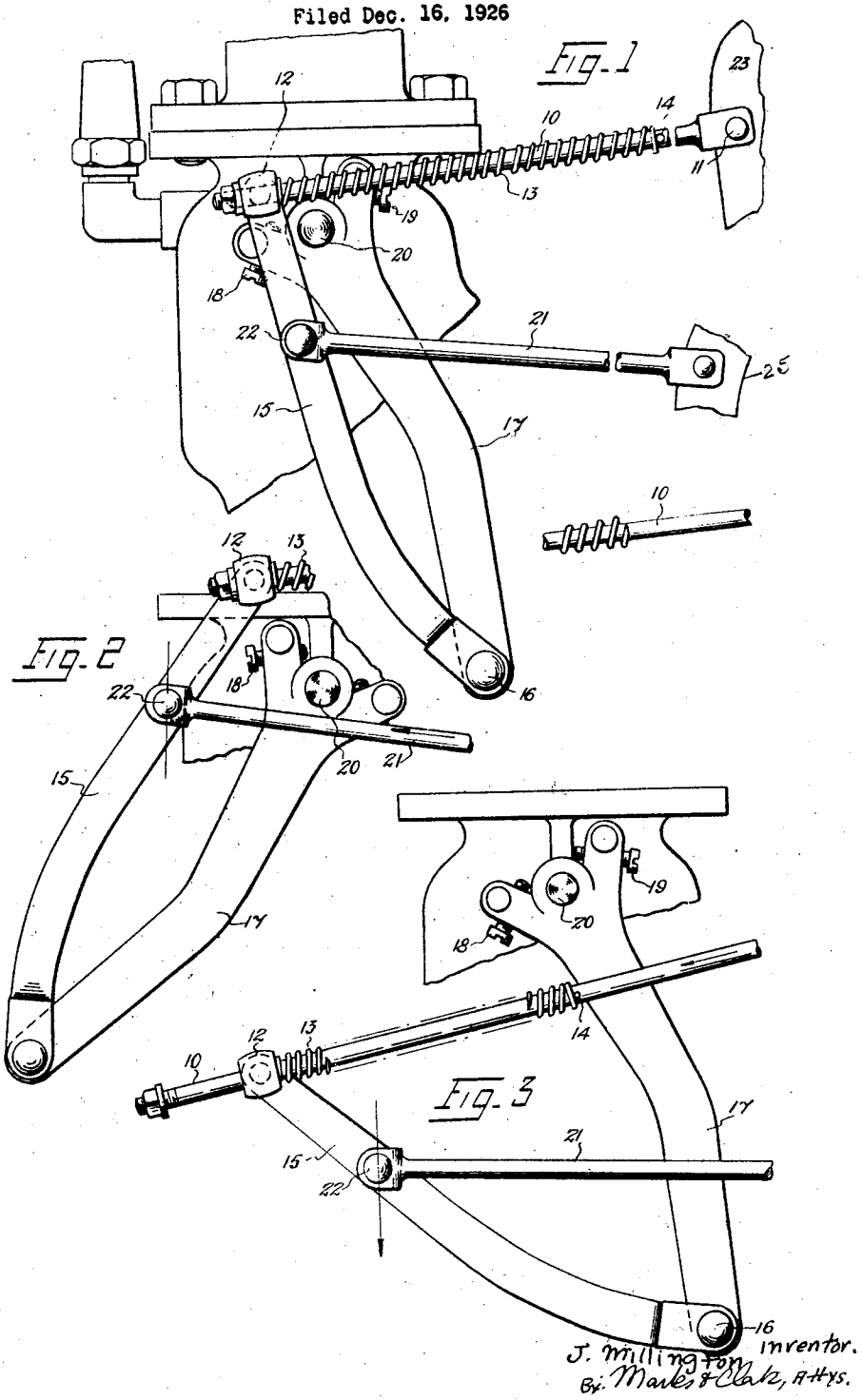
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CLUTCH AND ACCELERATOR INTERLOCKING MECHANISM FOR AUTOMOBILE ENGINES

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CLUTCH AND ACCELERATOR INTERLOCKING MECHANISM FOR AUTOMOBILE ENGINES.

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This invention consists in linkage interlocking the clutch the throttle arm and the hand accelerator lever of an engine with which the carburetter is associated, and it has for its object to provide automatic means whereby the hand throttle lever may be set to open the carburetter throttle to any desired degree and the clutch so interlocked with it that whilst the clutch is depressed (opened) the carburetter throttle will be automatically moved to minimum or idling position, and when the clutch is again let up to engage the engine to the transmission, the preadjusted running position of the carburetter throttle will be automatically re-established according to the original setting of the hand throttle lever.

The car carburetter control riggings which are commonly used in practice are the following:—

(1) Hand throttle lever only; (2) accelerator pedal only; (3) interlocked hand throttle lever and accelerator pedal.

In (1) the hand throttle lever "stays put" when set, until it is moved by the hand of the driver. If the clutch be released whilst the hand throttle lever is set at an advanced point, the engine will race. Consequently, the driver must set back the hand throttle lever to zero or idling position before he releases the clutch, and therefore he must re-set the hand throttle lever at running position after he has again let in the clutch. The hand throttle lever is not automatically moved either way from set position by action of the clutch pedal—it must always be moved by the hand of the driver.

In (2) the accelerator pedal comes back by action of a pull-back spring as the driver's foot pressure on it is eased off. If the driver lifts his foot off the accelerator the carburetter throttle comes back to "zero". The clutch pedal does not act on it. Consequently, the driver must separately operate the clutch pedal and the accelerator pedal in sympathy. If he continues to hold down the accelerator pedal and open the clutch, the engine will race. If he releases the accelerator pedal and opens the clutch the engine will idle. And, in the latter case when he again lets in the clutch he must then again press the accelerator and thereafter hold it down with his foot continuously to bring the carburetter throttle to the required running position.

In (3) the driver may set the hand throttle lever to give any desired throttle opening to the carburetter, and may further increase (but cannot decrease) the carburetter throttle opening by pressing down the accelerator pedal. The clutch does not operate to control either the hand throttle lever or the pedal accelerator. If the driver set the hand throttle lever at any position in advance of zero or idling position, the engine will race as soon as the clutch is released by pressing down the clutch pedal.

With the novel arrangement which is the subject of the present invention the driver is enabled to set his hand throttle lever at any desired driving position between zero and full open, and leave it there; and the clutch pedal is interlocked with it in such a way that whilst the clutch is released the carburetter throttle is temporarily closed, but yet the hand throttle lever is left at the driving position at which the driver had previously set it. This arrangement relieves the driver from the necessity of setting back the hand throttle lever to zero and afterwards replacing it at driving position every time he releases and re-engages the clutch. Consequently, the engine will idle and will not race away when the clutch is released, but it will take up its running on the pre-set driving adjustment of the throttle immediately the clutch is re-engaged. The control is thus entirely automatic, and is dependent only on operation of the clutch. This interlocking of the hand throttle lever with the throttle spindle permits of the use of the usual arrangement by which the carburetter may be opened up by means of an accelerator pedal beyond the position fixed by the hand throttle control, so that when the accelerator pedal is let up the throttle spindle comes back to the position set by the hand throttle lever.

In the accompanying drawing:—

Fig. 1 is a side elevational view of the essential parts of the rigging as they appear under normal running conditions and with the hand throttle lever set for idling;

Fig. 2 is a similar elevational view showing the position of the parts when the hand throttle lever is set full open; and

Fig. 3 is a similar view showing the full open hand throttle position with the clutch depressed and the carburetter throttle automatically swung back to minimum position

to hold the engine at idling rate temporarily whilst the clutch is open.

10 is a push rod pivotally connected at 11 to the clutch pedal 23 and slidable through a cross head 12 which is carried in gimbals on an interlocking link 15. 13 is a helical spring in compression sleeved over the push rod 10 and taking its abutment on a check 14 on the rod 10 and bearing against the cross head 12. This spring facilitates fitting by permitting a little lost motion to allow necessary clearance and prevent binding of the linkage. One end of the interlocking link 15 is articulated at 16 to the outer end of the carburetter throttle arm 17, and the arm 17 is provided with the usual adjustment stop pins 18 and 19, 20 being the throttle valve spindle to which it is keyed. 21 is a link from the member 25, articulated at 22 to a point in the interlocking lever 15 intermediate the cross head 12 and the pivot 16. The member 25 as movable by means of the usual connections by the hand throttle lever and it is movable also by the accelerator pedal, also by means of the usual connections through the range of its movement beyond the point fixed by the setting of the hand throttle lever. The parts between the back end of the link 21 and the hand accelerator lever which is fitted on the steering head of the car and the accelerator pedal are not shown.

When the clutch pedal is up (see Fig. 1) movement of the hand accelerator lever is communicated through the rod 21 to the interlocking lever 15. The accelerator lever movement swings the interlocking lever 15 on the gimbals of the cross head 12 and thus moves its lower end which is articulated to the throttle arm 17 outward, thus moving the throttle arm 17 and rocking the carburetter throttle spindle 20 from minimum towards maximum position, or vice versa, as the case may be. If the clutch pedal 23 be depressed, the spring 13 on the rod 10, acting against the cross head 12, tips the interlocking lever 15 about the link pivot 22 as a fulcrum moving its lower end backward and thus swings the throttle arm 17 backward, so rocking the throttle spindle 20 and bringing the throttle to the minimum or idle running position. As soon as the clutch 23 is let up, the push rod 10 retires and the parts are restored to the initial position; this change in the throttle control will be understood on comparing Figs. 3 and 2 respectively in that order.

What I claim as my invention and desire to secure by Letters Patent is:—

1. The combination with the throttle spindle arm of a carburetter, of means controlled by a hand throttle lever for setting said spindle at any position of adjustment for running, and means controlled by the clutch pedal for throttling the carburetter whilst the clutch is open and for opening it up to the pre-set position of running adjustment whilst the clutch is engaged.

2. Carburetter control means for automobiles including a hand throttle control lever link connected to the carburetter throttle spindle arm through an intermediate member, and a link connection between said member and the clutch pedal, disposed so that in the clutch pedal opening movement the carburetter throttle is closed to idling position without disturbing the hand throttle lever, and in the clutch pedal closing movement is restored to the degree of opening for running determined by the position at which the hand throttle lever is set.

3. The combination with hand throttle lever and accelerator pedal control linking connections to a carburetter throttle, of means dependent on movement of the clutch pedal for temporarily throttling the carburetter during the time the clutch is open without disturbing the position of the hand throttle lever.

4. In automobile carburetter control means, the combination with a member movable by a hand throttle lever and movable also by an accelerator pedal, of an interlocking lever link connected at one end of it to said member and articulated at the other end of it to the carburetter spindle arm, and a link connecting an intermediate point on said interlocking lever with the clutch pedal, the said arm, lever, and links being so disposed and centred that during the time the clutch pedal is at open position the carburetter spindle is set back to idling position without disturbing the setting of the hand throttle control lever.

5. In apparatus according to claim 4, a gimbal mounted crosshead on the interlocking lever, having the link which is associated with the hand throttle lever sliding through it and a compression spring sleeved on said link and bearing against the crosshead, substantially as described.

In testimony whereof I affix my signature.

JOHN MILLINGTON.