

W. H. SAWYER.  
MACHINE FOR COVERING WIRE.

No. 386,561.

Patented July 24, 1888.

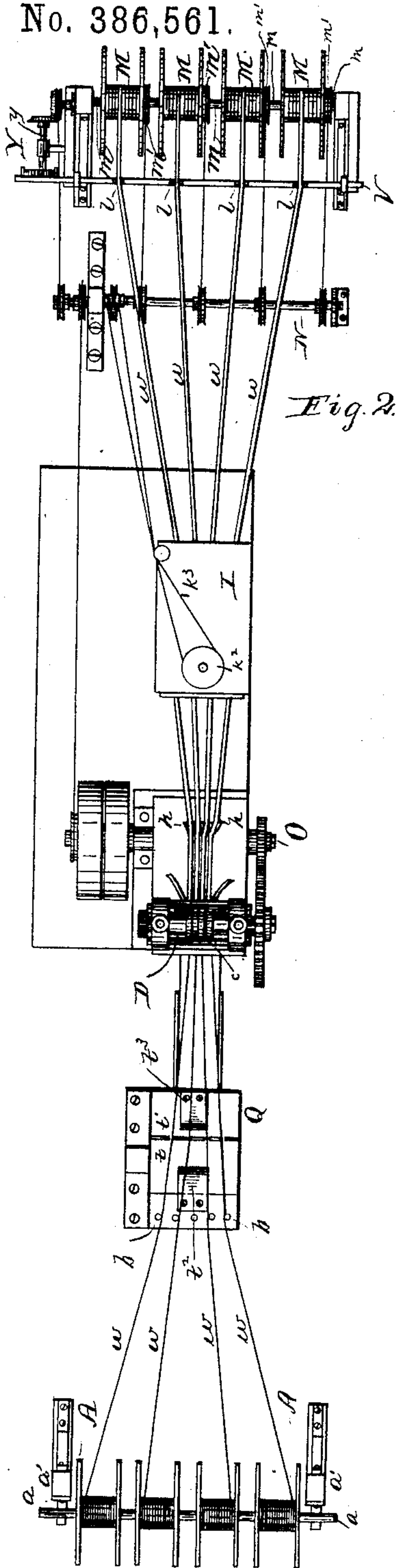


Fig. 2.

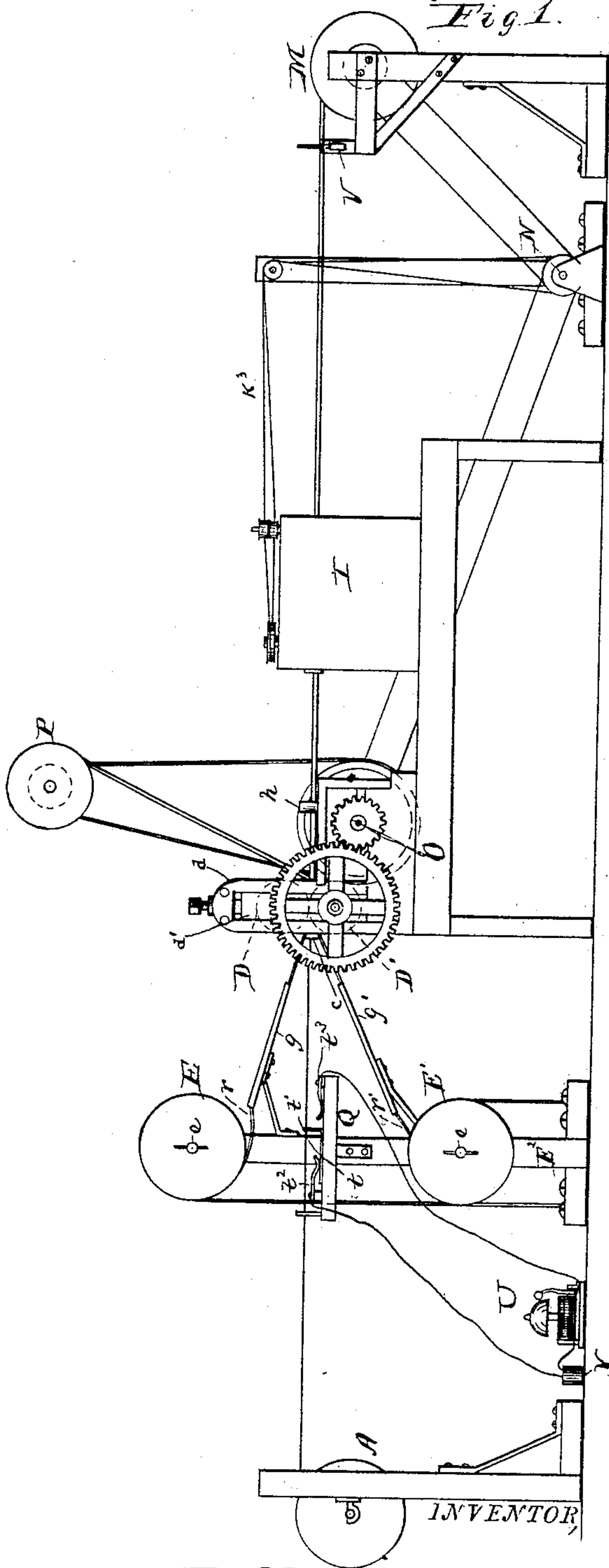


Fig. 1.

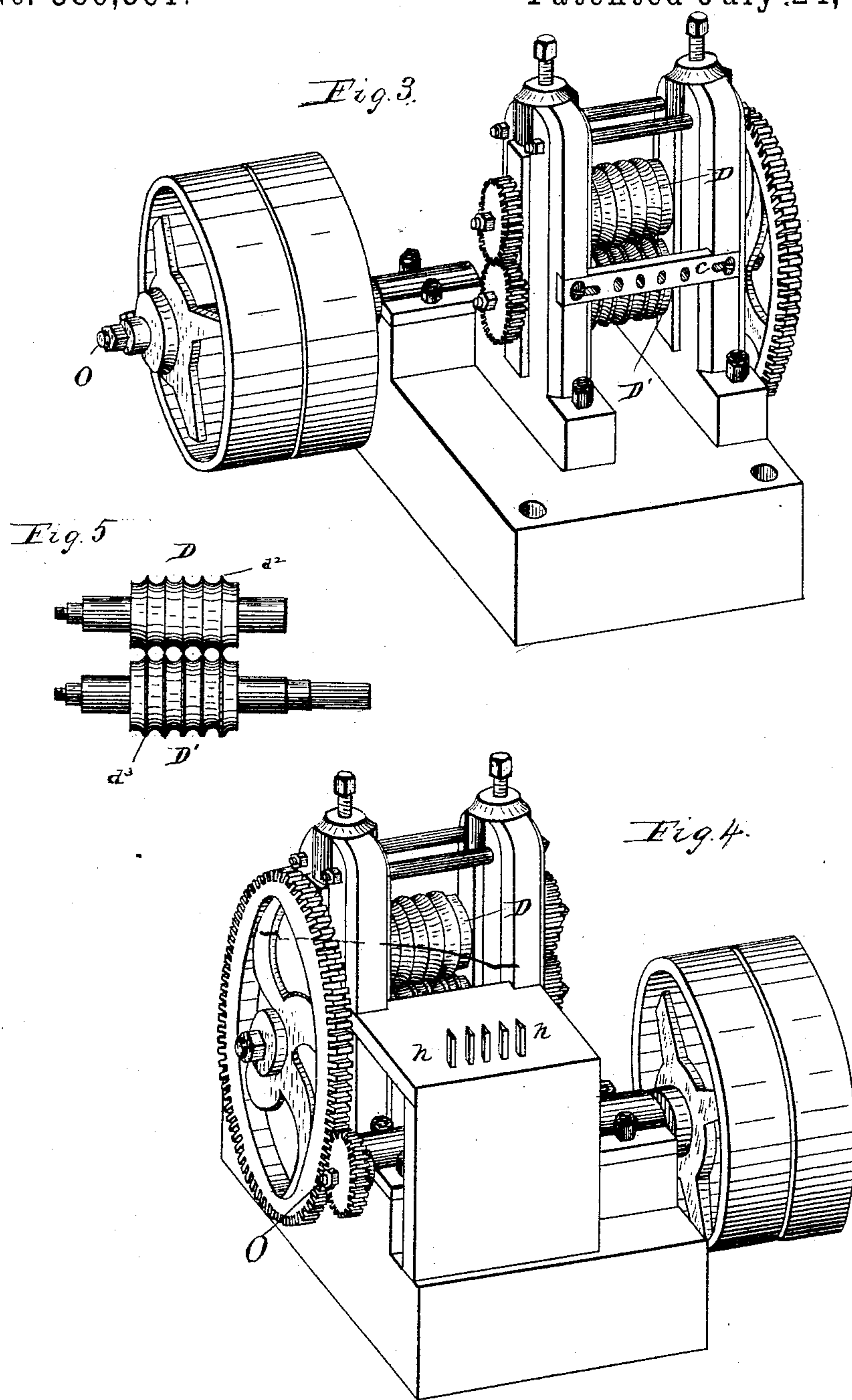
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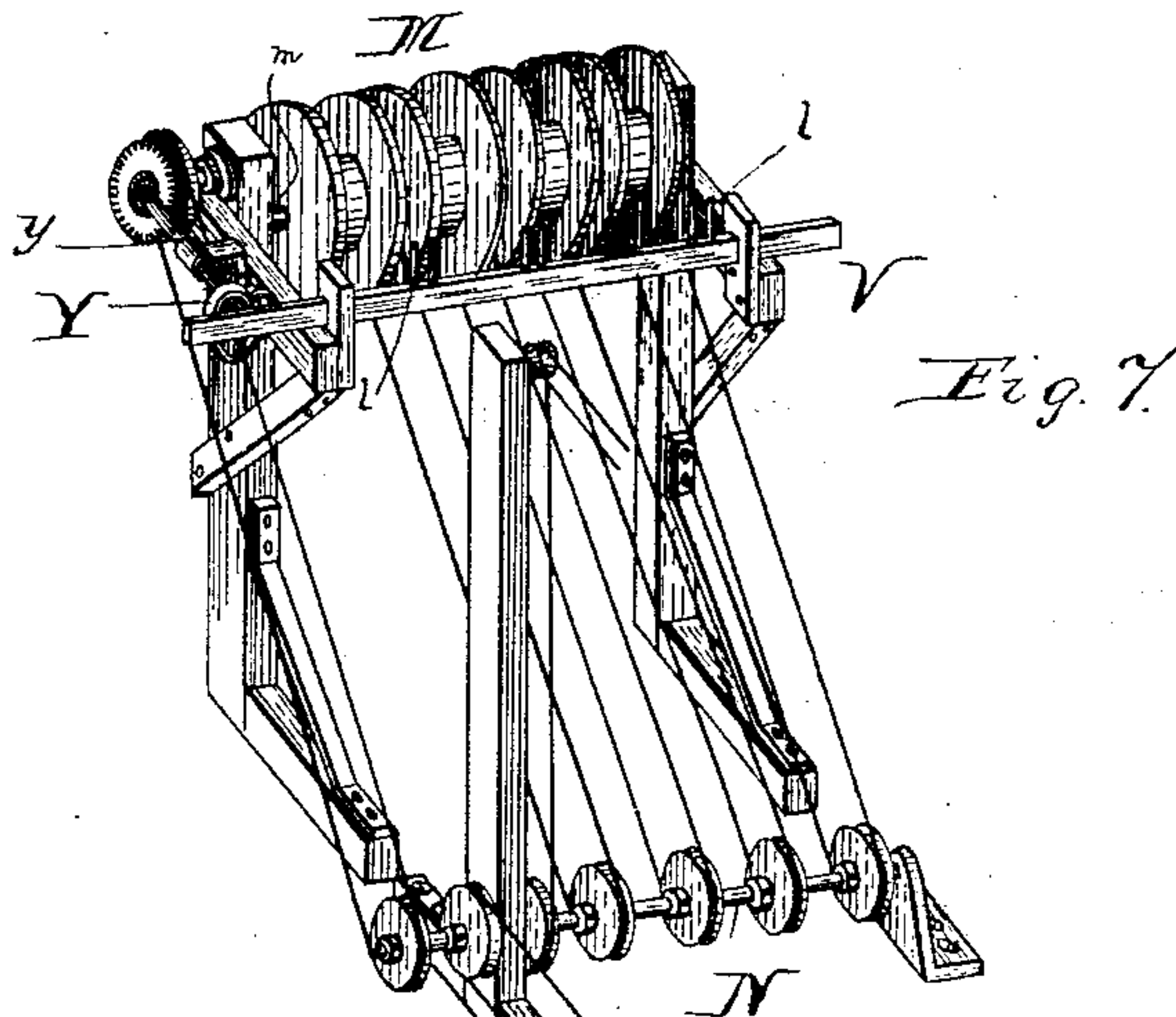
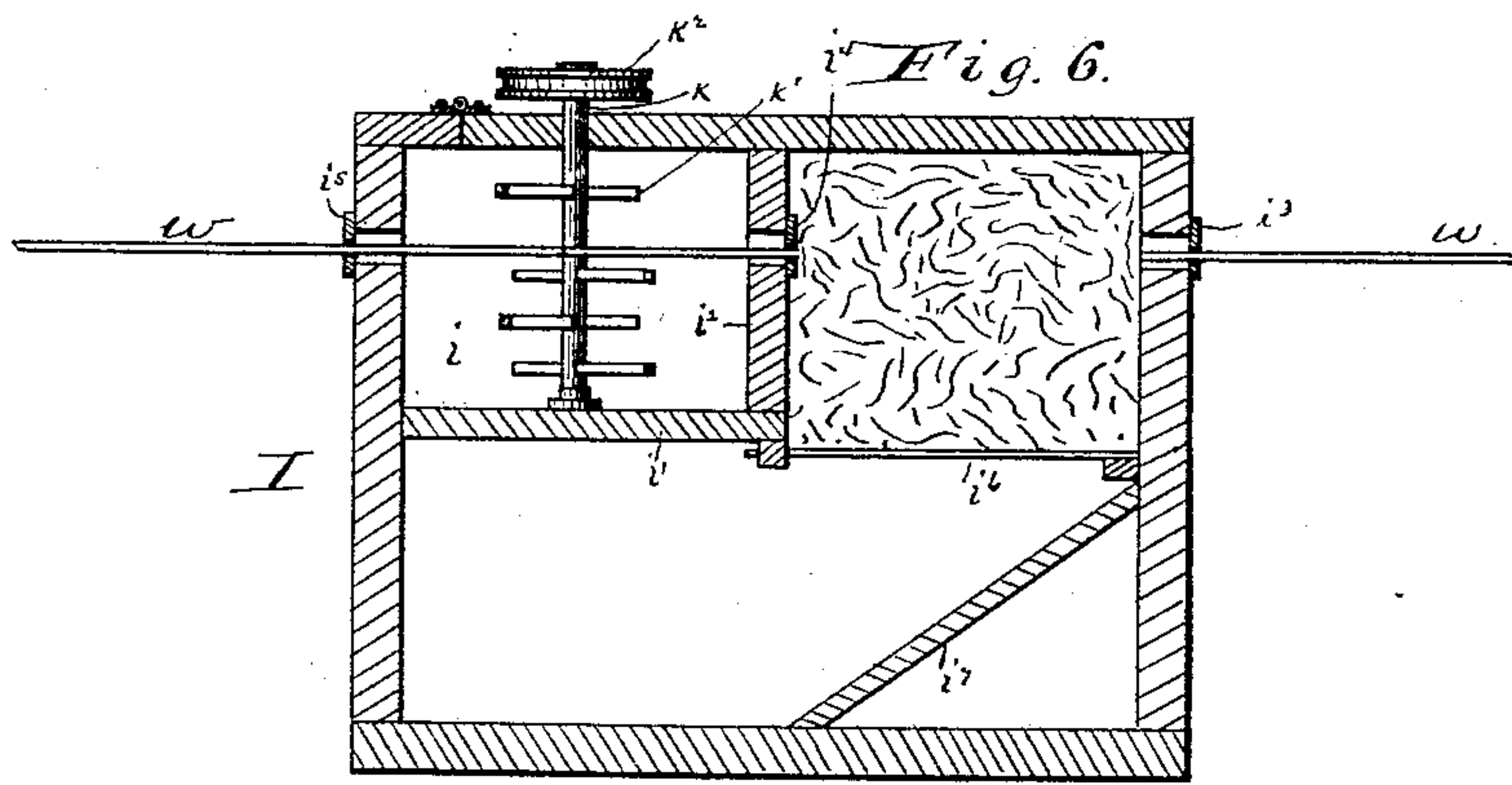
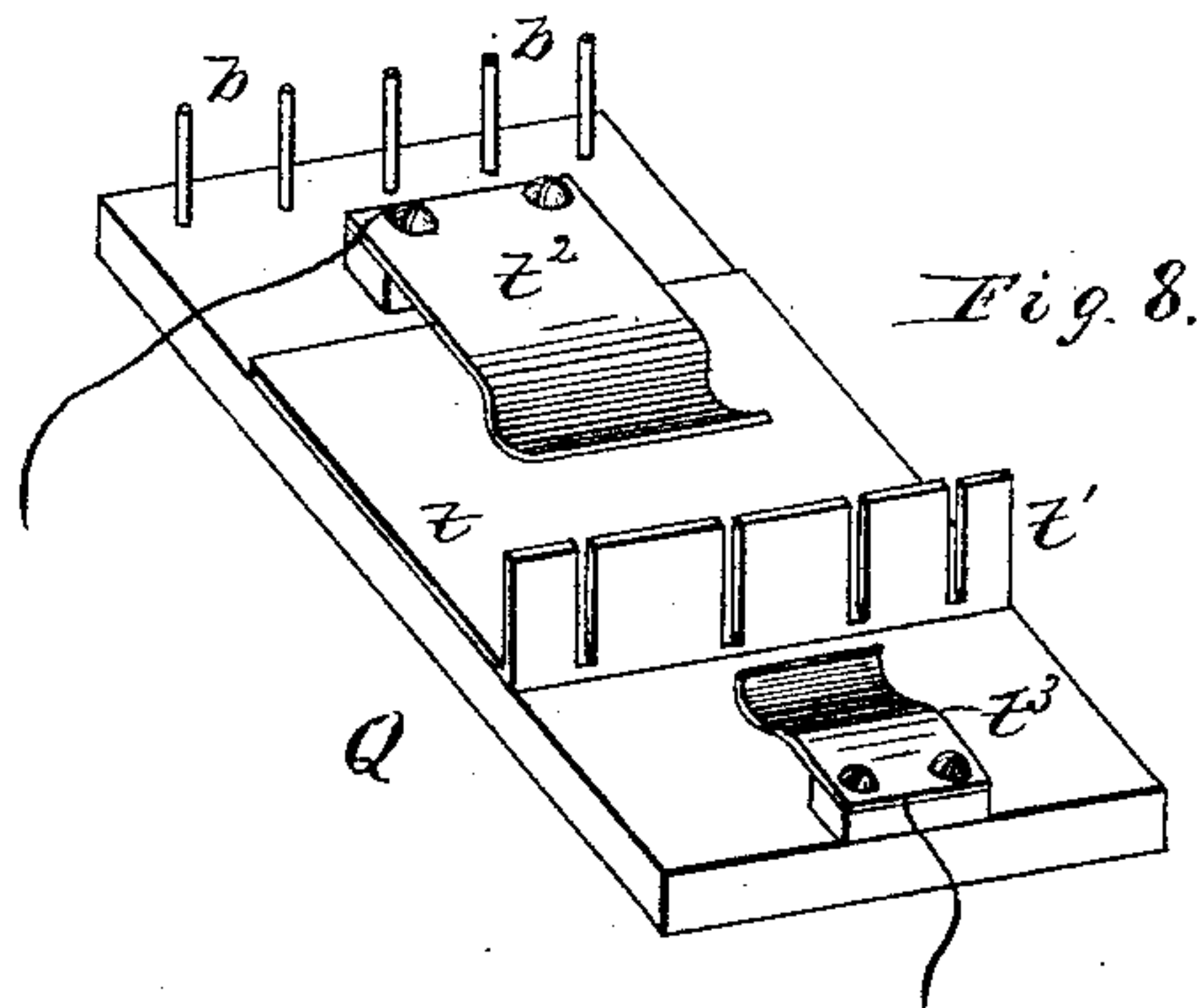
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# UNITED STATES PATENT OFFICE.

WILLIAM H. SAWYER, OF PROVIDENCE, RHODE ISLAND.

## MACHINE FOR COVERING WIRE.

SPECIFICATION forming part of Letters Patent No. 386,561, dated July 24, 1888.

Application filed November 23, 1884. Serial No. 149,122. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. SAWYER, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Machines for Covering Wires, of which the following is a specification, reference being had to the accompanying drawings.

10 This invention relates to mechanism for covering electrical conducting-wires with india-rubber or similar material to serve as an insulating and protecting cover, the main object of the improvement being to rapidly and efficiently accomplish the covering and spooling or reeling of a number of wires simultaneously as a continuous operation of a series of automatically co-operative mechanical devices.

20 The invention consists in certain novel combinations and constructions of devices, which will be readily understood from the following particular description, in connection with the accompanying drawings, in which—

25 Figure 1 is a side elevation of my machine. Fig. 2 is a top plan view. Fig. 3 is a front perspective view of the press-rolls. Fig. 4 is a rear perspective view of the same. Fig. 5 is a detail view of the rolls. Fig. 6 is a longitudinal vertical sectional view of the powder-box. Fig. 7 is a perspective view of the winding-reels, and Fig. 8 is a detail perspective view of the platform.

Referring to Figs. 1 and 2, the letter A indicates the delivery-reels, which carry the wires which are to be covered. These reels are mounted to run on rods *a*, supported by standards *a'* *a'*. From the reels the wires *w* are led between guide-pins *b*, and thence are directed in a straight course to openings or guide-holes in a metal plate, *c*, fixed horizontally to the standards *d*, which support the rolls D D', which press the rubber upon the wires. These rolls are grooved circumferentially, as clearly shown in Fig. 4, and the upper roll has its journals mounted in adjustable bearing-boxes *d'*, in the usual manner of mounting compression-rolls. The grooves of the upper roll are separated by sharp-edged ridges *d''*, while the ridges or walls *d'''*, which separate the grooves of the lower roll, are flattened a little at their circumferences, to form

faces against which the sharp-edged ridges of the upper roll may press. The guide-holes of the plate *c* direct the wires centrally through the grooves. 55

In advance of and respectively above and below the pressure-rolls are arranged two rubber-delivery reels, E and E', which rotate on pins *e*, projecting from a post, E<sup>2</sup>. Upon these reels the rubber is wound in strips, as shown at *r* *r'*, of suitable width, and guide-troughs *g* *g'* conduct these strips, respectively, over and under the perforated plate *c* to the rolls D D', so that they will pass between said rolls above and below the wires. The wires being drawn rearwardly between the rolls by means which will presently be explained, the two strips of rubber, which should be unvulcanized and adhesive, are pressed snugly upon opposite sides of the wires and between each two, so that the two strips meeting will be firmly pressed and adhere together, each wire being thus separately incased. At the same time the sharp ridges of the upper roll, D, cut the rubber, so as to separate the covered wires from each other, and thus separated they pass from the rear side of the rolls. 65 70 75

Owing to the adhesiveness of the rubber coverings of the wires, they might partially reunite if allowed to come in contact immediately after being severed, and I therefore arrange behind the rolls a series of blunt-edged vertical knives, *h*, which spread the covered wires sufficiently apart to prevent them from touching each other. From these knives the sticky covered wires pass to the powder-box I, the construction and function of which will be clearly understood from the sectional view, Fig. 5, in addition to the view in Fig. 1. At the upper front portion of the box is a compartment, *i*, separated from the other portion by a floor, *i'*, and a vertical wall, *i''*. In this vertical wall and in the end walls of the main box are transverse apertures covered by metal plates *i<sup>3</sup>*, *i<sup>4</sup>*, and *i<sup>5</sup>*, which are perforated with holes at a proper distance apart to guide the wires through the box without touching each other. At about the same level as the floor of the compartment *i*, and to the rear thereof, are a series of slats, *i<sup>6</sup>*, (or it might be a coarse wire-netting,) dividing the rear upper portion of the main box from the lower portion, and under this slatting or 80 85 90 95 100



netting is arranged an inclined plate,  $i'$ , leaning against the rear wall of the box and having its lower end resting on the bottom thereof. The compartment  $i$ , I fill to a proper depth with powdered soapstone, talc, or a similar powder, which will adhere to the rubber coverings of the wires and prevent them from sticking together when wound on spools or reels, and on the slats or netting  $i''$ , I place a mass of wool or other suitable material, through which the covered wires pass and which wipes off all surplus powder. The powder which is thus wiped off falls through the slats or netting upon the inclined plate  $i'$ , and is guided thereby to the front lower portion of the box, whence it may be removed through the doorway.

In order to prevent the soapstone or other powder from caking in the compartment  $i$ , I arrange in said compartment a stirring device consisting of a vertical shaft,  $k$ , with projecting arms  $k'$  above and below the level of the wires. The shaft is stepped in a bearing at its foot and projects above the top of the box, its upper end being provided with a pulley,  $k^2$ , around which passes a driving belt or cord,  $k^3$ , receiving motion from another pulley, which may be located as shown in the drawings or at any other suitable point.

From the rear end of the powder-box the wires pass to guides  $l$ , and thence to reels  $M$ , mounted loosely on rods or stationary shafts  $m$ . Each of these reels is provided with a pulley,  $m'$ , which is belted to a similar pulley fixed on a shaft,  $N$ , near the floor, said shaft being driven by belt-connection with the driving shaft  $O$ , which drives the lower compression-roll by direct gear-connection. The upper compression-roll is geared with the lower.

Above and a little to rear of the compression-rolls is a scrap-reel,  $P$ , driven by belt-connection with the driving-shaft  $O$ . The rubber strips are a little wider than is necessary to cover the wires, in order that a good hold may be had by the rolls for compressing the outer margins of the strips together. The marginal excess is cut off by the end ridges or cutters of the upper roll, and the two rubber scrap-slips are wound up by the reel  $P$  and may be utilized as convenient.

In front of the compression-rolls is a non-conducting platform,  $Q$ , upon which is arranged to slide a metal plate,  $t$ , having an upturned flange,  $t'$ , in which are cut vertical slits, each just wide enough for the passage of a wire without covering. The plate  $t$  is normally held stationary by a strong metal spring,  $t^2$ , which bears upon it; but if there should be a knot or kink in any wire it could not pass the comb-like flange  $t'$  of plate  $t$ , but would force said plate to slide toward and make contact with a metal strip,  $t^3$ . The strip  $t^3$  and spring  $t^2$  are respectively connected with the opposite poles of a battery,  $X$ , in circuit with which is an electric bell,  $U$ . Of course, when a kink or knot causes the plate  $t$  to touch the strip  $t^3$ , and thus close the battery-circuit, an alarm

will be sounded by the bell, and the machine may be stopped to clear the wire.

On the standards which support the receiving-reels  $M$  is mounted a sliding bar,  $V$ , carrying the guides  $l$ , for directing the wires upon the reels. Two pins or lugs (not seen in the drawings) project from the bar  $V$ , and between these pins plays a heart-wheel,  $Y$ , mounted on a shaft,  $y$ , receiving motion through belt-connection with shaft  $N$ . The heart-wheel and its connections are so timed, in the usual well-known manner, as to produce a reciprocating motion in the bar  $V$  and its guides, which will cause the covered wires to be laid in regular layers upon the receiving-reels.

In placing the rubber strips upon the reels  $E E'$ , I wind with each a strip of cotton or linen cloth saturated with paraffine, beeswax, or a resinous compound. The said strip coming between the coils of rubber prevents them from sticking together.

I am aware that machines for covering wires with rubber have heretofore been provided with grooved rollers for pressing the rubber upon the wires and severing the covered wires from each other, and I do not claim such a machine, broadly.

What I claim is—

1. In a machine for covering wire, the combination, with the standards, of a pair of rolls mounted one above the other in said standards, the upper roll having a series of peripheral grooves therein, which are separated by conical ridges having sharpened edges, and the lower roll having a series of grooves therein which register with said other grooves, and which are separated by ridges having flattened edges, substantially as described.

2. In a machine for covering wire, the combination, with a traveling covered wire, of a powder-box having a series of apertures in its sides and a compartment for containing the powder, a compartment arranged by the side of said powder-compartment for the reception of wiping material and having a slatted bottom, and a receptacle arranged beneath said bottom, substantially as described.

3. In a machine for covering wire, the combination of a powder-box having a series of perforations in its sides, a powder-compartment arranged at one side in said box, and a wiping-compartment at the opposite side, said latter compartment having a slatted bottom, and a receptacle located beneath said compartments, having an inclined plate arranged directly beneath the said slatted bottom, substantially as described.

4. In a machine for covering wire, a powder-box having a powder and a wiping compartment arranged side by side, said powder-compartment being provided with a revolving stirrer, for preventing the caking of the powder, substantially as described.

5. In a machine for covering wire, the combination of a stationary platform, a movable plate mounted thereon, having slits through which the wire passes, a metal strip situated



On said platform in the rear of said plate, and a bell having electrical connections with said plate and strip, substantially as described.

5 6. In a machine for covering wire, the combination of a non-conducting platform having a metallic clip secured thereto, a movable metallic plate on said platform and held in place by said clip, said plate having a vertical flange thereon with slits formed therein, 10 through which the wire passes, a metallic strip secured to the platform in the rear of the plate, and an electric bell having a circuit-connection with said clip and strip, whereby the bell is caused to ring by the closing of said circuit 15 caused by the occurrence of snarls in the wire forcing said plate in contact with said strip, substantially as described.

20 7. In a machine for covering wire, the combination, with the wire-reels and covering-reels, of separate guides for the covering, standards

having grooved rollers mounted thereon, one above the other, a horizontally-arranged plate having guide-openings therein, secured to said standards, a series of vertically-arranged knife-blade separators in the rear of said rolls, a 25 powder-box having powder and wiping compartments located beyond the said blades, and the winding-reels, substantially as described.

8. In a machine for covering wire, the combination, with the covering-reels and the roll- 30 ers, arranged, respectively, one above the other, of the reels P, for collecting the surplus covering, said reels located one above and the other below the said rolls, substantially as described.

In testimony whereof I affix my signature in 35 presence of two witnesses.

WILLIAM H. SAWYER.

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