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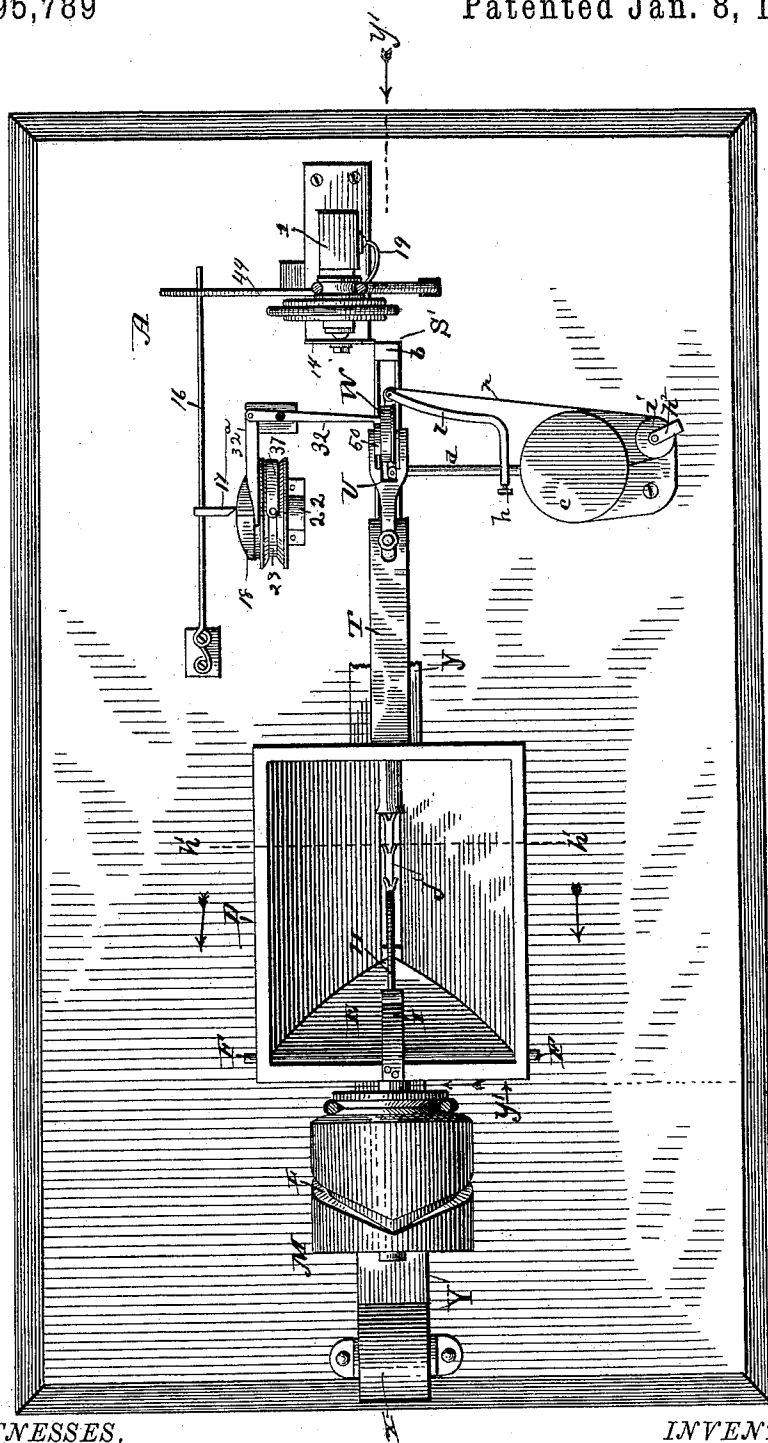
7 Sheets—Sheet 1.

E. J. LUMLEY.
CIGARETTE MACHINE.

No. 395,789

Patented Jan. 8, 1889.

Fig. 1.



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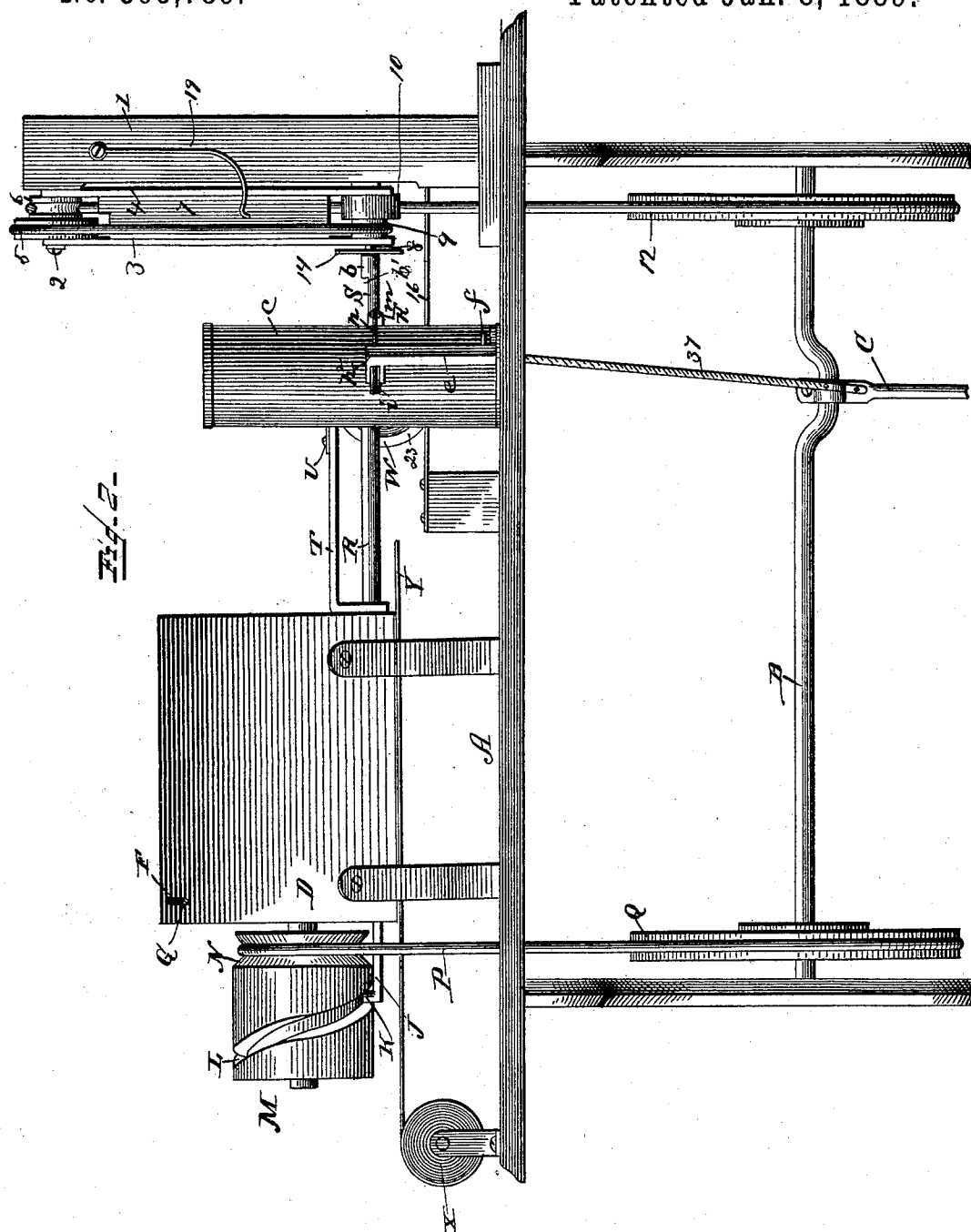
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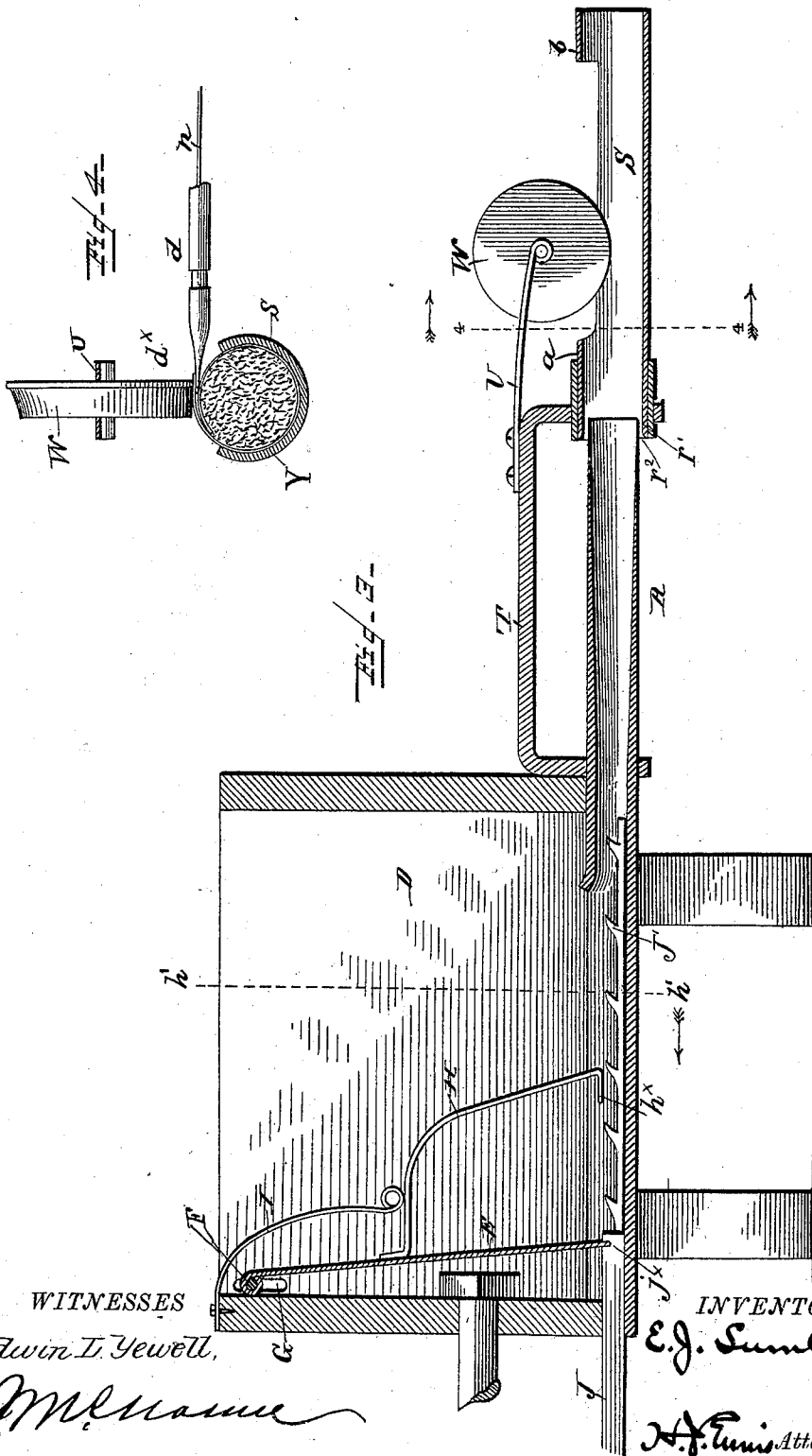
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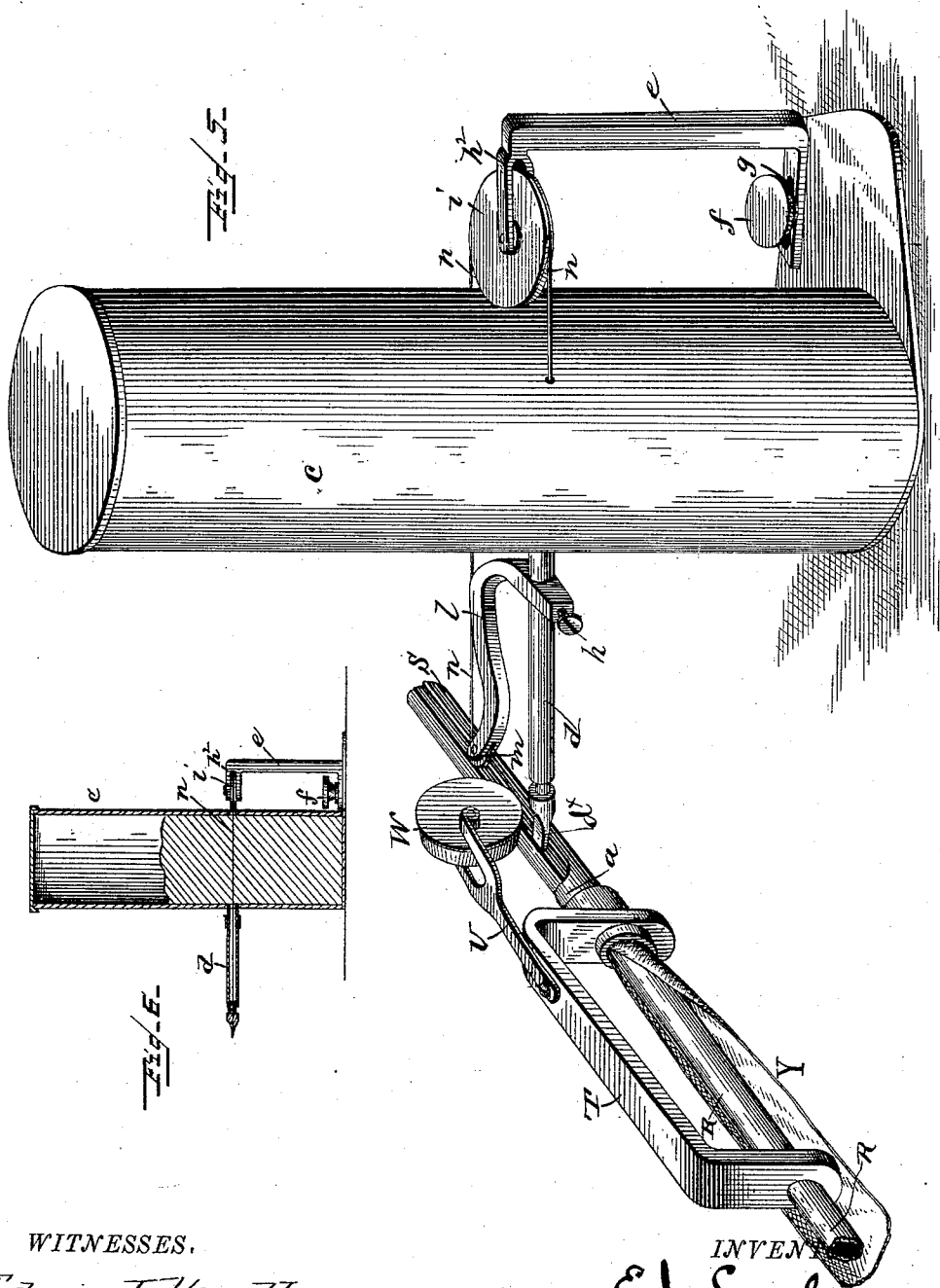
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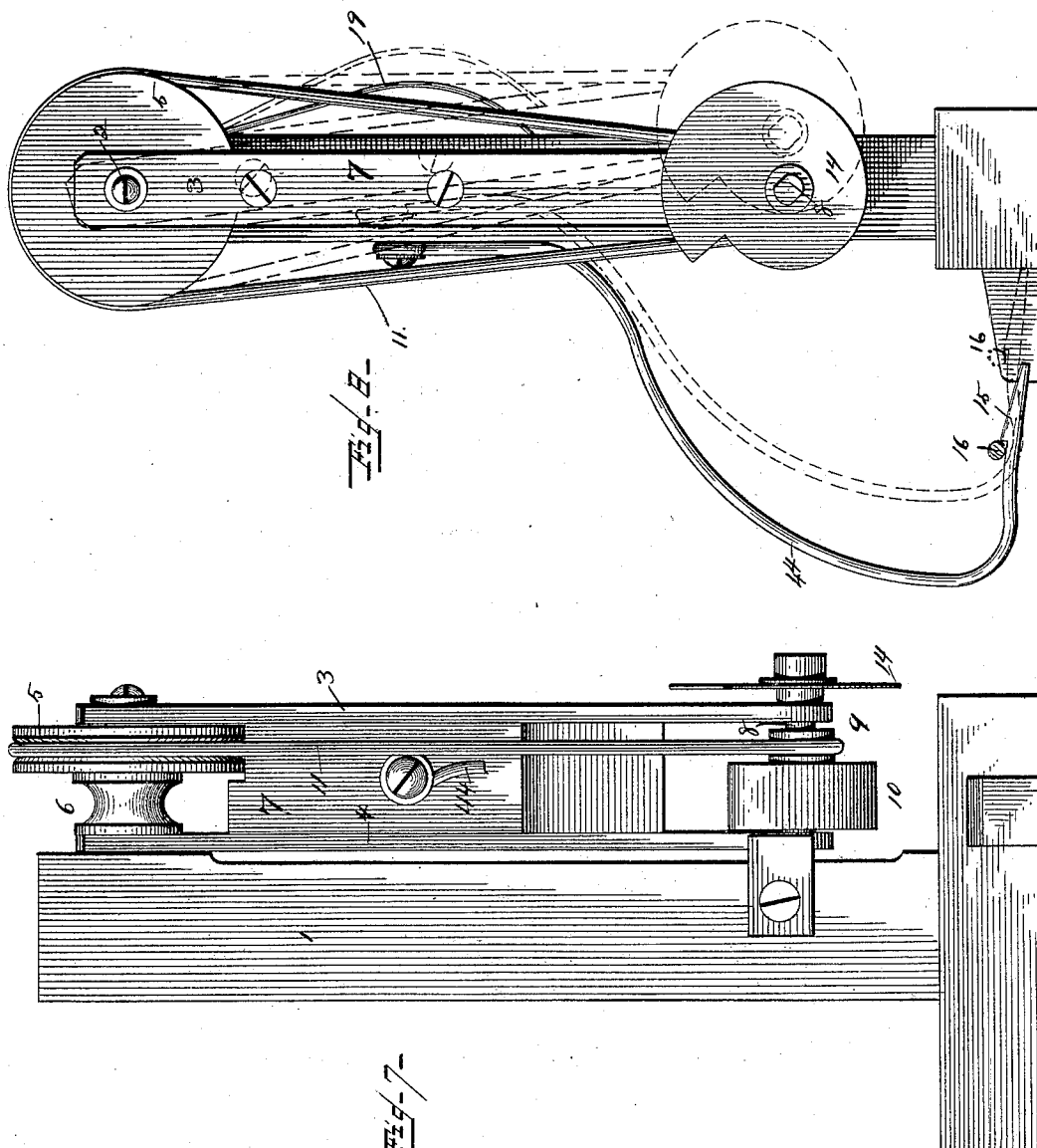
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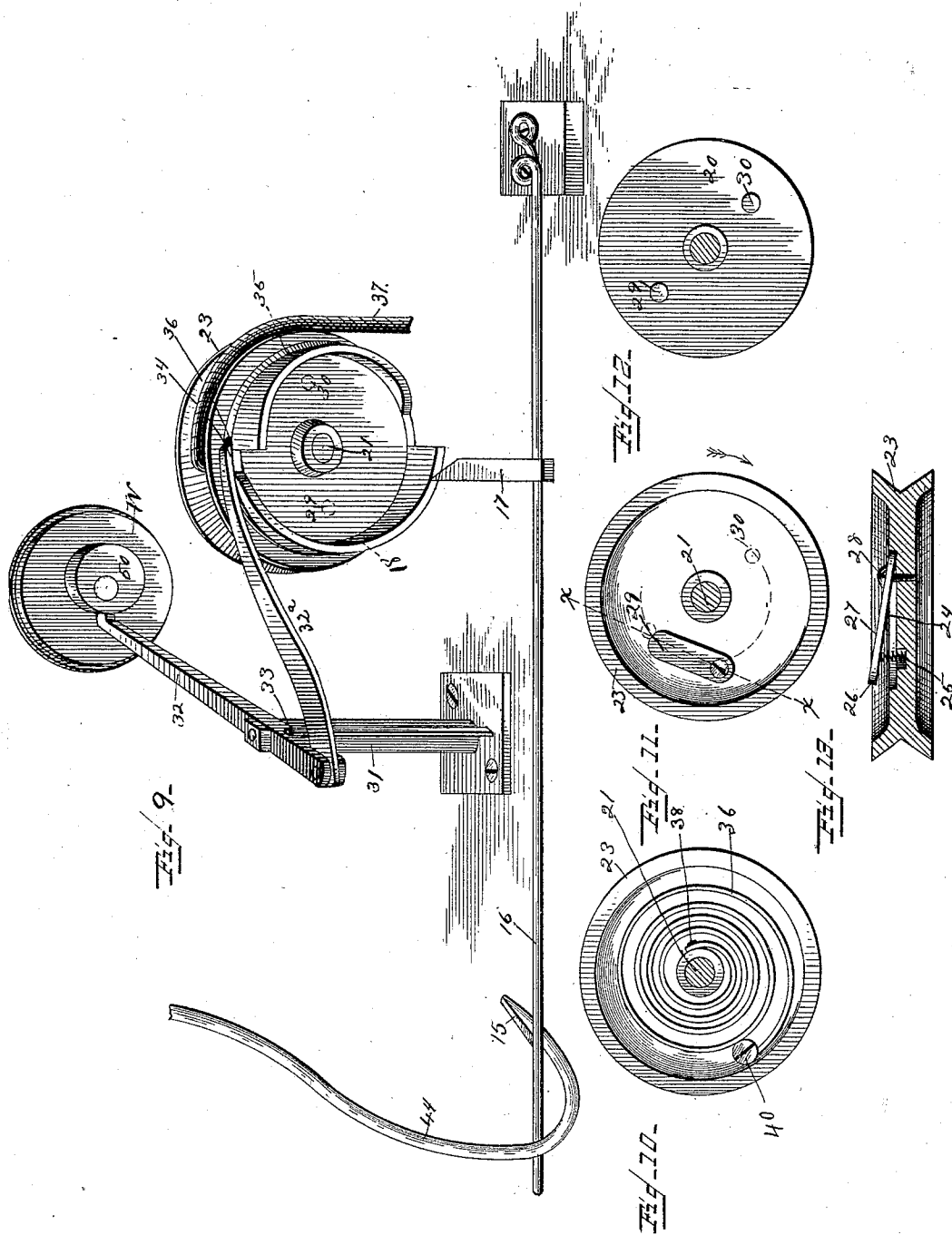
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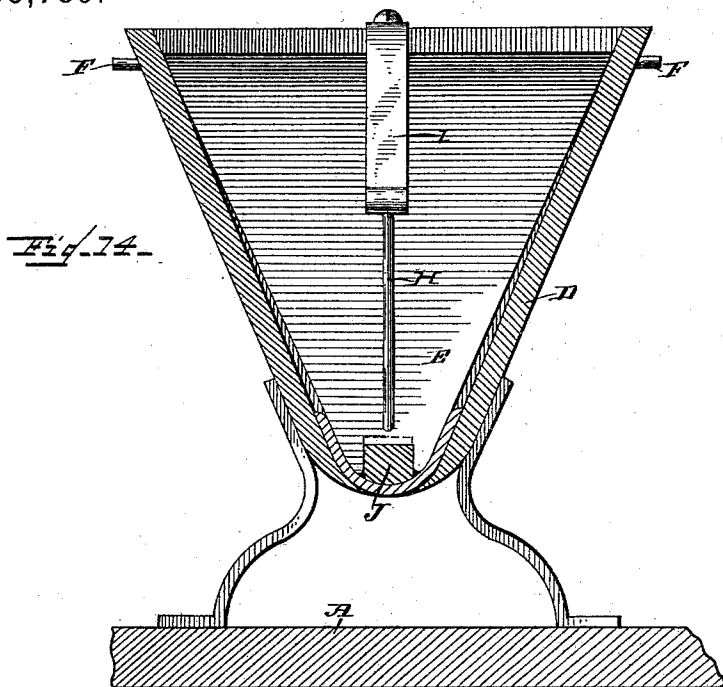
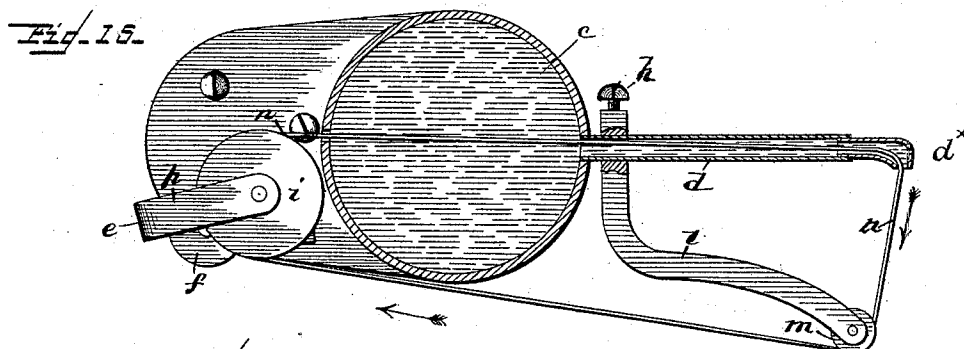
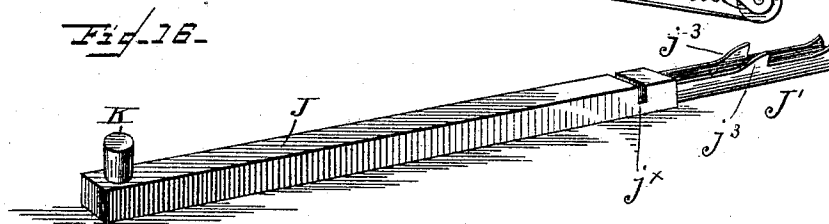
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UNITED STATES PATENT OFFICE.

EDWIN JOHNSON LUMLEY, OF WASHINGTON, DISTRICT OF COLUMBIA,
ASSIGNOR OF PART TO THOMAS A. MITCHELL, C. BANKES BROOKES,
SAMUEL D. WEBB, JOHN J. GRIGGS, AND J. C. HAVILAND, ALL OF
SAME PLACE.

CIGARETTE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 395,789, dated January 8, 1889.

Application filed December 19, 1887. Serial No. 258,353. (No model.)

To all whom it may concern:

Be it known that I, EDWIN JOHNSON LUMLEY, a subject of the Queen of Great Britain, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Machines for Making Cigarettes; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to certain novel improvements in machines for making cigarettes, which improvements will be fully understood from the following description, taken in connection with the annexed drawings, in which—

Figure 1 is a plan view of a cigarette-machine embodying my improvements. Fig. 2 is a broken view, in elevation, of the front side of the same. Fig. 3 is a vertical longitudinal sectional view taken in the course of the dotted line $y'y'$ on Fig. 1. Fig. 4 is a detail cross-sectional view showing the thread-guide and pressure pasting-roller, the section being taken on line 4 4, Fig. 3. Fig. 5 is an enlarged detail view, in perspective, of the paste-receptacle, the thread-guide, the thread-carrying devices, the forming-tube and trough, and the spring-actuated pressure or pasting roller. Fig. 6 is a reduced vertical sectional view through the paste-receptacle, showing the tube through which the thread passes in longitudinal section. Fig. 7 is a side elevation of the trimming mechanism. Fig. 8 is a face view of the trimming mechanism, parts of which are shown in dotted lines. Fig. 9 is a detail view, in perspective, of the double-cam wheel, the pasting-roller with its eccentric boss, the pivoted lever, the pivoted spring-detent, the spring-arm and dog, and the catch-carrier arm. Fig. 10 is a face view of the double cam, showing the convolute return-spring secured thereto. Fig. 11 is a face view of the grooved oscillating pulley. Fig. 12 is an in-

ner side view of the double cam detached from the pulley. Fig. 13 is a transverse section through the grooved pulley, taken in the plane indicated by dotted line $x x$ on Fig. 11, the double cam being removed. Fig. 14 is a vertical transverse section through the hopper, taken in the plane indicated by dotted line $h'h'$ on Fig. 3. Fig. 15 is an enlarged horizontal sectional view in detail of the paste-receptacle c , showing the peculiar arrangement of the endless thread n , the tube d , and the rolling-guides for said thread. Fig. 16 is an isometrical view of the feed-bar J detached from the machine.

Referring by letters to the annexed drawings, A designates the table or stand upon which the working parts of the machine are erected.

B is the main shaft, which is mounted in bearings below the table, and is operated by a treadle, C, or by other suitable motive power.

D is the feed-hopper, which is supported upon suitable legs above the table A, and is provided on its interior near one end with a swinging apron, E, which tapers laterally from above downward, as clearly shown in the sectional view, Fig. 14, and is supported by projecting arms F F at its upper corners in vertical slots G in the side walls of the hopper D.

It will be observed that the arms F F afford pivotal guides for the upper broad end of the apron E, and that the lower contracted end of this apron is loosely fitted into a transverse notch, j^x , formed in the rectangular portion of the reciprocating bar J.

The apron E is provided with a downwardly and forwardly curved agitating-arm, H, which is rigidly secured to said apron, and which terminates at the lower end in a backwardly-directed portion, h^x . A spring, I, is secured to the edge of the hopper at one end, and is extended downward and forward and bears upon the arm H, as shown in Fig. 3.

The feed-bar J is a rectilinear reciprocating bar, and is toothed at J' for a portion of its length. It will be observed by reference to

Figs. 3 and 16 that the forward toothed portion of the bar J presents a series of pairs of forwardly-directed teeth, j^3 , which at each forward stroke of the bar J will feed the loose cigarette material into a tube, R, but which during the return-stroke will shed the filling, leaving the same in said tube. The said feed-bar is provided on its upper side at its outer end with a stud, K, which enters a cam-groove, L, in the drum M. On the inner end of the drum M is a pulley, N, over which a belt, P, is run from the driving-pulley Q on the main shaft P.

A tapered forming-tube, R, is secured in the bottom of the feed-hopper D and extends back a short distance therein, terminating in a flaring inner end, and this tube projects forward and just enters the rear end of the pasting-trough S. This tube or tobacco-conductor R has an internal passage or bore, which diverges from the hopper D to a thin delivering end, r' , which externally is of less diameter than the entering end of the trough S, leaving an annular space, r^2 , as clearly shown in Fig. 3. The pasting-trough S is supported by an angular bridge, T, the rear arm of which is secured to the forming-tube R. At the front end of the bridge T is secured a bifurcated spring-arm, U, and in the free end of this arm is journaled the flanged pressure or pasting roller W, beneath which the formed cigarette is passed by the pressure exerted on the material behind it.

X is the spool upon which the continuous cigarette-wrapper Y of cigarette-paper is wound, said spool being preferably supported at the left-hand end of the table, as shown in Figs. 1 and 2. The cigarette-wrapper Y passes beneath hopper D and through the trough S, entering the annular space r^2 in the manner shown in Fig. 5, at and near which point or space the said wrapper is formed into a tube and the longitudinal edges thereof lapped, as shown in Fig. 4; but previous to the closing of the wrapper a suitable paste or cement is placed between them, as will be hereinafter explained.

The pasting-trough S is open at both ends, and is also open at its upper side between the cylindrical portions a b , in which opening the pasting pressure-roller W operates to press the lap of the wrapper. The paste-holder c is located at one side of the pasting-trough S, and is provided with a projecting horizontal tube, d , through which an endless thread, n , passes while being coated with paste. The discharge end or nipple d^x of this tube d is directed toward the discharge end of the trough S and flattened horizontally, so that it affords a narrow feed for introducing paste between the longitudinal lapping edges of the wrapper Y before the roller W operates to press the lapped edges together.

On one side of the paste-holder c is secured a standard, e , which is adjustable and can be held in place by means of a thumb-screw, f , passed through a slot, g , in the foot of said

standard, for the purpose of keeping the endless paste-feeding thread under proper tension. The upper arm, h , of the standard e is bifurcated to receive a grooved disk, i , which is journaled in said arm so as to rotate in a horizontal plane.

To the tube d is suitably secured an arm, l , which is provided with a small pulley, m , journaled in a bifurcation in this arm. The pasting-thread n passes horizontally through the paste-holder, through the tube d , and around the pulley m and disk i . This thread n is a continuous paste-feeder for evenly distributing a sufficient quantity of paste between the lapping edges of the cigarette-wrapper Y on its way through the trough S. The periphery of roller W impinges upon the lapped edges of the wrapper Y between the said nipple d^x and pulley m with a yielding pressure, exerted by spring U, which pressure is sufficient to seal the pasted edges of the wrapper.

It will be observed that arm l is adjustable. This adjustment is designed for giving a proper pressure of the roller m upon the thread, whereby the tension of the endless thread and its direction can be regulated. This adjustment is made by means of a screw, h . This operation forms a continuous roll of tobacco covered by a tubular wrapper, and the operation of the feeder J and thread n should be synchronous.

1 is a standard secured upon the table A, near the right-hand end of the same. In its upper end this standard is provided with a short shaft, 2, from which is hung the depending parallel arms 3 and 4, and between the upper ends of the arms 3 4 is journaled the double pulley 5 6. The arms 3 and 4 are secured to the opposite sides of a block, 7, which separates them.

In the lower ends of the swinging arms 3 4 is journaled a short shaft, 8, which is provided with a fast pulley, 9, and a balance-wheel, 10. A belt, 11, runs from the pulley 5 to the pulley 9. The double pulley 5 6 is driven from a wheel, 12, on the shaft B. On the outer end of the shaft 8 is secured a trimming-knife, 14, held removably in place by a nut and washer.

On one side of the block 7 is secured a spring catch-carrier arm, 44, which is provided at its lower curved end with a shouldered inclined portion, 15, which is designed to engage the spring-arm 16. This arm 16 is provided with a beveled dog, 17, which bears against a double cam, 18, on wheel 20. A spring-arm, 19, is secured to the standard 1, which arm bears against the face of the block 7 and keeps the knife 14 free from the cigarette, or in the position shown by Fig. 8 in full lines, except during the act of cutting off a length thereof, when the parts are in the positions indicated in dotted lines, Fig. 8. The swinging knife-carrier is moved to the position indicated in full lines, Fig. 8, by the pressure of the spring 19, and it is moved in the oppo-

site direction, or to the position shown by dotted lines in Fig. 8, by the combined action of a double cam, 18, on the wheel 20, the dog 17, the spring-arm 16, the catch-carrier arm 44, and a push-pawl, 32^a, which forces the cam to pass the dog. The shaft 21 is supported in a journal-box, 22, (shown in Fig. 1,) and on this shaft is applied a grooved oscillating pulley, 23, in front of which is applied on the same shaft a double-face cam-wheel, 20.

In front of the grooved pulley 23 a recess, 24, (see Fig. 13,) is provided, and also a small recess, 25, which latter is designed to receive a spiral spring, 26, that bears against the inner face of a short plate, 27, loosely attached near one end by a screw, 28, which plate forms a clutch to engage the pins 29 and 30, protruding from the side of the wheel 20, so that when the grooved pulley is rocked a continuous intermittent rotary movement in one direction is imparted to the double wheel 20, which imparts motion to the spring-arm 16 by the double cam 18, which it carries, engaging the dog 17 and causing said spring-arm 16 to operate the catch-carrier arm 44, and thus by engaging its shoulder 15 and moving it to the left causes it to swing the knife-carrying arms into position to permit the knife to cut off a cigarette from the long tube of wrapped tobacco. As the stock is fed forward, the next cut of the knife severs from said tube another cigarette, and so on.

Upon the upper end of a short vertical standard, 31, is pivoted a lever, 32, which is engaged by a vertical spring, 33, extending upward from the base-plate of said standard and serving to return said lever to its normal position after it is engaged by the cam 50 on the face of the pressure or pasting roller W. At its outer end the said lever 32 is provided with a pivoted feed-pawl, 32^a, the angular point 34 of which lies in a groove, 35, in the periphery of the wheel 20, and engages alternately in diametrically-arranged holes 36, leading from the groove 35, and serves to push the highest points of the double cam 18 past the inclined end of dog 17, as the cord 37 and wheel 23 do not turn them sufficiently far to pass the dog 17.

The pulley 23 is connected by a convolute spring, 36, to shaft 21, so that this pulley 23 may be rocked about its axis, a cord, 37, connecting it with the treadle C, and said convolute spring 36 connecting it to the shaft 21 at its inner end by a screw, 38. The outer end of the spring is secured to one side of the pulley 23 by a screw, 40, so that when the said pulley has been rocked in one direction

a given distance by the treadle the spring 36 will, by recoil, return it to its normal position as the pressure is removed from the treadle.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a cigarette-machine, the combination, with the supporting-table and driving mechanism, substantially as described, of a feed-hopper provided with a forming-tube, a reciprocating feed-bar within the feed-hopper, a pasting-trough connecting with the forming-tube, a paste-receptacle, an endless pasting-thread adapted to pass through the volume of paste in the paste-receptacle and also parallel with and above the pasting-trough, and a spring-pressed roller adapted to press the lap of the cigarette-wrapper as the cigarette is forced through the pasting-trough, substantially as specified.

2. In a cigarette-machine, the combination, with the forming-tube and the pasting-trough connecting therewith, of the paste-receptacle provided with the tube *d* and device *d*^x, the adjustable arm *l*, provided with the pulley *m*, the adjustable standard *e*, provided with the grooved disk *i*, and the endless pasting-thread passing over the grooved disk *i* through the paste-receptacle tube *d*, and device *d*^x, and over the pulley *m* on the arm *l*, substantially as specified.

3. In a cigarette-machine, the combination, with the standard 1, the parallel swinging arms provided with the rotary trimming-knife, the catch-carrier arm, and the return-spring 19, of the rocking-pulley 23, connected to the treadle by the cord 37, the double cam 18 on wheel 20, pasting-roller W, having cam 50, the lever 32, provided with the hinged feed-pawl, and the spring-rod 16, provided with the dog 17, substantially as specified.

4. In a cigarette-machine, the combination, with the rocking pulley 23, recessed in its rear face and provided with the spring-pressed plate 27, of the double cam on wheel 20, provided with pins 29 and 30, the lever 32, provided with the spring-pressed feed-pawl hinged thereto, the spring-rod 16, provided with the pawl 17, the swinging knife-carrier, the catch-carrier arm 44, having a shoulder, and the return-spring 19, substantially as specified.

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

EDWIN JOHNSON LUMLEY.

Witnesses:

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H. J. ENNIS.