No. 863,090. PATENTED AUG. 13, 1907.

S. I. PRESCOTT.

FILLER SHAPING MECHANISM FOR CIGARETTE MACHINES.

APPLICATION FILED MAY 14, 1906.

3 SHEETS—SHEET 1.

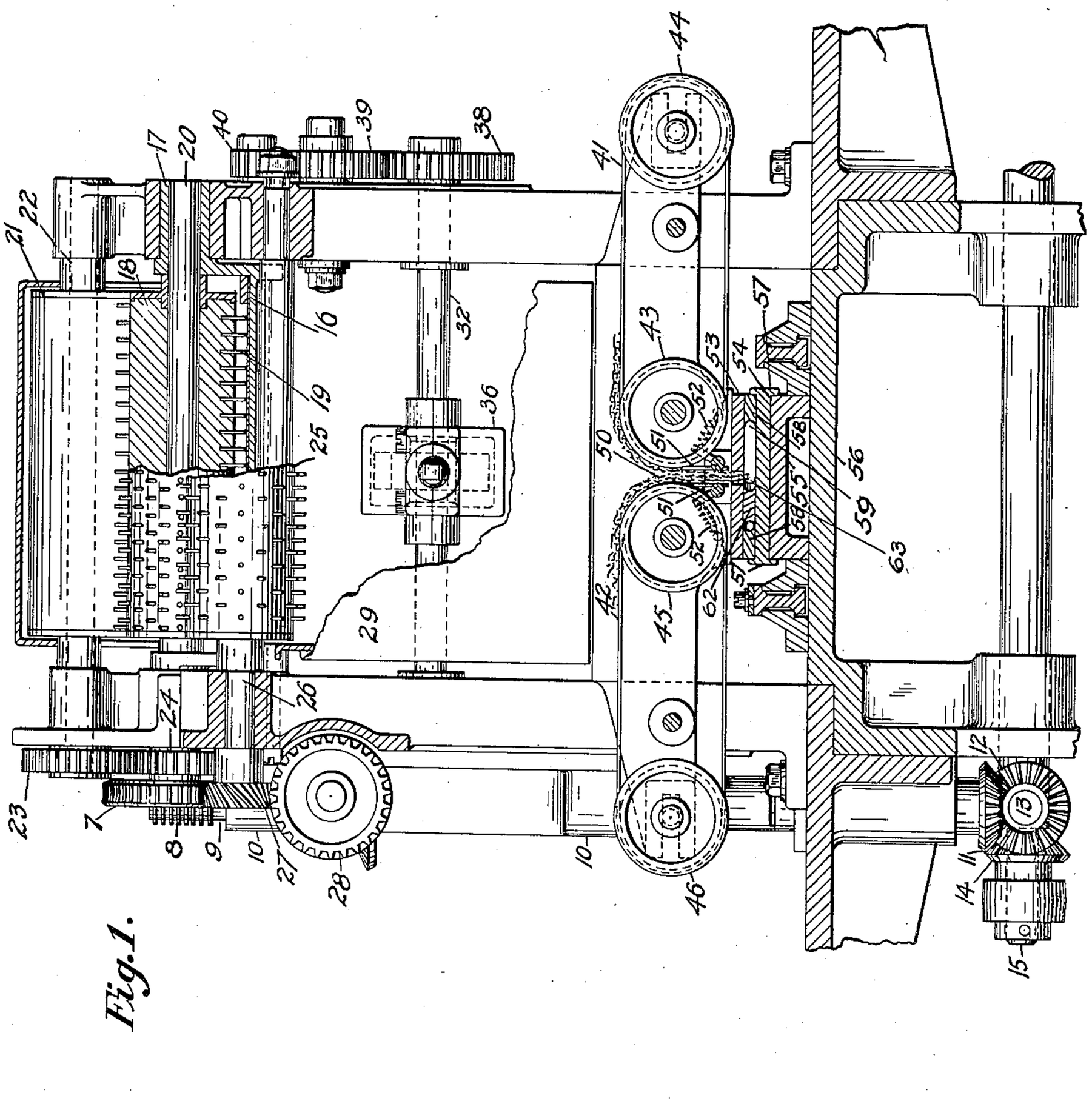

Fig. 1.

ATTEST
A. White
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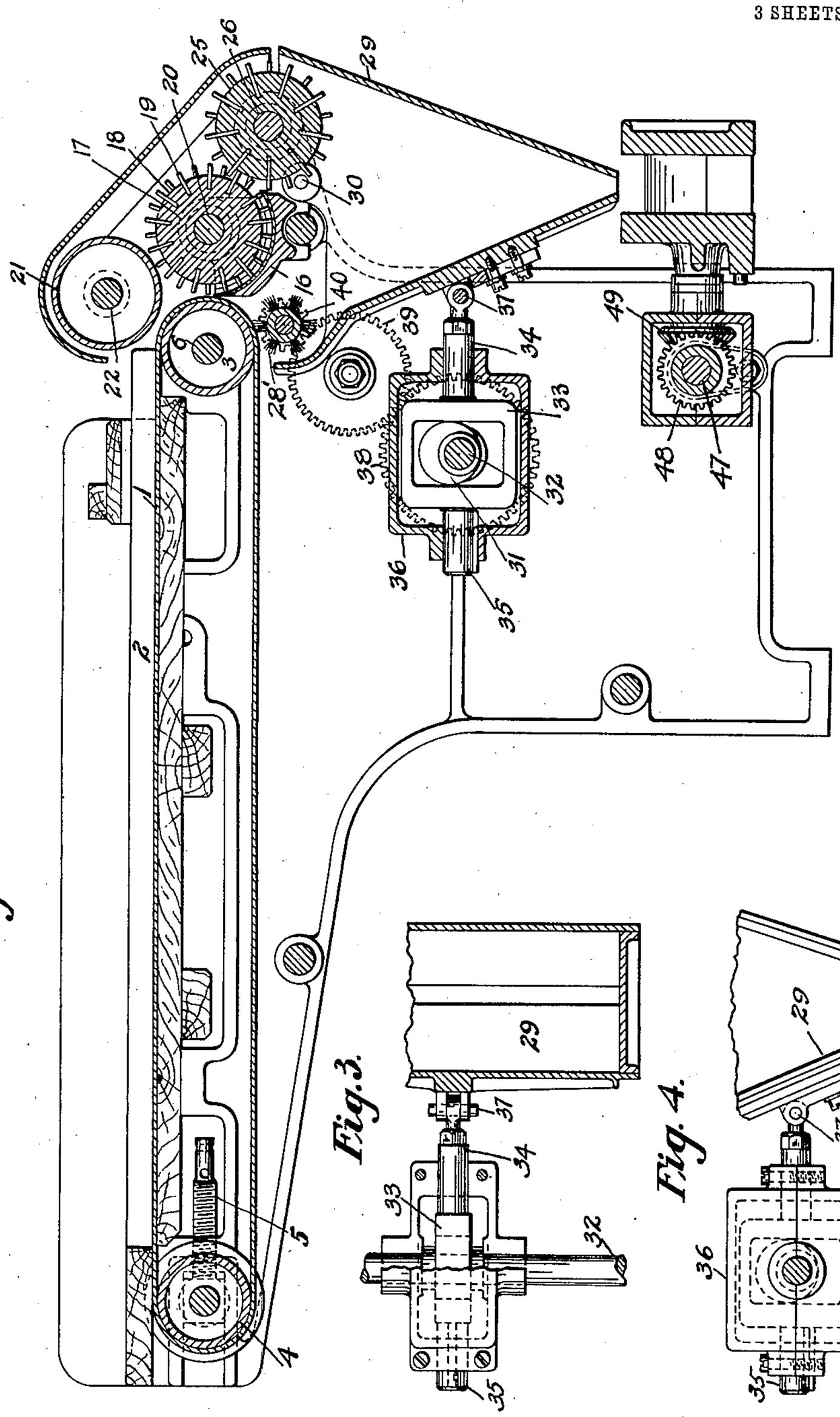

Fig. 2.

Fig. 3.

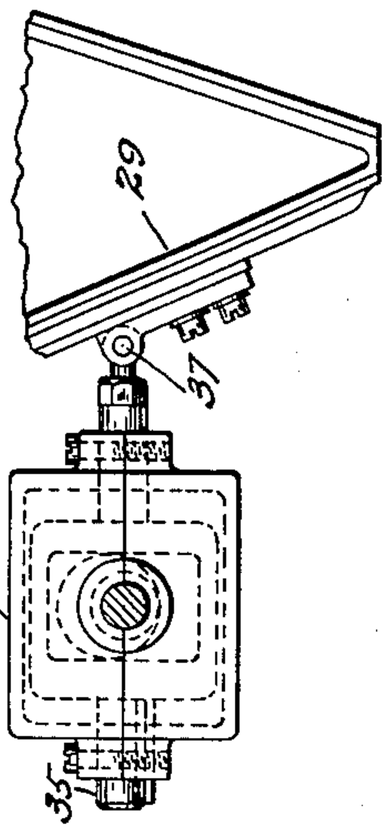

Fig. 4.

ATTEST

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3 SHEETS—SHEET 3.

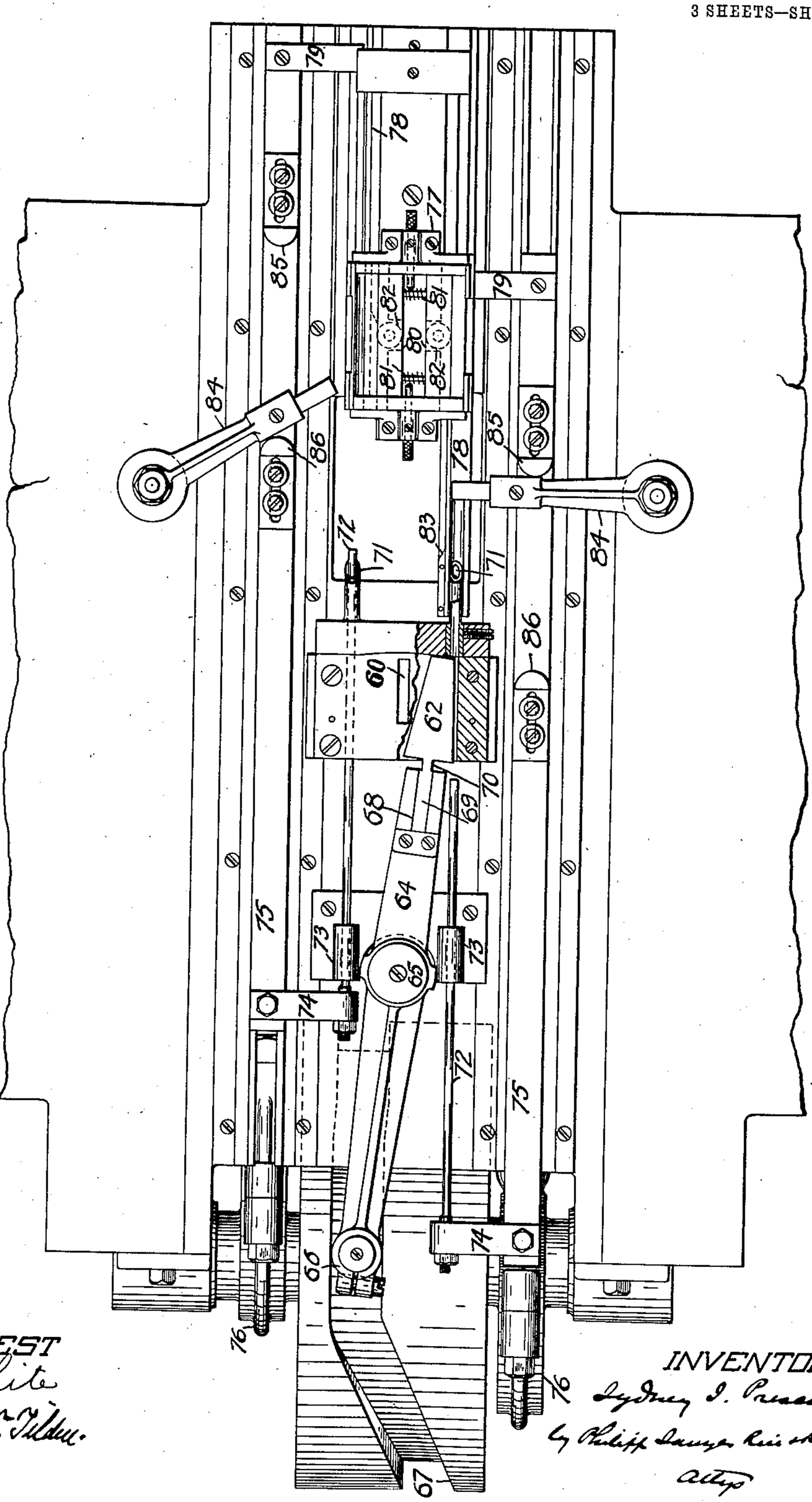

Fig. 5.

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UNITED STATES PATENT OFFICE.

SYDNEY I. PRESCOTT, OF NEW YORK, N. Y., ASSIGNOR TO THE AMERICAN TOBACCO COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

FILLER-SHAPING MECHANISM FOR CIGARETTE-MACHINES.

No. 863,090. Specification of Letters Patent. Patented Aug. 13, 1907.

Application filed May 14, 1906. Serial No. 316,688.

To all whom it may concern:

Be it known that I, SYDNEY I. PRESCOTT, a citizen of the United States, residing at New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Filler-Shaping Mechanism for Cigarette-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to certain improvements in cigarette machines, and more especially to that class of machines in which short sections or rods of filler are formed from the tobacco, these rods or sections being stuffed into cases or tubes already made.

Cigarette machines of the class referred to have been used in which the tobacco is introduced into a shaper case through an opening in its top wall, the sides of the shaper case being provided with stationary forming blocks, having shaping surfaces. The bottom of cases of this type was made movable, and there was secured to this movable bottom a rectangular shaper block having shaping surfaces formed on its opposite edges. In this construction, the bottom was reciprocated, causing the shaper block to move from side to side of the shaper case, thus forming a section or rod of filler alternately in connection with one or the other of the pair of forming blocks. These constructions are not only more or less complicated, but inasmuch as the forming blocks are stationary and the bottom of the casing reciprocates under them, there is liability that small particles of tobacco, and if the tobacco be not clean, sand or grit, will be carried by the movable bottom underneath the stationary blocks. This material not only is liable to wedge between the movable bottom and the stationary blocks, thus interfering with the operation of the machine, but it also causes excessive wear.

The object of this invention is to produce an improved shaper case for machines of the character in which short rods or sections of filler are formed to be stuffed into ready-made cases, which shall be free from the objections hereinbefore referred to and which shall possess other advantages as compared with prior constructions.

In the accompanying drawings—Figure 1 is a front elevation, partly in section, of so much of a cigarette machine as is necessary to an understanding of the invention, certain parts of the construction being shown in section. Fig. 2 is a sectional elevation of part of the tobacco feeding mechanism illustrated in Fig. 1. Figs. 3 and 4 are detail views illustrating the construction of the tobacco feeding mechanism. Fig. 5 is a plan view, partly in section, illustrating a shaper case constructed in accordance with the invention and the parts immediately connected therewith, certain of the parts being shown in section.

In machines embodying the invention, there will usually be employed a mechanism for disintegrating the tobacco fiber, to convert it into a loose or fluffy mass before it is operated upon by the shaper case to be hereinafter described.

The disintegrating mechanism, when such mechanism is employed, may be of any suitable description. In the particular machine illustrated, the tobacco is placed by an operator on a traveling belt 1, the belt running between side bars 2 and being supported on drums 3, 4. As shown, the drum 4 is mounted in adjustable bearings, indicated at 5, and is driven by the belt. The drum 3 is mounted on a shaft 6 which is provided with a worm gear 7 in mesh with a worm 8 on a standing shaft 9, this shaft being supported in suitable brackets 10 which may be secured to the frame of the machine. The shaft 9 may be provided at its lower end with a bevel gear 11 meshing with another bevel gear 12 on a horizontal shaft 13, this shaft being provided with a bevel gear which meshes with a bevel gear 14 on the drive shaft indicated at 15.

The belt may forward the tobacco into a channel formed by a casting 16 supported by a pair of hubs 17 one of which is shown in Fig. 1. Coöperating with this casting is a forwarding roll 18. This roll 18 may be provided with forwarding pins 19 and may be supported on a shaft 20 which finds its bearing in the hub 17 before referred to. This roll, in the particular machine shown, runs at the same surface speed as the belt and does not operate, therefore, to separate the tobacco. A guiding roll 21 may be employed in connection with the belt, this roll, however, being spaced from the belt, in the particular machine shown, a sufficient distance so as not to compress the tobacco being forwarded thereby. This roll 21 may be mounted on a shaft 22 suitably supported in the frame and driven by a gear 23 which is in mesh with a gear 24 on the shaft 20. These gears may derive their motion from suitable gearing, not necessary to illustrate and describe, from the shaft 9.

After being forwarded between the roll and channel, the tobacco is subjected to the action of a picker roll 25 mounted on a shaft 26. This roll rotates much faster than the stream of tobacco being forwarded by the roll 18, and the tobacco is, therefore, disintegrated by it. The shaft 26 is provided with a spiral gear 27 driven by another spiral gear 28 which may derive its motion

through suitable connections from the vertical shaft 9. A rotating brush 28′ may, if desired, be employed to remove from the belt any particles of tobacco that may adhere thereto. The disintegrated tobacco falls in a shower into, in the particular machine illustrated, a guide 29 which is hung on pivots 30. This guide may be given a swinging or to and fro movement by means of a cam 31 mounted on a shaft 32 suitably supported in the frame, this shaft being located in a yoke or eccentric strap 33. The eccentric strap may have extending from it guide rods 34, 35 which work through openings in a suitable casing 36. The guide rod 34 may be connected by a pivoted connection, indicated at 37, to the guide 29. The shaft 32 may be driven, by suitable gears, not shown, from the upright shaft 9 before referred to, and may also, through gears 38, 39, 40 drive the brush shaft before referred to.

In the particular machine illustrated, the tobacco is delivered by the guides onto a carrier composed of two belts 41, 42 which are arranged to run towards each other, the swinging movement of the guides depositing the tobacco evenly on the belts. The belt 41 may be mounted on drums 43, 44, and the belt 42 on drums 45, 46. The drums 43, 45 may be driven by any suitable gearing. As shown, a cross shaft 47 is provided, this shaft carrying two bevel gears, one of which is illustrated at 48 in Fig. 2. These bevel gears mesh pinions, one of which is indicated at 49, on the shafts which support the drums 42, 43. It will be understood that in the particular machine illustrated, the belts move toward each other so as to combine in a single stream or sheet the two sheets or streams of tobacco formed thereon. The sheet or stream thus formed by combining the two sheets or streams on the separate belts may be forwarded to the shaper case to be hereinafter described. While this may be formed in any desired manner, in the particular construction shown, two drums 43, 45 are arranged close to each other so as to provide a throat 50, in which throat the single sheet of tobacco referred to is formed. Pivoted scraping plates indicated at 51 may, if desired, be used to insure the delivery of the tobacco from the belts and these plates may assist in the formation of the throat. These plates may be held up against the belts by springs 52 in an obvious manner.

The shaper case employed may be varied widely in construction, but it will embody a stationary bottom. In the particular construction illustrated, there is employed, in the formation of the shaper case, an upper plate 53 and a stationary bottom plate 54, this plate resting on a table 55 which rests on the machine bed indicated at 56. The bottom may be provided with cross or T-heads indicated at 57, the lower extensions of these heads embracing the sides of the table 55 so as to hold the bottom stationary. Between the upper and the lower plates are located spacing blocks 58, these blocks forming the sides of the case. These blocks 58 may also, as in the particular construction illustrated, be utilized as forming blocks by providing them with concave recesses as 59, these concaves forming shaping surfaces.

The tobacco may be introduced into the shaper case in any suitable manner, but in the best constructions, and as illustrated, the upper plate will be provided with an opening 60. In the best constructions, furthermore, the sides of this opening will be parallel, or in the same plane with the sides of the throat and the opening will be about the width of the throat and will, of course, substantially correspond with it in length. The shaper employed in the shaper case may be varied in its details of construction. As shown, this shaper consists of a block 62 having concave recesses 63 on its opposite edges. The block will be given a to and fro movement in the shaper case, so that the recesses 63 coöperate alternately with the recesses 59 in the formation of fillers. In the best constructions and as shown, and for reasons which will hereinafter appear, the opposite sides of the block 6, *i. e.*, the sides in which the concave recesses are formed, will be arranged to converge, as clearly appears in Fig. 5.

The means by which the shaper block is operated may be varied widely and will vary according to the character of the to and fro movement given the block. When, however, the block has converging sides, as in the construction illustrated, the to and fro movement should be an oscillating movement. When the shaper block is given an oscillating movement, the connections by which this is effected may be of any suitable character. In the construction illustrated, there is employed a lever 64 pivoted at 65 to the bed of the machine, this lever being provided with a suitable cam roll, indicated at 66, which works in connection with a grooved cam 67 mounted on the shaft 15 before referred to. The connection between the lever 64, when this form of oscillating mechanism is employed, and the block, may be of any suitable character, but will, in the best constructions, be of the type known as a floating connection. The lever is provided with a socket, indicated at 68, and the block has a stem 69 which fits in the socket, the fit being, however comparatively loose. With this type of connection, the movement of the shaper block is always controlled by the top and bottom walls of the shaper case, no matter what may be the vertical position of the lever. If, therefore, the lever is improperly adjusted, or if it wears, the travel of the block in the shaper case will not be varied. If desired, the stem 69 may be narrowed, as indicated at 70, between the end of the lever and the base of the block. If any foreign matter, such, for instance, as a nail, gets into the shaper case, the breakage which necessarily results will occur at the narrower part of the stem and the machine will not be disabled for any greater length of time than is necessary to insert a new shaper block.

When a shaper block having converging sides is employed in connection with an operating lever, the center of oscillation of the lever should be so positioned with respect to the block that the converging side of the block which is to operate in connection with one of the forming surfaces 59 will be parallel to that forming surface when the block has completed its movements in one direction. The position of the parts described is well-shown in Fig. 5.

As has been indicated, the charges of tobacco which are to be compressed, may be introduced into the shaper case in any desired manner. When, however, the tobacco is, as in the particular machine illustrated, fed forward to the shaper case in a continuous stream, the shaper block may well be utilized to separate from this stream the successive charges of tobacco. The cutting off of these successive charges of to-

bacco should be effected by a shearing cut. The converging side construction of the shaper block enables it to be utilized for this purpose, by forming the upper edges or corners of the shaper block sharp so that they make cutting edges that will coöperate with the lower edges of the opening 60, and they will, owing to the shape of the edges, give the stream of tobacco a shearing cut. This construction, furthermore, enables the sides of the opening 60 to be arranged either in the same planes with the sides of the tobacco forwarding throat, or parallel with those planes, which is an advantage for the reason that it enables the size of the opening to be reduced to practically the size of the advancing tobacco stream or sheet.

As successive charges of tobacco are cut off and formed into fillers in the shaper case, they will be ejected from the case and into the formed tubes or casings. Any suitable ejecting mechanism may be used for this purpose. In the particular construction illustrated, the shaper case is provided with a pair of spouts 71, each of these spouts being in line with the chamber formed by the opposed shaping recesses in the shaper block and the shaping surfaces of the casing. The formed sections of filler are pushed out through these spouts by ejecting plungers 72, these plungers working through suitable guides 73 in the bed and being connected by arms 74 to slides 75 working in suitable ways in the bed. These slides are operated by eccentrics on the shaft 15, the eccentric straps being indicated at 76. It may be here remarked that the converging side construction of the shaper block is also advantageous in the ejecting operation. The cam groove in the cam 67 is so formed as to release the compression on the filler just as it is ejected. As the shaper block moves away from the stationary forming surface, the opening is converted from a substantially cylindrical one into a somewhat flaring shape, so as to permit the filler to be easily pushed out.

The formed cases or tubes into which the fillers are inserted may be supplied to the machine in any suitable manner. In the construction illustrated, there is provided a magazine, indicated at 77, beneath which operate a pair of transferring slides 78. These slides are connected by arms 79 with the slides 75. The bottom of the magazine may be formed by gates 80 which are normally held closed by means of springs 81 surrounding rods which enter recesses in the gates. The bottoms of the gates may be provided with rolls 82 illustrated in dotted lines in Fig. 5, these rolls being struck at proper times by cams 83 on the transporting slides so as to allow a tube to be delivered when the slide is beneath the magazine. The tubes are carried forward by the slides and deposited on the spouts 71. They may be held on the spouts by pivoted arms 84, these arms being operated at suitable times by cams 85, 86 on the slides 75.

This application discloses certain novel constructions relating more especially to the preparation and feeding of the tobacco and the operation of the filler shaping mechanism. These features are not, however, herein claimed, the same being claimed in application Ser. No. 232,480, filed November 12, 1904.

Changes and variations may be made in the construction by which the invention is carried into effect. The invention is not, therefore, to be limited to the specific construction hereinbefore described and illustrated in the accompanying drawings.

What is claimed is:—

1. In a cigarette machine, the combination with a shaper case having stationary top and bottom walls, one of said walls being provided with a feed opening, of means for feeding tobacco to said opening, a pair of shaping surfaces at the sides of the case, a shaper block the opposite sides of which are provided with shaping surfaces, and means for oscillating the block in the case.

2. In a cigarette machine, the combination with a shaper case having stationary top and bottom walls one of said walls being provided with a feed opening, of means for feeding tobacco in a sheet or stream to said opening, a pair of shaping surfaces at the sides of the case, a shaper block the opposite sides of which are provided with shaping surfaces, said block having sharp edges which coöperate with the edges of the feed opening to cut off charges of tobacco from the sheet or stream, and means for oscillating the block in the case.

3. In a cigarette machine, the combination with a throat through which tobacco is fed in a sheet or stream, of a shaper case having stationary top and bottom walls one of which is provided with a feed opening the side edges of said opening being parallel to the sides of the throat and the opening registering with the throat, a shaper block the opposite sides of which are provided with shaping surfaces, said block having sharp edges which coöperate with the edges of the feed opening to cut off charges of tobacco from the sheet or stream, and means for giving the block a to and fro movement in the case.

4. In a cigarette machine, the combination with a shaper case having stationary top and bottom walls, one of said walls being provided with a feed opening, of means for introducing tobacco into the case through said opening, a pair of shaping surfaces at the sides of the case, a shaper block the opposite sides of which are provided with shaping surfaces, operating means for the block, and a floating connection between the operating means and the block whereby the movement of the block is controlled by the walls of the case.

5. In a cigarette machine, the combination with a shaper case having stationary top and bottom walls, one of said walls being provided with a feed opening, of means for introducing tobacco into the case through said opening, a pair of shaping surfaces at the sides of the case, a shaper block the opposite sides of which are provided with shapjng surfaces, a lever for operating the block, and a floating connection between the lever and the block, whereby the movement of the block is controlled by the walls of the case.

6. In a cigarette machine, the combination with a shaper case having stationary top and bottom walls, one of said walls being provided with a feed opening, of means for introducing tobacco into the case through said opening, a pair of shaping surfaces at opposite sides of the case, a shaper block the opposite sides of which are converging and are provided with shaping recesses, and a lever for oscillating the block.

7. In a cigarette machine, the combination with a shaper case having stationary top and bottom walls, one of said walls being provided with a feed opening, of means for introducing tobacco into the case through said opening, a pair of shaping surfaces at opposite sides of the case, a shaper block the opposite sides of which are converging and are provided with shaping recesses, a lever for oscillating the block, and a floating connection between the block and the lever whereby the movement of the block is controlled.

8. In a cigarette machine, the combination with a shaper case having stationary top and bottom walls, one of said walls having a feed opening, means for feeding tobacco in a sheet or stream through said opening, a pair of shaping surfaces located at the sides of the case, a shaper block having converging sides one of said sides being provided with a shaping surface and having a sharp cutting edge which coöperates with an edge of the opening to cut off charges of tobacco from the sheet or stream, and means for oscillating the block in the case.

9. In a cigarette machine, the combination with a shaper case having stationary top and bottom walls, one of said walls having a feed opening, means for feeding tobacco in a sheet or stream through said opening, a pair of shaping surfaces located at the sides of the case, a shaper block having converging sides one of said sides being provided with a shaping surface and having a sharp cutting edge which coöperates with an edge of the opening to cut off charges of tobacco from the sheet or stream, means for oscillating the block in the case, and a floating connection between the block and the lever whereby the movement of the block is controlled.

In testimony whereof, I have hereunto set my hand, in the presence of two subscribing witnesses.

SYDNEY I. PRESCOTT.

Witnesses:

A. WHITE,

PHILIP N. TILDEN.