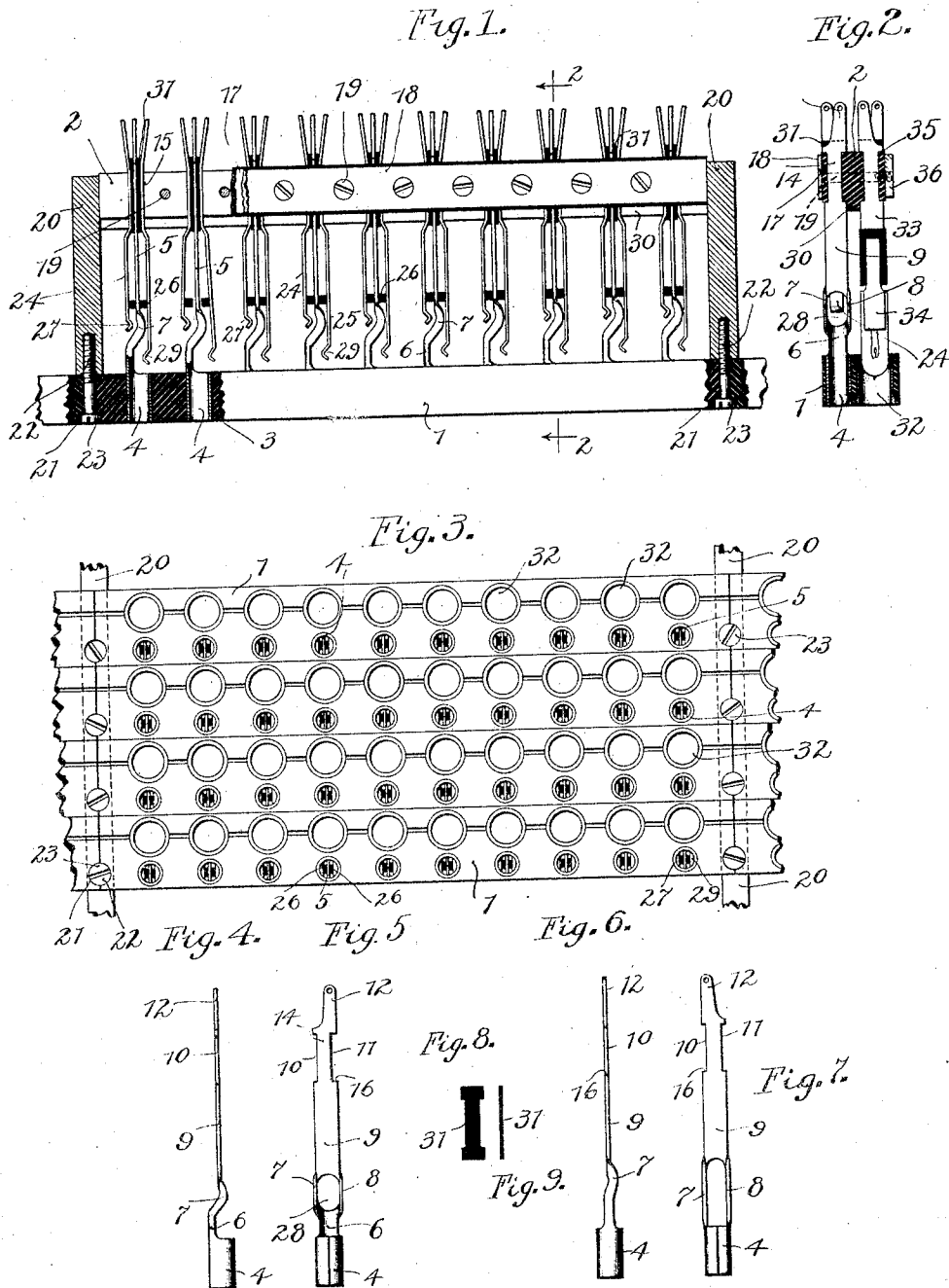


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 MULTIPLE SWITCHBOARD JACK.
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MULTIPLE-SWITCHBOARD JACK.

No. 901,672

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To all whom it may concern:

Be it known that I, JULES A. BIRSFIELD, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Multiple-Switchboard Jacks, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to spring jacks, and particularly to those used in multiple telephone switch boards, and the object of my invention is to provide improved construction and a more compact arrangement of the parts thereof.

Heretofore the front and rear supporting walls of the spring jack strips have been connected at their ends by end plates secured to vertical ribs or stiles at the front of the board. The spaces occupied by these end plates and ribs are entirely useless for jack springs and are consequently wasted. By my invention I am enabled to obviate the necessity of end plates and ribs and thus nearly all the space heretofore taken up by the end plates and ribs can be utilized for jack springs and I accomplish this by the provision of specially formed springs which besides acting as conductors for telephonic and signaling currents serve the additional purpose of connecting and securing together the front and rear walls of the jack strip.

My invention will be best understood with reference to the accompanying drawing in which

Figure 1 illustrates a spring jack strip parts being broken away to more clearly reveal the construction. Fig. 2, is a sectional view taken on line 2, 2 of Fig. 1. Fig. 3 is a front elevation view showing a plurality of jack strips in position. Fig. 4 is a plan view of a spring which with other similar springs holds together the front and rear walls of the jack strip. Fig. 5 is a side view of the spring. Fig. 6 is a plan view of the spring of modified construction. Fig. 7 is a side view of the spring shown in Fig. 6. Fig. 8 is a plan view of a spacing strip employed, and Fig. 9 is an edge view of the spacing strip.

Like reference characters refer to like parts throughout the various figures.

Each jack strip consists of a front supporting bar 1 and a rear supporting bar 2 both parts being preferably of insulating material such as hard rubber. The front bar 1 is provided with a longitudinal row of openings 3, 3 for the reception of thimbles 4, 4 each thimble is connected with a spring 5 for securely engaging the rear supporting bar. The thimbles and springs may be stamped from a single piece of sheet material as best shown in Figs. 4 and 5. The sheet metal blanks are formed to produce cylindrical thimbles 4 and a neck portion 6 extends from the thimble part and is divided into two legs 7 and 8 one at the top and one at the bottom, these legs again uniting to form the leaf spring body part 9, each spring 5 near its end has notches 10 and 11 cut in its opposite edges, and at its end a terminal 12 for connection with a conductor. The rear supporting bar 2 is provided with vertical and transverse slots or saw cuts 15 disposed in a line with the corresponding thimble 4. Into one of these slots the narrow portion 14 of the spring is inserted and the shoulders 16 of the slot 11 engage over the edges of the supporting bar 2 when the spring is disposed within the slot. A strip of insulating material 17 matches the upper part of the rear supporting bar and lies in the slots 10 of the springs 5, and a metallic reinforcing plate 18 engages over the strip 17 and by means of screws 19, 19 is drawn toward the bar 2 to clamp the springs securely within their slots. Thus the thimbles 4 and springs 9 by engaging securely with the front and rear supporting bars respectively form together a rigid connection between the supporting bars, and the necessity of end plates for holding these bars together is obviated.

To hold the various jack springs in position on the switch board I provide vertical supporting ribs 20, the distance between which is equal to the length of the rear supporting bars 2. The front supporting bars of the jack strips are greater in length at each end a distance equal to half the thickness of the supporting ribs, and at the end of each front supporting bar there is a semi cylindrical transverse notch 21, and as adjacent front supporting bars are brought together the corresponding semi cylindrical notches will form cylindrical openings for the reception

of screws 22, which engage the supporting ribs 20. These screws may have fillister heads 23, and the supporting bars 1 may be correspondingly counter-sunk to receive the screw heads. With this arrangement nearly all the space heretofore wasted by end plates is utilized and the distance between the end plug openings of the adjacent jack strips is just sufficient to provide a separating space between adjacent spring jack panels. I also provide tip springs 24 and sleeve springs 25 and these springs near their rear ends may be shaped similar to the thimble springs and secured in the rear supporting bar in the same manner by means of the insulating strip 17 and clamping plate 18. It is desirable that the tip and sleeve springs have a tendency to spring toward each other whereby to form better contact with the switch plug when inserted between them, but at the same time these springs can be kept out of engagement with the thimble springs 9. For this purpose I provide studs 26 of insulating material secured near the front ends of the tip and sleeve springs at a point registering with the front end of the spring parts 9 and the length of these springs is preferably such that the contact end 27 of the tip spring is disposed opposite the opening 28 between the legs 7 and 8 of the thimble springs and so that the contact ends 29 of the sleeve springs are disposed opposite the neck 6 of the thimble springs. Upon insertion of the plug in a thimble the tip and sleeve springs are spread apart in opposite directions. This disposition of the tip and sleeve springs facilitates the assembly of the jacks and also serves to maintain the alinement thereof, and the disposition of all the springs vertically on edge prevents accumulation of dust and renders the springs more readily accessible to inspection and repairs. As the plug is inserted between the tip and sleeve springs the bending center will naturally occur at the forward shoulders of the reduced portion 14, and to remove the bending center from this weak point I form a longitudinal lug 30 extending along the front of the rear supporting bar. This projecting lug engages for a short distance under the heavier body portion of the thimble springs, and I provide spacing strips 31 of insulating material to be placed between the thimble springs and the corresponding tip and sleeve springs, these strips extending a distance from the supporting bar in either direction and having the same shape as the springs which they engage. The projecting lug 30 causes the bending center to be removed from the narrow part of the spring and to be distributed along the heavier body portion thereof.

The thimble springs may be of modified construction as shown in Figs. 6 and 7, where

instead of being provided with a neck portion 6 the legs 7 and 8 extend directly from opposite sides of the thimble part 4 and unite to form the body part 9, the rear end of the spring, however, being the same.

The front supporting bar 1 may also be provided with openings 32, 32, and the rear supporting bar may be adapted for supporting contact springs 33, 33 for the reception of signal lamps 34, as shown in Fig. 2. These contact springs 33 are shaped at their rear ends similar to the jack springs and are disposed in slots 35 at the opposite side of the rear supporting bar in a similar manner as the spring jacks. An additional reinforcing bar 36, however, is employed with this construction, and the screws 19 passing through the upper reinforcing bar 18 and the rear supporting bar have screw threaded engagement with the bar 36.

I have thus shown and described a spring jack strip in which end plates are unnecessary and in which jack contacts and springs are combined to form a rigid mechanical connection between the front and rear supporting bars of the jack strip, and the vertical ribs heretofore necessary where these end plates have been employed are also unnecessary.

As many modifications may be made I do not wish to be limited to the exact construction and arrangement as shown.

I claim as new and desire to secure by Letters Patent.

1. In a telephone switchboard, the combination with front and rear supporting bars, of insulating material, there being transverse vertical slots in the rear supporting bar, switch springs, notches 10 and 11 cut in the opposite edges at the rear end of each spring forming the reduced portion 14, the length of the notches being equal to the width of the rear supporting bar, the reduced section of said springs between the notches engaging in the transverse slots in the rear supporting bar and the sides of the slots engaging the sides of the supporting bar to hold the springs against longitudinal displacement, and a projection or shelf extending forwardly from the rear supporting bar into engagement with the body portion of the springs directly in front of the notches 10 and 11, said shelf serving to form a frictional surface to be engaged by the edges of the switch springs, and upon bending of said switch springs said shelf causes the distribution of the bending area thereof.

2. In a telephone switchboard, the combination with front and rear supporting bars, of insulating material, there being transverse vertical slots in the rear supporting bar, switch springs, notches 10 and 11 cut in the opposite edges at the end of each spring forming the reduced portion 14, the length of said notches being equal to the

width of the rear supporting bar, the reduced section of said springs between the notches engaging in the transverse slots in the rear supporting bar and the sides of the slots engaging the sides of the supporting bar to hold the springs against displacement, and a projection or shelf 30 extending forwardly from the rear supporting bar into frictional engagement with the body portion of the springs directly in front of the notches 10 and 11, said shelf causing the bending center to be removed from the narrow parts of the springs and to be distributed along the heavier body portions thereof.

3. In a combined answering and lamp jack, front and rear supporting bars, slots in the rear bar for supporting jack springs, slots in the rear bar for supporting lamp springs, openings in the front bar registering

with the slots in the rear bar, springs having portions of reduced width for engaging such slots, thimbles in the front openings associated with the jack springs and extending by integral springs to the rear bar to hold the bars together, a shelf formed on the rear bar between the sets of springs adapted to engage the edges of the wider portions of the springs, and means for clamping such springs against such shelf in assembling to distribute the bending stresses of the springs in use to the wider portions thereof.

In witness whereof, I hereunto subscribe my name this 9th day of February A. D., 1905.

JULES A. BIRSFIELD.

Witnesses:

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