

May 29, 1923.

1,456,928

J. LAKE, JR

ELECTRICAL CONNECTOR FORMING TOOL

Filed March 19, 1921

2 Sheets-Sheet 1

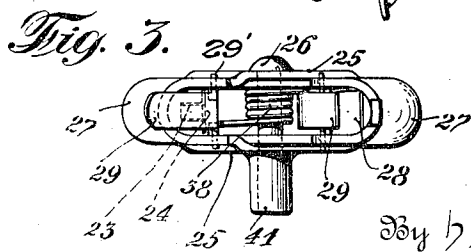
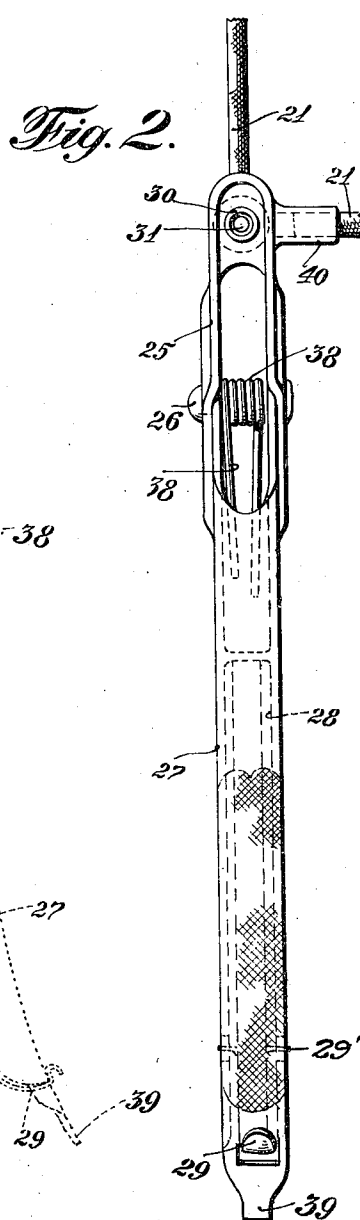
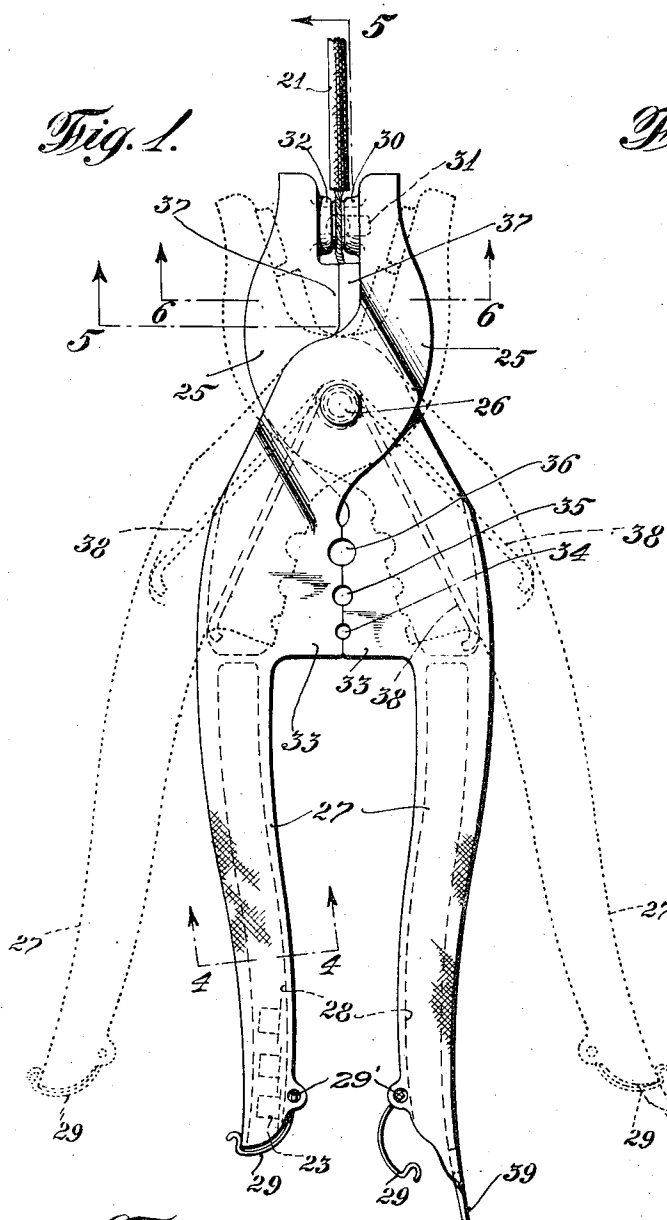


Fig. 4.

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Fig. 5.

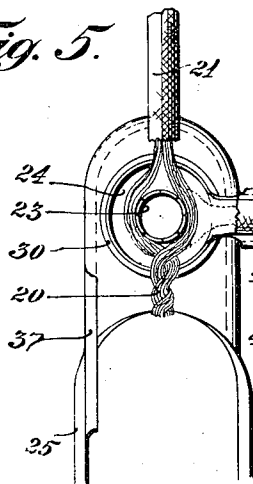


Fig. 8.

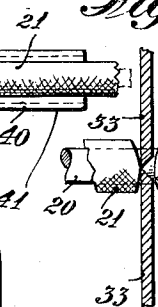


Fig. 7.

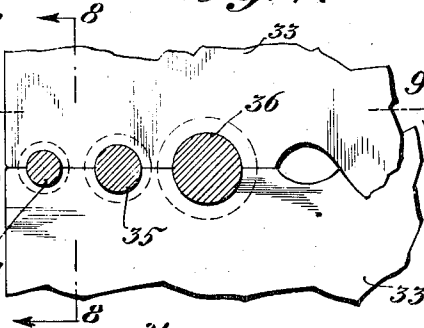


Fig. 6.

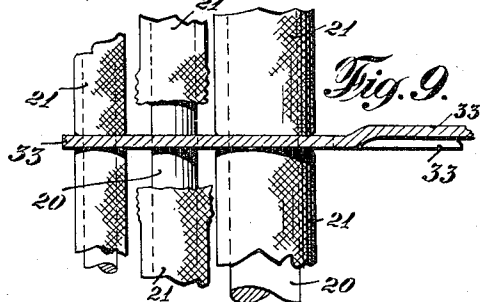
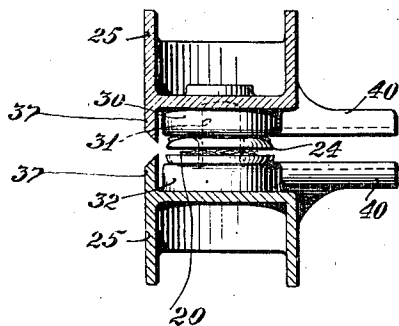


Fig. 12.

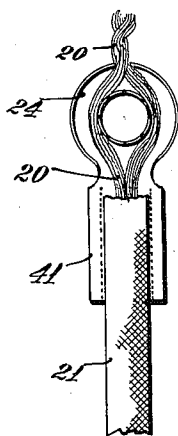


Fig. 13.

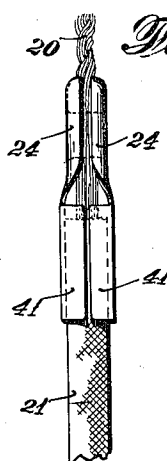


Fig. 10.

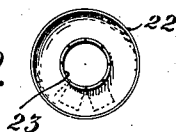
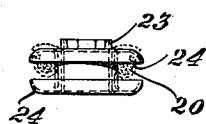


Fig. 11.



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ELECTRICAL-CONNECTOR FORMING TOOL.

Application filed March 19, 1921. Serial No. 453,808.

To all whom it may concern:

Be it known that I, JAMES LAKE, Jr., a citizen of the United States, and a resident of New York city, in the county and State of New York, have invented certain new and useful Improvements in an Electrical-Connector Forming Tool, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are: to provide a single tool adapted for performing various operations appertaining to the forming of electric wire connectors; to carry a supply of blank members from which the connectors are constructed; to provide means for stripping the insulating material from a metallic wire and to completely sever the same by a single operation; and to form a collar to cover the insulating material adjacent the bared wire and when such a collar is provided on the ferrule.

Drawings.

Figure 1 is a side view of a tool of the character mentioned constructed and arranged in accordance with the present invention, the dotted lines in said figure showing the tool in its normal or opened position.

Fig. 2 is a side edge view of the same.

Fig. 3 is an end elevation, the view being taken at the handle end of said figure.

Fig. 4 is a cross-section of a handle, the section being taken as on the line 4—4 in Fig. 1, and showing in conjunction therewith, one of the eyelets which are handled by the said tool.

Fig. 5 is an enlarged fragmentary elevation of the inner face of one of the jaws of the tool, taken substantially on the line 5—5 of Fig. 1, and shows one of the eyelet members in position thereon and ready for the assembling operation.

Fig. 6 is a detail view on enlarged scale showing in cross-section the meeting jaws of the pliers, the section being taken as on the line 6—6 in Fig. 1.

Fig. 7 is a detail view showing on enlarged scale fragments of the insulation stripping connectors, and in conjunction therewith, sectional views of wires of different diameter for use upon which the said stripping jaws are designed.

Fig. 8 is a cross-section of the same taken on the line 8—8 in Fig. 7.

Fig. 9 is a section taken on the line 9—9 in Fig. 7.

Fig. 10 is a side view of one of the eyelets employed in constructing connectors when employing the present tool.

Fig. 11 is an edge view of the two eyelets employed, the shank of the one being extended through the shank of the other.

Fig. 12 is a view of a modified form of eyelet having a collar section for enveloping the adjacent portion of the insulation with which the wire is provided.

Fig. 13 is an edge view of a completed connector formed from two eyelets of the character shown in Fig. 12.

Description.

The tool herein described is more particularly employed in forming terminal connectors for electric wires and particularly of the type of wire wherein a stranded core 20 is surrounded by insulation 21. The connectors are preferably constructed from eyelets 22 such as shown in Fig. 10. Two of these eyelets are employed, the split ends of the shanks 23 of each are overturned, the first upon the twisted strands 20 of the wire, and the second upon the flange 24 of the first positioned eyelet. The ends of the shanks 23 are slightly severed to form splitting sections when the said edge is overturned as a result of the employment of the present tool, as is shown best in Fig. 11.

The tool for splitting and overturning the edge of the shanks 23 is in the form of pliers having jaws 25 which are pivotally united by the pin 26. The tool has handles 27 which in the present form are hollow to form reservoirs 28 for holding the eyelets above described, the shanks 23 thereof extending into the rounded portion of the chamber 28, as seen best in Fig. 4. The chambers 28 are normally closed by small gates 29, preferably of spring metal, which are hinged, as at 29', at the inner sides of the handles 27, and arranged to snap over the ends of the latter when swung to closed position. The chambers 28 are loaded and unloaded normally.

One of the jaws 25 is provided with a pad 30 having a cup-like exposed recess which is centrally perforated to receive a stripper punch 31 which is extended from

the pad 32 on the other jaw 25. The recessed pad 30, the punch 31, and the pad 32 cooperate to hold, spread, split, and overturn the flange 24, shank 23 and ends thereof, respectively, as and when the jaws 25 are forced together by contraction of the handles 27.

To strip the insulation 21 from the core 20 of the wire, I have provided recessed blades 33, one extended from each of the handles 27 at the rear of and adjacent to the pivotal pin 26. The edges of the blades 33 meet when the handles are closed, as shown best in Figs. 7 and 8. The meeting edges are recessed to form when closed, circular openings 34, 35 and 36. The openings 34, 35 and 36 are graded to the usual size of the metal core of wires of standard dimension. As shown best in Fig. 8 the meeting edges of the blades 33 intermediate the openings 34, 35 and 36 are drawn to a cutting edge for the purpose of severing the insulating material with which the core is covered.

The frayed ends of the core 20 when arranged as shown in Figs. 12 and 13 are trimmed close to the edge of the flange 24 by means of clipping blades 37 which are formed on the jaws 25 forward of and adjacent to the pivotal pin 26. These clip- pers operate in the usual manner.

Normally, the handles 27 and jaws 25 are held in separated relation as shown by dotted lines in Fig. 1. This disposition of the members is insured by employing the spreading wire spring 38, the coiled section of which is wound around the pin 26.

If the connector is formed on wire intermediate the extremities thereof, a section of the wire is stripped and the core 20 thereof is parted to permit the insertion of the shank 23 of one of the eyelets. To aid in stripping the strands forming the core 20, one of the handles 27 is provided with a spreader 39, the extreme end whereof is for convenience, shaped so as to form a screw-driver that may be employed for parting the said strands as well as for other operations connected with the wiring system in which the connectors are employed.

When eyelets such as shown in Figs. 12 and 13 are employed the jaws 25 are furnished with curved dies 40 which are laterally extended from the pads 30. When these dies close on the extensions 41 they overturn the same as shown in Fig. 13 to form a ferrule for enclosing and protecting the insulating material adjacent the frayed edge thereof produced by stripping the same to expose the core 20.

Claims:

1. A tool as characterized comprising

manually operated clamping jaws, forming pads mounted on the opposed faces of said jaws for supporting shank-provided eye- 65
lets in aligning relation and adapted for spreading and overturning the ends of the shanks thereof when said jaws are actuated; and clipper blades mounted upon said jaws for severing the ends of wire passing be- 70
tween said eyelets.

2. An eyelet terminal connector forming and attaching tool, comprising relatively movable jaws, dies carried by the opposed faces of said jaws for the seating thereon 75
of complementally shanked eyelet members, said dies being adapted to spread and over- turn the free ends of the shanks of said eye- let members when said jaws are forced to- ward each other, whereby to secure said 80
eyelets together and to clamp between the same the bared portion of an electric con- ductor, and cutter members carried by said jaws for severing the surplus end portion 85
of the bared portion of said conductor sim- ultaneously with the operation of said jaws and said dies.

3. A terminal connector forming and at- 90
taching tool, comprising relatively movable jaws, dies formed on the opposed faces of said jaws for the seating thereon of com- plementally shanked eyelet members, said dies being adapted to spread and overturn 95
the free ends of the shanks of said eyelet members when said jaws are forced toward each other, whereby to secure said eyelet members together and to clamp between the same the bared portion of an electric con- ductor, spring means normally spreading 100
said jaws apart, and cutter members carried by said jaws inwardly of said dies for sever- ing the surplus end portion of the bared por- tion of said conductor simultaneously with the operation of said jaws and said dies.

4. A terminal connector forming and at- 105
taching tool, comprising pivoted jaws, dies formed on the opposed faces of said jaws for the seating thereon of complementally shanked eyelet members, said dies being adapted to spread and overturn the free 110
ends of the shanks of said eyelet members when said jaws are forced toward each other, whereby to secure said eyelet mem- bers together and to clamp between the same the bared portions of an electric con- 115
ductor, spring means normally acting to spread said jaws apart, and cutter members formed on the opposed faces of said jaws inwardly of said dies for severing the sur- plus end portion of the bared portion of 120
said conductor simultaneously with the op- eration of said jaws and said dies.

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