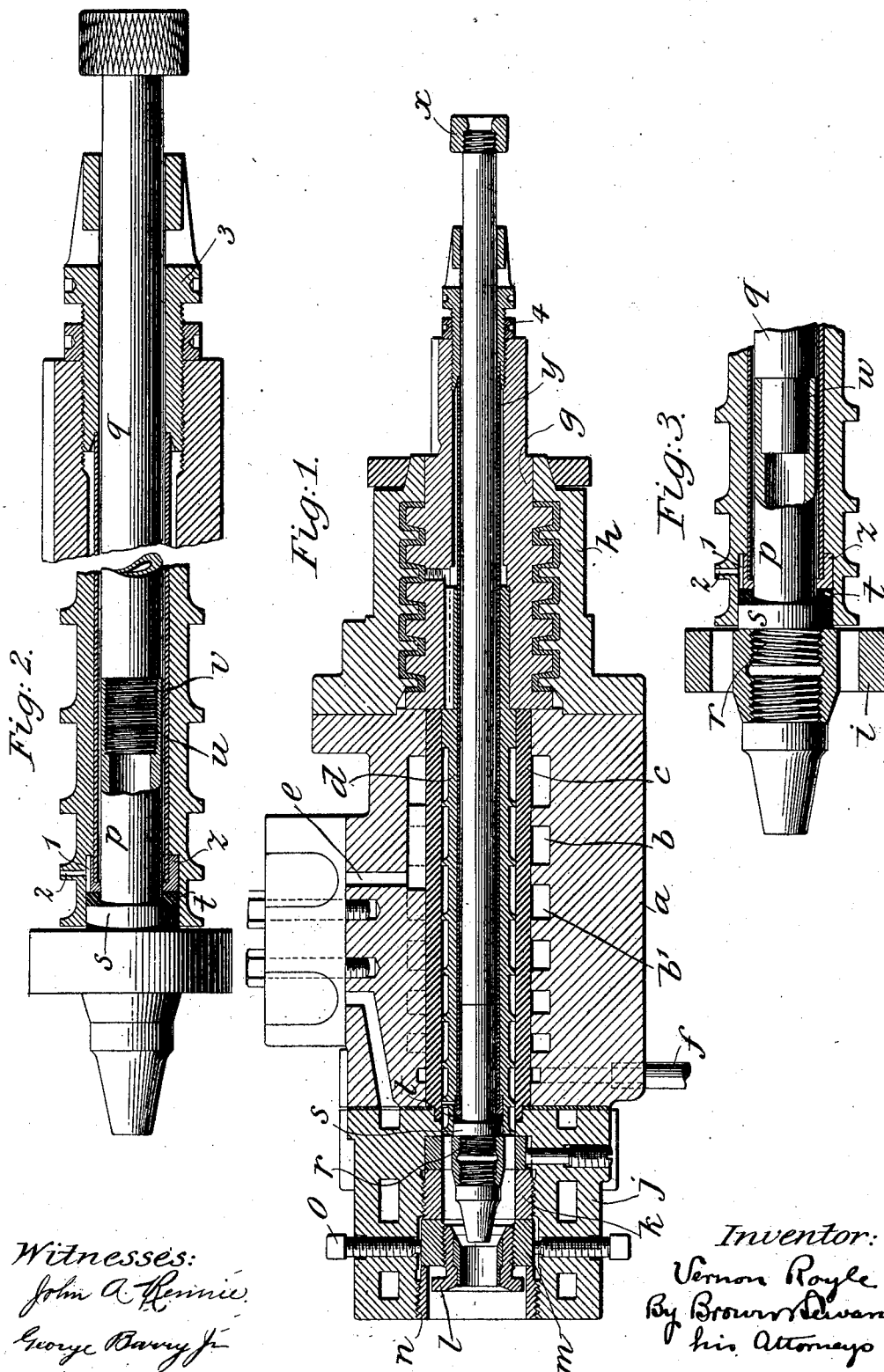


No. 678,038.

Patented July 9, 1901.

V. ROYLE.
INSULATING MACHINE.
(Application filed Mar. 15, 1901.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

VERNON ROYLE, OF PATERSON, NEW JERSEY.

INSULATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 678,038, dated July 9, 1901.

Application filed March 15, 1901. Serial No. 51,246. (No model.)

To all whom it may concern:

Be it known that I, VERNON ROYLE, a citizen of the United States, and a resident of Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Insulating-Machines, of which the following is a specification.

My invention relates to insulating-machines, with the object in view of providing means for detecting and preventing the clogging of the machine and improving the means for circulating the cooling medium within the cylinder.

In the accompanying drawings, Figure 1 is a view in longitudinal vertical central section of so much of the machine as will suffice to illustrate my invention. Fig. 2 is an enlarged view in detail, partly in section and partly in elevation, of the central tube, bridge, and parts in proximity thereto; and Fig. 3 is a view in detail, showing, partly in section and partly in elevation, a modified form of joint in the central tube.

The general type of machine to which my present invention is directed is that shown, described, and claimed in Letters Patent No. 592,938, granted me November 2, 1897, in which the wire to be coated with insulating material is led through a central hollow tube and core while the insulating material is forced around the core and into contact with the wire as it passes through the die.

The cylinder of the machine, within which the stock-worm rotates, is denoted by *a* and has formed in its interior wall a series of annular recesses *b b'*, &c., gradually diminishing in area as they approach toward the discharge end of the stock-worm. These recesses are converted into annular chambers by means of an interior tubular bushing *c*, the outer wall of which fits the interior of the cylinder *a* and the inner wall of which fits the exterior of the stock-worm *d*. The several annular chambers or recesses *b b'*, &c., communicate with one another as is usual; but the cooling medium is admitted to said annular chamber through a passage-way *e*, intermediate of the ends of the stock-worm, and thence passes to the chamber farthest from the discharge end of the stock-worm and through each successive annular chamber

until it finally escapes through the pipe *f*. The stock-worm is, as usual, keyed to a breech-block *g*, which rotates in a thrust in a bearing-block *h* and is driven by means of a pulley (not shown) keyed thereto and operated from a source of power. (Not shown.) The bridge for holding the core is denoted by *i* and is held in the die-block support *j* by means of a nut *k*, the die *l* being carried by an adjustable block *m*, locked in position by means of a screw-threaded sleeve *n* and adjusting-screws *o*.

Trouble and annoyance in the use of machines of this character have arisen from the passing of small portions of the material between the discharge end of the stock-worm and the packing at the rear end of the bridge-hub, the said material gradually working along between the wire-conducting tube and the interior of the stock-worm, forming a serious obstruction, sometimes causing the destruction of the wire-guiding tube and in all cases where the material creeps through to any considerable extent hindering the free operation of the stock-worm.

An important feature of my present invention is directed to preventing the working of this material through the joint at the discharge end of the stock-worm and for detecting the presence of the material when it has worked through and providing for its removal.

The guide-tube for leading the wire to the core through the interior of the stock-worm is formed in sections, the said sections being denoted in the present instance by *p* and *q*. The section *p*, adjacent to the bridge, is provided at its forward end with a screw-threaded projection *r* for screwing it into the rear end of the hub of the bridge and with an annular collar *s* in proximity to the screw-threaded projection *r*, which collar *s* is intended to abut against the rear end of the hub of the bridge and also form a bearing-surface for receiving the packing gasket or washer *t*. The section *p* of the tube has a removable connection with the section *q*, the preferred connection being a screw-threaded connection, as shown in Fig. 2, where the section *q* is provided with an exteriorly-screw-threaded end *u*, which engages the interiorly-

screw-threaded end *v* of the section *p*. Instead, however, of having the screw-threaded connection shown in Fig. 2 it may have other forms of removable connections—as, for example, the plain slip-joint shown in Fig. 3, where the extension *w* on the section *q* of the tube slips into the rear end of the section *p*. The rear end of the tubular section *q* is conveniently provided with a thumb-nut *x*, 10 screwed thereon for the purpose of screwing the two sections *p* and *q* together.

Intermediate of the central guide-tube, hereinabove described, and the interior of the stock-worm there is provided a tube *y*, 15 the forward end of which is thickened—as, for example, by means of a collar *z*, brazed or otherwise securely fastened thereon and having an abrupt face for the purpose of engaging the rear side of the packing gasket or 20 washer *t* to force it against the collar *s* on the tube-section *p*. The tube *y* is keyed to the stock-worm—as, for example, by means of a feather-and-groove connection, the groove being indicated by 1 (see Fig. 2) and the 25 socket for receiving the pin being denoted by 2, while at the same time the said tube *y* is permitted a limited longitudinally-sliding movement within the said stock-worm. Pressure is exerted upon the rear end of the tube 30 *y* to force the packing *t* tightly against the collar *s* by means of a tail-screw 3, which is engaged in the interiorly-screw-threaded end of the breech-block *g*, a jam-nut 4 being employed to lock the tail-screw in its adjustment. The tubular section *p*, with its 35 collar *s* and screw-threaded projection *r*, is preferably formed of a single piece of material, thereby effectually preventing any liability of the collar *s* working loose and insuring a perfect fit of its face against the bridge-hub to close the joint as tightly as may be. 40

In operation the packing *t* may be tightly forced into position by the action of the tail-screw 3, so as to shut out as far as may be 45 the passage of the insulating material through the joint into contact with the central tube through which the wire passes; but in the event the material should work through as soon as it has crept along the space between the section *p* of the central tube and the tube 50 *y* and has reached the rear section *q* of said central tube it will cause the said section *q* to gradually unscrew by carrying the said section around together with the stock-worm, 55 the said screw-threaded connection between the parts *p* and *q* being so arranged that when the section *q* of the central tube turns in the same direction as the stock-worm is turned it will cause it to unscrew. This action of 60 the section *q* of the central tube being observed by the operator, he may at once stop the operation of the machine, unscrew the section *q*, and clean the material, or the parts, including the section *p* of the tube, which, 65 together with the bridge, may be removed and the machine cleansed or repacked, if

necessary, before the clogging has become sufficient to materially damage the machine. In the event the simple slip-joint shown in Fig. 3 is utilized the operator will observe the 70 rotary movement of the section *q*, together with the stock-worm, when the clogging has become serious, and the operation of removing the parts and cleansing may be resorted to the same as before. By exerting pressure 75 upon the packing through the tube *y* and its operating-nut 3 I am enabled to keep the packing tight whatever be the wear on the other parts, as the tube *y* is capable of being moved longitudinally independently of the 80 parts adjacent thereto.

It is obvious that changes might be resorted to in the form and arrangement of the several parts without departing from the spirit and scope of my invention. Hence I do not 85 wish to limit myself strictly to the structure herein shown and described; but

What I claim is—

1. The combination with the stock-worm, core-bridge and their supports, of packing at 90 the joint between the stock-worm and core-bridge and means for adjusting the packing from the rear end of the stock-worm, substantially as set forth.

2. The combination with the stock-worm, 95 core-bridge and their supports, of packing at the joint between the stock-worm and core-bridge, a tail-screw at the rear of the stock-worm and means for communicating the action of the tail-screw to the packing for ad- 100 justing it, substantially as set forth.

3. The combination with the stock-worm, core-bridge and their supports, of packing at 105 the joint between the stock-worm and core-bridge, a tube engaged with the packing and extending along the interior of the stock-worm and means for exerting pressure upon the tube to adjust the said packing, substantially as set forth.

4. The combination with the stock-worm, 110 core-bridge and their supports, of packing between the stock-worm and core-bridge, a tube provided with a thickened head in engagement with the packing and means for exerting pressure upon the tube to adjust the 115 packing, substantially as set forth.

5. The combination with the stock-worm, core-bridge and their supports, of packing at 120 the joint between the stock-worm and core-bridge, a central tube provided with an annular collar intermediate of the packing and core-bridge, a tube having a bearing against the packing and means for exerting pressure upon the tube to force the packing toward the 125 said collar on the central tube, substantially as set forth.

6. The combination with the stock-worm, core-bridge and their supports, of a jointed 130 central tube extending along the interior of the stock-worm, substantially as set forth.

7. The combination with the stock-worm, core-bridge and their supports, of a central

tube extending along within the stock-worm and composed of detachable sections, substantially as set forth.

8. The combination with the stock-worm, core-bridge and their supports and a central tube extending along the interior of the stock-worm, the said central tube being composed of sections having a screw-threaded engagement with each other, substantially as set forth.

9. The combination with the stock-worm, core-bridge and their supports, of a central tube extending along the interior of the stock-worm, the said tube being composed of sections having a screw-threaded engagement, the screw-thread being arranged to cause one of the sections to unscrew from the other section when rotated in the direction in which the stock-worm is rotated to force the material around the core, substantially as set forth.

10. The combination with the stock-worm, core-bridge and their supports, of a central tube composed of detachable sections, the section in proximity to the core-bridge being provided with an annular collar in proximity to the core-bridge and packing in proximity to said collar and means for holding the packing in position, substantially as set forth.

11. The combination with the stock-worm, core-bridge and their supports, of a sectional central tube extending along the interior of the stock-worm, the section of said tube in proximity to the core-bridge being provided with a collar formed integral with the body

of the tube, a packing in proximity to said collar and means for holding the packing in position, substantially as set forth.

12. The combination with the stock-worm, core-bridge and their supports, of a central tube extending along the interior of the stock-worm, packing engaged with the said central tube, an intermediate tube between the central tube and interior of the stock-worm for engaging the packing and means for adjusting the intermediate tube toward and away from the packing, substantially as set forth.

13. The combination with the stock-worm, of a cylinder within which the stock-worm operates, a tubular bearing for the stock-worm within the cylinder, a series of annular chambers intermediate of said bearing and the cylinder and extending the entire length of the stock-worm, the said annular chambers being constructed to gradually diminish in area from the rear toward the forward end of the stock-worm, a passage for the entrance of the cooling medium leading from the exterior of the cylinder to the chamber at the rear end of the stock-worm and a discharge-passage at the opposite end of the worm, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 27th day of February, 1901.

VERNON ROYLE.

Witnesses:

FREDK. HAYNES,
HENRY THIEME.