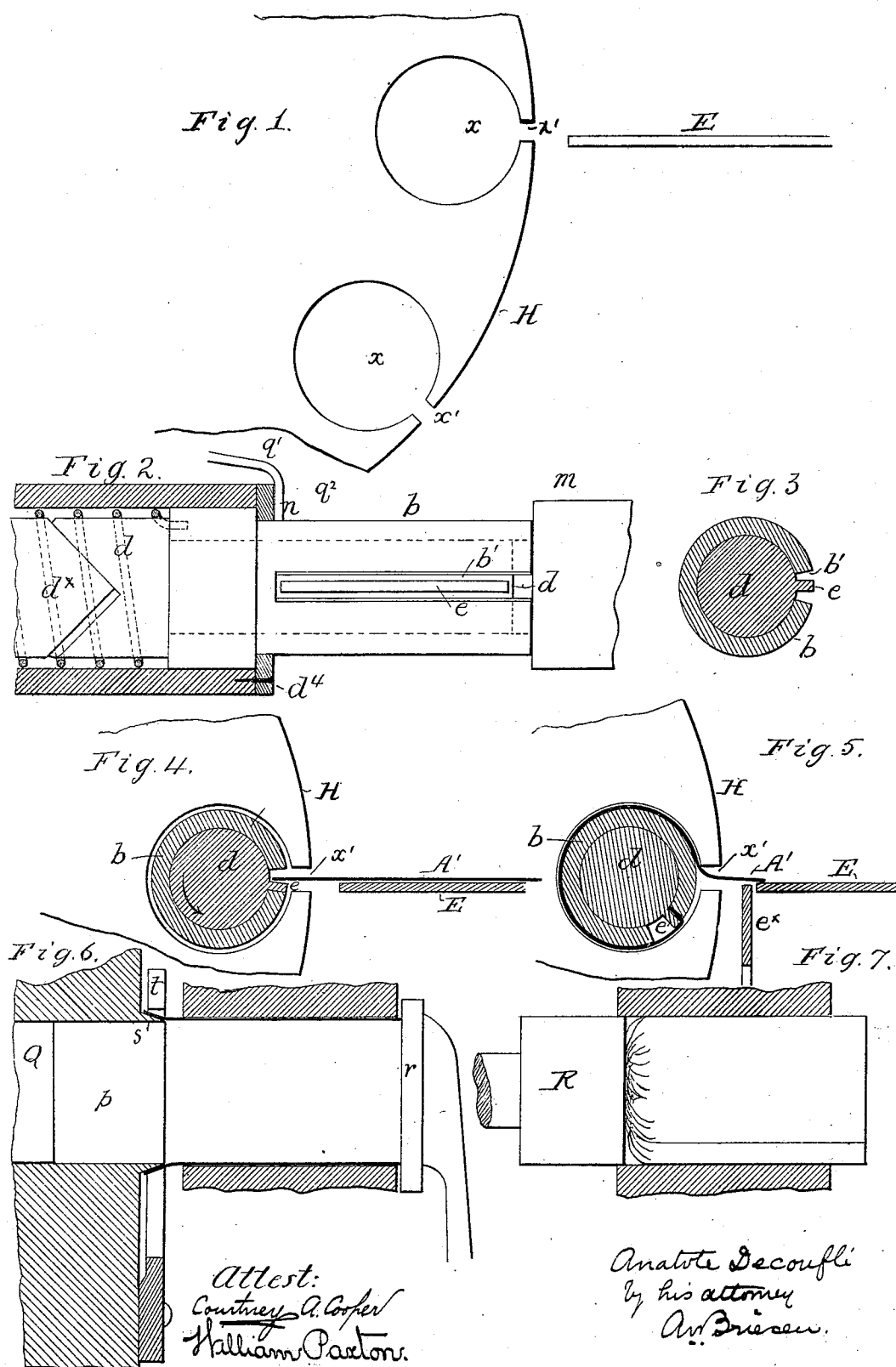


A. DECOUFLÉ.
Cigarette Machine.

No. 230,177.

Patented July 20, 1880.



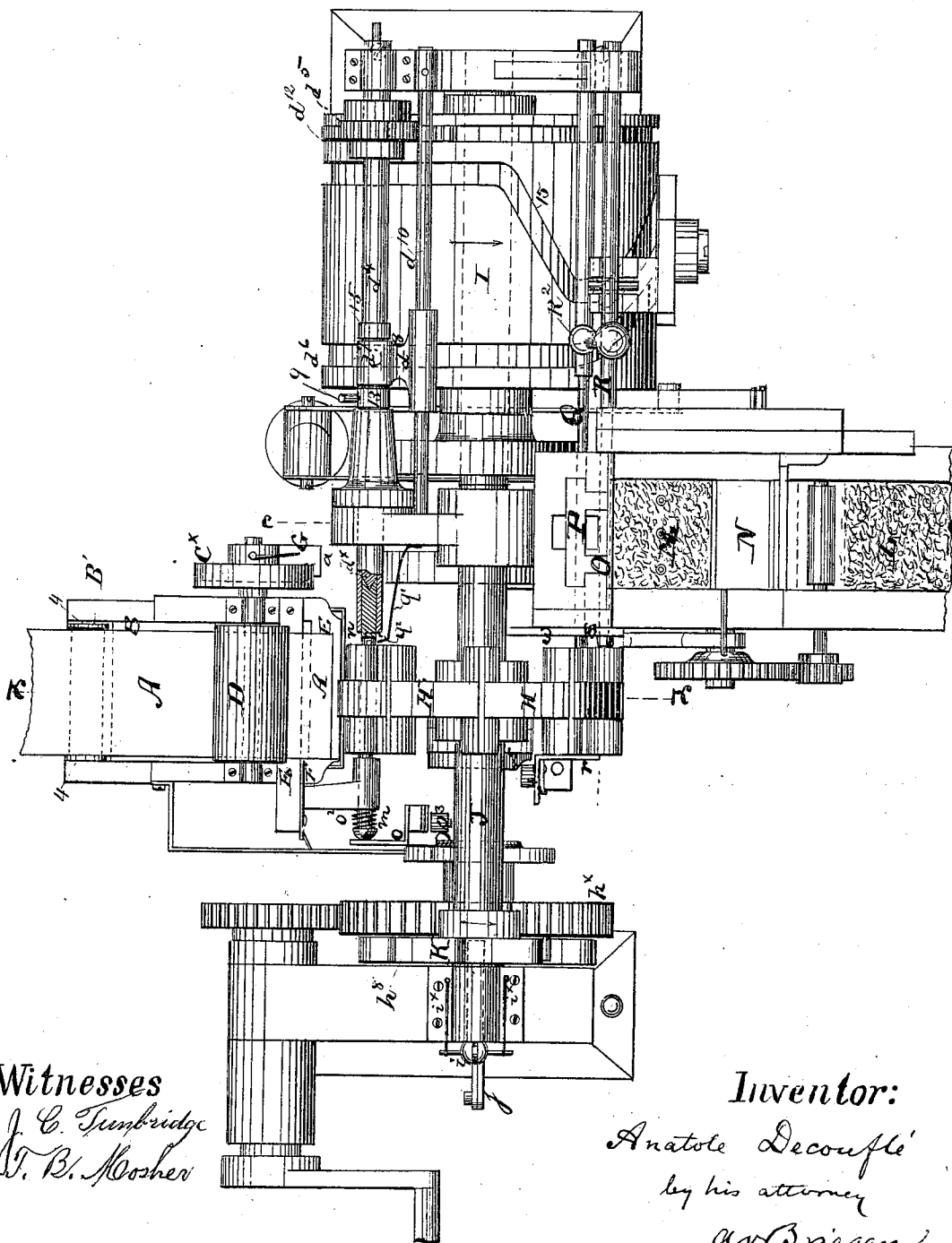
A. DECOUFLÉ.
Cigarette Machine.

5 Sheets—Sheet 2.

No. 230,177.

Patented July 20, 1880.

Fig: 8.



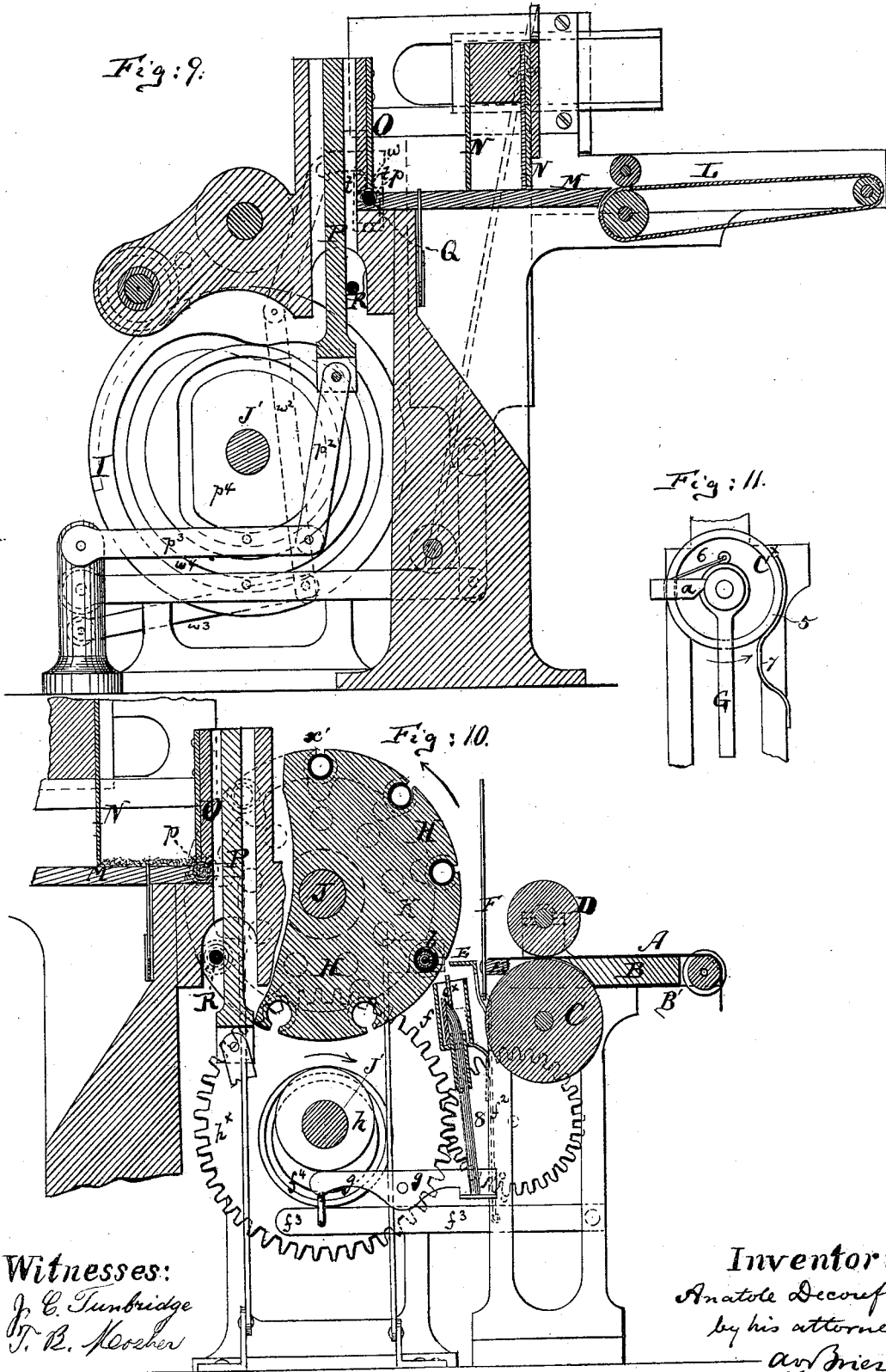
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A. DECOUFLÉ.
Cigarette Machine.

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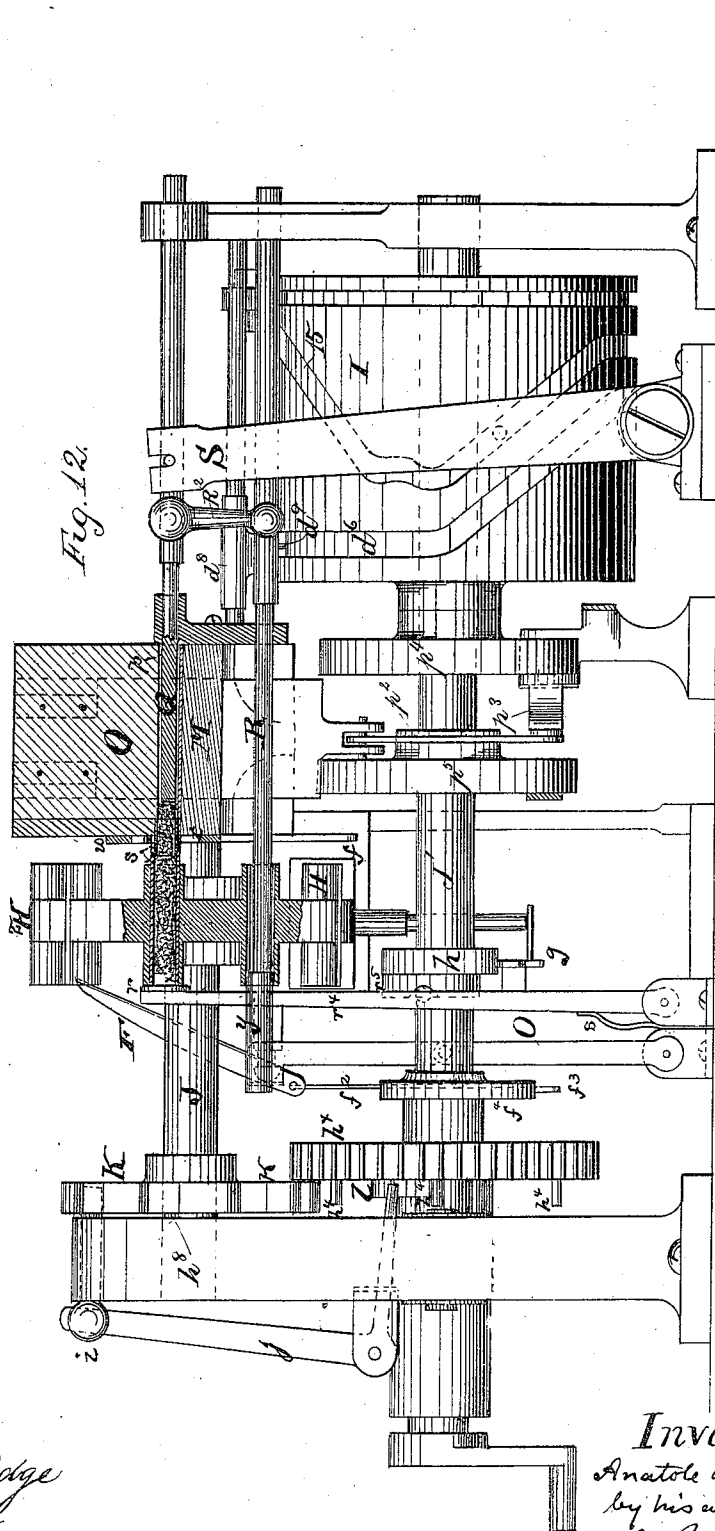
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A. DECOUFLÉ.
Cigarette Machine.

5 Sheets—Sheet 5.

No. 230,177.

Patented July 20, 1880.

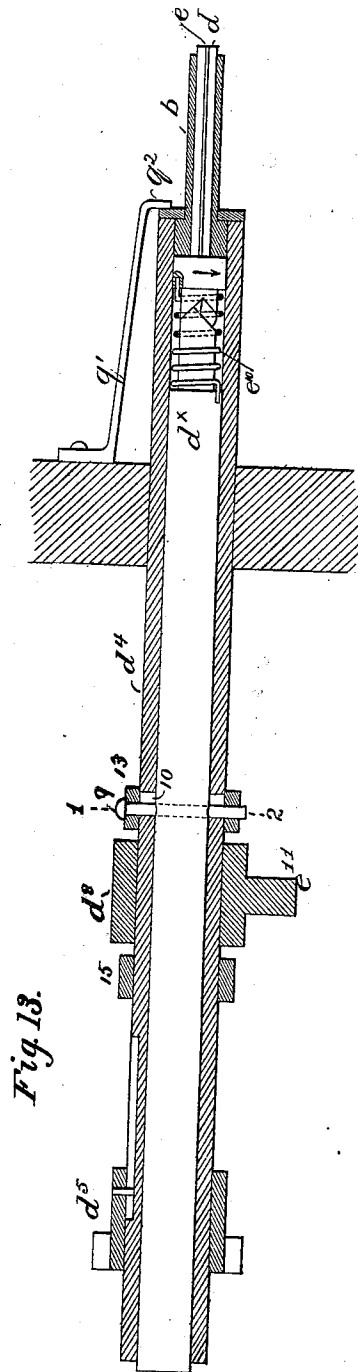


Fig. 13.

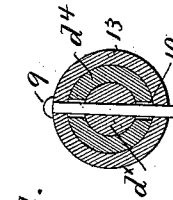


Fig. 14.

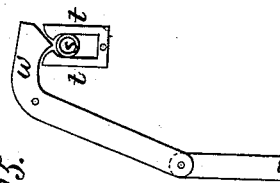


Fig. 15.

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A. B. Brier

UNITED STATES PATENT OFFICE.

ANATOLE DECOUFLÉ, OF PARIS, FRANCE.

CIGARETTE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 230,177, dated July 20, 1880.

Application filed January 11, 1879.

To all whom it may concern:

Be it known that I, ANATOLE DECOUFLÉ, of Paris, in the Republic of France, have invented a new and Improved Machine for Making Cigarettes, of which the following is a specification.

This invention is an apparatus for making cigarettes, embracing devices for severing the paper, pasting the edges of the sheets, rolling the same into tubes, measuring the tobacco, and filling and discharging the tubes.

In the drawings forming part of this specification, Figures 1 to 7 are enlarged views, illustrating the construction and operation of the devices more immediately connected with the forming of the paper tube and filling and discharging of the same. Fig. 8 is a plan view of an apparatus in which such devices are embodied. Fig. 9 is a sectional view on the line *cc*, Fig. 8. Fig. 10 is a sectional view on the line *kk*, Fig. 8. Fig. 11 is a detached view of the devices for operating the paper-feed wheel; Fig. 12, a side elevation, partly in section, of the apparatus; Fig. 13, an enlarged section of the tube-forming devices and adjuncts; Fig. 14, a cross-section on the line 1 2, Fig. 13; Fig. 15, a detached view of the nipple, gripping-fingers, and operating-lever.

Before referring to those features of the machine which may be varied as circumstances render necessary, I will describe the construction and operation of the general features which are essential to the formation and filling of the paper tube or wrapper of a cigarette.

In a carrier, *H*, which may be of any suitable construction, (a disk being shown,) is a series of pockets, *x*, each with a slot, *x'*, at the outer side. The carrier is moved to bring the pockets successively opposite a table, *E*, across which is carried the sheet *A'* of paper from which the tube or wrapper is to be made. Into each pocket, as it is brought opposite the table *E*, is introduced a spindle, *d*, carrying a sleeve, *b*, having a longitudinal slot, *b'*, somewhat wider than a feather, *e*, which extends into said slot from the spindle *d*.

When the parts are in the position shown in Fig. 4, and the end of the sheet *A'* is passed above the feather *e*, between it and the upper edge of the slot *b'*, and the spindle *d* is re-

volved in the direction of its arrow, the edge of the sheet will first be gripped between the feather and the edge of the sleeve. The latter will then be carried with the spindle and the paper be coiled around the sleeve, as shown in Fig. 5. A shoulder, *n*, on the sleeve at one side, and a spring-plunger, *m*, at the other, guide the sheet and prevent the paper from twisting while being coiled. As the end of the sheet passes from the table *E* it is touched by a pasting-blade, *e'*, moving upward, and is thus gummed at the edge, which is then brought against and pasted to the portion on the sleeve as the latter continues its revolution. A slight backward rocking of the rod *d'* carries the feather *e* away from the edge of the slot *b'*, releasing the edge of the paper, and the spindle is then withdrawn longitudinally, the paper tube being held in place by the end *q'* of an arm, *q'*, projecting from the frame, as shown in Figs. 2 and 8. The tube thus pasted is held in the pocket, while the spindle and its sleeve are withdrawn by a spring, *q'*, attached to the frame, and having a bent end, *q''*, which bears against the spindle opposite the end of the tube, both ends of which, owing to the paper being wider than the carrier, extend beyond the latter. The carrier then moves until the tube is opposite an annular nipple, *s*, surrounding the end of a pocket, *p*, charged with tobacco, and a plate, *r*, being then brought against the outer end of the tube, forces the latter longitudinally until its inner end embraces the nipple, as shown in Fig. 6, against which the tube is clamped by gripping-fingers *t*. A plunger, *Q*, then moves forward and carries the charge of tobacco into the tube, and the fingers *t* release the tube to permit the further movement of the same, with the contents, after it is filled, to carry it from the nipple *s* (or the nipple is withdrawn) to permit the carrier to bring the charged tube opposite a plunger, *R*, which, when moved forward, first mashing and closing the end of the tube and then forcing the latter out of the pocket.

These various devices may be combined in many different forms of mechanism, the accompanying drawings illustrating one construction of apparatus which may be used.

The frame supports two parallel shafts, *J J'*,

and on the former is mounted the carrier H. The table E is arranged opposite the edge of the carrier, and its frames support a feed-roll, C, and pressure-roll D, between which is fed the strip A, passing from a suitable roll, and guided by the flanges 4 4 of a roller, B'.

The roller C receives an intermittent rotary motion from a gripping-pawl, *a*, jointed and hung by a spring-band, *b*, to a lever, G, and slotted to receive the rim 5 of a wheel, *C*^x, mounted on the shaft of the roller C. The pawl grips and turns the wheel as the lever swings in the direction of the arrow, Fig. 4, but moves without the wheel as the lever returns to its position, a spring, 7, preventing the wheel from turning back.

A knife, F, pivoted to the edge of the table, is operated intermittently to sever the sheet A' from the strip A by a cam, *f*⁴, on the shaft J', through the medium of a lever, *f*³, and rod *f*².

The paste-box *f* is arranged beneath the edge of the table E, and the blade *e*^x is connected to a rod, S, operated by a cam, *h*, on the shaft J', through the medium of a lever, *g*.

The wheel K, having notches *h*⁸, corresponding to the pockets of the carrier, is arranged on the shaft J, and on each revolution of the shaft J' is turned a distance equal to the distance between the pockets *x* by a pin, *h*⁴, on a toothed wheel, *h*^x, on the shaft J', which pin enters said notches successively as the wheel *h*^x revolves.

A bolt is moved forward into the upper notch, *h*⁸, as the pin *h*⁴ leaves the lowest by springs *i*^x, thus locking the carrier while the tube is formed, said bolt being then retracted by a crank-lever, *j*, connected to the bolt and tilted by a cam, *l*, on the wheel *h*^x.

The hubs of the spindle *d* and sleeve *b* fit a socket in the end of a hollow shaft, *d*⁴, within which is a rod, *d*^x, having a V-shaped end adapted to a V-shaped socket in the hub of the spindle.

The rod *d*^x is provided with a cross-pin, 9, extending through slots 10 in the shaft *d*⁴, as shown in Figs. 13 and 14, so that the rod may be slightly moved longitudinally independently of the shaft. This longitudinal movement is made the means of slightly turning the spindle, with its feather, to gripe and release the edge of the sheet of paper forming the cigarette tube or cover, as the V-shaped end of the rod *d*^x, bearing against the inclined face of the socket of the spindle, will turn the latter as the rod is forced into said socket. A coiled spring, *e*¹⁰, secured at one end to the rod *d*^x and at the other to the hub of the spindle *d*, tends both to separate the two and to turn the spindle in the direction of its arrow to release the gripe upon the paper when the rod *d*^x is drawn away from the spindle.

The longitudinal movements of the rod *d*^x are effected by a slide, *d*⁸, carried on the shaft *d*⁴ of a cylinder, I, into the groove of which a projection, *e*¹¹, from the slide extends. The slide has a limited movement between collars

13 15 on the shaft *d*⁴, the former being fixed and the latter sliding and carrying the pin 9.

When the cylinder I carries the slide *d*⁸ forward in the direction of the arrow it strikes the ring 13 and the shaft *d*⁴, and its rod and spindle move forward until the spindle is in the pocket *x* of the carrier H. The sheet A' is passed into the mouth of this pocket and into the slot *b*' as the shaft *d*⁴ strikes the end *q*² of the arm *q*', the shaft being thus arrested, while the slide *d*⁸ continues its movement sufficiently to press the beveled end of the rod *d*^x against the beveled face of the hub of the spindle *d* to turn the latter to gripe the paper.

After the paper is rolled into a tube the slide *d*⁸ is moved in a reverse direction, when the spring *e*¹⁰ will, before the shaft *d*⁴ moves, force the rod *d*^x into the direction of its arrow and simultaneously turn the shoulder *d* in the direction of its arrow, thus carrying the feather from the edge of the slot *b*'. The slide will then strike the ring 15 and carry the shaft, rod, and spindle out of the rolled tube, the latter being held by abutting against the bent end *q*² of the arm *q*'.

The rotary motion of the shaft *d*⁴ is imparted by a toothed segment, *d*¹², on the cylinder I, engaging with a pinion, *d*³, through which the shaft *d*⁴ can slide without turning independently thereof. The segment *d*¹² is short, and so arranged as to begin to turn the shaft *d*⁴ as soon as the sheet A' is gripped, and to continue the revolution until the sheet is rolled into a tube, when the motion ceases by the segment passing from contact with the pinion *d*³.

I wish to have it understood that, instead of turning the spindle *d* within the sleeve *b* to gripe the paper, the sleeve *b* may be turned upon the spindle, which remains stationary until the paper is gripped.

On that side of the machine opposite the table E are arranged a table, M, and rollers carrying an endless belt, L, that feed the tobacco to the table. A slide, N, moving intermittently, feeds sufficient tobacco for filling a single cigarette into a recess at the end of the table M.

O is a vertical slide with a grooved lower edge, which, with the recess below, forms a pocket, *p*, for holding the charge of tobacco, the said slide being moved up and down from a cam, *p*⁴, on the shaft J', through the medium of a lever, *p*³, and connecting-rod *p*².

The plungers Q and R slide in bearings in the frame, are connected by a cross-head, R², and are moved longitudinally by a lever, S, having a pin extending into a cam-groove, 15, in the cylinder I.

The spring-plunger *m* is thrown forward by the action of the lever *o*, provided with a pin, which is struck by a projection, *o*³, on the cam *f*⁴, and the plate *r* is carried by a lever, *r*⁴, operated by a cam, *r*⁵, and spring *r*⁶.

The gripping-fingers *t* have inclined upper ends, which engage the wedge-shaped end of a lever, *w*, operated by a cam, *w*⁴, through the medium of a lever, *w*³, and rod *w*², the descent

of the lever *w* forcing apart the fingers to release the tube from the nipple.

I claim—

1. The combination of the feed-drums C D with the table B on one side, and the slotted table E on the opposite side of said feed-drums, and with the knife F and carrying-wheel H, having cavity in line with the two tables, substantially as herein shown and described.

2. The combination of the glue-box *f*, carrying the reciprocating plate *e*^x, with the flat slotted table E, knife F, and receiving-wheel H of a cigarette-machine, all arranged so that the paper is gummed on its passage from the table to the receiving-wheel and immediately after it is cut, substantially as and for the purpose specified.

3. The combination of the carrying-wheel H and tube *b*, having shoulder *n*, and of the rod *d* and tongue *e* with the pin *m*, all arranged so that the pin *m* and shoulder *n* will be in contact with opposite sides of the wheel H when the tube *b* is within said wheel, substantially as herein shown and described.

4. The combination of the carrying-wheel

H, having a series of circular cavities for containing within each a complete cigarette-wrapper, with the perforated wheel K on the same shaft, and with the bolt *i*, lever *j*, and cam *l* on main driving-shaft, all arranged to insure automatically the precise action and motion of the carrier-wheel, substantially as herein shown and described.

5. The combination of the carrier-wheel H, carrying the paper tube, with the nipple *s*, pinching apparatus or spring-nippers *t*, and the V-shaped lever *w*, for opening the spring-nippers *t*, and thereby releasing the paper tube from the nipple *s*, substantially as and for the purpose described.

6. The combination of the plate *r* with the carrier-wheel H and plunger Q, and with the nipple *s* and pinching apparatus *t*, substantially as specified.

The foregoing specification of my invention signed by me this 18th day of December, 1878.

A. DECOUFLÉ.

Witnesses:

E. LEBLOND,
MTE. COMMUN.