(No Model.)

W. J. PHILIPS & G. L. KITSON.

DIE FOR MACHINES FOR MAKING ELECTRIC CABLES.

No. 306,516. Patented Oct. 14, 1884.

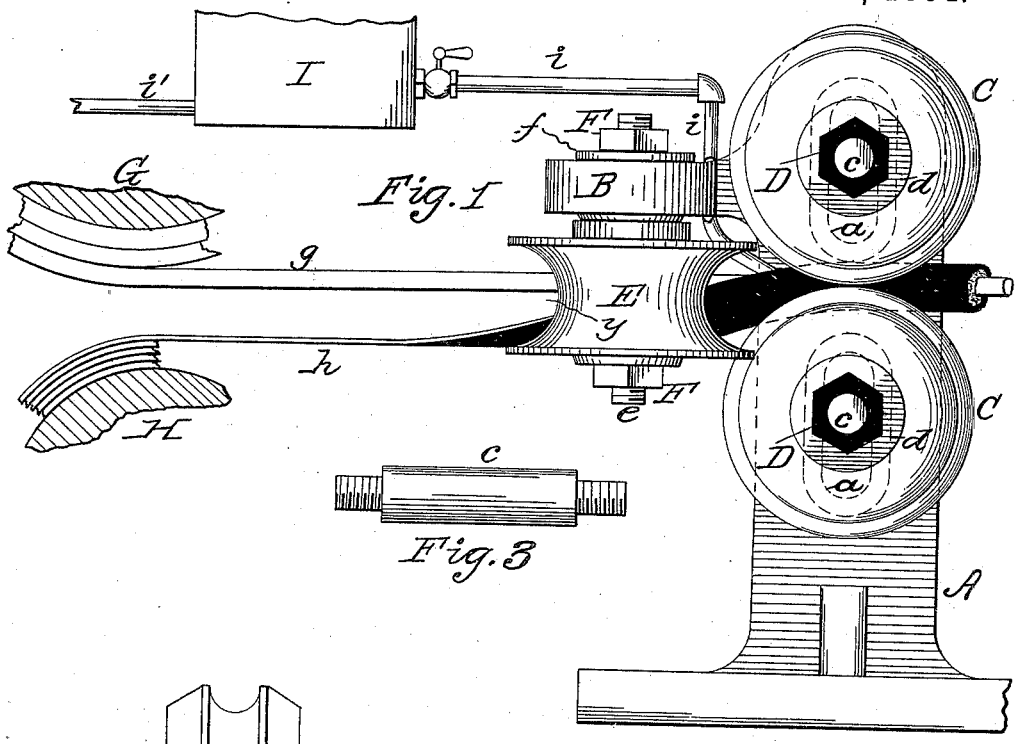

Fig. 1

Fig. 3

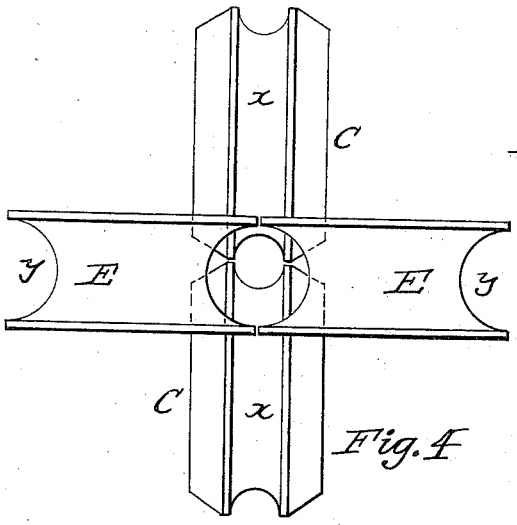

Fig. 4

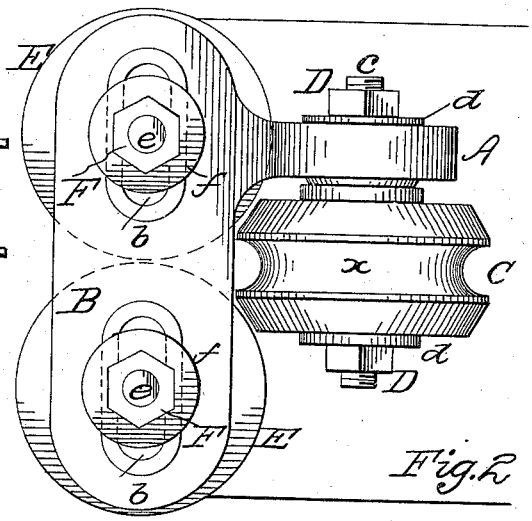

Fig. 2

WITNESSES:

W. H. Van Horn.

C. Williams

INVENTORS.

W. J. Philips

G. L. Kitson

By S. J. Van Stavoren

ATTORNEY.

UNITED STATES PATENT OFFICE.

WILLIAM J. PHILIPS AND GEORGE L. KITSON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO SAID PHILIPS.

DIE FOR MACHINES FOR MAKING ELECTRIC CABLES.

SPECIFICATION forming part of Letters Patent No. 306,516, dated October 14, 1884.

Application filed April 2, 1883. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM J. PHILIPS and GEORGE L. KITSON, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Making Lead-Covered Electrical Conductors, of which the following is a specification, reference being had therein to the accompanying drawings, wherein—

Figure 1 is an elevation of our invention. Fig. 2 is a plan. Fig. 3 is a detail elevation, and Fig. 4 is a face view of the rollers comprising our improved die.

Our invention has relation to that class of machines for making electric cables or conductors wherein a strip or skelp of sheet-lead or other metal is formed into a tube around the cable or conductor, to provide the latter with a casing or covering, and it has especial reference to the die or former for making said casing.

Our invention has for its object to decrease the friction in the die, to more easily and rapidly form the casing, which, when finished, is more smooth and round or of a truer circle in cross-section.

Our invention accordingly consists of the novel combination, construction, and arrangement of parts constituting the die, having reference particularly to the provision of two sets of grooved rollers arranged at right angles to one another and means for adjusting them relatively to each other, as hereinafter specifically described and claimed.

Referring to the accompanying drawings, A represents a standard, having a suitable foot or base plate and a bracket, B. The standard A is provided with aligning slots *a a*, and *b b* are corresponding slots formed in the bracket B.

C C represent a pair of rollers, having half-round peripheral grooves *x x*. These rollers are mounted on studs or bolts *c c*, (more plainly shown in Fig. 3,) which pass through the slots *a a*, and are firmly secured to the standard A by means of the washers *d* and nuts D in such manner that, while the studs are maintained in a fixed position, the rollers C C are free to revolve on said studs.

E E represent another pair of rollers, having half-round peripheral grooves *y y*, which are of a greater diameter than that of the grooves *x x*, as illustrated. The rollers E E are arranged at right angles to the rollers C C, and are mounted upon studs or bolts *e e*, having bearings in slots *b b* of bracket B. Said studs are held in position in said slots by means of the washers *f* and nuts F in a manner corresponding to that above described for the studs *c*. By moving the studs *c* and *e* in their respective slots *a* and *b*, the rollers are adjusted relatively to each other as desired, and to the other parts of the machine, so that when desired the line of draft between the feeding device and the dies may be adjusted as desired—an effect accomplished by no other machine of this character.

I represents a reservoir or melting-pot for liquefying rosin or other material, having a steam-pipe, *i'*, and an eduction-pipe, *i*, leading to the die.

G indicates a reel for the wire or conductor, and H a reel for the strip or skelp of sheet-lead. Said last-named parts may be constructed and arranged substantially as shown and described in an application filed by us on the 5th day of October, 1882, and need not, therefore, be more particularly described.

The operation is as follows: The cable *g* and skelp *h* are passed between the rollers E and C, and the melted pitch or rosin is permitted to flow through pipe *i* to the die. As the cable and skelp are drawn between the rollers, the skelp is first curved or bent by rollers E, and is then, by rollers C, formed into a tube to surround the cable, as shown in Fig. 1, leaving an annular space between the cable and the tube for the rosin or pitch to flow into as it emerges from the end of pipe *i*. Said rollers revolve on their axes as the skelp is moved, so as to decrease the friction between them and the skelp. As the latter passes between the rollers E E, and is bent or curved thereby, the pressure of the rollers upon the skelp causes it to ride or move upwardly out of its path of travel. If, now, the center of the peripheral grooves *x x* of rollers C C be located on a line with the center of the corresponding grooves, *y y*, of rollers E E, said upward movement of the bent or curved skelp is arrested, and it is drawn downwardly by the rollers C C; but in

so doing the sides or edges of the skelp are crowded together by the undue pressure between the skelp and the rollers C C, and the tube formed thereby is so uneven and imperfect that the annular space between it and the cable or conductor is irregular, and the pitch or other insulation surrounding the cable has a variable thickness. To avoid such pressure, and to prevent the imperfect formation of the tube or cable casing and the irregular thickness of the insulation for the cable, the rollers C C are so adjusted in relation to the rollers E E that the centers of the grooves *x x* are elevated more or less above the centers of the grooves *y y* of rollers E E, as plainly indicated in Figs. 1 and 4, so that when the bent or curved skelp moves upwardly as it emerges from the rollers E E it will easily and readily find its way between the rollers C C without being crowded or drawn down, the consequence whereof is that all undue pressure between it and the rollers C C is avoided, and an even and perfect tube is produced for incasing the conductor *h* in such manner that the pitch or other insulation will surround it equally on all sides.

If desired, instead of using a single standard, A, with bracket B, and the studs or bolts for the rollers, two uprights, A, may be employed, in which the rollers C C are journaled. To said uprights a cross-bar may be adjustably secured, which carries the rollers E E, so that by moving the cross-bar up and down the rollers E E will be adjusted in relation to the rollers C C.

We have shown the grooves *y y* in the rollers E E as being half-round; but, if desired, they may be more or less of an oval configuration.

What we claim is—

1. In a machine for covering electric-wire, the combination, with grooved rollers C C, of rollers E E, having peripheral grooves the centers of which are below the line of the centers of the grooves in the rollers C C, substantially as shown and described.

2. The combination of standard A, having slots *a a*, bracket B, having slots *b b*, rollers C C, having grooves, and rollers E E, with grooves, said rollers being mounted on axes which are adjustably secured to said standard and bracket, substantially as shown and described.

3. In a machine for making lead-covered conductors or cables, the combination of a reel or drum for the coil of sheet-lead, and a frame having a pair of dies, each die being formed of a pair of rollers, and being adjustable, substantially as described, to change the line of draft, the first die to change the line of draft between the reel or drum and the second die, and the second die to change the line of draft between it and the first die, as set forth.

4. In a machine for making lead-covered electric conductors or cables, the combination of a reel or drum for the coil of sheet-lead, a reservoir for holding an insulating material, and a frame having a pair of dies, each die being formed of a pair of rollers, and being adjustable, substantially as described, the first die to change the line of draft between the reel or drum and the second die, and the second die to change the line of draft between it and the first die, as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM J. PHILIPS.
GEORGE L. KITSON.

Witnesses:
S. J. VAN STAVOREN,
CHAS. F. VAN HORN.