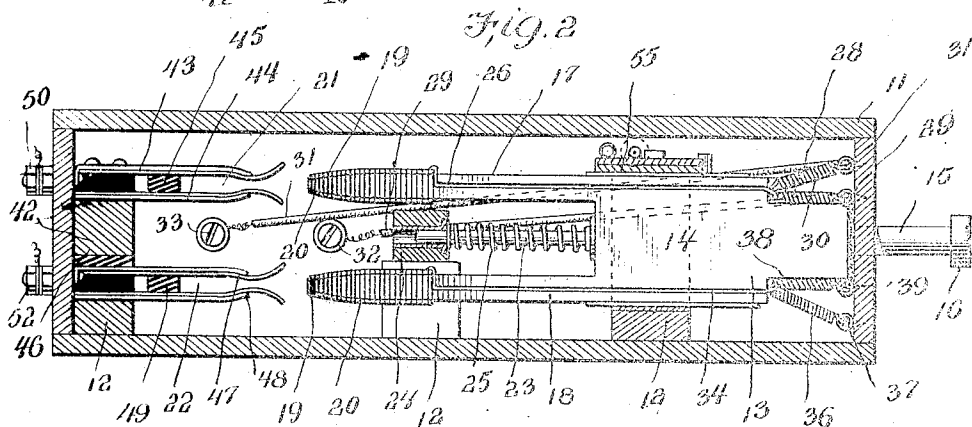
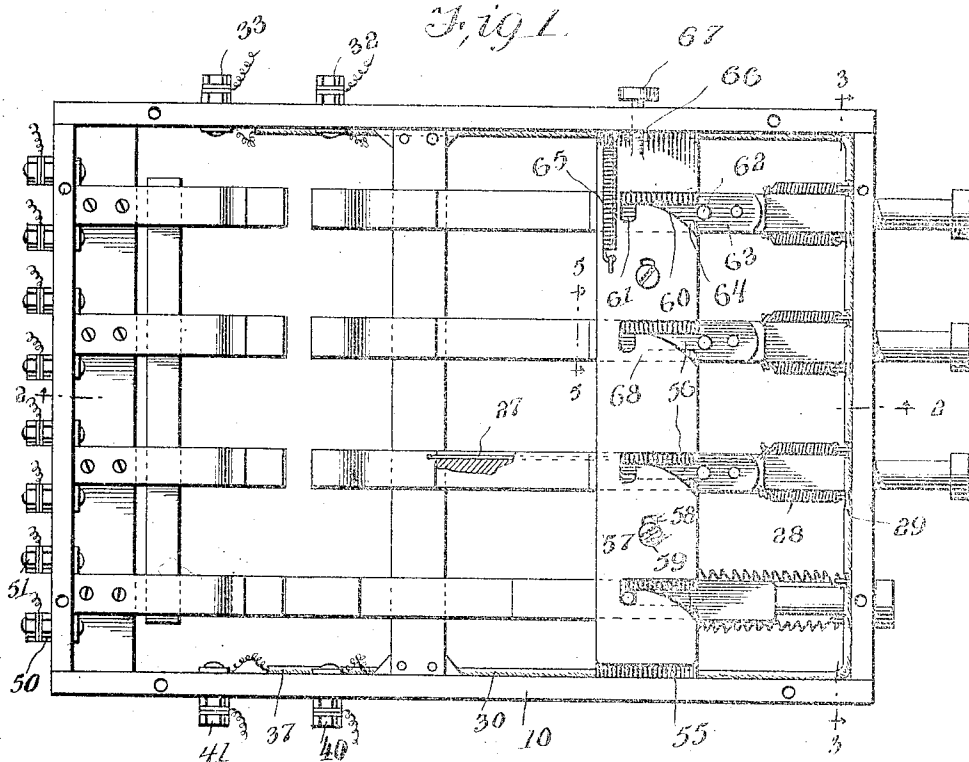


A. C. CARLSON.
INTERCOMMUNICATING TELEGRAPH OR TELEPHONE DEVICE.
APPLICATION FILED FEB. 6, 1912.

1,105,485.

Patented July 28, 1914.
3 SHEETS-SHEET 1.



Witnesses

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Fig. 3.

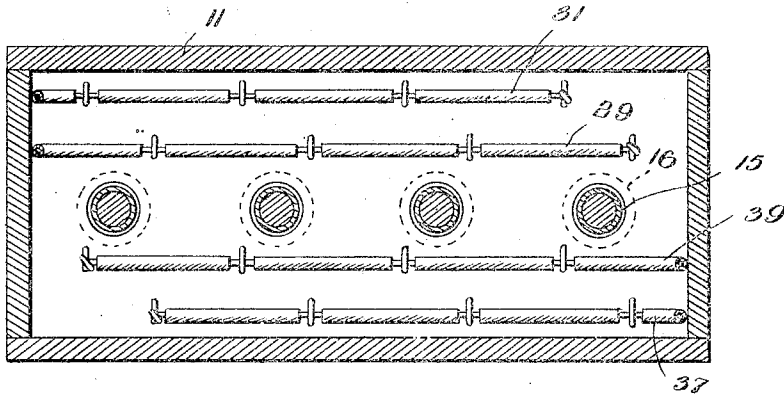


Fig. 4.

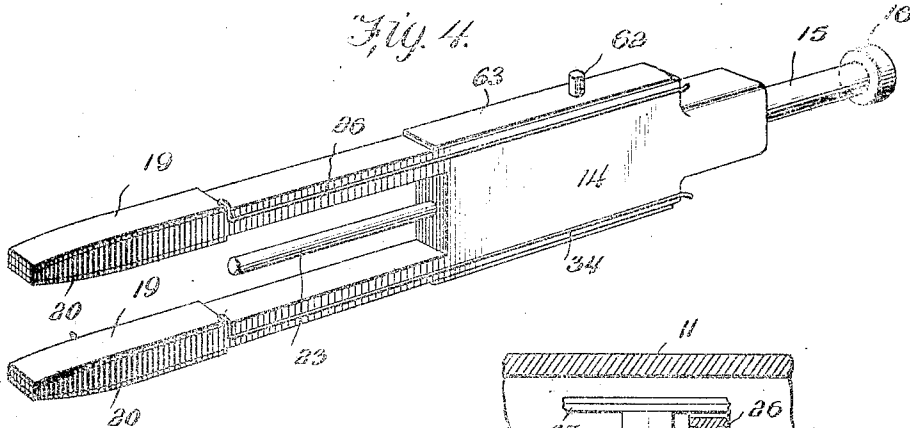
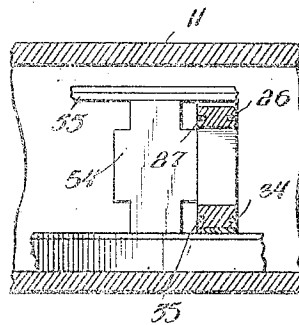


Fig. 5.



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3 SHEETS-SHEET 3.

Fig. 6.

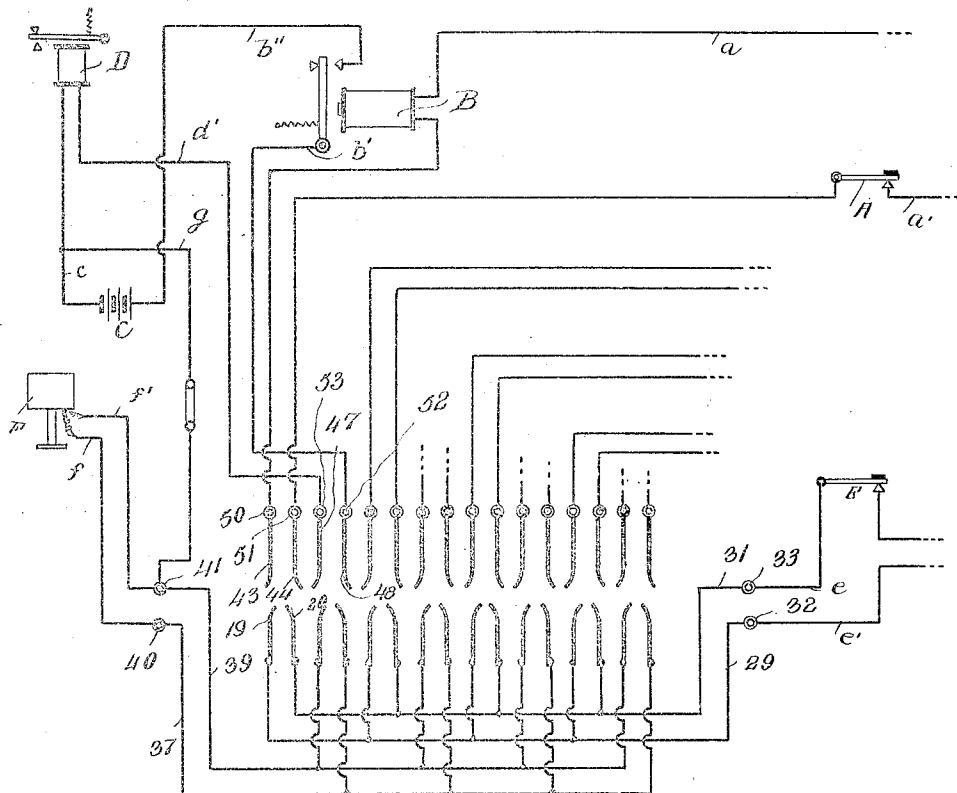
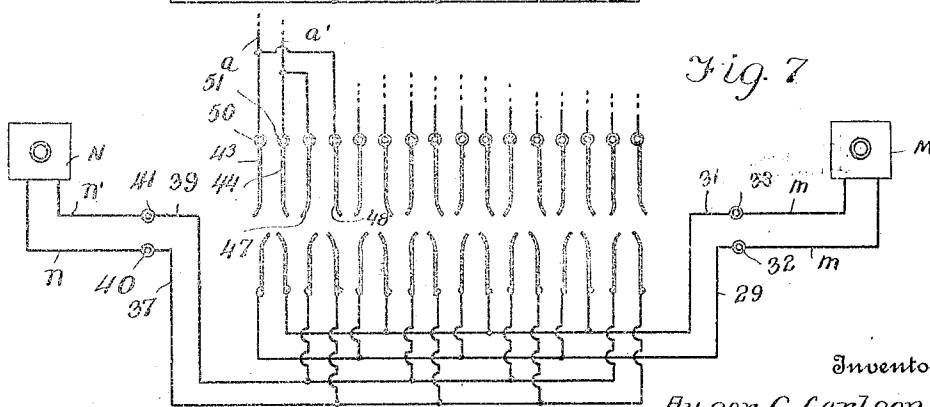


Fig. 7



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UNITED STATES PATENT OFFICE.

AUGER C. CARLSON, OF BUTLER, PENNSYLVANIA.

INTERCOMMUNICATING TELEGRAPH OR TELEPHONE DEVICE.

1,105,465.

Specification of Letters Patent.

Patented July 28, 1914.

Application filed February 6, 1912. Serial No. 675,775.

To all whom it may concern:

Be it known that I, AUGER C. CARLSON, a citizen of the United States, residing at Butler, in the county of Butler and State of Pennsylvania, have invented new and useful Improvements in Intercommunicating Telegraph or Telephone Devices, of which the following is a specification.

An object of the invention is to provide an intercommunicating device, particularly adapted for telegraph and telephone circuits to simplify and expedite the method of operation of the same.

The invention embodies among other features a device which in its operation accomplishes the breaking of one circuit when another circuit is closed, thus obtaining the release of other circuits when it is desired to use one circuit.

The invention further embodies a device which when used in connection with telegraph lines, obviates the use of independent local batteries for the resonators and the use of an independent relay, thus enabling the operator to cut directly in on the main line relay.

In the further disclosure of the invention, reference is to be had to the accompanying drawings constituting a part of this specification, in which similar characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a plan view of my device showing one of the plugs in closed position, the cover of the box being removed and parts being broken away to disclose the underlying structure. Fig. 2 is a vertical sectional view taken on the line 2—2 in Fig. 1. Fig. 3 is a vertical transverse sectional view taken on the line 3—3 in Fig. 1. Fig. 4 is an enlarged perspective view of one of the plugs. Fig. 5 is an enlarged fragmentary sectional view taken on the line 5—5 in Fig. 1. Fig. 6 is a diagrammatic view of a telegraph circuit embodying the use of my instrument. Fig. 7 is a diagrammatic view of a telephone circuit embodying the use of my instrument.

Referring more particularly to the views, I provide a box 10 having a cover 11, supports 12 being rigidly mounted within the box 10 to constitute suitable bearing members as will be hereinafter more fully disclosed.

Slidably mounted within the box 10, to

repose upon the supports 12 are plugs 13, each consisting of a body 14 having a shank 15 secured to one end thereof and extending through an opening in the box, the outer end of the shank being provided with a knob 16, arranged exteriorly of the box to constitute a handle. The other end of each of the bodies 14 is forked and terminates in spaced members 17, 18, having secured to the forward ends thereof spaced contact tips 19, 20 adapted for engagement with sockets 21, 22. The upper member 17, provided with contact tips 19, 20, is adapted for engagement with the socket 21, and the lower member 18, provided with contact tips 19, 20, is adapted for engagement with the socket 22. Extending forwardly from the body 14 between the members 17, 18 is a guide rod 23 having the free end thereof mounted to slide in an apertured bearing block 24 mounted on one of the supports 12, the said guide rod being encircled by an expansible spring 25, having one end thereof abutting against the body 14 and the other end thereof abutting against the bearing block 24 to normally retain the plug 13 in initial or open position so that when it is desired to move the plug into closed position, to engage the sockets 21, 22, the mentioned plug must be operated against the action of the spring 25 by exerting a pressure on the knob 16.

Mounted within the member 17 and extending longitudinally thereto are spaced wires 26, 27, the wire 26 having the forward end thereof connected to the upper contact tip 19 of the member 17 and the wire 27 having the forward end thereof connected to the lower contact tip 20 of the member 17, the mentioned wires 26 and 27 being spaced apart and properly insulated from one another. The other end of the wire 26 terminates in a spring coil 28, made of a conducting material such as copper and connected to a wire 29, secured to the inner side of the box 10. In a similar manner the other end of the wire 27 is connected to a spring coil 30, similar to the spring coil 28, the mentioned spring coil 30 being connected to a wire 31, similar to the wire 29, but spaced and insulated therefrom and secured to the inner side of the box 10. The wire 29, extending around the inner side of the box is connected to a binding post 32, secured to one of the sides of the box and extending exteriorly thereof and the wire 31 is con-

5 nected to a binding post 33 secured to the
 same side of the box and adjacent the bind-
 ing post 32. In a similar manner wires 34,
 35 are mounted within the lower member 18,
 the said wires being spaced apart and rela-
 10 tively insulated with an end of the wire 34
 connected to the upper contact tip 19 of the
 member 18 and an end of the wire 35 con-
 nected to the lower contact tip 20 of the
 15 member 18, the other end of the wire 34 be-
 ing connected to a coil spring 36, connected
 to a wire 37, secured to the inner side of the
 box 10, the other end of the wire 35 being
 20 connected to a similar coil spring 38 con-
 nected to a wire 39 secured to the inner side
 of the box 10, the wires 37, 39 being spaced
 apart and insulated similarly to the wires
 25 29, 31. The wires 37, 39 extend around the
 inner side of the box 10 and have their ends
 connected to spaced relatively insulated
 binding posts 40, 41, arranged oppositely to
 the binding posts 32, 33, the wire 37 being
 connected to the binding post 41 and the
 wire 39 being connected to the binding
 post 40.

The socket 21 is rigidly mounted upon a
 cross piece 42 extending horizontally within
 the box 10 and the mentioned socket consists
 of spring-like members 43, 44, relatively
 30 spaced apart and insulated at their inner
 ends and having their outer or free ends
 flared, the mentioned members 43, 44 being
 held in spaced relation by a removable in-
 sulated bar 45, it being understood that one
 35 of the sockets 21 is arranged oppositely to
 each of the members 17 so that when the
 plugs 13 are moved to closed position, the
 contact tips 19, 20 of each of the members 17
 will engage the members 43, 44 respectively
 40 of the sockets 21. The socket 22 is similar
 to the socket 21 and is arranged beneath the
 socket 21, the mentioned socket 22 being
 spaced from the socket 21 and insulated
 therefrom by a suitable insulation 46. The
 45 socket 22 embodies more particularly spaced
 relatively insulated spring-like members 47,
 48 having their outer or free ends flared, the
 mentioned free ends of the members 47, 48
 being normally held apart by an insulated
 50 bar 49. Now when one of the plugs 13 is
 moved into closed position, the contact tips
 19, 20 of the member 17 will not only engage
 the members 43, 44 respectively, but the con-
 tact tips 19, 20 of the member 18, operable
 55 with the member 17, will engage the mem-
 bers 47, 48 respectively. The inner end of
 the member 43 is connected to a binding post
 50 and the inner end of the member 44 is
 connected to an adjacent binding post 51.
 In a similar manner the inner end of the
 member 47 is connected to a binding post 52
 and the inner end of the member 48 is con-
 60 nected to an adjacent binding post 53, the
 binding posts of the upper sockets being ar-
 ranged in a horizontal row and the binding

posts of the lower sockets being arranged
 in a similar horizontal row beneath the up-
 per horizontal row of the binding posts as
 will be readily seen by referring to the dia-
 grammatic views in Figs. 6 and 7.

The plugs 13 are spaced apart by spacing
 70 blocks 54. Within the box 10 is a plate 55
 provided with slots 56. A locking plate 57
 is mounted on the plate 55 and provided
 with elongated openings 58 through which
 75 are extended suitable screws 59 connected to
 the plate 55, thus permitting the plate 57 to
 slide on the plate 55. The locking plate 57
 is provided with slots 60, adapted to register
 with the slots 56 when the locking plate is
 80 moved into locking position, the inner ends of
 the slots 60 terminating in offset openings
 61, adapted to receive locking pins 62 formed
 on plates 63 secured to the upper sides of the
 plugs 13, the mentioned locking plate 57
 85 being provided with cut away portions 64
 adjacent the outer extremities of the slots
 60 to permit the pins 62 to easily pass into
 the slots 60 of the locking plate 57. Sec-
 90 cured to the locking plate 57 is a contractile
 spring 65 having an end thereof connected to
 the inner side of the box 10, a rod 66 be-
 ing formed at one end of the locking plate
 57 and slidably extending through an open-
 95 ing in the box 10, the outer end of the said
 rod being provided with a knob 67 so that
 when an inward pressure is exerted on the
 knob 67 to move the locking plate 57, the
 mentioned locking plate will be operated
 100 against the contractile action of the spring
 65. Now by referring to Fig. 1, it will be
 readily seen that when a pressure is exerted
 on one of the knobs 16 to move one of the
 plugs 13 into closed position, the pin 62 of
 the plug, passing into the slot 56 of the plate
 105 55 will engage that portion of the locking
 plate 57 that extends over the slot 56 thus
 moving the locking plate 57 against the ac-
 tion of the spring 65 so that the slots of the
 locking plate will register with the slots of
 110 the plate 55, thus permitting the pin 62 of
 the particular plug 13 to pass into the slot
 of the locking plate and repose in the offset
 opening 61 thus permitting the locking plate
 to move into locking position by the action
 115 of the spring 65 and retaining the particular
 plug 13 in closed position, the cut away por-
 tion 56 of the locking plate and the opening
 61 being arranged so that the intermediate
 portion of the locking plate will form a
 120 flange 68, which, when the locking plate is
 in locked position will act as a stop mem-
 ber and prevent the plug 13 from moving
 into open position. Now if a second plug
 is moved into the slot 56, the pin of the sec-
 125 ond plug engaging one of the flanges 68 at
 the cut away portion thereof, will actuate
 the locking plate, thus disengaging the pin
 of the first plug from the flange 68 thereof
 so that the action of the spring 65 will move

the first plug into open position, it being understood that the operation of moving the second plug into closed position is the same as the operation of the first plug, mentioned heretofore. It will be seen, however, that with the structure described, when one plug is moved into closed position any other plug that is in closed position will be released and will move into open position so that by operating one plug to close a single circuit all other circuits will be open.

In Fig. 6 of the drawings, I have shown one manner of connecting the instrument in a telegraph system and in this figure *a* indicates one of the line wires extending through the coil of a relay B and terminally connected to one of the binding posts 50, while leading from the companion binding post 51 is the other line wire *a'* including in series an emergency key A. Connected with the binding posts 32, 33 of the wires or conductors 29, 31 respectively are wires *c'*, *c* including the sending key E. Leading from the binding posts 52 of a companion jack to that of the first mentioned binding post is a wire *b'* terminally connected to the armature of the relay B, while leading from a contact disposed in the path of movement of such armature is a wire *b''* connected to one side of a battery C from the opposite side of which leads a wire *c* extending through the coil of the sounder D, a wire *d'* connecting the free terminal of the coil of the sounder with the companion binding post 53. F indicates a resonator connected with the binding posts 40, 41 in circuit with the plugs by way of wires *f*, *f'*. By means of this construction, it will be seen that when the members of the respective plug are moved inwardly of the casing and into the jacks the key E will be connected in the line while the sounder D and resonator F will be simultaneously connected in series with each other, the key E being connected in the line by way of the wire *a*, the respective jack spring 43, the contact 19 of the plug, wire 29, binding post 32, wire *c'*, through the key, the binding post 33, the wire 31, the contact 20 of the plug, jack spring 44, the wire *a'*, current flowing back to the other side of the battery by way of the winding of the sounder D and the wire *c* at the receiving station. Thus, it will be seen that when the relay B is energized, incident to a message coming in, the armature of the relay will be actuated to close the circuit, just described, through the sounder and resonator where- by both will be actuated.

In some instances it may be desired to cut the sounder out of service and employ the resonator only, and for this purpose, a wire *g* connects the wire *c* with the binding post 41 and includes a switch which when closed short circuits the sounder so that the

resonator acts alone, the current flowing from the battery to the respective portion of the wire *c*, the wire *g*, the binding post 41, the wire *f'*, the resonator, the wire *f*, the binding post 40, the wire 37, the contact of the respective limb of the plug, the jack spring 43, the wire *b'*, the relay armature and the wire *b''* back to the battery.

It will be noted that no independent batteries are connected in circuit with the resonator and that one set of batteries only is used for the main line sounder, while the usual independent relay is dispensed with thereby permitting direct connection with the main line.

In the diagram of Fig. 7, I have shown the instrument as employed in telephone work and by the use of the device two separate and distinct telephones may be connected up with the calling telephone simultaneously so that a three party conversation may be carried on. In this figure, *a*, *a'* designate the line wires connected in multiple or parallel with the various sets of binding posts 50, 51, 52 and 53. M, N designate two telephone sets, the set M being connected with the binding posts 32, 33 by way of wires *m*, *m'* respectively, while the set N is connected with the binding posts 40, 41 by the wires *n*, *n'* respectively. Should the limbs of the plug be in engagement with the springs of the respective jacks and the telephone connected up with the main line *a*, *a'*, it will be seen that such telephone will have talking communication with the telephone M and like communication with the telephone N.

It will be understood that my device can be used in connection with other telegraph and telephone circuits than are shown in Figs. 6 and 7 and the device can also be used in combination with a telegraph and local telephone system, particularly railroad telegraph and telephone systems, in which it is desired at all times to have ready access to a local telephone. With a device of the class described, the operation of one of the plugs secures the automatic release of other circuits and when a device is used in connection with telegraph systems, batteries for the resonators need not be provided and an independent relay is dispensed with, the circuit being accomplished by cutting directly into the main line relay.

It will therefore be apparent from the foregoing description that the plugs 13, arranged as mentioned with respect to the sockets 21, consist primarily of a combination of two members, namely, the members 17 and 18, for engagement with the respective sockets 21, 22, and whereby, when the plugs are related to the sockets as disclosed heretofore, it will be possible to make direct connection between main lines and local lines, when used either as a telephone or

telegraph exchange or both, and whereby, further, a number of plugs used in connection with the respective sockets therefor permit of cutting in several independent main lines with independent local lines. By arranging the plugs so that the throwing in of one plug will cut out any others previously thrown into contact with their respective sockets, a structure is provided which is automatic in operation as regards the making and breaking of circuits between main and local lines.

I claim:—

1. An interconnecting device for telegraph and telephone lines comprising a substantially rectangular casing, pairs of jacks secured to one end wall of said casing and spaced apart, supports within said casing and spaced apart therein, plugs slidably mounted upon said supports and each having one end forked to enter the adjacent pair of jacks and the opposite end formed with a shank projecting outwardly of the adjacent end wall of the casing, and tension means interposed between the forked extremities of each plug and acting upon the latter to

hold the same normally disengaged from the companion jacks.

2. An interconnecting device for telegraph and telephone lines comprising a substantially rectangular casing, pairs of jacks secured to one end wall of said casing and spaced apart, supports within said casing and spaced apart therein, plugs slidably mounted upon said supports and each having one end forked to enter the adjacent pair of jacks and the opposite end formed with a shank projecting outwardly of the adjacent end wall of the casing, stationary guides interposed between the limbs of the bifurcated end of each plug, a guide rod secured to the plug and disposed within the adjacent guide, and a coiled expansion spring surrounding said guide and acting upon the plug to hold the latter normally disengaged from the companion jacks.

In testimony whereof I affix my signature in presence of two witnesses.

AUGER C. CARLSON.

Witnesses:

E. G. REISINGER,
S. J. McMARLIN.