

July 3, 1928.

1,676,016

H. H. FROST

JACK

Filed Dec. 1, 1924

Fig. 1.

Fig. 2.

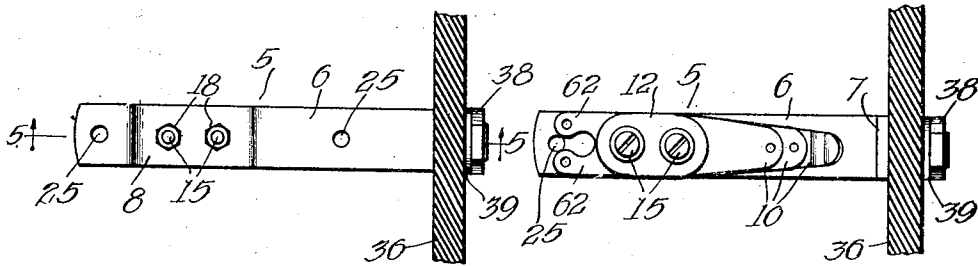


Fig. 3.

Fig. 4.

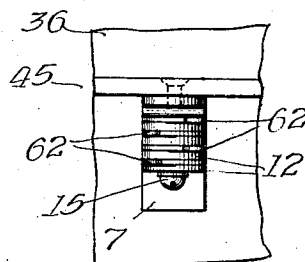
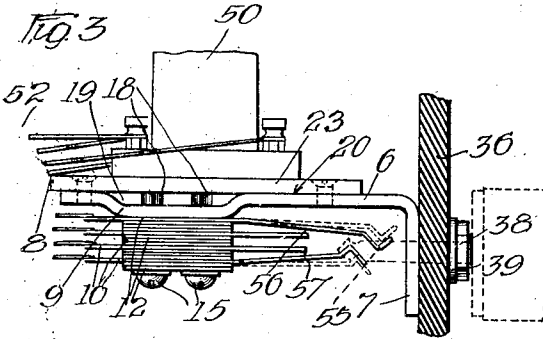
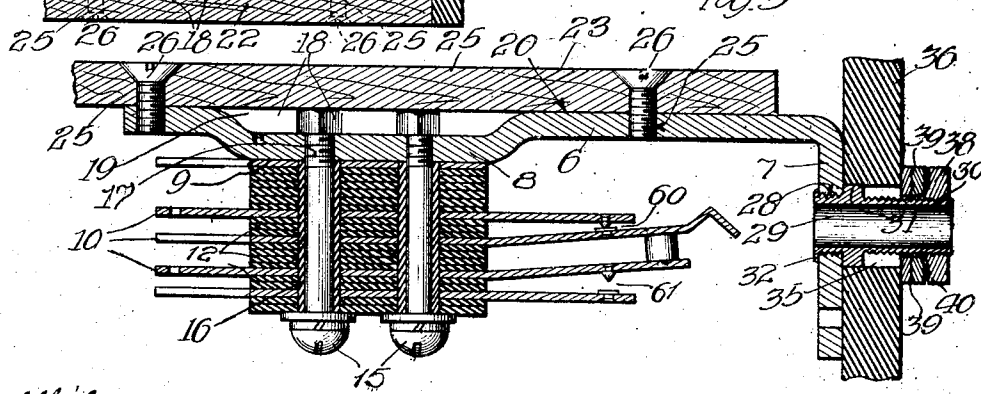
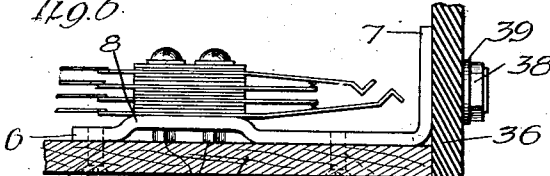


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

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JACK.

Application filed December 1, 1924. Serial No. 753,033.

My invention relates to telephony, more particularly to an improved jack, which while not limited to a particular use or purpose is especially suitable for use in connection with radio receiving instruments and its objects are the provision of a jack which will lend itself to all panel, table and other mountings and one that may be used to support a shelf, bracket or sub-panel for supporting or mounting the transformers, tube sockets or other parts of the instrument.

The device which I provide is also adapted to have a plurality of angularly related panels or plates secured to and connected through it.

In order to make the structure as simple and inexpensive as possible, I have arranged to use a minimum number of standard parts. The device permits the use of short leads, allows of close proximity of the parts and makes for compactness, simplicity and accessibility. Its structure is simple and relatively inexpensive and is standardized for different mountings and for different shelf or sub-panel supporting or different panel connecting purposes.

To acquaint those skilled in the art with the construction and manner of practicing my invention, I shall now describe a particular embodiment of the same in connection with the accompanying drawings, in which:

Figure 1 is a top plan view of a jack embodying my invention the spring arrangement of which is adapted for an audio frequency circuit;

Fig. 2 is a bottom plan view of the same;

Fig. 3 is a side elevational view of a jack embodying my invention which employs a spring arrangement used in jacks of the double circuit type;

Fig. 4 is a rear end view of the embodiment shown in Fig. 3;

Fig. 5 is an enlarged vertical section taken on line 5-5 of Fig. 1 with the addition of certain other element showing the practical mounting of the jack; and

Fig. 6 is a side elevational view of the modification illustrated in Fig. 3 showing two angularly related panels or plates secured to the jack and connected there-through.

Referring to the drawings, the device

shown comprises an angular jack frame 5 having a base 6 and a thimble leg 7.

Between its ends the base 6 has an offset portion 8 forming a seat 9 for the contact springs 10 which are mounted on said seat. Strips 12 of insulation are interposed between and insulate the contact springs 10 from each other and these strips and the contact springs have registering openings for the reception of screws 15 for securing the contact springs and insulating strips together and firmly upon the seat 9. The screws 15 extend through registering openings in the spring contacts and intervening insulating strips and through the seat 9, and are insulated from all of the contact springs 10 except the frame spring to which their connection through the jack frame is immaterial because of their insulation from the other springs. The frame spring may be clamped directly to the jack frame. The screws 15 have threaded engagement at 17 with tapped openings through the seat 9 and passing through said seat have threaded engagement with nuts 18 which thereby form lock nuts for preventing accidental loosening or displacement of the screws.

The nuts 18 lie on the offset portion 8 and the depression 19 formed thereby positions the nuts 18 below the surface 20 of the base 6, so that the base 6 may be secured, for example, to a plate, table or generally horizontal panel 22 as shown in Fig. 6 or, with the jack frame in inverted position, a shelf or sub-panel 23 may be mounted upon and supported by the base 6 as shown in Figs. 3, 4 and 5, without the screws 15 or nuts 18 interfering in any case with the mounting and supporting functions of the base 6. If the nuts 18 are omitted, the offset portion 8 allows the screws to project through the seat 9 which invariably results and would otherwise interfere with the mounting and supporting functions of the base 6.

On each side of the offset portion 8, the base 6 has means in the form of a tapped opening 25 for fastening the base 6 to a panel or plate, or a panel or plate to the base, as desired, suitable screws 26 extending through the plate or panel and having threaded engagement with tapped openings 25 for this purpose. The heads of the screws

26 are preferably countersunk in the panel or plate or other member which the jack supports, or upon which it is mounted, so as not to interfere with the mounting or supporting functions of said other plate.

The thimble leg 7 has a tapped or internally threaded opening 28. The contact or conducting thimble or sleeve 29 has an outer threaded end 30, a radial flange 31, and an inner threaded end which is screwed or threaded into the opening 28 until the flange 31 is brought up tightly against leg 7. Then, by riveting or heading over the inner end of the thimble as shown at 32, the thimble is secured firmly and rigidly in place in the leg 7.

In hanging the jack frame upon a panel or in securing a panel or plate to leg 7, the outer end of the thimble is passed through an opening or aperture 35 in the plate or panel 36, as shown in Fig. 5; said aperture or opening 35 being preferably sufficiently large to take the flange 31, so that the back of the leg 7 may be bound or clamped directly to the panel. A hexagonal shaped nut 38 threaded upon the outer end of thimble 29 is adapted for clamping a suitable washer or washers 39 interposed between it and the outer surface of the panel 36 up into firm engagement with said surface to bind the jack firmly in place. The washer 39 permits drawing the nut up tight without marring the surface of the panel 36 and where the panel is thinner, additional washers may be employed between the panel and nut to properly bind the jack in place and at the same time permit the nut 38 to be positioned outwardly on the thimble, so that there will be no appreciable part of the outer threaded end uncovered and thereby subject to marring and distortion of its threads.

To minimize the effect of irregularities in the inner surface of the nut 38 and irregularities between the parts in crooking the position of the jack frame, I recess or relieve the outer portion of the inner surface of the nut 38, leaving a relatively small central annular lip or hub 40 for co-operation with the washer 39. The fixed position of the thimble 29 in leg 7 gives that thimble a definite position with respect to the tip or plug spring, regardless of the mounting or thickness of the panel 36. The nut 38, adjustable along the thimble in co-operation with the leg 7, provides for binding the frame firmly in place without adjusting the position of the thimble which is thereby of substantially fixed position and substantially fixed length for all purposes, so that upon properly positioning the hill and valley of the plug spring, said hill and valley will have proper co-operation with the hill and valley of the pug tip regardless of the installation. The outer end of the thimble 29 constitutes a stop for limiting the

insertion of the plug and by the mounting arrangement described, this stop has a definite, fixed position for all installations and regardless of the thickness of the panel.

In Figs. 3, 4 and 5 I have shown the jack frame hung by its leg 7 in inverted position upon the upright panel 36, with a plate, shelf or sub-panel 23 mounted upon the base 6. This permits mounting the transformers, tube sockets or any or all other parts upon the plate or panel 23 with a resulting compactness and close proximity of the parts and permitting short leads or connections between the element or elements on the panel 23 and the contact springs 10, which is highly desirable. In Fig. 3 I have shown a transformer 50 mounted upon the panel 23 and connected by leads 52 to the contact springs 10; the particular spring contact arrangement shown in Fig. 3 being illustrative of a double circuit jack for inserting a set of head telephones and opening or disconnecting the transformer from the plate circuit, for example. The inverting of the jack frame and mounting of the element 50 directly thereon, eliminates additional mounting brackets and it should be noted that the terminals or binding posts of the element 50 are thereby positioned close to the terminals of the contact springs 10.

I have shown in dotted lines at 55 a plug member inserted into the jack thimble of Fig. 3, and the sleeve and tip springs of the spring contact arrangement employed as spread out so as to break the contact at 56 and 57 and at the same time place the plug 55 in series with the circuit, so that an instrument connected to the plug may be inserted in series in the receiving circuit which includes the jack.

The particular spring contact arrangement is, of course, immaterial and may be varied as desired within the scope of my present invention to suit the particular purpose to which the jack is to be placed. In Fig. 5, for example, I have shown another spring contact arrangement in which insertion of the plug connects it in circuit with the receiving circuit including the jack, and at the same time breaks contact at 60 and makes contact at 61. The formation of the fanned terminals 62 of the contact springs should, however, be noted. These extend longitudinally of the spring contacts and are disposed at one side thereof, so that by merely turning the contact springs over in assembly, the fanned terminals may be placed alternately at opposite sides, giving ease and convenience in soldering or connecting the leads 52 thereto and without different mounted positions of each contact spring, said contact springs being all adapted to be stacked in alignment so that the common screws 15 may extend through both apertures of each.

In Fig. 6, I have shown the manner of mounting the jack through its base 6 upon a table or generally horizontal plate 22 and, at the same time, I have shown in this figure 5 a panel 36 secured to the leg 7 in the manner already set out in connection with the other figures, so that the panels 22 and 36 are thereby connected through the jack frame. The jack frame thereby performs 10 not only the functions of supporting the contact springs, receiving the plug, and mounting the jack, but performs the additional function of firmly joining two panels such as are commonly presented at the corner of the cabinet or box of the instrument. 15

While I have referred to the element 50 as a transformer, it is to be understood that it is merely illustrative of any element or group of elements that may be mounted 20 upon the panel 23 and connected to the underlying spring contacts of the jack and while I have described certain particular uses of the jack, it is to be understood that said jack may be employed wherever found 25 desirable and I do not intend to be limited to the precise details shown or described.

I claim:

1. In combination, an angular jack frame comprising a base and a thimble leg, said 30 base having an offset portion between its ends forming a seat for contact springs, and having means on each side of said offset portion for fastening the base to a plate.

2. As an article of manufacture compris-

ing an angular jack spring having a base 35 and a thimble leg, a section of said base intermediate its end being offset to form a contact spring supporting seat, contact springs secured against the outside of said 40 section, said base being adapted to be mounted on a panel at opposite sides of said offset portion.

3. In combination, an angular jack frame comprising a base and a thimble leg, a plug 45 thimble secured at its inner end to said thimble leg, a flange integral with said thimble forming an abutment for said leg, the outer end of said thimble being threaded, said thimble being adapted to support 50 said jack frame and panels of different thicknesses, said panels having openings therein to receive said thimble, and panel used abutting against said leg and said openings being of a diameter to snugly fit said thimble 55 flange, washers adapted to fit over said thimble and engage with the panel, a nut adapted to be threaded on said thimble to secure said jack frame to said panel, said thimble flange being of less width than the 60 length of the panel opening, whereby said jack frame may be secured to panels of different thicknesses, and jack springs secured to the jack frame base in alignment with said thimble.

In witness whereof, I hereunto subscribe 65 my name this 26 day of November, 1924.

HERBERT H. FROST.