(No Model.) 2 Sheets—Sheet 1.

O. WARTMANN.

CIGAR MACHINE.

No. 604,445. Patented May 24, 1898.

Fig. 1.

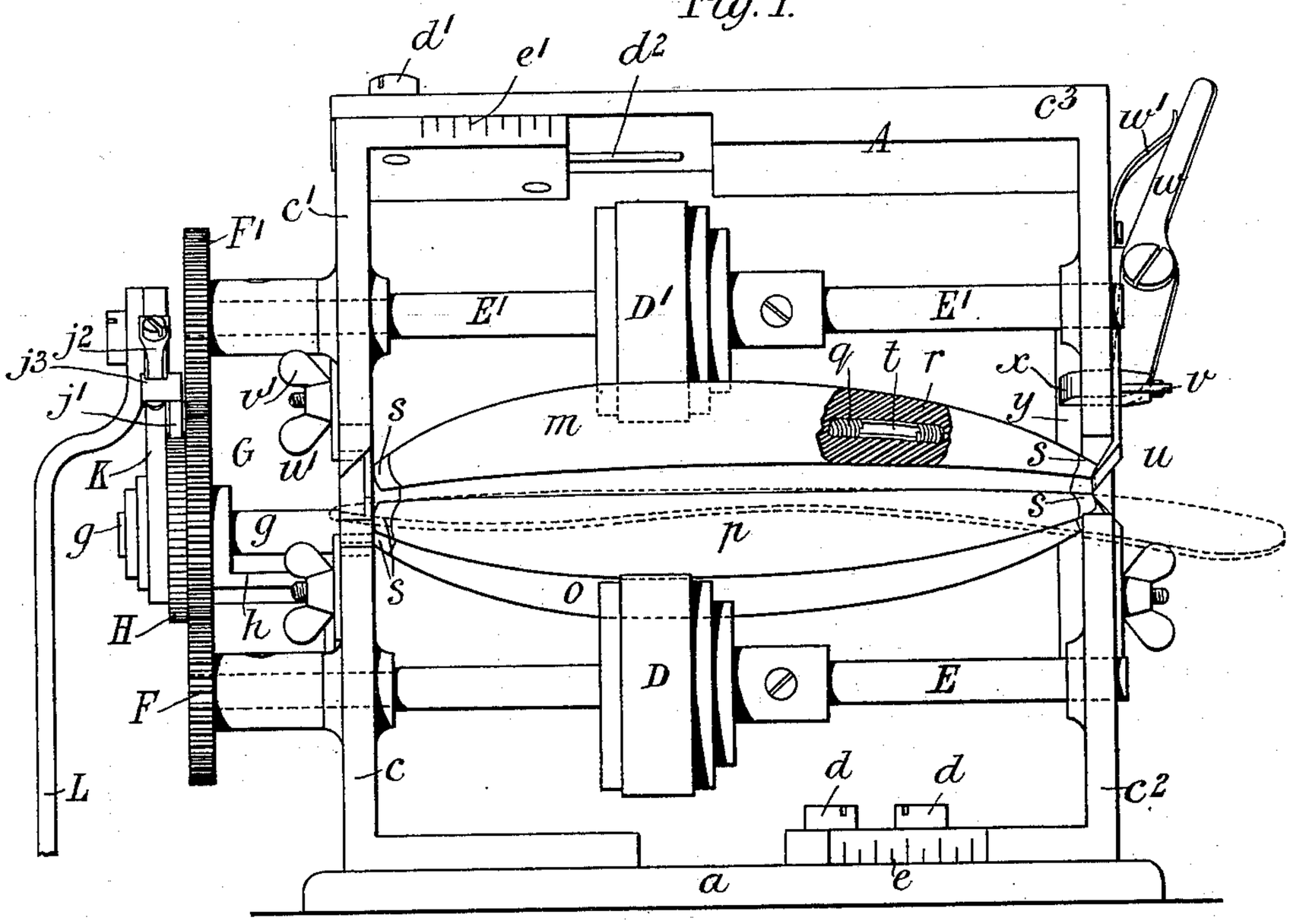


Fig. 2.

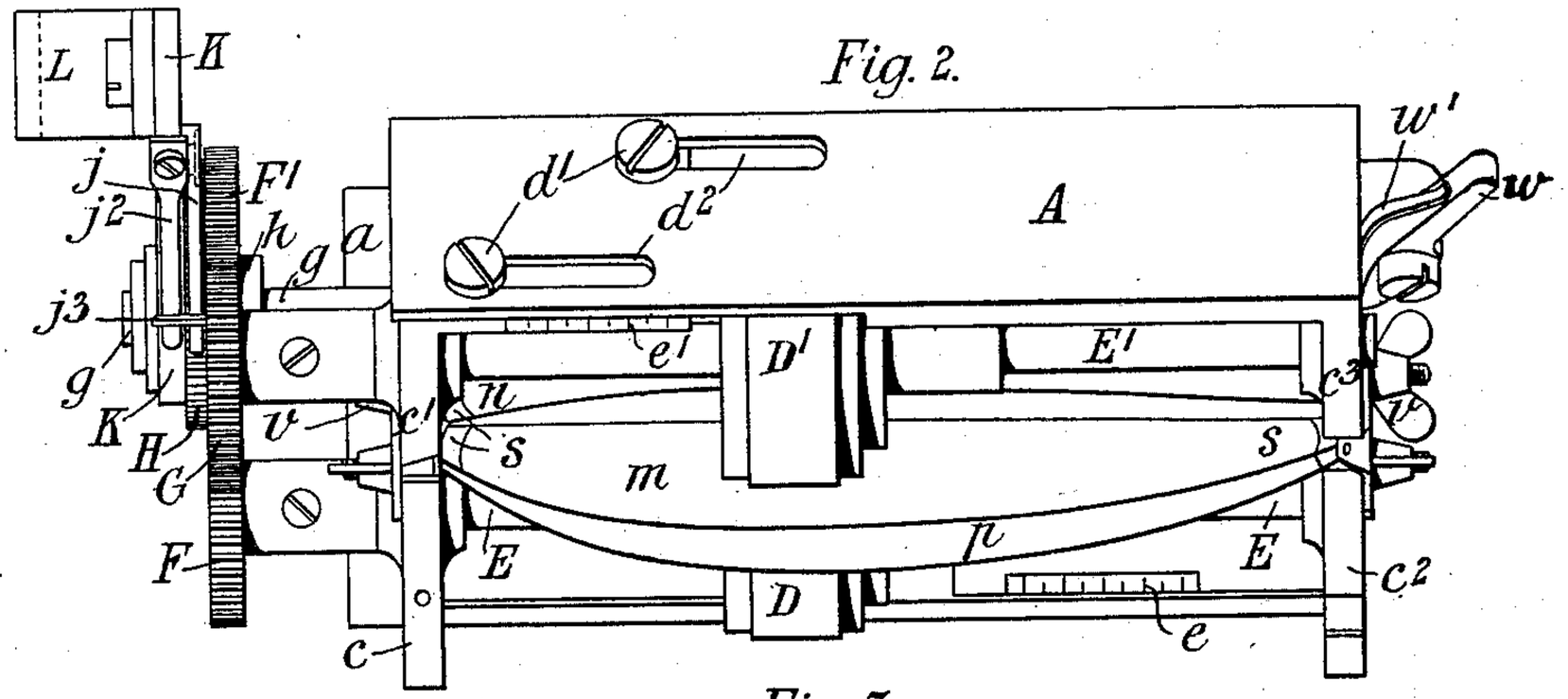


Fig. 7.

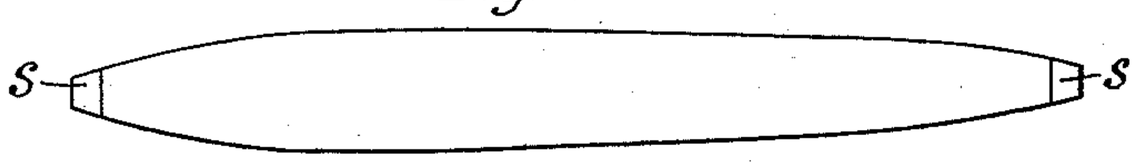


Fig. 8.

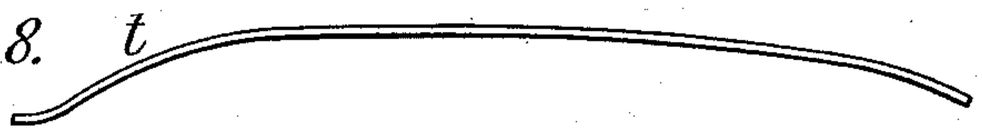
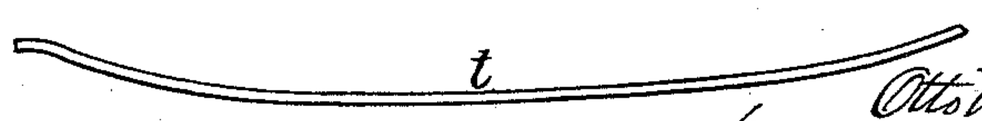


Fig. 9.



Witnesses:
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(No Model.) 2 Sheets—Sheet 2.

O. WARTMANN.

CIGAR MACHINE.

No. 604,445. Patented May 24, 1898.

Fig. 3.

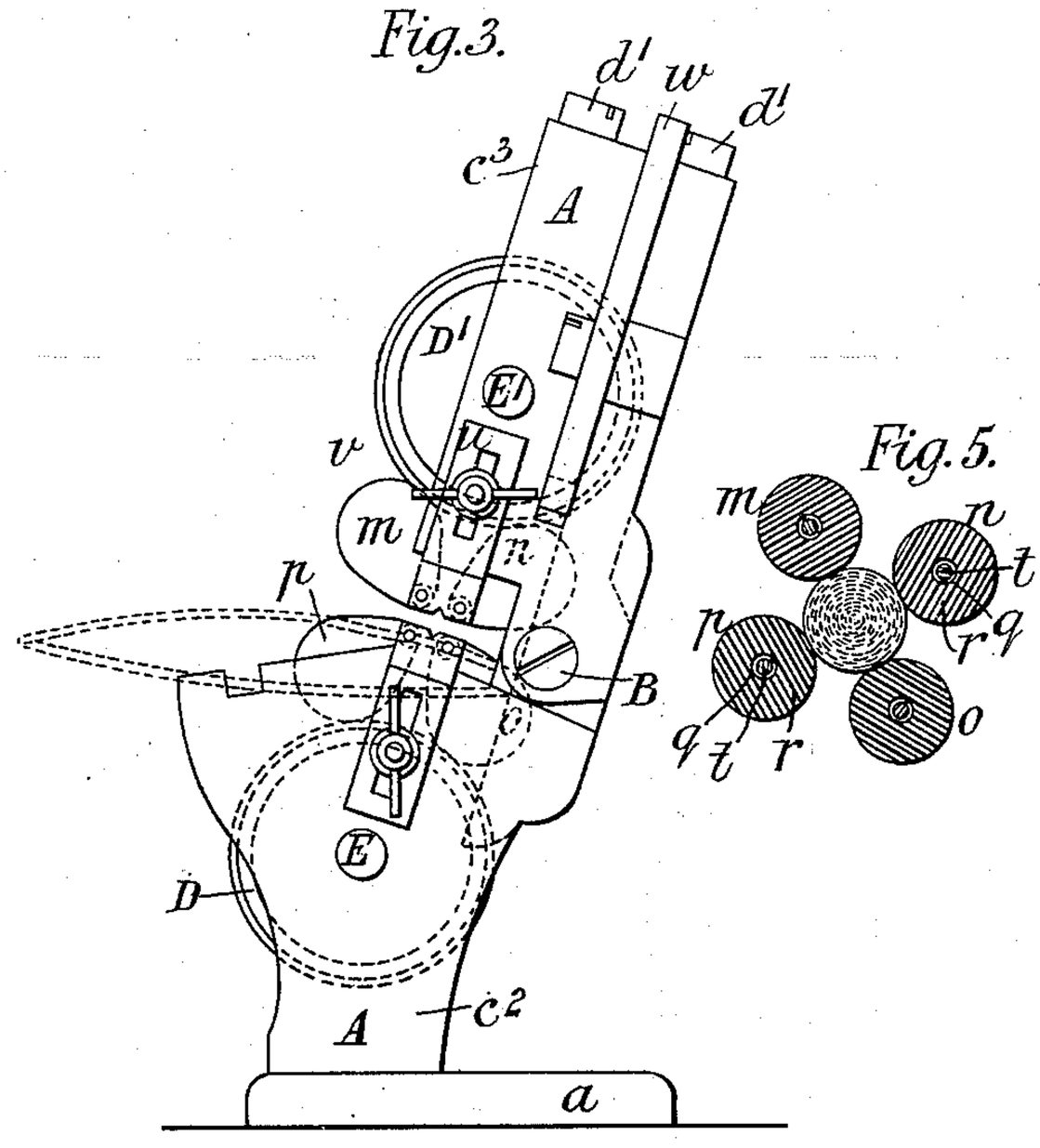


Fig. 5.

Fig. 6.

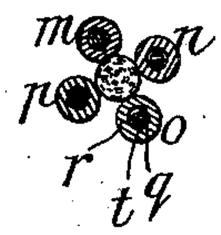
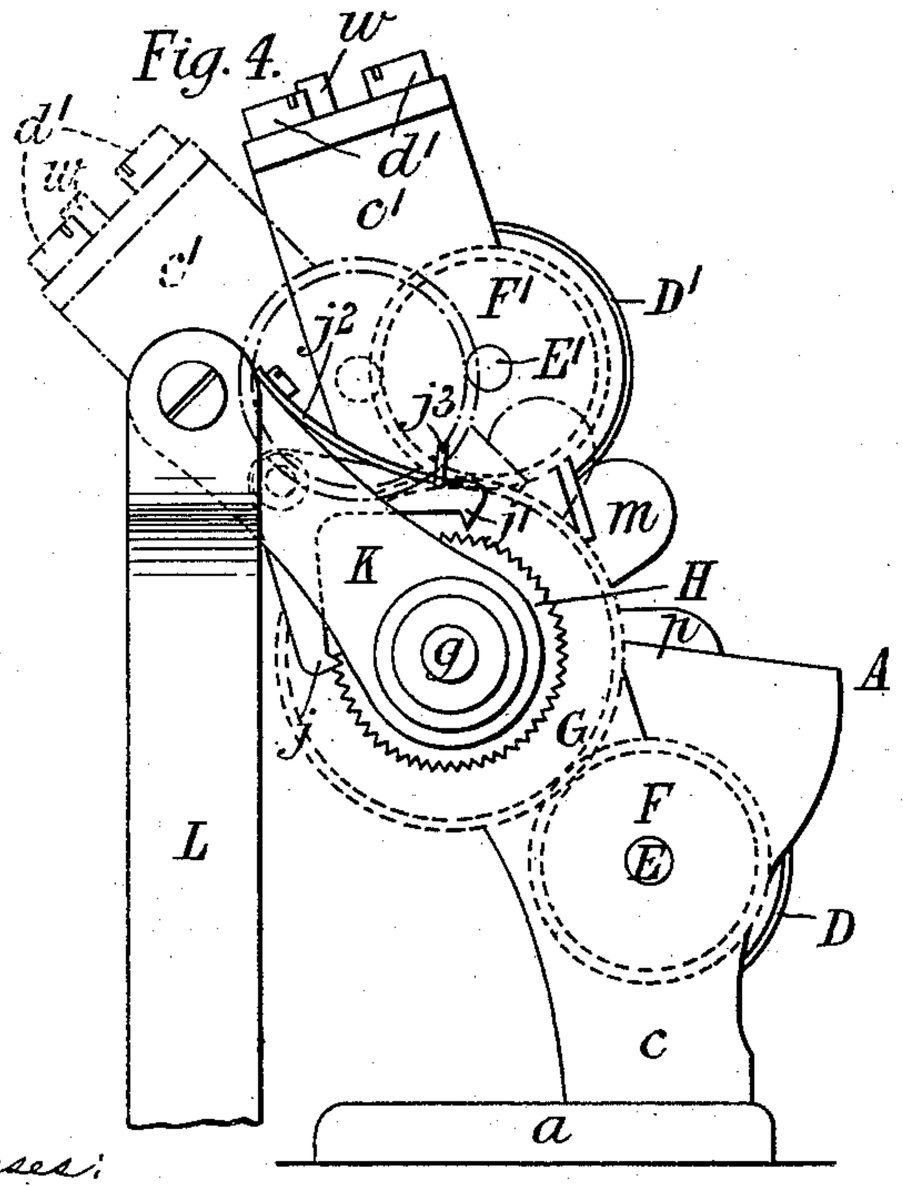


Fig. 4.



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UNITED STATES PATENT OFFICE.

OTTO WARTMANN, OF LONDON, ENGLAND.

CIGAR-MACHINE.

SPECIFICATION forming part of Letters Patent No. 604,445, dated May 24, 1898.

Application filed February 17, 1897. Serial No. 623,783. (No model.) Patented in England March 26, 1896, No. 6,638.

To all whom it may concern:

Be it known that I, OTTO WARTMANN, a subject of the Queen of Great Britain, residing at Nos. 73 to 75 Cowcross street, London, England, have invented certain new and useful Improvements in Cigar-Machines, of which the following is a specification.

Letters Patent of Great Britain, No. 6,638, have been granted to me for this invention, dated March 26, 1896.

The machine which I have invented and which forms the subject of this application has been devised for the purpose of manufacturing cigars fully shaped and tapered, so that the resultant product shall very closely resemble those made by hand.

My machine comprises an arrangement of rollers of peculiar construction which are driven by suitable mechanism and between which the materials to form the cigars are rolled and fashioned. These rollers, which constitute the central feature of my machine, are formed as exactly as is practicable in the shape of the cigar to be made and of soft or flexible material, each with a central longitudinal passage through which is passed a wire which does not rotate, but on which the roller revolves, and if the material of which the roller is made requires it I finish the ends of the roller with metallic or other tips or ferrules and bushes, and I line it throughout with or construct it upon or round a flexible lining, either metallic or otherwise, to cause it to run easily on its central wire and prevent undue wear, and I find a convenient lining may be made of a closely-wound metallic helix, which forms a flexible lining or foundation whereupon the flexible material of the body of the roller may be built up or formed; but rollers possessing the essential features indicated may be obtained by other combinations than that with the helical lining just described. The wires which pass through the rollers are not straight, but each is bent in such wise that when the roller is placed on it the latter is so bent that one side of it will exactly fit against a cigar of the desired shape. Several such rollers, preferably four, are mounted each on its central wire in a frame in such wise that one of the required cigars will exactly fill the space between them.

Referring now to the accompanying drawings, Figure 1 is a front elevation of my machine, showing parts in section. Fig. 2 is a plan of the same. Fig. 3 is an end elevation; Fig. 4, an elevation of the opposite end. Fig. 5 is a transverse section of the rollers with a cigar in process of manufacture between them, taken nearly in the middle of their length; and Fig. 6 is a similar section near one end of the same. Fig. 7 is one of the rollers detached, and which also represents the shape of the cigar which the rollers represented are fitted to produce. Figs. 8 and 9 are respectively a vertical elevation and plan of one of the wires on which the rollers work, showing, Fig. 8, the vertical and, Fig. 9, the horizontal components of the curvature of the wire.

A is a frame bolted through its base-plate *a* to the operating-table and formed with a joint at B, by which the upper portion may be inclined backward, as shown in dotted lines in Fig. 4. The part *c* of the frame is rigidly fixed to or forms one piece with the base-plate *a*, and the corresponding upper portion *c'* is jointed thereto. The part c^2 is adjustably attached to the plate *a* by the screws *d d*, which pass through slots in the part c^2. The part c^3 of the frame is jointed to part c^2 at B and is adjustably attached to the part *c'* by the screws *d' d'*, passing through the slots d^2 d^2, (shown in Fig. 2,) whereby the length of the frame may be varied to carry rollers and produce cigars of different lengths.

Motion is given to the rollers by two friction-wheels D and D', which may be conveniently faced with rubber and which are carried on spindles E E', respectively, which carry and are driven by the wheels F F', which gear with the wheel G, which works on a pin *g*, which is carried by the bracket *h*, and one end of which pin serves to unite the parts *c* and *c'* of the frame and forms the center of the joint. A ratchet-wheel H is keyed to and concentrically with the wheel G, and on the same pin *g* is mounted an arm K, which carries a pawl *j* and which is operated by a link L connected at its lower end with a treadle. (Not shown in the drawings.) By the descent of the link L and arm K the pawl *j* carries the ratchet-wheel forward, rotating the mechanism. The rising of the link and arm causes the pawl to pass backward

over the teeth, while the wheel remains stationary, and an intermittent rotary motion is thus produced which is very thoroughly under the control of the operator.

The rollers *m n o p* are required to combine flexibility with sufficient firmness of texture, and the best materials for and method of constructing them which I am acquainted with are as follows: I take a closely-wound coil *q* of preferably brass, copper, or white-metal wire and mold over it a body *r* of india-rubber of the shape of the cigar to be formed, with conical metal ferrules *s* at the ends. The rollers *m n o p* are mounted each on a sufficiently rigid wire *t*, passed longitudinally through the central coil, and which wires are permanently bent in such wise that the central space between the four rollers will exactly fit a cigar of the required shape.

The wires carrying the two upper rollers *m n* are rigidly fixed at one end to a sliding piece *u*, which is adjustably attached to the frame by a screw fixed to the frame and passing through a slot in the piece *u*, with clamping-nut *v* thereon. The other ends of these wires are removably fitted into eyes in a similarly mounted and adjustable slotted piece *u'* at the opposite side of the machine, secured with a similar screw-nut *v'*. The wires carrying the two lower rollers *o p* are mounted in the same manner on the lower half of the frame.

A lever *w* pressed forward by the spring *w'* and carrying a pin *x* with one inclined face engages with an extension *y* of the lower part c^2 of the frame and locks the upper portion in its forward—*i. e.*, its normal—position, as shown in full lines in Fig. 4. When the tail end of the lever *w* is pressed inward, the locking-pin *x* is withdrawn and the upper half of the machine can be inclined backward, as shown in dotted lines in Fig. 4, in order to allow of the introduction of the raw material or the removal of the cigar.

The pawl *j* I prefer to construct with a second arm *j'*, which is brought into action and the arm *j* thrown out by placing the spring j^2 on the opposite side of the stud j^3, and if then the arm K be brought over so that the link L is on the other side of the center *g* the direction of rotation is reversed.

A small table (shown in dotted lines in Figs. 1 and 3) is removably attachable to the frame and serves to facilitate the introduction and manipulation of the covering-leaf.

In using this machine the operator places his or her foot on the treadle connected with the link L, the upper portion of the machine is turned back, and a proper quantity of filling-tobacco is placed in the central space between the rollers. The upper part of the machine is pulled forward and the foot raised and depressed a few times. By this the filling is sufficiently rolled, and then the bunch wrapper or binder is introduced between the rollers and by further rotation rolled smoothly round the fillers. The covering-leaf or wrapper is introduced and rolled round the bunch in the same way, it being stretched by the operator as it passes in between the rollers. Before that part of the covering-leaf which forms the point of the cigar enters the rollers it is slightly pasted and then allowed to enter, thus forming a neat point to a well-finished cigar.

It will be observed that by using rollers which are in every part of the same diameter as the corresponding part of the cigar or if of greater or less diameter are of such proportionate configuration that the circumference of the roller bears in every part one uniform ratio to the circumference of the corresponding part of the cigar a perfect rolling contact is obtained and freedom from the objectionable slipping and twisting between the surfaces which necessarily take place in machines in which similar proportions do not obtain.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a cigar-making machine, flexible rollers having helical wire-coil foundations, each roller having a continuous surface without division or joint, and of the same diameter throughout as the corresponding part of the cigar to be produced, and means for rotating said rollers acting frictionally upon said rollers intermediate their respective ends, in combination with fixed mandrels supported at both ends on which said rollers are mounted and adapted to revolve, said mandrels being curved so that the rollers fit against and shape the cigar in process of formation, substantially as set forth.

2. In a cigar-making machine, flexible rollers having helical wire-coil foundations, each roller having substantially the shape and size of the cigar to be produced, and means for rotating said rollers acting frictionally upon said rollers intermediate their respective ends, in combination with fixed curved mandrels supported at both ends on which said rollers are mounted, each mandrel being so shaped that one side of the roller thereon conforms to the contour of the cigar in process of formation, substantially as set forth.

3. In a cigar-making machine, flexible rollers having helical wire foundations, each roller having a continuous surface without section or joint and being in every part substantially of the same diameter as the corresponding part of the cigar to be produced, in combination with fixed mandrels on which said rollers are mounted, each mandrel being supported at both ends and so shaped that one side of the roller thereon conforms to the contour of the product, friction-wheels in contact with said rollers intermediate their respective ends, and ratchet-and-pawl gearing whereby intermittent revolution of said friction-wheels is produced, substantially as set forth.

4. In a cigar-making machine, flexible roll-

ers each of which has a continuous surface without section or joint and substantially the size and shape of the cigar to be produced, in combination with rigid curved mandrels on which said rollers are mounted, each mandrel being supported at both ends and so formed that one side of the roller thereon corresponds with and fits the contour of the cigar, friction-gearing intermediate the respective ends of said rollers and in contact therewith, and ratchet-and-pawl mechanism for actuating said friction-gearing, substantially as set forth.

5. In a cigar-making machine, the combination of flexible rollers, rigid mandrels supported at both ends on which said rollers are mounted, and friction driving-gear in contact with said rollers intermediate their respective ends, substantially as set forth.

6. In a cigar-making machine, the combination of flexible rollers, rigid mandrels supported at both ends on which said rollers are mounted, friction driving-gear in contact with said rollers intermediate their respective ends, and ratchet-and-pawl mechanism whereby intermittent revolution of said friction-wheels is produced, substantially as set forth.

7. In a cigar-making machine, the combination of continuous-surfaced shaping-rollers, and friction driving-gear in contact with said rollers intermediate their respective ends, substantially as set forth.

8. In a cigar-making machine, the combination of shaping-rollers, friction driving-gear in contact with said rollers intermediate their respective ends, and ratchet-and-pawl mechanism whereby intermittent revolution of said friction-wheels is produced, substantially as set forth.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

OTTO WARTMANN.

Witnesses:
PERCY E. MATTOCKS,
P. P. PIGGOTT.