Feb. 1, 1938. W. W. LASKER 2,107,184

BOWDEN WIRE

Filed Dec. 13, 1934

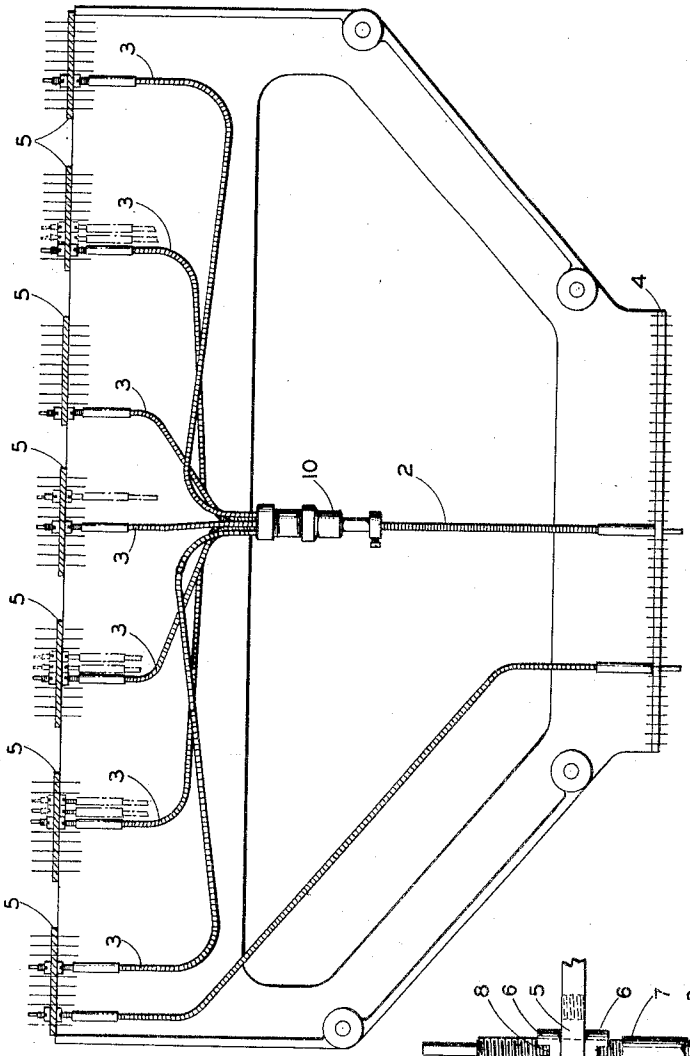


Fig. 1.

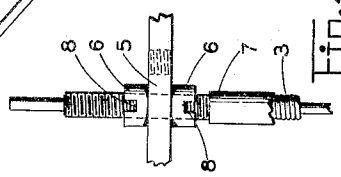


Fig. 4.

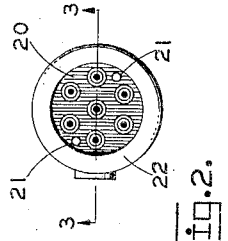


Fig. 2.

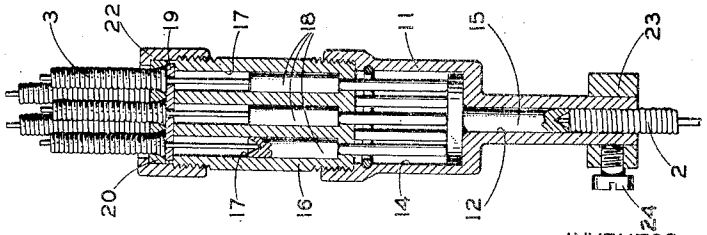


Fig. 3.

10

WITNESSES

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Patented Feb. 1, 1938

2,107,184

UNITED STATES PATENT OFFICE

2,107,184

BOWDEN WIRE

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Application December 13, 1934, Serial No. 757,251

5 Claims. (Cl. 74—501)

This invention relates to Bowden wires and more particularly to a connecting device for Bowden wires whereby one wire may transmit energy or motion to a plurality of points.

One of the many uses to which a Bowden wire of this type may be put is in the connection box for business machines known as tabulators, a type of which is disclosed and described in a U. S. Patent to William W. Lasker, No. 1,245,502. In a tabulating machine of this type it is often desirable to operate or set a plurality of stop members by one member or pin in a perforated card sensing mechanism. A connection box of this type is disclosed and described in U. S. Patent to J. R. Merkle, No. 1,884,072.

It is the principal object of this device to provide means for connecting two or more Bowden wires in such a manner that all may be operated by one actuating means.

A further object is to provide a flexible and easily variable system of multiple translation.

A still further object is to provide a link member for connecting the Bowden wires, which is simple, efficient and easy to manufacture.

A more clear conception of the further objects, construction and operation of invention may be had from the following specification taken in conjunction with the accompanying drawing, in which:

Fig. 1 discloses the device as used in a multiple connection box for a tabulator.

Fig. 2 is a top view of the connecting link.

Fig. 3 is a cross section through 3—3 of Fig. 2.

Fig. 4 discloses an adjustable fastening means for the Bowden wire.

It is well known in the card-operated accounting machine art that it is often desirable to print or enter in a plurality of places in the tabulating machine, an item appearing in one column of the card. This operation is effected by the use of a multiple connection box, such as disclosed in Fig. 1 of the above mentioned patent to Merkle. It is proposed in this invention to use flexible connections such as the Bowden wires disclosed in U. S. Patent No. 1,307,683 to W. W. Lasker.

In using Bowden wires in the multiple connection or translator box of a tabulating machine, it becomes necessary to use some type of multiple connecting link, one type of which is disclosed in Fig. 1. The connecting link 10 is shown connecting wire 2, located above one column of the card sensing box, with a plurality of wires 3, the operating ends of which are located in different sections of the tabulator stop mechanism. A well known form of connection box is shown in Fig. 1 having plate 4 adapted to be positioned over the sensing mechanism and plates 5 adapted to be positioned under the stop basket section of a tabulator. The lower end of wire 2 is screwed into a tapped hole in the plate 4, and the upper end is secured in the link 10. The upper ends of the wires 3 are secured in holes formed in each of the plates 5 adapted to be positioned below the stop baskets of each computing unit of the tabulator. These ends are secured to the plates by two nuts, 6, as shown in Fig. 4. The lower ends of these wires are secured in link 10.

The link member 10, as shown in Fig. 3, comprises a cylindrical member 11 formed as shown having a bore 12 of one diameter and a bore 14 of a larger diameter. The bore 12 accommodates the shank of a piston 15 while the upper or head portion moves in the bore 14. The upper portion of the member 11 is internally threaded to take a cylinder 16, formed as shown, with a plurality of bores 17 in which are positioned plungers 18. The lower portion of bores 17 are reduced as shown to form a limit for the plungers 18. A shallow seat is cut in the top of the cylinder 16 to hold a circular disc 19 having a plurality of holes bored therein corresponding to the bores 17. These holes are of a diameter large enough to permit the passage of the push wire, but not the casing of the Bowden wire. A second circular plate 20 is provided having holes therein corresponding to those in plate 19 and large enough to accommodate the casing of the Bowden wire. The holes are countersunk on the under side of the plate and the casings are belled out, thereby locking them to the plate 20. Plate 20 is provided with a pair of diametrically located holes, which are adapted to take a pair of diametrically positioned pins 21 protruding from plate 19 for positioning plate 20 with respect to plate 19. A cap 22 is provided which, when screwed on to cylinder 16, locks the plates 19 and 20 together, thereby forming a unitary structure. The push wires of Bowden wires 3 are extended into contact with plungers 18 which are formed with a conical depression for locating the ends of said wires. The casing of Bowden wire 2 is forced into the end of member 11 and held locked therein by a collar 23 having a set screw 24 associated therewith. The lower end of piston 15 is counterbored to provide a depression for positioning the end of the push wire of Bowden wire 2.

When the Bowden wire 2 is operated the plunger 15 is forced upward pushing plungers 18 upward, which, in turn, cause Bowden wires 3 to be operated. It is obvious that any number of

wires from 1 to 7 may be operated in this manner and that by enlarging the link 18 any conceivable number of wires 3 may be contained therein for operation by the wire 2. The usual form of connecting wire is shown to the left of Fig. 1. This wire merely transmits motion from one sensing pin to one tabulator stop.

The upper ends of the casing of wires 3 are provided with a sleeve 7 (Fig. 4) having a long thread formed thereon. By means of nuts 6 the end of the casing may be adjustably positioned in the plate 5. If the upper nut is screwed off to a position near the top of the thread, and the lower nut screwed up to clamp the plate 5, the length of the protruding end of the casing is shortened. If the operation is reversed, the protruding end will be larger. It is, therefore, obvious that this adjustment may be varied at will. Each nut 6 is formed with a slot 8 by means of which it may be tightened. A straddle wrench (not shown) of any well known type may be provided for this purpose.

A Bowden wire connection of this type is obviously useful in a great number of places such as in automobiles for controlling two separate and diversely located valves from one point, for instance, the accelerator pedal. It may also be used for closing a plurality of electric switches simultaneously from one control point. In fact the invention is adaptable for use in any instance where it is desirable to control a plurality of devices from one point. It is also obvious that by merely inserting a spring under the plate of piston 15, a single device may be controlled from a plurality of points.

While there are above described but a limited number of embodiments of the invention, it is possible to produce still other embodiments without departure from the inventive concept above disclosed, and it is, therefore, desired that only such limitations shall be imposed on the appended claims as are stated therein, or required by the prior art.

What I claim as new, and desire to secure by Letters Patent, is:

1. In a device of the character described, a group of Bowden wires, a single Bowden wire, and a connecting member for operating said group of wires by said single wire, said member comprising a casing containing a piston having a plurality of plungers operatively associated therewith.

2. In a device of the character described, a group of Bowden wires, a single Bowden wire, and a connecting member for said wires, whereby said group of wires may be operated by said single wire, said member comprising a casing containing a piston having a plurality of plungers associated therewith, said single wire being operatively connected to said piston and said group of wires being operatively connected to said plungers.

3. In a device of the character described, a group of Bowden wires, a single Bowden wire and a connecting member for said wires, comprising a casing containing a plurality of plungers, the push wires of said group of wires being associated therewith and a plate having counter-sunk holes therein for locking the casings of said wires to said member.

4. In a device of the character described, a sleeve containing a plurality of plungers, a piston positioned in said sleeve and adapted to operate said plungers, and means for connecting a Bowden wire to each of said plungers and said piston.

5. In a device for interconnecting Bowden wires, a sleeve containing a piston, a cylinder containing a plurality of bores therein, a plunger positioned in each of said bores, said cylinder being secured to said sleeve to permit operation of said plungers by said piston, and means for securing Bowden wires in operative relation with said piston and each of said plungers.

WILLIAM W. LASKER.