

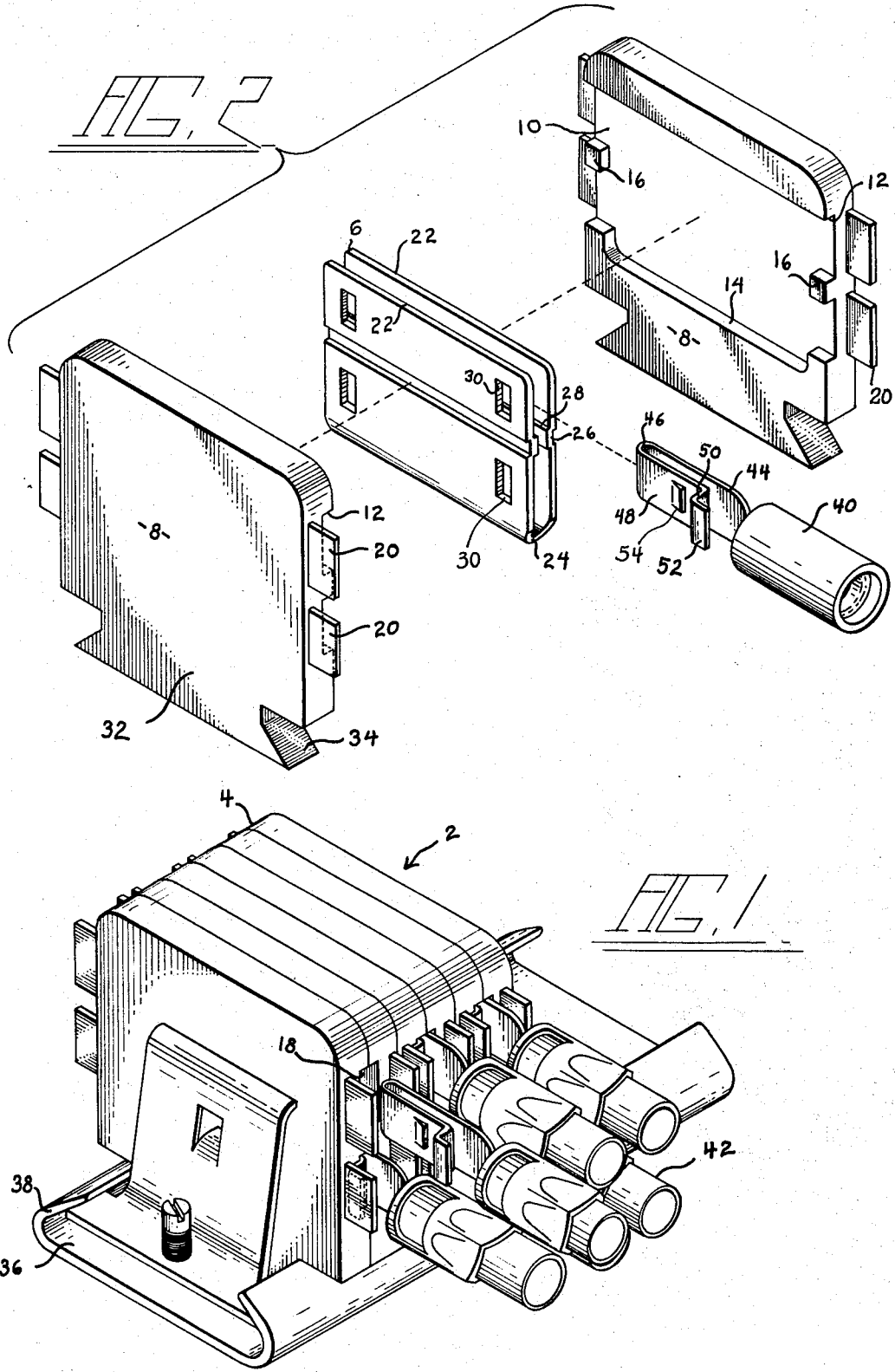
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TERMINAL BLOCK

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**TERMINAL BLOCK**

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**ABSTRACT OF THE DISCLOSURE**

Connector block for commonly connecting a plurality of wires comprises spaced-apart metallic plates contained in insulating housing. Terminal on wire end has reversely bent tongue which is adapted to be inserted through opening in housing so that it is received between plates. Terminal tongue has flexible arm with detent means which enters hole in one plate. Flexible ear on housing engages flexible arm on terminal and disengages detent to permit removal of terminal.

This invention relates to a terminal block for making common electrical connections among a plurality of conductors.

It is an object of the invention to provide an improved terminal block. A further object is to provide a terminal block which is adapted to receive terminals secured to the ends of conductors and which incorporates a positive latching means for holding the terminals in the block. A further object is to provide the terminal block having means for releasing the terminals contained therein and which does not require specialized tools for either inserting or releasing the contact terminals.

These and other objects of the invention are achieved in a preferred embodiment comprising an insulated housing having a commoning bar or commoning member therein which is adapted to receive the contact terminals on the wires which are to be electrically connected at a common junction. The commoning member comprises a pair of spaced-apart plates between which the terminal is inserted. A preferred form of terminal for use with the invention comprises a crimp portion, by means of which it is secured to a conductor, and a tongue extending forwardly from the crimp portion. The tongue is reversely bent to form a leaf which is flexible laterally of the axis of the terminal and towards the tongue. The spacing between the two plates of the commoning member is substantially equal to, and slightly less than, the distance between the tongue and the leaf of the terminal so that the terminal can be inserted through an opening in the housing and positioned between the plates. The leaf and tongue will then be resiliently urged against the plates to establish the electrical connection. The individual terminals are locked to the commoning member after insertion by means of a struckup tang on the leaf which is received in the opening in one of the plates thereby to effectively prevent withdrawal of the terminal from the block. The rearward portion of the leaf (which is adjacent to the crimp portion of the terminal) has a laterally extending flange which can be pushed towards the tongue to disengage the latching means. The housing is provided with an ear adjacent to the terminal-receiving opening which normally bears against this flange and which can be pressed to flex the leaf member when disengagement is being effected. A terminal block in accordance with the invention thus provides a positive lock for the terminal which prevents accidental removal of the terminal but at the same time, this lock or latch can be readily disengaged when it is desired to disconnect one of the conductors from the common junction.

In the drawing:

FIGURE 1 is a perspective view showing several terminal blocks in accordance with the invention mounted on a mounting rail; and

FIGURE 2 is an exploded perspective view showing a single terminal block and a contact terminal in accordance with the invention.

A terminal block 2 in accordance with the invention comprises an insulating housing 4 and a commoning member 6 contained in the housing. The insulating housing may be of any suitable insulating plastic such as diallyl phthalate or a relatively firm nylon and is composed of two identical molded sections 8. Each section of the housing comprises a flat plate-like member having a generally rectangular depression or recess 10 on its inner side. These recesses have sides 12, 14 which function to confine the commoning member 6 when the parts are assembled and prevent movement of the commoning member relative to the housing. Additionally, a boss 16 is provided at each side of the recess 10 midway between the sides 12, 14 of the recess. These bosses abut each other when the two parts 8 are assembled and form rectangular openings 18 on the side edges of the completed housing. The two parts of the housing may be secured to each other by any suitable method; for example, by bonding with a suitable adhesive or by a suitable plastic welding process. The housing parts 8 are provided with integral laterally extending ears 20 adjacent to each of the openings 18. These ears can be flexed laterally and inwardly and are utilized to disengage individual terminals from the block as will be described below.

The commoning member 6 comprises a pair of spaced-apart metallic plates 22 formed from a single piece of sheet metal and connected together at their lower ends by a U-shaped bend or bight 24. Each of the plates 22 is provided with a transversely extending rib 26 intermediate its sides which ribs form transversely extending supporting surfaces 28 for the contact terminals. Rectangular openings 30 are provided on each side of the ribs 26, and adjacent to the side edges of the commoning member, these rectangular openings form a part of a detent or locking system for holding the contact terminals in the housing.

The sections 8 of the housing are provided with base portions 32 which have obliquely extending side edges 34 so that the individual housings are adapted to be mounted in a mounting rail 36 having sidewalls 38 which extend over the side edges 34. Any desired number of individual connector blocks can be mounted in the rail 36 and held in position by a suitable clamp at each end of the stack of blocks.

A preferred form of contact terminal adapted for use with the connector block comprises barrel portion 40 which is crimped onto an end of a wire 42, a flat tongue 44 which extends forwardly from the barrel portion, and a rearwardly extending leaf portion 48 which is connected to the tongue by a reverse bend or bight 46. The rearward end of the leaf 48 which is adjacent to the barrel 40 extends laterally as shown at 50 and is provided with a flange 52 which extends parallel to the leaf and the tongue. This flange 52 constitutes a bearing surface for the application of a deflecting force to disengage the terminal from the commoning member. A lance 54 is struck up from the leaf 48 and provides a rearwardly facing shoulder which cooperates with the side of one of the openings 30 to form the latching means previously referred to.

It will be understood that the individual contact terminals are merely inserted through one of the openings 18 until the lance 54 lodges in the associated opening 30. The terminal cannot be removed from the block without complete destruction of the terminal and the block. When

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it is desired to disengage one of the terminals from the block, it is merely necessary to press the associated ear 20 thereby to move the flange 52 and the leaf 48 towards the tongue 44. A screwdriver or similar tool may be used to press the ear if desired. The wire can then be pulled to withdraw the terminal from the commoning member.

A distinct advantage of the invention is that the individual terminals can be connected to the commoning block by the mere act of inserting them through the opening 18 and once inserted, cannot be accidentally removed since they are securely maintained between the plates 22 by the lances 54. Intentional removal, however, can be readily accomplished without the aid of special tools by merely pressing on the appropriate one of the ears 20 to release the terminal from latched engagement with the commoning member.

Changes in construction will occur to those skilled in the art and various apparently different modifications and embodiments may be made without departing from the scope of the invention. The matter set forth in the foregoing description and accompanying drawing is offered by way of illustration only. The actual scope of the invention is intended to be defined in the following claims when viewed in their proper perspective against the prior art.

**Claim:**

1. An electrical connecting assembly comprising, a conductive commoning member, said commoning member comprising a pair of spaced-apart parallel plates, an insulating housing encasing said plates, openings in said housing in alignment with the edge portions of said plates, contact terminals inserted through said openings and extending between said plates, each contact terminal comprising a tongue, said tongue being reversely bent to form a flexible leaf, detent means effective between said commoning member and said leaf for retaining said terminal in said commoning member, and ear means

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on said housing adjacent to said opening, said ear means being deformable to engage said leaf and to flex said leaf towards said tongue thereby to disengage said detent means and permit withdrawal of said terminal from said opening.

2. A connector block assembly comprising, a commoning member, an insulating housing, and a plurality of terminals inserted into said commoning member, said commoning member comprising a pair of parallel spaced-apart plates, said terminal members each comprising a tongue, said tongue being reversely bent to form a flexible leaf extending parallel to said tongue and flexible towards said tongue, interengaging latch means on said leaf and said commoning member, said latch means being disengageable upon movement of said leaf towards said tongue, said housing being in surrounding relationship to said commoning member and having an opening for said terminal, and flexible ear means on said housing in engagement with said leaf, said ear means, upon flexure thereof, being effective to move said leaf towards said tongue to disengage said latch and permit removal of said terminal.

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