Nov. 12, 1957 KAY C. TONG 2,813,160

PROGRESSIVE PUSH BUTTON SWITCH

Filed Feb. 21, 1955

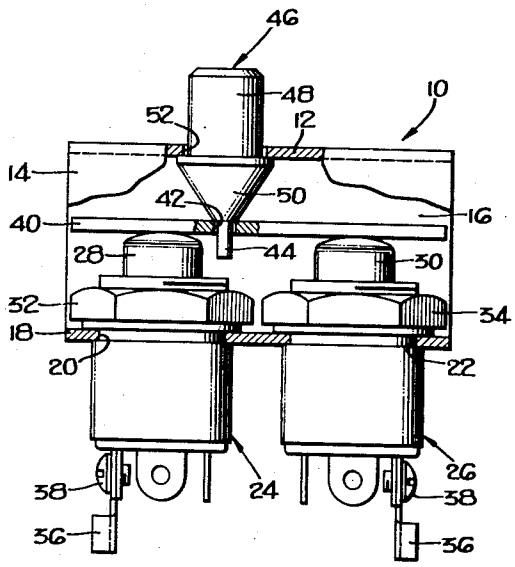


Fig. 1.

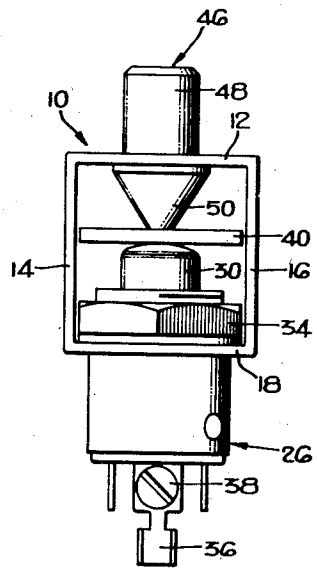


Fig. 2.

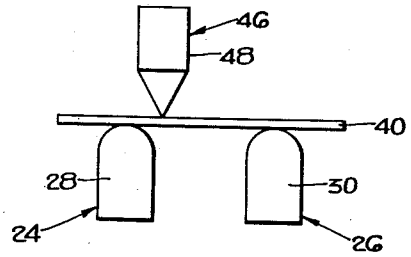


Fig. 3.

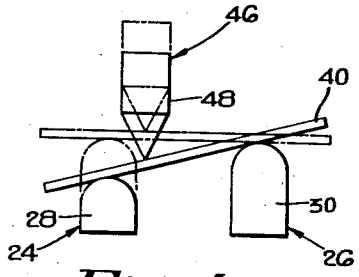


Fig. 4.

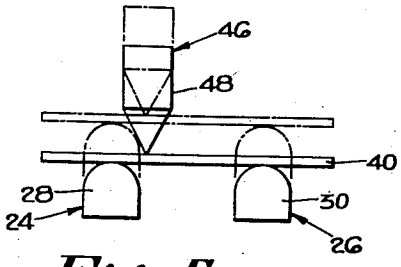


Fig. 5.

Kay C. Tong,
INVENTOR.

BY Herbert E. Metcalf
Patent Attorneys

United States Patent Office 2,813,160 Patented Nov. 12, 1957

2,813,160

PROGRESSIVE PUSH BUTTON SWITCH

Kay C. Tong, Culver City, Calif., assignor to Northrop Aircraft, Inc., Hawthorne, Calif., a corporation of California

Application February 21, 1955, Serial No. 489,460

2 Claims. (Cl. 200—18)

This invention has to do with electrical equipment and more particularly with switches therefore.

The principal object of this invention is to provide a progressive push button switch that will enable an electrical circuit designer to incorporate in a circuit the sequence of operation feature of this invention where the time element of operation is of importance.

Another object of this invention is to provide a progressive push button switch that is relatively economical to manufacture and assemble.

Figure 1 is a fragmentary, cross-sectional view portions of the structure being broken away for purposes of obtaining clarity.

Figure 2 is an end elevation view illustrating and having embodied therein the present invention.

Figures 3 to 5 inclusive are schematic views illustrating the sequence of operation of the invention.

Referring to the drawings for a more detailed description of the invention **10** broadly designates an elongated hollow body having four elongated integral side panels, **12**, **14**, **16** and **18**; the ends of the body being open.

Formed in side **18** of the body are a pair of spaced apart openings **20** and **22** through which extend a pair of spring loaded push button switches **24** and **26**, the latter being retained in position in the body **10** by nut and washer assemblies **32** and **34**. The buttons **28** and **30** are disposed within the interior of the body as may be determined by referring to Figures 1 and 2 of the drawings. Each switch has corresponding terminals **36** secured thereto by screws **38**.

Disposed in the body **10**, resting on buttons **28** and **30** and laying parallel to walls **12** and **18** when the switches are in their normal position is an elongated, flat plate **40**. Formed in, and offset from the center of plate **40** is an opening **42**.

Extending through and having a diameter less than opening **42** is a projection **44** that is integral with a push button broadly designated **46**. Disposed between the projection **44** and a button **48** and integral with each is a frusto-conical stop **50** the base of which engages the interior surface of the side **12** when the button **48** projects through an opening **52** in the latter, to retain the push button **46** in place as well as the plate **40**. Attention is directed to the fact that the opening **52** has a greater diameter than the button **48**.

The operation of the device is as follows and attention is directed to Figures 3 to 5 inclusive.

Assume the position of the switches **24** and **26**, plate **40** and push button **46** to be in the position as illustrated in Figure 3, and the same force is required to actuate

the buttons **28** and **30** of each switch **24** and **26**. When a force is applied to push button **46**, the plate **40** fulcrums on the button **30** of switch **26** and button **28** is urged from the dotted to the full line position to actuate the switch **24**. Continued application of force to button **46** results in button **28** functioning as a fulcrum for the plate **40**, and due to button **28** reaching its limit of movement, the additional force is imposed on button **30** to urge it from the dotted to the full line position as illustrated in Figure 5 of the drawings. In the last mentioned figure it is seen that both switches have been actuated and a complete sequence of electrical operation has been obtained.

Releasing the force imposed on button **46** results in reversal of the operation; and the structure, under the impetus of the spring loaded switches **24** and **26**, returns to the position illustrated in Figure 3 of the drawings.

While in order to comply with the statute, the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown, but that the means and construction herein disclosed comprise a preferred form of putting the invention into effect, and the invention is therefore claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

What is claimed is:

1. A progressive push button switch comprising a body; a pair of spaced apart, parallel push button switches mounted in the body; a plate in the body in simultaneous contacting relationship with both of said switches and fulcruming thereon; said switches each functioning as a fulcrum for the other when actuated; said plate having an opening therein offset from the center thereof; and a push button in said body having a projection thereon that is received by said opening; said push button being in contacting relationship with said plate for successively actuating said switches.

2. A progressive push button switch comprising a hollow body having an opening therein; a pair of spaced apart, parallel push button switches mounted in the body; a plate in the body in simultaneous contacting relationship with both of said switches and fulcruming thereon; said switches each functioning as a fulcrum for the other when actuated; said plate having an opening therein offset from the center thereof; a push button in said body, and received by the opening therein for actuating said switches; said opening being greater than the outside diameter of the button extending therethrough; a projection on the push button that is received by and extends through opening in said plate.

References Cited in the file of this patent

UNITED STATES PATENTS

1,004,005	Ferguson	Sept. 26, 1911
2,289,882	Myers	July 14, 1942
2,469,976	Miller	May 10, 1949
2,485,340	Warmey	Oct. 18, 1949
2,621,267	Cripe	Dec. 9, 1952
2,695,939	Filliette	Nov. 30, 1954

FOREIGN PATENTS

958,556	France	Sept. 12, 1949