(No Model.)

V. ROYLE & J. ROYLE, Jr.

MACHINE FOR COVERING WIRE, CABLES, &c., AND FOR MAKING TUBING AND CORD.

No. 466,910. Patented Jan. 12, 1892.

Fig. 2.

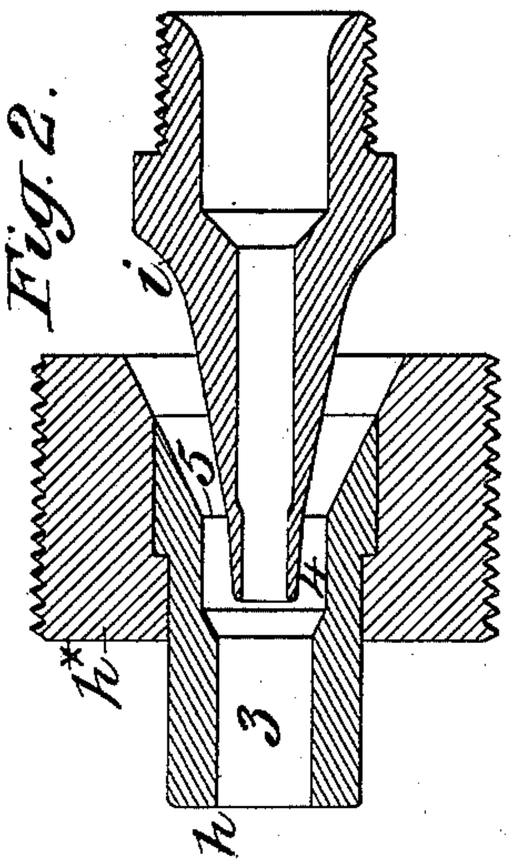

Fig. 1.

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VERNON ROYLE AND JOHN ROYLE, JR., OF PATERSON, NEW JERSEY.

MACHINE FOR COVERING WIRE, CABLES, &c., AND FOR MAKING TUBING AND CORD.

SPECIFICATION forming part of Letters Patent No. 466,910, dated January 12, 1892.

Application filed August 1, 1891. Serial No. 401,387. (No model.)

To all whom it may concern:

Be it known that we, VERNON ROYLE and JOHN ROYLE, Jr., both of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Machines for Covering Wire, Cables, &c., and for Making Tubing and Cord, of which the following is a specification.

Our invention relates to an improvement in machines for covering wire, cables, &c., and for making tubing and cord, in which the material in a soft or plastic state is forced around a core through a die.

One object is to prevent, in covering wire or cables, the contact of the bore of the hollow rotating screw through which the wire or cable passes with the surface of the wire or cable itself; and to this end the invention consists, principally, in a stationary tube arranged within the said screw to conduct the wire or cable through it.

Other objects are to utilize the pressure of the material being forced to close the joints between the core-bridge and pressure-screw and end of conducting-tube within the pressure-screw, to provide for maintaining the end of the conducting-tube in contact with the core-bridge when the machine is not in operation, and to provide for obtaining and maintaining the relative adjustments of the core and the die.

A practical embodiment of our invention is represented in the accompanying drawings, in which—

Figure 1 shows a longitudinal section through the pressure-screw, the trunk in which the pressure-screw operates, the press-head, and parts in proximity thereto; and Fig. 2 shows a central section of the die and core on a larger scale than Fig. 1.

Similar letters and numerals of reference designate corresponding parts in both figures.

Such portions of the supporting-frame, driving mechanism, &c., which are not essential to a clear understanding of our present invention have been omitted and may be of any well-known or suitable structure—such, for example, as shown and described in Letters Patent No. 325,363, granted to us September 1, 1885.

A represents an abutment forming a part of or fixed to the supporting-frame of the machine and provided with a bore therethrough, one end of which *a* is intended to receive the stem *b* of the thrust-piece B, and the opposite end *a'* of which is screw-threaded to receive the tail-screw C for forcing the thrust-piece to its work.

D represents the trunk, within which the hollow pressure-screw E is located, the rear end of said screw abutting against the face of the thrust-piece B and provided with the drive-wheel F.

The press-head is denoted by G, and is fixed to the end of the trunk D and provided with an opening therethrough, forming a contracted prolongation of the opening within the trunk in which the pressure-screw E is located. Within the outer end of the opening through the press-head, the die H is located, and the core-bridge I, carrying the core *i*, is seated between the press-head and the end of the trunk D within a space formed therefor around the inner margin of the opening in the press-head. From the inner face of the core-bridge I, where the core *i* is fixed thereto, a stationary conducting-tube K extends longitudinally through the pressure-screw, the thrust-piece B, and the tail-screw C and is intended to conduct the article to be covered therethrough into and through the hollow core *i* and through the opening *h* in the die H in alignment therewith, and also to protect the said article from contact with the rotating surface of the interior of the pressure-screw. It is found to be of importance to keep the joint between the core-bridge and the end of the tube K tightly closed against any liability of certain materials which are being forced through the die by the pressure-screw from entering therein. We accomplish the desired closure of this joint when the machine is in operation as follows: The end of the tube K in proximity to the core-bridge I is provided with a nut *k*, screwed thereon, the face of which is fitted to the inner face of the core-bridge, and the back of which is preferably inclined or beveled, as shown at *k'*. The pressure-screw E terminates a short distance back from the nut *k*, and is provided at its end with a bearing L, preferably formed separate from the pressure-screw and inserted snugly in its end, forming a close fit around the tube K. The face of the bearing L toward

the nut *k* is also preferably inclined or beveled, as shown at *l*, in a direction opposite that in which the nut *k* is beveled, so as to form between the two faces an annular space which gradually contracts toward the axis of the tube K. From this it follows that when the material is being forced through the core-bridge into the die by the pressure-screw E this pressure will be exerted between the nut *k* and the end of the pressure-screw, and will thereby tend to force the nut and end of the tube K into close contact with the core-bridge, the pressure to close the joint being increased as the pressure to force the material through the die is increased. We further find it desirable to insert a packing-ring *m* of some suitable material—asbestus, for example—between the nut *k* and the bearing L in close contact with the exterior of the tube K, to prevent the creeping of the plastic or other material being operated upon between the bearing L and the tube K. The tube K is provided near its outer end with an abutment a^2, here shown as a ring-nut screwed thereon, and is kept stationary—that is to say, prevented from turning with the pressure-screw E by means of a screw *m'*, tapped through the side of the tail-screw C and projecting into a groove k^3 in the periphery of the nut. A spring N is inserted against the face of the abutment a^2 and the inner end of a thrust-screw O, the latter being screwed into the end of the tail-screw C. By turning the screw O to force it inwardly the spring N is forced into contact with the abutment a^2, and the tube K thereby held yieldingly in contact with the inner face of the core-bridge I. This insures a contact between the nut *k* and the end of the tube K with the core-bridge when the machine is not in operation, and at the same time admits of the lateral adjustment of the core-bridge I by the radial screws P. The die H has a screw-threaded connection with the outer portion of the opening through the press-head, whereby it may be adjusted toward and away from the core *i* in the direction of the longitudinal axis of the core. It is provided with a jam-nut *h'* to secure it in desired adjustment. We also find it desirable to employ a jam-nut *c* upon the tail-screw C, to lock it in the desired adjustment.

In the example of the die and core shown in Fig. 1 the die *h*, which is screwed into the the press-head, is of one piece; but in the example shown in Fig. 2 it is fitted tightly into a collar *h**, which is screwed into the press-head. The bore or operative part of the die is the same in both cases, the front portion 3 of the bore being cylindrical and of proper caliber for the exterior of the covering and the portion 4 in rear being counterbored somewhat larger and of substantially cylindrical form. The exterior of the core *i*, which is tapered, enters into this cylindrical counterbore 4 and not into the bore proper 3. The space between the taper core and the cylindrical counterbore 4 is narrower at its entrance 5 than it is further forward, and we have found by repeated experiments with dies of different form that this contraction at 5 and the gradual widening farther forward, resulting from the cylindrical form of the counterbore, better insures the maintenance of the concentric relation between the die and core. It is obvious that the counterbore 4 need not be absolutely cylindrical and that it might be of a slight taper less than the taper of the core and yet preserve this feature of contracting the annular space between the die and core at the point 5 as compared with the width of the said space further forward. The said contraction may be varied and adjusted by the screwing of the die more or less into or out from the head G.

Such features as we have shown and not particularly described are quite similar in their structure and operation to the corresponding features shown and described in our Letters Patent hereinbefore referred to, and particular reference thereto has been purposely omitted herein, except so far as they relate to our present improvements.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination, with the trunk and the hollow pressure-screw, of a stationary tube within the said pressure-screw and supports for said tube at the ends thereof, substantially as herein described.

2. The combination of the externally-tapered core and the die counterbored substantially cylindrical to produce a contraction of the annular space between the core and die at a point some distance in rear of the front of said space, and the gradual widening of said space in front of said contraction, substantially as and for the purpose herein set forth.

3. The combination, substantially as herein set forth, of the press-head, the core-bridge, and the external taper core, of the die counterbored substantially cylindrical to produce a contraction of the annular space between the core and die, as herein described, and adjustable in the press-head relatively to the core to vary the said contraction.

4. The combination, with a core-bridge, the pressure-screw, and the conducting-tube within the pressure-screw, of a laterally-extended bearing on the end of the tube, adapted to engage the core-bridge, and a space between the back of said bearing and the end of the pressure-screw for receiving the material being forced, substantially as set forth.

5. The combination, with the core-bridge, the pressure-screw, and the conducting-tube within the screw, of a laterally-extended bearing on the end of the tube in proximity to the core-bridge, and a bearing at the end of the pressure-screw, the adjacent faces of said bearings being beveled, forming a space gradually contracting toward the axis of the tube, substantially as set forth.

6. The combination, with the core-bridge, the pressure-screw, and the conducting-tube

within the screw, of a laterally-extended bearing on the end of the tube in proximity to the core-bridge, a bearing on the end of the pressure-screw, and a ring of packing inserted between the adjacent faces of said bearings in engagement with the periphery of the tube, substantially as set forth.

7. The combination, with the core-bridge, the pressure-screw, and the conducting-tube extended therethrough, of a thrust-screw, an abutment on the tube, and a spring between the abutment and thrust-screw, whereby the tube is held in yielding contact with the core-bridge, substantially as set forth.

8. The combination, with the core-bridge, the pressure-screw, and the conducting-tube extending therethrough, of the thrust-screw, the abutment screwed onto the tube and provided with a groove along its periphery, a stop projecting into said groove to prevent the abutment from turning, and a spring located between the thrust-screw and the abutment, substantially as set forth.

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