

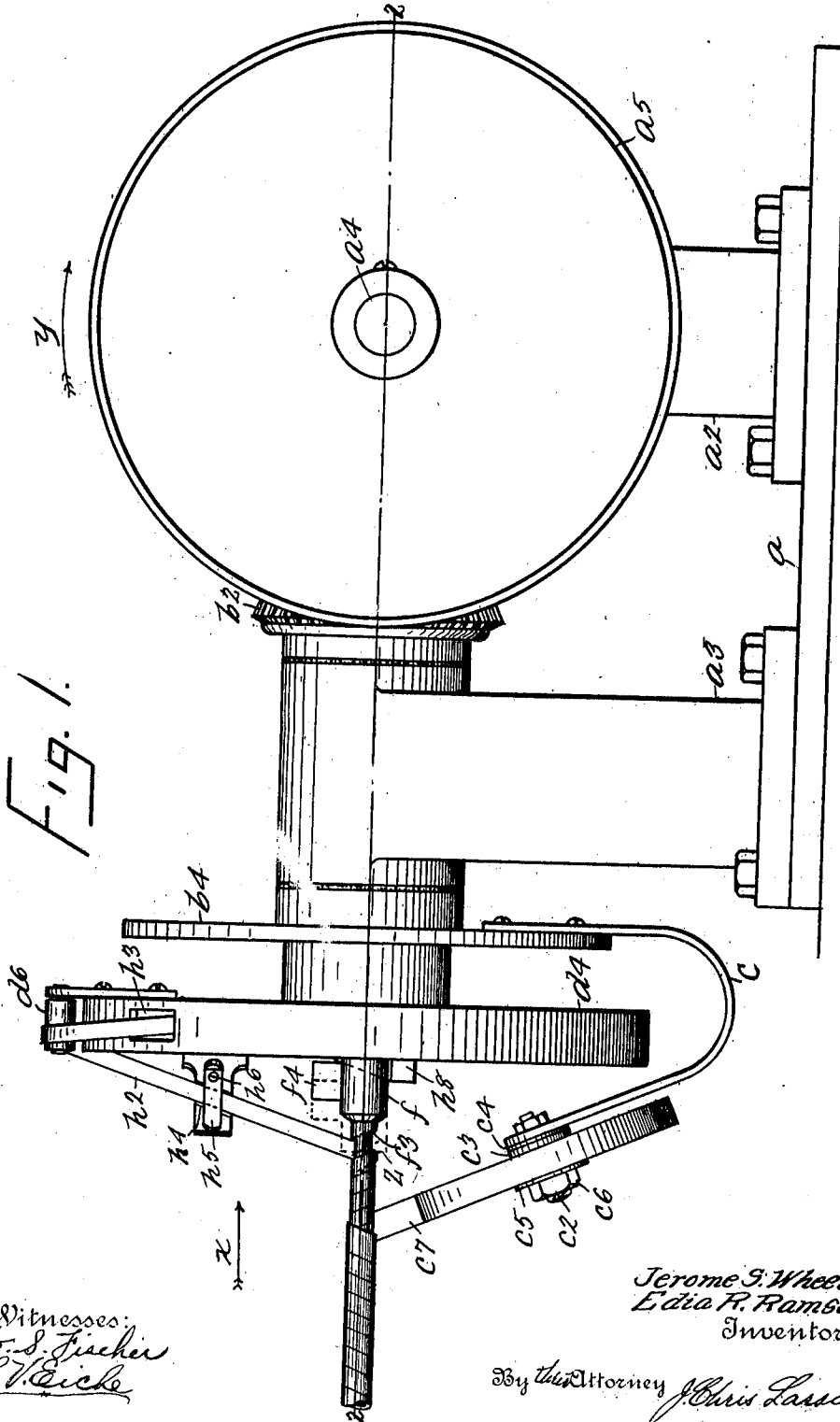
J. S. WHEELER & E. R. RAMSEY.
CONDUIT MACHINE.

APPLICATION FILED MAR. 16, 1910.

1,039,341.

Patented Sept. 24, 1912.

4 SHEETS—SHEET 1.



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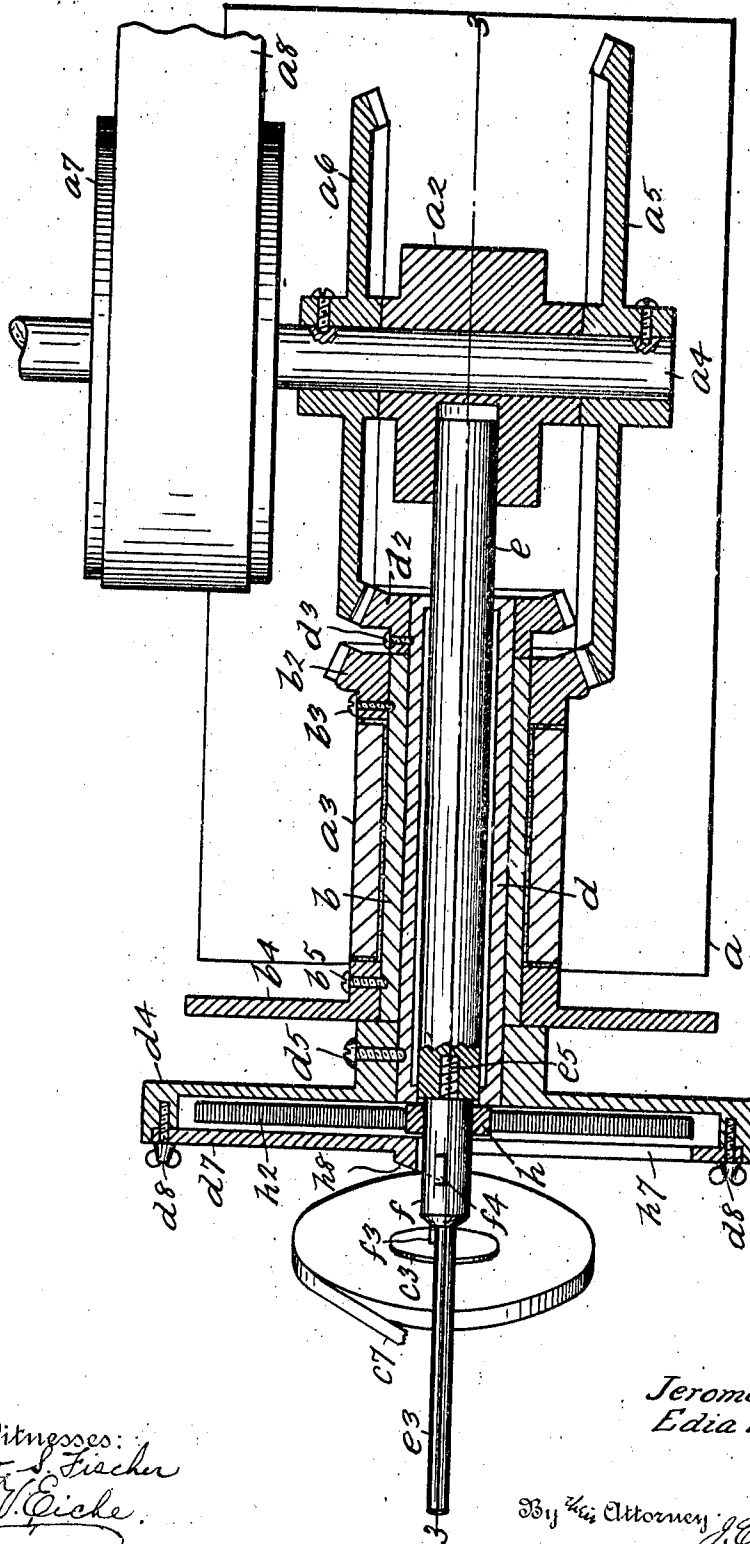


Fig. 2

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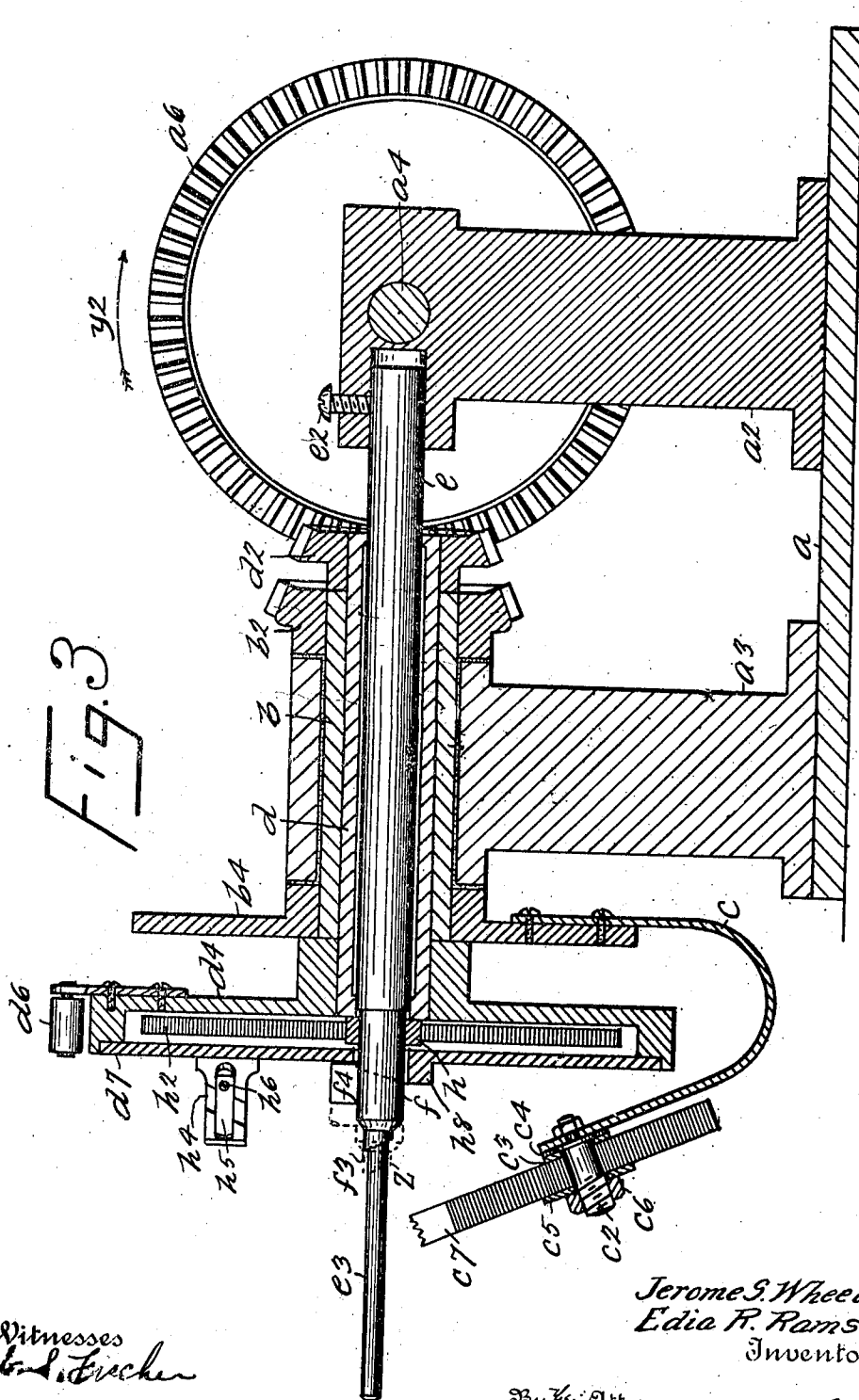
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4 SHEETS—SHEET 4

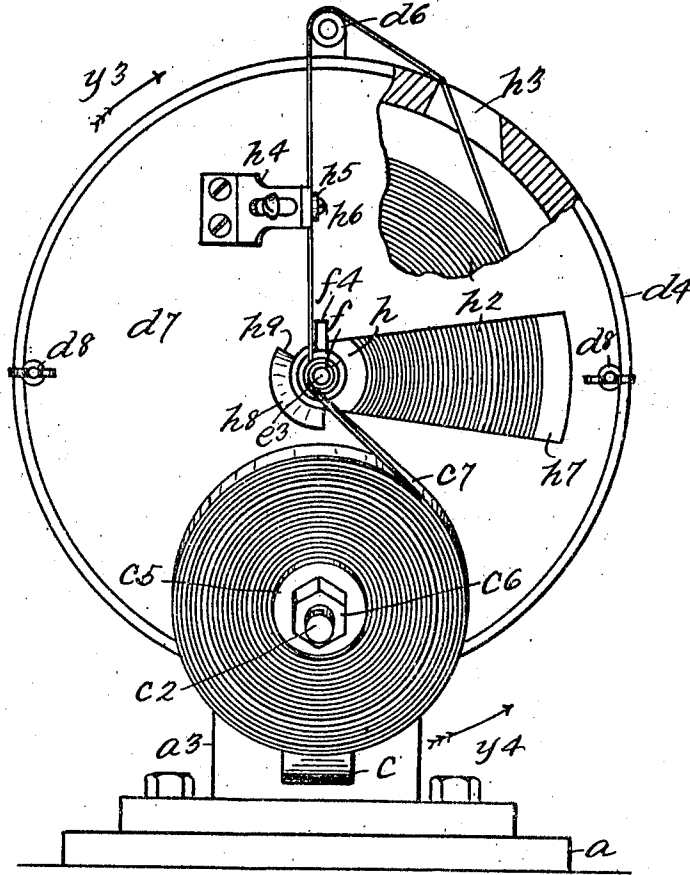


Fig. 4.

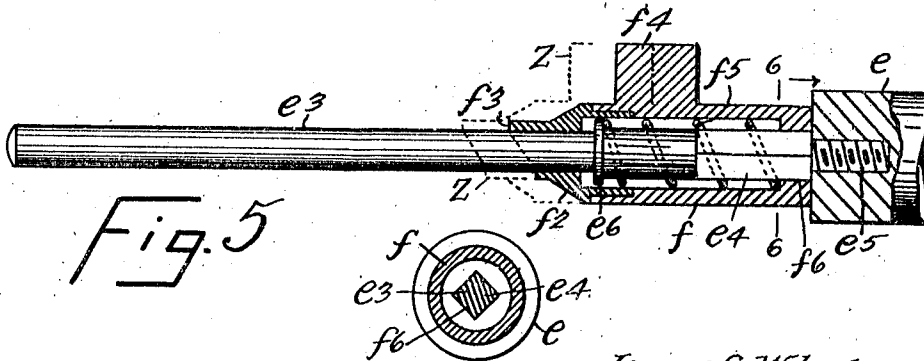


Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

JEROME S. WHEELER AND EDIA R. RAMSEY, OF PENN YAN, NEW YORK, ASSIGNORS TO
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CONDUIT-MACHINE.

1,039,341.

Specification of Letters Patent.

Patented Sept. 24, 1912.

Application filed March 16, 1910. Serial No. 549,702.

To all whom it may concern:

Be it known that we, JEROME S. WHEELER and EDIA R. RAMSEY, citizens of the United States of America, and residing at Penn Yan, in the county of Yates and State of New York, have invented certain new and useful Improvements in Conduit-Machines, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to the manufacture of that class of conduits formed by successive layers of suitable material wound spirally, one over another, and preferably in reverse direction, and the object thereof is to provide a machine for this purpose which employs a stationary mandrel upon which the said winding is done.

A further object is to provide means for carrying the material, in rolls, about the mandrel.

A further object is to provide a casing through which the mandrel passes for the reception of a roll of material for one of the windings, and also to provide means whereby the supply thereof may be quickly and easily replenished, when necessary.

A further object is to provide a carrier for another roll of material for a superimposed winding and which revolves about the mandrel and the said casing.

A further object is to provide accessible tension devices for each of the said materials when a conduit is being formed therewith.

A further object is to provide means for causing the said rolls of material to revolve in reverse directions about the mandrel.

A further object is to provide means for automatically sliding the conduit, when wound, along the mandrel, between revolutions of the said rolls of material; a further object being to provide such last named devices which force the successive windings of the inner wall into close contact with each other and in the same plane.

A further object is to insure the superimposed winding at a slight distance from the inner winding and also to provide means whereby the said outer winding will overlap in the successive turns to lock the same, the said means being also adjustable in a degree to determine the amount of said lap and the angle or pitch of the turns; and a

still further object is to construct such a machine which is simple in construction and operation, as well as rapid, and comparatively inexpensive.

Our invention is fully described in the following specification, of which the accompanying drawings form a part, in which the separate parts are designated by the same reference characters in each of the views, and in which:—

Figure 1 is a side elevation of our invention ready for use, and showing a part of the product; Fig. 2 is a section on the line 2—2 of Fig. 1; Fig. 3 is a section on the line 3—3 of Fig. 2; Fig. 4 is an end view in the direction of the arrow *a*; Fig. 5 is an enlarged view of a detail in section; and Fig. 6 is a section on the line 6—6 of Fig. 5.

In the drawings forming a part of this application we have shown a base *a* upon which are mounted two supports *a*² and *a*³, the former of which carries a transverse shaft *a*⁴ having two bevel gears *a*⁵ and *a*⁶ secured thereon of different sizes, and a pulley *a*⁷ adapted to be driven by a belt *a*⁸.

Rotatable in the support *a*³ is a longitudinally arranged sleeve *b* having a bevel pinion *b*² secured thereon by means of a screw *b*³ and enmeshed with the gear *a*⁵, the said sleeve also carrying, at its opposite end, a disk *b*⁴ secured by means of a screw *b*⁵, and the disk *b*⁴ carries a metal yoke *c* having a stub shaft *c*² at the outer end thereof upon which are mounted washers *c*³, *c*⁴ and *c*⁵ and a nut *c*⁶ for holding a roll of suitable material in ribbon form *c*⁷, preferably being what is technically known as friction tape, the washer *c*⁴ being of leather or the like, and the nut *c*⁶ serving as a tension device for the tape *c*⁷ in the feeding thereof.

Rotatable within the sleeve *b* is a longer sleeve *d*, to which is secured a bevel pinion *d*² by means of a screw *d*³, enmeshed with the gear *a*⁶, and the sleeve *d* also carries a casing *d*⁴ secured by means of a screw *d*⁵, said casing carrying a roller *d*⁶ and being provided with a removable cover *d*⁷ held by wing-nuts *d*⁸.

At *e* we have shown a shaft secured in the support *a*² by means of a screw *e*², adjustably, against rotation, and extending through the sleeve *d* to a point adjacent the position of the casing *d*⁴, and to which is secured a mandrel *e*³ having an enlarged angular portion *e*⁴ adjacent the said shaft *e*

and into which it enters and is secured by means of a screw threaded part e^5 , thus holding said mandrel stationary, and the mandrel is provided with a flange e^6 for reasons hereinafter explained.

Slidably mounted about the mandrel e^3 is a casing f having a removable cap f^2 provided with a nosing f^3 preferably inclined, and with a lug f^4 on one side thereof and normally held closely adjacent the cover d^7 of the casing or drum d^4 by means of a spring f^5 extending between the flange e^6 and a reduced portion f^6 of the casing f also angular to fit the part e^4 of the mandrel, and it will thus be seen that the casing f may be forced forwardly into the position indicated by the letter z , and returned to normal position by the spring f^5 .

Within the drum d^4 and slidable on the casing f is a ring h which serves as a support for a roll of material h^2 in ribbon form and preferably of fiber, the end of which passes through an aperture h^3 in the side of the drum d^4 , thence over the roller d^6 and through a guide h^4 on the cover d^7 and which is provided with a tension plate h^5 held adjustably by means of a screw h^6 and thence to the mandrel e^3 , the cover d^7 being provided with a view opening whereby the moment for replenishing the roll of fiber h^2 may be seen, at h^7 , and the cover d^7 is also provided with a segmental curved cam or inclined block h^8 , tapered to a feather-edge at h^9 and which block forces the casing f outwardly when the said inclined block slides over the lug f^4 in each revolution of the drum d^4 .

When the shaft a^4 is actuated the bevel gears a^5 and a^6 are rotated and, being arranged oppositely with reference to the axis of the machine, the pinions b^2 and d^2 are also rotated but in reverse directions, thus causing the drum d^4 to rotate in the direction of the arrow y^3 , the gears rotating in that of the arrows y and y^2 , and causing the yoke c and roll of tape c^7 to revolve in the direction of the arrow y^4 , opposite to that of the drum d^4 and, in practice, the fiber strip is held stationary on the mandrel until several turns have been made by the revolution of the guide h^4 around the same, at which time the friction tape c^7 is placed on the wound portion of the fiber strip and is wound thereon by the revolution of the yoke c , this start being made manually but the subsequent operation is automatic as will be seen.

By reference to Fig. 1 it will be seen that the fiber strip h^2 is narrower than the friction tape c^7 the reason for which is that it is desired to butt the turns of the former, as clearly shown, but to lap the latter, as also shown, the friction tape have been previously coated with adhesive matter whereby the successive turns adhere to each other as

well as to the wound fiber and thus holding the said turns and forming the conduit. As previously stated, the casing f is forced forwardly in each rotation of the drum d^4 by the inclined block h^8 revolving about the same and acting upon the lug f^4 , thus driving the nosing f^3 against the last turn of the fiber strip and forcing it against the next rearward turn and making a positive butt at all turns, and this movement of the casing f also forces the completed conduit rearwardly along and off of the mandrel for a corresponding distance and thus automatically removing the conduit, step by step, after completion. As previously stated, the friction tape turns are some distance to the rear of the fiber turns, one reason for which is that an imperfect condition of the latter may be seen before being covered by the latter, and another being that time is thus given for the insertion of cord, tape, or the like, around the said windings, alternately, to serve as binders therefor and prevent the wilful or accidental stripping thereof, one from the other, and it will be seen that the overlap and pitch of the friction tape may be altered by bending the yoke c and thus changing the position and incline of the roll of tape c^7 .

It will thus be seen that we provide a machine which forms a conduit of ribbons of material spirally and reversely wound, one upon the other, which removes the formed conduit, which employs a stationary mandrel, and which permits of any desired tension on either of said ribbons, and we also provide means for readily and quickly replenishing the supply of either when exhausted, the nut e^6 being removed for the one and the cover d^7 for the other.

It will be evident that many changes may be made in the details shown and described and, with such reservation, what we claim as new and desire to secure by Letters Patent, is:—

1. In a machine for forming conduits, a support, a sleeve rotatable in said support, a support for a roll of ribboned material secured to said sleeve, a supplemental sleeve within said first named sleeve, a support for a roll of ribboned material secured to said supplemental sleeve, a mandrel passed through said supplement sleeve and projecting beyond said roll supports, a pinion on each of said sleeves, a shaft, a gear wheel on said shaft enmeshed with one of said pinions, and a supplemental gear wheel on the opposite side of said mandrel enmeshed with the other of said pinions.

2. In a machine for forming conduits, a support, a sleeve rotatable in said support, a support for a roll of ribboned material secured to said sleeve, a supplemental sleeve within said first named sleeve, a drum adapted to receive a roll of ribboned mate-

rial secured to said supplemental sleeve, means carried by said drum for guiding said ribboned material, means for simultaneously rotating said sleeves, and a mandrel passed through said supplemental sleeve and projecting beyond said drum.

3. In a machine for forming conduits, a support, a sleeve rotatable in said support, a support for a roll of ribboned material secured to said sleeve, a supplemental sleeve within said first named sleeve, a drum adapted to receive a roll of ribboned material secured to said supplemental sleeve, means carried by said drum for guiding said ribboned material, means for simultaneously rotating said sleeves, a mandrel passed through said supplemental sleeve and projecting beyond said drum and means connected with said drum for forcing the formed conduit along said mandrel.

4. In a machine for forming conduits, a support, a sleeve rotatable in said support, a support for a roll of ribboned material secured to said sleeve, a supplemental sleeve

within said first named sleeve, a drum adapted to receive a roll of ribboned material secured to said supplemental sleeve, means carried by said drum for guiding said ribboned material, means for simultaneously rotating said sleeves, a mandrel passed through said supplemental sleeve and projecting beyond said drum and means connected with said drum for forcing the formed conduit along said mandrel, said means comprising a spring retracted casing slidable on said mandrel and an inclined block on said drum operating against a projection on said casing, intermittently.

In testimony that we claim the foregoing as our invention we have signed our names in presence of the subscribing witnesses this 10th day of March 1910.

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EDIA R. RAMSEY.

Witnesses:

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OLIVER SHEPPARD.