

(No Model.)

2 Sheets—Sheet 1.

W. MAXFIELD.
CIGARETTE MACHINE.

No. 545,805.

Patented Sept. 3, 1895.

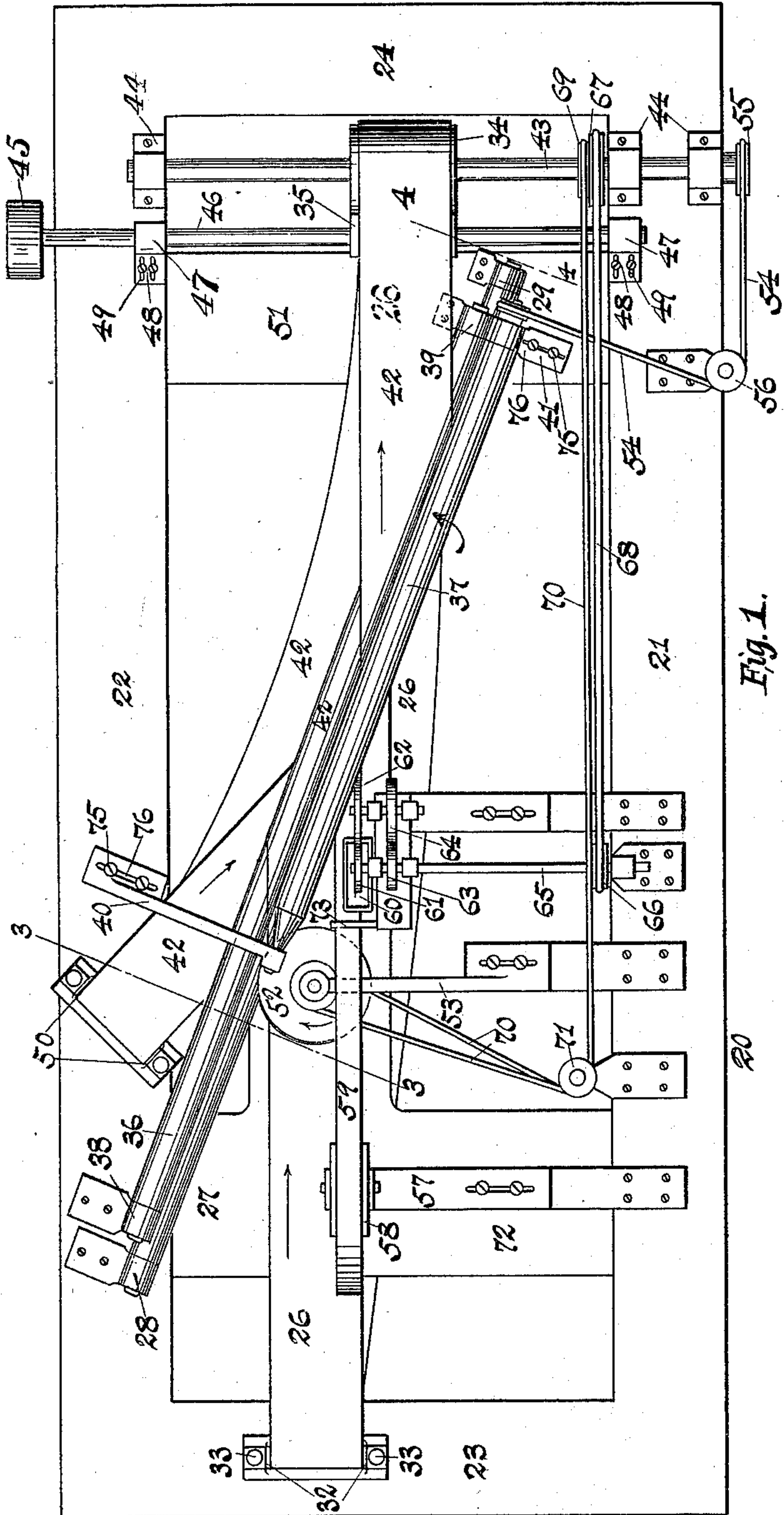


Fig. 1.

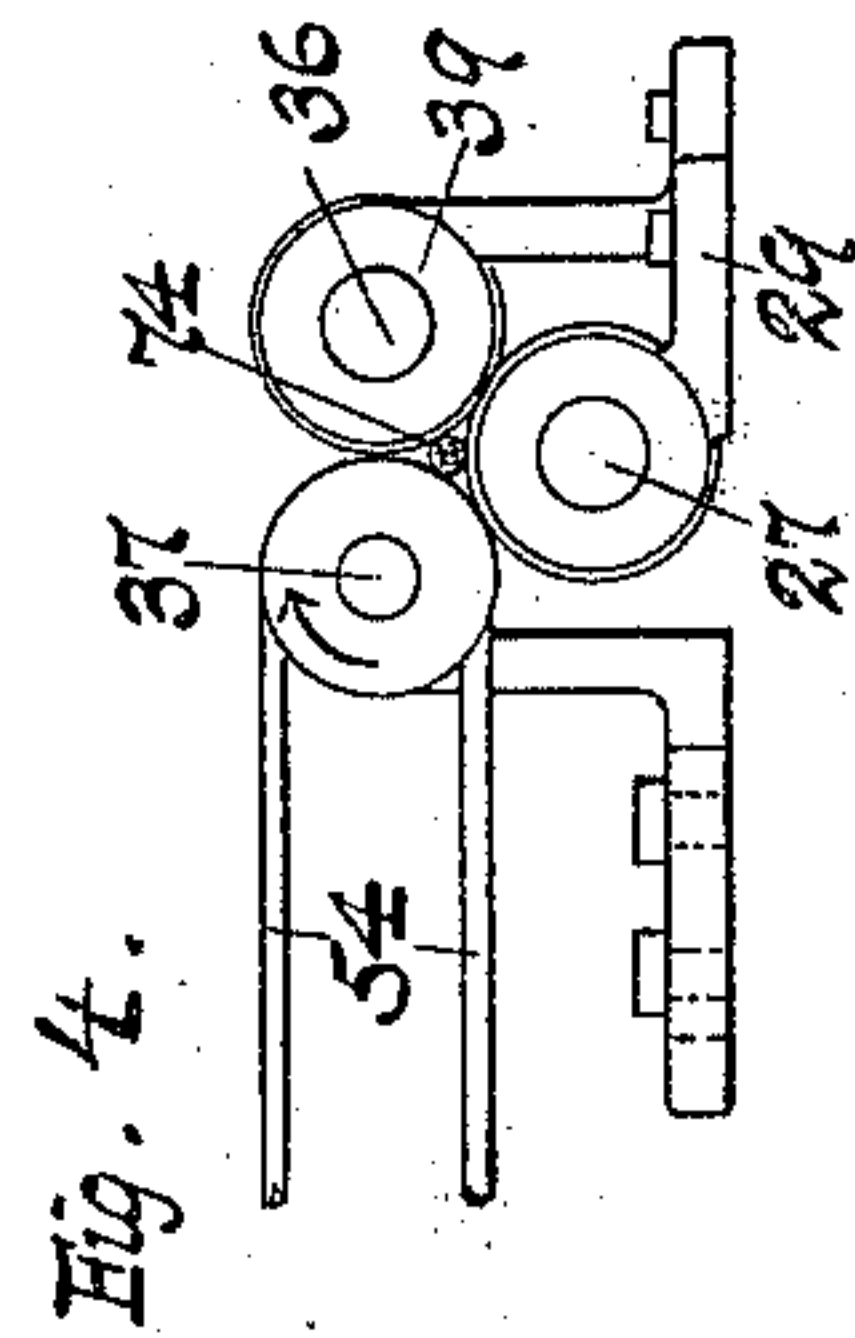


Fig. 4.

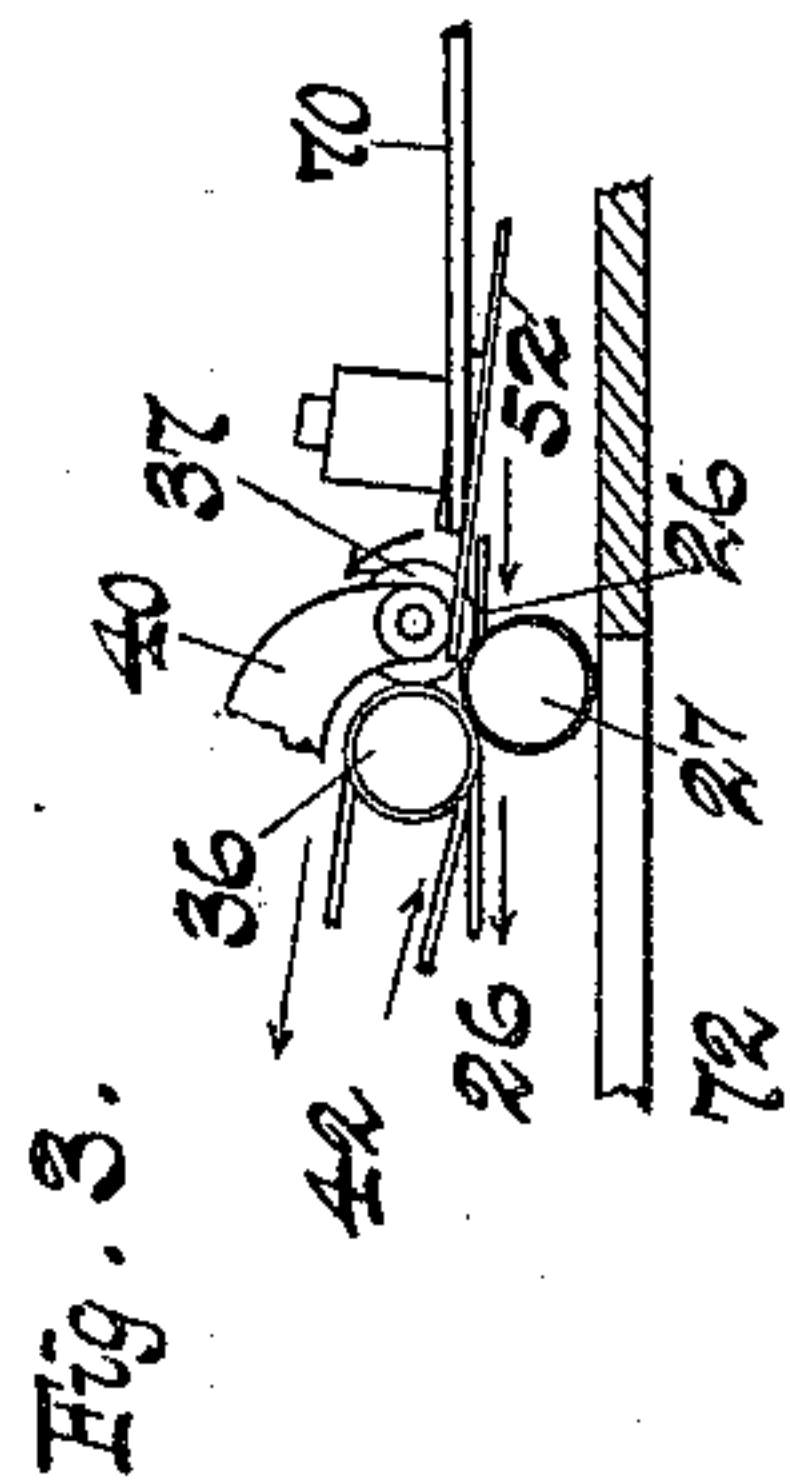


Fig. 3.

Witnesses:

W. C. Pinckney
L. Holloway.

Inventor

William Maxfield

(No Model.)

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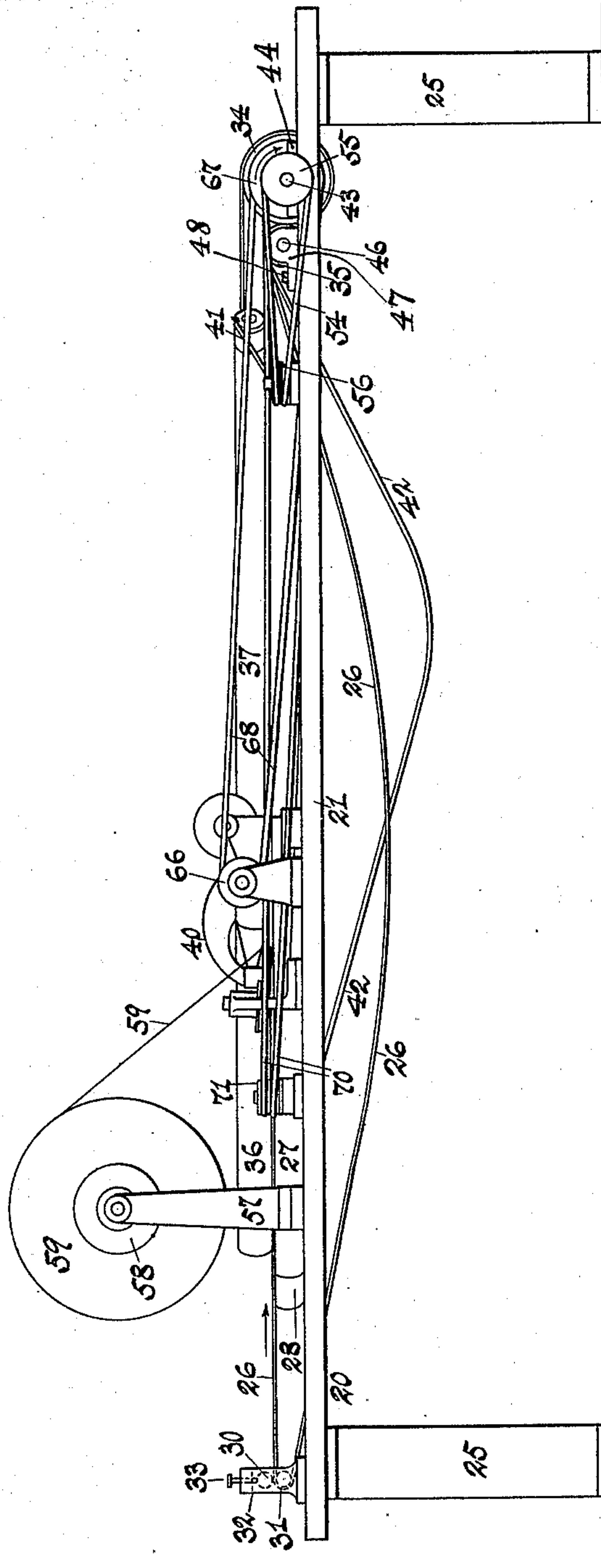


Fig. 2.

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UNITED STATES PATENT OFFICE.

WILLIAM MAXFIELD, OF BROOKLYN, NEW YORK.

CIGARETTE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 545,805, dated September 3, 1895.

Application filed March 21, 1895. Serial No. 542,588. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MAXFIELD, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Cigarette-Machines, of which the following is a specification.

My invention relates to machines for the manufacture of cigarettes consisting of a filler of tobacco and a wrapper of paper, tobacco, or other suitable material; and the invention particularly comprises novel mechanism for forming the filler of the cigarette from loose tobacco and for applying to it spirally a suitable wrapper, so that the pasted seam, instead of extending longitudinally of the cigarette, extends spirally around the same.

To enable those acquainted with the art to manufacture my cigarette-machine and to make use of the same, I have hereinafter described its construction and illustrated the same in the accompanying drawings, forming part of this specification.

In the drawings, Figure 1 represents a plan view of the machine, and Fig. 2 a side elevation. Fig. 3 is a vertical section along line 3 3 in Fig. 1; and Fig. 4 such a section along line 4 4 in Fig. 1, the observer in both cases looking toward the central portion of the machine. Fig. 4 is drawn on an enlarged scale.

Corresponding figures of reference throughout the different views refer to corresponding parts.

Referring to the drawings, 20 represents the main frame, upon which the operating mechanism is mounted, and which may be of any suitable construction and dimensions. It is here represented in the form of a rectangular table, with the larger and central portion of its top cut out so as to leave only longitudinal side bars 21 and 22 and end cross-bars 23 and 24 connecting therewith and supported by legs 25 25.

At the forward end of the machine a tobacco feeding and disintegrating mechanism of any suitable construction should be provided for the purpose of preparing and picking the tobacco prior to depositing it upon a traveling apron or belt 26. As such a feeding and disintegrating mechanism forms no part of this invention and as such mechanisms are well-

known in the art, no description thereof is here given, nor is its construction illustrated in the drawings.

Apron 26 is represented in the drawings as an endless belt, which at one portion of its length is wound spirally to the extent of a full turn, more or less, around a stationary bar 27, coming first in contact with its upper surface. Said bar 27 is secured to the top of the frame of the machine in brackets 28 and 29, and is preferably placed diagonally with reference to said frame and preferably at an oblique angle to the direction under which the apron or belt 26 is made to travel toward it. At the forward end of the machine the apron or belt 26 passes between two rollers 30 and 31, the upper one of which is capable of being forced downward toward the lower one in vertically-slotted bearings 32 by means of proper adjusting-screws 33, for the purpose of insuring close contact of the belt or apron with both of said rollers during its passage between the same, the said mechanism serving as a brake to keep the upper portion of apron 26 perfectly taut.

At the rear end of the machine the belt or apron 26 passes over the top and over the larger portion of the periphery of a horizontal drum 34, then between said drum and a similar drum 35 and over the top of the latter, and from thence beneath the table portion of the frame of the machine toward rollers 30 and 31, as shown more particularly in Fig. 2. Parallel with and close to said bar 27 a second stationary bar 36 and a revolving roller 37 are provided in such positions as to be close to each other and to approximately meet in a plane extending vertically from the axis of bar 27. Bar 36 is fixedly mounted in brackets 38 and 39, while roller 37 is revolvably mounted in proper bearings in brackets 40 and 41. Bars 27 and 36 I will hereinafter designate as "still-bars."

42 is an endless belt, wound to the extent of about one turn, more or less, around still-bar 36, so as to come first in contact with the lower surface of the forward portion of said bar, substantially opposite to the point where endless belt or apron 26 first comes in contact with still-bar 27, and so as to leave still-bar 36 opposite to where belt or apron 26 leaves still-bar 27. The extent to which belt 42 is wound

on bar 36 is such that the direction under which said belt approaches said bar is different from that under which it leaves it. The endless belt 42 and apron 26 leave their respective still-bars under the same directions, and so as to have belt 42 substantially cover apron or belt 26. Belt 42 then passes around drums 34 and 35 in the same manner as and in close contact with apron or belt 26.

43 is the axle of drum 34. The same is mounted in proper bearings 44 44 on the frame of the machine. Axle 46 of drum 35 is mounted in bearings 47 47 on said frame and carries a pulley 45, to which revolving motion is imparted from any suitable source of power, the bearings 47 being capable of adjustment toward and away from bearings 44 by having their securing-screws 48 48 pass through slots 49 49. As the forward end of belt 42 is held between two rollers mounted in bearings 50 50 in the same manner as the forward end of belt 26 is confined, it will be seen that the upper members of both belts may be tightly stretched by drawing their rear portions toward and around drums 34 and 35, and that then the central and rear portions of the upper branches of both belts may be kept traveling together continuously after moving bearings 47 toward bearings 44 sufficiently to insure close frictional contact between said belts, where they pass upward between drums 34 and 35. When axle 43 and with it drum 34 is revolved, the upper members of both belts, tightly stretched, will be drawn spirally around their respective still-bars, apron or belt 26 at the same time conveying the loose tobacco deposited upon its forward end toward said still-bars.

51 is a leaf extending between side bars 21 and 22 of the machine-table and supporting end brackets 29, 39, and 41.

The forward end of roller 37 is cone shaped and is placed preferably near the edge of apron or belt 26, where the same approaches still-bar 27. Both still-bars 27 and 36 extend forward from said cone-shaped end. The rear ends of the still-bars and of roller 37 may be made approximately even, as shown in Fig. 1.

52 is a disk slightly inclined with reference to the upper surface of apron or belt 26 and so supported by a shaft in bracket 53 as to bring the most elevated portion of its under surface close to still-bar 36 and near to and underneath the conical end of roller 37 and to make it cover the tobacco fed upon apron or belt 26, which is constantly moving toward the still-bars. Said disk revolving in the direction of the arrow in Fig. 1 will guide said tobacco underneath the conical end of roller 37 and into the space formed between the main body of said roller and those portions of apron or belt 26 and belt 42 which, while being drawn over or around their respective still-bars, face each other and face said roller.

Revolving motion is imparted to roller 37 in the direction indicated by arrow in Fig. 1 from shaft 43 by a belt 54 engaging with a pulley

55 on said shaft and with the end of said roller and passing around suitable idlers 56.

A bracket 57 extends from bar 21 of the frame of the machine toward the forward portion of apron or belt 26 and carries a reel 58, on which the material 59 from which the cigarette-wrappers are to be made is wound. Such material in this case is assumed to be a strip of paper, and the same is shown to unwind, while resting upon apron or belt 26, in the same direction in which said apron travels and to pass underneath roller 37 at an oblique angle to the direction of said roller.

60 is a trough containing glue or paste into which a roller 61 dips. Said roller transfers glue from its periphery to an auxiliary roller 62, the periphery of which applies said glue to one edge of the strip of paper 59 near the point where the same passes underneath roller 37. Revolving motion of glue-applying rollers 61 and 62 is secured by means of coacting friction-rollers 63 and 64 mounted on their respective shafts, shaft 65 of rollers 61 and 63 carrying a pulley 66, which receives its motion from a suitable pulley 67 on shaft 43 through belt 68. Revolving motion is imparted to disk 52 from a pulley 69 on shaft 43 by a belt 70 which passes over idlers 71.

72 is a leaf between longitudinal bars 21 and 22 of the machine-table, and is employed in keeping apron or belt 26 in a level position where it travels toward the still-bars.

73 is a presser-foot for confining a strip of paper 59 in contact with apron or belt 26.

The operation of the machine is as follows: The tobacco having been placed upon the portion of endless apron or belt 26 near the forward end of the machine in properly disintegrated condition, is carried by the movement of said apron or belt underneath the elevated portion of disk 52 and is conducted, owing to the simultaneous movements of said apron or belt, over or around still-bar 27 and of belt 42 around still-bar 36, as well as of the revolving motion of roller 37, all produced as described above, into the space formed between said apron or belt 26 and belt 42, where they are wound over or around their respective still-bars and between roller 37, and is conducted along said space and consolidated therein into a continuous body traveling toward the point where the strip of paper 59 by passing underneath roller 37 is introduced into such space. As opposite to this point, and to some distance beyond and toward the rear end of the machine, apron or belt 26 and belt 42 are moving over or around their still-bars, being wound and drawn spirally around the same, as described, the strip of paper by coming in contact with said belts will be coiled spirally around the body of tobacco constantly moving toward it, and the gluing together of its edges will likewise be effected, owing to the joint action of said apron and belt and roller 37. By using a belt drawn around a stationary or still bar I am enabled to give to such belt the spiral wind-

ing heretofore mentioned and to thus assist in spirally winding the wrapper around the filler, as contemplated by me. This could not be done as well by winding a belt spirally around a roller, as in that case the coils of the belt would constantly have a tendency to shift their positions along such roller. After this has been accomplished and filler and wrapper have thus been united they travel together for some distance between said apron and belt and said roller, and thereby an opportunity is given to the glue to thoroughly unite the edges of the wrapper and to the body of the filler to become thoroughly homogeneous before the cigarette 74 passes from engagement with said apron and belt and near to the rear end of the machine out of the space between roller 37 and said still-bars. (See Fig. 4.) At this point of the machine a cutting mechanism for detaching cigarettes of predetermined lengths from the emerging endless-cigarette body may be employed. No such cutting mechanism is illustrated in the drawings, as my present invention does not relate to such feature of a cigarette-machine. Various suitable devices of this nature are well known in the art.

It will be seen that the diameter of the cigarette so produced is determined by that of the largest circle which can be placed between roller 37 and apron or belt 26 and belt 42 where wound on or over their respective still-bars. Approximately close contact between said apron and belt, and also roller 37, is required, so as to keep the tobacco confined between them, it being, however, necessary to keep roller 37 sufficiently elevated above apron or belt 26, say, about one-sixteenth of an inch, to guard against the glue on the wrapping-strip being deposited on said roller. Hence, when it is desired to enlarge the diameter of the cigarette, this will have to be accomplished by slightly displacing either one of the still-bars or roller 37 laterally with reference to the other members. For such purpose brackets 40 and 41 are secured to the frame of the machine by screws 75 passing through suitable slots 76 in the bases of said brackets, whereby lateral displacement of said roller is made possible. Either of the still-bars might be provided with similar adjustable brackets. A corresponding adjusting arrangement is also illustrated in Fig. 1, with reference to guiding-disk 52, so that its position may be varied correspondingly, if desired.

While the machine here illustrated for forming a cigarette-body represents means which in practice have given very satisfactory results, I do not wish to confine myself to the details of construction and arrangement shown, as it will be apparent to those versed in the art of constructing cigarette-making machinery and of making cigarettes that various modifications might be made in the mechanism without departing from the spirit of my invention, the vital features of which comprise a roller, as 37, a bar, as 36,

with traveling belt 42 wound on the same, and a tobacco-conveying apron or belt coacting therewith suitably supported either by still-bar 27, as shown, or by other obvious means, such as a suitable extension of leaf 72 beneath the machine. The still-bar 27 serves in this organization simply as a support for the apron 26. Thus the winding of said tobacco-conveying apron 26 around a bar, as 27, while being useful, might be dispensed with, providing said apron be so arranged with reference to belt 42 on bar 36 and with reference to roller 37 as to keep the tobacco confined and moving in the space formed between said portions of the structure. Apron or belt 26 and belt 42 might be each made to join and to leave its corresponding still-bar, under any suitable angle with reference to its axis, and the number of coils in such belts may be varied as circumstances may require, it being even possible to operate with belts wound on or over their still-bars less than one turn. It will be observed that while the roller 37 is placed parallel with the still-bar 36 said roller and bar need not be oblique to the direction of travel of apron 26, but may be arranged longitudinally thereof, the wrapper, as 59, being always introduced oblique to the roller and said still-bar. Where in this description I use the term "apron" or "belt" I have reference to element 26, which at the forward end of the machine serves as the tobacco-conveyer.

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

1. In cigarette machines, the combination with a traveling apron suitably supported, a still bar fixedly mounted on proper supports, a belt wound on part of its surface, a roller, all in operative relation with one another, and means for conducting the tobacco into the space between the roller and said apron and belt, substantially as set forth.

2. In cigarette machines, the combination with two still bars fixedly mounted on proper supports, each having a belt wound on part of its surface, a roller, all in operative relation with one another, and means for conducting tobacco into the space between said belts at their point of contact with said still bars and the roller, substantially as set forth.

3. In cigarette machines, the combination with a traveling belt suitably supported, a still bar, a second belt wound on part of its surface, a roller provided with a conical forward end portion all in operative relation with one another, and means for introducing tobacco into the space between said conical end portion and said belts where so supported, substantially as set forth.

4. In cigarette machines, the combination with a traveling belt suitably supported, a still bar, a second belt wound on part of its surface, a roller provided with a conical forward end portion, all in operative relation with one another, and an inclined disk adjusted to

conduct tobacco toward said conical end portion, substantially as set forth.

5. In cigarette machines, the combination with a traveling belt suitably supported, a still bar, a second belt wound on part of its surface, and a roller, all in operative relation with one another, of means for holding said belts in said frictional contact with each other, and mechanism for propelling said belts, substantially as set forth.

6. In cigarette machines, the combination with a traveling belt suitably supported, a still bar, a second belt wound on part of its surface, a roller, all in operative relation with one another, means for conducting tobacco into the space between said roller and the operative portions of said belts, and appliances for varying the relative position between said roller and said operative portions of the belts, substantially as set forth.

7. In cigarette machines, the combination with a roller and two still bars, each provided with a suitable belt, all in operative relation

with one another, of mechanism for conducting tobacco into the space between roller and belts, and means for guiding the wrapping material toward the roller, obliquely, substantially as set forth.

8. In cigarette machines, the combination with a traveling apron suitably supported, a still bar, a belt wound spirally around part of its surface, and a roller all in operative relation with one another the roller being placed obliquely with reference to the direction in which the apron travels, of means for conducting the tobacco into the space between the roller and said apron and belt, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 19th day of March, A. D. 1895.

WILLIAM MAXFIELD.

Witnesses:

J. E. M. BOWEN,
M. C. PINCKNEY.