June 25, 1946. H. A. BOLLER 2,402,867

SAFETY CONNECTION FOR DRIVING AND DRIVEN MEMBERS

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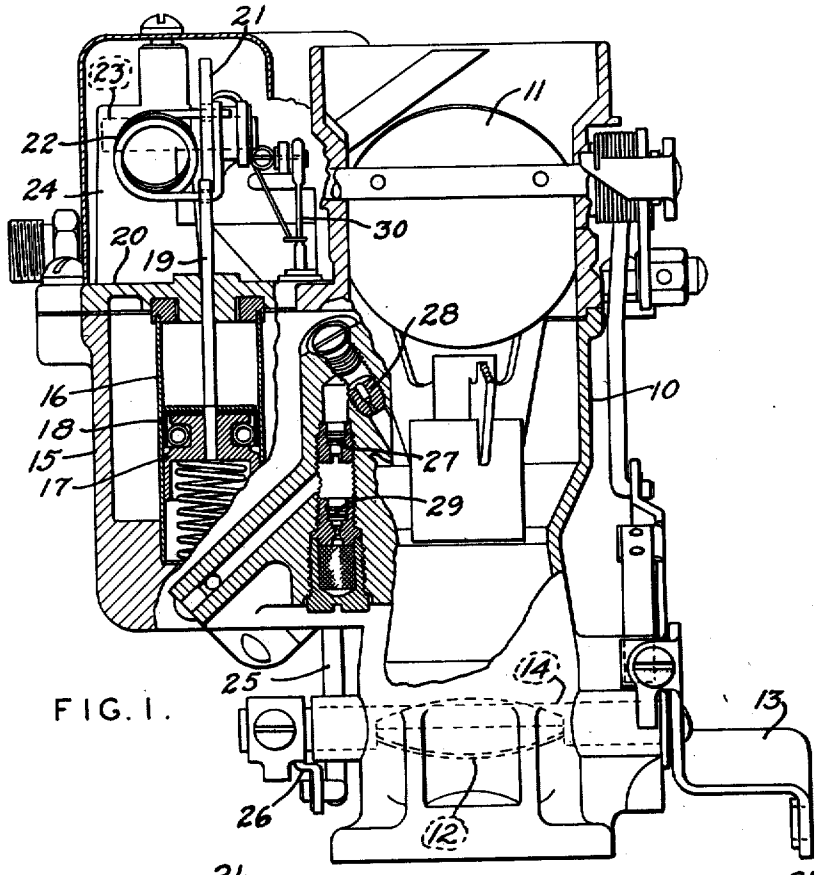


FIG. 1.

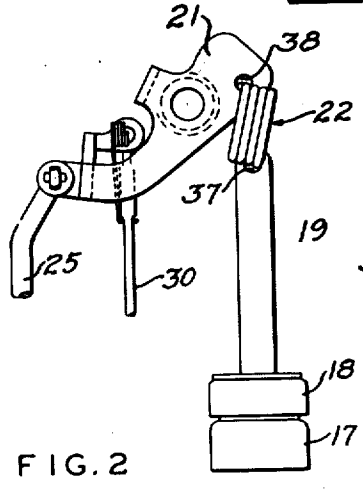


FIG. 2

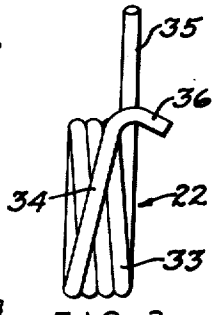


FIG. 3.

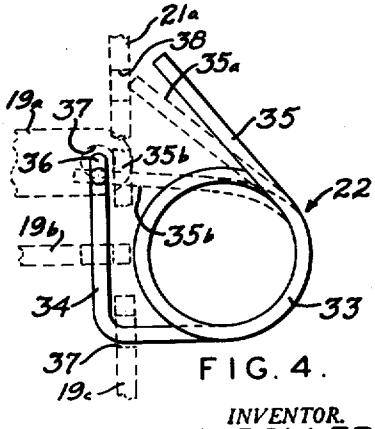


FIG. 4.

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SAFETY CONNECTION FOR DRIVING AND DRIVEN MEMBERS

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6 Claims. (Cl. 74—581)

1

This invention relates to mechanisms having driving and driven parts which normally move in unison but are provided with a safety connection which yields under abnormal conditions to prevent damage to the mechanism.

The invention is illustratively applicable to an internal combustion engine carburetor having an accelerating pump positively actuated with or by the throttle. The accelerating fuel is normally discharged through a restricted orifice into the carburetor mixture conduit. In case the outlet restriction becomes clogged or the pump piston sticks for any reason, the pump operating linkage may bend or break.

The main object of the present invention is to provide a yielding safety element as a part of the aforementioned linkage which will yield only in case the pump discharge restriction or jet becomes clogged or the pump piston sticks.

Another object is to provide such a yielding connection which may be substituted for a part of the pump operating linkage already widely in use in the Chevrolet type of carburetor without alteration of other parts thereof.

Still another object is to provide a yielding element for the pump operating linkage which may be easily assembled with the pump piston rod and its actuating lever and which is maintained properly assembled by its own resilience.

These objects and other more detailed objects hereafter appearing are attained by the device illustrated in the accompanying drawing in which

Fig. 1 is a vertical section illustrating an automotive carburetor embodying the invention.

Fig. 2 shows a disassembled detail of the carburetor taken at 90° to the view in Fig. 1.

Fig. 3 shows the novel safety spring disassembled.

Fig. 4 is a view of the spring taken at right angles to Fig. 3 and showing the manner of assembly of the spring with the piston rod and actuator lever.

The carburetor illustrated comprises a downdraft mixture conduit 10 having the usual pivoted choker valve 11 in the upper part thereof and a butterfly throttle valve 12 controlling the discharge of mixture from the lower part. An arm 13 is rigidly attached to throttle shaft 14 for manual actuation thereof. Adjacent the mixture conduit, there is provided a constant level bowl 15 which encloses an accelerating pump cylinder 16 within which slides the pump piston 17 having packing 18. A stamped piston rod 19 projects upwardly through an opening in bowl cover 20 and is connected to pump actuating lever

2

21 by the novel coil spring generally indicated at 22. Lever 21 is pivoted on a shaft 23 mounted in a post 24 projecting above cover 20. The opposite end of lever 21 is connected by a link 25 to an arm 26 attached to the projecting end of throttle shaft 14 opposite crank 13. The arrangement is such that upon opening of the throttle valve by crank 13, piston 17 is depressed in cylinder 16 to cause the ejection of an accelerating charge past outlet check 27 and through restricted jet 28 into the mixture conduit. Upon closing of the throttle, fuel is drawn from the constant level bowl past inlet check 29 into the pump cylinder. Metering rod 30 is also carried by pump lever 21 and moves therewith in a well known manner.

Spring 22 comprises an intermediate coiled part 33 and projecting ends 34 and 35. End portion 34 is formed as a right angle, as best shown in Fig. 4, and its extremity is provided with a hook 36. Piston rod 19 and lever 21 are provided with holes 37 and 38 for loosely receiving the end portions of the spring.

Fig. 4 illustrates the manner of assembling the spring with the piston rod and lever 21. Hole 37 in the piston rod is first inserted over hooked end 36 of portion 34, as indicated at 19*a*, and the rod is moved downwardly along portion 34, as at 19*b*, to the assembled position 19*c*. End 35 is next inserted through the opening 38 in lever 21 (in the relative position as at 21*a*) and is then flexed, as indicated at 35*a* and 35 and ultimately forced under hook 36. The tension of the spring thereafter holds end portions 34 and 35 hooked together so as to maintain the assembly of the spring with the piston rod and actuating lever 21.

The design of the spring is such that when it is so prestressed in the assembled position, the spring will not be further stressed during all normal operating movements of the pump so that, in effect, there is provided a positive, non-yielding driving connection between the pump piston and throttle. However, under abnormal conditions, the spring may yield to prevent damage to the piston rod, lever 21, or link 25. The spring is further designed to exactly replace the non-flexible link which heretofore has been used to connect the piston and lever 21 in this form of pump operating mechanism.

The exclusive use of all modifications as come within the scope of the appended claims is contemplated.

I claim:

1. In combination, driving and driven members, at least one being subject to linear move-

ments and said members having adjacent portions with apertures therein, and a safety device connecting said members and comprising a spring having end portions respectively received in said holes, one of said portions being off-set laterally and hooked over the other end so as to maintain said device prestressed and properly assembled with said elements.

2. In combination, driving and driven members, one being subject to linear movements, and a safety device connecting said elements comprising a prestressed spring with an intermediate, resilient part and with end portions, respectively, projecting through loosely fitting holes in said members, one of said end portions extending sharply laterally at its outer end and being resiliently hooked over the other end portion to hold the spring in prestressed condition and maintain the assembly.

3. In combination, driving and driven members, one being subject to curvilinear movements, said members having adjacent parts with holes therethrough, and a prestressed, safety spring connecting said members for unison normal movements, said spring having an intermediate, coiled part and also having end portions extending loosely through said holes, one of said end portions having its outer part bent at a right angle and hooked over the other end portion so as to hold the spring in prestressed condition and to maintain the assembly of said members and said safety spring.

4. A safety connection for interposition in

carburetor accelerating pump operating linkage comprising a spring having projecting end portions for attachment to adjacent members of the linkage, one of said portions having a hook normally spaced from the other end portion and distortable for attachment to said other portion to maintain the assembly with the spring in prestressed condition.

5. In a carburetor, a movable element, an actuator movably mounted adjacent said element, said element and actuator each having a hole, and a pre-stressed spring with an intermediate, resilient part and end portions, respectively, projecting through said holes, one of said end portions extending sharply laterally on the side of said actuator opposite said resilient portion and resiliently hooked over said first end to maintain the assembly.

6. In a carburetor, a linearly movable element, a lever pivoted adjacent said element, immediately adjacent portions of said element and lever having apertures therethrough, and a prestressed spring connecting said element and lever for unison normal movements, said spring having an intermediate, coiled, resilient part and end portions extending loosely through said apertures, one of said end portions having a right angle bend hooked over the other end portion and held so positioned by the resilience of said coiled part to maintain the assembly of said element, lever, and spring.

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