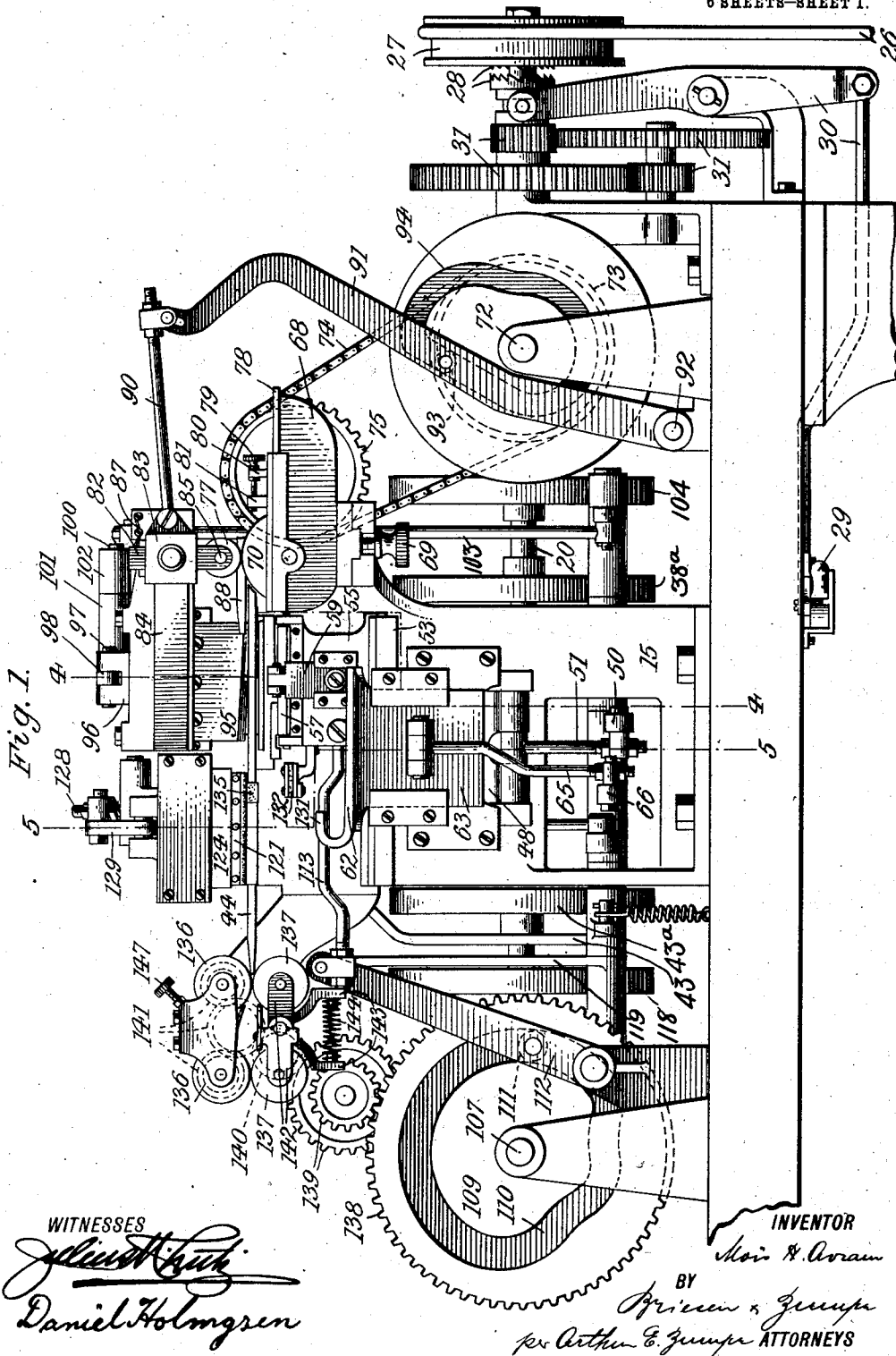


M. H. AVRAM.
MACHINE FOR MAKING TIPPED CIGARETTE TUBES.
APPLICATION FILED JAN. 4, 1911.

1,011,557.

Patented Dec. 12, 1911.

6 SHEETS—SHEET 1.

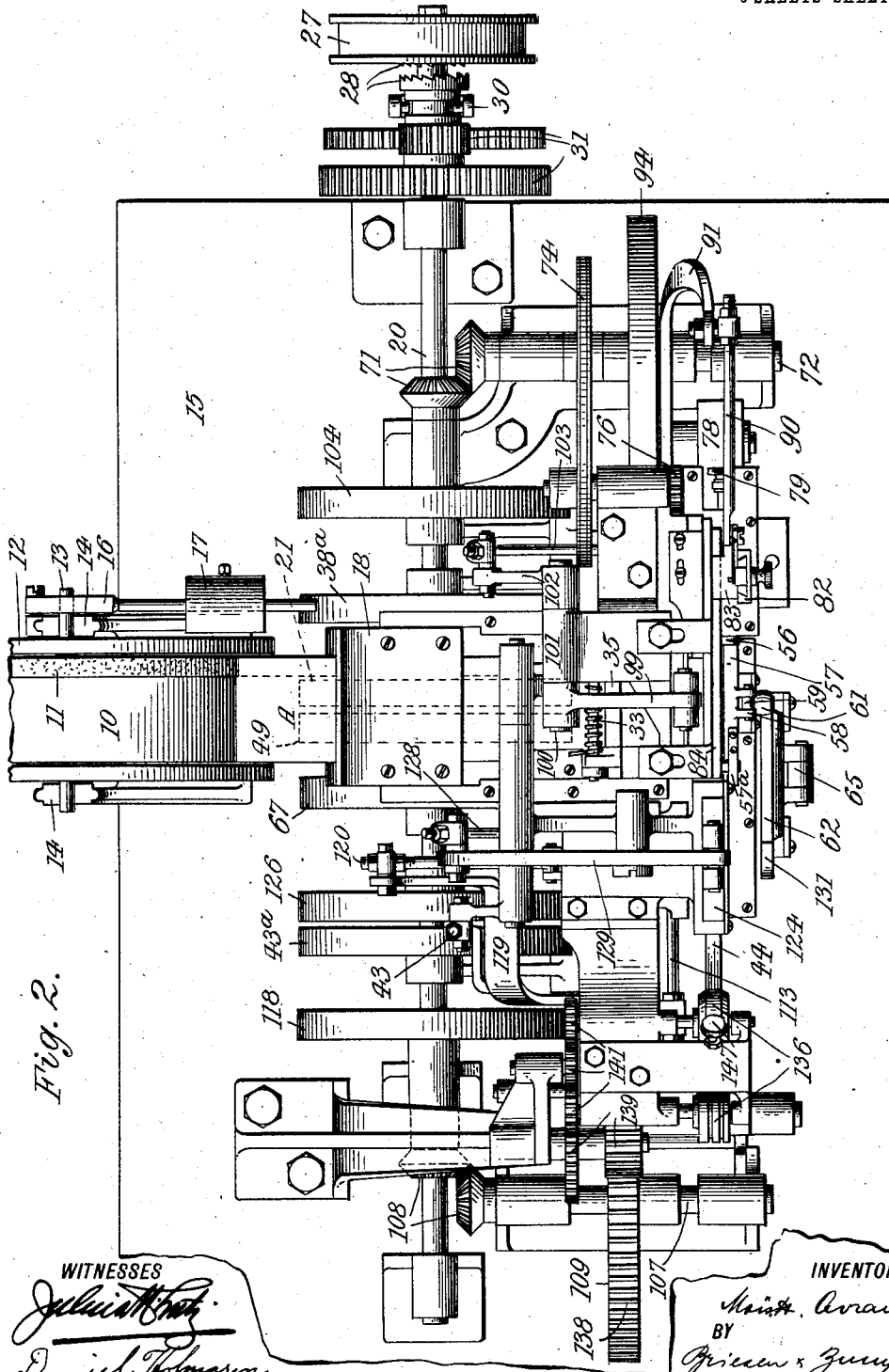


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6 SHEETS—SHEET 2.



WITNESSES
[Signature]
Daniel Tolmagen

INVENTOR
M. H. Avram
BY
Friedman & Gump
per Arthur G. Gump ATTORNEYS

M. H. AVRAM.
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6 SHEETS—SHEET 3.

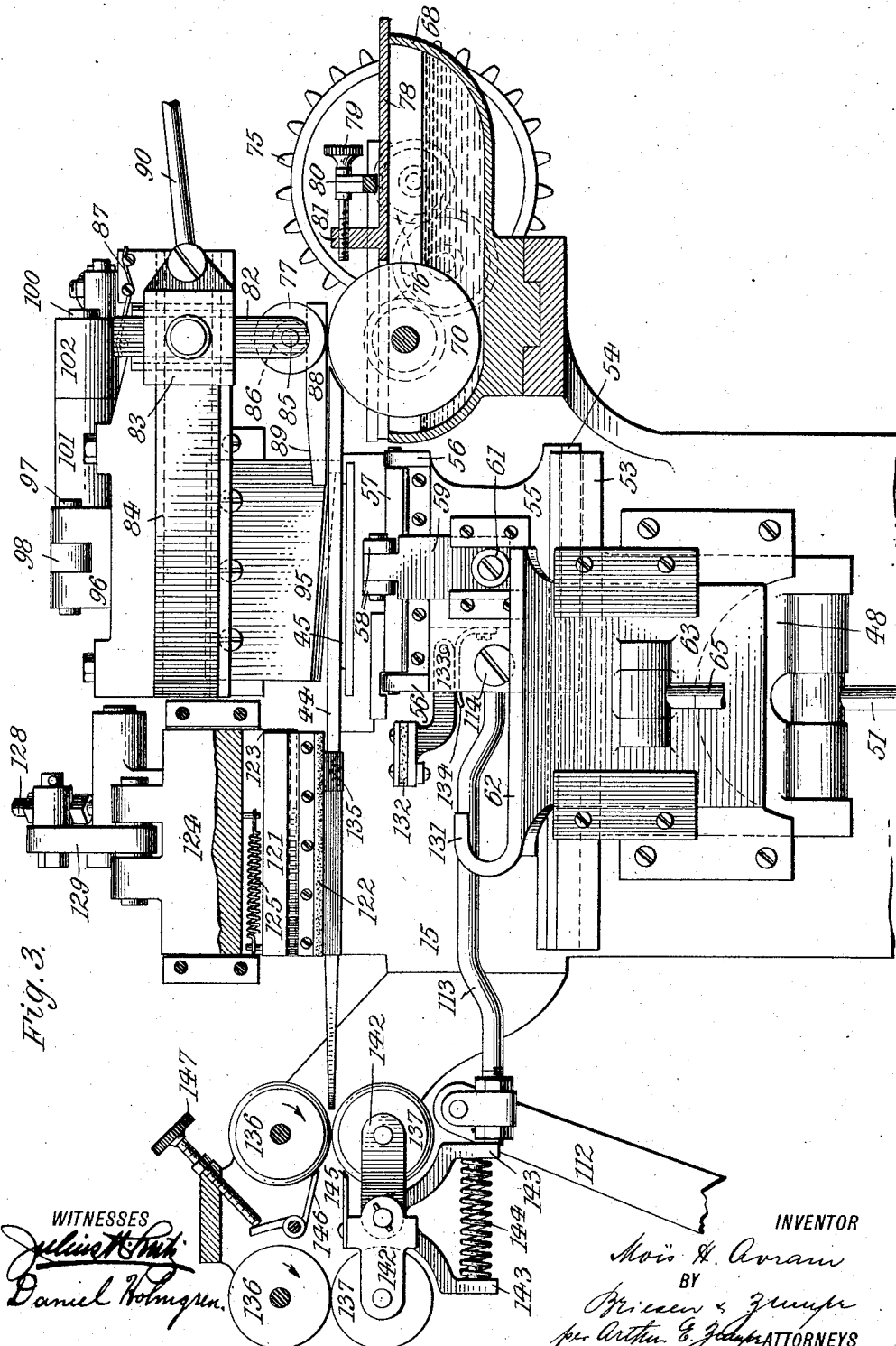


Fig. 3.

WITNESSES
Julius H. Smith
Daniel Holmgren

INVENTOR
M. H. Avram
BY
Arthur G. Johnson
per *Arthur G. Johnson* ATTORNEYS

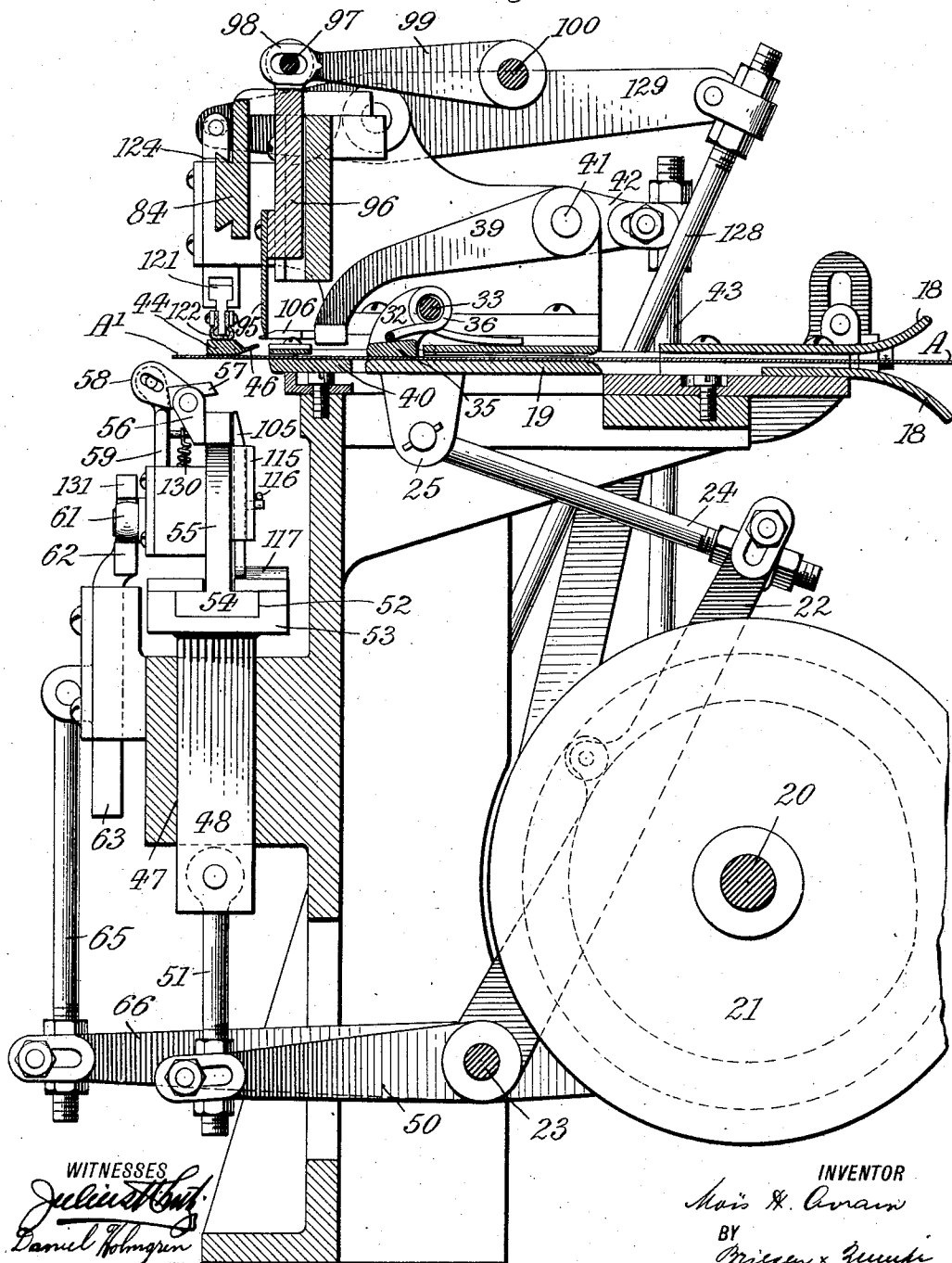
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6 SHEETS—SHEET 4.

Fig. 4.



WITNESSES
Julius H. [Signature]
Daniel [Signature]

INVENTOR
M. H. Avram
BY
Priscen & Zump
per Arthur G. Zump ATTORNEYS

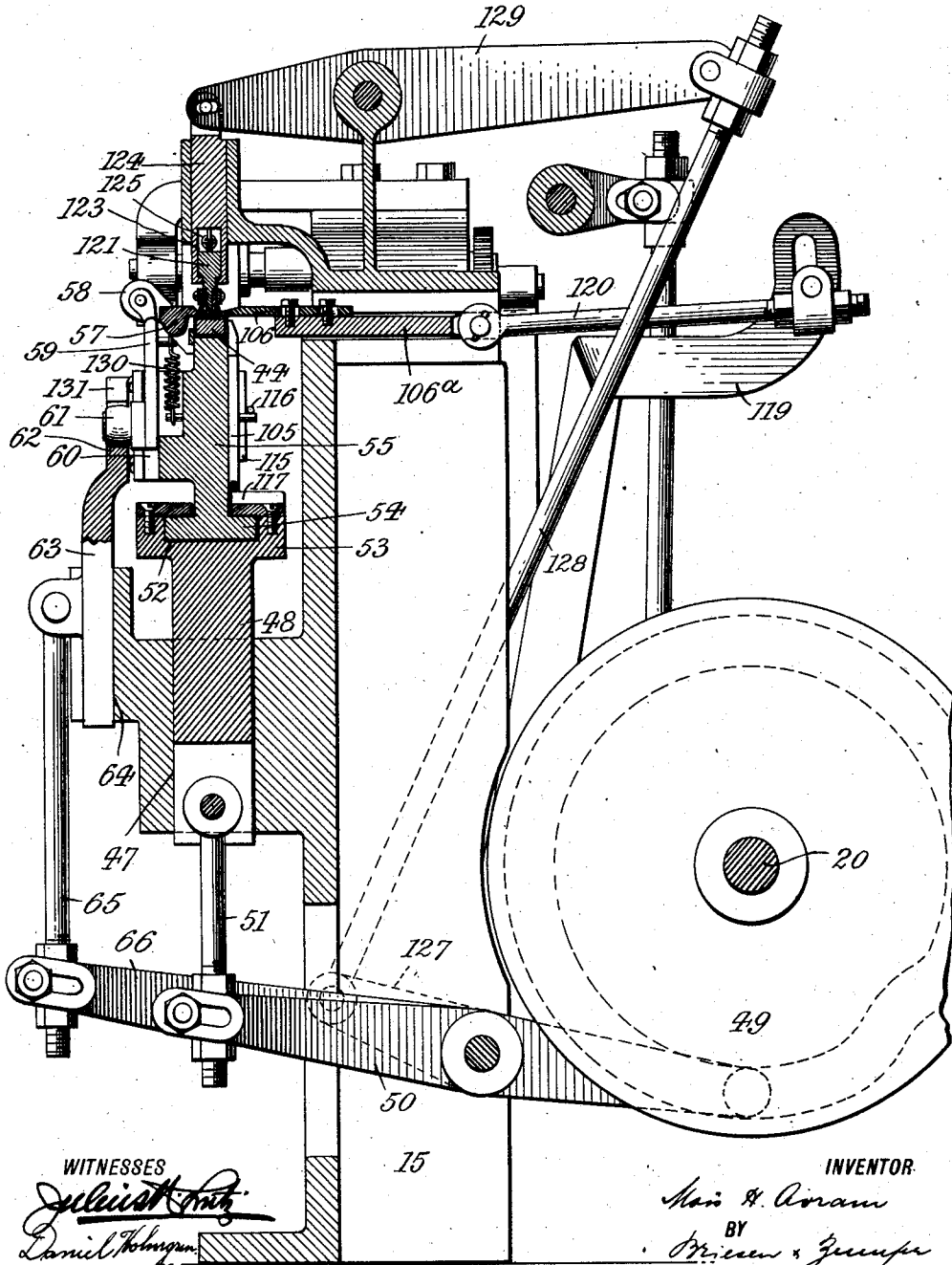
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6 SHEETS—SHEET 5.

Fig. 5.



WITNESSES
Julius H. Smith
Daniel Johnson

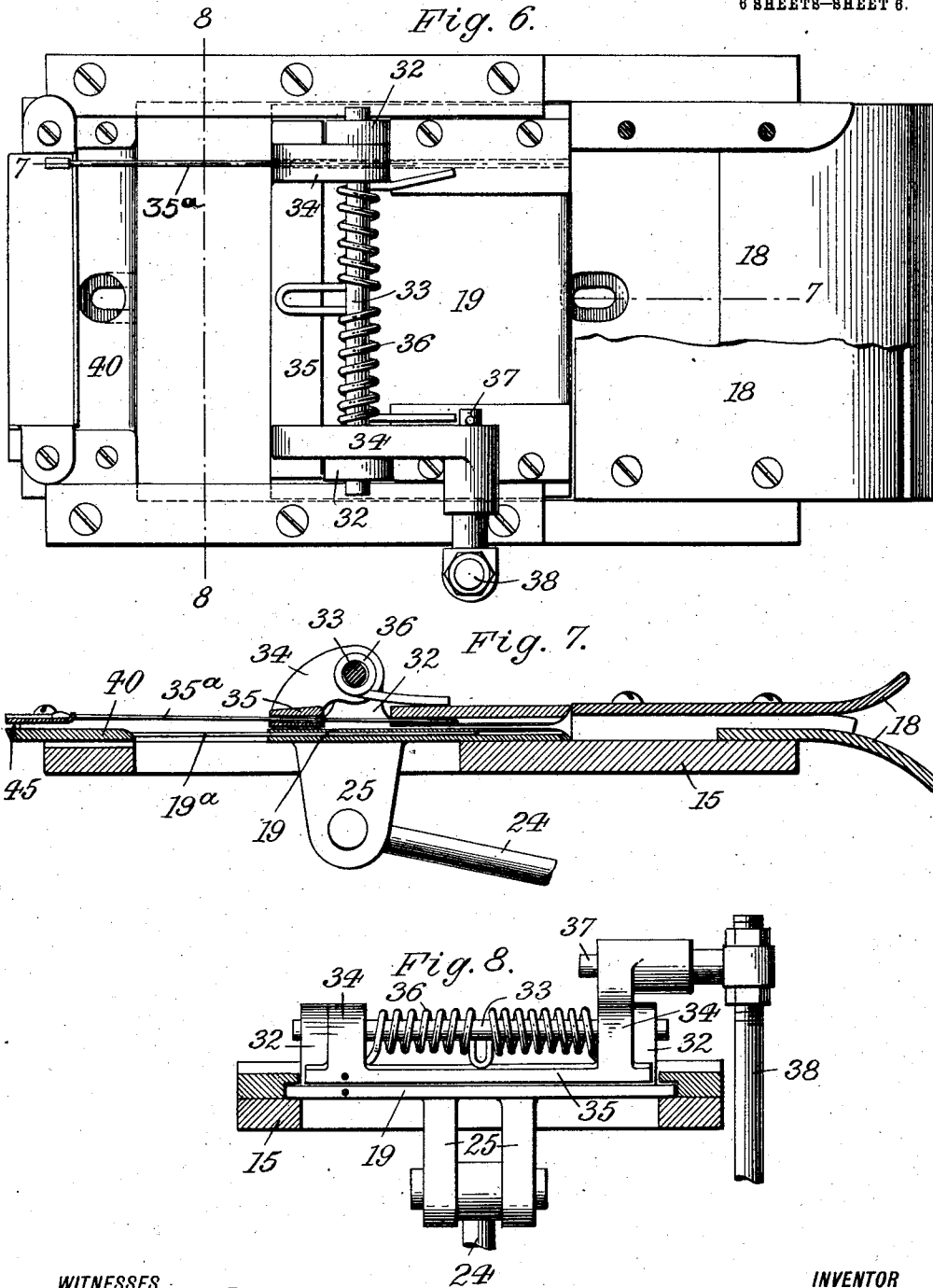
INVENTOR
M. H. Avram
BY
Arthur G. Zumpfer
ATTORNEYS

M. H. AVRAM.
MACHINE FOR MAKING TIPPED CIGARETTE TUBES.
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6 SHEETS—SHEET 6.



WITNESSES
Julius H. Smith
Daniel Holmgren

INVENTOR
M. H. Avram
BY
Priscen & Zump
per Arthur & Zump ATTORNEYS

UNITED STATES PATENT OFFICE.

MOÏS H. AVRAM, OF NEW YORK, N. Y.

MACHINE FOR MAKING TIPPED CIGARETTE-TUBES.

1,011,557.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed January 4, 1911. Serial No. 600,715.

To all whom it may concern:

Be it known that I, MoïS H. AVRAM, a citizen of the United States, residing at New York city, county and State of New York, have invented new and useful Improvements in Machines for Making Tipped Cigarette-Tubes, of which the following is a specification.

This invention relates to a machine of novel construction for making cigarette tubes provided with mouth pieces of cork, gold paper, silk, or other tipping material.

The machine is simple in construction, reliable in operation and occupies a minimum amount of floor space.

In the accompanying drawing: Figure 1 is a front view of a cigarette tube making machine embodying my invention; Fig. 2 a plan thereof; Fig. 3 an enlarged front view partly in section of part of the machine; Fig. 4 a cross section on line 4-4, Fig. 1; Fig. 5 a cross section on line 5-5, Fig. 1; Fig. 6 a plan of part of the strip feeding means; Fig. 7 a vertical section on line 7-7, Fig. 6, and Fig. 8 a vertical section on line 8-8, Fig. 6.

Briefly stated, the machine comprises means for intermittently feeding a compound strip of paper and a suitable tipping material such as cork to a cutting device which severs said strip into sections of equal length. Each section is folded around a preferably oblong mandrel and its overlapping ends are glued together. The flat tube thus formed is then stripped off the mandrel to be shipped or charged in any suitable manner.

The compound strip A comprises a paper strip 10 provided along one edge with a narrow strip 11 of cork or other tipping material, the width of strip 10 corresponding to the length of the tubes to be formed. Compound strip A is wound upon a reel 12, the axis 13 of which is hung in suitable bearings 14 of the machine frame 15. Reel 12 is held against spinning by a brake lever 16 carrying an adjustable weight 17 and frictionally resting upon spindle 13. From reel 12 strip A passes between a pair of flaring stationary guards 18 and over a feed slide 19 which receives intermittent reciprocative movement from power shaft 20 through cam disk 21 and cam lever 22 turning on a stationary shaft 23. To the free end of lever 22 is adjustably pivoted one

end of a rod 24, the other end of which is fulcrumed to lugs 25 depending from slide 19. Shaft 20 receives rotary movement through a belt 26, pulley 27 and coupling 28 the movable member of which is actuated from a handle 29 by a rod and lever connection 30. Between coupling 28 and shaft 20 is preferably interpolated a speed reducing gear 31.

Slide 19 is guided in corresponding ways of the machine frame and has a pair of upwardly extending lugs 32 in which is hung a spindle 33. To the latter are secured the arms 34 of a presser foot 35 which serves to temporarily clamp strip A to plate 19, a spring 36 forcing the foot against the plate. One of the arms 34 extends beyond spindle 33 and carries a loose transverse pin 37 to which a connecting rod 38 is adjustably secured. The latter receives motion from a cam 38^a similar to cam 21, the mechanism for actuating the paper feeding means being fully described in a copending patent application filed by me July 14th, 1908 under Serial Number 443,445.

The respective movements of the unisonally reciprocating slide 19 and presser foot 35 are such that during the advance of slide 19, foot 35 is lowered to clamp strip A to said slide whereby said strip will be taken along. During the receding movement of the slide, foot 35 is raised off the same, to permit the strip to remain stationary. In order to prevent the latter from being accidentally taken along while said receding movement takes place, a clamp lever 39 is provided which holds the strip to a stationary support 40 during such movement. Lever 39 is fulcrumed at 41 and receives properly timed movement through arm 42, rod 43 and cam 43^a. To permit a ready threading of the strip into the machine, a pair of guide wires 19^a, 35^a may be provided that are located below and above the strip run respectively.

The free end of the advanced strip is located below a fixed transverse mandrel 44 which is preferably oblong in cross section. Opposite the paper egress slot 45, mandrel 44 has a flaring extension 46 that properly guides the advancing paper below mandrel 44. Fig. 4 shows the position of the still unsevered strip after the latter has reached its foremost position. It will be noticed that a portion A' thereof projects beyond mandrel

44. This portion is next folded upward and partly over the mandrel in the following manner: Within a guide way 47 of frame 15 is accommodated a T-shaped
 5 plunger 48 which receives vertically reciprocative movement from a cam 49 mounted on shaft 20 through a cam lever 50 and an adjustable rod 51. Within a guide way 52 of the plunger-head 53 is
 10 transversely slidable the foot 54 of a carriage 55 having a flat upper face which is adapted to be raised into contact with strip A and to thereby hold the latter against mandrel 44. Within bearings 56 of carriage 55 is hung a front flap folder 57 having a pair of slotted lugs 58 which are engaged by a vertically reciprocative slide 59 guided in a corresponding guide way 60 of carriage 55. Slide 59 carries a roller 61
 20 which engages a rail 62 forming part of a piston 63 which is guided in a way 64 of the machine frame. Piston 63 is by rod 65 adjustably connected to a lever 66 which receives oscillative movement from a cam 67
 25 of shaft 20.

The movements of the parts described are so timed that after strip A has been brought into the position illustrated in Fig. 4, plunger 48 rises until carriage 55 firmly
 30 presses said strip against mandrel 44. During this movement, the upper forward edge of the carriage head engages the rearward end of folder 57, and as piston 63 remains stationary, the folder will be swung up, thereby taking along the protruding strip
 35 portion A' and laying it against the front of mandrel 44. Piston 63 will now ascend to swing the folder downward in its bearings 56 so that the free end of strip portion A' is placed against the top of the mandrel. From Fig. 5 it will be seen, that the folder engages the strip only near the upper front corner of mandrel 44, while the balance of the strip remains exposed to permit the
 45 application of an adhesive. The latter is contained in a receptacle 68 removably secured to frame 15 by a clamp screw 69. Within receptacle 68 is hung a transfer roller 70 which receives rotating movement
 50 from shaft 20 through miter wheels 71, shaft 72, chain wheel 73, chain 74, chain wheel 75 and train of gear wheels 76. Roller 70 transfers the adhesive to an applying roller 77, while the amount of paste carried by roller 70 may be regulated by the receptacle cover 78 which thus constitutes a doctor. For this purpose, cover 78 may be advanced toward or withdrawn from roller 70 by correspondingly turning a screw
 55 79 rotatable in a transverse 80 of receptacle 68 and tapped into a lug 81 of cover 78.

Roller 77 is journaled in a bar 82 which is vertically movable in a slide 83 engaging a transverse rail 84 of frame 15. To the
 60 axle 85 of roller 77 is secured a roller 86

which is held by a spring 87 in engagement with a rail 88 having an inclined section 89. To slide 85 is fulcrumed a rod 90 that is adjustably connected to a cam lever 91 pivoted at 92. Lever 91 carries a roller 93 which
 70 engages a cam disk 94 fast on shaft 72. It will be seen that during each rotation of shaft 72, slide 83 together with roller 77 will make a complete stroke so that the necessary paste will be applied to the free
 75 end of strip portion A' after the latter has been laid over the top of mandrel 44 by folder 57. Rail 88 has for its object to lift roller 77 off mandrel 44 as soon as the roller clears the paper strip, so as to maintain the machine in a clean condition.

Simultaneously with applying the paste, a strip section sufficient for making a cigarette is cut off web A. For this purpose a cutter 95 is carried by a vertically reciprocative plunger 96, an upper pin 97 of which is engaged by the elongated slotted eye 98 of a lever 99. The latter is fast on a pintle 100 supported by bearing 101 and carrying a relatively fixed arm 102 which is oscillated
 90 by a connecting rod 103 from a suitably shaped cam disk 104 of shaft 20. After a strip section has thus been severed and provided with glue, it is successively carried to a back flap folder 105 and a rear top
 95 flap folder 106, during which movement the strip slides along mandrel 44. For this purpose carriage 55 is shifted toward the left (Fig. 1), while it is maintained in its raised position thereby taking along the
 100 severed and partly folded strip section. To produce this result, a shaft 107 is inter-gearred with shaft 20 by miter wheels 108 and carries a cam wheel 109 the groove 110 of which is engaged by the roller 111 of a
 105 cam lever 112. To the free end of this lever is adjustably secured one end of a connecting rod 113, the other end of which is fulcrumed at 114 to carriage 55. During its movement toward the left, roller 61 travels
 110 along raised piston rail 62 to maintain the carriage in contact with mandrel 44.

Folder 105 is vertically reciprocative in a guide 115 of carriage 55 and is normally depressed by a spring 116. Below folder 105 is
 115 arranged a cam rail 117 which raises the folder from the position shown in Fig. 4 to that shown in Fig. 5 while the carriage travels toward the left and comes finally to a standstill below folder 106. The latter is
 120 now advanced to turn the free rear edge of the paper strip around the upper rear corner of mandrel 44. Folder 106 is carried by a slide 106* which receives horizontally reciprocative movement from a suitable cam 118
 125 by cam lever 119 and adjustable connecting rod 120. It may here be stated that for the sake of greater clearness, some of the operative cams have been shown in outlines only, such cams constituting well known elements
 130

of construction. After the strip has been properly folded, a pressing member 121 descends upon the overlapping strip sections to firmly unite the same. This pressing member is cushioned at its bottom as at 122 and is made in the form of a bar which is slidable in the correspondingly shaped guide way 123 of a vertically reciprocative plunger 124, a spring 125 tending to confine the bar within the plunger. The latter receives its movement from a cam 126 through lever 127 adjustable rod 128 and two arm lever 129. As soon as the strip is thus firmly held to mandrel 44 by member 121, piston 63 descends so that a spring 130 interposed between slide 59 and carriage 55 will cause the descent of said slide and consequently the withdrawal of folder 57 from the folded tube. To render this movement more reliable a curved overhanging finger 131 may be provided on rail 62 so that the descending piston 63 will positively take along slide 59. Immediately after this movement has taken place, plunger 48 is lowered into the position shown in Figs. 3 and 4, whereupon the operation described is repeated.

Carriage 55 is provided with a cushioned clamp 132 fulcrumed thereto at 133 and influenced by a spring 134. This clamp is so located that during the ascent of the carriage required for holding the next strip section to mandrel 44, the clamp will engage the mouth piece 135 of the previously folded cigarette tube. During the subsequent movement of the carriage toward the left, clamp 132 will take along said tube to shift the same along mandrel 44 into engagement with a tube removing or stripping device, in which movement bar 121 participates by virtue of its engagement with an abutment 57^a of folder 57.

The stripping device is shown to consist of a pair of relatively stationary upper rollers 136 and a pair of relatively movable rollers 137 arranged below rollers 136. The latter receive rotary movement from the toothed rim 138 of wheel 109 by accelerating gear 139 and wheels 140, 141. Rollers 137 are hung in pivoted bearings 142 having depending arms 143 spread by a spring 144 which thus tends to raise rollers 137 into contact with rollers 136. As soon as the unisonally advanced bar 121 and clamp 132 convey the finished tube into engagement with the right hand set of rollers 136, 137, the latter will withdraw the tube from mandrel 44 and will deliver it to any suitable conveying, packing or filling device (not shown).

To insure a proper movement of the tube between the rollers, a fixed lower guide 145 and an upper guide 146 adjustable by screw 147 may be provided.

It will be seen that by the construction described, the compound strip sections are

folded and pasted in a simple and reliable manner. Furthermore the overlapping edges of the pasted strip are held against each other for a considerable length of time, including the time required for feeding the strip along the mandrel, so that an intimate connection takes place.

I claim:

1. In a machine of the character described, a mandrel, a carriage adapted to be raised against the bottom thereof for clamping a strip against the mandrel, a folder pivoted to the carriage, a cutter for severing the strip, a plunger above the mandrel and arranged at a distance from the cutter, and means for moving the carriage from the cutter to the plunger whereby the severed strip is presented to said plunger.

2. In a machine of the character described, a mandrel, a carriage adapted to be raised against the bottom thereof for clamping a strip against the mandrel, a front flap folder pivoted to the carriage, a cutter for severing the strip, a back flap folder slidable on the carriage, a top flap folder and a plunger arranged at a distance from the cutter, and means for moving the carriage from the cutter to said top flap folder and plunger.

3. In a machine of the character described, a stationary mandrel, a carriage adapted to be raised against the bottom thereof, means for reciprocating the carriage, front and back flap folders coöperating with the mandrel, and a pressing member adapted to be reciprocated along the top of the mandrel.

4. In a machine of the character described, a stationary mandrel, a carriage adapted to be raised against the bottom thereof, means for reciprocating the carriage, front and back flap folders coöperating with the mandrel, and a vertically and horizontally reciprocative pressing member above the mandrel.

5. In a machine of the character described, a stationary mandrel, a carriage adapted to be raised against the bottom thereof, means for reciprocating the carriage, front and back flap folders coöperating with the mandrel, a clamp pivoted to the carriage below the mandrel, and a spring-influenced pressing member above the carriage which is adapted to be longitudinally displaced by said carriage.

6. In a machine of the character described, a stationary mandrel, a carriage adapted to be raised against the bottom thereof, means for reciprocating the carriage, front and back flap folders coöperating with the mandrel, a paste roller, means for reciprocating said roller along the top of the mandrel, and a vertically and horizontally reciprocative pressing member above the mandrel.

7. In a machine of the character described, a stationary mandrel, a plunger be-

low the mandrel and having a guide way in parallelism with the mandrel, a carriage engaging said guide way, means for vertically reciprocating the plunger to intermittently raise the carriage against the mandrel, and means for reciprocating the carriage along the guide way.

8. In a machine of the character described, a stationary mandrel, a plunger below the mandrel and having a guide way in parallelism with the mandrel, a carriage engaging said guide way, means for vertically reciprocating the plunger to intermittently raise the carriage against the mandrel, a front flap folder pivoted to the carriage, means for swinging said folder over the mandrel, and means for reciprocating the carriage along the guide way.

9. In a machine of the character described, a stationary mandrel, a vertically reciprocative plunger arranged therebelow, a horizontally reciprocative carriage engaging the plunger, a front flap folder pivoted to the carriage, a slide operatively connected to said folder, and means for actuating said slide.

10. In a machine of the character described, a stationary mandrel, a vertically reciprocative plunger arranged therebelow, a horizontally reciprocative carriage engaging the plunger, a front flap folder pivoted to the carriage, an independent vertically reciprocative piston, and means for operatively connecting said piston with the folder.

11. In a machine of the character described, a stationary mandrel, a vertically reciprocative plunger arranged therebelow, a horizontally reciprocative carriage engaging the plunger, a front flap folder pivoted to the carriage, an independent vertically reciprocative piston, an upper rail integral therewith, a slide carried by the carriage and operatively connected to the folder, and a roller on said slide that engages the rail.

12. In a machine of the character described, a stationary mandrel, a vertically reciprocative plunger arranged therebelow, a horizontally reciprocative carriage engaging the plunger, a back flap folder slidable

in the carriage, and a cam-rail engaged by said folder.

13. In a machine of the character described, a stationary mandrel, a vertically reciprocative plunger arranged therebelow, a horizontally reciprocative carriage engaging the plunger, a front flap folder pivoted to the carriage, means for actuating said front flap folder, a spring-influenced back flap folder slidable in the carriage, and a stationary cam rail engaged by the back flap folder.

14. In a machine of the character described, a frame, a stationary mandrel, a vertically reciprocative plunger arranged therebelow, a horizontally reciprocative carriage engaging the plunger, a front flap folder pivoted to the carriage, means for actuating said front flap folder, a back flap folder vertically slidable in the carriage, a stationary cam rail engaged by said back flap folder, a rear top flap folder horizontally slidable in the frame, and means for actuating said top flap folder.

15. In a machine of the character described, a stationary mandrel, a horizontally reciprocative carriage below the mandrel, a vertically reciprocative plunger above the mandrel, a spring-influenced cushioned pressing member horizontally slidable in said plunger, a vertically and horizontally reciprocative plunger below the mandrel, and means for causing the pressing member to participate in the advance movement of the carriage.

16. In a machine of the character described, a stationary mandrel, means for folding a paper strip partly therearound, a horizontally and vertically reciprocable bar, a paste applying roller and a guide roller carried thereby, a rail having an inclined section and adapted to be engaged by the guide roller, and a paste transfer roller adapted to be engaged by the applying roller.

MOÏS H. AVRAM.

Witnesses:

ARTHUR E. ZUMPE,
KATHERYNE KOCH.