

No. 654,198.

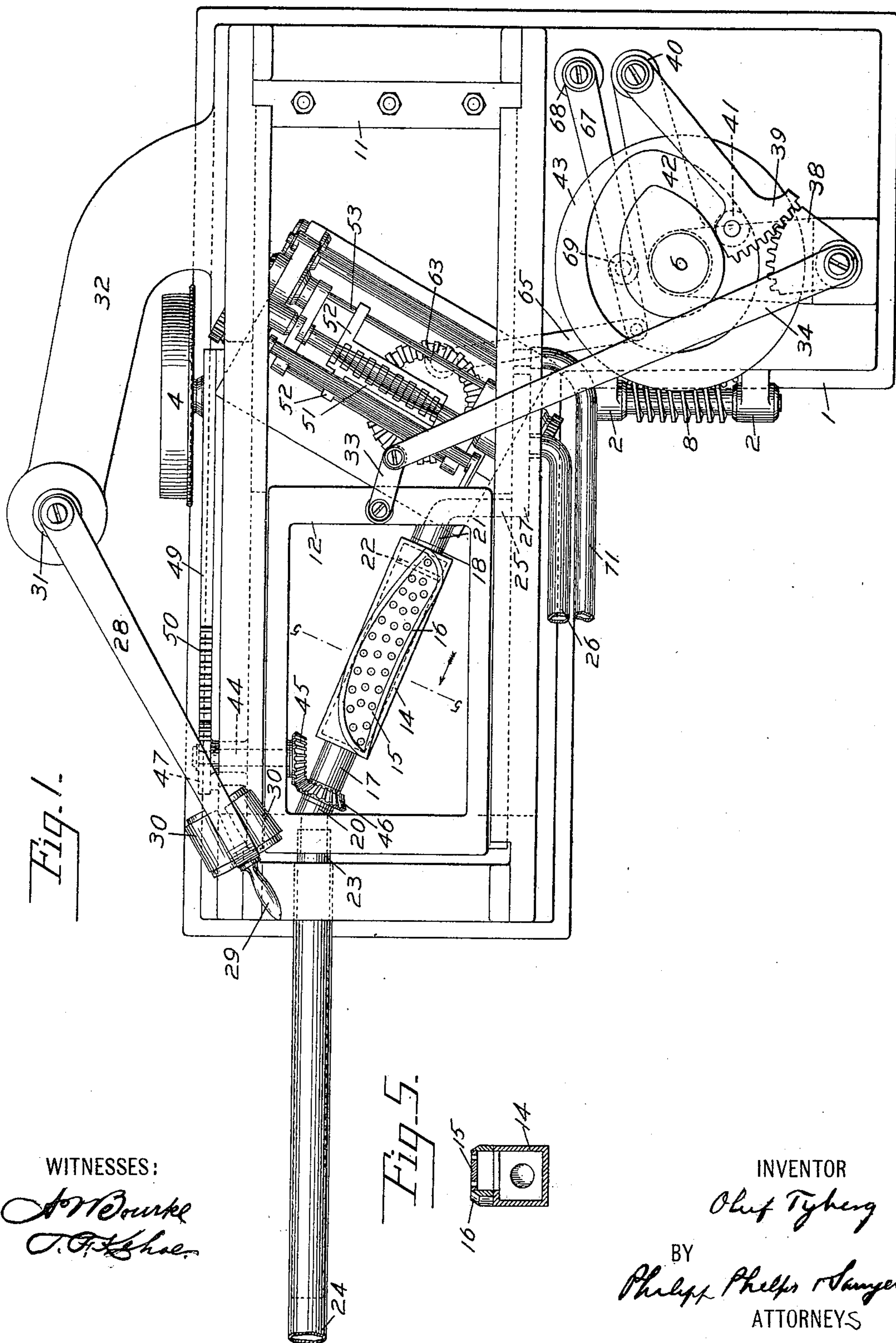
Patented July 24, 1900.

O. TYBERG.  
CIGAR MACHINE.

(Application filed Feb. 5, 1900.)

(No Model.)

5 Sheets—Sheet 1.



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No. 654,198.

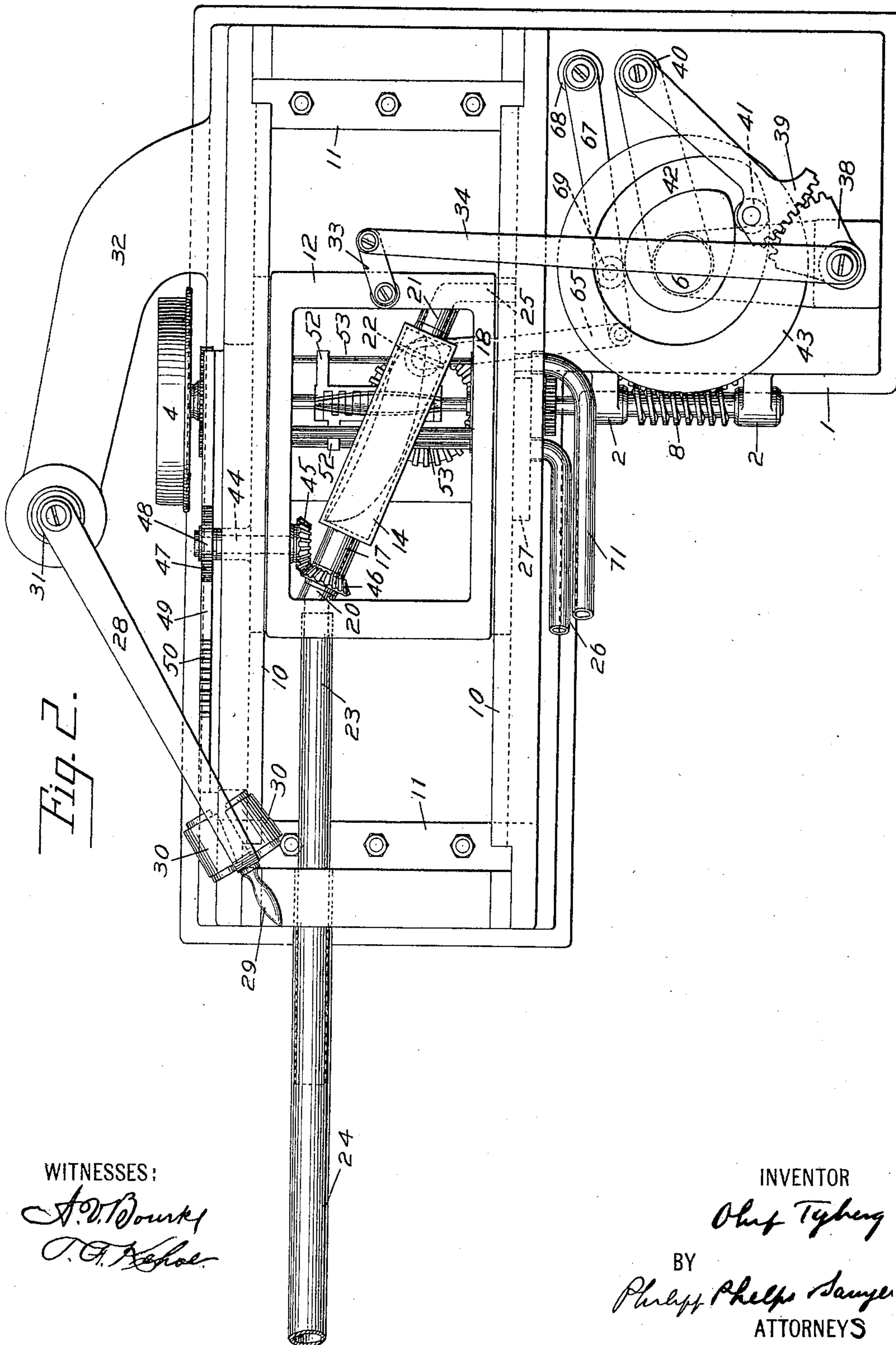
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5 Sheets—Sheet 2.



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No. 654,198.

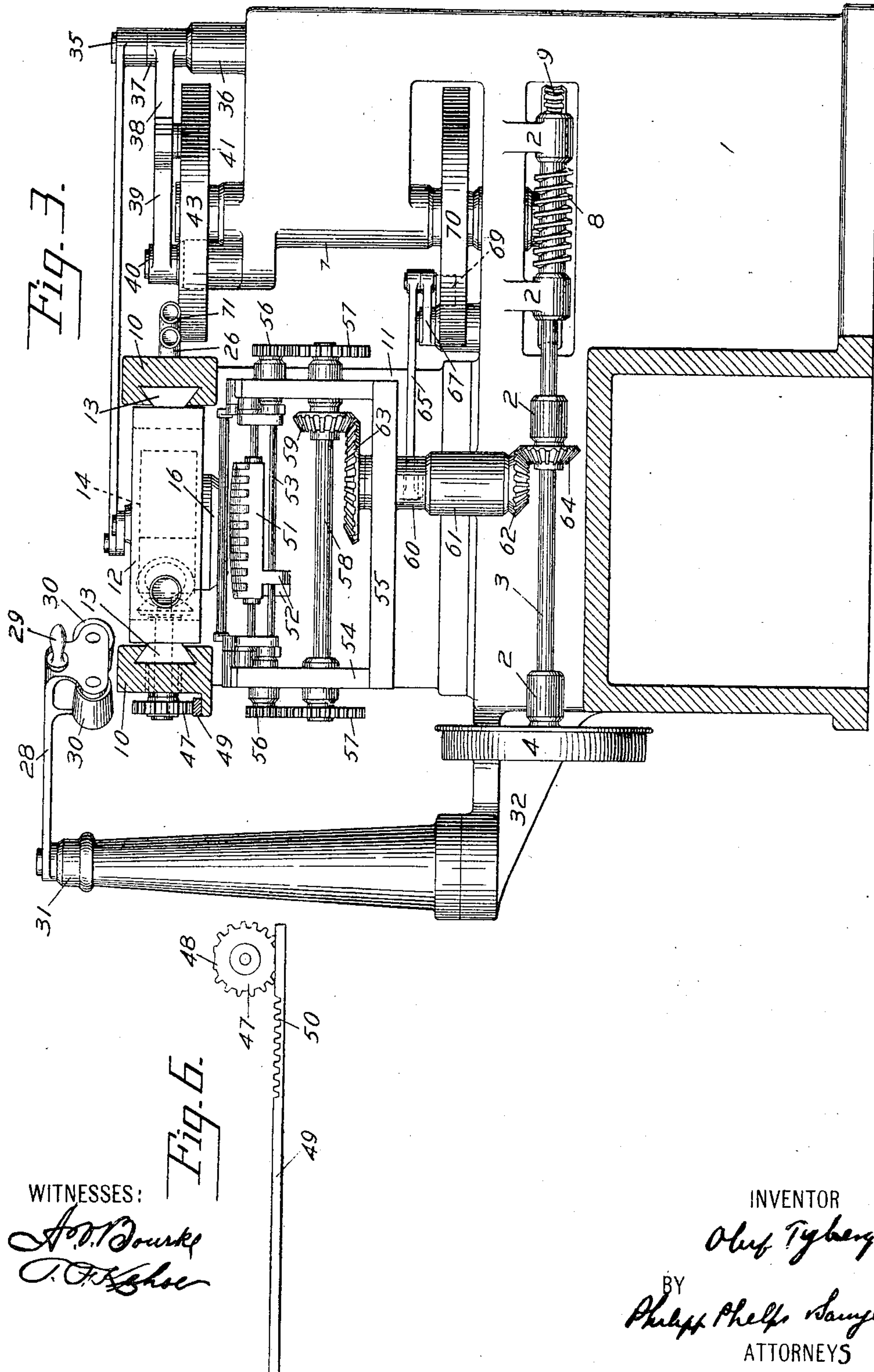
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No. 654,198.

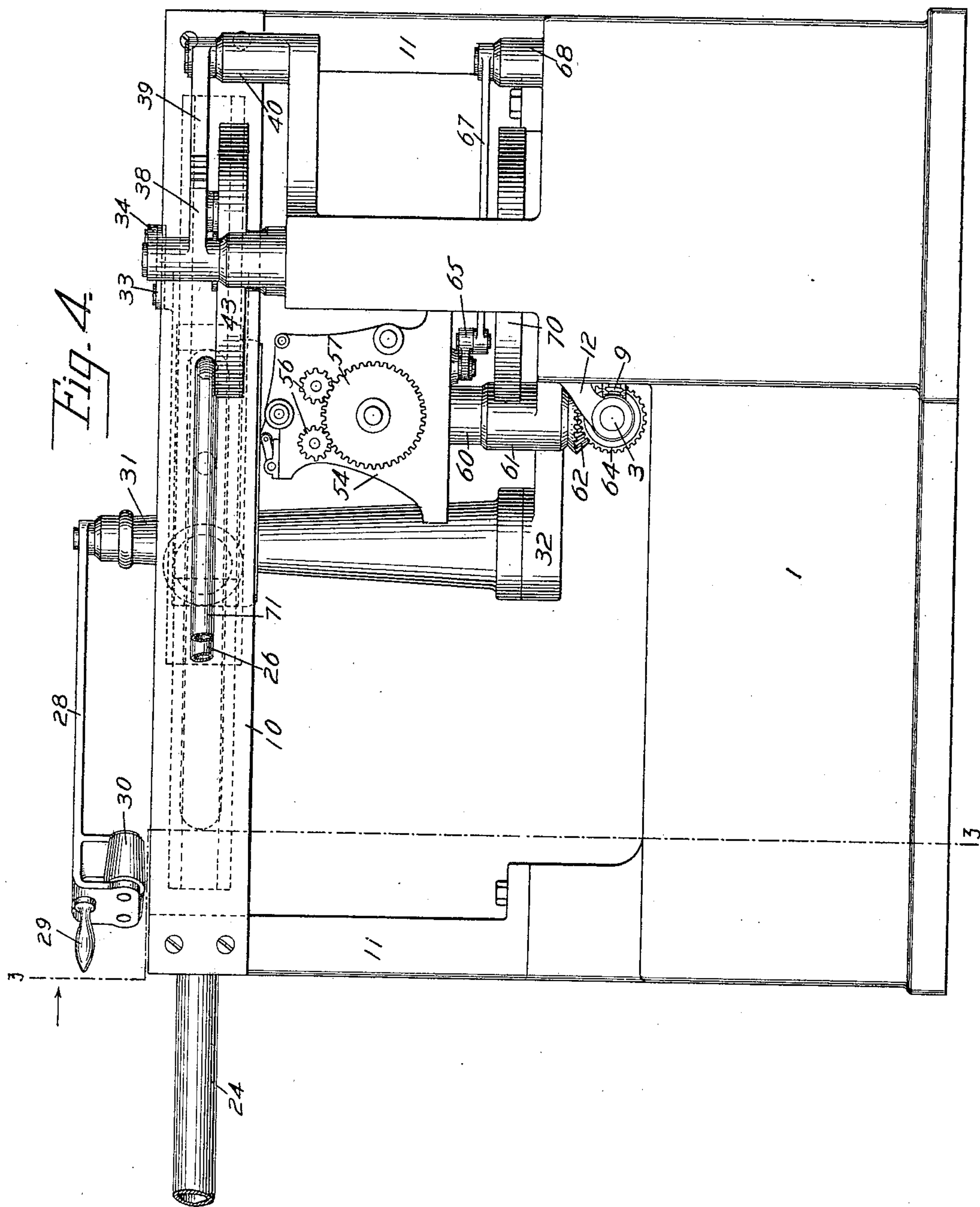
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5 Sheets—Sheet 4.



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(No Model.)

5 Sheets—Sheet 5.

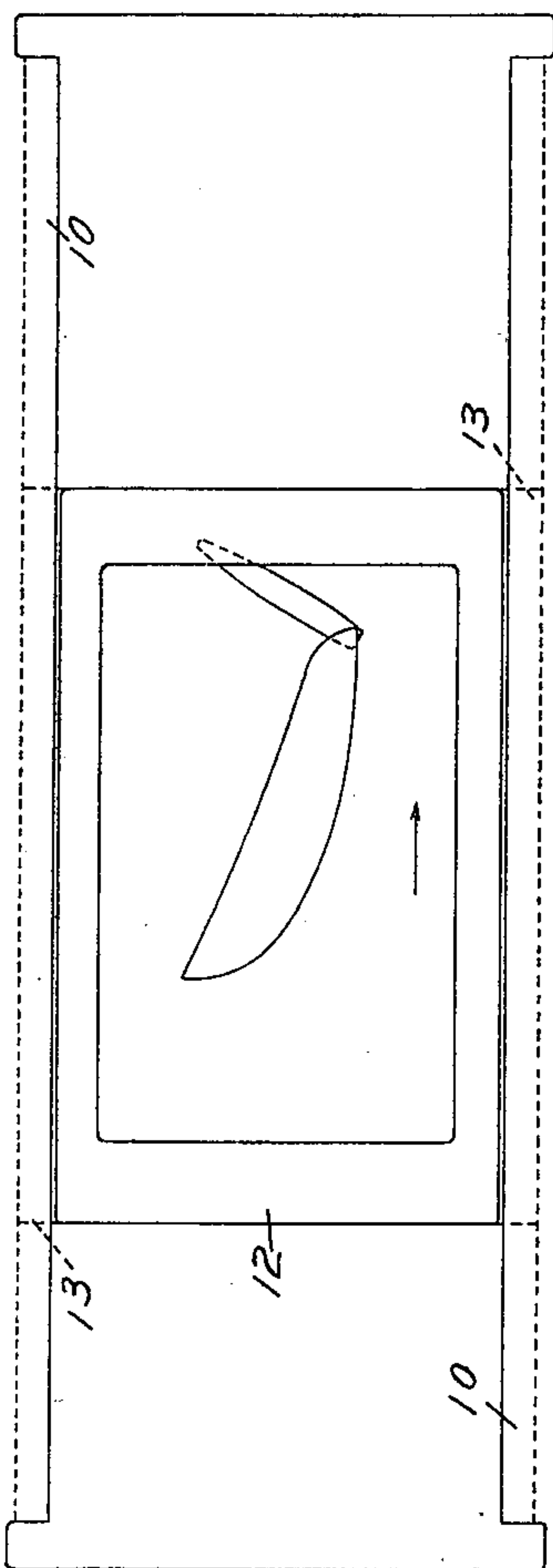


Fig. 7.

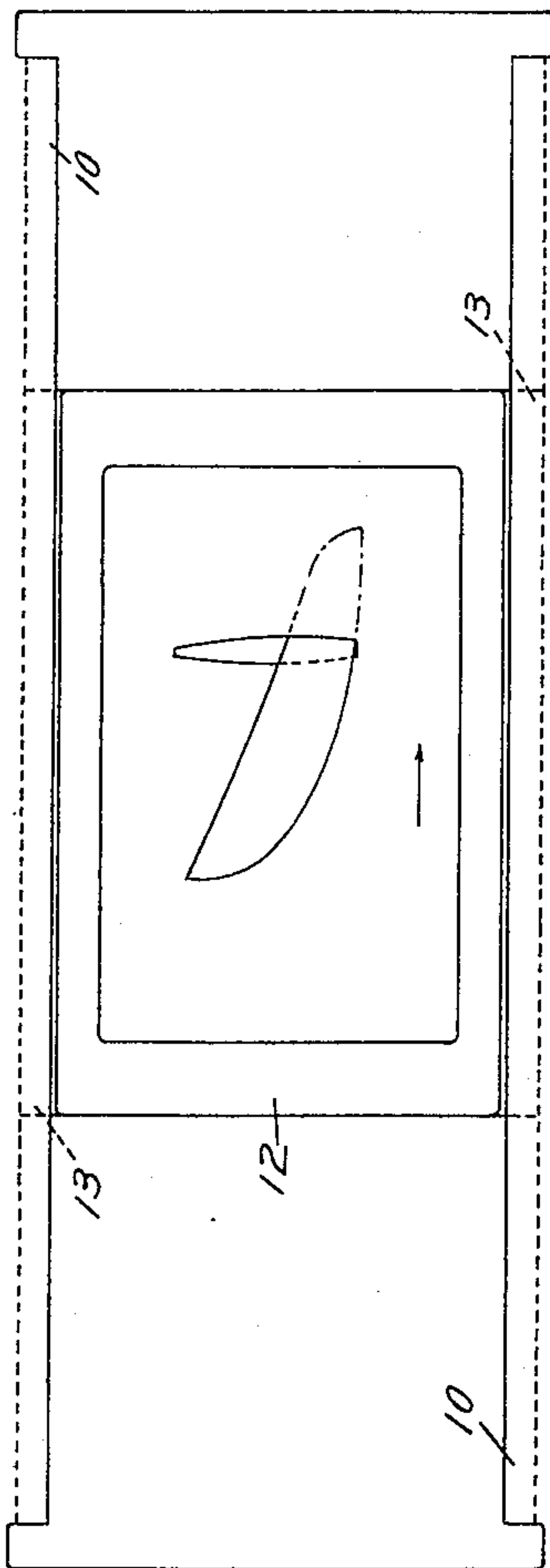


Fig. 8.

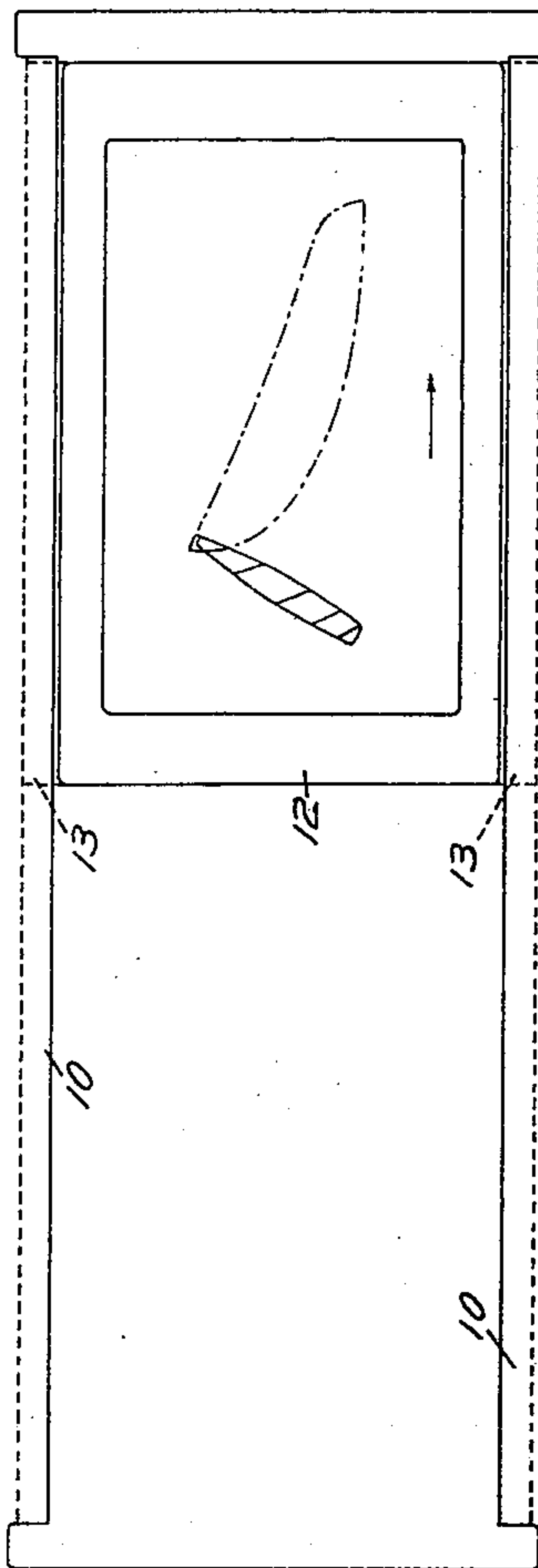


Fig. 9.

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# UNITED STATES PATENT OFFICE.

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## CIGAR-MACHINE.

SPECIFICATION forming part of Letters Patent No. 654,198, dated July 24, 1900.

Application filed February 5, 1900. Serial No. 4,076. (No model.)

*To all whom it may concern:*

Be it known that I, OLUF TYBERG, 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 Cigar-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 This invention relates to certain improvements in cigar-machines.

15 In cigar-machines in which a wrapper is automatically fed by a supporting device or wrapper-support to the wrapping mechanism the relative movement between the wrapping mechanism and the wrapper-support should be such as to wind a wrapper evenly and smoothly upon the cigar-bunch. In order to accomplish this, it is necessary that 20 the wrapper be not only fed to the cigar-bunch, but that it be caused to advance along the bunch. Furthermore, when cigars of what is known in the art as the "perfecto" shape—that is, cigars having their largest 25 diameter near the middle of their length and tapering more or less sharply toward each end—are to be wrapped it is desirable also to vary the angle at which the wrapper is presented to the bunch. In some machines the 30 wrappers are fed to the wrapping mechanism by a movement which is the resultant of three movements—that is to say, a movement by which the wrapping mechanism and the wrapper-support are caused to approach 35 each other, a movement by which one of these parts is traversed along the other, and an angular movement of one of the parts with relation to the other—and it is obvious that this resultant movement can be produced by moving either the wrapper-support 40 or the wrapping mechanism, or both. It is possible, however, by properly arranging the path of the moving member with relation to the other member to cause the wrapper to be 45 properly presented to the bunch in the wrapping mechanism without producing a traversing movement of either of the parts. So, too, if the cigar to be wrapped is approximately cylindrical in shape it is possible 50 also to do away with the angular movement. In some classes of machines it is also desir-

able to arrange the wrapper-support so that its operative face will stand in one plane while the wrapper is placed thereon and is afterward reversed in position, so as to deliver its wrapper to the wrapping mechanism. It is also desirable in some machines to so construct the machine that a sheet of material may be placed on the wrapper-support and a wrapper cut therefrom, after which 60 the wrapper-support delivers the wrapper directly to the wrapping mechanism.

It is one of the objects of this invention to produce a machine in which a wrapper-support shall operate to automatically feed a 65 wrapper to a wrapping mechanism, the relative approaching movement between the two parts being in a straight or right line.

A further object of the invention is to produce a cigar-machine in which a wrapper 70 shall be fed to the wrapping mechanism by a movement which is the resultant of a relative approaching movement in a right line between the two parts and a relative angular movement between the parts. 75

A further object of the invention is to produce a machine in which a wrapper-support moving in a right line and provided with means for holding a wrapper thereon coöperates with a cutting device, so that a sheet of 80 material may be placed on the support and a wrapper cut therefrom.

A further object of the invention is to produce a cigar-machine in which the wrapper-support is caused to stand in one position 85 when the wrapper or sheet of material from which the wrapper is to be cut is placed thereon and in another position when the wrapper is delivered to the wrapping mechanism, improved means being also provided for reversing 90 the position of the wrapper-support and for holding it locked in either of its positions.

A further object of the invention is to produce improved mechanical devices by which the various operations to be performed by 95 the machine may be effected.

With these and other objects in view the invention consists in certain constructions and in certain parts, improvements, and combinations, as will be fully described herein- 100 after and then specifically pointed out in the claims hereunto appended.



In the accompanying drawings, which form a part of this specification, and in which like characters of reference indicate the same parts, Figure 1 is a plan view of the machine. Fig. 2 is a plan view of the machine, showing the parts in a different position. Fig. 3 is a sectional elevation taken on the line 3 3 of Fig. 4 looking in the direction of the arrow in that figure. Fig. 4 is a front view. Fig. 5 is a detail section of the wrapper-support, taken on the line 5 5 of Fig. 1. Fig. 6 is a detail view of part of the gearing for reversing the wrapper-support. Figs. 7, 8, and 9 are diagrammatic views illustrating the position of the wrapper-support and wrapping mechanism at different stages of the wrapping operation.

Referring to the drawings, which illustrate one concrete embodiment of the invention, 1 indicates the frame of the machine. Mounted in suitable bearings 2, extending from one side of the machine, is the main shaft 3, said shaft being provided with any suitable driving device—such, for instance, as a belt-pulley 4. The main shaft is provided with any suitable means by which power is transmitted to the operating parts of the machine. In the present machine the main cam-shaft is a vertical shaft 6, which is journaled in a long bearing 7, formed in one part of the frame, and the main shaft 3 is provided with a worm 8, which meshes with a worm-gear 9, mounted on the cam-shaft.

In accordance with this invention the wrapper-support, to be hereinafter described, is mounted so as to move in a straight line at the time when it delivers the wrapper to the wrapping mechanism. In the present machine the wrapper-support has a reciprocating movement; but machines might be devised which would be within the invention in which a reciprocating movement would not be employed. Any suitable means may be employed for carrying the wrapper-support and for giving it the straight or right line movement. Preferably, however, the machine is provided with grooved rails 10, the said rails being secured to uprights 11, rising from the frame, said uprights being secured to the frame in any suitable manner. The grooved rails 10 form tracks or ways, and in these ways is mounted a frame or carrier 12, the said carrier being provided with projections 13, which may and preferably will be dovetailed in form to engage the grooves in the ways or rails 10, said grooves being similarly shaped.

In the present machine while the wrapper-support may be formed in various ways it will preferably consist of a hollow casting 14, one side of which consists in whole or in part of a perforated plate 15 in order to form a suction wrapper-support. When, as will preferably be the case, the construction is such that the wrapper is cut from a sheet of material held on the support, the casting will carry a knife 16, which is of the configura-

tion of the wrapper to be cut, the said knife surrounding the perforated plate 15. The casting 14 is provided with hollow journals 17 18, these journals being mounted in bearings 20 and 21, secured to the frame or carrier 12. For reasons to be hereinafter stated the support stands at an angle to its line of reciprocation, which is other than a right angle, and it is therefore arranged diagonally of the carrier-frame, as shown.

The support is preferably divided into two chambers by a partition 22, (see dotted lines in Fig. 1,) the journal 17 connecting with one of the chambers and the journal 18 connecting with the other chamber. Any suitable means may be provided for establishing suction in the suction-support. Preferably, however, a pipe 23 connects with that end of the frame which supports the bearing 20, the said pipe having a telescopic connection with a pipe 24, which leads to any suitable suction mechanism (not shown)—as, for instance, a fan. It may be here remarked that the bearing 20 is hollow, and the frame is also perforated, so that a continuous passage is formed from the pipe 23 through the frame, bearing, and journal into one of the chambers of the suction-support. The other chamber of the suction-support may also have suction established therein in any suitable manner. Preferably, however, a passage 25 (see dotted lines in Fig. 1) is formed through that end of the frame which carries the bearing 21, the said passage communicating with the hollow journal 18. The passage is extended through the projection 13, which is adjacent to it. A suction-pipe 26 passes through one of the rails 10 and terminates in a suction-box 27, (see dotted lines in Figs. 1 and 2,) said suction-box being elongated, so that the passage 25 communicates with it during a considerable part of the feeding reciprocation of the suction-support. While it is preferred that the wrapper be held to the support by suction devices, it is to be understood, however, that other forms of retaining devices might be employed.

Any suitable cutting device may be used in connection with the knife 16 to cut a wrapper from a sheet of material held on the support. Preferably, however, a lever 28, provided with a handle 29 and carrying cutting-rollers 30, is pivoted at 31 on an arm 32, extending from the frame of the machine. After a sheet of material has been placed on the support the operator seizes the handle 29 and swings the lever over and back, causing the rollers 30 to run over the knife 16, and thus to cut a wrapper from the sheet of material held on the support.

Any suitable means may be employed for reciprocating the carrier 12 in order to give it the approaching movement with respect to the wrapping mechanism. In the machine shown the carrier is connected by a link 33 to a lever 34, which is mounted on a short vertical shaft 35 in a suitable socket 36, located



on the machine-frame. The shaft 35 also has connected therewith a hub 37, and extending from the hub is a toothed sector 38. This sector 38 is engaged by the teeth of a segment-lever 39, which is pivoted at 40 to the frame of the machine and is provided with a cam-roll 41, which engages a cam-groove 42 in a cam-disk 43, mounted on the cam-shaft 6, before referred to. As the cam-shaft 6 rotates, therefore, it will be seen that the carrier-frame 12 is given a right-line reciprocation, by which it is caused to approach and move away from the wrapping mechanism.

By the term "approaching" as used herein it is not, of course, meant that all parts of the support are at all times during the delivery of the wrapper approaching the wrapping mechanism, since that part of the support which has delivered its portion of the wrapper to the wrapping mechanism moves away from it after the delivery. That part of the support, however, which is still to deliver its portion of the wrapper to the wrapping mechanism moves toward it, and the support as a whole makes what may be termed an "approaching" movement.

In the machine shown the support moves in a plane which does not intersect the wrapping mechanism, which is to be hereinafter described, and the support is so arranged as to reverse its position after a leaf of tobacco has been placed thereon and a wrapper cut from the leaf. The support therefore stands with its face in one horizontal plane while the wrapper is being cut and in another horizontal plane while the wrapper is being fed to the wrapping mechanism. Any suitable means may be employed to effect the reversal of the wrapper-support. Preferably, however, and as shown a short shaft 44 is journaled in one of the sides of the frame or carrier 12, the rail or way 10 being slotted, as indicated in dotted lines in Figs. 1, 2, and 4, so as to permit the movement of the carrier. The shaft 44 carries on its inner end a bevel-gear 45, said gear being arranged to mesh with a similar gear 46, mounted on the journal 17 of the wrapper-support. On its other end the shaft 44 carries a mutilated gear 47, the untoothed portions of which are marked 48. Supported in any suitable manner, as by a ledge on one of the rails 10, is a bar 49, provided near one end with rack-teeth 50, the remainder of the bar on each side of the rack-teeth being plain. As the carrier starts on its reciprocation the teeth of the mutilated gear 47 will engage with the rack-teeth 50 and the gear will be given a half-revolution, the rack-teeth being of proper length to effect this movement of the gear. This half-revolution of the gear causes a half-revolution of the wrapper-support. As soon as the gear 47 has made its half-revolution one of the untoothed portions 48 comes opposite the untoothed portion of the bar 49 and the gear is locked from any further movement, thus holding the wrap-

per-support stationary during the time when it makes its feeding movement.

The wrapping mechanism used in this machine may be of any suitable form. Preferably, however, it will be of the type disclosed in United States Patent to J. Reuse, No. 552,447, granted December 31, 1895, reference being made to said patent for a full disclosure of the construction of said mechanism. For the purposes of this application it is sufficient to say that the wrapping mechanism consists of two pairs of opening and closing jaws 51, said jaws being provided with projections 52, which work in operating-rods 53. These operating-rods are driven from short shafts located in the end frame-pieces 54 of the wrapping mechanism, the end frame-pieces being connected in the machine shown to a base-plate 55. The short shafts referred to are provided with gears 56 at each end of the machine. These gears 56 mesh with larger gears 57, one of which is located at each end of the frame. The gears 57 are mounted on a shaft 58, which also carries an operating-gear 59.

It has been before stated that the wrapper-support stands at an angle to its line of reciprocation which is other than a right angle, and this will be clearly seen from a consideration of Figs. 1 and 2. From an inspection of Fig. 2 it will be seen that one end of the wrapper-support, which is, in fact, the end which carries the end of the wrapper which is to be wrapped on the tuck end of the cigar-bunch, delivers its wrapper to the wrapping mechanism before the other end does. As the wrapper-support passes across the wrapping mechanism the tuck end of the wrapper is first fed to the wrapping mechanism, and owing to the angular position of the support successive parts of the wrapper will be fed to successive parts of the bunch, the tip of the wrapper being delivered to the tip end of the bunch. Were the cigar truly cylindrical in shape this movement of the wrapper-support would be sufficient to properly deliver the wrapper to the bunch—that is to say, the wrapper thus delivered by the support would be smoothly wound upon the bunch by the operation of the wrapping-jaws. Many cigars, however, have their largest diameter in the middle of their length and taper more or less sharply toward each end. In order that the wrapper may be smoothly wrapped on such cigars by a mechanism employing an automatic wrapper-support, such as has been heretofore described, it is desirable that an angular movement be produced between the wrapper-support and the wrapping mechanism. While the angular movement referred to might be provided by moving either the wrapper-support or the wrapping mechanism, it will preferably be effected by moving the wrapping mechanism. While the construction for moving the wrapping mechanism may be of any preferred form, in the machine shown the



base-plate 55 is provided with a downwardly-projecting boss 60, which is journaled in a bearing 61, formed on the frame of the machine. The boss 60 is hollow, and extending through it and through the bearing 61 is a shaft which is provided at its lower end with a bevel-gear 62 and at its upper end with a bevel-gear 63. The gear 63 is in mesh with the gear 59, before referred to, and the gear 62 is in mesh with the bevel-gear 64, mounted on the main shaft 3. It will be seen that by this construction the wrapping mechanism is free to turn about the shaft which carries the gears 62 63 as a center and that in any position of the wrapping mechanism the power transmitted from the main shaft through the gears 62 and 63 and the shaft upon which they are mounted will drive the jaws of the wrapping mechanism.

Any suitable means may be employed for swinging the wrapping mechanism about its pivotal center. In the machine shown a link 65 is connected to a stud 66 on the under side of the base-plate 55. The link 65 is connected to a lever 67, which is pivoted at 68 to the base of the machine. This lever carries a cam-roll 69, which engages with a cam-groove in a cam 70, which is mounted on the vertical cam-shaft 6, before described. It will be seen that as the shaft 6 is rotated by the means before described the wrapping mechanism will be given varying angular movements depending upon the eccentricity of the cam 70, these movements being of such a character as to properly vary the angle at which the wrapper is presented by the wrapper-support to the bunch being operated upon by the wrapping mechanism.

Suitable clutch mechanisms will be employed for starting and stopping the wrapping mechanism at the proper times in order to enable a fresh bunch to be inserted in said mechanism and the wrapped cigar to be removed therefrom. Inasmuch, however, as these clutch mechanisms have no relation to the present invention they have been omitted in the interest of clearness from the illustration and description.

The operation of the machine is as follows:

The parts of the machine being in the position shown in Fig. 1, the operator places a leaf of tobacco or other material from which the wrapper is to be cut upon the wrapper-support. The suction is constantly acting in the wrapper-support, the pipe 24 and connections enabling the suction mechanism to constantly operate on one chamber and the pipe 26 and the connections enabling it to act on the other chamber. As soon as the leaf of tobacco is spread upon the support, therefore, it is immediately secured thereon by the suction. Having placed the leaf in position, the operator seizes the handle 29 and runs the rollers 30 over the support, causing a wrapper to be cut from the leaf by the knife 16. As soon as this is accomplished the carrier 12 begins its forward movement, this being ef-

fectuated through the lever 39, the segment 38, the lever 34, and the link 33. As the carrier starts on its forward movement the teeth of the gear 47 run into mesh with the rack-teeth 50 and cause a half-revolution to be given to the wrapper-support, thus reversing its position. As the forward end of the wrapper-support comes over the wrapping mechanism (which position is indicated in the diagram Fig. 7) the opening 25, which, as has been said, extends through the frame 12 and through the projections 13, passes out of register with the suction-box 27 and momentarily runs into register with the opening of a blast-pipe 71. As soon as the opening 25 passes out of register with the box 27 the suction is of course cut off from the smaller chamber, and as the opening 25 registers with the blast-pipe 71 the blast operates to blow the forward end of the wrapper down into the wrapping-jaws and into a position to be seized by them and wrapped upon the bunch. Suction is continuously maintained on the other chamber, however, so that the wrapping-jaws are caused to draw the wrapper from the support against the force exerted by the suction, thus producing a smooth and even lay of the wrapper on the bunch. When the support has delivered the wrapper to the wrapping mechanism, (the relative positions of the support and wrapping mechanism at about the middle of the delivery movement and at its end being illustrated in the diagrams Figs. 8 and 9,) it starts on its return movement. As it is about to complete this movement the teeth of the gear 47 again strike the teeth 50 on the bar 49 and reverse the position of the support, turning the suction-plate 15 uppermost, so that a wrapper may be conveniently placed thereon. It will be noted that the untoothed portions of the gear 48 are opposite the plain portions of the bar 49 at all times except when the wrapper-support is being reversed. The result of this is that the wrapper-support is always locked from movement in either direction except when it is being reversed, and is consequently maintained steadily and truly in either one of its two positions.

The mechanisms by which the several features of the invention are carried into effect may be varied within wide limits. It is to be understood, therefore, that the invention is not to be restricted to the particular mechanisms herein shown and described.

What I claim is—

1. The combination with a wrapping mechanism, of a wrapper-support, means whereby a sheet of thin material is held thereon, cutting devices coöperating with the support to cut a wrapper from the sheet of thin material while on the support, and means for producing a right-line movement between the support and the wrapping mechanism during the wrapping operation, substantially as described.

2. The combination with a wrapping mechanism, of a wrapper-support, means whereby



a sheet of thin material is held thereon, cutting devices coöperating with the support to cut a wrapper from the sheet of thin material while on the support, means for reversing the position of the support between the cutting and feeding operations, and means for producing a right-line movement between the support and the wrapping mechanism during the wrapping operation, substantially as described.

3. The combination with a wrapping mechanism, of a suction wrapper-support, cutting devices coöperating with the support to cut a wrapper from a sheet of thin material while on the support, and means for producing a right-line movement between the support and the wrapping mechanism during the wrapping operation, substantially as described.

4. The combination with a wrapping mechanism, of a suction wrapper-support, cutting devices coöperating with the support to cut a wrapper from a sheet of thin material while on the support, means for reversing the position of the support between the cutting and feeding operations, and means for producing a right-line movement between the support and the wrapping mechanism during the wrapping operation, substantially as described.

5. The combination with a wrapping mechanism, of a wrapper-support, means whereby a sheet of thin material is held thereon, cutting devices coöperating with the support to cut a wrapper from the sheet of thin material while on the support, and means for giving the wrapper-support a right-line movement with respect to the wrapping mechanism during the wrapping operation, substantially as described.

6. The combination with a wrapping mechanism, of a wrapper-support, means whereby a sheet of thin material is held thereon, cutting devices coöperating with the support to cut a wrapper from the sheet of thin material while on the support, means for reversing the position of the support between the cutting and feeding operations, and means for giving the wrapper-support a right-line movement with respect to the wrapping mechanism during the wrapping operation, substantially as described.

7. The combination with a wrapping mechanism, of a suction wrapper-support, cutting devices coöperating with the support to cut a wrapper from a sheet of thin material while on the support, and means for giving the wrapper-support a right-line movement with respect to the wrapping mechanism during the wrapping operation, substantially as described.

8. The combination with a wrapping mechanism, of a suction wrapper-support, cutting devices coöperating with the support to cut a wrapper from a sheet of thin material while on the support, means for reversing the position of the support between the cutting and feeding operations, and means for giving the

wrapper-support a right-line movement with respect to the wrapping mechanism during the wrapping operation, substantially as described.

9. The combination with a wrapping mechanism, of a wrapper-support, means whereby a wrapper is held on the support, and means for moving the support toward the wrapping mechanism in a right line during the wrapping operation, substantially as described.

10. The combination with a wrapping mechanism, of a wrapper-support, means whereby a wrapper is held on the support, and means for giving the wrapper-support a right-line movement toward the wrapping mechanism during the wrapping operation, said movement taking place in a plane which does not intersect the wrapping mechanism, substantially as described.

11. The combination with a wrapping mechanism, of a wrapper-support, means whereby a wrapper is held on the support, and means for giving the wrapper-support a right-line movement over the wrapping mechanism during the wrapping operation, substantially as described.

12. The combination with a wrapping mechanism, of a wrapper-support, means whereby a wrapper is held on the support, and means for producing a right-line movement between the support and the wrapping mechanism during the wrapping operation, substantially as described.

13. The combination with a wrapping mechanism, of a wrapper-support lying in a plane which does not intersect the wrapping mechanism, means whereby a wrapper is held on the support, and means for producing a right-line movement between the support and the wrapping mechanism during the wrapping operation, substantially as described.

14. The combination with a wrapping mechanism, of a suction wrapper-support, and means for moving the support toward the wrapping mechanism in a right line during the wrapping operation, substantially as described.

15. The combination with a wrapping mechanism, of a suction wrapper-support, and means for giving the wrapper-support a right-line movement toward the wrapping mechanism during the wrapping operation, said movement taking place in a plane which does not intersect the wrapping mechanism, substantially as described.

16. The combination with a wrapping mechanism, of a suction wrapper-support, and means for giving the wrapper-support a right-line movement over the wrapping mechanism during the wrapping operation, substantially as described.

17. The combination with a wrapping mechanism, of a suction wrapper-support, and means for producing a right-line movement between the support and the wrapping mechanism during the wrapping operation, substantially as described.



18. The combination with a wrapping mechanism, of a suction wrapper-support lying in a plane which does not intersect the wrapping mechanism, and means for producing a right-line movement between the support and the wrapping mechanism during the wrapping operation, substantially as described.

19. The combination with a wrapping mechanism, of a wrapper-support lying in a plane which does not intersect the wrapping mechanism, means whereby a wrapper is held on the support, and means for producing a movement between the wrapper-support and the wrapping mechanism which is the resultant of a movement in a straight line and an angular movement, substantially as described.

20. The combination with a wrapping mechanism, of a suction wrapper-support lying in a plane which does not intersect the wrapping mechanism, and means for producing a movement between the wrapper-support and the wrapping mechanism which is the resultant of a movement in a straight line and an angular movement, substantially as described.

21. The combination with a wrapping mechanism, of a wrapper-support, means whereby a wrapper is held on the support, and means for producing a movement between these parts during the wrapping operation which is the resultant of an angular movement of one of the parts and a right-line-approaching movement of the other part, substantially as described.

22. The combination with a wrapping mechanism, of a wrapper-support, means whereby a wrapper is held on the support, means for giving the wrapper-support an approaching movement in a right line, and means for giving the wrapping mechanism an angular movement, substantially as described.

23. The combination with a wrapping mechanism, of a wrapper-support lying in a plane which does not intersect the wrapping mechanism, means whereby a wrapper is held on said support, means for giving the wrapper-support a right-line movement, and means for giving the wrapping mechanism an angular movement, substantially as described.

24. The combination with a wrapping mechanism, of a suction wrapper-support, and means for producing a movement between these parts during the wrapping operation which is the resultant of an angular movement of one of the parts and a right-line-approaching movement of the other part, substantially as described.

25. The combination with a wrapping mechanism, of a suction wrapper-support, means for giving the wrapper-support an approaching movement in a right line, and means for giving the wrapping mechanism an angular movement, substantially as described.

26. The combination with a wrapping mechanism, of a suction wrapper-support lying in a plane which does not intersect the wrapping mechanism, means for giving the wrapper-support a right-line movement, and means

for giving the wrapping mechanism an angular movement, substantially as described.

27. The combination with a suction-support, of cutting devices coöperating therewith to cut a sheet of material while on the support, means for giving the support a right-line movement, and means for reversing the position of the support, substantially as described.

28. The combination with a wrapping mechanism, of a wrapper-support, means whereby a wrapper is held thereon, and means for giving the wrapper-support a right-line movement with respect to the wrapping mechanism, the support being arranged at an angle to its line of movement which is other than a right angle, substantially as described.

29. The combination with a wrapping mechanism, of a wrapper-support, means whereby a wrapper is held thereon, means for giving the support a right-line movement, the support being arranged at an angle to its line of movement which is other than a right angle, and means for giving the wrapping mechanism an angular movement during the wrapping operation, substantially as described.

30. The combination with a wrapping mechanism, of a suction wrapper-support, and means for giving the wrapper-support a right-line movement with respect to the wrapping mechanism, the support being arranged at an angle to its line of movement which is other than a right angle, substantially as described.

31. The combination with a wrapping mechanism, of a suction wrapper-support, means for giving the support a right-line movement, the support being arranged at an angle to its line of movement which is other than a right angle, and means for giving the wrapping mechanism an angular movement during the wrapping operation, substantially as described.

32. The combination with a wrapping mechanism, of a wrapper-support, means whereby a sheet of thin material is held thereon, cutting devices coöperating with the support to cut a wrapper from the sheet of thin material while on the support, means for reversing the position of the support and for locking it in either of its two positions, and means for giving it a right-line movement with respect to the wrapping mechanism, substantially as described.

33. The combination with a wrapping mechanism, of a suction wrapper-support, cutting devices coöperating with the support to cut a wrapper from a sheet of thin material while on the support, means for reversing the position of the support and for locking it in either of its two positions, and means for giving it a right-line movement with respect to the wrapping mechanism, substantially as described.

34. The combination with a wrapping mechanism, of a wrapper-support, means whereby a sheet of thin material is held thereon, cutting devices coöperating with the support to



cut a wrapper from the sheet of thin material while on the support, means for reversing the position of the support and for locking it in either of its two positions, means for giving it a right-line movement with respect to the wrapping mechanism, and means for giving the wrapping mechanism an angular movement, substantially as described.

35. The combination with a wrapping mechanism, of a suction wrapper-support, cutting devices cooperating with the support to cut a wrapper from a sheet of thin material held on the support, means for reversing the position of the support and for locking it in either of its two positions, means for giving it a right-line movement with respect to the wrapping mechanism, and means for giving the wrapping mechanism an angular movement, substantially as described.

36. The combination with a frame, of ways mounted therein, a wrapping mechanism, a carrier, means for reciprocating the carrier along the ways, a wrapper-support arranged diagonally of the carrier, and means whereby a wrapper is held on the support, substantially as described.

37. The combination with a frame, of ways mounted therein, a wrapping mechanism, a carrier, means for reciprocating the carrier along the ways, and a suction wrapper-support arranged diagonally of the carrier, substantially as described.

38. The combination with a frame, of ways mounted therein, a wrapping mechanism, a carrier, a wrapper-support mounted in the carrier, means whereby a wrapper is held on the support, means for reciprocating the carrier, and means for giving the wrapping mechanism an angular movement, substantially as described.

39. The combination with a frame, of ways mounted therein, a wrapping mechanism, means for reciprocating the carrier along the ways, a wrapper-support arranged diagonally of the carrier, means whereby a wrapper is held on the support, and means for giving the wrapping mechanism an angular movement, substantially as described.

40. The combination with a frame, of ways mounted therein, a wrapping mechanism, a carrier, a suction wrapper-support mounted in the carrier, means for reciprocating the carrier, and means for giving the wrapping mechanism an angular movement, substantially as described.

41. The combination with a frame, of ways mounted therein, a wrapping mechanism, means for reciprocating the carrier along the ways, a suction wrapper-support arranged diagonally of the carrier, and means for giving the wrapping mechanism an angular movement, substantially as described.

42. The combination with a frame, of ways mounted therein, a carrier reciprocating in the ways, a wrapping mechanism, a suction-support mounted in the carrier, means for re-

ciprocating the carrier, and means for reversing the position of the support, substantially as described.

43. The combination with a frame, of ways mounted therein, a wrapping mechanism, a carrier, means for reciprocating the carrier along the ways, a suction-support mounted in the carrier, cutting devices cooperating with the support, and means for reversing the position of the support, substantially as described.

44. The combination with a frame, of ways mounted therein, a wrapping mechanism, a carrier, means for reciprocating the carrier along the ways, a suction-support mounted in the carrier, cutting devices cooperating with the support, means for reversing the position of the support, and means for locking the support in either position, substantially as described.

45. The combination with a frame, of ways mounted therein, a wrapping mechanism, a carrier, means for reciprocating the carrier along the ways, a suction-support mounted in the carrier, cutting devices cooperating with the support, a shaft moving with the carrier, gearing between said shaft and the suction-support, a mutilated gear carried by the shaft, and a bar having a toothed portion lying in position to be engaged by the mutilated gear, substantially as described.

46. The combination with a frame, of ways mounted therein, a wrapping mechanism, a carrier, means for reciprocating the carrier along the ways, a suction-support arranged diagonally of the carrier, cutting devices cooperating with the support, a shaft moving with the carrier, gearing between the shaft and the suction-support, a mutilated gear carried by the shaft, a bar having toothed and plain portions with which the mutilated gear engages, and means for giving the wrapping mechanism an angular movement, substantially as described.

47. The combination with a frame, of ways mounted therein, a wrapping mechanism, a carrier, means for reciprocating the carrier along the ways, a suction-pipe connected to and moving with the carrier, and a stationary pipe with which said pipe is connected, substantially as described.

48. The combination with a frame, of ways mounted therein, a wrapping mechanism, a carrier, means for reciprocating the carrier along the ways, a suction-support mounted in the carrier and consisting of two chambers, a suction-pipe connected with the carrier and communicating with one of the chambers, a suction-box and a blast-pipe lying along the path of travel of the carrier and with which the other chamber successively communicates, substantially as described.

49. The combination with a frame, of ways mounted therein, a wrapping mechanism, a carrier, means for reciprocating the carrier along the ways, a suction-support arranged



diagonally of the carrier and having hollow  
bearings through which the suction acts, said  
suction-support consisting of two chambers,  
a suction-pipe connecting with one of the  
5 chambers, a suction-box and a blast-pipe ar-  
ranged along the path of travel of the carrier  
with which the other chamber of the suction-  
support successively communicates, cutting  
devices coöperating with the support, means  
10 for reversing the position of the support, and

means for giving the wrapping mechanism  
an angular movement, substantially as de-  
scribed.

In testimony whereof I have hereunto set  
my hand in the presence of two subscribing 15  
witnesses.

OLUF TYBERG.

Witnesses:

A. L. KENT,

A. A. V. BOURKE.