May 16, 1933. J. E. ESHBAUGH 1,909,857

PRESSURE GAUGE

Filed Nov. 15, 1928

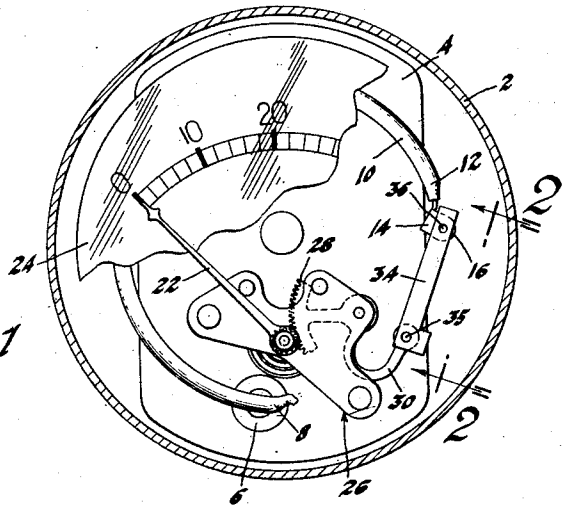


Fig. 1

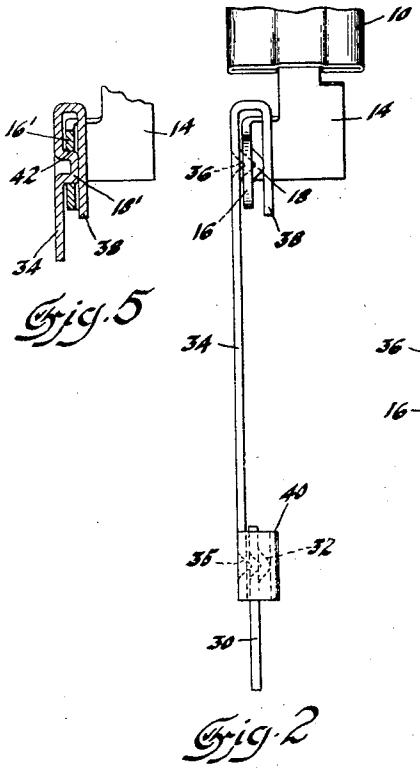


Fig. 5

Fig. 2

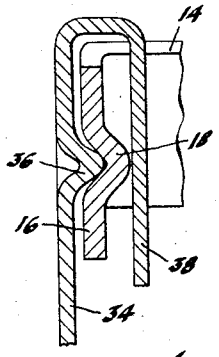


Fig. 4

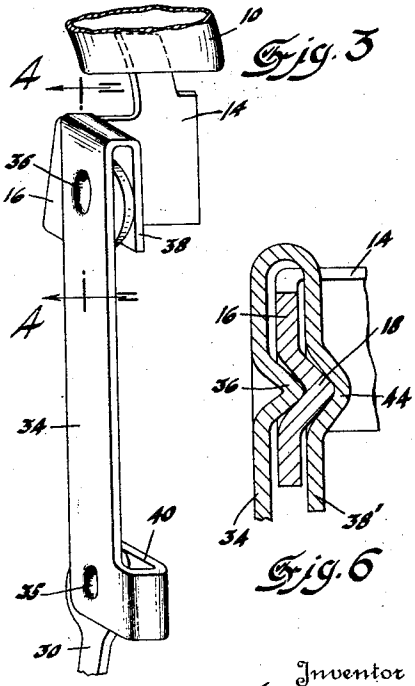


Fig. 3

Fig. 6

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UNITED STATES PATENT OFFICE

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PRESSURE GAUGE

Application filed November 15, 1928. Serial No. 319,561.

This invention relates to gauges and has particular reference to the link which connects the pressure responsive member to the pointer operating mechanism.

The invention is illustrated in connection with a gauge of the Bourdon tube type, although it is applicable to other types of gauges. The free end of the Bourdon tube is usually provided with a wing or attaching portion while the pointer-swinging mechanism is also provided with an arm or wing for the attachment of a link. The link interconnects the wing of the Bourdon tube with the arm of the swinging mechanism and in prior constructions use has been made of a shouldered rivet which has been passed through an opening in the link and a smaller opening in the wing of the Bourdon tube to form a pivotal connection. It is an object of the present invention to improve and cheapen this construction.

The object of the invention is accomplished by pressing a knob, button or projection in the wing at the end of the Bourdon tube and a similar button or projection in the arm or wing of the pointer swinging mechanism. The side opposite the button is left hollow forming a recess or an indentation. The connecting link is provided with similar buttons or projections, the button of the link resting in the hollow portion of buttons of the arm and wing. Each end of the link is bent around on itself and contacts with the button or projection on the wing of the tube or arm of the pointer swinging mechanism to hold the parts in their relative inter-relation and assist in forming a pivotal connection.

As a modification the wings may be provided with holes and the link with a projection which fits into the hole.

Referring to the drawing—

Fig. 1 shows a face view of the Bourdon gauge with the cover removed and the casing and dial broken away to illustrate the construction.

Fig. 2 is an enlarged detailed view of the structure of the invention taken on the line 2—2 of Fig. 1.

Fig. 3 is a perspective view of the structure of Fig. 2.

Fig. 4 is an enlarged sectional view of the line 4—4 of Fig. 3, the section being taken through one of the pivotal connections.

Figs. 5 and 6 are modifications of the structure shown in Fig. 4.

Referring to the drawing, the numeral 2 indicates the casing of a gauge. In the casing there is mounted the base plate 4 to which there is secured the stud or socket 6 in which there is mounted an end 8 of the Bourdon tube 10. The opposite end 12 of the tube is free and has secured thereto the end connection or wing 14, having the angularly bent portion 16 which is provided with a projection or button 18, pressed from one side. The button extends beyond the plane of the portion 16 and forms a recess or indentation on the opposite side.

The gauge is provided with the usual pointer 22 moving over the dial 24. The pointer is actuated by the pointer-swinging mechanism indicated as a whole at 26. The pointer-swinging mechanism includes the sector 28 having the arm or wing 30, the end of which is provided with a button or projection 32 in all respects similar to the button 18 on the wing 14.

Connecting the wing 14 with the wing or arm 30 is a link 34. One end of the link 34 is provided with a button or projection 36 which conforms to the button or projection 18 of the wing 14, while the other end has a button or projection 35 which conforms to the button or projection 32 on the arm or wing 30. As will be seen from Figs. 2, 4 and 6, the projecting portion of the buttons 35 and 36 extend into the recesses of the buttons 32 and 18 respectively.

Referring to Figs. 2, 3 and 4 it will be noted that each end of the link 34 is reversely bent as shown at 38 and 40, the bent portions projecting under and contacting with the tip or peak of the buttons 18 and 32 on the wing 14 and arm 30 respectively. The purpose of these bent-over portions is to maintain the link in position on the wing 14 and arm 30 and to aid in forming the pivotal connection between the Bourdon tube

10 and the pointer-swinging mechanism 26.

Referring to the structure of Fig. 5, it will be noted that the angular portion 16′ of the wing 14 instead of being provided with a button 18 has a hole 42 punched therein, while the end of the link 34 is provided with a rounded projection 18′ which enters into the hole 42. A similar connection is provided at the other end of the link. The link pivots about the projection 18′ in the opening 42.

Referring to the structure of Fig. 6, it will be seen that it is in all respects similar to Fig. 4 except that the bent portion 38′ is also provided with a button or projection 44 conforming to the buttons 18 and 36 on the wing 14 and link 34 respectively.

The operation of the Bourdon tube gauge is conventional and similar in all respects to Bourdon tube gauges now in use. As the Bourdon tube expands it will pull on the link 34 which in turn will pull the arm 30 of the sector 28. A pivotal movement at the connecting point of the link will be allowed due to the seating of the tip or peak of the projection of the buttons on the link 34 in the recesses formed by the buttons on the wing and arm respectively.

The present invention has eliminated the usual rivet and the opening which it was necessary to punch in the link and its connections. The structure is much cheaper and much easier to assemble and equally as effective as prior constructions.

I claim:

1. In a gauge, a Bourdon tube having a connecting wing at its free end, a pointer swinging mechanism having a connecting wing portion, pressed-out portions formed on said wings, a link having pivotal engagement with said pressed-out portions and connecting said tube and mechanism, and means to hold said link in position.

2. In a gauge, a Bourdon tube having a connecting wing at its free end, a pointer swinging mechanism having a connecting wing portion, knobs or buttons pressed from said wings leaving indentations on the opposite side, a link connecting said tube and mechanism and having a pivotal connection with said wings at said knobs or buttons, and means to hold said link in position.

3. In a gauge, a pressure responsive member having a connecting element secured thereto, a knob or button pressed into said element leaving an indentation on the opposite side, a pointer swinging mechanism having an attaching arm, a knob or button pressed into said arm leaving an indentation on the opposite side, a link connecting said member and mechanism in operative relation, and a knob or button pressed from each end of said link and conforming to the indentations in the element and arm, and means to retain said buttons in said indentations for pivotal engagement.

4. In a gauge, a Bourdon tube having a connecting wing at its free end, a pointer swinging mechanism having a connecting wing portion, pressed-out portions formed on said wings, a link connecting said tube and mechanism and having pressed-out portions conforming to the pressed-out portions of said wings, and means to hold said pressed-out portions together to form a pivotal connection.

5. In a gauge, a Bourdon tube having a connecting wing at its free end, a pointer swinging mechanism having a connecting wing portion, knobs or buttons pressed from said wings leaving indentations on the opposite side, and a link connecting said tube and mechanism and having knobs or buttons pressed therefrom conforming to the indentations in said wings, and means to hold the knobs of the link in the indentations of the wing to form a pivotal connection.

6. In a gauge, a pressure responsive member having a connecting element secured thereto, a knob or button pressed into said element leaving an indentation on the opposite side, a pointer swinging mechanism having an attaching arm, a knob or button pressed into said arm leaving an indentation on the opposite side, a link connecting said member and mechanism in operative relation, a knob or button pressed from each end of said link and conforming to the indentations in the element and arm and forming therewith pivotal connections, and bent-over portions on the ends of said link comprising a part of said connections.

7. In a gauge, a pressure responsive member, a wing on said member, a pointer swinging mechanism, an arm on said mechanism, a link between said wing and arm to operate said mechanism from said member, a connection between said link and said wing and arm, said connection formed of parts of said link, wing and arm, and including bent over ends on said link engaging over and around said wing and arm to hold said link in position.

8. In a gauge, a Bourdon tube having a connecting wing at its free end, a pointer swinging mechanism having a connecting wing portion, knobs or buttons pressed from said wings leaving indentations on the opposite side, a link connecting said tube and mechanism and having a pivotal connection with said wings at said knobs or buttons, and bent ends on said link engaging over said wings to hold said link in position.

9. In a gauge, a Bourdon tube having a connecting wing at its free end, a pointer swinging mechanism having a connecting wing portion, knobs or buttons pressed from said wings leaving indentations on the opposite side, and a link connecting said tube and

mechanism and having knobs or buttons pressed therefrom conforming to the indentations in said wings to form a pivotal connection with said wings at said knobs or buttons, and bent ends on said link engaging over said wings to hold said link in position.

10. In a gauge, a pressure responsive member, a wing on said member, a pointer swinging mechanism, an arm on said mechanism, said wing and arm having indentations, and an articulation connector link between said wing and arm having a flattened end doubled upon itself and indented to form a point of articulation with the indentations of the wing and arm.

In testimony whereof I affix my signature.

JESSE E. ESHBAUGH.