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ADJUSTABLE THROTTLE VALVE STOP

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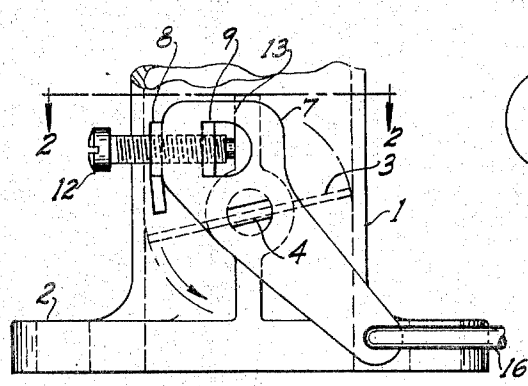


FIG. 1

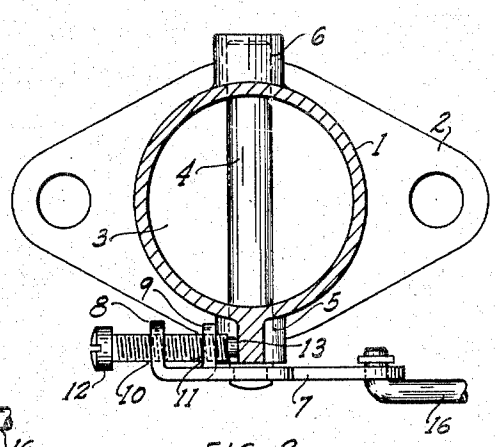


FIG. 2

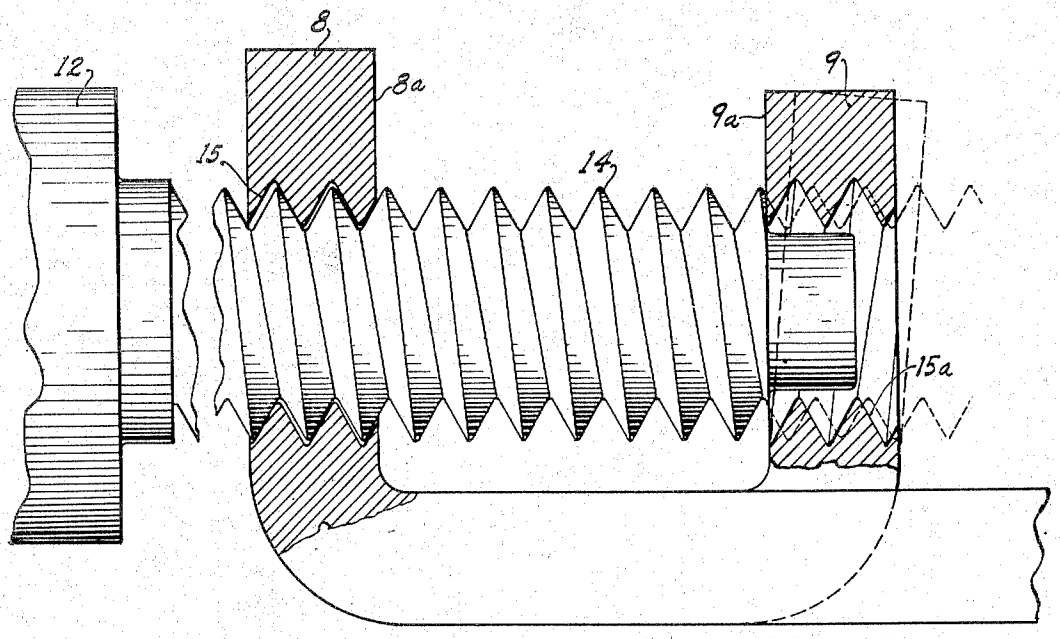


FIG. 3

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ADJUSTABLE THROTTLE VALVE STOP

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4 Claims. (Cl. 74—526)

This invention relates to means providing an adjustable limit to the movement of throttle valves as used in connection with internal combustion engine carburetors and more particularly to the provision of a controlled frictional detention for said adjustable limit or stop.

The provision of an adjustable stop to limit the closing of a carburetor throttle valve for the purpose of obtaining the desired idling speed is well known and understood. Threaded means for the adjustment of such stops is most commonly used and usually comprises a screw threadedly engaged in the throttle valve operating lever and adapted to contact an abutment on the carburetor body. The use of threaded adjustment means, however, presents the problem of holding the adjustment screw in any predetermined position against the forces of motor vibration and substantial impacts occasioned by sudden throttle closing movements which tend to alter the adjustment. This problem has usually been solved by the inclusion of a spring arranged in such manner as to set up frictional resistance of the movement of the adjustment screw.

It is an object of this invention to provide a novel means of producing stress between the threads of a threaded member and the threads of an engaging screw.

It is a further object of this invention to provide a throttle valve operating lever having two definitely spaced and parallel portions thereof drilled and threaded in alignment and fitted with an adjustment screw of similar pitch diameter but of different pitch than the internal threads.

Other objects and advantages will appear in the following description and accompanying drawing in which:

Fig. 1 of the drawing indicates the flange end of a conventional carburetor embodying one form of my invention.

Fig. 2 is a view taken on line 2—2 of Fig. 1.

Fig. 3 is an enlarged fragmentary view of the throttle valve operating lever with parts shown in section for clearer illustration.

Numeral 1 indicates a portion of a conventional carburetor casting having a flange 2 formed thereon for attachment to an internal combustion engine. A throttle valve 3 is indicated and is mounted for rotation as indicated by the arrow on the throttle shaft 4, which is journalled within casting 1 at 5 and 6. A throttle valve operating lever 7 formed as a stamping is provided and rigidly attached to the throttle shaft 4. Means for remote operation of the lever 7 may include the rod 16.

Two parallel tangs 8 and 9 formed as a part of lever 7 are drilled and threaded in alignment as indicated at 10 and 11. An adjustment screw 12 threadedly engaging the tangs 8 and 9 and projecting to the right therethrough contacts an abutment 13 formed as a part of casting 1 thereby limiting the closing movement of the throttle valve 3. It will be understood that the fit between the external threads on screw 12 and the internal threads in tangs 8 and 9, necessary to permit large volume economical production, would also permit the rotation and alteration of any predetermined adjustment of screw 12 under incessant motor vibration or impacts against the abutment 13. In order to produce a stress between the threads of screw 12 and members 8 and 9 and thereby set up a frictional resistance to rotation, I have provided a screw having similar pitch diameter to the internal threads in tangs 8 and 9 but having a slightly different pitch or lead. Referring to Fig. 3; in this illustration I have chosen to select a slightly shorter pitch for the external thread 14 than that of the internal thread 15 and 15a in the order of, say 26 threads per inch for the external thread 14 and 24 threads per inch for the internal thread 15 and 15a. Further, I have selected a dimension between the inner surfaces 8a and 9a which is not an even multiple common to both pitches but is, however, proportioned to cause the high point of the external thread to approximately coincide with the root of the internal thread in 9a as the screw is advanced thereinto. As the screw 12 is rotated clockwise from the position shown in full lines in Fig. 3, to the position shown in dotted lines, deflection of one or both of members 8 and 9 must take place as indicated by dotted lines to accommodate this mis-matching of threads and will, thereby, impose a constant stress upon the screw thread surfaces in engagement.

It will be understood that in this modification the internal threads in both 8 and 9 are formed in one direction with a single tap. Also that as the dimension between surfaces 8a and 9a varies from a common multiple of both pitches the stress set up will increase and the stress may, thereby, be proportioned. Upon considering the comparatively few internal threads in either of tangs 8 or 9 and the comparatively free fit of the threads it will be seen that the accumulated difference in pitch in the thickness of either tang is not sufficient to cause undue distortion of the threads. It is intended that the drawing and preceding description be illustrative and not limiting and

that the inventor contemplates the exclusive use of all modifications which come within the scope of the following claims.

I claim:

1. The combination of a screw and a plurality of yieldably connected members perforated and internally threaded in alignment and engaging said screw, the threads of said screw being of different pitch than said internal threads, and said members being spaced to a dimension which varies to some degree from a common multiple of both pitches thereby requiring relative movement of said members for the engagement of said screw.

2. The combination of an oscillating lever, an adjustable stop for said lever, and threaded means for positioning said adjustable stop, comprising a screw, and a plurality of yieldably connected members, said members being perforated and internally threaded in alignment and engaging said screw, the threads of said screw being of different pitch than said internal threads, and said members being spaced to a dimension which varies to some degree from a common multiple of both pitches, thereby requiring relative movement of said members for the engagement of said screw.

3. In combination an internally screw threaded member, a second internally screw threaded member resiliently connected therewith, the threads of said members being substantially coaxial and of the same size and pitch, and a screw mounted in said threaded members, said screw being threaded with threads of a slightly different pitch, whereby said screw is frictionally held in position by the resiliency of the connection between said members.

4. For use with an internal combustion engine carburetor, a throttle valve operating lever, comprising a stamping having a plurality of formed and internally screw threaded portions, said internal threads in said formed members being coaxial and of the same pitch diameter and pitch, and an adjustment screw threadedly engaged in said formed portions, said screw being threaded with threads of similar pitch diameter but of slightly different pitch than said internal threads, whereby said screw is frictionally held in position by the resiliency of said formed members.

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