

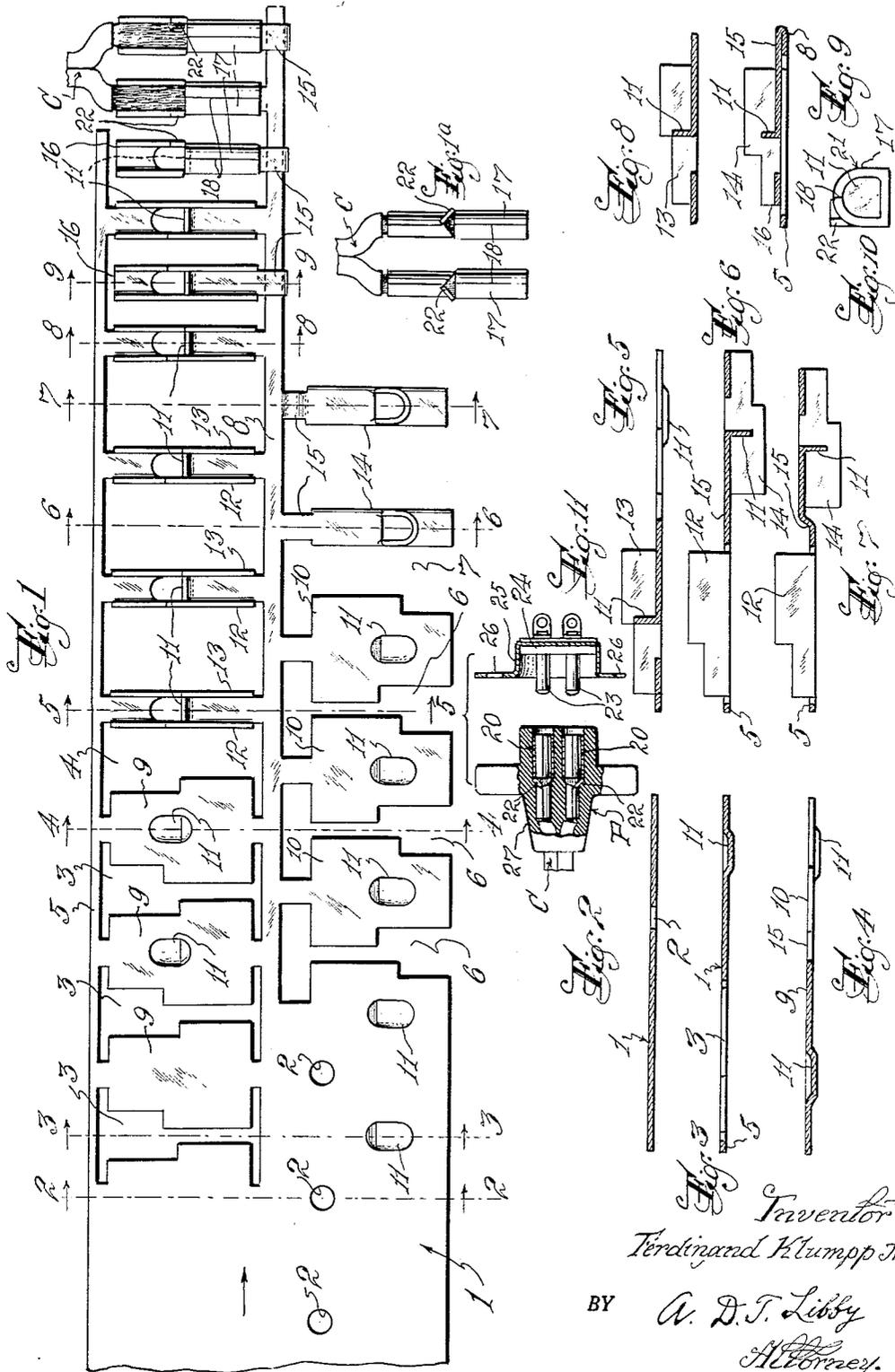
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PROCESS FOR MAKING ELECTRICAL TERMINALS

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PROCESS FOR MAKING ELECTRICAL TERMINALS

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This invention relates to a process for making electrical conductor terminals in strip form which is then taken to an assembly machine for connecting an electrical cable composed of a pair of conductors to a pair of terminals ready for a subsequent operation which will be later referred to. By making conductor terminals for the purposes to be described in strip form much time and material is saved and this is a further important object of my invention. By having the terminals arranged in strip form ready to receive a pair of conductors forming an electrical cable much time is saved as individual terminals do not have to be handled, and the terminals being in strip form, the assembly operation of the conductor cable thereto is greatly speeded up while doing a better assembly job.

My process will be understood by referring to the annexed drawing wherein Figure 1 shows one end of the strip as it comes out of the press ready for assembly with a cable, the strip and its parts being shown twice the size of a working structure.

Figure 1A shows a right end pair of terminals of Figure 1 after the conductor or the cable has been placed in position and the parts of the terminal forced over the barred end of the conductor's end, the terminals being severed from the plate strip.

Figure 2 is a view on the line 2—2 of Figure 1.

Figure 3 is a view on the line 3—3 of Figure 1.

Figure 4 is a view on the line 4—4 of Figure 1.

Figure 5 is a view on the line 5—5 of Figure 1.

Figure 6 is a view on the line 6—6 of Figure 1.

Figure 7 is a view on the line 7—7 of Figure 1.

Figure 8 is a view on the line 8—8 of Figure 1.

Figure 9 is a view on the line 9—9 of Figure 1.

Figure 10 is an end view of one of the terminals.

Figure 11 is part sectional and part elevational view showing the cable with its terminals molded into a socket type plug for making a connection to contacting member forming the right end portion of the two parts of Figure 11.

From the different views wherein like numbers refer to corresponding parts, 1 is a strip of suitable metal such as copper or alloy thereof which is usually used for making terminals of the type described. As the strip 1 comes into the punch press, holes 2 are punched therein for guiding purposes of the strip. As the strip comes through the press similar orifices 3 and 4 are punched out simultaneously on one side of the strip leaving an anchoring strip 5 on one side of the main plate. Also the press punches at the same time similar orifices 6 and 7 on the opposite side of the strip leaving a centrally located strip 8 to which the portions 9 extending in one direction between the central strip 8 and the side strip 5. Also punched simultaneously with the portions 9 are similar portions 10 extending in opposite directions from the center strip 8. While the parts 9 and 10 are being punched from the strip, stops 11 are punched, upwardly in portions

9 and downwardly in portions 10. The purpose of these stops will be later described.

Directly after the portions 9 and 10 have been formed the sides 12 and 13 in the portions 9 are turned upwardly while the portions 10 have their sides 14 turned downwardly as indicated by the section lines 5 and 6. It will be noted from Figures 6 and 7 and by reference to section lines 6—6 and 7—7 that the arm 15 has been forced upwardly from the center strip 8 whereby the formed members 10 can be turned over into the spaces between the terminals located between the metal support strip 8 and the side strip 5 as indicated in the right hand end of Figure 1 where it is seen that the terminals extending from the central strip 8 are free at the end 16 whereas the terminals from the portions 9 are anchored at both ends but the two terminals are alike in all respects and closely spaced together so that later on in the assembly operation as indicated by the last two terminals at the right end of Figure 1, the cable C need have its ends separated only a very small amount in order to have the bared ends inserted into the open portions of the terminal against the stops 11.

Directly after the portions 10 have been formed and immediately after they have been bent over as above described so that they are positioned between the central strip 8 and the strip 5, the portions formed by the side members 13 and 14 are rolled into closed position as shown at 17 leaving only a very slight gap 18, if any, for a purpose which will be later described. While the two right end terminals of Figure 1 are shown as having the conductors of the cable C placed in position on the strip coming from the punch press, I prefer to take the entire strip as formed shown by the sections 9 and 10 in separate assembly operation where the terminals are severed from the central support strip 8 and the strip 5 simultaneously with the connection of the conductors of the cable C to the terminals.

One of the useful purposes of the terminals is shown in Figure 11 wherein plug member P is formed by molding suitable insulating material around the assembly shown in Figure 1a. In doing this a paper sleeve 20 is slid over the folded part 21 of each terminal. A stop 22 is formed at the junction of the folded part 21 and the adjacent part of P receives the cable conductor. This stop 22 positions the paper sleeve 20 which is utilized for the purpose of preventing the insulating material of the plug member P, passing through any crack 18 that might be at the folded parts 17 so that the folded parts 17 will be sure to make good electrical contact with the studs 23 that are carried by an insulation 24 in a metallic member 25 that is fastened by means of screws passing through holes 26 into a support member. It will be noted from the left end of Figure 11 that the shank 27 of the plug member P completely encloses the terminal ends carrying the cable C and since conductors of the cables are only slightly spaced for the assembly operation the material of the shank 27 embraces the slightly spaced ends of the cable C thereby providing complete insulation for the conductors of the cable C. It will be understood that this construction is important because of the voltage and frequency that is applied to a terminal which is especially adapted for use in connection with television work.

From the foregoing it will be seen that I have obtained the objects of my invention in a fast and efficient manner.

Having thus described my invention, what I claim is:

1. The process of making terminals in pairs for simultaneous connection to the conductors of a twin conductor cable, said process consisting in blanking out metal on opposite portions of a strip of suitable metal, said blanks being anchored to a centrally extending strip, the blanks on one side of the strip having free ends, an edge strip

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extending along and anchored to the ends of the blanks on the other side of the center strip, forming up all of said blanks to receive conductors and bending over the formed blanks of one set into alternate positions with respect to the other set of formed blanks ready to receive up pairs of terminals and also ready to complete the final locking engagement with the conductor before they are severed from the pair of terminals having the conductors fastened thereto.

2. A process for making electrical conductor terminals for the purpose described, which consists in passing a strip of suitable metal through a punch press, punching out simultaneously portions of the material on opposite edges of the strip in staggered relation to form blanks for at least one pair of mating cooperative conductor terminals, the said blanks extending in opposite directions from a central longitudinally extending portion of the strip to which their adjacent ends are anchored, then forming said blanks in opposite directions to a preliminary shape to receive conductors, then bending over at least one of said formed blanks into side by side relationship with the other mating one of said formed terminals ready to receive conductors.

3. A process for making electrical conductor terminals for the purpose described, as set forth in claim 2, and further defined in that the two sets of blanks are anchored at their adjacent ends to said central portion of the strip, while the opposite ends of one set of blanks are normally anchored to an outer edge of the strip and the corresponding ends of the other set of blanks are free whereby these ends are bent over between alternate similarly formed ends of the first mentioned set of blanks in side by side alignment and further defined in that after the two sets of partially formed ends have been brought into side by side alignment, their corresponding ends are then rolled up to receive a circular conductor while the opposite ends are left open to receive in pairs the bared ends of a twin conductor, and further defined in that each blank as formed is preferably provided with a stop for each type of conductor, while a special stop is preferably provided on each terminal to receive a guard sleeve for the purpose described.

4. A process for making electrical conductor terminals

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for the purpose described, which consists in passing a strip of suitable metal through a punch press, punching out simultaneously similar portions but extending in staggered opposite directions from a centrally located longitudinally extending supporting band to form blanks for a pair of co-operative conductor terminals, one set of the blanks having free ends alternatively spaced with the other set of blanks, then forming said blanks in opposite directions to form similar terminals, then bending over on said centrally located band the said terminals having the free ends so they will be in alternate arrangement between each other, then finishing the forming operation, the process being further defined in that the end of all of the terminals connected to said centrally supporting band and including those which are bent over alongside the other terminals, has the metal rolled up in circular forms for the purpose described while their adjacent opposite ends are left open to have bared ends of two conductors placed simultaneously in the two adjacent terminals.

5. The process of making electric conductor terminals which consists in passing a sheet of suitable metal through a punch press, blanking out metal to form two sets of oppositely disposed portion in staggered relation, all anchored to a longitudinally extending relatively narrow centrally located straight middle strip and each portion also all having stop parts thereon intermediate its length, one set of said portions having free ends while the other set is anchored to an outer edge strip, partially forming all of said portions, and bending over on the said middle strip the portions having free ends to alternately intermingle with the other portions and then finishing the forming operation by rolling up of the metal next to said middle strip for about half the length of each portion and including one of the stops which substantially closes the rolled up portion at the inner end thereof.

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