May 30, 1939. H. T. ANDERSON 2,160,113

BOWDEN WIRE

Filed Sept. 28, 1937 2 Sheets-Sheet 1

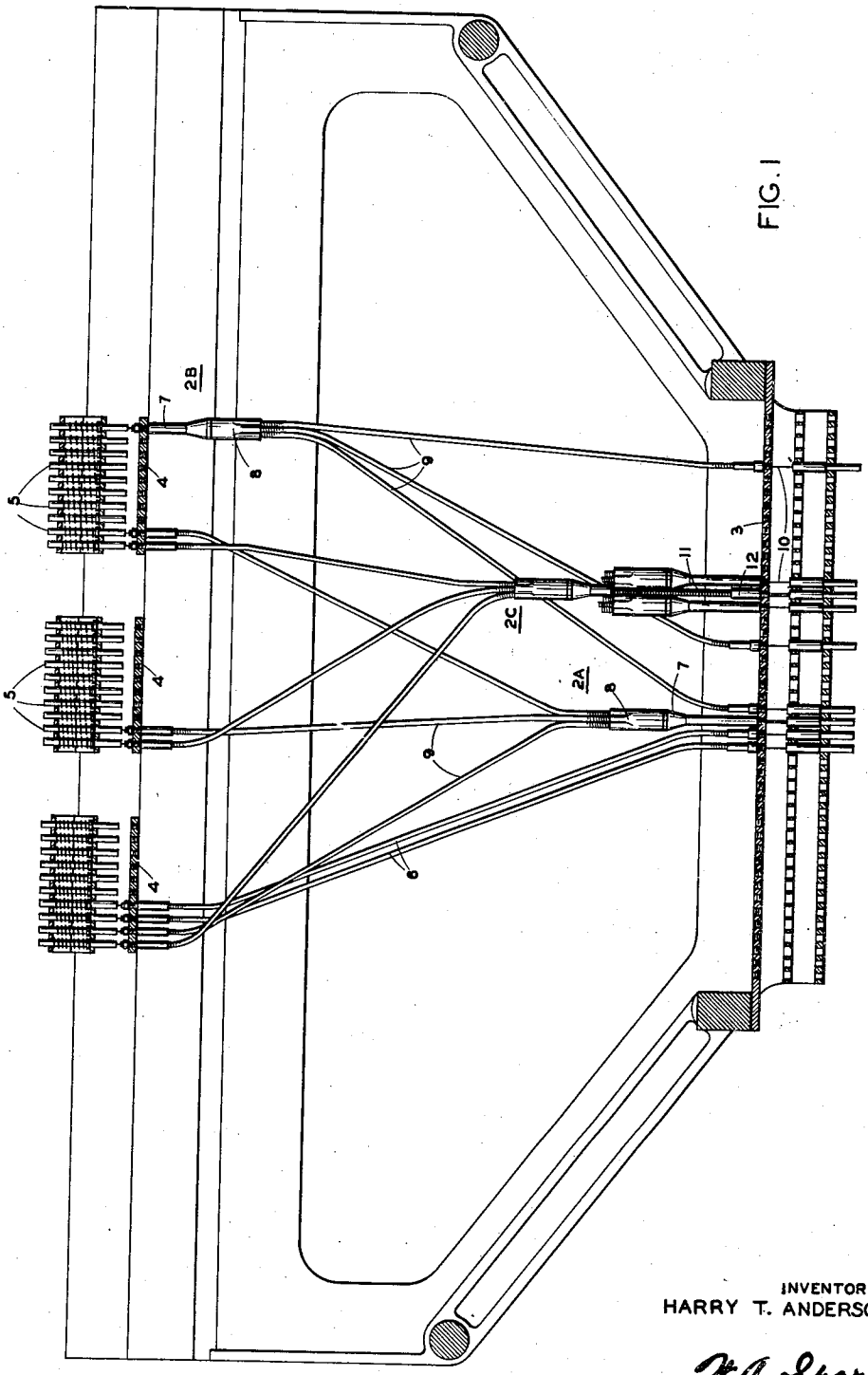


FIG. 1

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BOWDEN WIRE

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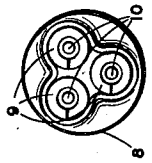


FIG. 6

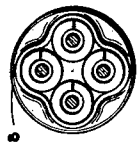


FIG. 7

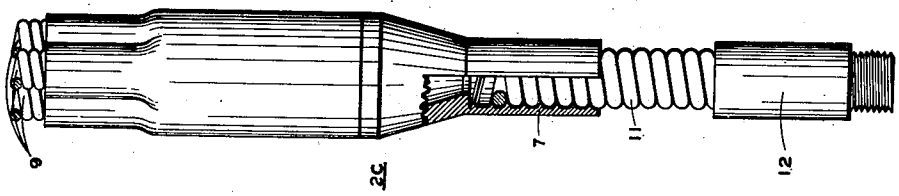


FIG. 5

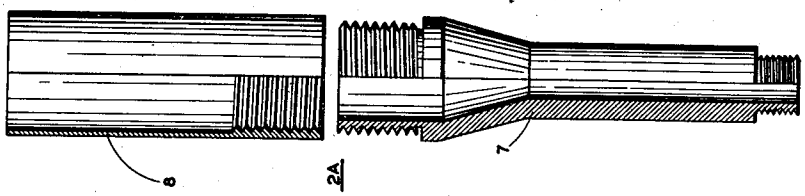


FIG. 4

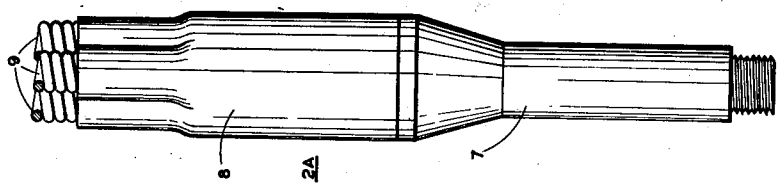


FIG. 3

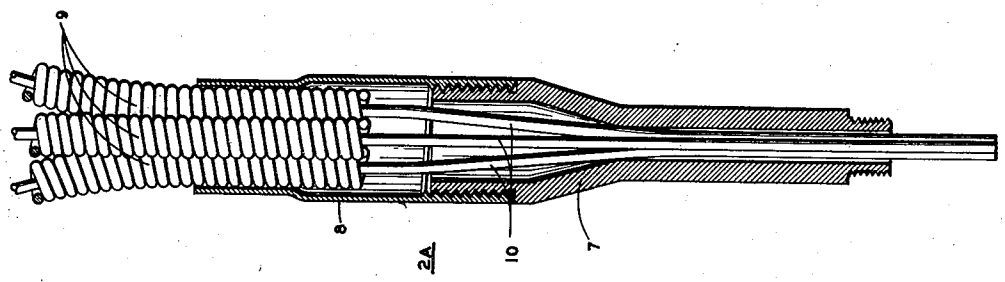


FIG. 2

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Patented May 30, 1939

2,160,113

UNITED STATES PATENT OFFICE

2,160,113

BOWDEN WIRE

Harry T. Anderson, Herkimer, N. Y., assignor to Remington Rand Inc., Buffalo, N. Y., a corporation of Delaware

Application September 28, 1937, Serial No. 166,232

3 Claims. (Cl. 74—501)

This invention relates to Bowden wires and more particularly to a connecting device for Bowden wires whereby energy or motion may be transmitted from one point to a plurality of points.

Heretofore when it was desired to control a plurality of members or devices from one point, by the use of Bowden wires, a connector was used which grouped the ends of the wires leading to the devices in a tube or sleeve containing a plunger which when actuated by the wire extending from the single point operated all of the Bowden wires.

A connector of this type is of necessity a bulky device and, unless the wires in each of the branches are very carefully adjusted as to length, they frequently fail to operate.

One of the many uses to which a Bowden wire connector 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 U. S. Patent No. 1,245,502 to William W. Lasker, issued November 6, 1917. 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 shown in U. S. Patent No. 1,884,072 to J. R. Merkle, issued October 25, 1932.

The present device was designed for use in connection boxes of the above type in which space is at a premium. In order to reduce the size of the connector the usual plunger was omitted and the cores or operating wires of the grouped wires extend the full length of the grouped casings. In other words the separate casings and cores are grouped at one point where the cores enter a single casing which carries the grouped cores to a single point.

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

Another object is to provide means for connecting a plurality of Bowden wires in such a manner that various actuating means may be utilized to transmit motion or energy to a single point.

A still further object is to provide a flexible and variable system of multiple translation which is simple, efficient, and easy to manufacture.

Other objects will be apparent from the following description and claims, when read in conjunction with the accompanying drawings, in which:

Fig. 1 is a sectional view through a translator illustrating the various forms of the present invention, in use.

Fig. 2 is a vertical sectional view of the present invention.

Fig. 3 is an elevational view of the present invention.

Fig. 4 is an exploded, quarter-sectional view of the main elements of the present invention.

Fig. 5 is an elevational view partially in section and illustrating a modification of the present invention.

Fig. 6 is a plan view of Fig. 5 and illustrates the manner of fastening three wires together, and

Fig. 7 is a view similar to Fig. 6 and illustrates an embodiment of the present invention utilizing four wires.

As is well known in the card-operated accounting machine art, it is often desirable to print or enter in a plurality of positions in the tabulating machine, an item appearing in a group of columns of a card. This operation is effected by the use of a multiple connection box, such as disclosed in Figure 6 of the above cited patent to Merkle. A connection box of this type is located between the tabulator head and sensing pin box as shown in Fig. 1 of the Lasker patent. It is proposed to replace the wires of the above patent by flexible connections such as the Bowden wires disclosed in U. S. Patent No. 1,307,683 to W. W. Lasker, issued June 24, 1919.

In using Bowden wires in the multiple connection or translator box it often becomes necessary that a connector be provided whereby a single actuating means may control a plurality of printing positions or vice versa. Several of such connectors are shown in Fig. 1 of the drawings in which figure various combinations of set-ups are illustrated. One connector as shown at 2A is secured in the base plate 3 of the translator and each of the associated wires being secured to the top plate 4 in a position to control a setting member 5 in separate accumulator positions. A second connector shown at 2B is secured in the top plate 4 under a setting member 5 and has its associated wires secured at separated points in the base plate 3.

A modified form of connector is shown at 2C which has a length of flexible casing secured thereto and which is shown in use in the same manner as 2A. A pair of conventional Bowden wires 6 of the type disclosed in the above cited Lasker Patent No. 1,307,683 is also illustrated in this figure.

As shown in Fig. 4 the main elements of the

connector include a tapered tubular member 7 having threads at both ends, those at the smaller end being of such a size as to fit tapered holes in either plate 3 or any of the plates 4 of the translator and those threads at the larger end being adapted to engage threads in a thin tubular member 8. Into tubular member 8, a desired number of Bowden wire covers 9 (Fig. 2) are positioned after which a portion of said tubular member is crimped around the covers 9 (Figs. 3 and 6) thereby securing them therein. With covers 9 securely mounted in member 8 the tapered member 7 is attached thereto (Figs. 2 and 3) after which the free small end of said member 7 is threaded into plate 3 or 4 as desired. The free ends of covers 9 are positioned in plate 3 or plates 4, as the case may be, in a similar manner to that disclosed in the above cited Lasker Patent No. 1,307,683. With the cable covers and connector in position as shown at 2A, in the translator the Bowden wire cores 10 are inserted in covers 9 and, as may be seen in Fig. 2, these cores will engage the internal tapered surface of member 7 and thereby be guided into a small opening through the stem portion of said member 7, and consequently will all be under control of a single actuating member.

Because of the relatively close spacing of the tapped holes in plate 3 and the relatively large diameter of the form of this invention just described, it would be impossible to set up Y-wiring from a plurality of adjacent columnar positions, therefore, a modification of this invention is provided, a detail of which is shown in Fig. 5 and a practical application of which is shown in Fig. 1 at 2C. As may be seen in Fig. 5, this modified form differs only in the means for attaching to plate 3 or 4. The members 7, instead of having threads cut on the extremity of its stem portion, is tapped to receive a relatively large wire cover 11, of any desired length, the other end of which cover 11 has mounted thereon a connector 12 of the type disclosed in the above cited Lasker Patent No. 1,307,683, which connector 12 is adapted to be threaded into plate 3 or 4. As may readily be seen in Fig. 1, by alternately using the above described preferred form and modification of the present invention, Y-wiring from a plurality of adjacent columns may be accomplished inasmuch as the cover 11 is flexible, thereby permitting the bending of the associated links 2 in any desired direction.

While two forms of wire-cover arrangement are illustrated in Figs. 6 and 7, the most practical is that illustrated in Fig. 7.

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 plurality of Bowden wires including wire-covers and cores, a sleeve adapted to maintain one end of each of said wire-covers in a group, a tapered sleeve adapted to be connected to said wire-cover sleeve, said tapered sleeve being adapted to cause said cores to converge into a relatively small group whereby said group may be operated simultaneously from a single point.

2. In a device of the character described, a plurality of Bowden wires including wire-covers and cores, a sleeve adapted to maintain one end of each of said wire covers in a group, a tapered sleeve adapted to be connected to said cover sleeve, said tapered sleeve being also adapted to cause said cores to converge into a relatively small group whereby motion may be transmitted to a single point from any one of a plurality of points.

3. In a device of the class described, a plurality of Bowden wires including wire-covers and cores, a sleeve adapted to maintain one end of each of said wire-covers in a group, a tapered sleeve adapted to be connected to said cover-sleeve, said tapered sleeve being also adapted to cause said cores to converge into a relatively small group, a flexible member adapted to be attached to said tapered sleeve member and also adapted to receive said converged group of cores and maintain them in their converged relationship, thereby enabling the transmission of motion from a single point to a plurality of points.

HARRY T. ANDERSON.