

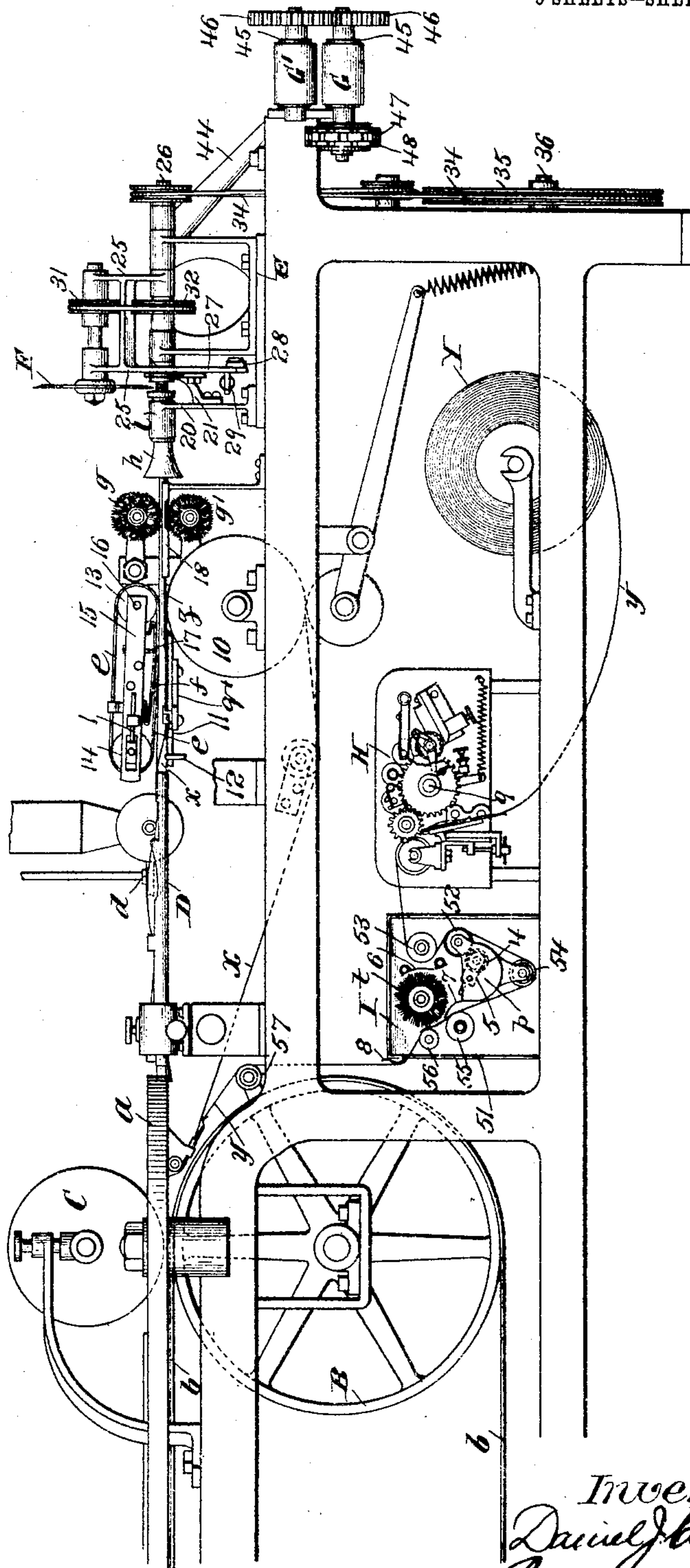
No. 779,411.

PATENTED JAN. 10, 1905.

D. J. CAMPBELL.
CIGARETTE MACHINE.

APPLICATION FILED APR. 21, 1898. RENEWED SEPT. 19, 1903.

5 SHEETS—SHEET 1.



Attest:
Geo H Bots
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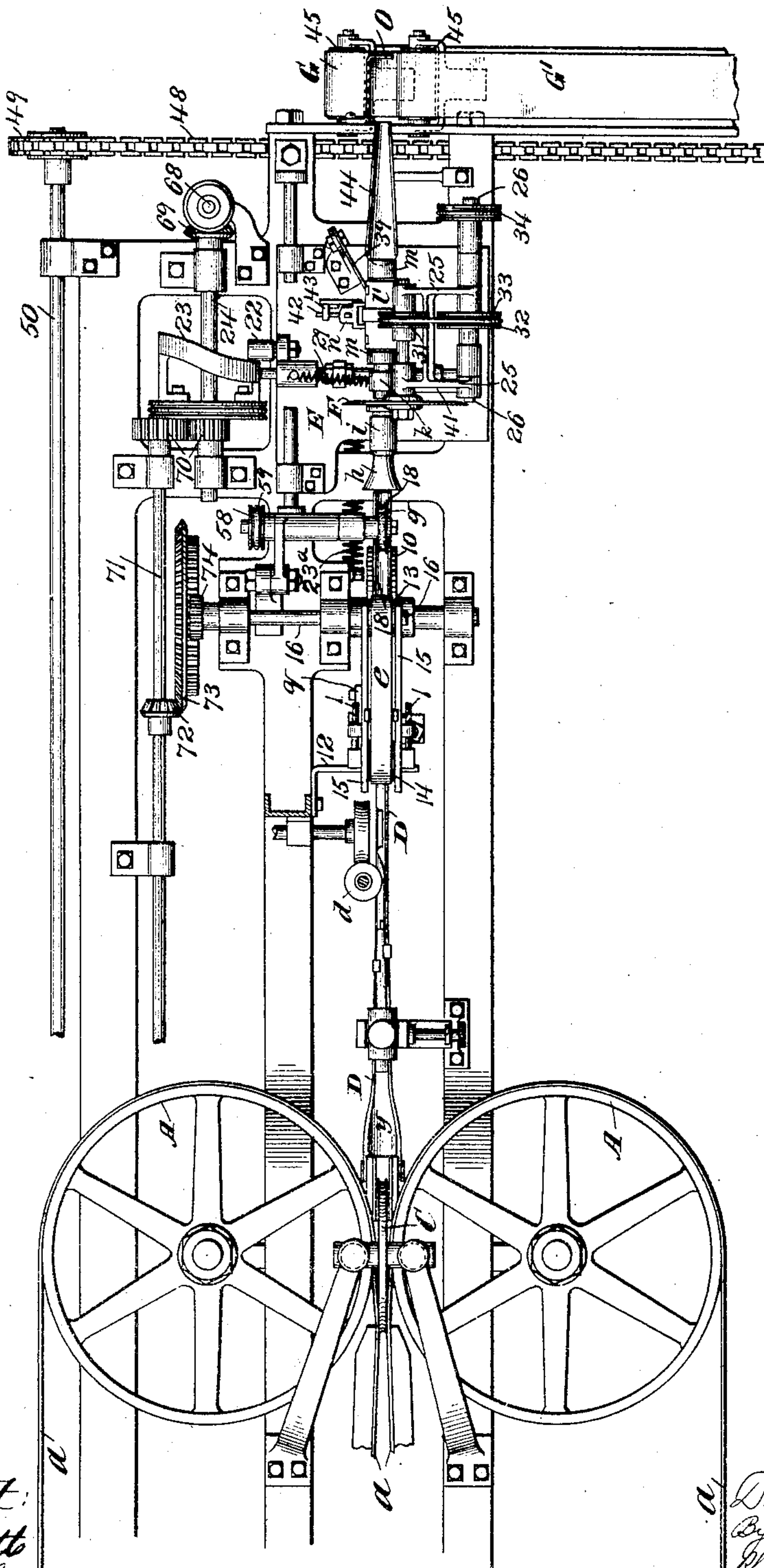
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5 SHEETS—SHEET 2.

Fig. 2.



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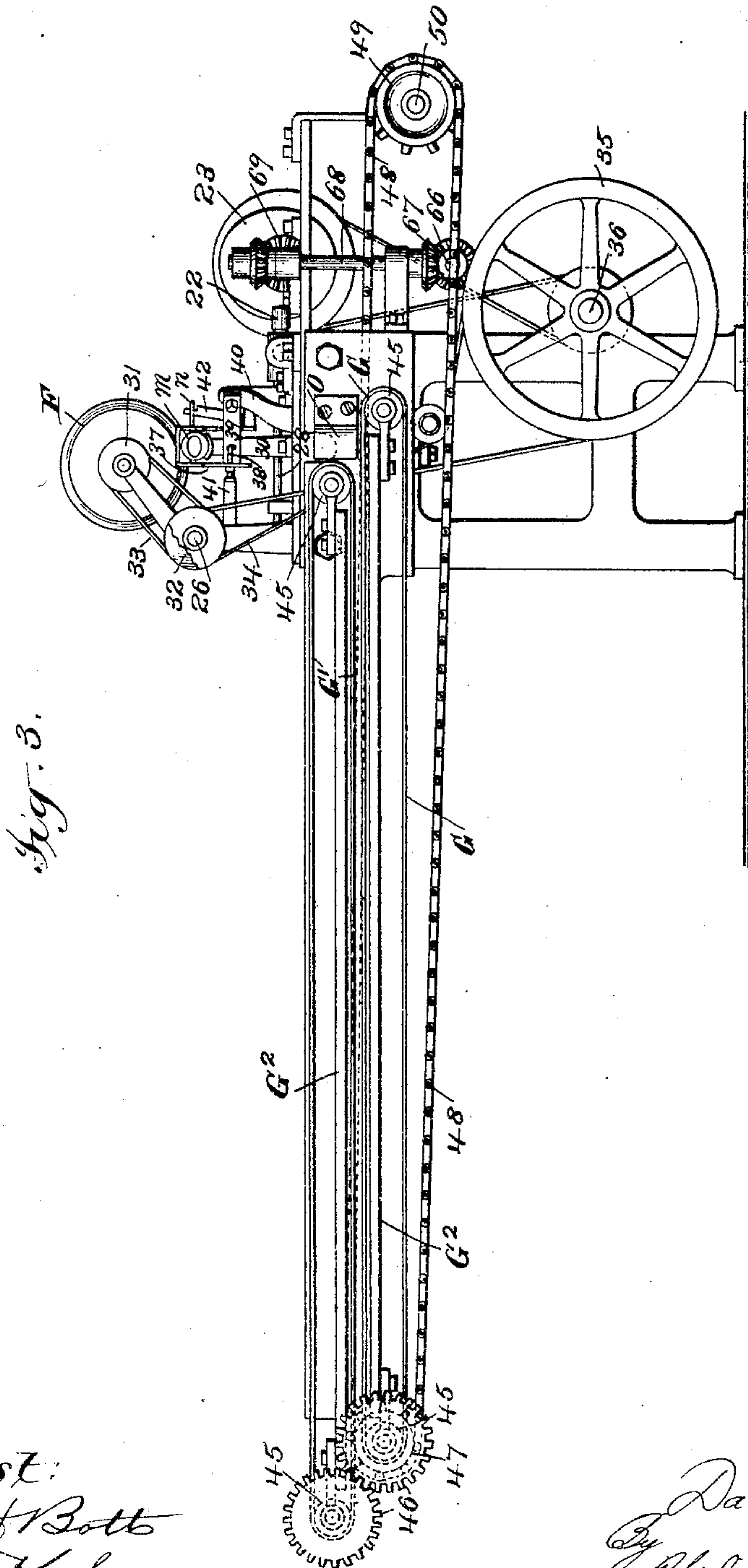
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5 SHEETS—SHEET 3.



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5 SHEETS—SHEET 4.

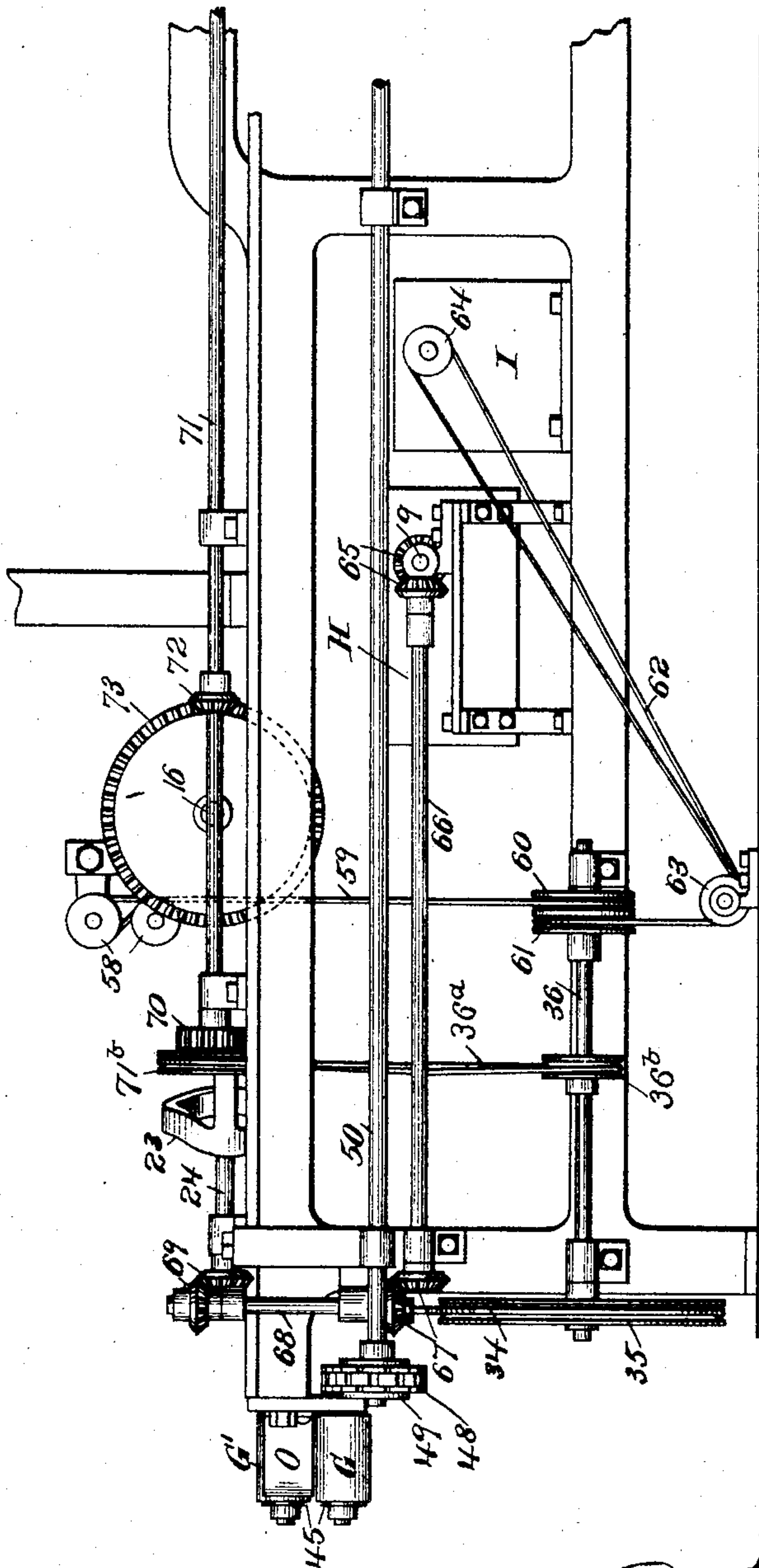


Fig. 11.

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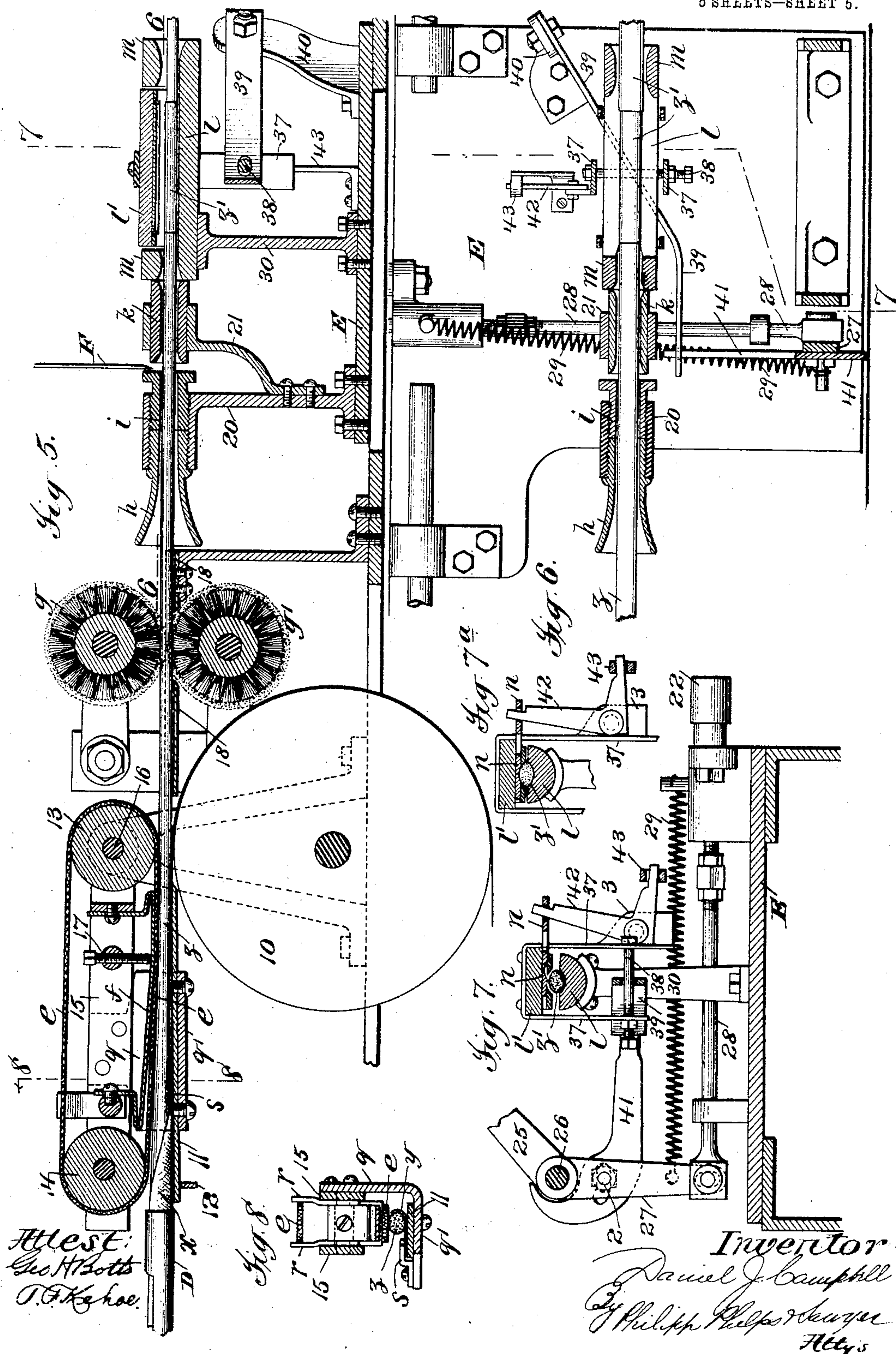
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5 SHEETS—SHEET 5.



UNITED STATES PATENT OFFICE.

DANIEL J. CAMPBELL, OF NEW YORK, N. Y., ASSIGNOR TO THE AMERICAN TOBACCO COMPANY, A CORPORATION OF NEW JERSEY.

CIGARETTE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 779,411, dated January 10, 1905.

Application filed April 21, 1898. Renewed September 19, 1903. Serial No. 173,896.

To all whom it may concern:

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

This invention relates especially to that class of cigarette-machines in which the wrapper in the form of a continuous web is wrapped around a continuous filler and its edges united to form a continuous cigarette-rod, after which this rod is cut into suitable lengths to form cigarettes.

The especial object of the invention is to provide improved shaping devices for securing the delivery of the cigarettes in the proper form and condition when not made to the exact shape desired by the filler forming and wrapping devices or for making cigarettes by forming a continuous rod of one shape and then changing the shape, so as to deliver cigarettes of other form, the invention being especially adapted for making elliptical cigarettes from a continuous cigarette-rod of the common cylindrical form, although applicable for other purposes.

The invention includes also an improved printing mechanism for printing the wrapper-web, which may be applied also in connection with cigarette-machines of other form, but is especially applicable in connection with machines for making elliptical cigarettes and various features of construction and combinations of parts, some of which may be applied in making cigarettes of other form or by other methods than that above described.

As a full understanding of the invention can best be given by a detailed description of a construction embodying the same, such a description will now be given in connection with the accompanying drawings, in which is illustrated a machine for making elliptical cigarettes and embodying all the features of the present invention as applied in their preferred form, and the features forming the invention

will then be specifically pointed out in the claims.

In the drawings, Figure 1 is a side elevation of so much of a continuous-rod-cigarette machine as is necessary to illustrate the present invention. Fig. 2 is a plan view of the same with the transverse delivery-belts partially broken away. Fig. 3 is an elevation of the delivery end of the machine. Fig. 4 is a partial side view of the delivery end of the machine on the opposite side from that shown in Fig. 1. Fig. 5 is a longitudinal vertical section taken centrally through the delivery end of the machine, omitting the transverse delivery-belts. Fig. 6 is a horizontal section on the line 6 of Fig. 5. Fig. 7 is a cross-section on the line 7 of Figs. 5 and 6 looking to the left and showing the compressor just about to act on a cigarette. Fig. 7^a is a detail showing the parts in position with the cigarette compressed between the die-plates of the compressor. Fig. 8 is a section on line 8 of Fig. 5.

The invention is shown as applied to a common Bonsack machine, only those parts being shown that are required for an explanation of the present invention. The construction shown employs a wrapping-tube by which the wrapper is folded about the filler and pasted to form a continuous round cigarette-rod, as in machines now well known, and elliptical cigarettes are formed therefrom by shaping devices acting partly upon the continuous cigarette-rod and partly upon the cigarettes after they have been cut.

In the construction shown the feeding devices for the tobacco consist of two side belts *a*, passing around horizontal wheels A, bottom belt *b*, passing around vertical wheel B, these wheels being set at the proper distance apart, and a grooved vertical wheel C being mounted above and coacting with the belt *b* and wheel B, these wheels and belts being arranged to secure a partial compression of the tobacco-filler and its proper feed to the belt *x* and wrapping-tube D, through which the belt *x* and wrapper *y* run and by which a continuous round cigarette-rod *z* is formed, with the wrapper secured by paste supplied

by the paster d and delivered from the delivery end of the tube D with the wrapper sealed. The belt x runs over and is driven by the belt-wheel 10, located beyond the delivery end of the tube.

The parts thus far described are shown as of the construction common in the Bonsack cigarette-machine; but it will be understood that the invention is not limited to these devices for molding and wrapping the filler to form a continuous cigarette-rod.

Referring now to the shaping devices by which the elliptical cigarettes are made from the continuous round cigarette-rod z , the belt x after it leaves the tube D, with the cigarette-rod z thereon, runs over a plate on the under side of the rod, and above the rod opposite this plate and the belt x and extending, as shown, from the end of the tube D to the pulley 10 is a compressing-belt e , which runs around belt-pulleys 13 14, mounted in bars 15, which are pivotally supported on shaft 16 of pulley 13, by which belt e is driven, these bars 15 thus forming a swinging support for belt-roll 14, belt e , and support 11, which may be swung upward on the shaft 16, so as to give free access to the cigarette-rod and belt x when desired and is supported by fixed arm 12 when swung down in working position. The plate 11 is supported from frame 15 by vertical arm q by means of plate q' , to which plate 11 is secured, and the vertical arm q is detachably secured to one of the bars 15—as, for example, by means of screws—as shown, so that the frame 15 is properly held down during the operation of belt e , but may readily be released from arm q and swung upward independently of support 11 by withdrawing the screws, or by pulling the belt x out at one side the frame 15, with all the parts connected thereto, including the plate 11, may swing back, exposing the belt x completely. Side guards r , carried by the bars 15, are preferably provided to assure the proper position and run of the belt e upon the cigarette-rod, and the rear belt-pulley 14 is preferably adjustably mounted in the bars 15 and made adjustable by screws 1, by which the bearings of the pulley 14 may be adjusted toward or from the pulley 13 to secure the desired tension and proper running of the belt. The belt e is preferably arranged to secure a gradual increasing compressing pressure upon the cigarette-rod, so as to gradually flatten it from the cylindrical form, and this result with the desired pressure is well secured by the construction shown, in which a plate f , bent to exert a spring-pressure, is supported at its ends and bears upon the belt e between the pulleys 13 14, and the pressure of this plate upon the belt is made adjustable by a set-screw 17, holding the plate against the belt with the belt thus pressed upon the cigarette-rod. As the belt x leaves the tube D one side is lapped over

the top of the cigarette-rod, and for the purpose of turning down this edge of the belt, so as to uncover the top of the cigarette-rod for the flattening action of the belt e , a finger s is provided, under which this edge of the belt x runs as it passes over the support 11, as shown clearly in Figs. 5 and 8.

Beyond the belt e the flattened cigarette-rod passes between revolving rubbers g g' , which are preferably brushes, as shown, although felt or other suitable material may be used with fairly good results, these rubbers being concave on their faces, so as to practically inclose the cigarette-rod, the lower rubber g' working through an opening in the trough 18, in which the cigarette-rod moves. These rubbers act to hold the cigarette-rod in proper central position as it goes into the mouthpiece or funnel h on its way to the cutter and to rub down the wrapper and smooth out any irregularities that may exist as the rod passes from the tube D or be caused by the compressing-belt e . In making pasted cigarettes also these rubbers perform the important function of rubbing down the seam, so as to assure the sealing of the wrapper at all points, which is especially important in combination with the belt e or other shaping device acting on the rod before the paste has much time to set. If the seam has been loosened at any point by the pressure-belt e , the seam is secured again by the action of the rubbers.

When the print on the cigarettes is formed by the application of powder to an impression on the wrapper-strip, as in the printing devices shown and preferably used in connection with this machine, these rubbers act also to clean off any extra powder that may adhere to the wrapper and to polish and rub in the powder forming the print, so as to secure a clear, sharply-defined, and permanent print by this process of applying powder to an impression, all as will be fully described hereinafter.

The cigarette-rod passes from the rubbers g g' through the funnel h to the elliptical ledger i , which is mounted in a vertical support 20 upon the carriage E, which also carries a rotary knife F, by which the cigarette-rod is cut as it passes from the ledger i , this carriage E also carrying the elliptical guide and support k , through which the cigarette-rod passes and in which it is supported during the operation of cutting and from which the cigarettes z' , severed by the knife F, pass to the compressor presently to be described, this guide and support k being shown as mounted in an arm 21 on vertical support 20.

The carriage E reciprocates longitudinally of the cigarette-rod, so as to move with the cigarette during the cutting operation, as usual in such machines, and is shown as actuated in one direction by a common means consisting of a roller 22 on the carriage E, actu-

ated by a rotary cam 23, carried by a shaft 24, and in the other direction by a spring 23^a. The rotary cutter F is shown as driven and oscillated in the usual manner, its shaft being carried in arms 25, mounted to rock on shaft 26, and rocked by arm 27 through the reciprocating cam-rod 28, pivoted to the lower end of the arm 27 and moved in one direction by a rim-cam on the cam-disk 23 and returned to position by a spring 29. The cutter F is shown as rotated in the usual manner by means of belt-pulleys 31 and 32 on, respectively, the shaft of the cutter F and shaft 26, connected by belt 33, the shaft 26 being driven by belt 34 from pulley 35 on the shaft 36 at the bottom of the machine, said shaft 36 being driven from main driving-shaft 71 by belt 36^a, passing over pulleys 36^b 71^b on shafts 36 71, respectively, as shown in Fig. 4.

The compressor consists of a bottom elliptical die-plate *l*, mounted in fixed position upon the standard 30 on the carriage E, and an upper reciprocating die-plate *l'*, which is pressed upon each of the cigarettes *z'* as they pass beneath the die-plate *l'*, so as to press the cigarettes to an exact elliptical form, this compressor also being preferably formed so as to crease the cigarettes slightly on each edge in the same manner as the common hand-made elliptical cigarettes, as shown in Fig. 7^a, wherein the edges of the cigarettes are being pinched between the flat faces of the die-plates *l l'* on opposite sides of their shaping-grooves. The stationary die-plate *l* is shown as having at opposite ends portions *m*, extending over the cigarettes and funnel-shaped, so as to assure the proper delivery of the cigarettes from the guide and support *k* to the compressor *l l'* and from the compressor through the guide *m* for final delivery. The die-plate *l'* is provided with the depending arms 37, connected by a bolt 38, which is threaded through an opening in a lever 39, pivoted on a vertical bracket 40 on the carriage E, and this lever 39 is oscillated vertically by an arm 41, which passes through an opening in the lever 39 and is secured to the arm 27, by which the cutter is oscillated, the connection between the arms 41 and 27 being preferably made adjustable by a curved slot-and-nut connection 2, as shown, or otherwise, so as to secure exactly the desired compressing action of the die *l'* upon the cigarettes. By this construction it will be seen that the die *l'* is moved downward to act upon a cigarette as the cutter F makes its cutting stroke and while the carriage E is moving with the cutter and compressor in the direction of movement of the cigarette-rod and cigarettes, so that a cigarette is cut and the next cigarette in advance compressed at each movement of the carriage.

With the seam secured by paste, as in the construction shown, there is liability that the paste of the cigarette-seam may adhere to the die *l'* of the compressor and the wrapper thus

be torn or the cigarette injured in pushing the cigarette out of the compressor by the following cigarette. I avoid all danger of this by the use of a separator by which the cigarette-seam is separated from the upper die *l'* of the compressor, and thus left loose in the compressor, so as to readily feed therefrom. This result is secured by making the die with a cross-slot which opens into the elliptical groove, and within which slot moves transversely to the cigarette the separator, which consists in the form shown of a plate *n*, this plate *n* being actuated by a bell-crank lever 42, pivoted in flanges 3 on one of the arms 37 of the die-plate *l'*, the upper end of this lever passing through an opening in the separator *n* and the other end through an opening in a stationary bar 43, mounted on the carriage E, so that the separator *n* is reciprocated transversely to the cigarette as the die *l'* is raised and lowered. The separator *n* is moved to the left from the position shown in Fig. 7 as the die *l'* is lowered to compress the cigarette, so that the curved surface of the separator *n* bears on the top and seam portion of the cigarette and forms a part of the curved working face of the die *l'*, as shown in Fig. 7^a, and on the upward movement of the die *l'* the separator *n* is returned to the position shown in Fig. 7, and the pasted seam, if it has adhered to the separator *n*, thus detached as the separator moves past the sharp edge of the side portion of the die *l'* and the compressed cigarette thus freed.

The cigarettes *z'* are shown as delivered from the guide *m* through the usual inclined chute 44 onto a lower belt G, by which the cigarettes are carried off and with which belt coacts a top belt G', these belts G G' running at right angles to the direction of movement of the cigarettes as they are delivered by the machine through chute 44, so as to carry the cigarettes sidewise, and forming compressing-belts, being set at such a distance apart as to hold the cigarettes in form and advance them without rolling them over, and preferably being of considerable length, as shown, so as to hold the cigarettes for a sufficient length of time to have the tobacco set, and thus to assure their permanent elliptical form. The belts G G' are preferably provided, because of their length, with supporting or backing strips G² for preventing the lower one from sagging and holding both in proper relation to each other. As the cigarettes pass from the inclined chute 44 onto the belt G they are stopped and positioned accurately upon the belt by the plate O, mounted upon the end of the machine and forming an abutment by which the cigarettes are stopped in proper position transversely to the belts G G'. The belts G G' run over belt-pulleys 45, the belt-pulleys 45 at the delivery end of the belts being geared together by gears 46 and driven from the shaft of the lower belt-pulley 45 by

a chain-wheel 47 thereon, and chain 48 driven from chain-wheel 49 on the shaft 50.

Referring now to the printing devices, which are designed especially for securing a gold or
 5 bronze print, the wrapper-web y passes from the web-roll Y in the lower part of the machine through a printing device H , which may be of any suitable form, but is shown as of the construction now in general use on the
 10 Bonsack machine and fully shown and described in United States Letters Patent No. 377,447, granted to James A. Bonsack, February 7, 1888, so as to require no further description, this printing device, however, instead of
 15 printing in ink, as heretofore, being arranged to make the desired impression from the die in sizing or other suitable material which will properly hold powder applied thereto. From the printing device H the wrapper-web y
 20 passes to the bronzing device I , by which the print is completed. This bronzing device consists of a casing 51, inclosing all the parts, so as to prevent waste of the powder, and within this casing 51 is a receptacle p for the
 25 powder, in which is mounted a roll 4, so as to run in and take up the powder contained in the receptacle p , this roll 4 being mounted in a swinging carrier 5, pivoted in the receptacle p and yieldingly pressed upward by a spiral
 30 spring (not shown) on the pivot or otherwise, so as to hold the roll 4 in engagement with another roll, 52, mounted in the upper part of the receptacle p and to which the powder is transferred by the roll 4. The rolls 4 52 are
 35 faced with felt or similar material to carry and apply the powder properly.

The wrapper-web y runs into the casing 51 through an opening at the top of the casing, then about guide-roll 53, over roll 52, where
 40 the powder is applied, then downward around roll 54, upward over guide-rolls 55 56, opposite which the powder is subjected to a brushing operation by a rotating brush t of suitable construction rotating in the opposite
 45 direction to the movement of the web y , a guard 6 on the upper side of the brush and a curved guard-plate 7 on the under side of the brush being used, by which the powder brushed from the web by the brush t is con-
 50 ducted back into the receptacle p . From the guide-roll 56 the web y passes out of the casing 51 through an opening at the top of the casing and over a curved guide 8 and guide-roll 57 to the belt x and tube D .

55 The printing operation is completed and perfected after the filler is wrapped by the brushes g g' , previously described, the lower brush g' acting upon the print, so as to remove any excess powder and rub the powder into
 60 the print and secure a sharp permanent impression, and the brushes acting otherwise upon the rod, as fully described above.

The brushes g g' preferably, as shown, rotate in the same direction as the cigarette-rod z is
 65 moving, being actuated by pulleys 58 on their

respective shafts and belt 59, which is driven by pulley 60 on shaft 36, and from pulley 61 on this shaft 36 the brush t of the bronzer I is driven by belt 62, passing around guide-pulley 63 at the base of the machine and pulley 70
 64 on the shaft of the brush t , the other rolls within the casing 51 not being driven, but rotating freely in their bearings, so as to be actuated by the pull of the web y .

The parts of the printing device H are ac-
 75 tuated by suitable gearing from shaft 9, (see Figs. 1 and 4,) which is geared by bevel-gears 65 to shaft 66, which is driven by bevel-gears 67 from a short vertical shaft 68, driven by
 80 bevel-gear 69 from shaft 24, carrying cam 23, which shaft 24 is driven by gears 70 from the main driving-shaft 71, which also drives shaft 16 of belt-roll 13 by bevel-gears 72 73, geared to pinion 74 on shaft 16. It will be
 85 understood, however, that it is immaterial how the parts are driven, and this driving means for the various parts is shown only for the purpose of illustration and may be widely varied.

While I have shown the machine as equipped
 90 with the belt e , the compressor l l' , and the belts G G' for shaping the cigarettes after the cigarette-rod is formed and securing their delivery in a permanent elliptical form, it will be understood that some of these shaping de-
 95 vices may be omitted, while employing certain features of the invention, although the best results are secured by the use of all these devices or substantial equivalents thereof, and the invention includes various features
 100 of construction and combinations of parts employing all these devices or substantial equivalents thereof. Thus any one of these three devices may be used in cigarette-machines under certain conditions without any
 105 of the other devices, and they will be found applicable and useful in machines in which it is not desired to change materially the shape of the cigarettes after the cigarette-rod is formed, but only to compress the cigarette-rod or
 110 cigarettes into the exact form desired and hold them for such a time as to assure their permanent retention of this form. It will be understood also that while the compressor and belts G G' are especially applicable in con-
 115 nection with continuous-rod-cigarette machines and for forming elliptical cigarettes either or both of these devices may be used in connection with machines for making cigarettes otherwise than by first forming a con-
 120 tinuous cigarette-rod and then cutting it into cigarettes and for making cigarettes of other forms than elliptical. By varying the forms of the dies l l' it will be obvious that the cigarettes may be shaped to any form desired
 125 or a cigarette of proper form simply pressed without changing its shape, so as to aid in securing its permanent retention of such form and, if desired, the formation of slight creases in the wrapper along the opposite edges of
 130

the cigarettes, as shown in Fig. 7^a, as in hand-made elliptical cigarettes. Instead of the belt *e* and support 11 coacting therewith for flattening the cigarette-rod after it leaves the tube D it will be understood that other suitable devices may be used, and these devices may be so made as to shape the cigarette to substantially its final elliptical form and the cigarettes then pressed in this form by the compressor and held therein by the belts G G', so as to secure their permanent retention of the shape into which the rod is formed as it leaves the tube D. It will be understood also that some or all of the devices shown may be combined with devices for making an elliptical cigarette-rod—for instance, such as shown and described in my prior patents, Nos. 579,421 and 579,422—so as to hold the elliptical cigarette-rod or cigarettes in form for a longer time after the wrapper-seam is closed or to press the cigarettes in this form and crease the wrapper by the dies *l l'* of the compressor, as shown in Fig. 7^a.

What I claim is—

1. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine, of a compressing device acting to change the shape of the cigarette-rod after the wrapper is sealed, means for severing the cigarette-rod into cigarettes, a compressor acting to press the cigarettes into the form desired after they are severed from the rod, a carrying-belt receiving the cigarettes after being acted upon by the compressor, and a compressing-belt coacting with said carrying-belt to hold the cigarettes in form, substantially as described.

2. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine, of a compressing device moving with the cigarette-rod and acting to change the shape of the rod after the wrapper is sealed, means for severing the cigarette-rod into cigarettes, a compressor acting to press the cigarettes into the form desired after they are severed from the rod, a carrying-belt receiving the cigarettes after being acted upon by the compressor and carrying the cigarettes sidewise, and a compressing-belt coacting with said carrying-belt to hold the cigarettes in form, substantially as described.

3. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine of a compressing device moving with the cigarette-rod and acting to change the shape of the cigarette-rod after the wrapper is sealed, means for severing the cigarette-rod into cigarettes, a compressor moving with the cigarettes as they are advanced longitudinally by the machine and acting to press the cigarettes into the form desired after they are severed from the rod, a carrying-belt receiving the cigarettes after being acted on by the compressor and carrying them sidewise, and a compressing-belt coacting

with the carrying-belt to hold the cigarettes in form, substantially as described.

4. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine, of a compressing device moving with the cigarette-rod and acting to change the shape of the cigarette-rod after the wrapper is sealed, means for severing the cigarette-rod into cigarettes, rotating rubbers acting upon the cigarette-rod between the compressing device and means for severing the rod, a compressor moving with the cigarettes as they are advanced longitudinally by the machine and acting to press the cigarettes into the form desired after they are severed from the rod, a carrying-belt receiving the cigarettes after being acted on by the compressor and carrying them sidewise, and a compressing-belt coacting with the carrying-belt to hold the cigarettes in form, substantially as described.

5. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine, of a compressing device moving with the cigarette-rod and acting to change the shape of the cigarette-rod after the wrapper is sealed, means for severing the cigarette-rod into cigarettes, a compressor through which the cigarettes pass after they are severed from the rod having coacting die-plates shaped to press the cigarettes to the form desired, and means for pressing said plates together and separating them for the receipt of the cigarettes, a carrying-belt receiving the cigarettes after being acted on by the compressor and carrying them sidewise, and a compressing-belt coacting with the carrying-belt to hold the cigarettes in form, substantially as described.

6. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine, of a compressing device moving with the cigarette-rod and acting to change the shape of the cigarette-rod after the wrapper is sealed, means for severing the cigarette-rod into cigarettes, rotating rubbers acting upon the cigarette-rod between the compressing device and means for severing the rod, a compressor through which the cigarettes pass after they are severed from the rod having coacting die-plates shaped to press the cigarettes to the form desired and means for pressing said plates together and separating them for the receipt of the cigarettes, a carrying-belt receiving the cigarettes after being acted on by the compressor and carrying them sidewise, and a compressing-belt coacting with the carrying-belt to hold the cigarettes in form, substantially as described.

7. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine, of a compressing device moving with the cigarette-rod and acting to flatten the rod after the wrapper is sealed, means for severing the cigarette-rod into cigarettes, a

compressor acting to press the cigarettes into elliptical form after they are severed from the rod, a carrying-belt receiving the cigarettes after being acted upon by the compressor and
 5 carrying the cigarettes sidewise, and a compressing-belt coacting with said carrying-belt to hold the cigarettes in elliptical form, substantially as described.

8. The combination with the filler forming
 10 and wrapping devices of a continuous-rod-cigarette machine, of a compressing device moving with the cigarette-rod and acting to flatten the cigarette-rod after the wrapper is sealed, means for severing the cigarette-rod into cig-
 15 arettes, a compressor moving with the cigarettes as they are advanced longitudinally by the machine and acting to press the cigarettes into elliptical form after they are severed from the rod, a carrying-belt receiving the
 20 cigarettes after being acted on by the compressor and carrying them sidewise, and a compressing-belt coacting with the carrying-belt to hold the cigarettes in elliptical form, substantially as described.

25 9. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine, of a compressing device moving with the cigarette-rod and acting to flatten the cigarette-rod after the wrapper is sealed,
 30 means for severing the cigarette-rod into cigarettes, rotating rubbers acting upon the cigarette-rod between the compressing device and means for severing the rod, a compressor moving with the cigarettes as they are ad-
 35 vanced longitudinally by the machine and acting to press the cigarettes into elliptical form after they are severed from the rod, a carrying-belt receiving the cigarettes after being acted on by the compressor and carrying them
 40 sidewise, and a compressing-belt coacting with the carrying-belt to hold the cigarettes in elliptical form, substantially as described.

10. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine, of a compressing device mov-
 45 ing with the cigarette-rod and acting to flatten the cigarette-rod after the wrapper is sealed, means for severing the cigarette-rod into cigarettes, a compressor through which the cig-
 50 arettes pass after they are severed from the rod having coacting die-plates shaped to press the cigarettes to elliptical form and means for pressing said plates together and separating them for the receipt of the cigarettes, a car-
 55 rying-belt receiving the cigarettes after being acted on by the compressor and carrying them sidewise, and a compressing-belt coacting with the carrying-belt to hold the cigarettes in elliptical form, substantially as described.

60 11. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine, of a compressing device acting to change the shape of the rod after the wrap-
 65 rette-rod into cigarettes, and a compressor

acting to press the cigarettes into the form desired after they are severed from the rod, substantially as described.

12. The combination with the filler forming and wrapping devices of a continuous-rod-cig- 70
 arette machine, of a compressing device acting to change the shape of the cigarette-rod after the wrapper is sealed, means for severing the cigarette-rod into cigarettes, a compressor through which the cigarettes pass after they 75
 are severed from the rod having coacting die-plates shaped to press the cigarettes to the form desired, and means for pressing said plates together and separating them for the receipt of the cigarettes, substantially as de- 80
 scribed.

13. The combination with the filler forming and wrapping devices of a continuous-rod-cig-
 arette machine, of a compressing device acting to change the shape of the cigarette-rod after 85
 the wrapper is sealed, means for severing the cigarette-rod into cigarettes, a compressor through which the cigarettes pass after they are severed from the rod having coacting die-plates shaped to press the cigarettes to 90
 the form desired, means for pressing said plates together and separating them for the receipt of the cigarettes, and means for reciprocating said die-plates in the direction of movement of the cigarettes, substantially as 95
 described.

14. The combination with the filler forming and wrapping devices of a continuous-rod-cig-
 arette machine, of a compressing device act- 100
 ing to change the shape of the rod after the wrapper is sealed, means for severing the cigarette-rod into cigarettes, rubbers acting on the rod between the compressing device and means for severing the rod, and a compressor 105
 acting to press the cigarettes into the form desired after they are severed from the rod, substantially as described.

15. The combination with the filler forming and wrapping devices of a continuous-rod-
 cigarette machine, of a compressing device 110
 acting to change the shape of the cigarette-rod after the wrapper is sealed, means for severing the cigarette-rod into cigarettes, rubbers acting on the rod between the compressing device and means for severing the rod, a 115
 compressor through which the cigarettes pass after they are severed from the rod having coacting die-plates shaped to press the cigarettes to the form desired, and means for pressing 120
 said plates together and separating them for the receipt of the cigarettes, substantially as described.

16. The combination with the filler forming and wrapping devices of a continuous-rod-cig- 125
 arette machine, of means for severing the cigarette-rod into cigarettes, and a compressor acting to press the cigarettes into the form de-
 sired after they are severed from the rod, sub-
 130

17. The combination with the filler forming

and wrapping devices of a continuous-rod-cigarette machine, of means for severing the cigarette-rod into cigarettes, a compressor through which the cigarettes pass after they are severed from the rod having coacting die-plates shaped to press the cigarettes to the form desired, and means for pressing said plates together and separating them for the receipt of the cigarettes, substantially as described.

18. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine, of means for severing the cigarette-rod into cigarettes, a compressor through which the cigarettes pass after they are severed from the rod having coacting die-plates shaped to press the cigarettes to the form desired, means for pressing said plates together and separating them for the receipt of the cigarettes, and means for reciprocating said die-plates in the direction of movement of the cigarettes, substantially as described.

19. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine, of rubbers acting on the rod to smooth out irregularities in the wrapper, said rubbers being opposed to each other and the surfaces thereof when in engagement with the rod inclosing and conforming to the shape of the same, means for severing the cigarette-rod into cigarettes, and a compressor acting to press the cigarettes into form after they are severed from the rod, substantially as described.

20. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine, of rubbers acting on the rod, to smooth out irregularities in the wrapper, said rubbers being opposed to each other and the surfaces thereof when in engagement with the rod inclosing and conforming to the shape of the same, means for severing the cigarette-rod into cigarettes, a compressor through which the cigarettes pass after they are severed from the rod having coacting die-plates shaped to press the cigarettes to the form desired, and means for pressing said plates together and separating them for the receipt of the cigarettes, substantially as described.

21. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine, of means for severing the cigarette-rod into cigarettes, a compressor acting to press the cigarettes in form after they are severed from the rod, a carrying-belt receiving the cigarettes after being acted upon by the compressor, and a compressing-belt coacting with said carrying-belt to hold the cigarettes in form, substantially as described.

22. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine, of means for severing the cigarette-rod into cigarettes, a compressor through which the cigarettes pass after they are severed from the rod having coacting die-plates

shaped to press the cigarettes to the form desired, means for pressing said plates together and separating them for the receipt of the cigarettes, a carrying-belt receiving the cigarettes after being acted upon by the compressor, and a compressing-belt coacting with said carrying-belt to hold the cigarettes in form, substantially as described.

23. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine, of means for severing the cigarette-rod, a compressor having coacting die-plates shaped to press the cigarettes to the form desired, means for pressing said plates together and separating them for the receipt of the cigarettes, and means for reciprocating said die-plates longitudinally of the cigarettes, substantially as described.

24. In a cigarette-machine, a compressor acting to press the cigarettes into form and consisting of two die-plates between which the cigarettes pass, in combination with means for pressing said die-plates together and separating the said plates for the receipt of the cigarettes, and rubbers acting on the cigarettes before they are acted upon by the compressor to smooth out irregularities in the wrappers of the cigarettes, said rubbers being opposed to each other and the surfaces thereof when in engagement with the cigarettes inclosing and conforming to the shape of the same, substantially as described.

25. In a continuous-rod-cigarette machine, the combination with a carriage, a cutter carried by said carriage, and means for reciprocating said carriage in the line of movement of the cigarettes, of a compressor carried by said carriage and acting to press the cigarettes into form after they are severed, substantially as described.

26. In a continuous-rod-cigarette machine, the combination with a carriage, a cutter carried by said carriage, and means for reciprocating said carriage in the line of movement of the cigarettes, of die-plates *l*, *l'* carried by said carriage between which the cigarettes pass from the cutter, and means for pressing said die-plates together to press the cigarettes into form and separating said plates for the receipt of the cigarettes, substantially as described.

27. The combination of stationary die-plate *l* for receiving the cigarette, die-plate *l'* coacting therewith, means for moving the die-plate *l'* toward the die-plate *l* after the cigarette is received by the latter and returning the die-plate *l'* to position for the delivery and receipt of the cigarettes, and a cutter from which the cigarettes are delivered to said die-plates, substantially as described.

28. The combination with the carriage *E*, of the die-plate *l* carried thereby, die-plate *l'* mounted above the die-plate *l* to reciprocate vertically toward and from said die-plate, means for moving said carriage longitudinally

of the cigarettes, means for reciprocating plate *l'* to press a cigarette on die-plate *l* while the carriage *E* is moving toward the cigarette delivery, and a cutter also mounted on the carriage *E* from which the cigarettes are delivered to the die-plates, substantially as described.

29. The combination of coacting die-plates, means for pressing said die-plates together and separating them for the receipt of the cigarettes, a separator movable relatively to one of the die-plates in position to engage and secure the release of the cigarette from the die-plates for delivery, and means for so moving said separator, substantially as described.

30. The combination with the die-plates *l*, *l'* having coacting shaping-grooves, of separator *n* reciprocating through the die-plate *l'* transversely thereto in position to engage the seam side of the cigarette, and means for actuating said separator to prevent the cigarette-seam adhering to the die-plate *l'*, substantially as described.

31. A cigarette-machine having a compressor provided with a shaping-groove for pressing the cigarettes into elliptical form and with means for creasing the side edges of the cigarette, substantially as described.

32. The combination of two coacting dies having opposed shaping-grooves for compressing a cigarette into elliptical form and provided with means for creasing the side edges of the cigarette, and means for pressing said dies together and separating them for the receipt of the cigarettes, substantially as described.

33. The combination with a cigarette-machine, of carrying-belt *G* running transversely to the movement of the cigarettes as delivered from the machine, and compressing-belt *G'* coacting with the carrying-belt to hold the cigarettes in form, substantially as described.

34. The combination with a cigarette-machine and its inclined delivery-chute 44, of carrying-belt *G* running transversely to the line of movement of the cigarettes through the delivery-chute and to which the cigarettes are delivered longitudinally, stop-plate *O* against which the ends of the cigarettes abut as they are delivered from the chute to the carrying-belt, and compressing-belt *G'* coacting with the carrying-belt to hold the cigarettes in form, substantially as described.

35. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine, of a support over which the rod passes after the wrapper is sealed, frame 15 mounted at one end to swing away from the rod, and means carried by said frame and opposed to said support for acting on the cigarette-rod, substantially as described.

36. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine, of swinging frame 15, belt-rolls 13 14, and belt *e* mounted in said frame,

and means for holding the frame in position for the action of the belt *e* on the cigarette-rod, substantially as described.

37. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine, of the cigarette-pressing belt *e* and belt-rolls 13, 14, and spring-inclined plate *f* acting on the belt *e* between the belt-rolls 13, 14 to give a gradually-increasing pressure to the belt, substantially as described.

38. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine, of the cigarette-pressing belt *e* and belt-rolls 13, 14, a spring-inclined plate *f* acting on the belt *e* between the belt-rolls 13, 14 to give a gradually-increasing pressure to the belt, and an adjusting-screw 17 for adjusting the pressure of the belt, substantially as described.

39. The combination with the filler forming and wrapping devices of a continuous-rod-cigarette machine including the carrying-belt *x*, of the support 11 over which the carrying-belt runs with the cigarette-rod after the wrapper is sealed, finger *s* for holding one edge of the belt down to uncover the cigarette-rod as it passes over the support, and compressing-belt *e* mounted above the support 11 and coacting therewith to press the cigarette-rod as it is carried over the support by the belt *x*, substantially as described.

40. In a continuous-rod-cigarette machine, the combination of devices acting to flatten the cigarette-rod after the wrapper is sealed, and rotating rubbers *g*, *g'* acting on the cigarette-rod after it has been flattened to smooth out irregularities in the wrapper, said rubbers being opposed to each other and the surfaces thereof when in engagement with the rod inclosing and conforming to the shape of the same, substantially as described.

41. In a continuous-rod-cigarette machine, the rotating rubbers *g*, *g'* acting on the cigarette-rod and arranged to inclose the cigarette-rod to smooth out irregularities in the wrapper and to aid in supporting said rod in its passage through the machine, said rubbers being opposed to each other and the surfaces whereof when in engagement with the rod inclosing and conforming to the shape of the same, substantially as described.

42. The combination with means for forming flattened cigarettes, of rotating rubbers *g*, *g'* arranged opposite the flattened sides of the cigarettes to smooth out irregularities in the wrappers and to aid in supporting the cigarettes in their passage through the machine, said rubbers being opposed to each other and the surfaces thereof when in engagement with the cigarettes inclosing and conforming to the shape of the same, substantially as described.

43. In a cigarette-machine, the combination with a printing device for printing the wrapper-strip in suitable material for holding pow-

der, of a powder-reservoir and suitable devices for applying powder to the print, wrapping devices by which the wrapper is then applied to a filler to form a cigarette-rod, and rubbing devices acting upon the print after the rod is formed, substantially as described.

44. In a cigarette-machine, the combination with a printing device for printing the wrapper-strip in suitable material for holding powder, of a powder-reservoir and suitable devices for applying powder to the print, brushing devices for removing the excess of powder from the wrapper, wrapping devices by which the wrapper is then applied to a filler to form a cigarette-rod, and rubbing devices acting upon the print after the rod is formed, substantially as described.

45. In a continuous-cigarette machine, the combination, with means for guiding and severing the cigarette-rod, of means for pressing and creasing the cigarettes as they are divided from the rod.

46. In a continuous-cigarette machine, the combination, with means for forming the cigarette-rod and a cutter for dividing the same into cigarettes, of dies arranged and operated adjacent to said cutter to press the cigarettes and crease the corners when divided from the cigarette-rod.

47. In a continuous-cigarette machine, the combination, with means for forming the cigarette-rod and dividing the same into cigarettes, of dies for pressing and creasing the finished cigarette, means for moving the dies

from their initial position coincident with the advance of the cigarette-rod and pressing the dies upon the same, and means for returning the dies to their initial position.

48. In a continuous-cigarette machine, the combination, with means for forming the cigarette-rod and dividing the same into cigarettes, of a cutter for dividing the cigarette-rod, a carriage for the cutter traversed longitudinally with the cigarette-rod, and dies supported upon the carriage for pressing and creasing the cigarette severed from the rod.

49. In a continuous-cigarette machine, the combination, with means for forming the cigarette-rod and dividing the same into cigarettes, of a cutter for dividing the cigarette-rod, a carriage for the cutter traversed longitudinally with the cigarette-rod, a rocking arm upon the carriage with means for oscillating the same, the cutter having a spindle journaled in said arm, a guide upon the carriage to support the cigarette when divided by the cutter, dies supported upon the carriage adjacent to such guide to receive the cigarettes successively, and means connected with the rocking arm for actuating the dies.

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

DANIEL J. CAMPBELL.

Witnesses:

C. J. SAWYER,
T. F. KEHOE.