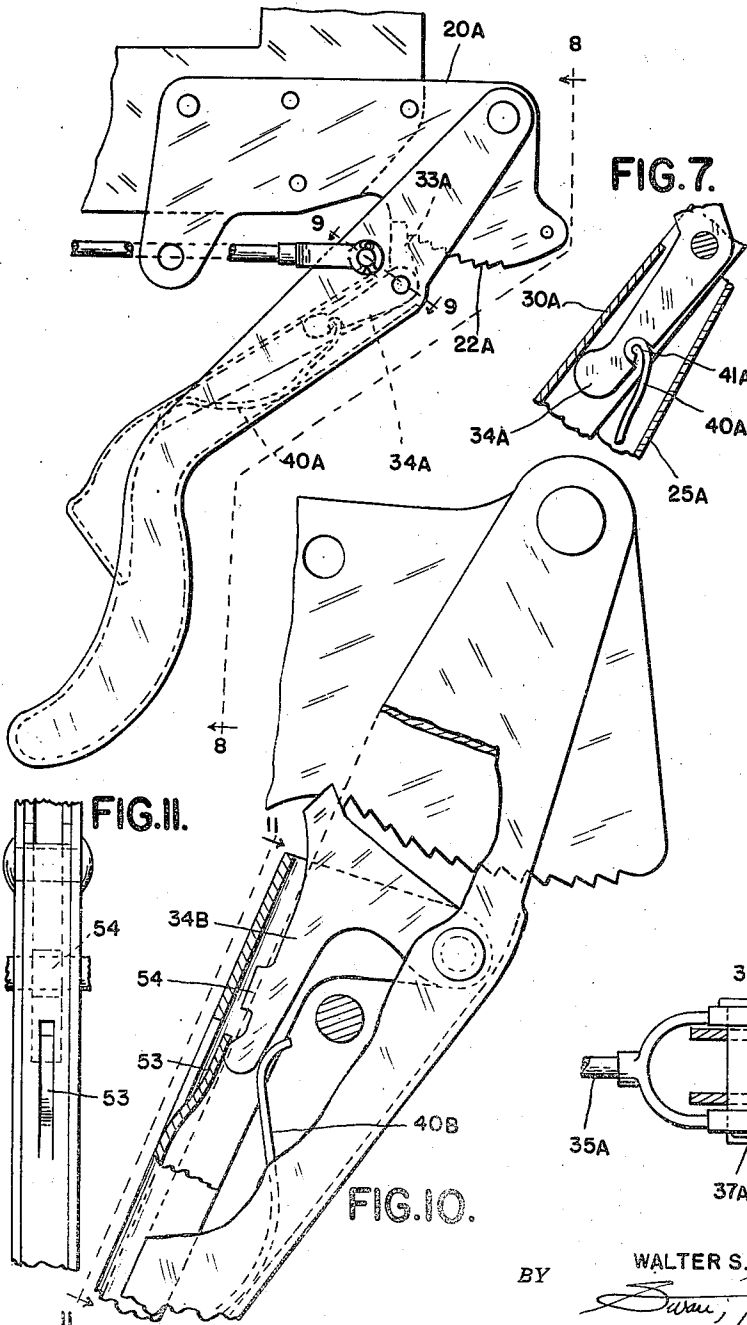


FIG. 8.

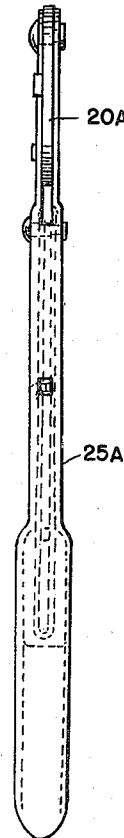


FIG. 7.

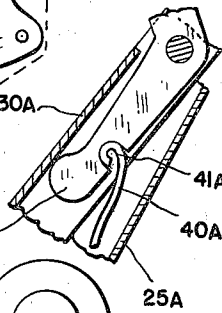


FIG. II.

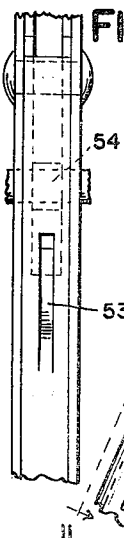
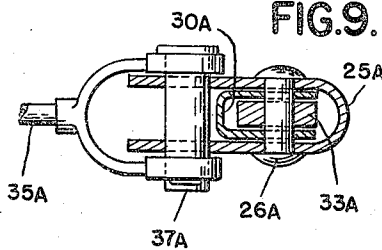


FIG. 9.



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2,235,238

OPERATING LEVER MECHANISM

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Application May 15, 1939, Serial No. 273,610

7 Claims. (Cl. 74-537)

This invention relates to control levers, and particularly to hand levers of the type used for operating the emergency brakes of motor vehicles, although it will be apparent that the invention is readily applicable to other uses, and is in fact useful wherever it is desired to provide convenient means for manually setting and releasing, at will, remotely located mechanism.

An important object of the invention is to provide a hand lever of the character indicated which is simple, and less expensive than previously known devices, but which is nevertheless of very rugged construction, virtually impossible to release accidentally, yet very easy to release, and to reset, when manipulated in the intended manner.

A further object is to provide such a hand lever mechanism having pawl and ratchet holding means, and a trigger release member for the pawl means, so designed that the leverage applied to the pawl by the trigger release means is considerably multiplied, to facilitate release of the pawl when the brakes, or other controlled mechanism, are set hard.

Another object is to provide such an improved hand lever which is so designed that a single spring suffices to hold both the trigger and pawl in their normal positions, and a single pivot may be used to support both the trigger and pawl, as a result of which both labor and parts are eliminated in manufacture, and an important economy is effected in the cost of construction.

Other objects and advantages will be apparent from the following description, wherein reference is made to the accompanying drawings illustrating preferred embodiments of my invention and wherein similar reference numerals designate similar parts throughout the several views.

In the drawings:

Figure 1 is a somewhat diagrammatic vertical sectional view through the dash, cowl, instrument panel and adjacent forward portions of a motor vehicle, shown equipped with a brake lever constructed in accordance with the present invention.

Figure 2 is a side elevational view of the brake lever, on a somewhat larger scale.

Figure 3 is a cross section taken substantially on the line 3-3 of Figure 2, and looking in the direction of the arrows.

Figure 4 is a view on a larger scale, partly in section and partly in side elevation, showing the pawl and ratchet portions and trigger mounting.

Figure 5 is a sectional detail of the spring mounting.

Figure 6 is a view similar to Figure 2, showing a somewhat modified construction.

Figure 7 is a fragmentary detail of the spring mounting of the modified construction.

Figure 8 is a front elevational view of the brake lever of Figure 6, taken substantially as indicated by the line and arrows 8-8 of Figure 6.

Figure 9 is a sectional detail taken substantially on the line 9-9 of Figure 6, and looking in the direction of the arrows.

Figure 10 is a view similar to Figure 3, showing another modified construction; and

Figure 11 is a fragmentary front elevational view, taken substantially as indicated by the line and arrows 11-11 of Figure 10.

Referring now to the drawings, in which reference character 10 designates the passenger compartment of a motor vehicle (fragmentarily shown) and an instrument panel 11, dash panel 12, engine compartment 14, and cowl 15 are illustrated in the typical arrangement which they conventionally occupy in motor cars, it will be seen that a brake lever mechanism is shown supported by a bracket 17 secured to the dash and cowl portions beneath the instrument panel. The hanger 20, riveted or otherwise rigidly secured to the supporting bracket, is formed with an integral ratchet portion 22 disposed concentrically with respect to the pivot 24 which supports the hand lever 25. The lower or handgrip portion of the lever is of closed, generally tubular form, while an intermediate portion is of channel shape, open at the front to slidably receive a trigger 30, formed as a lever, pivoted to the main lever 25 upon a pin 26, which also pivotally supports the pawl 33.

A cable 35 is attached to the lever at a suitable point somewhat farther from the fulcrum, as by pin 37, the cable being connected to the brake rigging or other mechanism to be operated (not shown).

A finger portion 34, integral with the pawl, projects downwardly to a position in the path of swinging movement of the trigger 30, the arrangement being such that when the trigger is pressed, the pawl is released, while when the trigger is released, the pawl reengages the ratchet to hold the lever in any set position. It will be seen that a single leaf spring 40 serves to return both the pawl and trigger, the normal position of the trigger being such that it is slightly spaced from the finger 34 of the pawl, as indicated at 42. The lower end of the spring is hooked in suitable apertures (undesignated) in the front face of the channel shaped trigger,

the hooked portion of the spring being designated 41. The spring is bowed so that its central portion bears against the interior of the opposite face of the lever, forcing the trigger outwardly with respect to the lever, while the farther end of the spring bears against the finger portion 34 of the pawl, to swing the nose of the latter upwardly into engagement with the ratchet. The spacing, at 42, between the pawl and trigger, will be seen to be sufficient to allow the pawl to ride over the teeth without imparting motion to the trigger, when the lever is pulled back to set the brakes. This clearance also serves to prevent accidental release of the pawl.

In the somewhat modified construction shown in Figures 7, 8 and 9, in which parts corresponding to those already described have been given like reference characters, distinguished by the addition of the letter "A" to each, the spring 40A is secured at its upper end to the lower arm 34A of the pawl, being curled and fitted in a socket therein, as indicated at 41A. The pawl is formed as a bellcrank, its upper arm 33A engaging the ratchet 22A, and the parts being similarly carried by a hanger 20A.

In the construction shown in Figures 10 and 11 the parts are maintained in yieldable engagement, and lost motion and rattling prevented, by means of a tongue 53, struck inwardly from the body of the trigger in position to be engaged by the pawl arm 34B, which is normally maintained in engagement therewith by the upper end of the spring 40B. The tongue is relatively resilient, and cannot exert sufficient force upon or impart sufficient movement to the pawl to disengage it when the parts are at rest. An abutment 54 formed upon the pawl arm 34B limits the distortion of the tongue 53, so that it cannot be strained beyond its elastic limit. The other end of the spring 40B, not shown in the figure, acts similarly to the springs 40 and 40A already described, to maintain the trigger in the released position.

I am aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I therefore desire the present embodiments to be considered in all respects as illustrative and not restrictive; reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

I claim:

1. An operating lever mechanism for brakes and the like comprising in combination with a support, a lever pivoted thereto, a clutch member pivoted on the lever and releasably engageable with a cooperating clutch portion carried by the support, and a trigger member mounted co-pivotally with the clutch member upon the lever and limitedly swingable independently of said clutch member but engageable therewith to release the same, said trigger member extending generally parallel to the main lever and being limitedly swingable with relation thereto to actuate the clutch member.

2. Means as set forth in claim 1 including a common spring engageable with the clutch member and the trigger and urging said clutch member toward clutched position and the trigger away from the clutch member.

3. Means as set forth in claim 1 including spring means yieldably opposing independent movement of said trigger and clutch members.

4. An operating lever mechanism for brakes and the like comprising in combination with a support, a lever pivoted thereto, a clutch member pivoted on the lever and releasably engageable with a cooperating clutch portion carried by the support, a trigger member also pivotally mounted on the lever and movable to actuate the clutch member to release the same, and also movable to a clutch-engaging position, said trigger member extending generally parallel to the main lever and being limitedly swingable with relation thereto, and common spring means for the trigger and the clutch member comprising a leaf spring of bowed form, the central portion of said spring reacting against the lever, one end of the spring reacting against the clutch member to urge the same toward engaged position, and the other end of the spring reacting against the trigger to urge the same toward clutch-engaged position.

5. An operating lever mechanism for brakes and the like comprising in combination with a support, a lever pivoted thereto, a clutch member pivoted on the lever and releasably engageable with a cooperating clutch portion carried by the support, a trigger member also pivotally mounted on the lever and engageable with the clutch member to actuate the same to released position, said trigger also being movable to clutch-engaged position; spring means urging the clutch member toward engaged position and urging the trigger toward clutch-engaged position, and a resilient portion maintaining constant connection between the trigger and clutch member but permitting limited independent movement thereof.

6. An operating lever mechanism for brakes and the like comprising in combination with a support, a lever pivoted thereto, a clutch member pivoted on the lever and releasably engageable with a cooperating clutch portion carried by the support, a trigger member also pivotally mounted on the lever and engageable with the clutch member to actuate the same to released position, said trigger also being movable to clutch-engaged position, spring means urging the clutch member toward engaged position and urging the trigger toward clutch-engaged position, a resilient portion carried by the trigger member and constantly engaging the clutch member and urging said members apart with a force insufficient to release said clutch member, said resilient portion being yieldable to permit limited independent movement of the trigger member and clutch member.

7. In combination with means as set forth in claim 6 an abutment portion providing rigid connection between said clutch member and trigger member upon a predetermined degree of flexure of said resilient portion, said abutment means limiting both the deformation of said resilient portion and the independent movement of the trigger and clutch members during actuation of the latter toward released position.