S. E. AARON.

LINEMAN'S TOOL.

APPLICATION FILED SEPT. 9, 1916.

1,257,948. Patented Feb. 26, 1918.

Fig. 1.

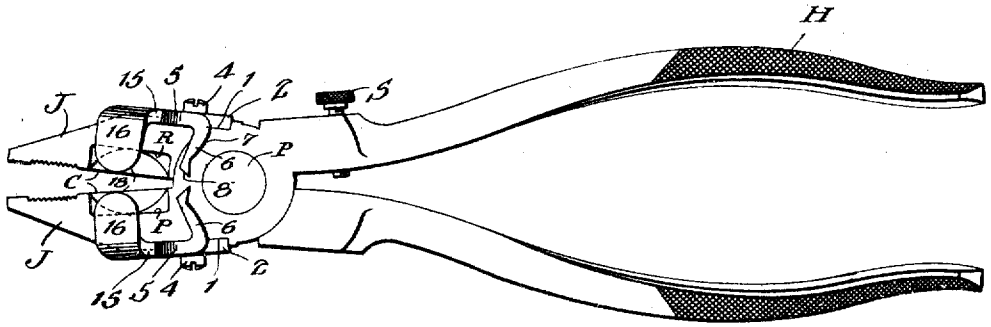


Fig. 2.

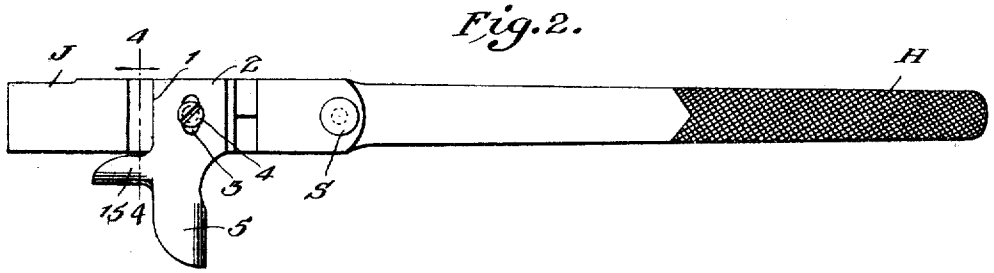


Fig. 3.

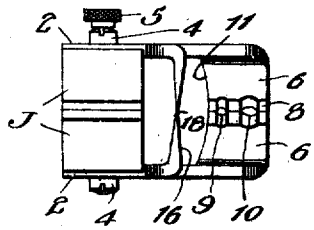


Fig. 4.

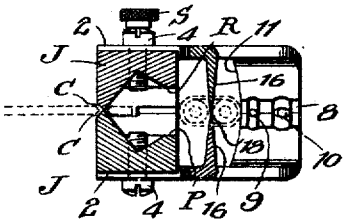


Fig. 5.

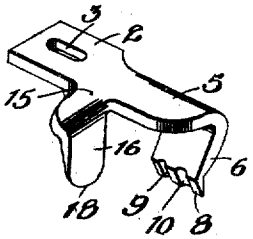
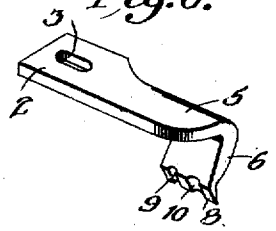


Fig. 6.



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LINEMAN'S TOOL.

1,257,948. Specification of Letters Patent. Patented Feb. 26, 1918.

Application filed September 9, 1916. Serial No. 119,238.

To all whom it may concern:

Be it known that I, SOLOMON E. AARON, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Linemen's Tools; and I do hereby declare the following to be a full, clear, and exact description of the invention such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to tools, and more especially to wire strippers; and the object of the same is to produce a lineman's tool of the plier type and including a pair of pincers, the tool also embracing a pair of cutter blades, a pair of stripper blades, and a pair of splitter blades, although in some cases the last-named pair may be omitted as when the tool is for use on single strand wire. Whatever the work being done by the lineman or electrician, almost invariably he needs pincers, and therefore this improved device is in effect a combination tool of the plier type embodying in its make-up a pair of pincers, but to this extent no novelty is claimed further than that the contact of the pincer-faces prevents undue contact of the cutting edges of the blades which would tend to dull them. Provision is made in the present instance for free use of the pincers at the end and on one side of the tool, and in order that any pair of blades may be used on a straight stretch of wire without the latter passing through the other pairs of blades, all pairs are placed out of alinement with each other as will be explained. Finally, in order to reduce the cost of manufacture as far as possible, the improvement consists in the attachment of two specially shaped arms to what might be called an ordinary pair of pincers having coacting cutting blades on one of the side faces. Details are set forth in the following specification, reference being had to the drawings wherein:

Figure 1 is a left side elevation of this tool complete, showing it held slightly open by means of a set screw through one of its handles; Fig. 2 is a plan view thereof, and Fig. 3 is a front end elevation with the jaws closed.

Fig. 4 is a cross section on the line 4—4 of Fig. 2 through the splitters, showing in dotted lines various wires to which reference will be made hereinafter.

Fig. 5 is a perspective detail of one arm including the splitter blade and the stripper blade; and Fig. 6 is a similar perspective detail excepting that the splitter blade is omitted.

The pliers are made up of two members having handles H at their inner ends, the members crossing each other and pivoted together at P where they cross, and jaws J at their front ends whose faces constitute a pair of pincers and meet each other when the pliers are closed with nothing in them. Between said meeting faces and the pivot P the jaws are recessed transversely as at R, and across one end of the recess the jaws carry cutter blades C whose coacting edges barely meet when the pincer-faces meet each other. These cutters may well be formed integral with the jaws, and they lie substantially flush with the rear side thereof or may project a trifle beyond that face of the implement as seen in Fig. 2. For preventing the jaws from closing completely together, and hence for producing a function set forth below, adjusting mechanism is employed such as the set screw S passing through one handle H with its tip adapted to engage the other. No novelty is claimed for the parts thus far described, as the device up to this point is a plier type of pincers with cutter blades on one side of its jaws and a set screw in rear of the pivot for adjusting the extent to which the jaw faces or the blades can be brought together. While I prefer to manufacture all parts of this tool, it might be possible to purchase the implement constructed as thus far described, and adapt and apply to it the details of improvement which follow.

Mounted upon the upper jaw and beneath the lower jaw are upper and lower arms or members which are complementary to each other, and the upper of which is shown in detail in Fig. 5 and in slightly modified form in Fig. 6. For mounting each of these members I preferably provide the outermost face of the jaw with a transverse groove 1, and the shank 2 of the arm lies therein and has a longitudinal slot 3 through which passes a set screw 4 whose tip engages the jaw, so that the arm may be adjusted in its slot as will be described below; however, any other form of attachment and adjustment might be employed, or the arm might be rigidly or perhaps integrally attached to the jaw if adjustment were not desired. The

arm may stand at a point about midway between the recess R and pivot P, center to center, and its shank and body are about an inch long over all. Its body 5 continues outward laterally from the shank, and the rear edge of said body is turned downward into a lip 6. (I am describing the upper member seen in Fig. 5, but the lip of the lower member will be turned upward from its body as will be understood.) The lip is carried downward and preferably deflected slightly forward, until it reaches a point about opposite the upright center of the recess R, where it is deflected slightly to the rear or toward the pivot as at 7, its forward or under side being beveled as at 8 so as to produce a rather sharp working edge; and in the coacting working edges of the two lips are cut registering notches 9 and 10 as best seen in Fig. 3. The inner edges of said lips 6 are slightly curved as seen at 11 and stand some distance from the adjacent side faces of the jaws, with the result that there is quite an opening between the lips and jaws, which opening serves as a guide when the splitters are used as described below and as shown in Fig. 5. The size and shape of parts is such that when the jaw faces come together the working faces of the lips also just meet each other, but when the set screw S is adjusted inward these working faces are held slightly spaced when the plier jaws move toward each other, and therefore the openings through the registering notches are larger.

Thus is produced a stripper for the use of the electrician and lineman. It is obvious that when a wire is to be stripped of its insulation, the implement is laid alongside the wire and opened, the wire passed between the coacting edges of the blades or lips 6, the set screw properly adjusted according to the size of the wire itself, and the handles pressed together as far as the screw will permit. This closes the active edges on the wire, and pressure causes them to cut through the insulation. Then by holding the wire in one hand and revolving the implement slightly to and fro, the insulation is circled or cut without injury to the wire; and thereafter by pulling the instrument sharply toward the user, the severed insulation is stripped off the wire in a manner which will be clear. I prefer to employ two notches 9 and 10 of different sizes so that wires of different gage can be treated with or without the use of the set screw, but very small wires would pass through the registering notches when the tool is completely closed because the contact of the pincer faces serves also as a stop. In a simple form of my improvement, the pliers would be provided only with these strippers, and it might be possible to have only a single pair of notches in their cutting edges.

Care should be taken in mounting the arms or members on the jaws, that the lips 6 stand opposite the rear end of the recess R as seen in Fig. 1; and they might be disposed nearer the pivot than there shown, though I would never have them farther forward than illustrated. This disposition of the strippers is made in order that a wire may be laid transversely across the tool and passed between its jaws and between its cutter blades C, without interfering with the strippers. Obviously the latter may be used on a wire alongside the tool without interfering with the cutters. Therefore the coacting edges of these two sets of blades are out of alinement with each other.

In the preferred or most complete form of my improved tool, the front edge of the body 5 of each arm or member is carried forward as at 15 and the lateral outer side of this forwardly projecting portion bent downward into a lip or blade 16, its lower end or active edge being rounded and sharpened as at 18; and the active edges of the two lips are so disposed that they barely contact with each other when the implement is closed as seen in Fig. 3. Their disposition also is such that they stand opposite the front of the recess R so as not to interfere with a wire being cut as above explained. Also, as best seen in Fig. 3, these lips or blades 16 are so disposed that they stand about midway between the side face of the pliers and the inner edges 11 of the stripper blades 6, and hence they would not interfere with a stretch of wire whose insulation is being stripped. These blades are preferably formed integral with the arms or members, and if the shanks 2 of the latter are adjustable by the means described above the blades will necessarily be adjusted outward from or inward toward the side face of the pliers.

Thus is produced a splitter for the use of the lineman handling twin wire cables whose outer covering it is desired to split and remove before the insulation on the individual strands is stripped off. By opening the pliers wide, such a cable may be passed completely between the active edges of the stripper blades and the active edges of the splitter blades 16, and laid against the side of the tool along which it is to be guided. Then by closing the handles the active edges of the splitter blades are passed through the exterior insulation or covering, while the stripper blades are brought toward each other and their inner edges 11 form the outer guide for the cable. Meanwhile the set screw S may be set up to prevent the splitters from cutting too deeply, the same as it is used in connection with the strippers. Finally by holding the cable in one hand and drawing the implement toward the user, the splitters are caused to sever the outer covering between the insulated wire strands,

while the face of the pliers and the inner edges 11 of the strippers guide the cable in a manner which will be clear. Here also the pliers are out of line with the strippers, so that neither interferes with a wire passing through the other pair, and both pairs are transversely out of line with the cutting blades for the same reason.

It will be observed from Fig. 2 that the strippers and splitters are all offset to one side of the jaws, the former to a different degree than the latter, whereas the cutters are on the other side of the tool and substantially flush with its face so as to leave nothing projecting. Therefore the pliers may be used on this side as an ordinary pair of pincers, or an article can be passed transversely between the pincer faces and grasped thereby as usual, because both the stripper and splitter blades are disposed out of alinement with the working faces of said jaws. In other words all the coacting faces or edges of the several pairs of members—pincers, cutters, strippers and splitters—are out of alinement with all others so that any pair can work on a straight wire without its being injured by another pair. Thus is produced a combination tool which includes everything necessary for the lineman and electrician and which when once in hand need not be laid down in order that he may pick up some other implement to handle a wire or make a connection.

What I claim is:

1. An implement comprising pincers of plier type whose jaws are recessed between their meeting faces and the pivot, cutter blades carried by one side of the jaws in line with said recess, and transversely adjustable arms mounted respectively on the jaws and carrying duplicate opposing blades standing beyond that side of the jaws opposite to the cutters and coacting on a line between the pivot and recess.

2. A wire stripper comprising two members crossing and pivoted to each other and continued into jaws whose outermost faces are transversely grooved, means for limiting the approach of such jaws to each other, a pair of arms whose shanks rest in said grooves and are slotted and whose bodies extend to one side of the jaws and are turned toward each other into lips, the coacting edges of said lips having registering notches, and set screws through said slots into the jaws.

3. A wire stripping tool comprising two members pivoted to each other and continued into jaws, an adjustable stop for limiting the approach of such jaws to each other, and a pair of guide arms secured to the outermost faces of said jaws, extending laterally beyond one side of the same, and carrying stripper blades bent toward each other and spaced from the adjacent faces of the jaws whose active edges coact on a line transverse to the length of the tool and between its front end and its pivot.

4. Improved pliers comprising a pair of pivoted jaws, and insulation-splitting blades and stripping blades mounted on the opposed jaws and so disposed as to leave an opening adjacent to the jaws for the reception of material to be stripped, the splitting blade alining with the opening.

5. In a lineman's tool, the combination with a pair of pliers; of arms secured to the jaws thereof forward of the pivot, projecting to one side, and turned toward each other into a pair of lips coacting on a line parallel with the length of the tool and constituting splitters, and into a second pair of lips more remote from the side of the tool and constituting an outer guide for the splitters.

6. In a lineman's tool, the combination with a pair of pliers; of arms secured to the jaws thereof, projecting to one side, and turned toward each other into a pair of lips coacting on a line parallel with the length of the tool and constituting splitters, and into a second pair of lips more remote from the side of the tool and notched on their meeting edges so as to constitute strippers.

7. In a lineman's tool, the combination with a pair of pliers; of arms secured to the jaws thereof, projecting to one side, and turned toward each other into a pair of lips constituting splitters, and into a second pair of lips more remote from the side of the tool and constituting an outer guide for the splitters, the active edges of the last-named lips also constituting strippers.

8. In a lineman's tool, the combination with a pair of pliers; of arms secured to the jaws thereof and projecting to one side, a pair of splitter blades carried by the arms and coacting on a line parallel with the length of the tool, and a pair of stripper blades also carried by the arms and co-acting on a line transverse to the length of the tool and more remote from the jaws than said splitter blades, each line of coaction being out of alinement with the other.

9. An implement comprising a pair of pliers, a pair of stripper blades opposed to each other on the respective jaws of the pliers and standing transversely to the jaws, the inner edges of the blades being spaced from the proximate side of the jaws to provide a passageway for wire, and a pair of opposed cutters alined with the opening to cut the insulation of wire drawn through the opening.

10. An implement comprising a pair of pliers, a pair of stripper blades opposed to each other on the respective jaws of the pliers and standing transversely to the jaws, the inner edges of the blades being spaced from the proximate side of the jaws to provide a passageway for wire, and a pair of

opposed cutters alined with the opening to cut the insulation of wire drawn through the opening, the cutter and blade on each jaw being integrally connected.

11. An implement comprising pincers of plier type whose jaws are recessed between their meeting faces and the pivot, cutter blades carried by one side of the jaws in line with said recess, and arms mounted respectively on the jaws and carrying stripper blades and splitter blades offset beyond the other side of the jaws to different degrees with their active edges out of alinement with each other or with said recess on the pincer faces.

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

SOLOMON EDWARD AARON.

Witnesses:
JOHN F. ZEBLEY,
JULIA FOLEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."