A. L. FLINT.

MULTIPLE CONNECTOR.

APPLICATION FILED JAN. 15, 1914.

1,172,694. Patented Feb. 22, 1916.

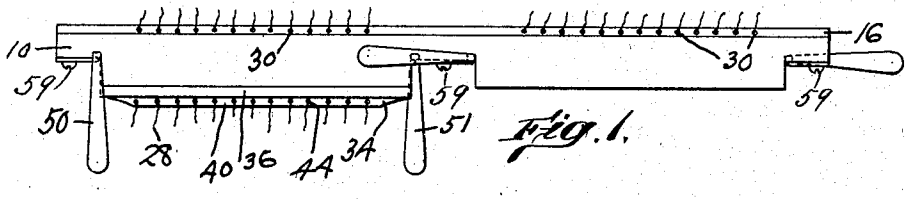


Fig. 1.

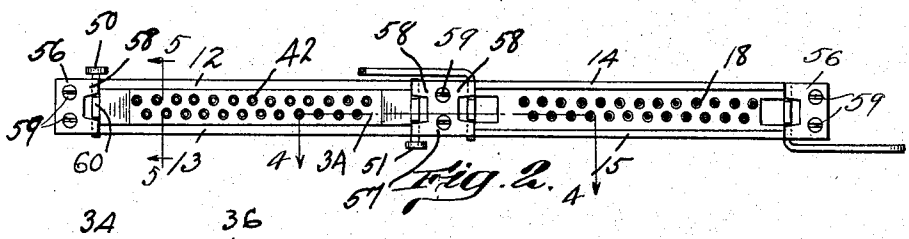


Fig. 2.

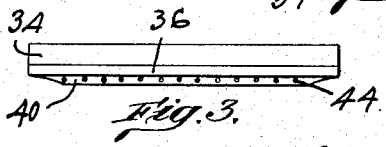


Fig. 3.

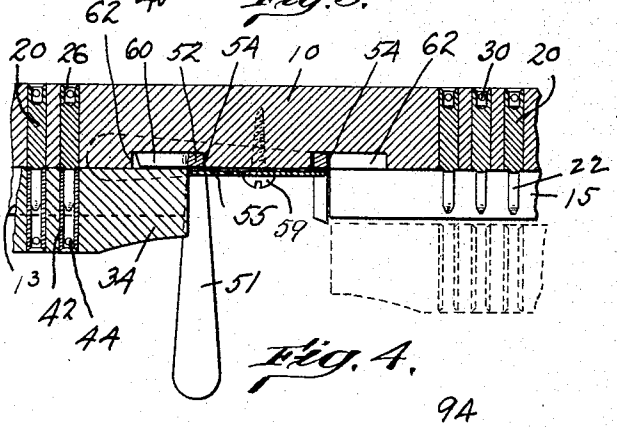


Fig. 4.

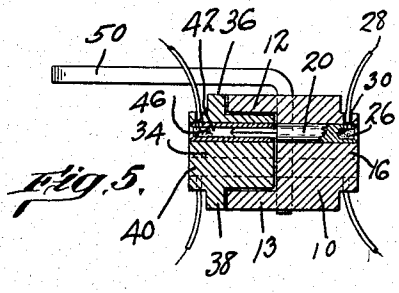


Fig. 5.

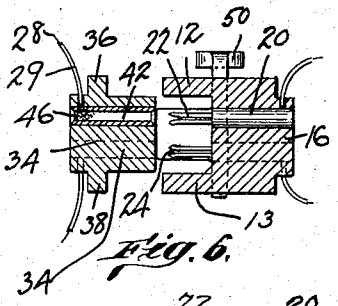


Fig. 6.

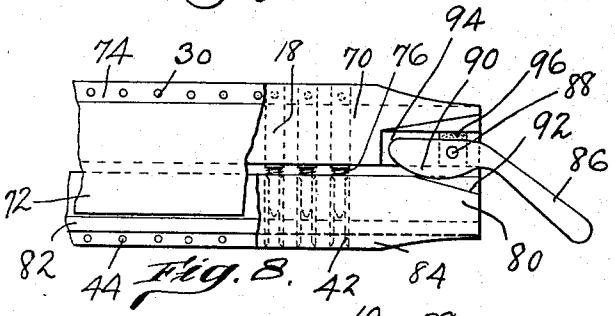


Fig. 8.

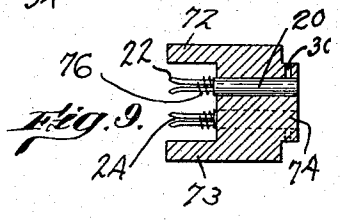


Fig. 9.

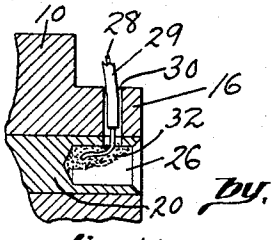


Fig. 7.

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MULTIPLE CONNECTOR.

1,172,694. Specification of Letters Patent. Patented Feb. 22, 1916.

Application filed January 15, 1914. Serial No. 812,294.

To all whom it may concern:

Be it known that I, ANDREW L. FLINT, of East Weymouth, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Multiple Connectors, of which the following is a specification.

This invention relates to an improvement in devices for connecting a multiplicity of circuits.

The object of the invention is to provide a device whereby a multiplicity of electric conductors may be simultaneously and quickly connected and disconnected. The device is primarily intended for use in electric musical instruments wherein the sonorous bodies are electromagnetically actuated, although obviously it is not limited to such use.

The invention will be readily understood from an inspection of the accompanying drawing, in which—

Figure 1 is a side elevation of one form of the invention with one of the removable blocks in position; Fig. 2 is a view looking upward at the same; Fig. 3 is a side elevation of one of the removable blocks; Fig. 4 is an enlarged fragmentary section on the line 4—4 of Fig. 2; Fig. 5 is a section on the line 5—5 of Fig. 2, showing the detachable block in engaging position; Fig. 6 is a similar view showing the block detached; Fig. 7 is a fragmentary sectional view, on an enlarged scale, showing how the conductors are secured in place; Fig. 8 is a fragmentary side elevation of a modified form of connector; and Fig. 9 is a transverse vertical section of a portion of the connector.

As illustrated in Figs. 1 to 6 the device includes a bar 10, preferably of wood, having pairs of elongated protective flanges or guiding lips 12, 13 and 14, 15 at intervals. Two such pairs of guides are shown, but one or more may be employed. The bar 10 also has a rib or ledge 16 extending along its entire length on the face opposite that from which the flanges 12 to 15 project.

Secured in the bar 10 are two rows of pins or plugs 18, comprising cylindrical body-portions or shanks 20, which are driven into the bar, and reduced necks 22, which are split at 24, and tapered at their ends. The outer end of the shank of each plug is provided with a recess or cavity 26 in which one end of a conductor 28 can be secured. A series of holes 30 are drilled into the ledge 16, and through one side of the shanks of the plugs 20 into the recesses 26. These holes are of such a diameter as to enable the insulation 29 of the conductors 28 to enter, and the end of said conductor is preferably bent as shown and secured to the plug by solder 32.

The detachable portion of the connector comprises a relatively short bar 34, also of wood, having its body portion of such a width as to fit between the flanges 12, 13 on the bar 10. The bar 34 has a pair of laterally projecting flanges 36, 38 adapted to engage the flanges 12, 13, and a ledge 40 extends along said body-portion beyond the flanges 36, 38. Two rows of socket members 42, preferably tubular in form, are driven through the ledge and body portion, and are located the same as the plug-members 20.

A series of holes 44 are drilled into the ledge 40, and through one wall of the tubes 42. These holes are of such a diameter as to enable the insulation 29 on the conductors 28 to enter, and the ends of said conductors are bent as shown and secured to the tubes by solder 46. The spike ends of the plugs on the bar 10 are preferably spread apart slightly or bent outward in order to insure a good frictional and electrical contact between said plugs and the socket-members on the bar 34. Although only one bar 34 is shown, it will be understood that as many such bars may be employed as there are groups of conducting plugs or pairs of flanges 12, 13, said flanges acting to protect the plugs from injury and also guide the bars 34 as they are pressed in conducting position.

In order to detach the socket-member from the plug-member, a pair of levers 50, 51 are provided for each socket-member. As shown the levers 50, 51, are provided with intermediate pivotal portions 52, which are preferably square and yieldingly held

in transversely extending grooves 54 by spring plates 56, 57. The plate 56 is secured at the end of the bar 10 by screws 59 and is provided with a pair of spring fingers 58 which engage the square intermediate portion. A piece of felt 55 may be held between said fingers and said portions 52 to cushion the action and prevent rattling. A cam-finger 60 projects laterally from the portion 52 of each lever in a plane substantially at right angles to the plane which contains said intermediate portion and the operating handle of the lever. The cam-finger is adapted to pass between the spring-fingers 58 when swung up into operative position, as shown in Figs. 2 and 4.

The plate 57 is secured in place by screws 59, and this plate has two pairs of spring fingers 58, since this plate coacts with two levers which are located close together. The handles of the levers 50, 51 extend at substantially right angles to the intermediate portions 52, and are adapted to lie parallel with and in close proximity to the flanges 12, 13 when swung down in the act of separating the plug and socket members. By reference to Fig. 4 it will be noted that the cam-finger 60 lies within a recess 62 in the bar 10 and engages the inner face of the bar 34, and the handle 51 projects laterally from the bar 10, when the plug and socket members are fully in engagement. In order to separate the plug-member from the socket-member, both handles 50, 51 are simultaneously swung down into parallel relation with said bars, whereupon the camfingers 60 are raised and the contact-members are forced apart. In this form of the device there may be two or more sets of plugs on a bar 10, although for simplicity only two sets are shown.

In Fig. 8 is shown a modified form of the invention, in which only one set of contacts are employed. As here shown, the device comprises a bar 70, preferably of wood, having a pair of longitudinally extending protecting flanges 72, 73, and a rib or ledge 74 extending along its entire length on the face opposite that from which the protecting flanges project. Secured in the bar 70 are two rows of pins or contact plugs 18, similar to those described above, and having reduced necks 22, which are split, and surrounded by coiled springs 76 at their inner ends. These springs are preferably held at one end in the slit 24, and they aid in providing additional conducting members to insure a good contact between the plug-members 18 and the socket-members 42. These springs may also be employed with the other form of the device in which plurality of series of plugs and sockets are employed. Holes 30 are drilled into the ledge 74, and through one side of the shanks of the plugs into the recesses 26, as described above. The detachable or socket-member of this form of the connector comprises a relatively short bar 80, also preferably of wood, having its body portion of such a width as to fit between the flanges 72, 73 on the bar 70. The bar 80 has a pair of laterally projecting flanges 82, adapted to engage the flanges 72, 73, and a rib 84 extends along said body portion. A series of holes 44 are drilled into the rib 84 and through one wall of the tubes 42, and the conductors 28 are inserted through the holes 44 and soldered to said tubes, in the same manner as described above.

In order to disengage the plug and the socket members from each other, a pair of levers 86, are provided, one for each end of the bar 70 pivotally mounted on a pin 88. These levers are provided with cams 90 which are adapted to engage inclined surfaces 92 on the bar 80. These levers are held in recesses 94 in the bar 70 and a strip of felt 96 is held between the lever and the surrounding wood to cushion the action and prevent rattling.

What I claim is:—

1. A connector comprising in combination a member provided with a plurality of contact sockets and a second member having a plurality of contact plugs corresponding to said sockets and adapted to enter the same; and a lever mechanism mounted on one of said members for forcing the same apart.

2. A connector comprising a block, a plurality of plug contact-members projecting from said block, a pair of parallel protecting flanges projecting from said block and extending along opposite sides of said plug contact-members, a block provided with a series of socket contact-members adapted to engage said plug members, and a pair of levers simultaneously operable for separating said blocks.

3. A connector comprising a block, a plurality of sets of plug contact-members projecting from said block, a plurality of pairs of parallel flanges on said block extending along opposite sides of said sets of contact-members, a plurality of blocks each provided with a set of socket contact-members corresponding to a set of said plug contact-members and adapted to engage said plug contact-members, a lever at each end of said first-mentioned block, and a pair of levers on said block between the ends of adjacent pairs of flanges, said levers being arranged to engage the socket-carrying blocks to effect the disengagement of the plug from the socket contact-members.

4. A connector comprising a block having a pair of parallel flanges, a series of plug contact-members secured in said block and projecting between said flanges, one or more pairs of levers supported by said block, plates mounted on said block and having yielding portions engaging said levers, in

combination with one or more blocks provided with socket contact-members adapted to engage said plug contact-members, said levers having portions arranged to engage the socket-carrying block to effect the disengagement of the contact-members from each other.

In testimony whereof I have affixed my signature in the presence of two witnesses.

ANDREW L. FLINT.

Witnesses:
EDWARD S. CROCKETT,
WILLIAM J. SPERL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."