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W. R. WILEY

2,179,582

CLIP

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FIG. 1.

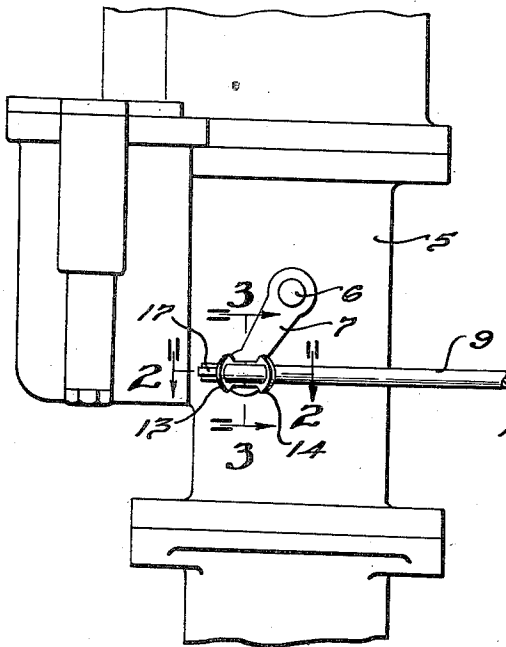


FIG. 2.

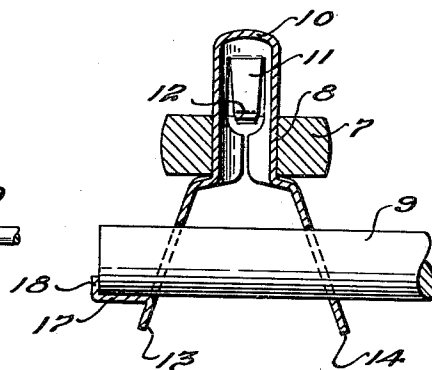


FIG. 3.

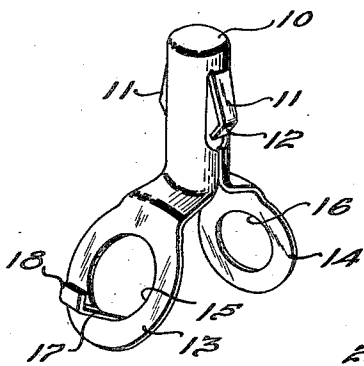
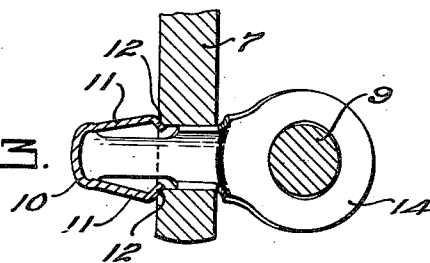


FIG. 4.

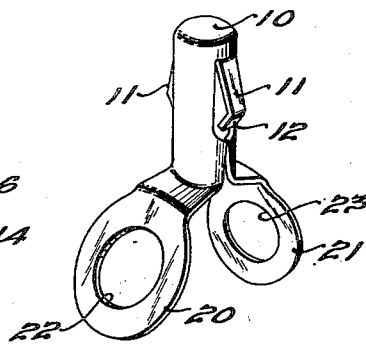


FIG. 5.

INVENTOR.  
*William R. Wiley.*  
BY  
*Harness, Dickey, Pierce & Hann.*  
ATTORNEYS.

## UNITED STATES PATENT OFFICE

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CLIP

William R. Wiley, Phoenix, Ariz.

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4 Claims. (Cl. 287—93)

This invention relates to clip construction. Particularly it relates to a novel and improved form of metal clip primarily adapted to interconnect a longitudinally movable bar or arm with a pivotally mounted member in order to effect oscillation of the pivotally mounted member by means of longitudinal movement of the bar or arm.

It is a primary object of the present invention to provide an improved form of clip construction which is extremely simple in structure, cheap to manufacture, and which provides a positive self-locking interconnection between the parts which it serves to connect.

It is a still further object of the present invention to provide a clip construction of the type defined above in which novel means are provided for effecting adjustment of the clip and accurately determining the longitudinal position with respect to the bar or arm on which it is mounted.

It is a still further object of the present invention to provide a clip construction of this generic type which is exceedingly easily mounted in position with respect to the members with which it is associated, and which when so mounted is permanently resiliently retained in position with respect thereto.

Yet another feature of the present invention consists in the provision of a clip construction of the generic type described above in which the clip itself is formed from a single integral sheet metal stamping so constructed and arranged that it serves to provide a positive locking engagement with the parts with which it is associated.

Many other and further objects, advantages, and features of the present invention will become clearly apparent from the following specification when considered in connection with the accompanying drawing forming a part thereof.

In the drawing:

Fig. 1 is a fragmentary side elevational view of a portion of a carburetor of an internal combustion engine illustrating one embodiment of the improved clip of the present invention utilized in connection therewith.

Fig. 2 is an enlarged fragmentary sectional view taken substantially on the line 2—2 of Fig. 1 illustrating in detail the manner in which the clip is mounted upon the control arm.

Fig. 3 is an enlarged transverse sectional view taken substantially on the line 3—3 of Fig. 1 illustrating in detail the manner in which the clip is mounted with respect to the arm which it serves to actuate.

Fig. 4 is an enlarged perspective view of a clip

embodying the improvement of the present invention.

Fig. 5 is an enlarged perspective view similar to Fig. 4 illustrating a modified form of clip construction.

With more particular reference to the drawing, it will be readily understood that the clip shown therein is merely illustrative of one specific embodiment of the invention, and that substantial departures from the specific structure shown may be made which at the same time will fall within the generic scope of the invention as presented and defined in the subjoined claims.

In Fig. 1 a portion of a carburetor is shown comprising an inlet duct or tube 5, which is adapted to be controlled by a conventional butterfly valve not shown. This butterfly valve is actuated by means of a shaft 6 to which is rigidly secured a crank arm 7. This crank arm 7 has an aperture 8 in the outer end thereof adapted to receive one portion of the improved clip, and it will be subsequently seen that the clip of the present invention provides relatively simple means for interconnecting this crank arm 7 with a longitudinally movable actuating rod or bar 9.

The clip in the form shown comprises a single integral sheet metal stamping which is preformed in its central portion to provide a substantially tubular projection 10. This projection 10 is preferably preformed to provide upstruck lugs 11 on each of the opposite sides thereof, which lugs have their tip ends 12 bent inwardly to provide means, as will hereinafter be more clearly seen, for securing the clip as a whole in position within the aperture 8 of the arm 7. Formed as an integral part of this generally cylindrical central portion are a pair of wings 13 and 14, which wings are bent sharply away from the central portion of the clip, and are disposed in divergent relation with respect to each other.

It will be readily apparent that when the tubular central portion 10 of the clip is inserted within the aperture 8 of the crank arm 7, the upstruck tange 11 will be compressed permitting the insertion of the clip until the wing portions seat against the face of the arm 7. It will be seen that when the clip has been thus inserted the upstruck lugs 11 will spring outwardly permitting the tip ends thereof to seat against the opposite face of the crank arm 7 adjacent the aperture 8 thereof, thus firmly locking the central body portion of the clip in position in the aperture of the crank arm. It will be readily apparent that due to the generally cylindrical configuration of the central portion of the clip as a whole, this inter-

locking engagement of the clip and crank arm will at the same time permit relative rotational movement of the body portion of the clip within the aperture, but will retain the clip firmly seated in place therein.

The wing portions 13 and 14 have apertures 15 and 16, respectively, formed therein which apertures are adapted to receive the actuating rod 9. Inasmuch as these wing portions are inclined to each other, it has been found desirable to facilitate mounting of the clip to make the apertures 15 and 16 slightly larger than the exterior diameter of the rod 9 in order to permit the insertion of the rod and at the same time, permit these wing portions to be maintained in inclined relation with respect to each other. A portion of the metal from the aperture 15 of the wing portion 13 is struck outwardly to provide a projecting lug 17 having a hook-like end 18 which, as will hereinafter be seen, is adapted to engage the extreme end of the operating shaft in order to positively position the clip with respect thereto.

After the clip has been completely formed it is heat treated and tempered in order that it will be extremely resilient, and so that the metal thereof will be substantially harder than the metal with which the clip is associated. The wing portions 13 and 14 are tempered so that they have an inherent tendency to assume a position whereby the angle of inclination of one to the other is substantially greater than that which the parts must assume when the rod 9 is inserted through the apertures 15 and 16. This construction provides a clip which firmly grips the rod and the hard metal of the clip has a tendency to dig into the surface of the rod thus firmly positioning the clip with respect to the rod on which it is mounted. In the specific form of the invention shown in Figs. 1 to 4 inclusive, of the drawing, it will be readily understood that the hook-like member 18 also serves to retain the clip in predetermined longitudinal position with respect to the rod on which it is mounted.

In the modified form of the invention illustrated in Fig. 5 of the drawing, it will be seen that the central portion of the structure is substantially the same as has been described above, and the same reference characters are used therefor. In this form of the invention the central body portion is provided with a pair of wings 20 and 21 which have apertures 22 and 23 respectively therein, the marginal edges of which apertures are adapted to engage the rod 9 in substantially the manner described above, and firmly grip the same. It will be readily appreciated that in this form of the invention the clip may be adjusted to any desired position, longitudinally with respect to the rod, and this adjustment may be easily and simply accomplished by merely squeezing the wing portions toward each other in order to release the grip of the portion upon the rod. The clip may then be slid to the desired position and when the wing portions 20 and 21 are released they will serve to firmly grip the exterior surface of the rod and retain the clip in predetermined adjusted longitudinal position with respect to the rod on which it is mounted.

It will be readily appreciated that in the form of the invention illustrated in the drawing and

described above the clip provides a structure which permits pivotal movement of the clip within the aperture 8 in the crank arm 7 in order that as reciprocatory movement of the rod 9 takes place the crank will be moved arcuately in order to adjust the position of the control valve in the duct 5. It will likewise be appreciated that due to the fact that the clip is made of extremely hard and highly tempered steel, the clip will grip the rod 9 firmly and be retained in predetermined longitudinal position thereon.

While but two illustrative embodiments of the present invention have been illustrated and described, many other and further modifications thereof falling within the scope of the invention as defined in the subjoined claims will become clearly apparent to those skilled in the art.

What I claim is:

1. Means for connecting a longitudinally movable rod with a pivotally mounted member comprising a sheet metal clip, said clip having the central portion thereof preformed to provide a tubular extension adapted to seat within an aperture in said arm, said clip having diverging wing portions having apertures formed therein adapted to engage and grip said rod, a portion of the metal from one of the apertures in one of said wing portions being preformed to provide a hook-like member integrally connected to said clip to position same with respect to the end of said rod.

2. In combination, a rod, an arm, said arm having an aperture therein, and a clip for interconnecting said rod and arm, said clip comprising a single integral sheet metal member preformed in its central portion to provide a substantially tubular projection extending through and seated in the aperture in said arm, and wing portions extending from said central portion and having aligned apertures therein, said rod passing through said apertures, said wing portions being normalized to lie in angular relation with respect to each other whereby to grip said rod.

3. In combination, a rod, an arm having an aperture therein, and a clip for interconnecting said rod and arm, said clip comprising a sheet metal member having a tubular projection extending through and seated in the aperture in said arm, said clip having wing portions diverging from said tubular portion, said wing portions having apertures therein, said arm passing through said apertures, said wing portions being tensioned to normally lie at a substantial angle to each other whereby the marginal edges of said apertures will grip said arm.

4. In combination, a rod, an arm having an aperture therein, and a clip for interconnecting said rod and arm, said clip comprising a single integral sheet metal member preformed to provide a generally tubular projection in the central portion thereof, said projection extending through the aperture in said arm, said projection having upstruck integrally formed lugs therein adapted to retain said projection seated in the aperture of said arm, said clip having wing portions diverging from the central portion thereof, said wing portions having apertures therein, said rod passing through said apertures and resiliently gripped by the marginal portions thereof.

WILLIAM R. WILEY.