

No. 661,875.

Patented Nov. 13, 1900.

S. S. HURWITZ.

MACHINE FOR APPLYING GOLD LEAF TO PAPER.

(Application filed Jan. 10, 1900.)

(No Model.)

7 Sheets—Sheet 1.

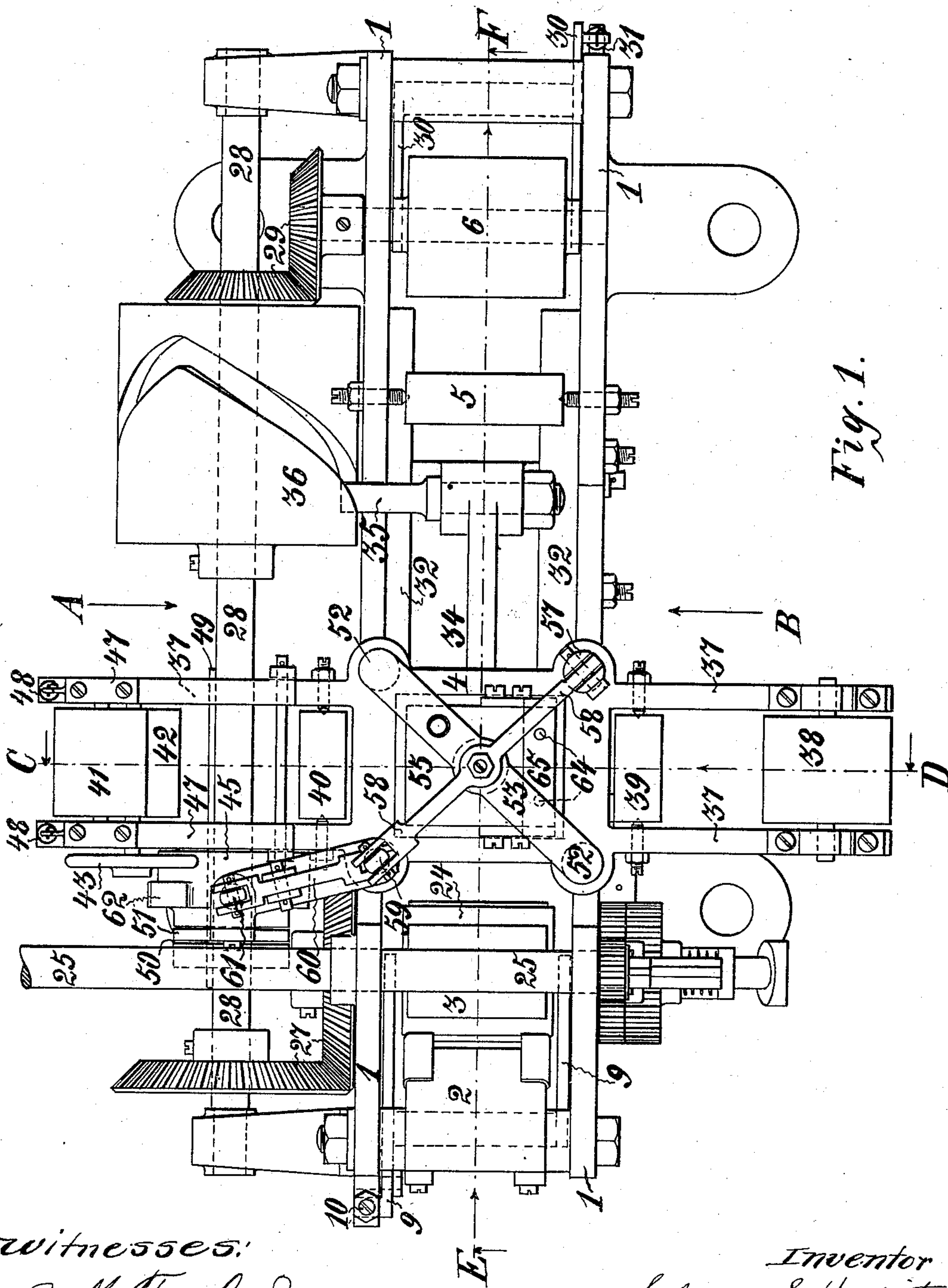


Fig. 1.

witnesses:

J. M. Fowler Jr.
J. R. Peyton, Jr.

Inventor
Salomon S. Hurwitz,
by *Churck & Churck*
his Attorneys.

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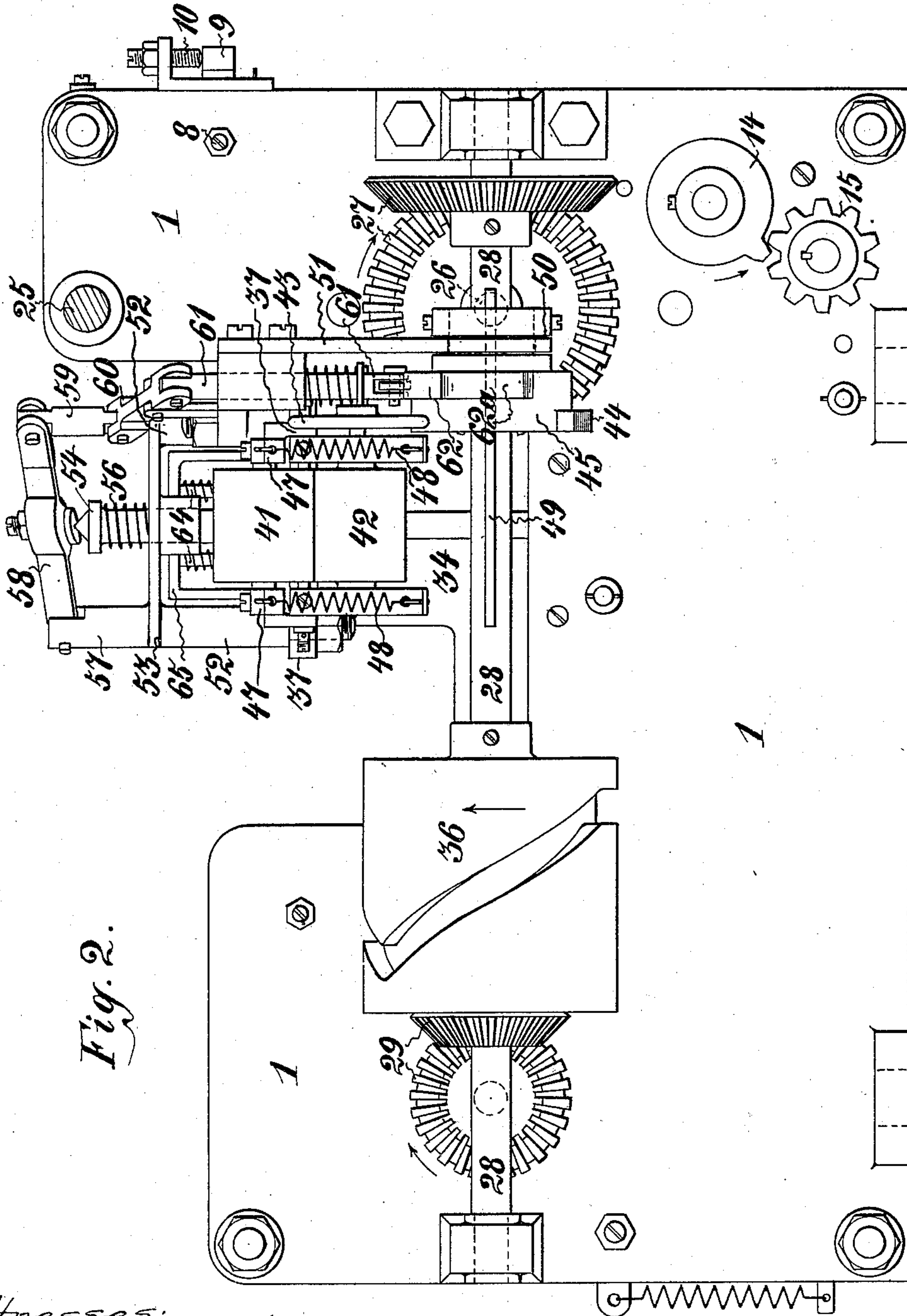


Fig. 2.

witnesses:

J. M. Fowler Jr.
J. P. Peyton, Jr.

Inventor

Salomon S. Hurwitz

by

Charles H. Hurwitz

his Attorneys

No. 661,875.

Patented Nov. 13, 1900.

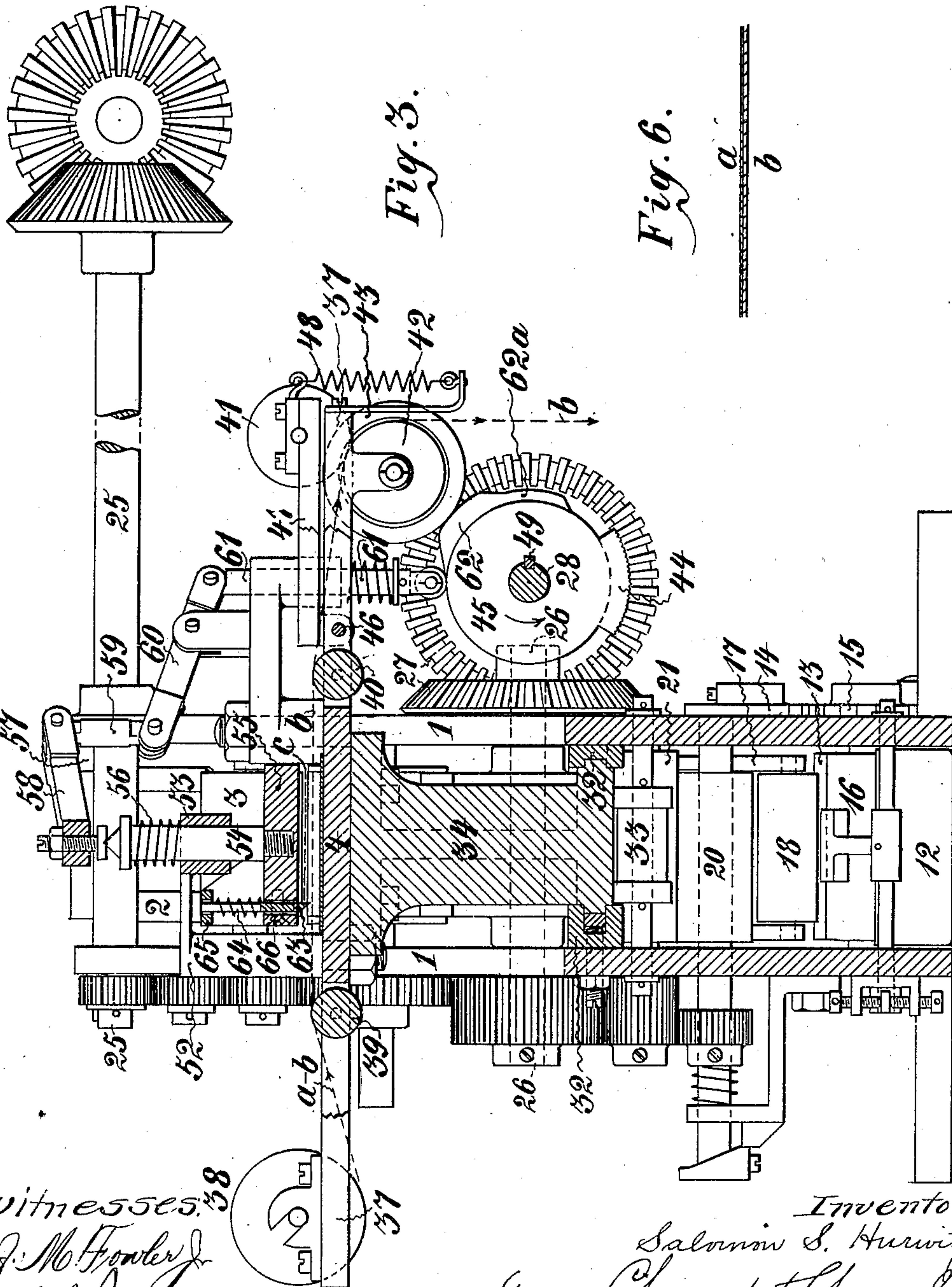
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Witnesses:
J. M. Fowler
J. H. Peyton

Inventor
Salomon S. Hurwitz
by *Chas. & Chas.*
his Attorneys

No. 661,875.

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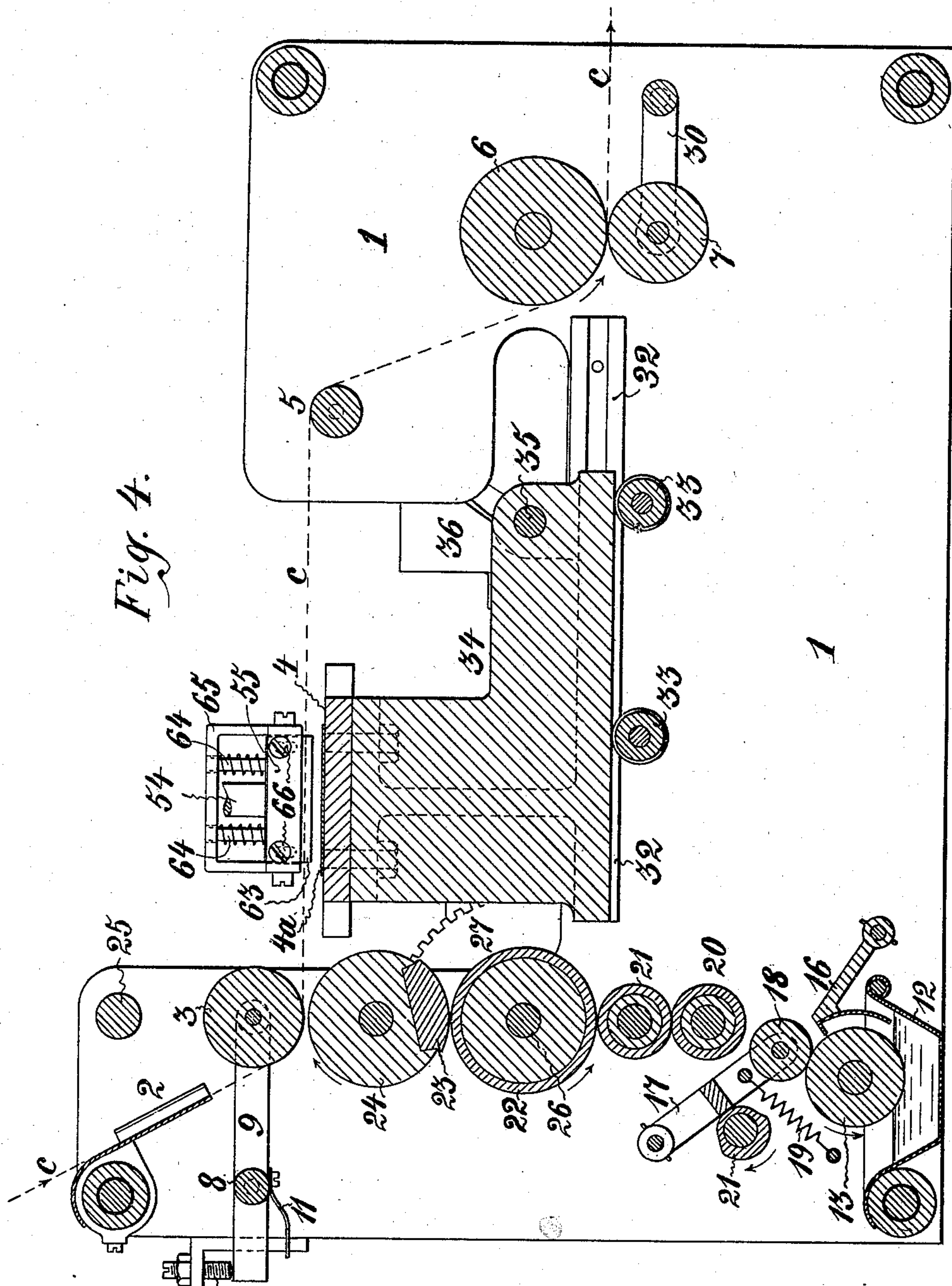
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Witnesses
J. M. Fowler, Jr.
J. B. Peyton, Jr.

Inventor:
Salomon S. Hurwitz,
ay Church & Church,
his Attorneys

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Patented Nov. 13, 1900.

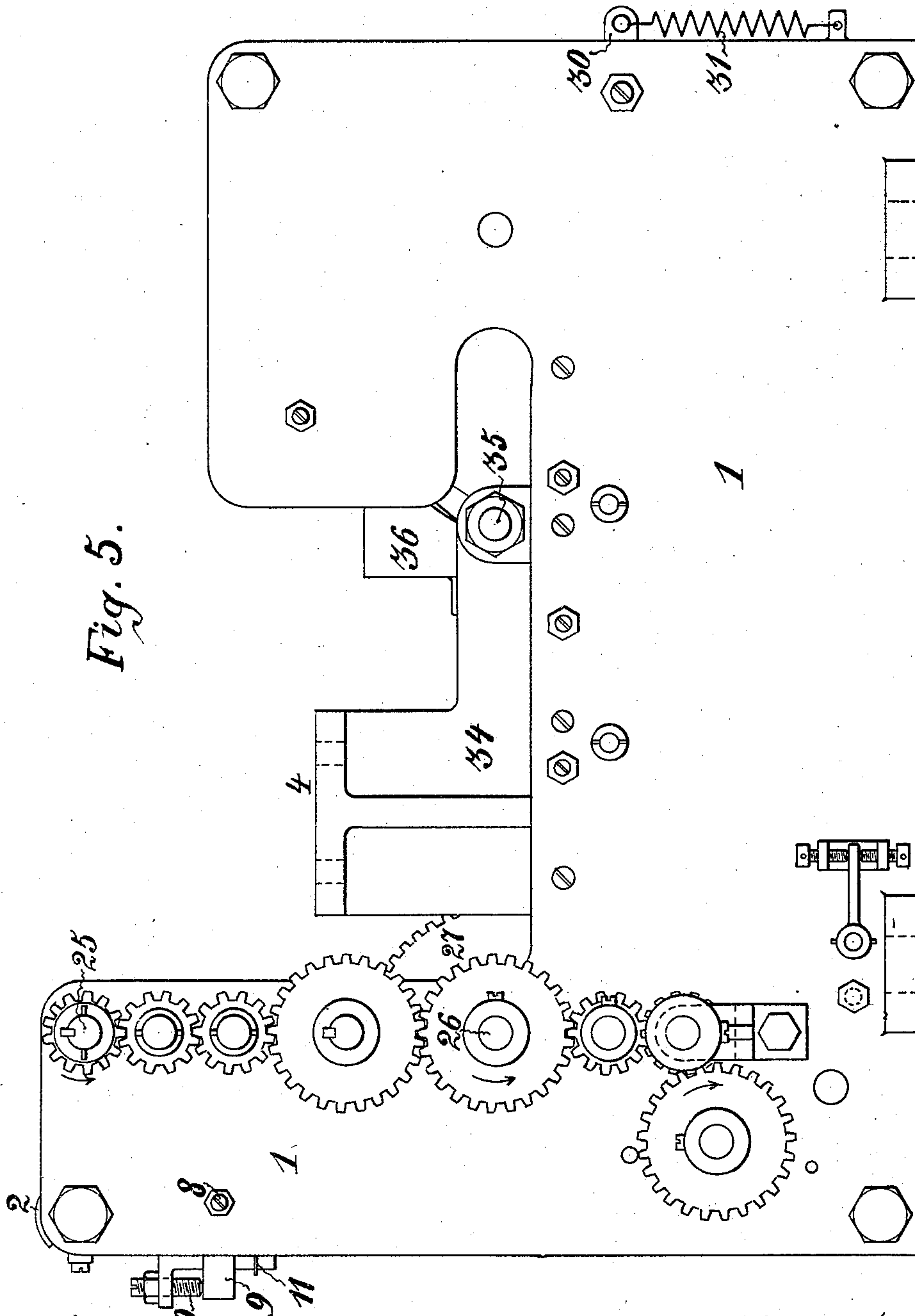
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7 Sheets—Sheet 5.



witnesses.
J. M. Fowler Jr.
J. B. Peyton, Jr.

by

Inventor:
Salomon S. Hurwitz.
Church & Church
his Attorneys.

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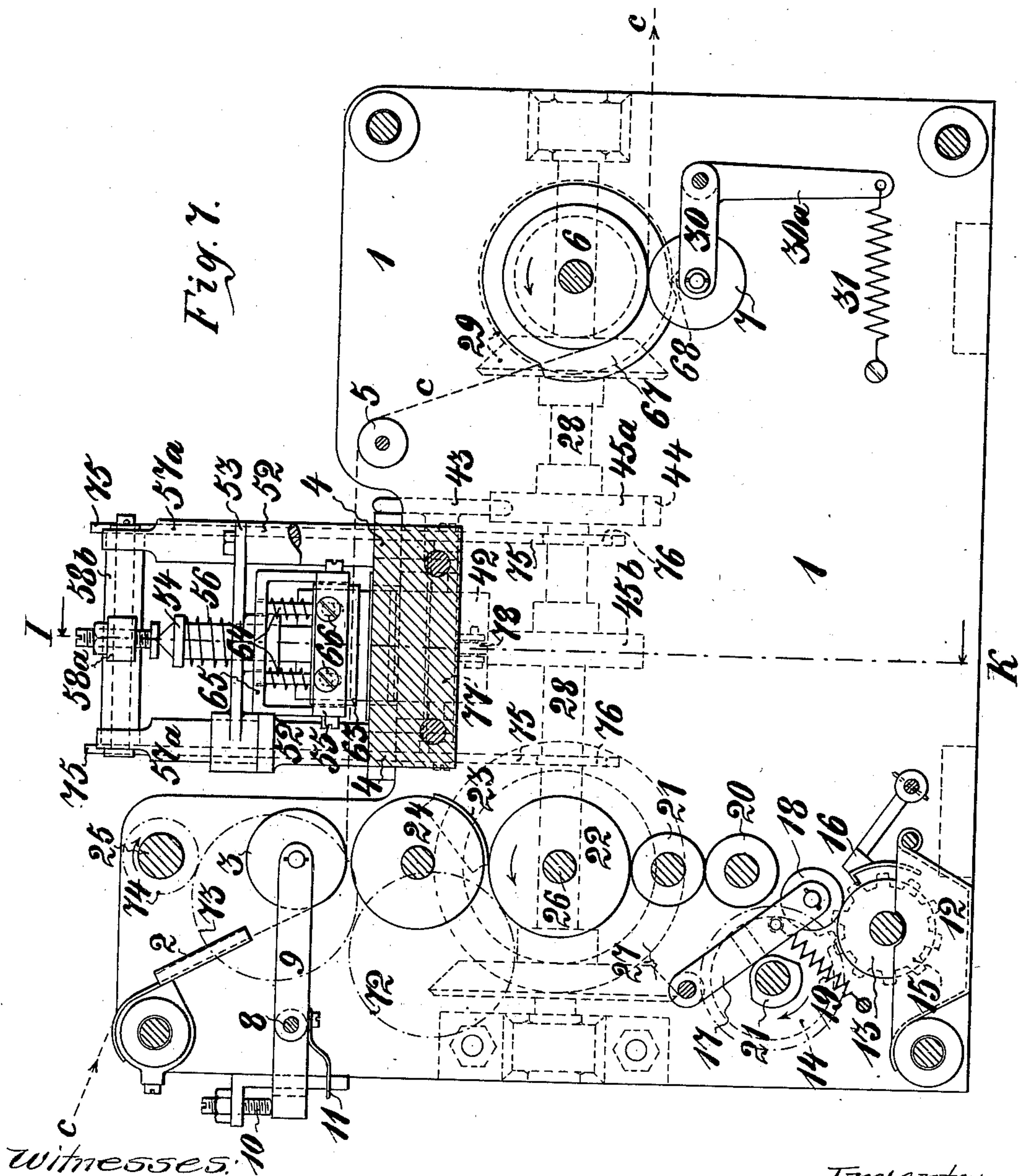
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7 Sheets—Sheet 6.



witnesses:
J. M. Fowler Jr.
J. H. Peyton, Jr.

Inventor
Salomon S. Hurwitz
by Chas. & Chas.
his Attorneys

No. 661,875.

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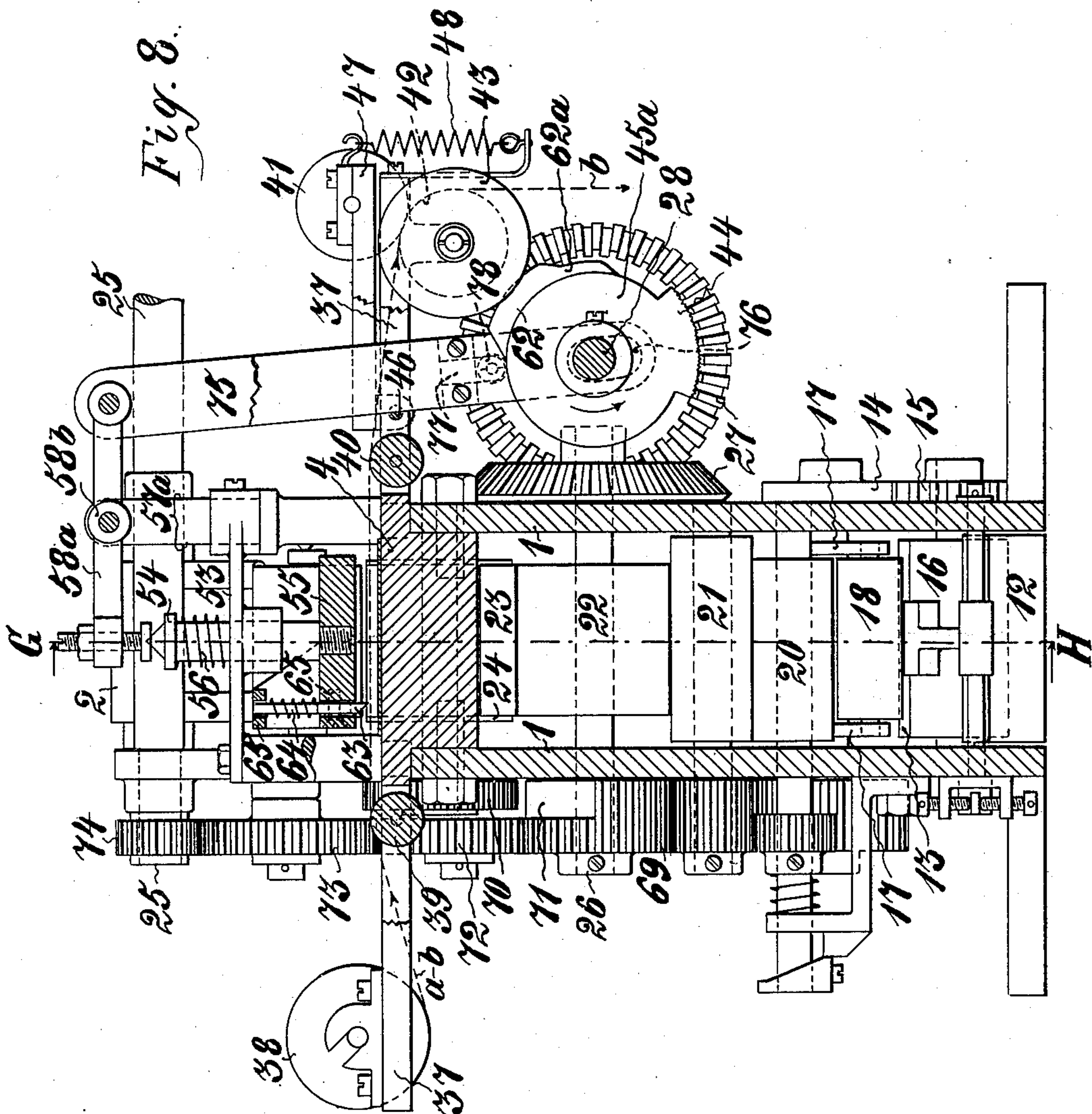
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7 Sheets—Sheet 7.



Witnesses:

J. M. Fowler Jr
J. B. Peyton, Jr.

Inventor:

Salomon S. Hurwitz,
 Attorney
 Church & Church,
 his Attorneys.

UNITED STATES PATENT OFFICE.

SALOMON SAMUEL HURWITZ, OF DRESDEN, GERMANY.

MACHINE FOR APPLYING GOLD-LEAF TO PAPER.

SPECIFICATION forming part of Letters Patent No. 661,875, dated November 13, 1900.

Application filed January 10, 1900. Serial No. 1,005. (No model.)

To all whom it may concern:

Be it known that I, SALOMON SAMUEL HURWITZ, a subject of the Emperor of Russia, residing at Dresden A, Saxony, Germany, have
5 invented certain new and useful Improvements in or Relating to Machines for Preparing Cigarette-Papers, (for which I have applied for Letters Patent in Germany, dated June 12, 1899, H. 22,260, III/79,) of which the
10 following is a specification.

The present invention relates to a machine for covering cigarette mouthpieces or papers with gold, silver, aluminium, or other metallic leaf or the like in connection with the
15 manufacture of cigarettes or cigarette-shells, the continuous paper strip from a roll being covered in the required places. The further work in connection with the strip after being gilded or covered in the required parts with
20 leaf metal or the like, as produced according to this invention, can be carried out in various ways. Such work will, however, not be described here, as they do not form part of the invention. One way of connecting the present
25 machine or apparatus with a cigarette-making machine—say in the case of machines of the Bonsack or Elliott type, in which an endless rope of tobacco is employed—would be to inclose the tobacco rope with paper tubing
30 covered by means of this machine, the rope being afterward cut into separate cigarettes. In connection with such a process of manufacture it is a special advantage in favor of the machine that it is well adapted for use in
35 combination with machines for making cigarettes from a tobacco rope, inasmuch as owing to the infinitesimal thickness of the metal leaf the thickness of the cigarette-shell is not appreciably increased; but the gilt or metal
40 covered strip may also be used in connection with empty shells, which are afterward filled either by suitable machines or by hand.

In the case of the machine forming the subject of the present invention the paper-shell
45 strip issuing from the roll is sized—i. e., covered with some adhesive material in the desired places. On the same side of the paper strip a metallic leaf strip supported by a strong paper strip is passed in such a manner over cylinders that the said paper strip
50 and metal-foil strip face each other at the places to be covered. For this purpose a

pressing device is provided consisting of a base-plate and pressure-plate, between which the two strips are pressed together when the
55 sized part of the paper-shell strip is opposite to the foil strip. In all cases the foil is carried forward by the apparatus to an extent equal to the length of the strip of foil that has been used. With regard to the paperstrip, however,
60 the latter may be moved either periodically from one sized part to the next, in which case the pressing device does not change its place relatively to the machine, or the paper strip may travel on continually, in which case
65 the pressing device, together with the foil strip, will have a reciprocating movement, so as to allow when moving in one direction and at the same speed as the paper strip the
70 attachment of the metal foil to the paper to be perfectly carried out. The latter construction of the machine is especially advantageous, since it not only avoids the intermittent movement which is detrimental to so
75 thin and delicate a material as metal foil, which is liable to be torn when the movements take place, but it permits the machine to be combined with the rope-forming cigarette-machine in such a manner that the
80 paper strip coming from the reel and covered by the machine may be arranged to immediately enter the cigarette-machine proper. A form of construction of the latter kind will now be described.

In the accompanying drawings, Figure 1 is
85 a plan of the machine; Fig. 2, an elevation as seen when looking at the machine in the direction of the arrow A, Fig. 1. Fig. 3 is a vertical section on the line C D of Fig. 1. Fig. 4 is a vertical longitudinal section on the
90 line E F, Fig. 1, in which the upper part of the pressing device is only partially shown. Fig. 5 is an elevation of the machine viewed in the direction of the arrow B, Fig. 1. Fig. 6 represents a section of a portion of the
95 metal-foil strip *a*, with the supporting paper strip *b* under it, on an enlarged scale. Fig. 7 is a vertical longitudinal section on the line G H, Fig. 8; and Fig. 8 is a vertical cross-section on the line I K, Fig. 7.

The paper strip *c* passes, as represented by the dotted lines, from the reel arranged to the left at the top of Fig. 4 to the apparatus
100 contained between two parallel side walls 1.

The paper strip passes, first, through a guide device 2, Figs. 1 and 4, and thence under a cylinder 3 over a base-plate 4 of the pressing device, thence over a guiding-roller 5, and, finally, between feeding-rollers to the farther part of the machine. The cylinder 3 is carried at the end of a carrier 9, pivoted at 8 in such a manner that it is limited as regards its lowest position by a set-screw 10, while a spring 11 tends to keep it permanently in its lowest position. Below the cylinder 3 is arranged the mechanism employed for applying size or adhesive material at certain places to the under side of the strip *c*. This mechanism consists of a trough 12, Fig. 4, intended to hold the adhesive material, a cylinder 13, immersed therein and driven by a disk 14, Fig. 2, with a single tooth which gears with the toothed wheel 15, keyed on the axle of the cylinder 13, and a scraper 16. A cylinder 18, rotating in bearings on a carrier 17, is supplied with adhesive material from the cylinder 13 so long as these two cylinders are in contact, owing to the action of a spring 19, and which transfers the adhesive material onto a cylinder 20, when a cam 21, carried by the shaft of disk 14, acting on the block 17, and thereby on the cylinder 18, presses the latter against the cylinder 20. Farther cylinders 21 and 22 carry the material farther on, the latter transferring it to the projecting portion 23, consisting of some soft elastic material, of the circumference of a cylinder 24, as soon and as long as this portion of the circumference of the cylinder is in contact with the cylinder 22.

The mechanism, including the cylinder 24, is actuated from an operating-shaft 25 by means of a series of toothed wheel-gearing, (represented in Fig. 5,) to which a continuous movement is given. The movement of the paper strip *c* is also continuous, the feeding or drawing-off cylinder 6 being driven by the operating-shaft 25, intermediate shaft 26, (on which the cylinder 22 is also keyed,) bevel-wheels 27, shaft 28, and bevel-wheels 29, Figs. 1 and 2. Although the movement of the paper strip *c* is continuous, the transfer of the adhesive material to the under side of the strip is only effected when and as long as the part 23 of the circumference of the cylinder 24 is in contact with the slip. In this way only a certain part of the strip is gummed, the length of which is equal to the length of the part 23, while the portion of the strip between two gummed parts remains ungummed. The under cylinder 7 revolves in bearings on a pivoted block 30, Figs. 1 and 4, which is always pressed upward against the cylinder 6 by a spring 31, Figs. 1 and 5.

A slide 34, carrying the base-plate 4 of the pressing device, moves on rollers 33 in guide-slots 32, Figs. 1, 3, and 4. A brass plate 4^a, Fig. 4, is preferably arranged on the upper pressing-surface for the purpose of insuring clean work. The slide 34 is moved forward and backward in the direction of the move-

ment of the strip *c* by means of a stud 35 engaging in a cam-groove 36 in a roller keyed on the shaft 28, Figs. 1, 2, 4, and 5, the forward movement being such as to coincide as regards speed with the movement of the strip *c*.

The presser-plate 4 is prolonged transversely to the direction of movement of the paper strip *c*, as shown at 37, Figs. 1 and 3. On this platform are arranged the reel or cylinder 38, from which issues the strip *a b*. The strip is represented in Fig. 3 by a dotted line and consists, as represented in Fig. 6, of an exceedingly thin strip of leaf metal or foil *a* and a stout paper strip *b* below. This paper strip passes over the guide cylinders 39 and 40, Figs. 1 and 3, below the cigarette-paper strip *c*, and over the presser-plate 4. Inasmuch as the gold-leaf corresponding to the strip *c* is taken up by the latter the paper band *b* continues on its way empty over the cylinder 40 and between the two transport or drawing rollers 41 and 42. On the axle of the roller 42 is keyed a wheel 43 with an india-rubber rim, Figs. 1, 2, and 3, by which the paper strip *a b* is carried forward to an extent equal to the breadth of the strip *c* whenever the projecting part 44 of the cam-disk 45, keyed on the shaft 28, Figs. 2 and 3, comes in contact with the said small wheel 43. The roller 41 acts as a presser-cylinder and rotates in bearings 47, pivotally arranged at 46, Fig. 3, and is pressed against the roller 42 by springs 48. Inasmuch as the slide 34 is given a reciprocating movement the cam-disk 45 must also take part in the movement. It is therefore arranged on the shaft 28 so as to be movable longitudinally thereon, but not revolvable, and is connected with the slide by a fork or bar 51, connected with the latter and engaging in a groove 50 in the nave of the cam.

The presser-plate 55, Figs. 1 and 3, is guided horizontally by a bolt 54 passing through a cross-bar 53, supported by the standards 52, Figs. 1 and 2, and a spring 56 tends to raise it. On the other hand, a lever 58, pivoted on a standard 57, Figs. 1, 2, and 3, presses on the bolt 54 when the end of said lever is moved downward by a system of levers 59 60 61. This happens when the highest surface 62 of the cam 45 raises the rod 61. By the action of this system of levers the part of the under side of the strip *c* is pressed on the metal leaf immediately under it, both strips being firmly pressed together between the base-plate 4 and the presser-plate 55. This part of the operation is carried out while the slide is passing forward, together with the paper band *a b*. When the rod 61 leaves the surface 62, the presser-plate 55 will be raised and the strip *c* will now pass on with the metallic leaf firmly gummed to it, while the slide 34 returns and the foil strip *a b* is drawn forward to an extent equal to the length of the strip of foil removed by the band *c*.

In order to obtain a clean separation of the part of the metal cemented to the band *c* from the rest of the strip, the following device has

been introduced into the mechanism: A sharp-edged blade or knife is made to press on the edge of the strip *c* on the strip *a b* after the presser-plate is raised and while the strip *c* is on its way forward and the slide 34 on its return movement. Owing to this arrangement the metal portion cemented to the strip *c* will tear off along the edge of the knife as if cut through. The blade 63, Figs. 3 and 4, is guided in a slot of the presser-plate 55 and by means of two pins 64 on the plate 65 is connected with the said presser-plate and is pressed downward by springs arranged around the said pins as far as slots provided in the blade, Fig. 4, and small screws 66, passing through the slots, will allow. After the leaf metal has been attached to the strip *c* by the action of the cam 62 the lower portion 62^a of the said cam allows the presser-plate 65 to be raised so far that the pressure ceases, although the blade 63 still presses on the strip *a b*. It is only when the cam 62^a leaves the rod 61 that the blade is taken off the strip, owing to the presser-plate still receding, and it is only at this moment that the forward movement of the strip *a b* is started again.

In the second form of construction, in which Fig. 7 represents a vertical longitudinal section on the line G H of Fig. 8 and Fig. 8 a vertical cross-section on the line I K of Fig. 7, the paper strip *c* is periodically carried forward by the cylinders 6 and 7. By the side of the cylinder 6 is arranged on the same shaft a cam 67, Fig. 7, the projecting circumference of which presses against a projection 68 on a plate 30, whereby the presser-cylinder 7 is pressed back during a certain portion of a revolution, and thereby rendered ineffective as a drawing-roller. Of course the cylinder 6 still continues its movement; but during the time as it is not in contact with the cylinder 7 there will be no friction between the circumferences of the cylinders 6 and 7 to carry the paper forward. The bearing 30 is differently arranged, as compared with the first form of construction, inasmuch as the spring 31 is connected to the vertical arm 30^a of the bearing 30. In this form of construction the gum-applying cylinder 24 also stops whenever the band *c* stops, although it may continue to revolve, (in which case the diameter would have to be correspondingly increased,) since it is only the projecting part 23 which is effective during a portion of a complete turn. The periodical stopping is accomplished by a toothed wheel 69, provided with teeth extending entirely around a portion only of its circumference, leaving a portion 71 without teeth, as shown in Fig. 8, said wheel 69 being mounted on the shaft 26 and gearing intermittently with a toothed wheel 70 on the axle of the presser-cylinder, as will be readily understood. In order, however, to continuously transmit the movement of the operating-shaft 25 to the gumming device, an intermediate wheel 72,

revolving on a stud, is caused to gear with the fully-toothed circumferential part of the wheel 69, which is of double breadth for that purpose, which wheel 72, on the other hand, is driven by means of the toothed wheel 73 from the toothed wheel 74 of the operating-shaft. Inasmuch as in this form of construction the presser device is not intended to move, the base-plate 4, with its prolongations 37, is fixedly arranged in the machine. Accordingly the cam 45^a, with the projecting circumferential part 44, is fixedly keyed on the shaft 28, as well as the cam-disk 45^b, Fig. 7, carrying the stepped cam 62 62^a, Fig. 8, for actuating the presser-plate 65. The said presser-plate is actuated in this case by means of a pivoted lever 58^a, the center 58^b of which is arranged in bearings in two standards 57^a. To the outer ends of the lever-arms are connected rods 75, the slotted ends 76 of which embrace the shaft 28, Fig. 8, and are connected by a cross-piece 77, provided with small rollers 78, by means of which the latter is pressed against the cam 62 62^a.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. Apparatus for applying mouthpiece-coverings to a paper-band strip used in the manufacture of cigarettes or cigarette-shells comprising means for guiding and moving forward an endless paper band, means for guiding and intermittently moving forward a strip of covering material supported on a strong band, means by which this strip is moved forward opposite the part of the paper band which is to be covered, an adhesive-applying device by means of which the paper band is provided with adhesive material on the parts to which the covering is to be applied, and a presser device by means of which the adhesive portions of the paper strip are successively pressed on the leaf-metal strip, substantially as described.

2. In a machine such as described, the combination with means for feeding forward the paper strip, means for applying adhesive material intermittently thereto, means for feeding a covering material transversely to the paper strip, and a presser device consisting of a base-plate and reciprocating platen for pressing the coated portion of the paper strip against the covering material; substantially as described.

3. In a machine such as described, the combination with the endless paper strip, mechanism for feeding said strip forward continuously, mechanism for intermittently pasting portions of said strip, a carrier for the covering material, mechanism for moving said carrier at the same speed and in the direction of movement of the paper strip, mechanism on said carrier for feeding the covering material and bringing it opposite the pasted portions of the strip, and a pressing device for pressing the paper strip against the covering material; substantially as described.

4. In a machine such as described, the combination with the endless paper strip, mechanism for feeding said strip forward continuously, mechanism for applying paste intermittently to said paper strip, a slide, mechanism for moving said slide forward and backward, in the direction of movement of the paper strip and at the same speed, the endless strip of covering material carried by said
 10 slide, mechanism for feeding and bringing said strip of covering material as the slide moves backward opposite the pasted portion of the strip, and a pressing device for pressing the paper strip against the covering-strip,
 15 and connections between the slide and pressing device whereby they may move forward together; substantially as described.

5. In a machine such as described, the combination of the following elements: a paper-
 20 strip-feeding mechanism, mechanism for applying paste intermittently to the paper strip, mechanism for feeding and positioning the covering material, a pressing device for pressing the paper strip and covering material to-
 25 gether, and mechanism for moving the pressing device forward and at the same speed with the paper strip while the paper strip and covering-strip are pressed together; substantially as described.

30 6. In a machine such as described, the combination with the main drive-shaft, the paper-strip-feeding mechanism operated by said drive-shaft, the slide carrying the covering material, the shaft 28 operatively connected
 35 with the main drive-shaft, the roller carried by said shaft 28 provided with the cam-groove, the stud working in said cam-groove connected with said slide, whereby the slide will be reciprocated and the paper strip fed at the same
 40 speed; substantially as described.

7. In a machine such as described, the combination with the slide, the roll carried by the slide upon which the backing of the covering material is wound, the wheel carried by
 45 the shaft of the receiving-roll, the disk carried by the shaft 28, a projection on the disk adapted to contact with the said wheel to turn the same to feed the covering-strip; substantially as described.

8. In a machine such as described, the combination with the slide, mechanism for reciprocating said slide, the receiving-roller for the covering material carried by the slide, the wheel carried by the shaft of said roller, the disk carried by the shaft 28, and movable
 55 longitudinally thereon, the projection on the disk for contacting with the said wheel to turn the receiving-roll, and connection between the disk and slide, whereby the disk will take part in the movement of the slide; 60 substantially as described.

9. In a machine such as described, the combination with the movable bed-plate, the platen cooperating therewith, the drive-shaft, the cam moving on said shaft in unison with
 65 the bed-plate, and lever connections between the platen and cam; substantially as described.

10. In a machine such as described, the combination with the movable bed-plate, the
 70 platen cooperating therewith, the lever connected to said platen for depressing the same, a drive-shaft, the cam movable longitudinally thereon, in unison with the bed-plate, and a lever connection between said first-
 75 mentioned lever and cam; substantially as described.

11. In a machine such as described, the combination with the movable bed-plate, the
 80 platen cooperating therewith, the drive-shaft, the cam of varying height movable longitudinally thereon, and lever connections between said cam and platen; substantially as described.

12. In a machine such as described the combination with the bed-plate, the platen cooperating therewith, the blade or knife carried by said platen, adapted to press on the strip of covering material after the platen has been
 85 partially raised, and mechanism for operating the platen; substantially as described. 90

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SALOMON SAMUEL HURWITZ.

Witnesses:

C. JANZ AMMURR,
 K. L. SCHUSTER.