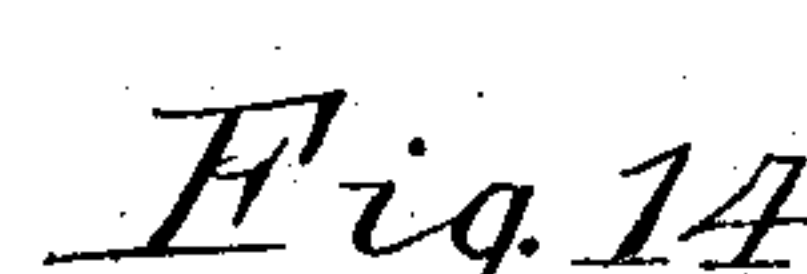


APPLICATION FILED MAY 19, 1908.

5 SHEETS—SHEET 1.



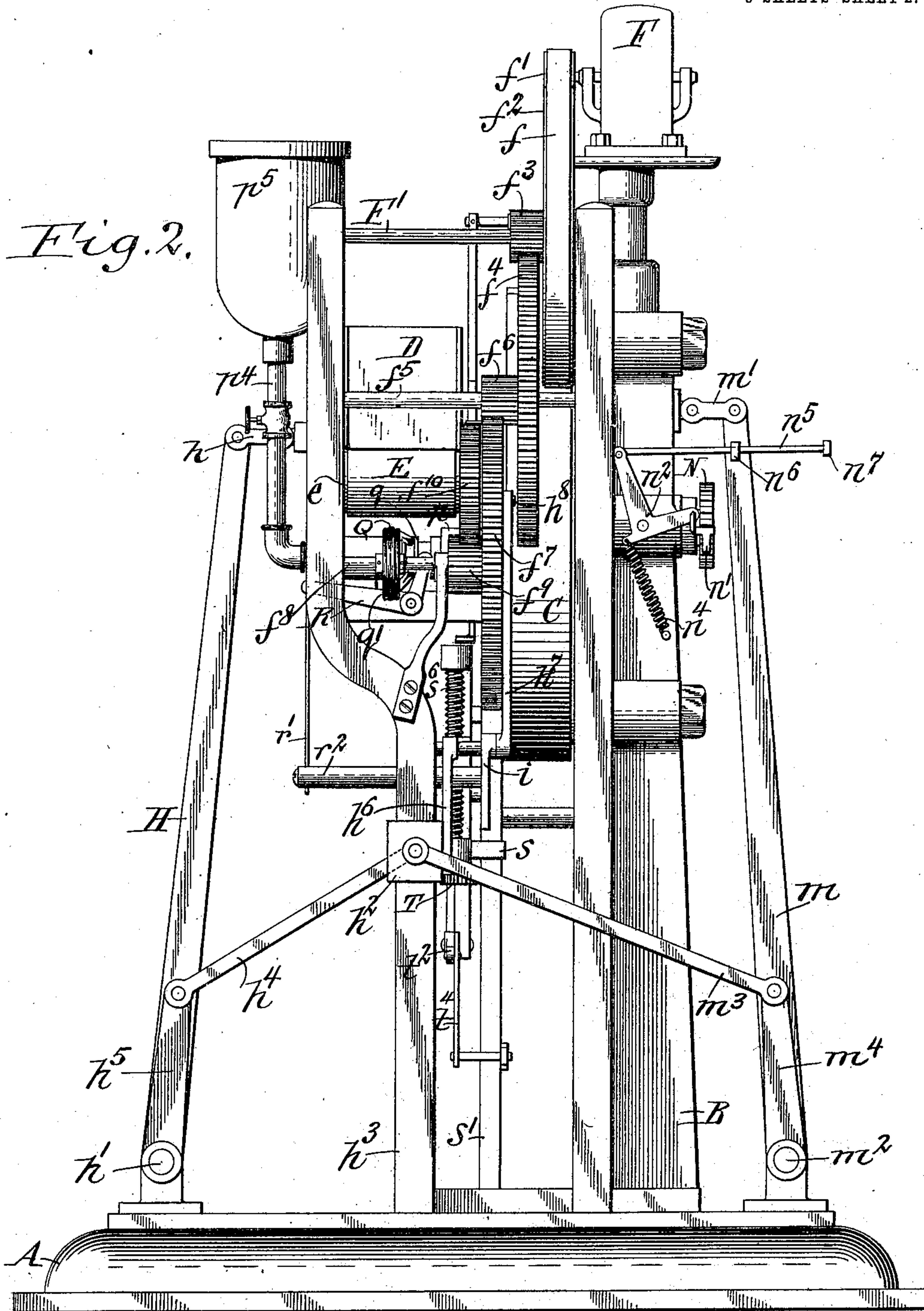
<sup>3</sup>  
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B. S. MOLYNEUX.  
CIGARETTE TIPPING MACHINE.  
APPLICATION FILED MAY 19, 1908.

981,785.

Patented Jan. 17, 1911.

5 SHEETS—SHEET 2.



Witnesses:  
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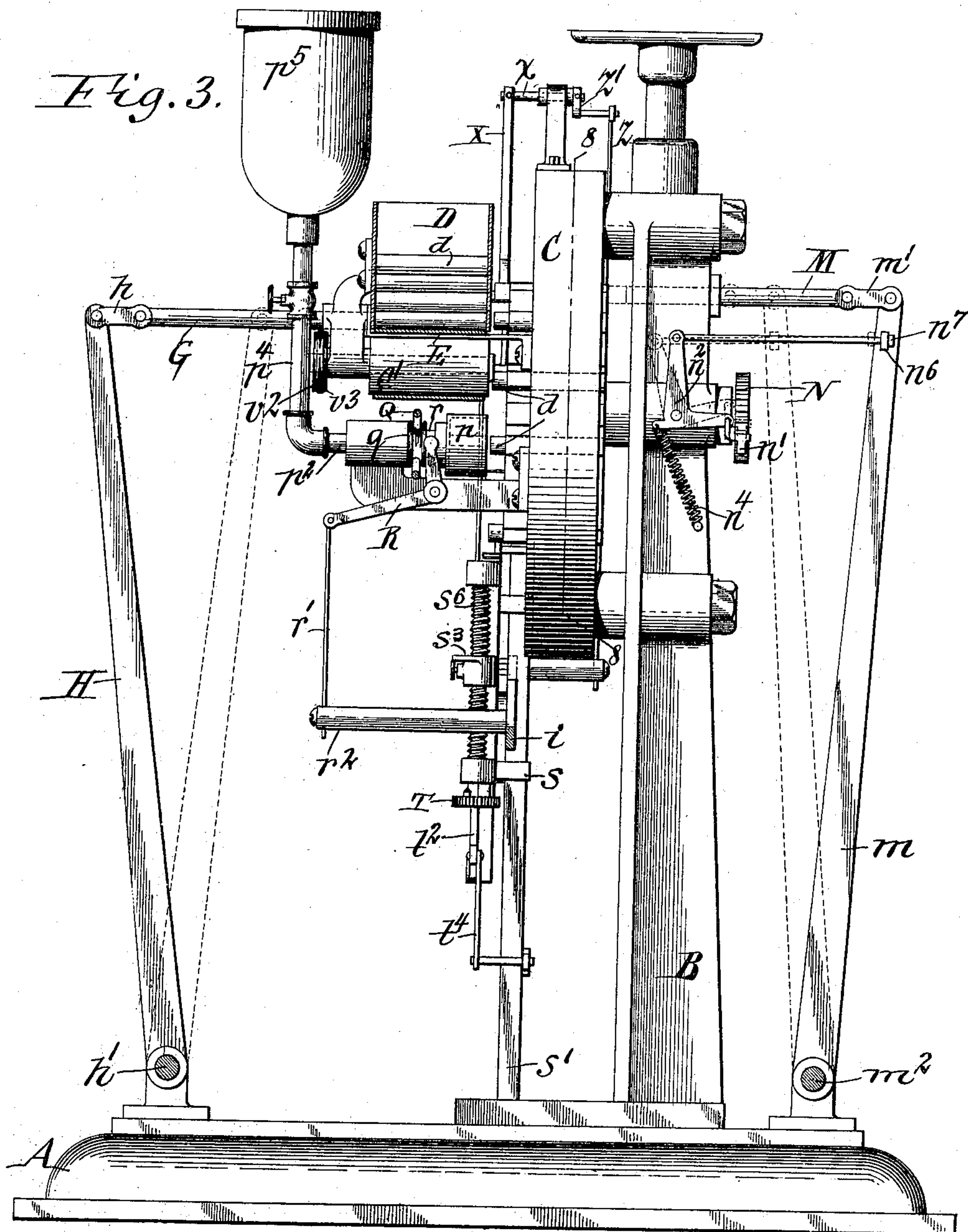


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5 SHEETS—SHEET 3.



Witnesses:-  
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Gustav W. Horn

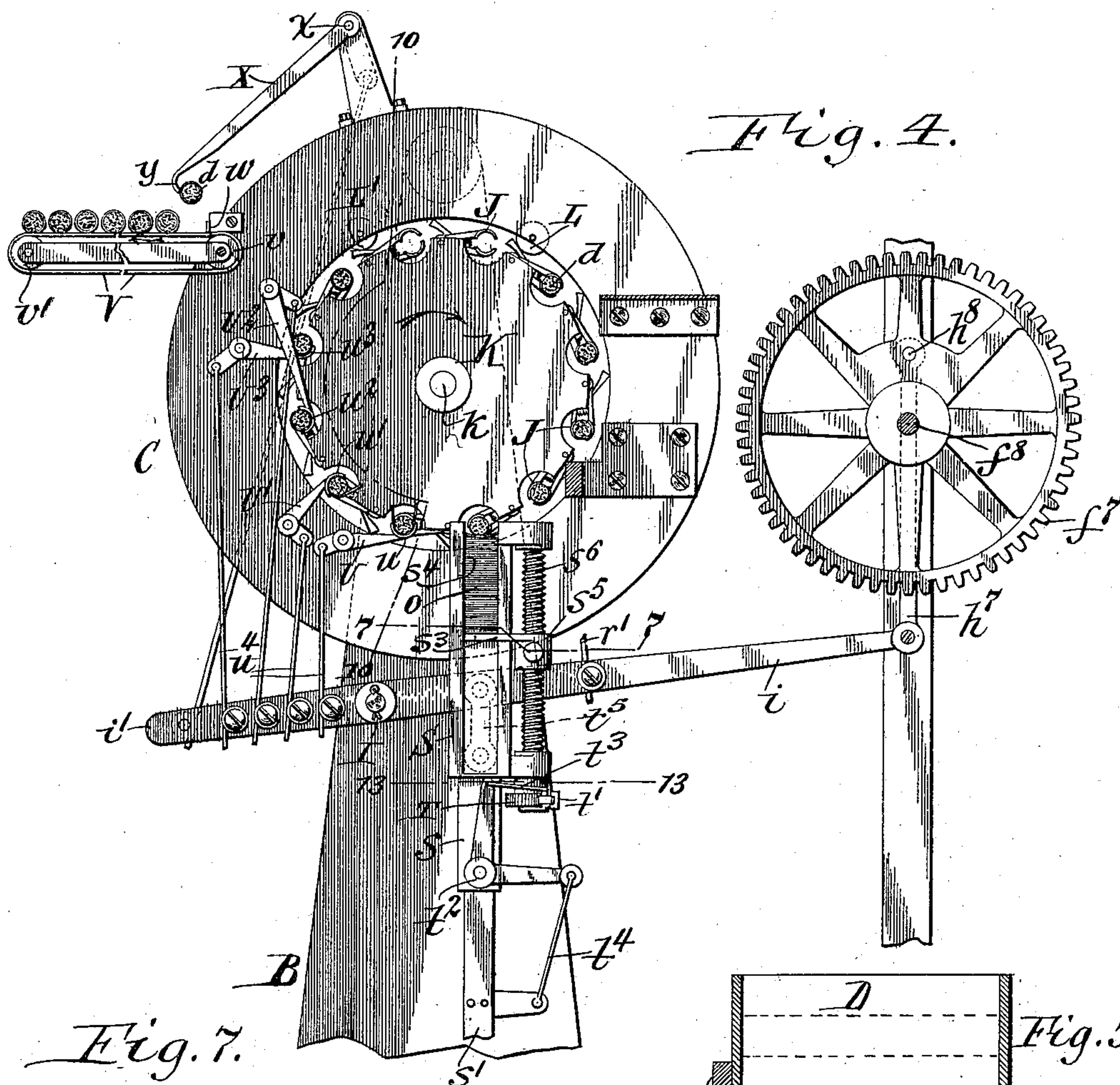
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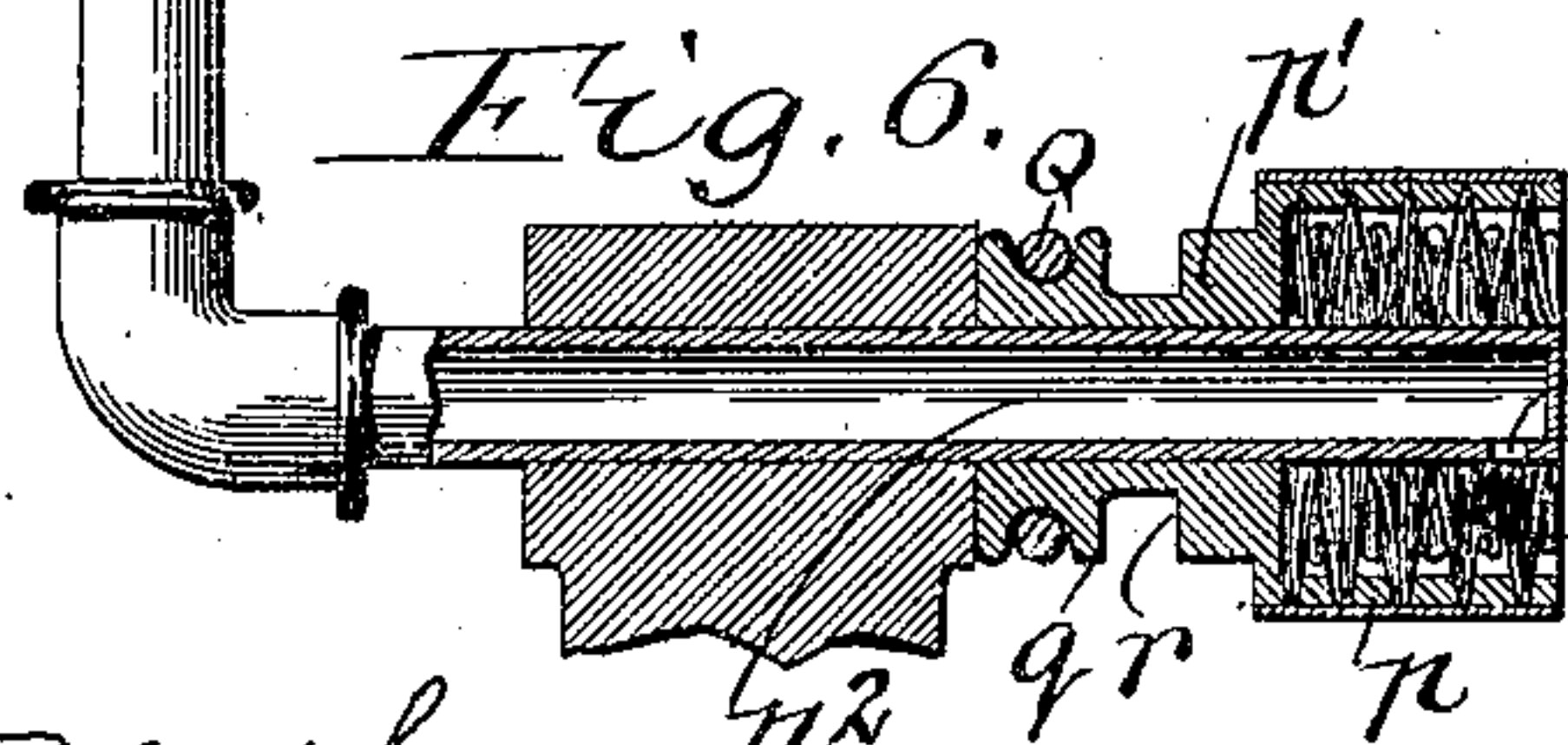
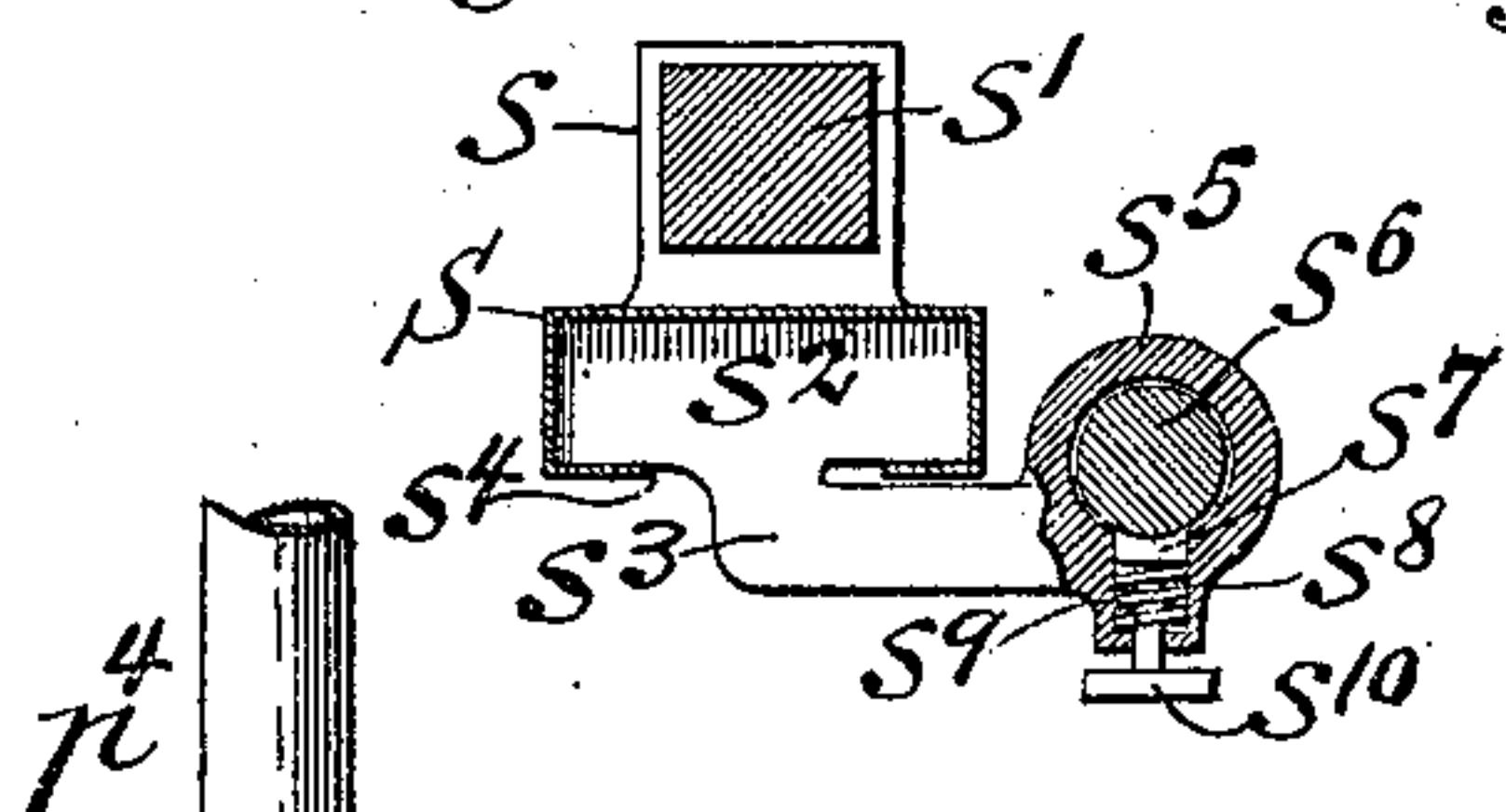
981,785.

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5 SHEETS—SHEET 4.



*Fig. 7.*



Richard Sommer,  
Gustav W. Horn, } Witnesses.

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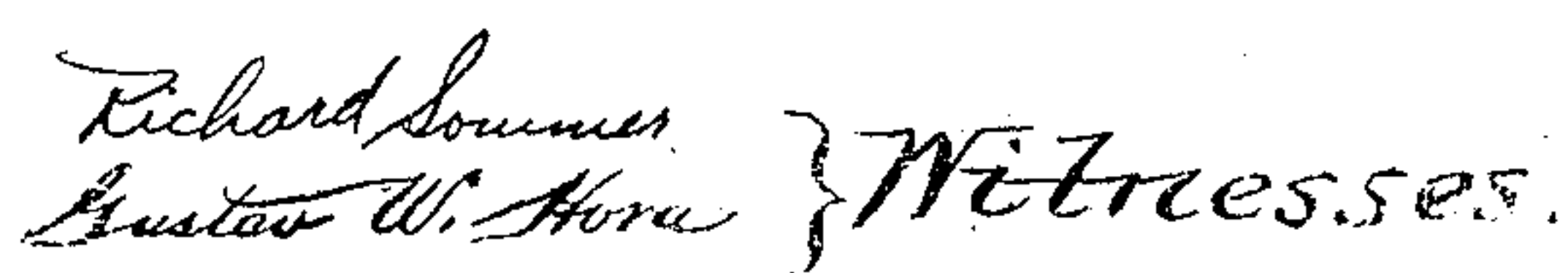


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5 SHEETS—SHEET 5.

Fig. 8.



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# UNITED STATES PATENT OFFICE.

BARTON S. MOLYNEUX, OF BUFFALO, NEW YORK.

## CIGARETTE-TIPPING MACHINE.

981,785.

Specification of Letters Patent. Patented Jan. 17, 1911.

Application filed May 19, 1908. Serial No. 433,675.

*To all whom it may concern:*

Be it known that I, BARTON S. MOLYNEUX, a citizen of the United States, and residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Cigarette-Tipping Machines, of which the following is a specification.

This invention relates to a machine for applying tips or mouth pieces of thin sheets of cork or other material to the rear ends of cigarettes and has the object to provide a machine whereby this work may be done efficiently, expeditiously and economically.

In the accompanying drawings consisting of 5 sheets: Figure 1 is a front elevation of a machine embodying my invention. Fig. 2 is an end elevation thereof. Fig. 3 is a vertical transverse section in line 3—3, Fig. 1. Fig. 4 is a fragmentary sectional front view of the machine similar to Fig. 1 but showing the parts in a different position. Fig. 5 is a fragmentary vertical transverse section, on an enlarged scale, taken in line 5—5, Fig. 1. Fig. 6 is a fragmentary vertical transverse section, on an enlarged scale, taken in line 6—6, Fig. 1. Fig. 7 is a horizontal section, on an enlarged scale, taken in line 7—7, Fig. 4. Fig. 8 is a fragmentary longitudinal section, on an enlarged scale, taken in line 8—8, Fig. 3, and showing the grippers or holders which support the cigarettes during the operation of applying the tips thereto. Fig. 9 is a fragmentary cross section taken in line 9—9, Fig. 8. Fig. 10 is a fragmentary cross section in line 10—10, Fig. 4. Fig. 11 is a perspective view of a cigarette and a tip partly applied to the same. Fig. 12 is a fragmentary rear view of the mechanism for operating the carrier of the cigarette grippers. Fig. 13 is a fragmentary horizontal section in line 13—13, Fig. 4 of the mechanism for feeding the cigarette tip blanks. Fig. 14 is a fragmentary perspective view of the tip sheet magazine and the mechanism for vibrating the same.

Similar letters of reference indicate corresponding parts throughout the several views.

Although the main frame of the machine may be of any suitable construction to support the working parts that shown in the drawings is preferred and consists essentially of a base A, a standard B rising from the rear part of the base and a circular head C supported on the upper end of the

Adjacent to the upper right hand part of the supporting head is arranged the reservoir or supply box D which is adapted to contain a pile of cigarettes  $d$  which are to receive tips or mouth pieces at their rear ends. These cigarettes are arranged transversely in the supply box and are discharged rearwardly one at a time through a discharge or outlet opening  $d^1$  which is arranged in the rear longitudinal wall of the supply box adjacent to the lower front corner of the box. The cigarettes are constantly fed in the box toward the discharge opening by gravity and a belt or apron E which forms the bottom of this box and supports the cigarettes and moves with its operative portion from the outer or rear to the inner or front end of the box. As shown in the drawings, this feed belt or apron passes with its receiving and delivery portions around supporting pulleys or rollers  $e$ ,  $e^1$  arranged adjacent to the receiving and delivery ends of the supply box. Any suitable means may be provided for propelling this cigarette feed belt, those shown in the drawings being suitable for the purpose and consisting of an electric motor F mounted on top of the standard, a belt  $f$  passing around a small pulley  $f^1$  on the motor shaft and a large pulley  $f^2$  on an upper shaft  $E^1$ , a pinion  $f^3$  connected with the large pulley  $f^2$  and meshing with an upper gear wheel  $f^4$  which is mounted on a shaft  $f^5$  arranged below the upper shaft  $E^1$ , a pinion  $f^6$  connected with the upper gear wheel  $f^4$  and meshing with a lower gear wheel  $f^7$  on a lower shaft  $f^8$  arranged below the intermediate shaft and a pinion  $f^9$  connected with the lower gear wheel  $f^7$  and meshing with a gear wheel  $f^{10}$  on the shaft of the receiving roller  $e$  of the cigarette feed belt.

The means shown in the drawings for periodically ejecting a cigarette rearwardly from the supply box consists of a transversely reciprocating front plunger G which moves horizontally in a bracket  $g$  supported on the supply box or otherwise and adapted to enter the supply box through an opening  $g^1$  in the front wall thereof at the lower inner corner thereof and through the outlet opening  $d^1$  in the rear wall of said box so that this plunger sweeps through the lower front corner of the same. During its forward movement this plunger engages with the rear end of the cigarette arranged in the lower front corner of the supply box and



ejects the same rearwardly therefrom and after the plunger is again retracted so as to clear the box the constant forward movement of the feed belt causes another cigarette of the pile to take the place of the discharged cigarette preparatory to being discharged by the next forward movement of the plunger, this operation being repeated continuously while the machine is in use.

The mechanism shown in the drawings for effecting this reciprocating movement of the front plunger G consists of a long upright rock arm H connected at its upper end by a link  $h$  with the front plunger, a horizontal rock shaft  $h^1$  journaled on the base and carrying the rock arm H, a vertically movable slide  $h^2$  guided on a post  $h^3$  rising from the base and connected by a link  $h^4$  with a short arm  $h^5$  rising from the rock shaft, a connecting rod  $h^6$  connecting the right arm  $i$  of a vertically swinging rock lever I with the slide  $h^2$  and a link  $h^7$  connected at its lower end with said right arm  $i$  and connected at its upper end with a crank pin  $h^8$  on the rear side of the lower gear wheel  $f^7$ , as shown in Figs. 1, 2 and 4. During each rotation of the gear wheel  $f^7$  the rock lever I is raised and lowered together with the slide  $h^2$  causing the shaft  $h^1$  to be rocked and the front plunger G to be moved forward and backward.

As the cigarette is discharged from the supply box it is received by one of a plurality of holders or grippers J which are mounted on a rotatable carrier K arranged concentrically within the circular head C and which are moved successively into a receiving position in rear of the discharge or outlet opening of the cigarette supply box. These holders or grippers may be variously constructed but are preferably constructed as shown in the drawings which is as follows:

$j, j$  represent two semi-circular or curved gripper jaws which face each other and together form substantially a cylindrical mouth which is adapted to be arranged axially in line with the discharge opening of the cigarette supply box while the cigarette is being ejected from the latter so that the cigarette passes with its front part into the mouth between said jaws. The jaws of each coöperating pair are mounted respectively on arms or levers  $j^1, j^1$  which are pivoted by a single transverse pin  $j^2$  to the peripheral portion of the rotatable carrier K, as shown in Figs. 1, 4, 8 and 9. When free the two gripper arms are drawn toward each other by means of a spring  $j^3$  connecting the same, whereby a cigarette placed between the jaws thereof is gripped and held. Between the gripper arms is arranged a rotatable cam or spreader  $l$  which is pivoted on the adjacent portion of the carrier and which when turned so as to engage its salient parts with

the gripper arms causes the jaws thereof to be separated to permit of either pushing a cigarette between the same or ejecting a cigarette therefrom. This turning movement of the cam  $l$  is preferably effected by means of a tappet or arm  $l^1$  secured to one end of its shaft and adapted to engage successively with two rollers or abutments L,  $L^1$  which are arranged in the bore or inner part of the supporting head of the frame. The roller L is so arranged that it is engaged by the tappet of each gripper cam and separates the jaws thereof when the same are in line with the outlet of the cigarette supply box, thereby permitting a cigarette to be discharged from this box between the respective gripper jaws which are in the receiving position. As the carrier advances and the tappet of the gripper cam leaves the roller L the spring  $j^3$  of this gripper draws the arms thereof together and causes its jaws to engage opposite sides of the cigarette and firmly hold the same during the subsequent operation for applying a tip or mouth piece thereto. The other roller or abutment  $L^1$  is so arranged that it engages the cam tappet or arm  $l^1$  of each gripper and opens the same after the tip has been applied to the cigarette and the same is ready to be discharged from the gripper. As shown in the drawings these rollers L,  $L^1$  are arranged on opposite sides of the central upper part of the supporting head but this arrangement may be varied depending upon the special design of the machine.

When the tip has been applied to the cigarette and the gripper holding the same reaches the discharging position where it is opened by engagement of its tappet with the roller  $L^1$  the tipped cigarette is discharged forwardly from the gripper by an ejector which preferably consists of a reciprocating rear plunger M sliding transversely on the standard in line with the discharging position of the grippers, a long upright rock arm  $m$  connected at its upper end by a link  $m^1$  with the rear end of the rear plunger, a horizontal rock shaft  $m^2$  carrying the lower end of the long rock arm and journaled lengthwise on the rear part of the base and a link  $m^3$  connecting the slide  $h^2$  with a short rock arm  $m^4$  secured to the rear rock shaft, as shown in Figs. 2 and 3. While the gripper carrier is turning the rear plunger M is retracted rearwardly out of the path of the grippers but when the same comes to rest the rear plunger is moved forwardly and discharges the tipped cigarette from the gripper which holds the same and then retracts again preparatory to ejecting the next tipped cigarette.

The carrier supporting the several grippers or holders is rotated intermittently in the direction of the arrow Figs. 1 and 4, and remains at rest after each forward step a



sufficient length of time to permit of performing the operations of delivering an untipped cigarette into one of the holders, applying a tip to the cigarette while grasped by a gripper and discharging the tipped cigarette from its gripper. As an example of means suitable for this purpose that shown in the drawings consists of a ratchet wheel  $N$  secured to the rear end of the shaft  $k$  whereby the carrier is pivoted on the standard, a ratchet lever  $n$  having a spring pressed pawl  $n^1$  engaging with the ratchet wheel, an elbow lever  $n^2$  pivoted on the standard and having its lower arm connected by a link  $n^3$  with the ratchet lever, a spring  $n^4$  connecting the elbow lever with the frame and operating constantly to move the same backwardly, and a rod  $n^5$  connecting the upper arm of the elbow lever with the rock arm  $m$ , as shown in Figs. 2, 3 and 12.

Inasmuch as it is necessary for the plungers to be retracted from the path of the grippers before the gripper carrier begins its forward movement a slack connection is provided between the rock arm  $m$  and the rod  $n^5$  which is preferably effected by passing the latter at its rear end through a perforated lug  $n^6$  on the rock arm  $m$  and providing the rod with a shoulder or collar  $n^7$  in rear of the lug. During the forward movement of the rock arm  $m$  the rod  $n^5$  moves with the same until the upper arm of the elbow lever engages with a stop or shoulder formed by the adjacent part of the standard, as shown in full lines in Fig. 2 and by dotted lines in Fig. 3, when the further backward movement of the ratchet mechanism is arrested while the plunger  $M$  and arm  $m$  continue their forward movement for completing the discharge of the tipped cigarette from its holder. During the subsequent backward movement of the rock arm  $m$  and plunger  $M$ , the same move idly until the plunger has cleared the path of the grippers, after which the perforated lug  $n^6$  of the rock arm  $m$  engages with the collar  $n^7$  on the rod  $n^5$  and causes the elbow lever  $n^2$  to turn forwardly to the end of the stroke of the rock arm  $m$ , as shown in full lines in Fig. 3, thereby causing the gripper carrier to be advanced one step.

It will be noted that while the carrier is at rest the front plunger operates to shift an untipped cigarette from the supply box into an empty gripper which is in the receiving position and at the same time a tipped cigarette is being discharged from its gripper by the rear plunger, but both plungers are retracted into their inoperative position while the gripper carrier is moved forwardly by the ratchet mechanism.

After a cigarette has been discharged from the supply box into a gripper, a coat of paste, mucilage or other adhesive is ap-

plied to the periphery of its rear end so as to permit of attaching thereto a rectangular sheet  $o$  of cork or similar material for forming the tip or mouth piece thereon. This paste applying device is preferably arranged to operate upon the cigarette two steps forward from the position where the gripper receives the cigarette from the supply box and is preferably constructed as follows:  $P$  represents a cylindrical brush having its bristles arranged radially and secured at their outer ends to a hollow head or cylindrical stock  $p$  while their inner free ends form a cylindrical cavity or bore within the brush. The stock of this brush is secured to the rear end of a sleeve  $p^1$  which is mounted upon a hollow stationary arbor  $p^2$  and is rotated by means of a belt  $Q$  passing around a pulley  $q$  on the stock of the brush and a pulley  $q^1$  on the shaft  $f^3$ . On the underside of its rear end the arbor is provided with an outlet opening  $p^3$  which leads to the bore of the brush and at its front end the same is connected by a pipe  $p^4$  with an elevated reservoir  $p^5$  adapted to contain a supply of liquid paste, mucilage or other adhesive. The paste flows from the reservoir through said pipe and arbor and escapes through the opening in the latter to the bore of the brush. After each cigarette comes to rest axially in line with the brush, the latter is pushed forwardly while rotating so as to inclose the rear end of the cigarette and engage with the periphery thereof, whereby a thin film of paste is deposited by the bore of the brush on the outer surface of the cigarette. After the paste is thus applied, the brush again withdraws from the cigarette. This forward and backward movement of the brush is co-incident with the forward and backward movements of the plungers while the carrier is at rest and is effected by means of an elbow lever  $R$  mounted on the frame and engaging one arm with an annular groove  $r$  in the hub of the brush stock while its other arm is connected by a rod  $r^1$  with a pin  $r^2$  on the front arm  $i$  of the rock lever  $I$ . After the front end of the cigarette has received this coat of paste the same is carried forward two steps by the carrier to a device which sticks a sheet  $o$  of cork or other material on one side of the pasted part of the cigarette preparatory to wrapping this sheet entirely around the same. The tip sheet feeding mechanism for this purpose shown in the drawings is constructed as follows:  $S$  represents a vertically reciprocating holder or box which is mounted on a slide  $s$  guided on an upright post  $s^1$  rising from the base and which is adapted to contain a vertical stack or pile of the rectangular sheets  $o$  from which the tips or mouth pieces for the cigarettes are made. This pile of tip sheets is supported on its underside by a follower  $s^2$  moving



vertically in the supply box and provided with a laterally projecting arm  $s^3$  which projects through a vertical slot  $s^4$  in the front side of the supply box and is provided with a sleeve  $s^5$  which receives a vertical feed screw or shaft  $s^6$  journaled in bearings on the upper and lower ends of the tip sheet box.

$s^7$  represents a screw nut section mounted in a socket  $s^8$  in the sleeve  $s^5$  and yielding held in engagement with the thread of the screw shaft by a spring  $s^9$ .

T represents a ratchet wheel secured to the lower end of the screw shaft and  $t$  a ratchet arm mounted loosely on the screw shaft and provided with a spring pressed pawl  $t^1$  engaging with the ratchet wheel T.

$t^2$  represents an elbow lever pivoted on the slide  $s$  which carries the tip sheet box and having its upper arm connected by a link or rod  $t^3$  with the ratchet arm  $t$ , as shown in Figs. 1, 3 and 13, while its lower arm is connected by a rod or link  $t^4$  with the guide post  $s^1$  or other stationary part of the machine. The slide  $s$  is raised and lowered intermittently by means of a link  $t^5$  connecting the same with the front arm  $i$  of the rock lever I.

After the paste coated cigarette comes to rest at the tip sheet receiving position the slide  $s$  is raised and lowered, whereby the pile of tip sheets is moved upwardly against the underside of the pasted cigarette, as shown in Fig. 4, causing the uppermost tip sheet while in a straight condition to adhere to the underside of the pasted surface of the cigarette and to be lifted from the pile, as shown in Fig. 1, as the latter recedes during the downward movement of the stack with the slide  $s$ . During this vertical reciprocating movement of the slide  $s$  the elbow lever  $t^2$  is turned inasmuch as one arm thereof is connected with the stationary part of the machine, whereby the other arm thereof is caused to operate the ratchet mechanism and turn the screw shaft, whereby the latter owing to its engagement with the screw nut section causes the follower to rise. In this manner the stack of tip sheets is gradually raised as the operation of applying the sheets to the cigarettes proceeds, thereby compensating for the reduction in the height of the pile as the tip sheets are successively removed by the cigarettes from the top of the pile. When it is desired to replenish the supply of tip sheets in the holder or box S the screw nut section  $s^7$  is withdrawn from the feed screw shaft by a finger piece  $s^{10}$ , thereby permitting the same to be quickly lowered on said shaft and reengaged there-with at the proper point after a new lot of tip sheets has been placed in the holder.

After a tip sheet has been applied in a flat condition to one side of the pasted part of a cigarette, the same is presented by the carrier successively to a series of wrapping

or folding devices each of which is constructed to effect a partial wrapping or folding of the tip sheet around the pasted part of the cigarette and the several wrapping devices being so arranged that they operate progressively upon the tip sheet, so that the wrapping is advanced by successive stages beginning with the sheet in its flat condition and terminating after the sheet has been wrapped into tubular form around the cigarette. These wrapping devices preferably consist of a plurality of concave paddles or folding jaws  $u, u^1, u^2, u^3$  and levers  $U, U^1, U^2, U^3$  pivoted on the adjacent part of the frame head and each having one of its arms carrying one of the folding jaws while its other arm is connected by a rod  $u^4$  with the rear arm  $i^1$  of the rock lever I.

As shown in Fig. 4, the paddle  $u$  of the first folding lever  $U$  operates to fold or double the tip sheet from the flat condition in which it leaves the supply box into a condition in which the opposite ends of this sheet project upwardly into U-form, the second folding lever  $U^1$  engages its jaw or paddle  $u^1$  with the advancing end or flap of the tip sheet and folds the same in one direction against the cigarette, the third folding lever  $U^2$  engages its jaw  $u^2$  with the rear end or flap of the tip sheet and folds the same in the opposite direction around the cigarette and the fourth folding lever  $U^3$  engages its jaw or paddle  $u^3$  with the tip sheet and applies the final pressure thereto for completing the cylindrical form of the tip sheet and causing the same to adhere reliably to the cigarette. While the gripper carrier is in motion and advancing the several cigarettes from one position to another the folding or wrapping levers are in their retracted position, as shown in Fig. 1, and when said carrier comes to rest the folding levers move forwardly into engagement with the several tip sheets and cigarettes, as shown in Fig. 4. After the tubular tip or mouth piece has been thus completed by the last folding lever the gripper carrying the respective cigarette passes to the discharging position where the gripper is opened and the cigarette discharged forwardly therefrom by the rear plunger. If desired, the cigarettes when thus discharged from the grippers may be delivered into a suitable receptacle but it is preferable to deliver the same to a gathering device whereby the cigarettes are deposited parallel side by side for convenience in packing the same. The means for this purpose shown in the drawings are constructed as follows: V represents a gathering apron or belt arranged adjacent to the upper left hand part of the head C and passing with its receiving and delivering parts around rollers  $v, v^1$  so that the upper operative portion of the same is arranged substantially horizontal, as shown in Figs. 1 and 4. This



belt or apron is moved slowly so that its upper operative portion moves toward the left, as indicated by the arrow in Figs. 1 and 4, the means for this purpose consisting of a belt  $v^2$  passing around a pulley  $v^3$  on the shaft of the delivery roller of the cigarette feeding belt and a pulley  $v^4$  on the shaft of the receiving roller  $v$  of the gathering belt. Arranged transversely above the receiving portion of the gathering apron is a stationary guide or guard  $w$  which is secured to the adjacent part of the frame head.

X represents a vertically swinging transfer arm which is secured at its upper end to a transverse rock shaft  $x$  journaled in a bearing on the upper part of the frame head and provided at its lower end with a trough-shaped conveyer  $y$  which vibrates back and forth between a position in line with the place where the cigarettes are discharged from the grippers and a position over the receiving portion of the gathering apron in rear of the guard  $w$ . This oscillating movement is imparted to this transfer arm by means of a connecting rod  $z$  which connects at its lower end with the rear arm  $z^1$  of the rock lever I while its upper end connects with a rock arm  $z^2$  secured to the shaft which carries the transfer arm. As shown in Fig. 1, the carrier is at rest and the conveyer trough of the transfer arm is arranged in front of the carrier and below the path of the cigarette discharging position, whereby the cigarette upon being discharged from the respective gripper by the rear plunger will be delivered into the conveyer trough. After this has taken place and while the carrier is effecting its next forward movement, the transfer arm is swung forwardly until its conveyer trough reaches a position over the receiving part of the gathering apron and in rear of the guard, in which position the cigarette will roll from the trough upon the gathering apron and in rear of the guard.

The forward movement of the gathering belt is preferably so timed that the cigarettes are moved forwardly and a gap is left between the guard and the last cigarette deposited upon the apron for the reception of the next following cigarette, thereby causing the cigarettes to be arranged side by side and in order for conveniently and quickly packing the same into boxes.

When the machine is in full working condition all of the operations above described are taking place with reference to different cigarettes, the operation of tipping each step being one step in advance of the next following cigarette.

I claim as my invention:

1. A cigarette tipping machine, comprising a box or holder adapted to contain a supply of cigarettes and having a discharge opening in its side, an ejector plunger mov-

able across said box and adapted to discharge the cigarettes successively through said opening, a movable carrier bottom for said supply box supporting the cigarettes in the same and operating to carry the cigarettes toward said discharge opening, and a tip applying mechanism to which the cigarettes are presented after being discharged from said supply box.

2. A cigarette tipping machine, comprising a box or holder adapted to contain a supply of cigarettes and having a discharge opening in its side, an ejector plunger movable across said box and adapted to discharge the cigarettes successively through said opening, an endless apron forming the bottom of the cigarette supply box and moving with the operative part toward the discharge opening thereof, rollers supporting the receiving and delivery ends of said apron, and a tip applying mechanism to which the cigarettes are presented after being discharged from said supply box.

3. A cigarette tipping machine, comprising a carrier adapted to support the cigarettes, a pasting device adapted to apply a coat of paste to the rear end of the cigarettes embodying a cylindrical brush adapted to inclose the end of the cigarette, and means for applying a tip sheet to the coated part of the cigarettes.

4. A cigarette tipping machine, comprising a carrier adapted to support the cigarettes, a pasting device adapted to apply a coat of paste to the rear end of the cigarettes, embodying a cylindrical brush adapted to inclose the end of the cigarette, and a paste reservoir arranged to deliver paste to the bore of said brush, and means for applying a tip sheet to the coated part of the cigarettes.

5. A cigarette tipping machine, comprising a carrier adapted to support the cigarettes, a pasting device adapted to apply a coat of paste to the rear end of the cigarettes and embodying a hollow cylindrical brush, means for moving said brush axially into and out of engagement with the rear peripheral part of the cigarette and a paste reservoir arranged to deliver paste to the bore of said brush, and means for applying a tip sheet to the coated part of the cigarette.

6. A cigarette tipping machine, comprising a carrier adapted to support the cigarettes, a pasting device adapted to apply a coat of paste to the rear end of the cigarettes and embodying a hollow cylindrical brush, means for moving said brush axially into and out of engagement with the rear peripheral part of the cigarette, a hollow arbor upon which said paste brush is journaled and which has an opening leading to the bore of the brush, a paste reservoir connected with the interior of said arbor, a belt pulley connected with said brush for



rotating the same, a rocking elbow lever operating to move the brush lengthwise of its axis, and means for applying a tip sheet to the coated part of the cigarettes.

5 7. A cigarette tipping machine, comprising means for holding a cigarette having its rear end coated with paste, and means for applying a tip sheet to the coated part of the cigarette embodying a vibrating receptacle which is movable toward and from the cigarette and which is adapted to contain a stack of tip sheets, a follower arranged in the receptacle and adapted to support the pile of tip sheets on its underside, a screw shaft journaled on the receptacle, and a screw thread member connected with the follower and engaging with the thread of said screw shaft.

8. A cigarette tipping machine, comprising means for holding a cigarette having its rear end coated with paste, and means for applying a tip sheet to the coated part of the cigarette embodying a vibrating receptacle which is movable toward and from the cigarette and which is adapted to contain a stack of tip sheets, a follower arranged in the receptacle and adapted to support the pile of tip sheets on its underside, a screw shaft journaled on the tip sheet receptacle, a sleeve connected with the follower and surrounding the screw shaft, and a screw nut section mounted on said sleeve and yieldingly held in engagement with the thread of said screw shaft.

9. A cigarette tipping machine, comprising means for holding a cigarette having its rear end coated with paste, and means for applying a tip sheet to the coated part of the cigarette embodying a vibrating receptacle which is movable toward and from the cigarette and which is adapted to contain a stack of tip sheets, a follower arranged in the receptacle and adapted to support the pile of tip sheets on its underside, a screw shaft journaled on the receptacle, and a screw thread member connected with the follower engaging with the thread of said screw shaft and a ratchet mechanism for turning said screw shaft.

10. A cigarette tipping machine, comprising means for holding a cigarette having its rear end coated with paste and means for applying a tip sheet to the coated part of the cigarette embodying a vibrating receptacle which is movable toward and from the cigarette and which is adapted to contain a stack of tip sheets, a follower arranged in the receptacle and adapted to support the pile of tip sheets on its underside, a screw shaft journaled on the receptacle, and a screw thread member connected with the follower engaging with the thread of said screw shaft and a ratchet mechanism for turning said screw shaft comprising a ratchet wheel secured to the screw shaft, a

ratchet arm pivoted concentrically with the screw shaft and provided with a pawl engaging with the ratchet wheel, and a lever pivoted on the tip sheet receptacle and having one arm connected with the ratchet arm while its other arm is connected with a stationary part of the machine.

11. A cigarette tipping machine, comprising a revolving carrier, means arranged on said carrier for holding a cigarette having its rear end coated with paste, means for applying a tip sheet to the coated part of the cigarette, means for wrapping said sheet around the cigarette embodying a concave folding jaw movable toward and from the tip sheet and cigarette, and a lever carrying said jaw and pivoted parallel with the axis of said carrier.

12. A cigarette tipping machine, comprising a revolving carrier, means arranged on said carrier for holding a cigarette having its rear end coated with paste, means for applying a tip sheet to the coated part of the cigarette, means for wrapping said sheet around the cigarette embodying a plurality of concave folding jaws adapted to move toward and from different sides of the sheet and cigarette and levers carrying said jaws and pivoted parallel with the axis of said carrier.

13. A cigarette tipping machine comprising a revolving carrier, means arranged on said carrier for holding a cigarette having its rear end coated with paste, means for applying a tip sheet to the coated part of the cigarette, means for wrapping said sheet around the cigarette embodying a plurality of concave folding jaws which are adapted to move successively toward and from different parts of the tip sheet and cigarette, and folding rock levers supporting said folding jaws and pivoted parallel with the axis of said carrier.

14. A cigarette tipping machine, comprising a revolving carrier, means arranged on said carrier for holding a cigarette having its rear end coated with paste, means for applying a tip sheet to the coated part of the cigarette, means for wrapping said sheet around the cigarette embodying a plurality of concave folding jaws which are adapted to move successively toward and from different parts of the tip sheet and cigarette, folding rock levers supporting said folding jaws, and a main actuating rock lever connected with the several folding rock levers, said levers being pivoted on a stationary support parallel with the axis of said carrier.

15. A cigarette tipping machine comprising feeding means for feeding one cigarette at a time from a pile, means for applying a coat of paste to the rear ends of cigarettes, means for applying a tip sheet to the coated part of the cigarettes, means for wrapping



or folding the tip sheet around the cigarette comprising a plurality of folding jaws movable successively toward and from the cigarette and tip, and means which receive the  
 5 cigarettes from said feeding means and present the same successively to said paste applying means, tip sheet applying means and said wrapping or folding means comprising  
 10 a revolving carrier, and grippers mounted on said carrier and adapted to hold the cigarettes.

16. A cigarette tipping machine, comprising a revolving carrier adapted to support a cigarette, means for feeding cigarettes from  
 15 a pile to said carrier, means for applying a coat of paste to the rear end of a cigarette, means for applying a tip sheet to the coated end of a cigarette, means for wrapping the  
 20 tip sheet around the cigarette comprising a plurality of folding jaws operating successively on said tip sheet and cigarette, means for discharging the tipped cigarette from the  
 25 carrier, and means for moving said carrier successively to said feeding means, paste applying means, tip applying means, wrapping means, and discharging means.

17. A cigarette tipping machine, comprising a rotatable carrier adapted to support a cigarette, means for feeding cigarettes from  
 30 a pile to said carrier, means for applying a coat of paste to the rear end of a cigarette, means for applying a tip sheet to the coated end of a cigarette, means for wrapping the  
 35 tip sheet around the cigarette comprising a plurality of folding jaws operating successively on said tip sheet and cigarette, means for discharging the tipped cigarette from the  
 40 carrier, and means for moving said carrier successively to said feeding means, paste applying means, tip applying means, wrapping means, and discharging means comprising a  
 45 ratchet wheel connected with said carrier and a ratchet arm having a pawl engaging with said ratchet wheel.

18. A cigarette tipping machine comprising a carrier adapted to support a cigarette, means for applying a tip to the cigarette, means for discharging the cigarette from the carrier, and a gathering device which re-

ceives the cigarette from the carrier comprising a gathering apron, and a vibrating member adapted to receive the cigarettes from the carrier and deliver the same upon said apron.

19. A cigarette tipping machine, comprising a carrier adapted to support a cigarette, means for applying a tip to the cigarette, means for discharging the cigarette from the carrier, and a gathering device which re-  
 60 ceives the cigarette from the carrier comprising a gathering apron, a vibrating conveyor trough adapted to receive the cigarette from the carrier and deliver the same upon the apron, and a rock arm supporting said  
 65 trough.

20. A cigarette tipping machine comprising a carrier adapted to support a cigarette, means for applying a tip to the cigarette, means for discharging the cigarette from the carrier, and a gathering device which re-  
 70 ceives the cigarette from the carrier comprising a gathering apron, a vibrating conveyor trough adapted to receive the cigarette from the carrier and deliver the same upon the apron, a rock arm supporting said  
 75 trough, and a guard arranged transversely over the receiving end of said apron.

21. A cigarette tipping machine comprising a carrier, a gripper comprising two co-  
 80 operating jaws, arms pivoted on the carrier and supporting said jaws, a spring connecting said arms and operating to close the jaws, a rotatable cam pivoted on the carrier between said arms and operating to open  
 85 said jaws, a tappet connected with said cam, a stationary abutment adapted to be engaged by said tappet for operating the cam, means for delivering a cigarette into the gripper, means for applying a tip to the cigarette while the same is held by the gripper, and  
 90 means for discharging the cigarette from the gripper.

Witness my hand this 16th day of May, 1908.

BARTON S. MOLYNEUX.

Witnesses:

THEO. L. POPP,  
 ANNA HEIGIS.