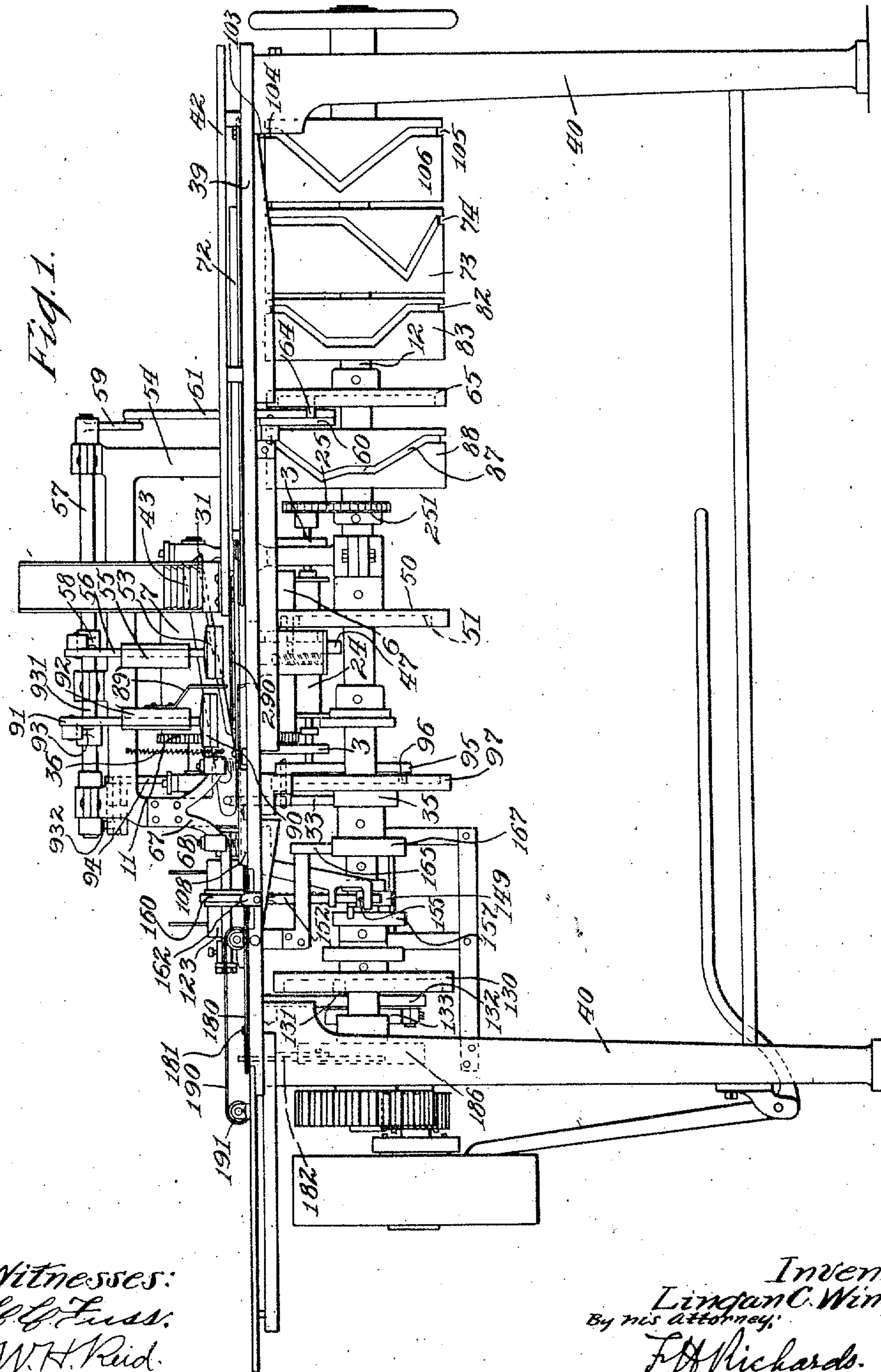


L. C. WING.
WRAPPING MACHINE.

APPLICATION FILED SEPT. 2, 1905.

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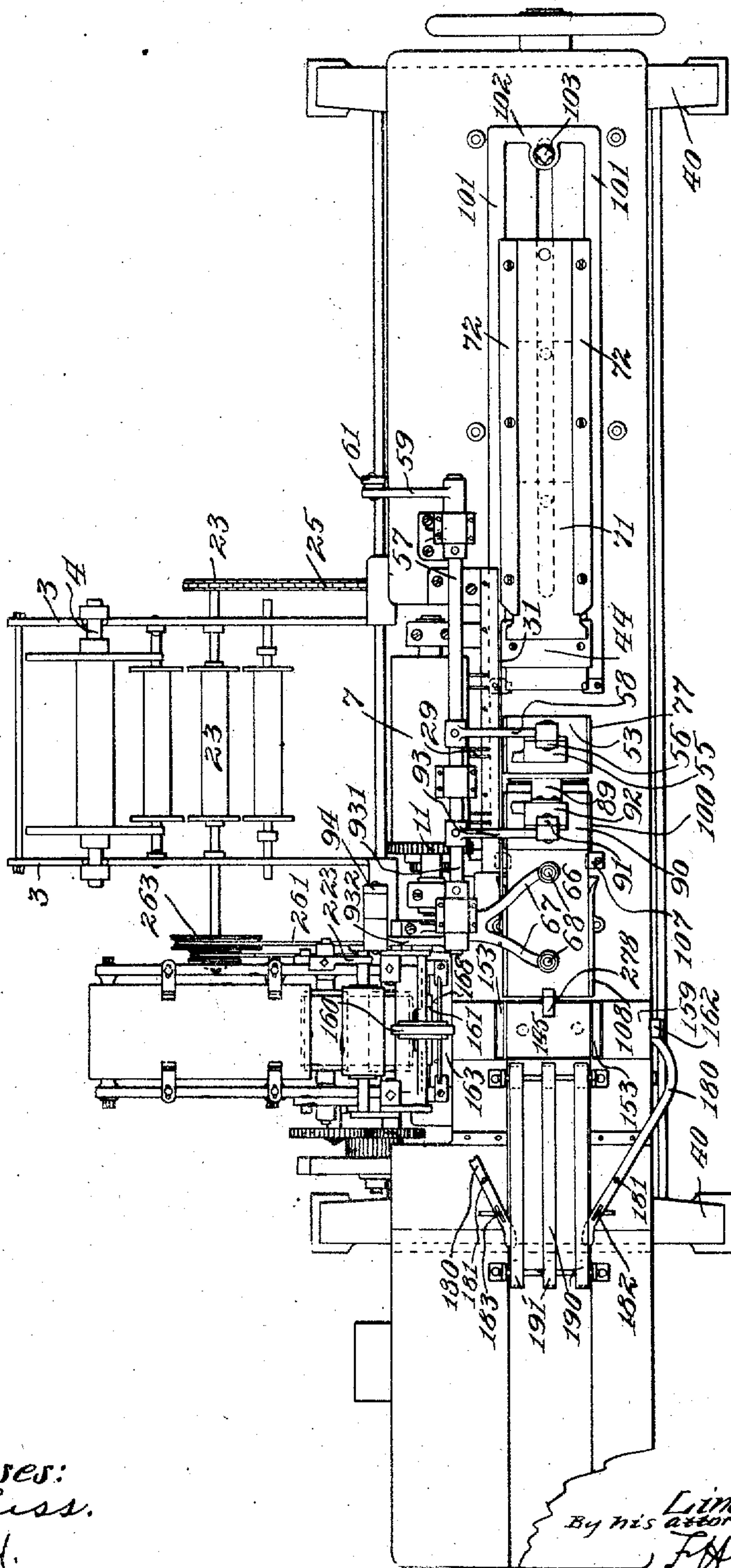


L. C. WING.
WRAPPING MACHINE.

APPLICATION FILED SEPT. 2, 1905.

10 SHEETS—SHEET 2.

Fig. 2.



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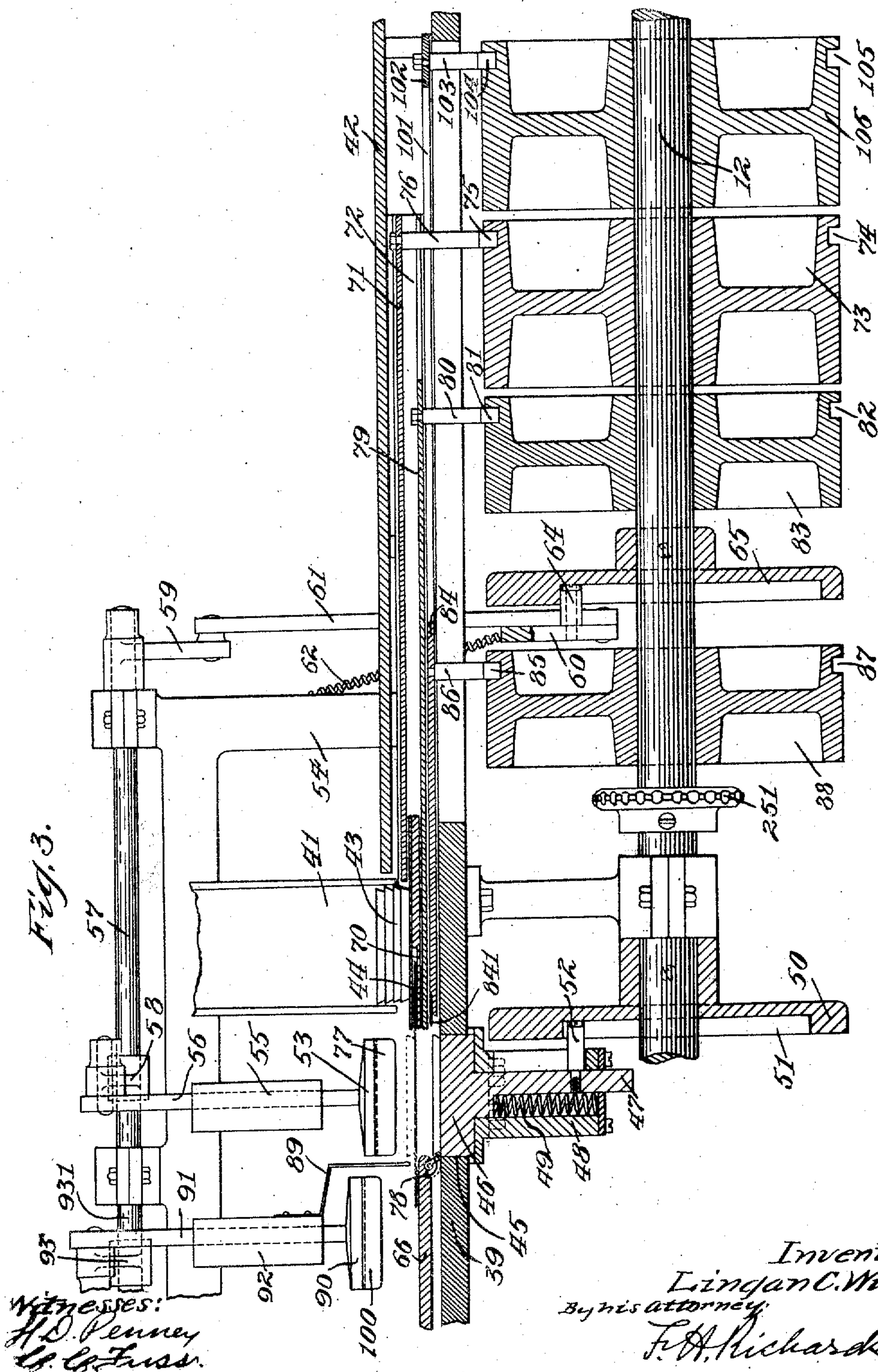
No. 860,176.

PATENTED JULY 16, 1907.

L. C. WING.
WRAPPING MACHINE.

APPLICATION FILED SEPT. 2, 1905.

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L. C. WING.
WRAPPING MACHINE.

APPLICATION FILED SEPT. 2, 1905.

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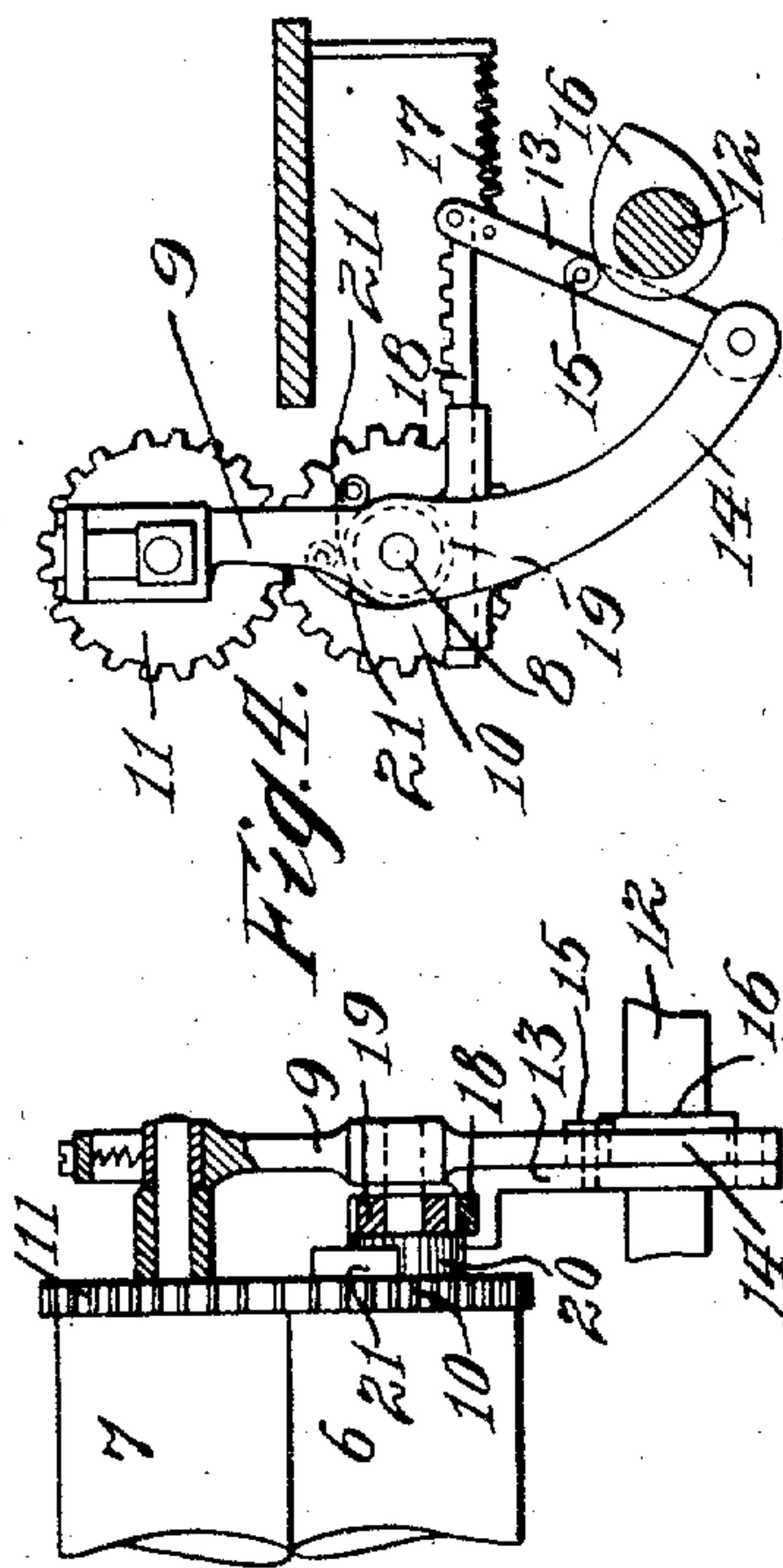


Fig. 4.

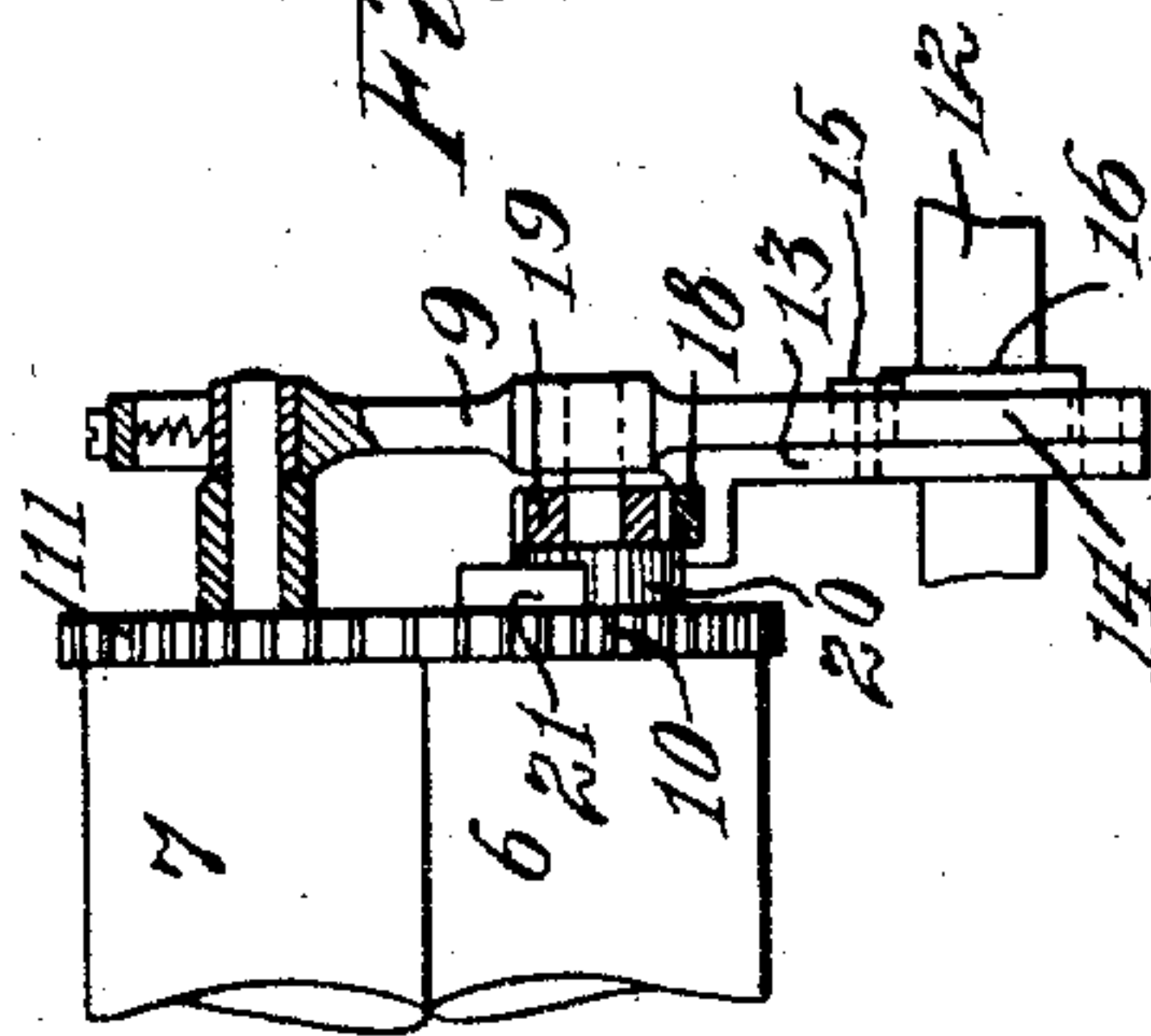


Fig. 5.

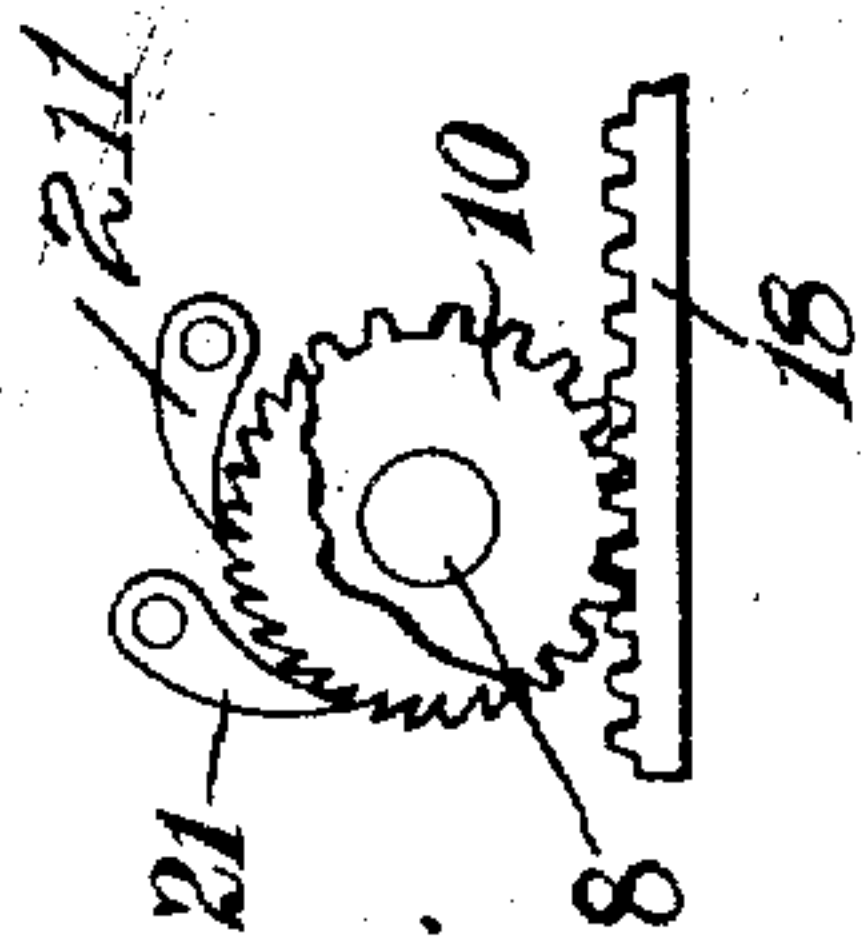


Fig. 6.

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Fig. 8.

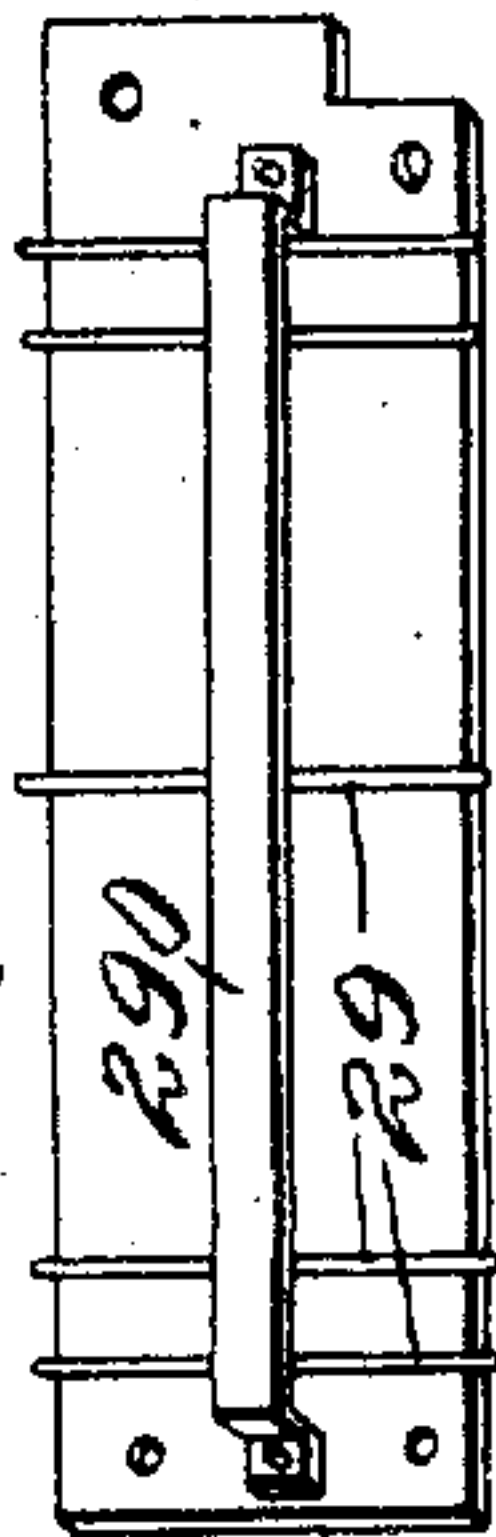


Fig. 45.

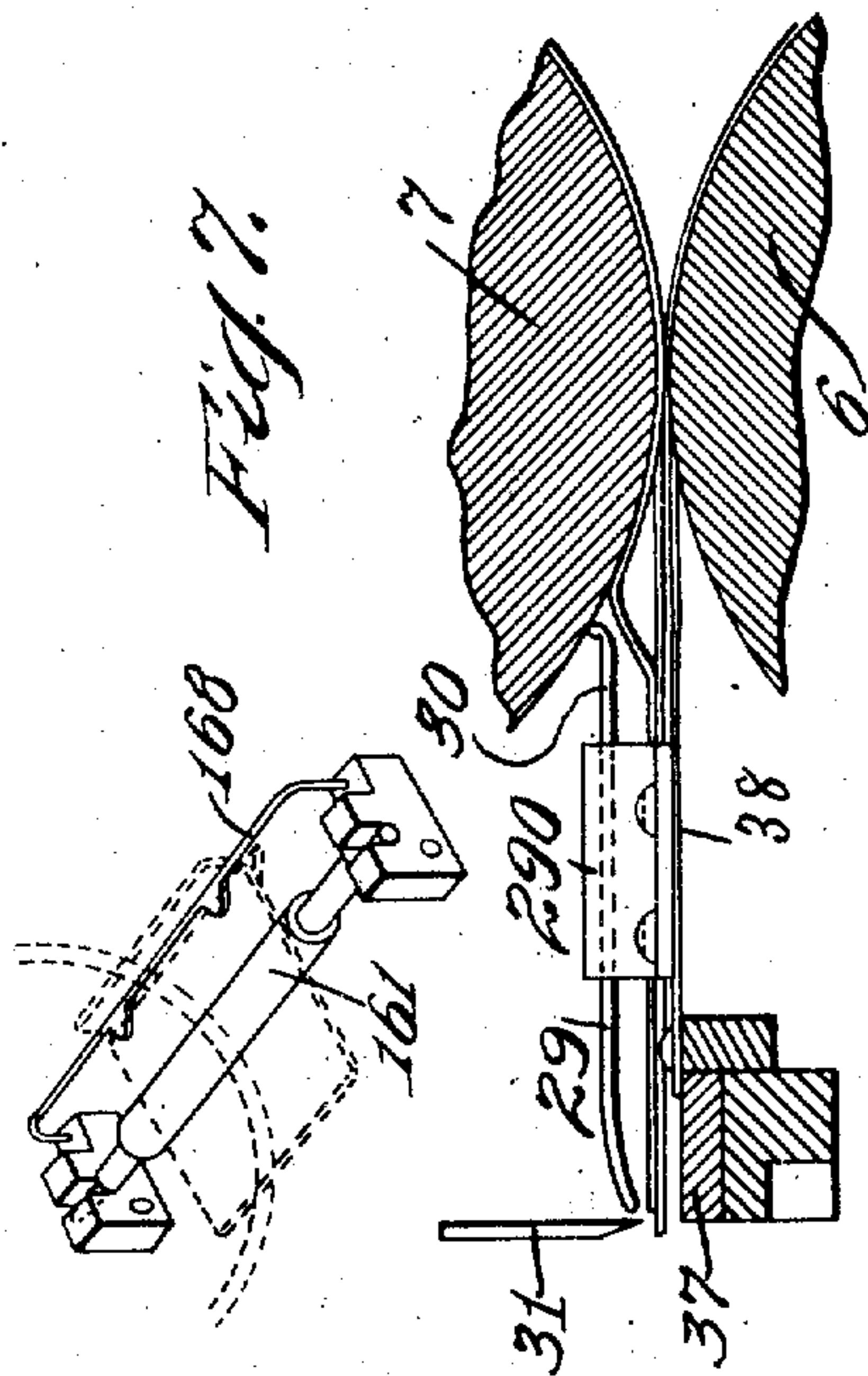


Fig. 7.

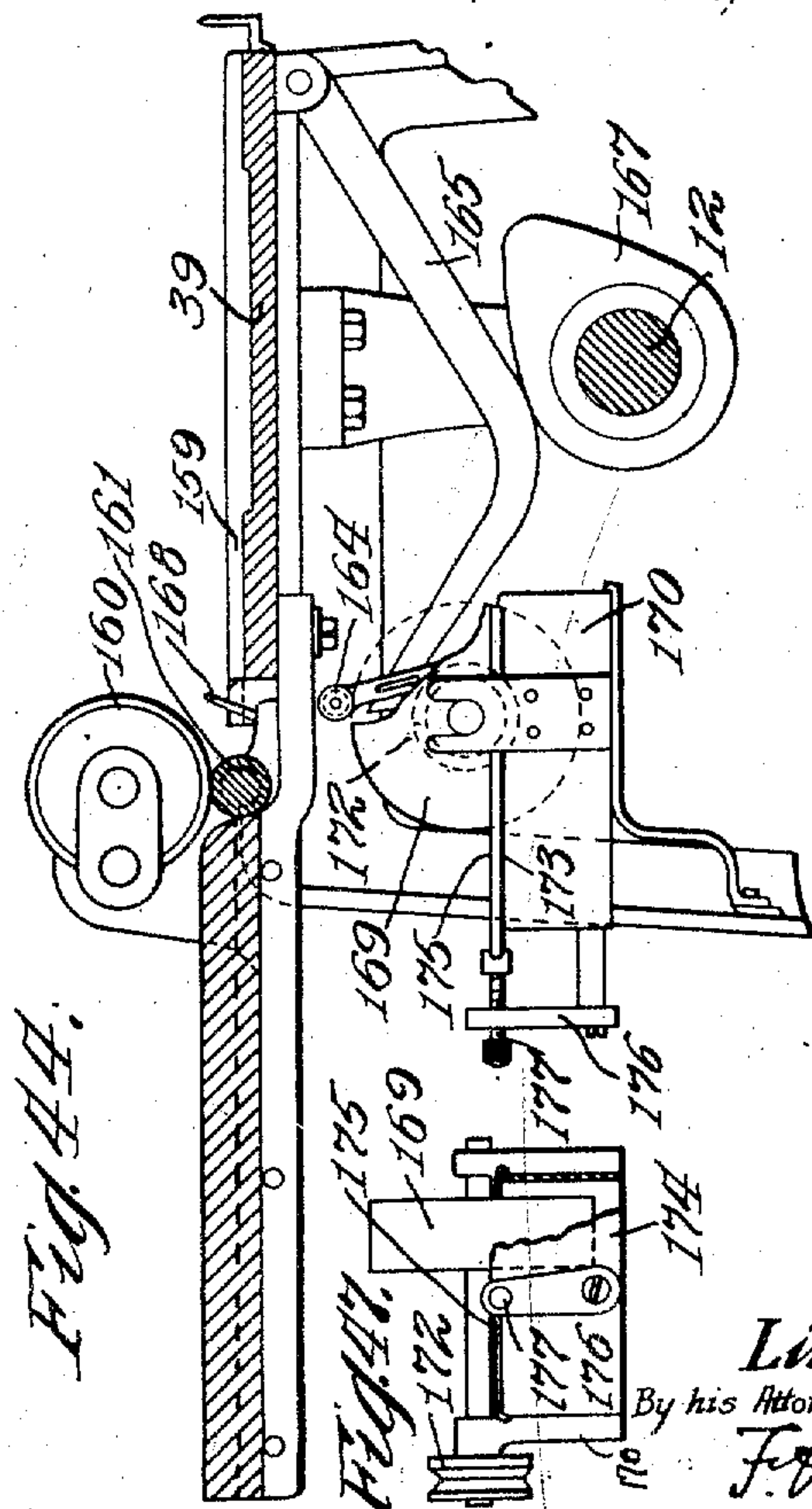


Fig. 44.

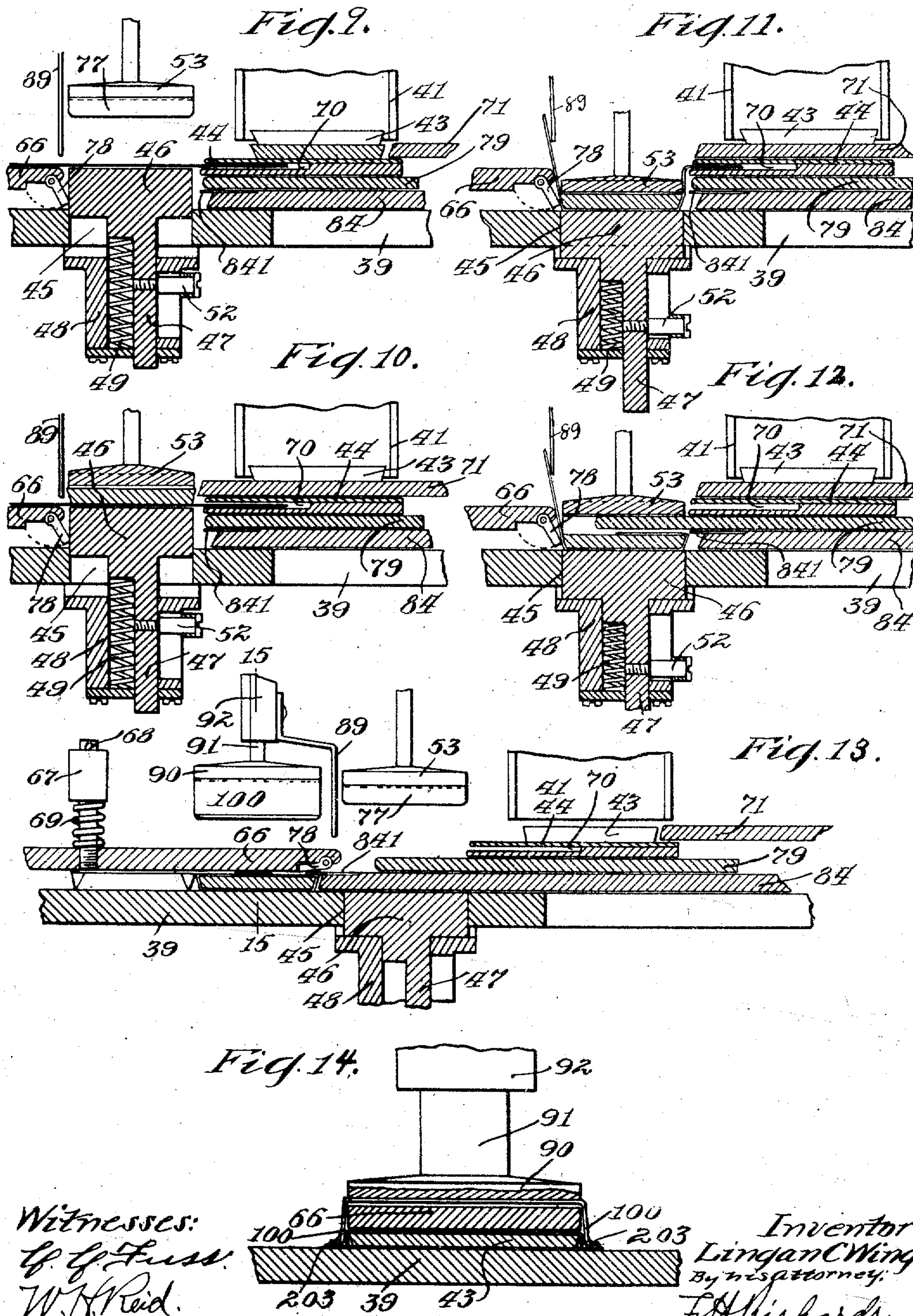
Fig. 46.



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WRAPPING MACHINE.

APPLICATION FILED SEPT. 2, 1905.

10 SHEETS—SHEET 6.

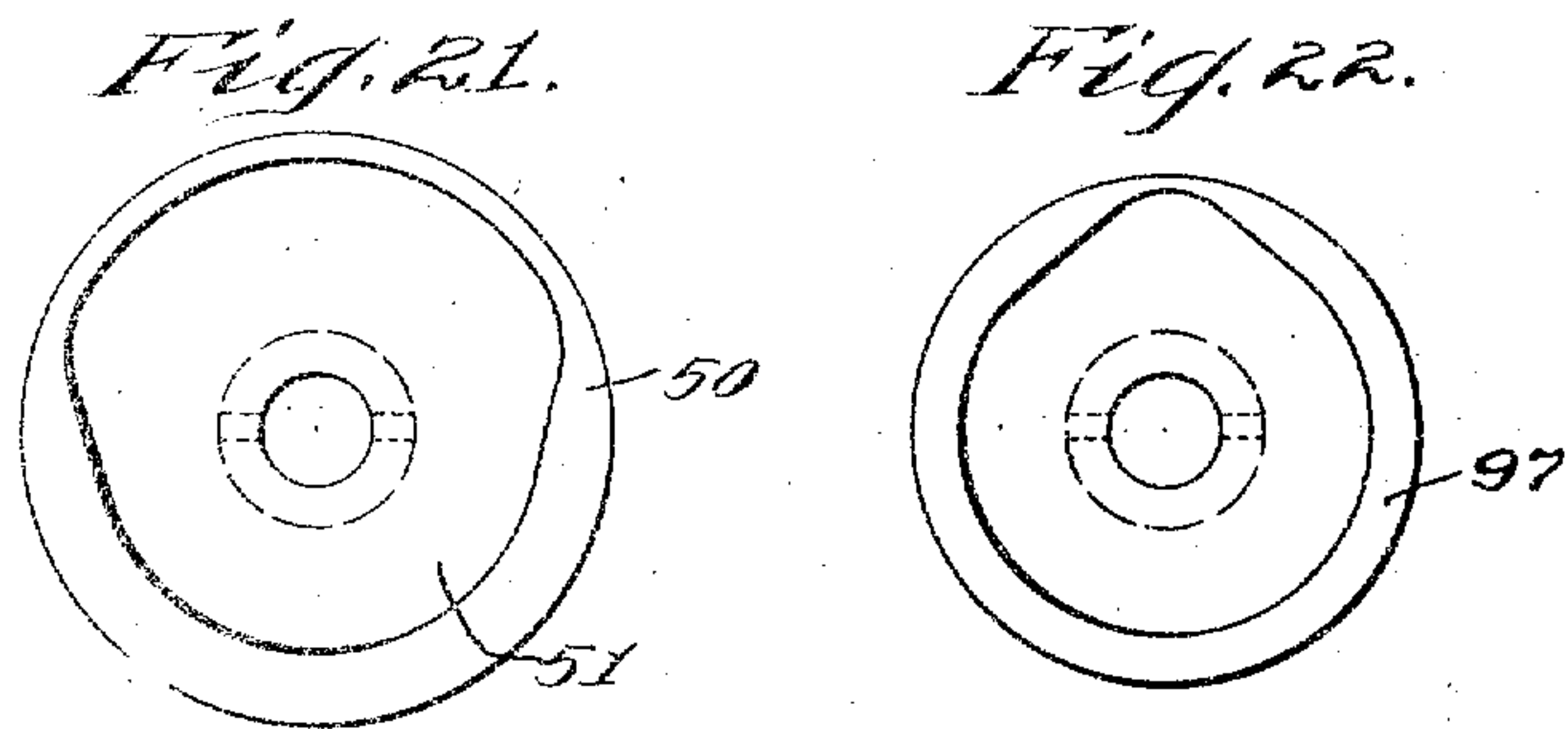
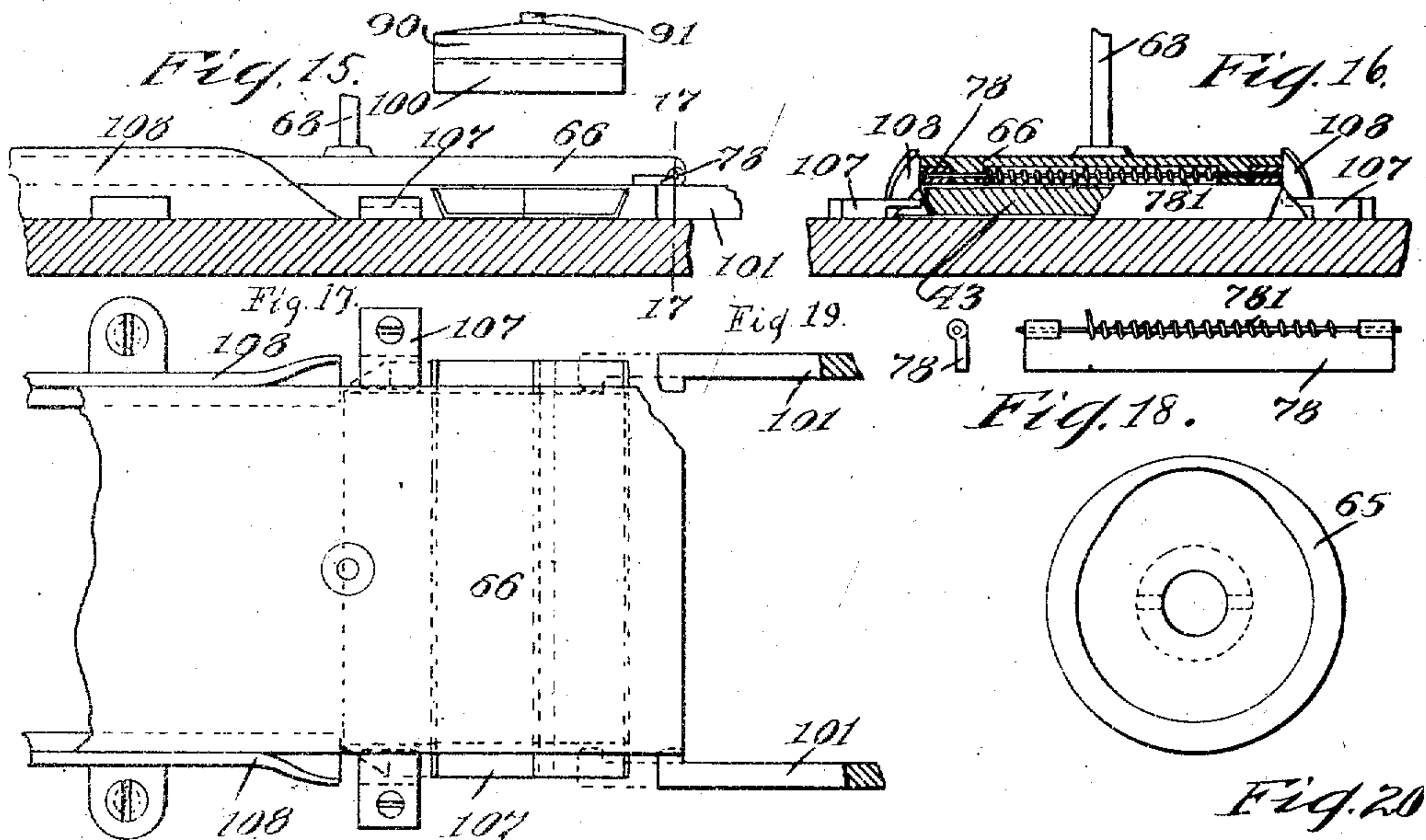
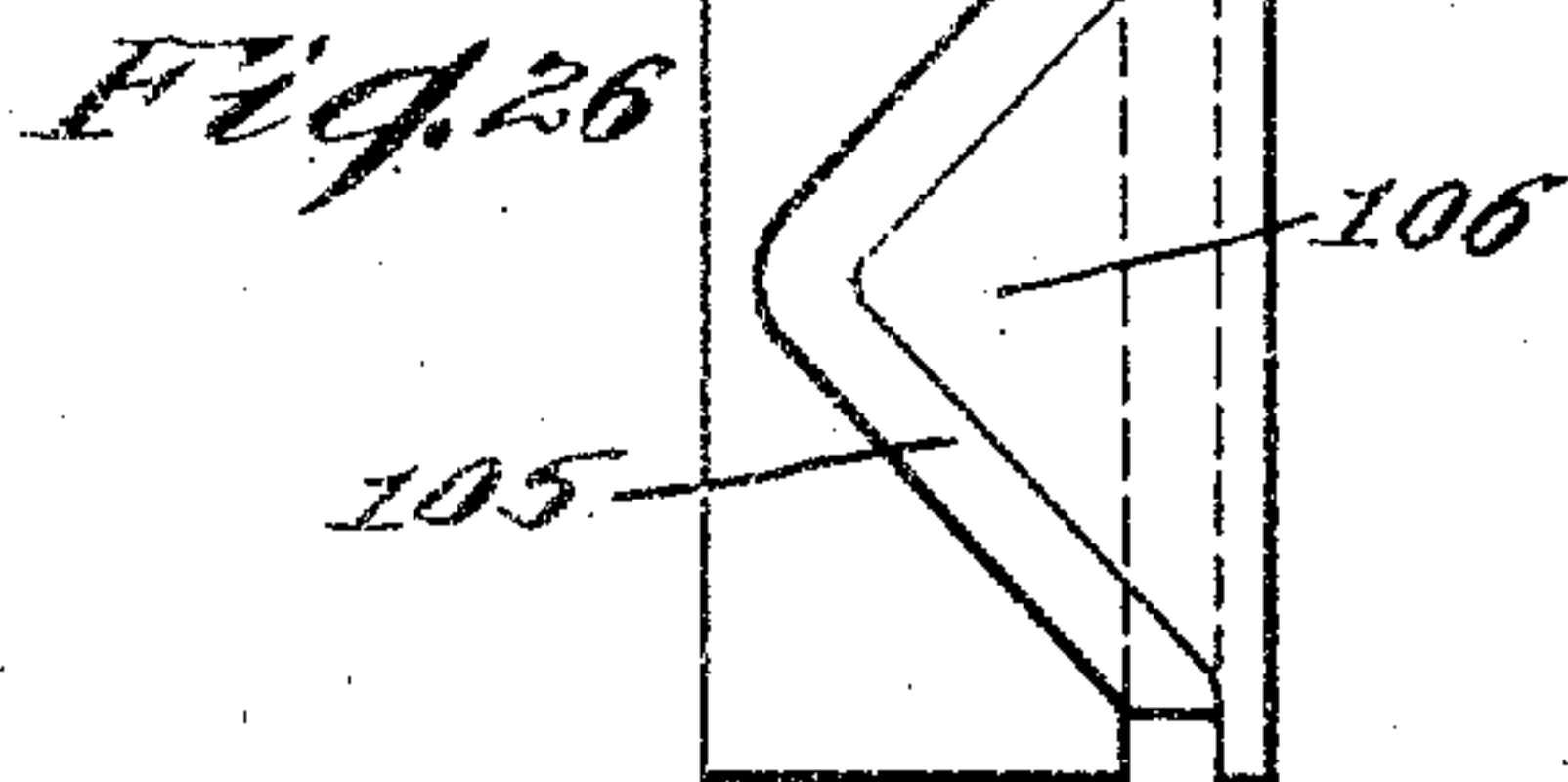
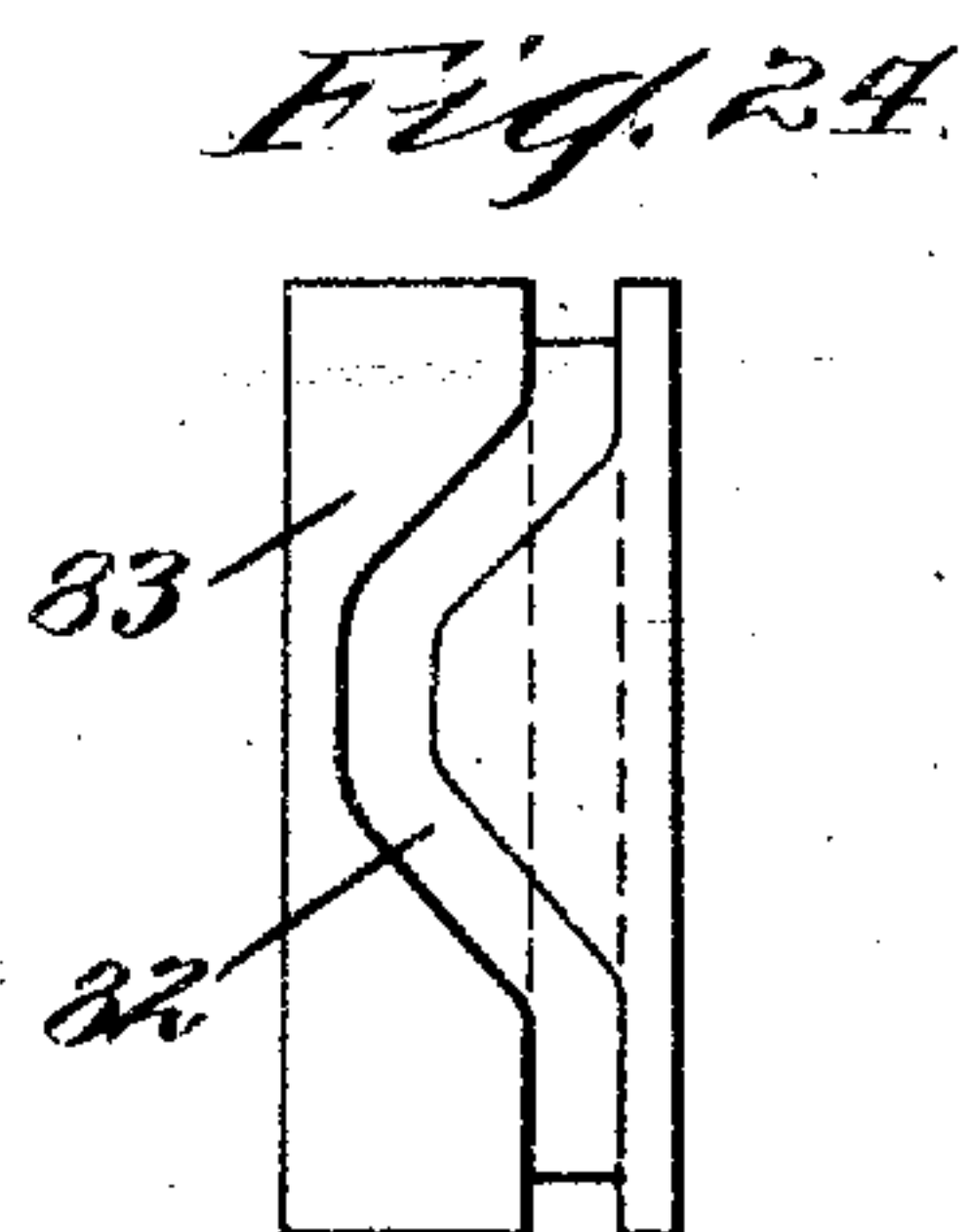
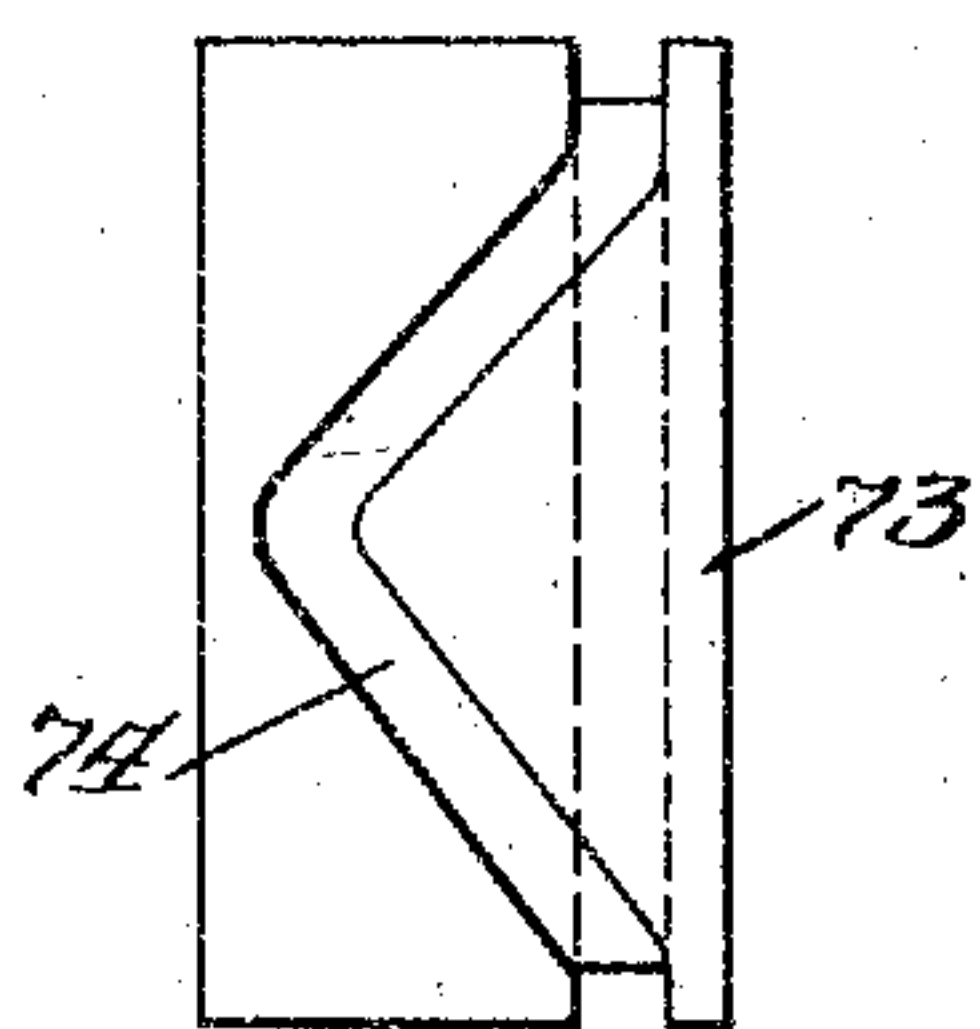
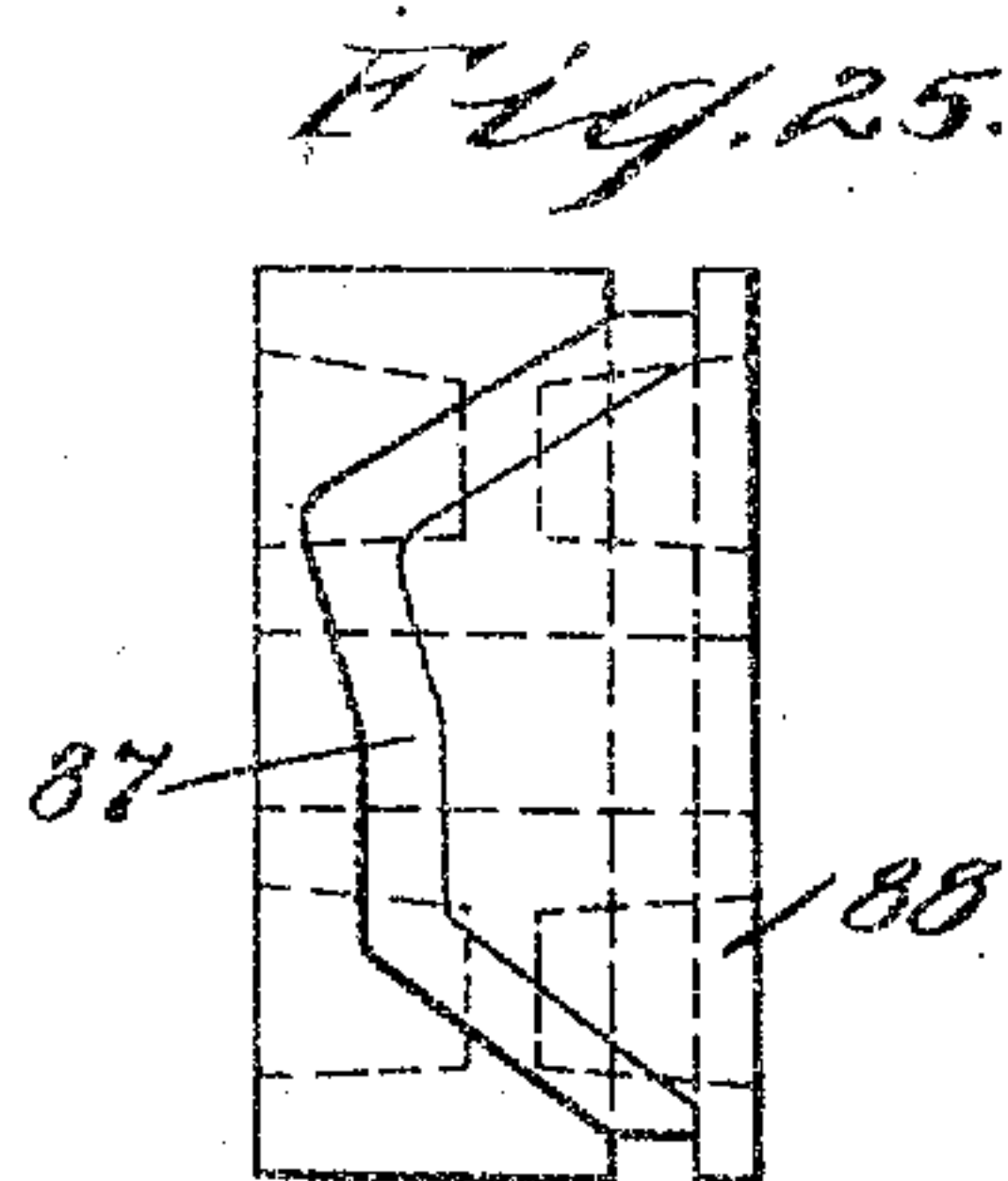


Fig. 23.

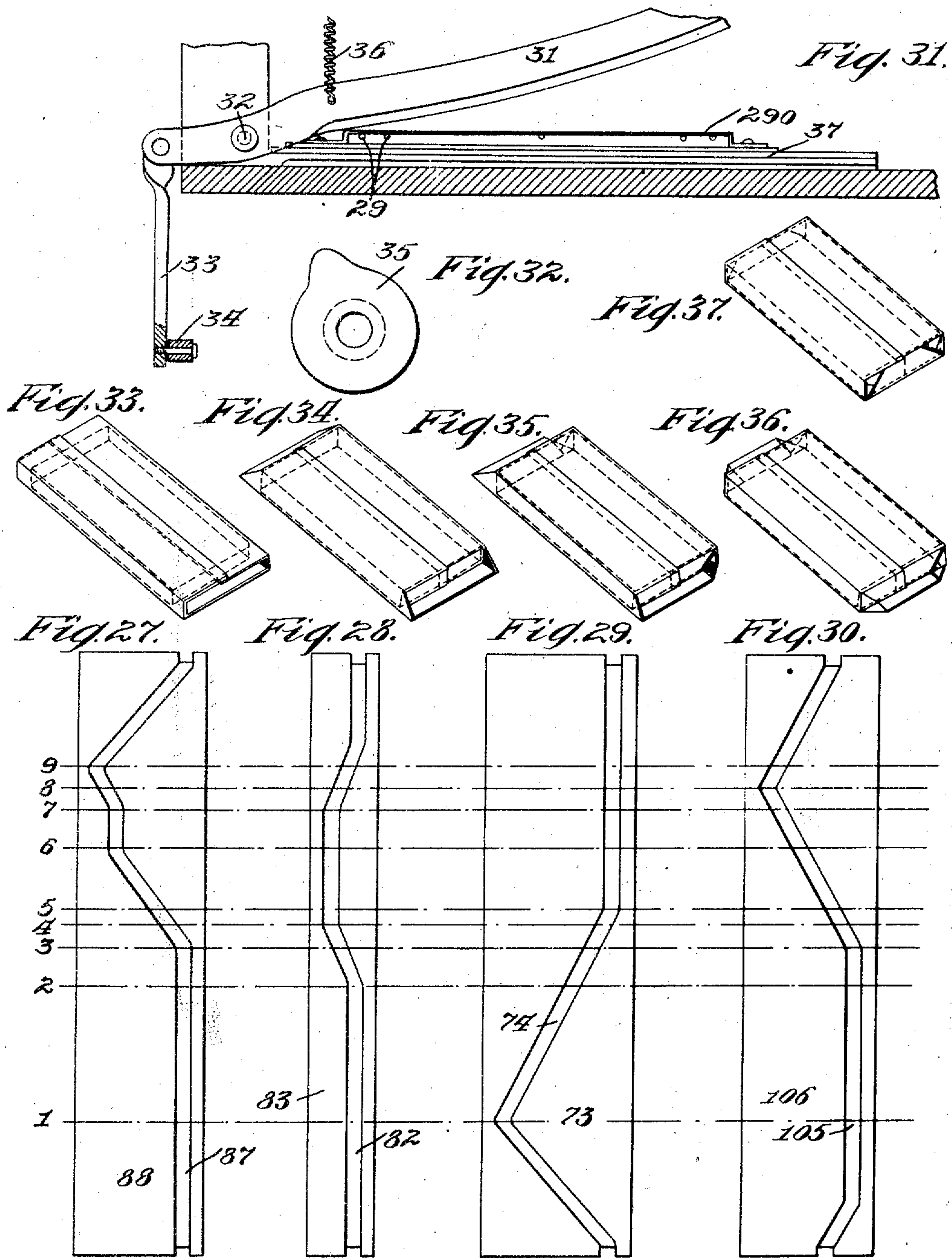


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WRAPPING MACHINE.

APPLICATION FILED SEPT. 2, 1905.

10 SHEETS—SHEET 8.

Fig. 38.

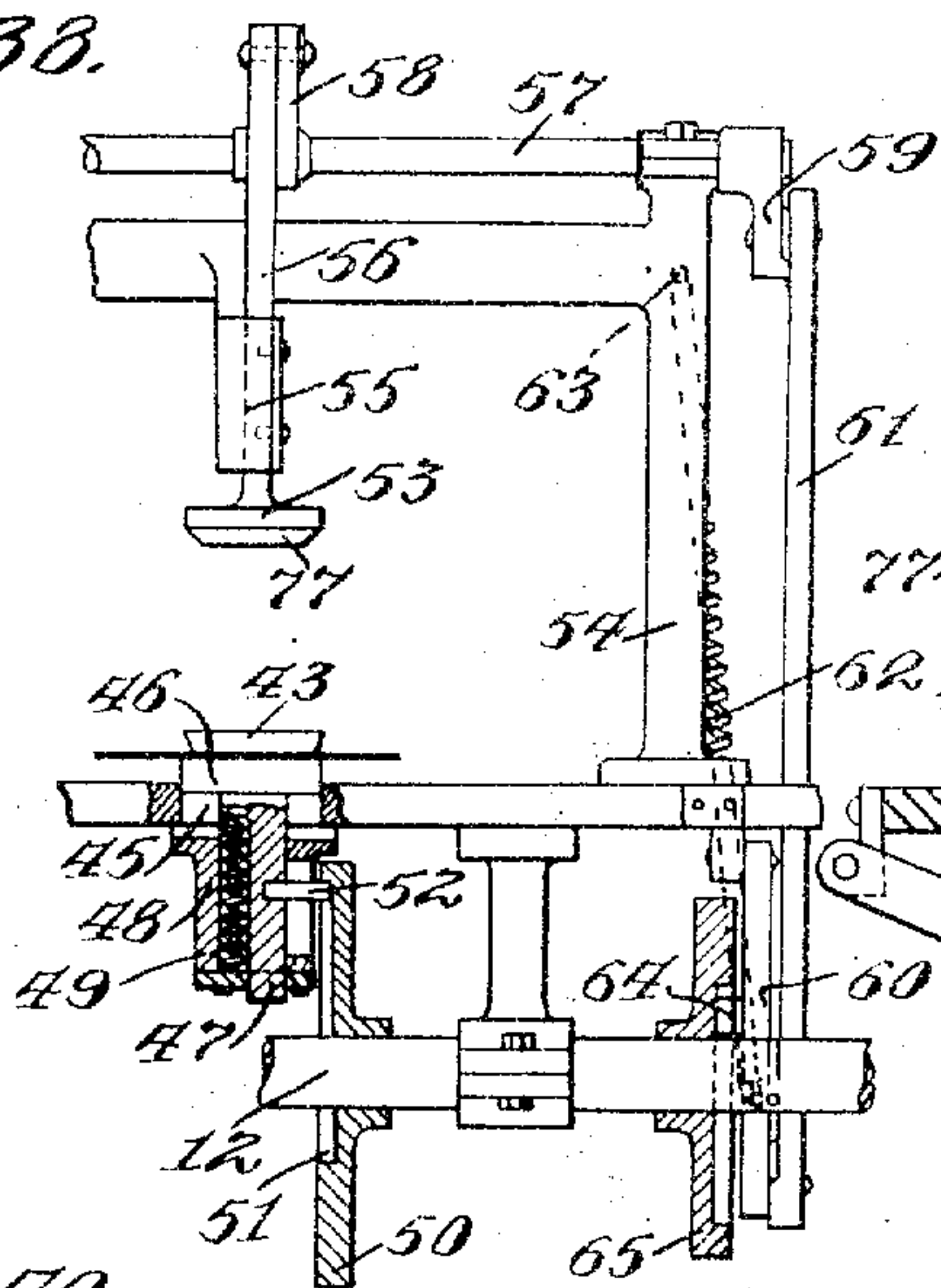


Fig. 39.

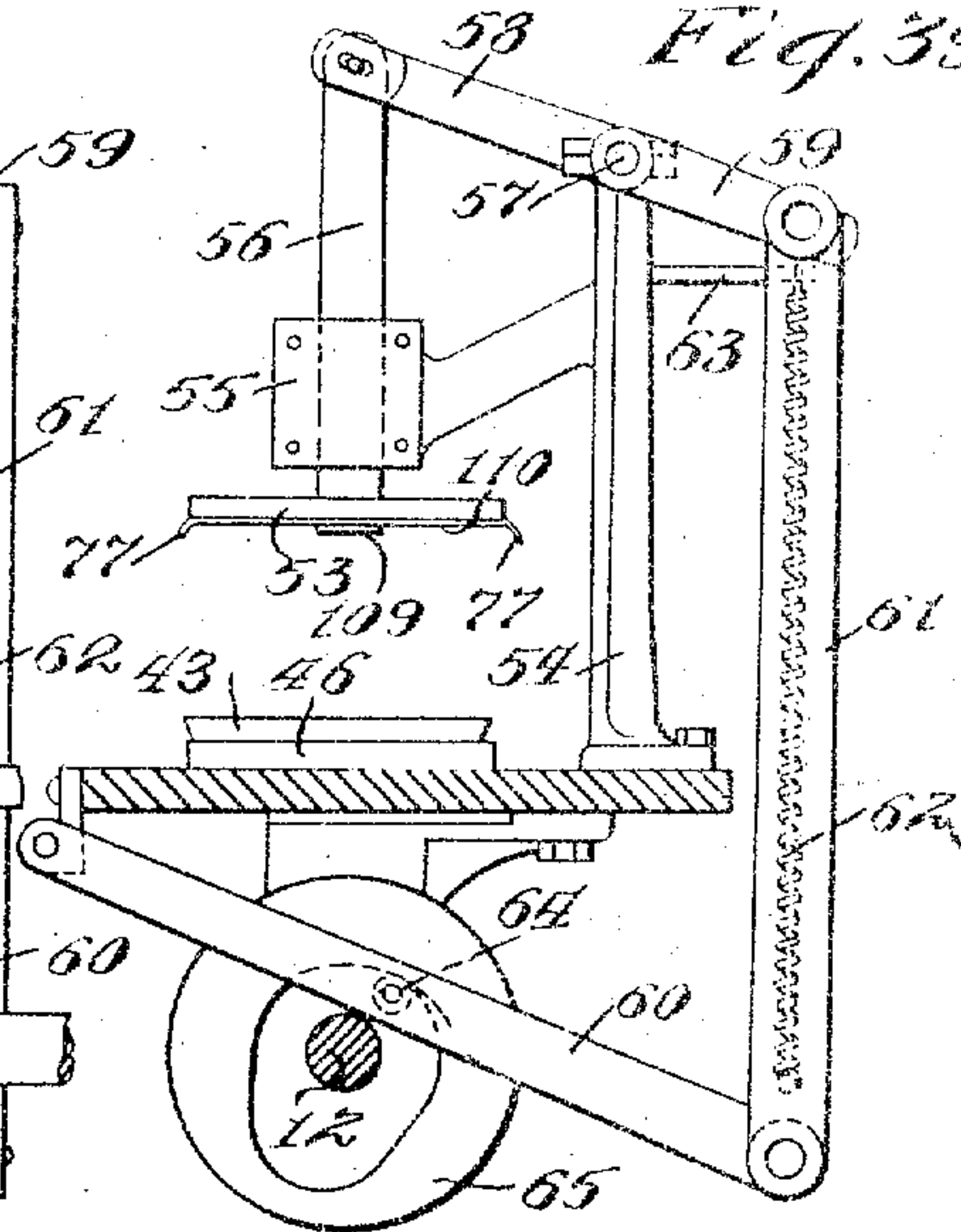


Fig. 40.

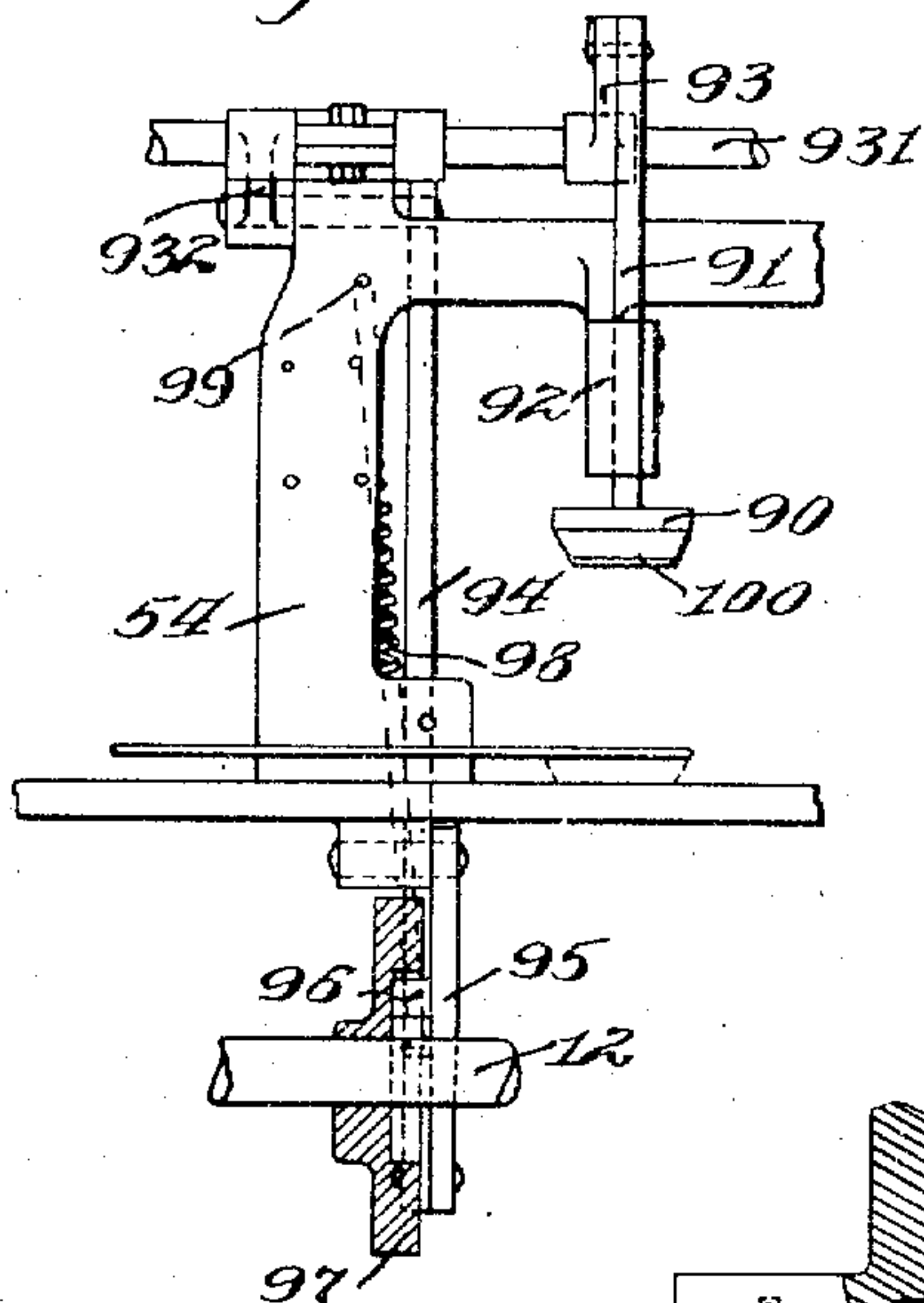


Fig. 41.

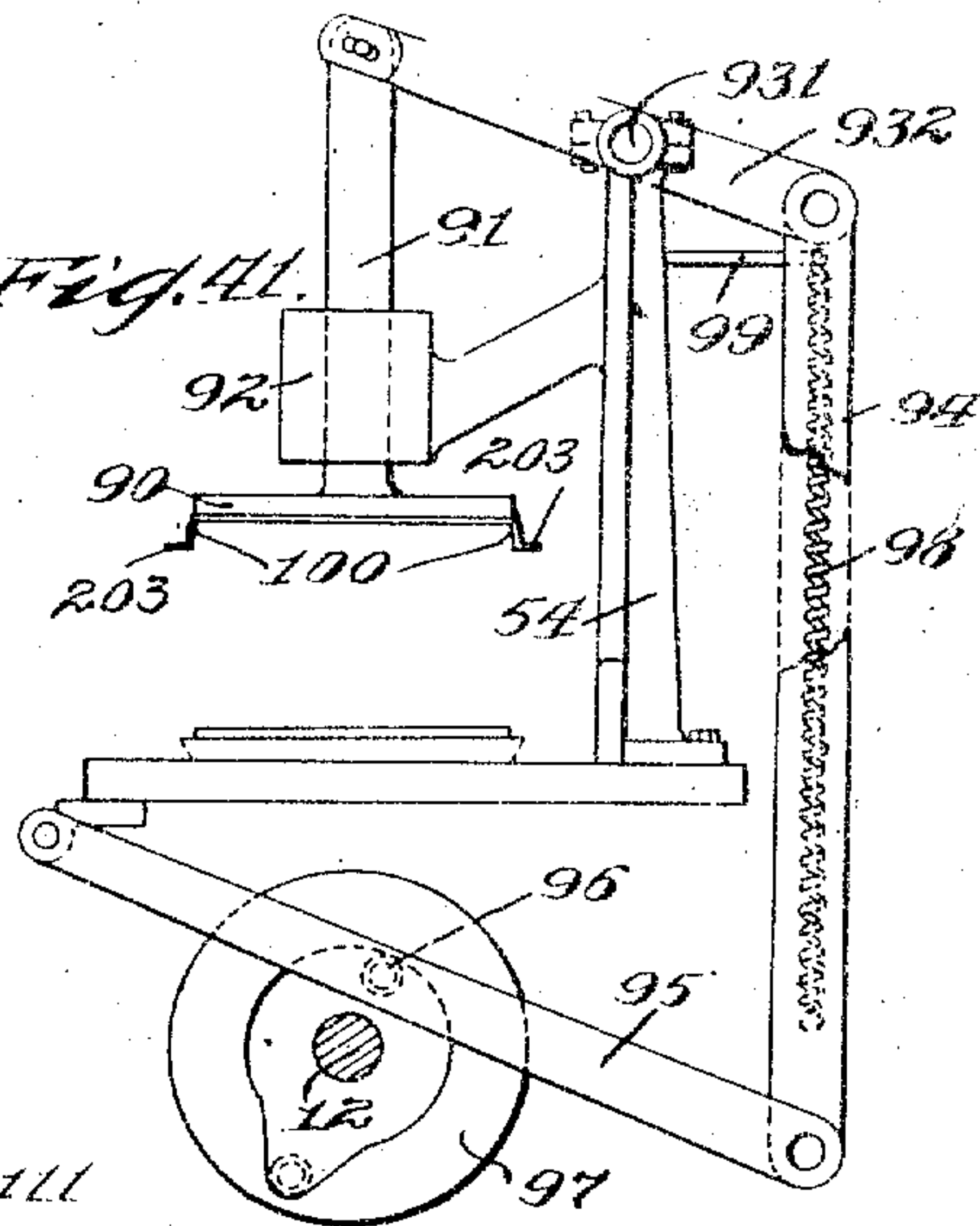
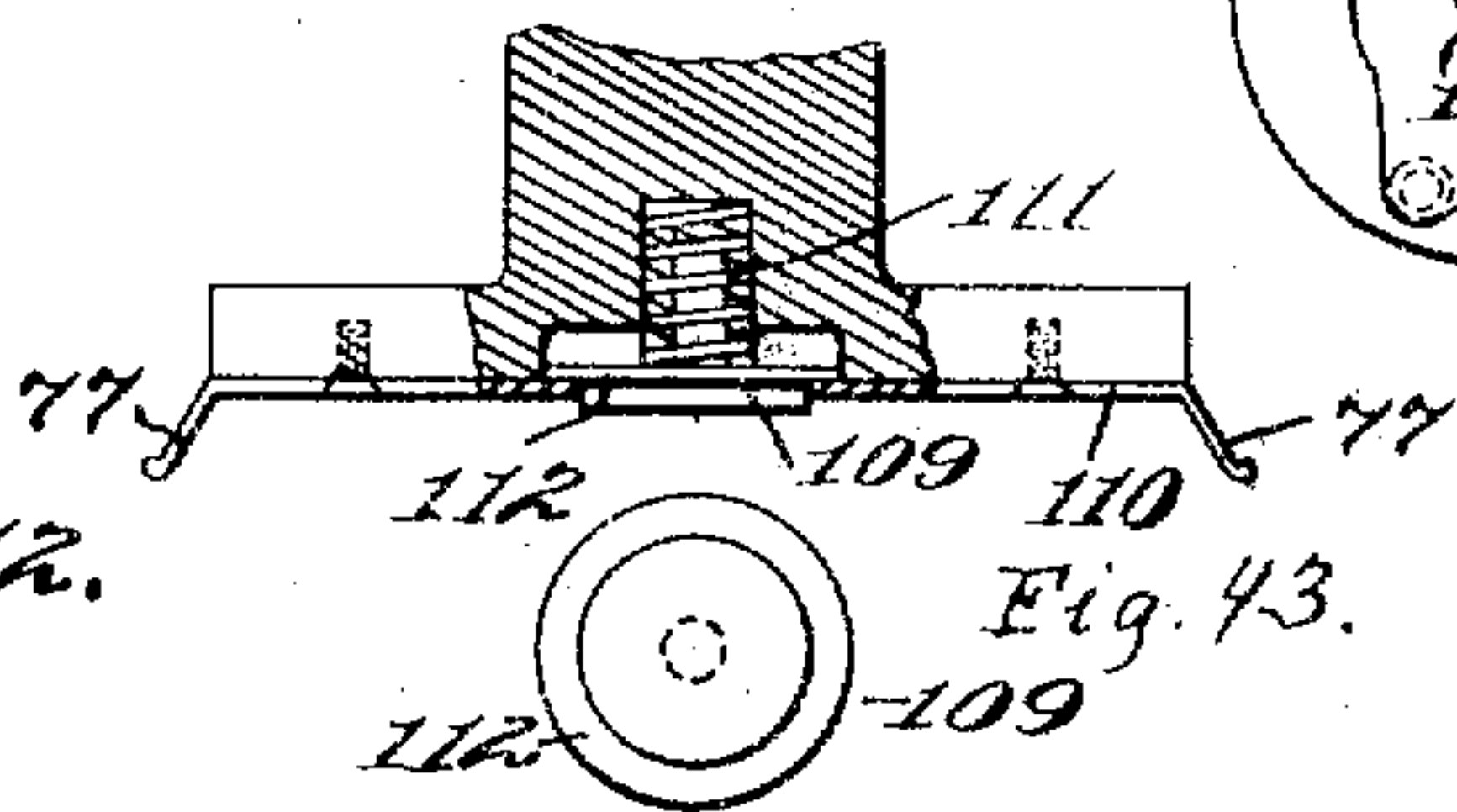


Fig. 42.



L. C. WING.

WRAPPING MACHINE.

APPLICATION FILED SEPT. 2, 1905.

10 SHEETS—SHEET 9.

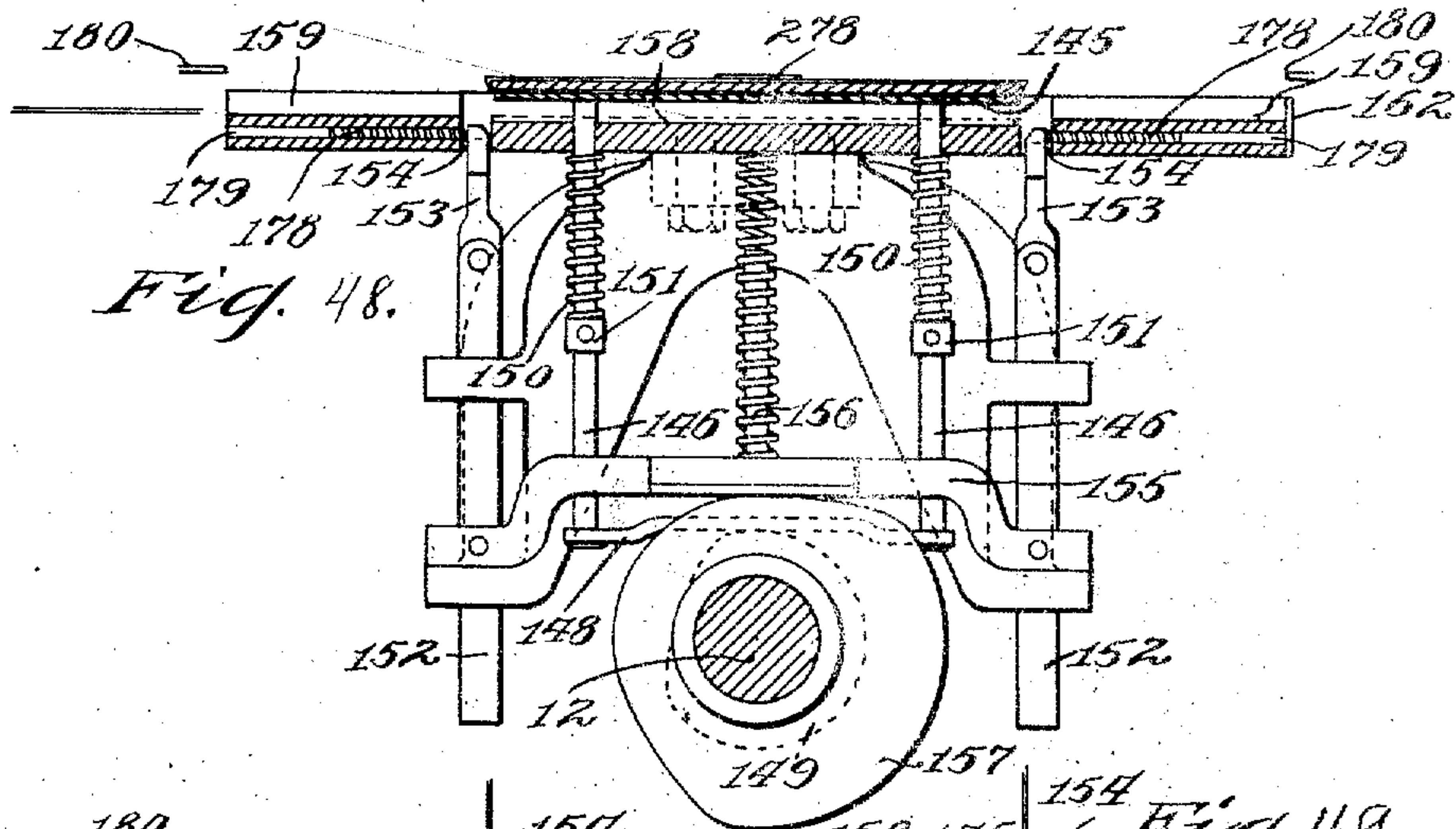


Fig. 48.

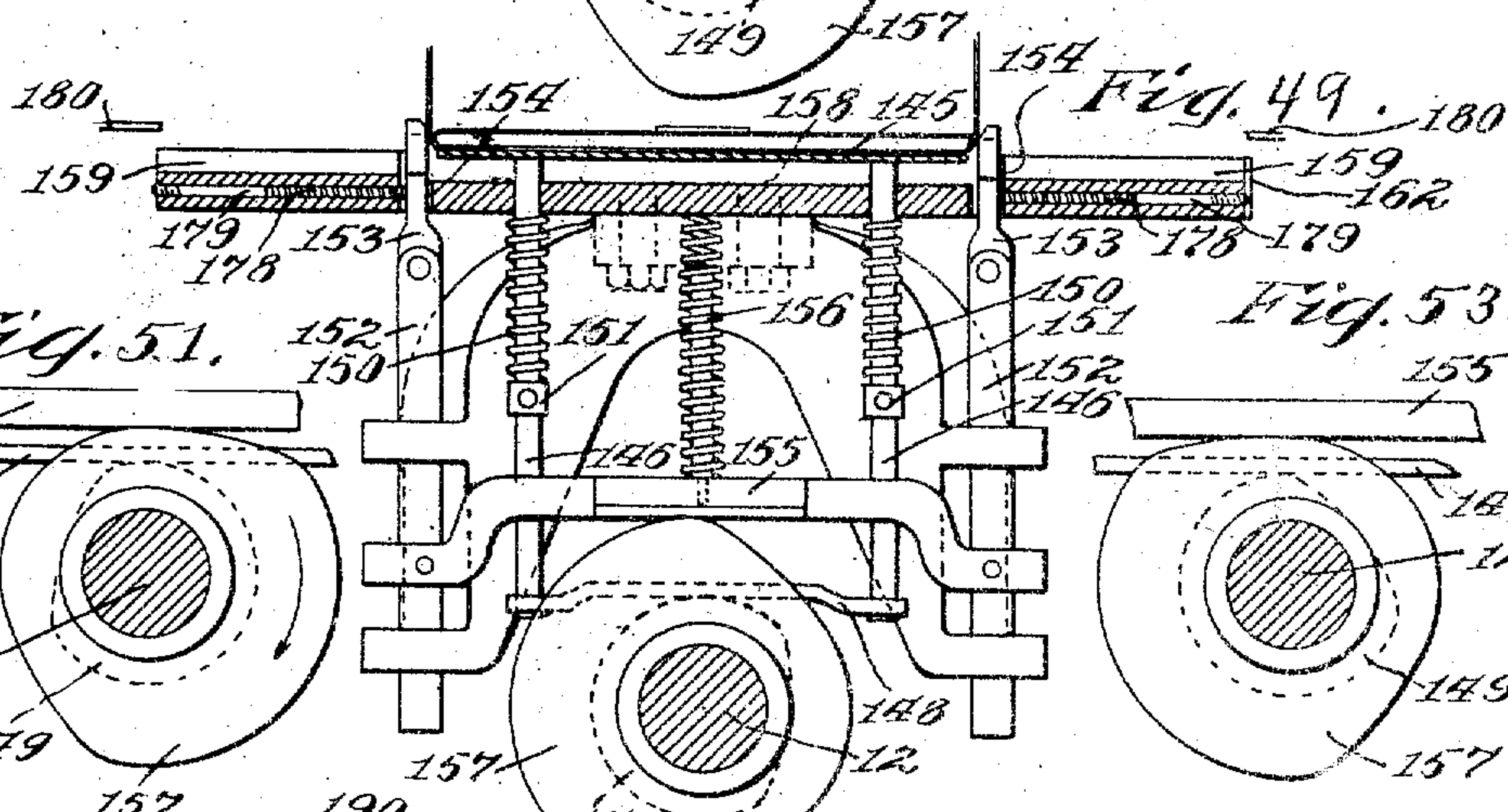


Fig. 49.

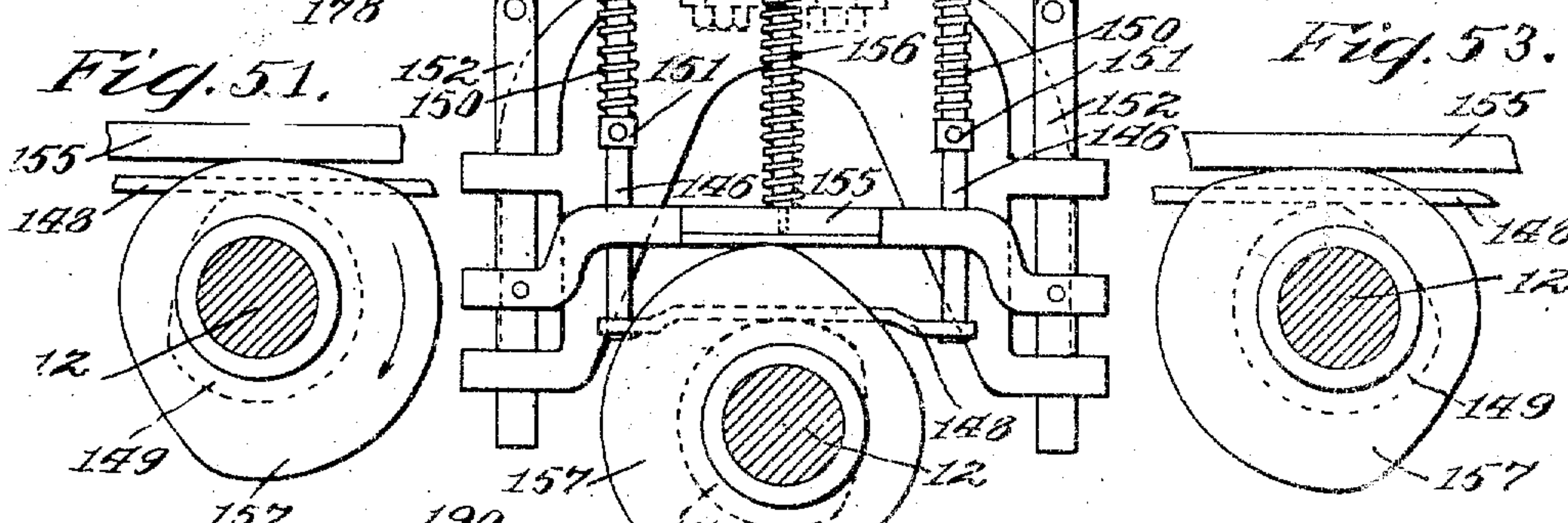


Fig. 51.

Fig. 53.

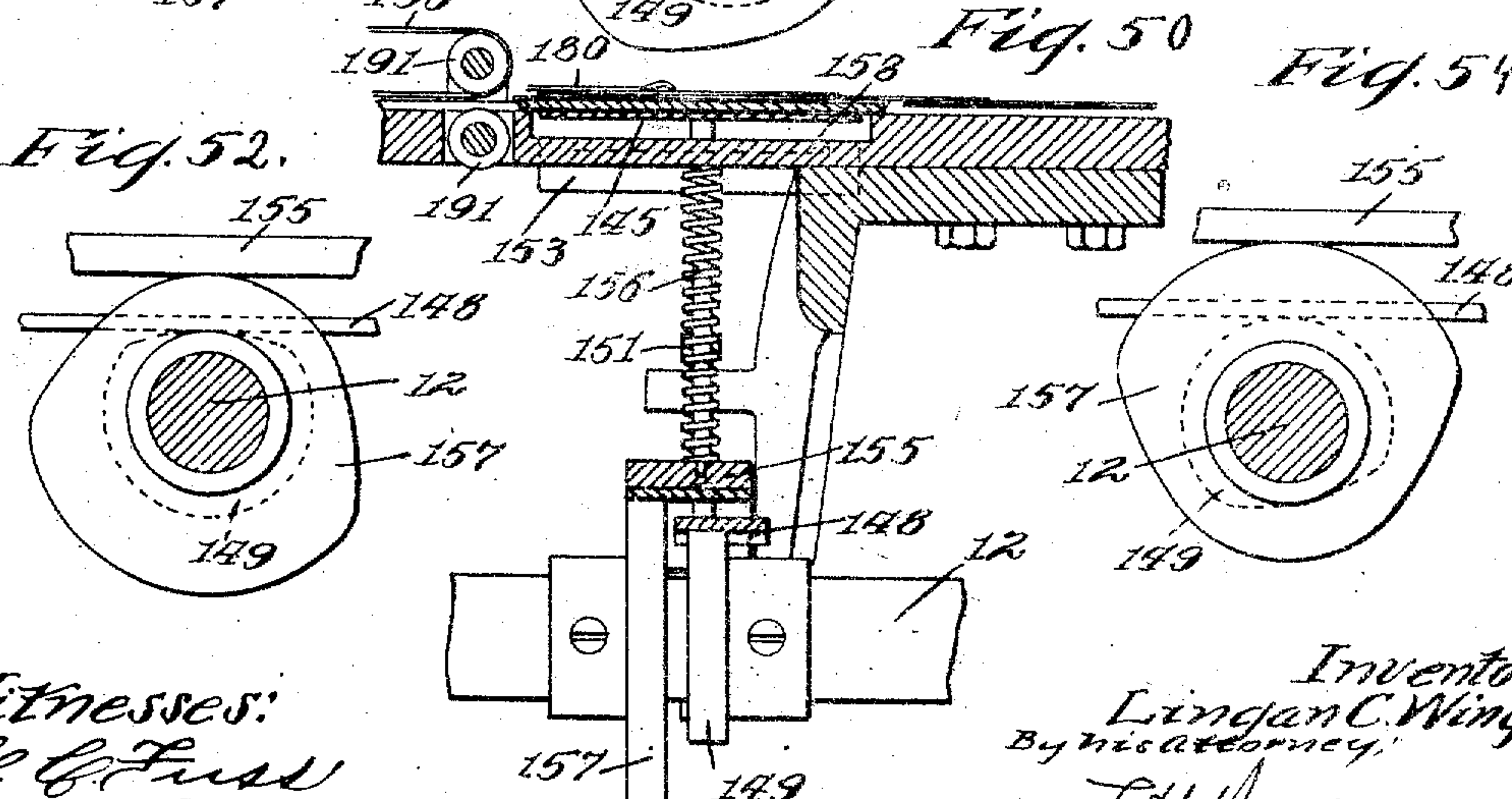


Fig. 50.

Fig. 54.

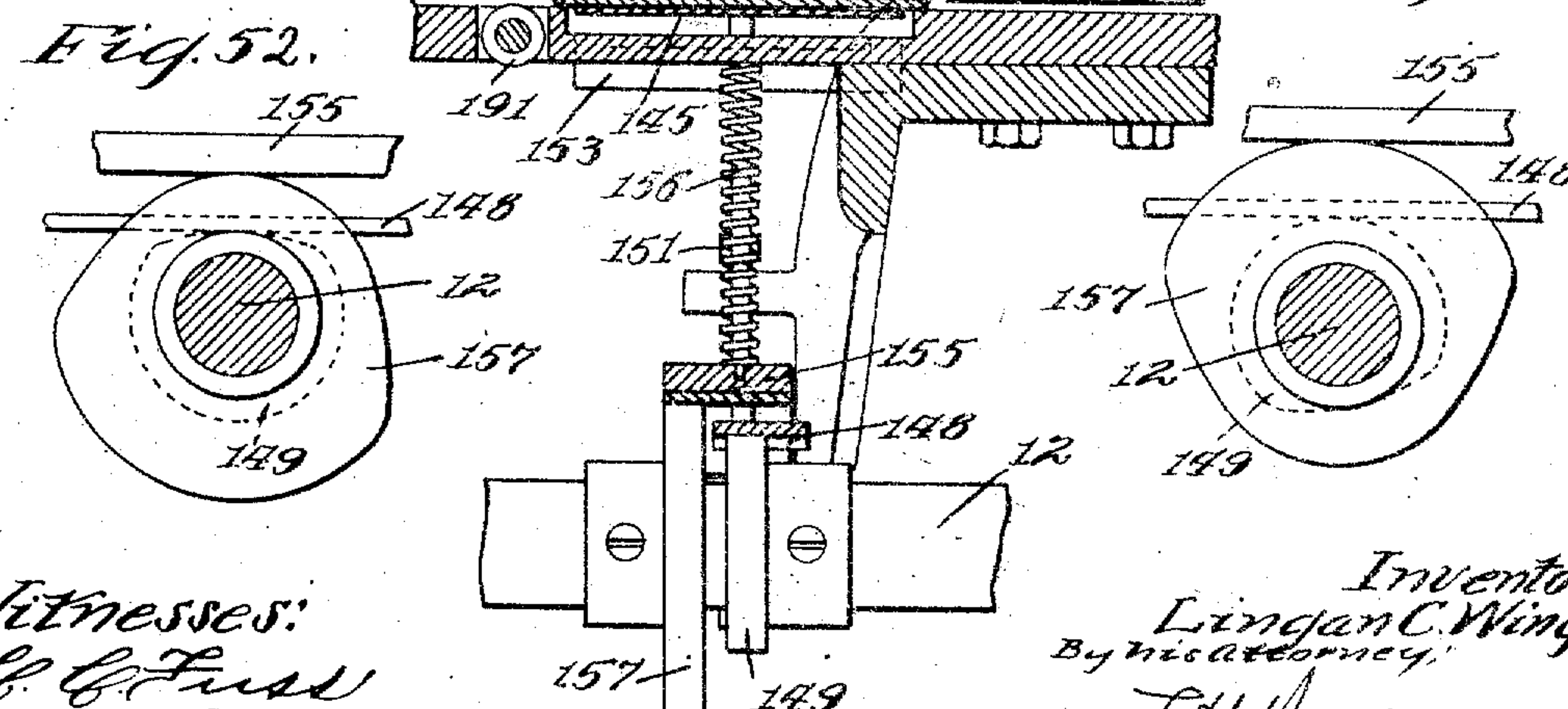


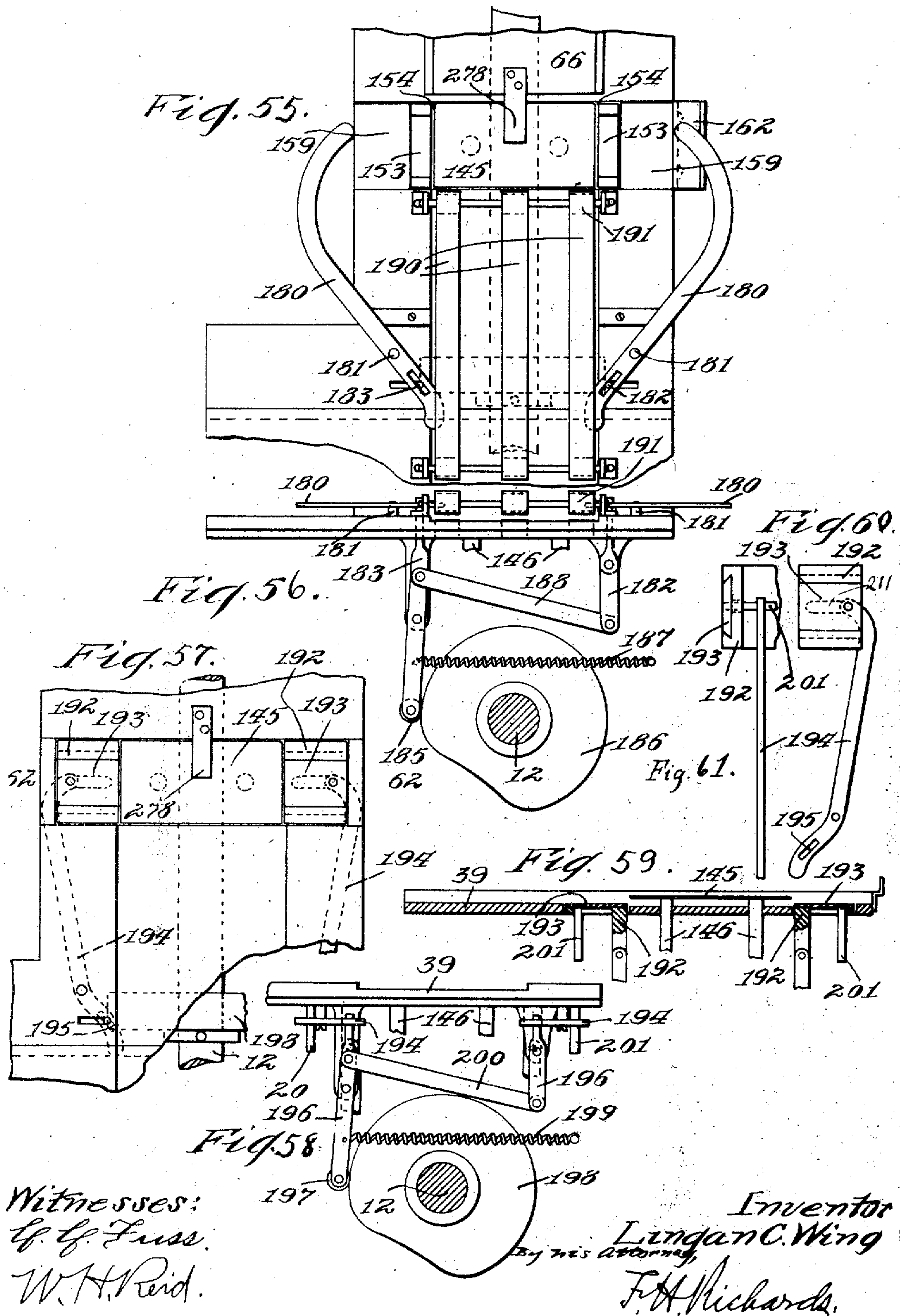
Fig. 52.

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APPLICATION FILED SEPT. 2, 1905.

10 SHEETS—SHEET 10.



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UNITED STATES PATENT OFFICE.

LINGAN C. WING, OF NEW YORK, N. Y.

WRAPPING-MACHINE.

No. 860,176.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed September 2, 1905. Serial No. 276,798.

To all whom it may concern:

Be it known that I, LINGAN C. WING, a citizen of the United States, residing in New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Wrapping-Machines, of which the following is a specification.

This invention has reference to an organized machine for automatically inclosing in a wrapper of flexible material, such as paper, tin foil, or the like, various articles for instance, cakes of chocolate, soap, or boxes, bottles, papers, magazines or packets of various forms, or other articles, similar to the wrapping of such articles as would be performed by the human hands.

The objects of the invention comprehend improved means for delivering the article on to a wrapper and folding the same around the cake, and bending up the end portions against the article; means for thereupon delivering a labeling strip to, and wrapping the same around the article and securing the strip by suitable adhesive.

A further object is to provide in a wrapping mechanism suitable plungers or the like engaging members that are brought to engage the article by a resilient means, in order to compensate for inequalities in the size of the article and prevent breaking thereof.

A further object is to provide in the process of turning down various portions of the end folds, means for holding each turned portion until the next succeeding portion is turned down and secures the former one in position.

A further object is to provide means for folding a strip, preferably gummed, around the wrapped article, whereby the strip will be wrapped around the article with its gummed extremities engaging, and thereupon retained in such position until the article is advanced to pressing means to suitably press such ends together upon the article to secure them in such position.

With these objects in view, and others, my invention comprehends the novel construction and arrangement of parts and combinations thereof as will be hereinafter set forth, and then particularly pointed out in the claims.

In the drawings illustrating a machine containing one embodiment of my invention; Figure 1 is a front elevation of the machine. Fig. 2 is a plan view of the same with the hopper and top plate removed. Fig. 3 is a partial vertical section taken through the main shaft. Fig. 4 shows in elevation the feed rolls and actuating mechanism. Fig. 5 is a front elevation of the parts shown in Fig. 4. Fig. 6 shows the ratchet device for intermittently rotating one of the feed rolls. Fig. 7 shows a stripping device for preventing the web from adhering to the feed rolls, and also for stripping the web from the knife. Fig. 8 is a perspective view of the

stripper blade. Fig. 9 is a vertical section, partly elevation, taken through the wrapping mechanism, showing the parts in the initial position with the paper fed on to the platform and bridge plates. Fig. 10 shows the same parts in the next position with the article fed on to the paper wrapper on the platform. Fig. 11 shows the same at the end of the next position with the plunger lowered still further, and the platform in its lower position, showing the wrapper folded up at the opposite sides of the article. Fig. 12 shows the same parts in the next position with the folding ram advanced folding the upturned wrapper at one side down on the top of the article, the plunger having previously moved upward to permit such advance of the folding ram. Fig. 13 is a view of the same parts, showing the article advanced along the table under one bridge plate, by the clearing ram, the other upturned portion being thereby folded down on top of the article by engagement with the overhanging bridge plate. Fig. 14 is a partial section taken on the line 15, 15 indicated in Fig. 13, showing the creasing plunger lowered upon the article in the position in which shown in Fig. 13 to fold down the paper at each end along the top. Fig. 15 is a view similar to Fig. 13 showing the folding blocks in advance of the article, and the end of the side wiper. Fig. 16 is a vertical section on the line 17, 17 of Fig. 15. Fig. 17 is a plan view of the parts shown in Fig. 15. Figs. 18 and 19 show the spring operated folding flap. Fig. 20 shows the cam for operating the first plunger. Fig. 21 shows the cam for operating the platform. Fig. 22 shows the cam for operating the creasing plunger. Fig. 23 shows the cam drum for operating the main feed ram. Fig. 24 shows the cam drum for operating the folding ram. Fig. 25 shows the cam drum for operating the clearing ram. Fig. 26 shows the cam drum for operating the side wiper. Figs. 27, 28, 29 and 30 respectively show the development of the slots in the cam drums illustrated in Figs. 23 to 26 inclusive. Fig. 31 shows the knife for severing the wrapper from the web. Fig. 32 shows the cam for operating the knife. Figs. 33, 34, 35, 36 and 37 show the successive foldings at the ends of the article. Fig. 38 shows in side elevation, partly in section, the folding plunger, the platform, and operating mechanism for both. Fig. 39 shows in end elevation the main plunger and its operating means. Fig. 40 shows in front elevation, partly in section, the creasing plunger and operating means. Fig. 41 is an end elevation of the parts shown in Fig. 40. Fig. 42 shows the discharge device for the main plunger. Fig. 43 shows the end of the device. Fig. 44 shows in vertical section, partly in elevation, mechanism for feeding label strips the label wrapping mechanism being omitted. Fig. 45 shows one of the advancing rolls and also the stop for engaging the gumming roll. Fig. 46 shows the adjustable arm for the gumming roll. Fig. 47 shows in side elevation the gumming box and gum-

ming drum. Fig. 48 shows in end elevation, partly in section a strip wrapping mechanism. Fig. 49 shows the same parts in another position. Fig. 50 shows the same parts in longitudinal vertical section. Figs. 51, 52, 53 and 54 show the cams for operating the platform and folding arms in four consecutive positions respectively. Fig. 55 shows in plan the means for folding the strip upon the article. Fig. 56 shows in end elevation the arms for folding the ends of the strips down to overlap, with their operating mechanism. Fig. 57 is a plan view of a modified form of the stripper folding means. Fig. 58 shows an elevation view of the cam and levers for operating the latter mechanism. Fig. 59 is a vertical section on the line 62—62 of Fig. 57; Fig. 60 shows one of the folding plates and its operating lever, in elevation and Fig. 61 shows the same in plan.

A suitable frame projects rearward from the main frame of the machine and between its parallel bars 3, 3, are journaled a number of rollers or shafts, one of them, 4, serving to rotatably support a roll of paper not shown. The paper and foil are fed intermittently on to the table of the machine by means of a pair of rolls 6 and 7, the former having its shaft 8 journaled in suitable frame 9 and rotated from a gear 10 fast to the roll that meshes with a gear 11 fast on the roll 7, whereby the latter is driven from the other roll. The mechanism shown for driving the roll 6 from the main shaft 12 of the machine comprises a rack arm 13, pivoted at its lower end on an extension 14 of the frame 9, which arm carries a roller 15, held in engagement with a cam disk 16 by a coil spring 17 suitably connected with the frame of the machine. This arm 13 serves to reciprocate a rack bar 18 to which it is pivotally connected, which bar slides in a guideway in the frame 9. The rack in the bar 18 meshes with a gear 19, loose on the shaft 8 of the roll, but secured to a ratchet wheel 20, also loose on the shaft 8. The gear 10 fast to the roll 6 carries a pawl 21 in engagement with the ratchet wheel 20. By this mechanism, when the cam advances the arm against the tension of the spring, the gear and ratchet wheel will be rotated and the latter engaging the pawl will carry the gear 10 around thereby rotating the drums 6 and 7. But when the further movement of the cam permits the arm to be retracted by the spring, the rack bar sliding in the opposite direction will rotate its gear and ratchet wheel in the reverse direction, and the pawl riding free over its wheel will not move the rolls 6 and 7. By this means the paper will be intermittently fed on the table of the machine from the constantly driven main shaft 12.

Where metal foil such as tin foil is used in connection with paper, the foil may be intermittently advanced toward the feed rolls 6 and 7 and may be positively unwound from its roll. The tin foil roll may be placed upon a shaft 23 and rotated by means of a chain 25 driven from a sprocket wheel 251 on the main shaft 12. By this means, the foil will be unwound as fast as passed between the feed rolls 6 and 7. And during the periods of rest of the feed rolls, a certain amount of slack will be provided in the web of foil, which slack will be taken up by the rotation of the feed rolls.

The paper from a roll on shaft 4 may be carried over the roll of foil and passed between the feed rolls simultaneously with the web of foil. The paper being upper-

most will have a tendency to adhere to the upper roll 7 and is prevented from being carried around the roll by means of suitable stripper fingers 30, extending toward the roll in engagement therewith from a plate 200. This stripper plate 200 is also provided with fingers 29 extending forward over the webs of paper and foil in close proximity to a cutting knife 31, by which the strips of paper are severed after being positioned on the table.

The cutting knife 31 is caused to act at the end of each intermittent motion of the feed rollers, that feeds the web on the wrapping means on the table. This cutting knife, as best shown in Fig. 31, is pivoted to a suitable upright from the frame at 32, and has pivoted at one end a bar 33. A roller 34 carried at the lower end of this bar is held against the surface of a cam 35 fast on the main shaft 12 by a spring 36 secured between the knife and the framework. The rise in the cam being abrupt causes the knife to quickly descend, and the fall in the cam permits the knife to be drawn up by the spring to its normal upper position. The knife blade coöperates with a knife plate 37 suitably mounted on the table of the machine. A plate 38 extends rearward from the table against the lower feed roll 6, serving to strip the sheet or sheets therefrom as fed through, and prevent them winding around this roll. The knife is curved as shown to present a constant angle with the plate 37.

Referring now particularly to Figs. 3 and 9 to 19, the table or bed plate of the machine is supported upon suitable legs 40 at each end. At one end of the machine a magazine or hopper 41 is suitably supported from an upper plate 42, raised above the table 39. The articles, which may be cakes 43, are fed into the hopper, and the lowermost one rests on a stationary plate 44 suitably supported from plate 42. The table is provided with an opening 45, in which operates a platform 46, that is normally supported above the table by resilient or yieldable means, and depressed from such position by positively acting means actuated from the main shaft 12. In the present instance the platform has a shank 47 guided in a box 48, secured to the lower face of the table, and a coil spring 49 rests on the lower portion of the box and normally retains the platform elevated, as indicated in Fig. 10. On the shaft 12 is a disk 50 having a cam flange 51 that is engaged by a roller 52 pivoted on the shank 47 of the platform. The spring forcing the platform upward holds the roller in engagement with the inner face of the flange on the cam, and during a revolution of the cam the platform is depressed and then elevated to its former position, as will be seen by inspection of Fig. 21. It will be obvious from this construction that the raising of the platform will permit it to yield in case it engages an irregular article, and not break the same, which would result if the platform were positively raised and not permitted to yield.

Directly above the platform is suitably mounted a plunger 53 suitably supported and actuated to coöperate with the platform after a wrapper and article has been delivered on to the platform. In the device shown, the table is provided with a framework 54 carrying a guide-block 55, in which the plunger shank 56 reciprocates. This plunger is also moved to one position by a yieldable means and actuated in the opposite

direction by positively acting means. On the frame 54 is suitably mounted a rock shaft 57, on which is secured an arm 58, (see Figs. 38 and 39), the forward end of the arm being pivotally connected with the shank 56 by slidable connection. A lever 60 has one end pivoted below the table, and its other end pivotally connected with a link 61, the other end of the link being pivoted to the rear end of the link 59 fast on the shaft 57. A coil spring 62 has one end fast to the lower end of the link 61, and its other end is secured to a stationary member such as a pin 63 projecting rearward from the frame 54. The spring tends to move the link upward and thereby retain the plunger in its lowermost position. This motion is counteracted by means of a roller 64 pivoted on the lever 60, and held in engagement with the inner face of a flanged cam 65 fast on the main shaft 12. During one revolution of the main shaft the cam will permit the lever 60 to be elevated by the spring, causing the depression of the plunger 53. This cam 65 is shown separately in Fig. 20, from which it will be seen that during about two thirds of the revolution the platform remains elevated, then it is depressed by a rise in the cam, and then a dwell in the cam holds the plunger depressed for a short time; after which it is permitted to rise to its normal upper position. The operation of the platform 46 is similarly controlled. The cam 50 for about half of its revolution holds the platform depressed, then a quick rise leads to a comparatively long dwell in the cam, during which time the platform will remain elevated; and then a fall in the cam returns the platform to its depressed position, as will be apparent from inspection of Fig. 21. The normal upper position of the platform is slightly below the top of the plate 44 supporting the lower cake in the magazine; but is substantially flush with the top of the bridge plate 66, that is supported above the table, and removed therefrom for a distance slightly greater than that of the article to be wrapped. This bridge plate is shown as supported to yield upward in order to allow for any increased thickness in the article and prevent breakage of the cake. The frame 54 carries a two-armed bracket 67, from each of which arms project pins 68 extending through suitable apertures in the bridge plate. A coil spring 69 surrounds each pin and has its ends secured respectively to the arm and bridge plate; thereby permitting slight elevation of the bridge plate.

The plate 44 is provided with a slot 70 extending inward from its edge adjacent the platform; which slot lies substantially in the plane of the top of the bridge plate 66. The web or webs fed through the feeding rolls 6 and 7 after passing the lower knife edge 37, advance on to the platform that at this stage is in its elevated position; the edges of the web beyond the platform lying on the bridge plate at one side, and extending into the slot 70 at the other side. As soon as this intermittent motion of the feed rollers ceases, the lower cake is advanced on to the wrapper portion immediately above the platform, by a main feed ram, in the present instance a plate 71 reciprocated in suitable guide strips 72, best shown in Fig. 2. This feed ram is reciprocated by a drum 73 having a cam slot 74 therein that is engaged by a roller 75, pivoted on a pin 76 projecting downward from the ram 71. This drum is also shown in Figs. 23 and

29. This ram is normally retained in the position shown in Fig. 3, but advanced therefrom a sufficient distance to move the lower cake on to the paper on the platform, as indicated in Fig. 10. The next operation is to cut the end portion of the web or webs that lie on the platform by a severing knife 31; and this latter is not done until the cake has been placed on the web, which will tend to retain the severed wrapper portion in such position. The next operation of the machine will cause the descent of the main plunger 53 on top of the cam on the plunger. This plunger is provided with flaring extensions 77 at two opposite portions, which serve to properly position the cake on the platform. When the plunger has descended far enough to engage the cake it has not made its full lowering movement, but its cam permits it to descend further. But as soon as the plunger reaches this engaging position, the platform begins to be lowered by the cam, and the two descend together until they reach the position indicated in Fig. 11, when the platform will be level with the table. From Figs. 10 and 11 it will be seen that the lowering of the platform and plunger from the position of Fig. 10 will cause the wrapper at each side of the plunger to engage its supporting member and be turned upward along the side of the cake, as shown in Fig. 11. Where a non-resilient wrapper, such as foil, is used, the wrapper will be pressed snugly against the side of the plate; but where a resilient wrapper, such as stiff or paraffined paper is employed, this will tend to buckle or curve outward during such folding. To obviate this effect I provide a spring clip 78 pivoted at a chamfered portion on the lower face of the bridge plate adjacent the platform, see Fig. 18. This clip is normally retained by the spring 781 in engagement with the platform, as shown in Fig. 11. The portion of the clip contacting with the platform, as the plunger moves the article downward, will first engage the paper adjacent the lower edge of the wrapper and follow the paper upward, tightly pressing it against this side of the wrapper. When at a further stage the article is advanced under the bridge plate by suitable means, the spring clip will fold upward under the chamfered portion of the bridge plate, as indicated in Fig. 13.

The succeeding operation after folding two side edges up, as shown in Fig. 11, is to fold the upturned edge, seen to the right hand of these figures, downward on top of the cake; and this is accomplished by means of a folding ram slide 79. This slide carries a pin 80 having a roller 81 engaging the walls of a cam slot 82 in a drum 83. This ram slide will be advanced from its normal position indicated in Fig. 11 to that shown in Fig. 12. But just before the operation of this ram the plunger 53 is moved upwards by its cam. This folding ram is not at once retracted, but is retained in such position by reason of the dwell in the cam slot, as indicated in Figs. 24 and 28. And during this dwell, the cake is advanced under the bridge plate by a clearing ram slide 84 operated by a roller 85 on a pin 86 engaging a cam slot 87 in a drum 88 fast on the shaft 12. This advance of the cake under the bridge will cause the upward extending portion of the wrapper adjacent the bridge plate to engage the latter, and also the spring slip and be folded down on top of the cake, and the

other folded portion, as will be obvious by comparison of Fig. 12 and 13. The clearing ram 81 has a thin strip 841 overhanging its engaging end that passes on top of the cake and prevents its being pushed up by the ram; that might be caused by the inclined edge of the cake. The folding ram slide 79 is now returned to its former position, having served to retain the portion of the wrapper that is folded down until the cake passes under the bridge plate, and has the other portion folded down on top of said portion. Thus it will be seen that upon a portion being folded down it is held in such position until subsequently engaged by a superposed flap or portion of the machine, thereby preventing the fold swinging away from the article. The folding down of this second upturned portion is further assisted by means of a stop plate 89 suitably connected with the framework of the machine and extending down to within a short distance of the extremity of the bridge plate adjacent the platform.

When the wrapper is engaged by the descending plunger 53 as indicated in Figs. 10 and 11, the extremity of the bridge plate 66 will cause the adjacent end or projecting portion of the wrapper to extend upward, as indicated in Fig. 11. And upon the movement of the ram slide 84 to advance the article from the position of Fig. 12, to that shown in Fig. 13, during which operation, the plunger 53 ascends, the wrapper being carried by the article, will be engaged by the end of the bridge plate which would force the wrapper against the adjacent edge of the plunger, and the upward motion of the latter would tend to injure the wrapper. This is prevented by the presence of the stationary suspended deflecting plate 89, which engages the upturned portion of the wrapper as shown in Figs. 11 and 12 and holds it away from the upwardly moving plunger. The latter movement of the cake by the clearing ram brought it to a position on the plunger where it can be engaged by a creasing ram 90, whose shank 91 slides in a suitable guide-block 92 supported from the frame 54. This plunger is operated by means similar to that operating the other plunger 53, comprising an arm 93 fast on rock shaft 931 having one end pivoted to the shank 91 of the plunger. The shaft 93 has an arm 932, connected by a link 94 with the free end of the lever 95 pivoted beneath the table at the front. A roller 96 on the lever 95 is held in engagement with the wall of a flange cam 97 fast on the shaft 12, by means of a retractile spring 98 fast between the lower end of the link 94 and a pin 99 extending rearward from the frame 54. By this means the plunger 90 is positively elevated to its upper position, and lowered by the spring when so permitted by the cam. This plunger is provided with plates 100 at each side having projecting flange parts 203 the plates extending downward a sufficient distance to override the bridge plate 66, and to engage the portion of the wrapper projecting beyond the cake at the top on each of two sides, as indicated in Fig. 14. As soon as the cake is brought to the position indicated in Fig. 13, this creasing plunger is brought downward and then retracted immediately, causing end fold, as shown in Fig. 34. As soon as the creasing plunger rises a side wiper arm is advanced to engage the side portion at each end of the cake and fold it down on top of the top fold just produced. This is accomplished by means of a member comprising two parallel strips 101 slidable

on the table and guided by the said blocks, connected at their rear end by a transverse piece 102. A pin 103 extends downward from the latter transverse piece and carries a roller 104 engaging the walls of a groove 105 in the cam drum 106 fast on the shaft 12. Immediately upon the creasing plunger being moved upward from the cake, these side wipers advance to fold down at each end a side fold on top of the top fold just produced, as indicated in Fig. 35. The next operation of the machine causes a still further advance of the clearing ram 84 to advance the article a short distance, and the cam drum operating the side wipers is arranged to still further advance a short distance to hold the side fold down on the cake. This second advance of the clearing ram is effected by a second rise in its cam slot, as indicated in Fig. 25, and then the clearing ram returns to its former position; both of such means being effected during one cycle, that is, during one revolution of the main driving shaft. But during this last movement of the cake by the clearing ram the forward side edge has had the wrapper folded down by means of a stationary folding block 107 arranged on each side of the table in the path of movement of the article, as indicated in Figs. 15 to 17. This will cause a second end fold down on top of the top fold as indicated in Fig. 36. This will complete one cycle of operations by reason of a complete revolution of the main shaft, and the several parts will be returned to their former position, if not already returned, in order to repeat the operation at the next revolution of the main shaft. The article with three of the four end folds being effected as shown in Fig. 36 is left in the position indicated in Fig. 15, and upon the first movement of the clearing ram in the next cycle the article first wrapped will be advanced for a fraction of its width, and the second movement of the clearing ram advancing the article being wrapped will still further advance the first article, having moved it during these two movements of the clearing ram for an aggregate distance equal to the width of the article. As soon as the first article is advanced by the next article, it passes from the folding blocks 107 to folding blocks 108 adjacent to the latter, whereby the final bottom fold is folded up on to the end of the article, as indicated in Fig. 37, thereby completing the folding of the article at both ends.

Suitable means are provided to prevent the first plunger from adhering to the article and moving it upward when raised; in the present instance comprising a piston 109 passing through an aperture in a plate 110 secured to the bottom of the plunger and carrying the said flaring plates 77, preferably integral therewith. A spring 111 tends to force the piston downward, which is limited by means of a flanged portion 112 of the piston engaging the upper side of the plate 110. Upon the plunger engaging the article, the piston will recede and press the spring, but upon the plunger raising the piston will be forced downward by the spring a short distance and disengaged from the bottom of the plunger.

The four cam drums 106, 73, 83 and 88, mounted on the main shaft 12, as shown in Fig. 12, are shown separately in Figs. 23, 24, 25 and 26, are also shown diagrammatically in Figs. 27 and 28, 29 and 30 respectively. In these last figures the periphery of each of such cam

drums is indicated as laid out in a plane and showing the relative positions of the operating part of each cam groove. The transverse broken lines 1 to 9 indicate the relative active positions of these grooves. The cam drum 73 is the first one brought into action at the beginning of the wrapping operation, which serves to advance the main feeding ram 71 to advance the cake onto the raised plunger. The bottom portion of this figure represents the beginning of the rise in the cam groove that advances this feeding slide, and between such point and the transverse line 1 represents the travel of the roller that operates this slide. In other words the drums are revolved while the roller travels from the bottom position to the position at the line 1 during the advancement of this slide. By comparing the corresponding portions of the other three cams it will be seen that the cam 83 has its groove extending circumferentially, and therefore it will not advance the folding ram operated from this cam. And the same is true of the cam drum 88, which operates the clearing ram. In regard to the other cam 106 operating the side wiper, during a part of the movement of the rotation of this drum the side wiper will be returning to its inactive position, and from the preceding operation, and for the rest of this period this cam does not actuate the side wiper. From the line 1 the roller will travel back to line 5 to its former position by a continuation of the rotation of the drum, and thence the roller will remain inactive during the continuation of one revolution, and need not be further considered. When the drums have revolved until the portion of each indicated by the broken line 2 is uppermost, and the grooves engage their respective cams at such positions, it will be seen that the folding ram operated by the groove in the cam 83 will now begin to travel by reason of the rise or slant in the groove, from this line 2 until a position indicated by the transverse line 4. During this stage the folding ram operates to fold one side of the wrapper down on the article, as previously explained. But this folding operation is completed before the roller travels the limit of this incline and at a portion of it indicated by broken line 3 the groove in the cam 88 begins to slant, thereby advancing the clearing ram. The effect of this is to cause the clearing ram to advance the article and the folding ram to simultaneously advance for a short distance in order to hold the folded portion of the wrapper down on the article. It will be further observed from Fig. 30 that the side wiper begins to advance at the position of the transverse line 3, but it does not come into engagement with the article until a later stage. From the position of the line 4 the folding ram groove has a circumferential direction, thereby retaining the ram in its advanced position and holding the folded portion of the wrapper down until the position of line 7, at which stage the article will have been advanced beyond engagement with this ram. It thereupon returns to its normal position and is not again operated during this revolution. The clearing ram is advanced from a position of line 3 to that of line 6, when it will have advanced the article under the bridge plate to a certain position for engagement with the creasing plunger, that is thereupon caused to descend by its spring and controlling cam. From the position of line 6 to that of line 7 the creasing plunger is quickly

brought down and retracted, and thereupon at the latter part of this period the side wiper cam that has been advancing from position of line 3, engages the side of the article to fold down, which is accomplished at the period represented by line 7. Thereupon the side wiper is still further advanced to the position of line 8; but from the position of line 7 the clearing ram is advanced simultaneously with the side wiper. The effect of the latter is that the side wiper holds its resultant fold down on the article while the clearing ram advances the article, causing the latter to engage the stationary block 107, and fold down the opposite side portion. The clearing ram continues to advance to the position of line 9, completing this folding down by the stationary blocks, whereupon the clearing ram returns to its former position during the remainder of the cycle. From the position of line 8 the side wiper begins to return to its former position; which, however, is not accomplished until the beginning of the next cycle, as indicated in Fig. 30, and previously referred to. This folding operation may be done with a single sheet or two or more sheets superposed, and is shown as accomplished with a sheet of paraffined paper placed on top of a sheet of tin foil, which sheets when severed act as a single sheet and are folded around the article as a single sheet would be, the tin foil being on the outside.

In order to retain the overlapping folds at the end, and the overlapping portion extending across one face, in such position; it is customary to provide a strip or label that is wrapped around the article with the ends overlapping and suitably secured, preferably by gum. This strip may contain a suitable inscription or design designating the contents and manufacturer. In the present machine the cakes are advanced along under the bridge plate and between suitable guide strips forming a continuation of the folding strips 108, to a mechanism that feeds a strip under the article, places adhesive on one portion of each strip, wraps the strip around the article with the gummed end overlapped by the opposite end, and thereupon presses these lapped ends together to insure their adhesion.

The table 39 is provided with a recessed portion in which rests normally a platform 145. The platform is elevated to a position substantially level with the table by a suitable cam on the main shaft 12, and is permitted to lower by a fall in this cam, assisted by expansion of springs. In Figs. 48, 49, and 50, the platform is shown as having two posts 146, 146, secured thereto, and extending downward through apertures in a bridge piece 155 that is secured to posts 152. The lower ends of the posts 146 are rigidly connected by a bridge piece 148, which latter rides on the periphery of a cam 149 fast on the shaft 12. Springs 150, 150, arranged on the posts 146 between the table and collars 151, 151, serve to move the posts and platform downward and hold the cross piece 148 against the cam 149. In suitable openings in the table adjacent each end of the platform 145 are arranged vertical movable members for the purpose of bending upward a strip of paper that has been inserted beneath a cake. Each member is shown as composed of two parts, a post 152, and a block 153 pivoted at the upper end of each post, the latter sliding in openings 154 in the table. The posts 152 are connected at their lower portions by a bridge

piece 155, and a spring 156 arranged between the bridge piece and the table serves to force the bridge piece downward into engagement with a cam 157 fast on the main shaft 12 adjacent the cam 149. At each side of the recessed portion 158 in the table is a channeled portion 159, the depth of which is less than that of the recessed portion, so that when the platform is lowered, as indicated in broken lines in Fig. 48, its top will be substantially flush with the bottom of the channeled portions. As shown in Fig. 50, the longitudinal width of the recess 158 is slightly less than the width of the cake or other article to be wrapped, so that after the cake is moved on to the platform with its extremities resting on the table at each side as shown in this figure, the platform can be depressed and the cake will remain in such position, leaving a considerable space between the bottom of the cake and the top of the platform. At this stage in the operation, the labels or wrapping strips are fed into the channeled portions and recess by any suitable means. In the present instance, the strip passes between a roll 160 that coöperates with a roll 161, the latter being duly supported to be driven from the other roll. The roll 160 is continuously driven by belt 261 from pulley 262 fast on the roll, and pulley 263 on shaft of roll 23. Adjacent these rolls 160 and 161, as shown in Fig. 44, is provided suitable gumming mechanism. When the strip is advanced by these latter rolls it will rest with one end engaging a suitable stop 162 at the end of one of the channeled portions 159, and its other end a short distance from the roll 161. Adjacent this latter end the table is provided with a slot 163, into which is moved a gumming roll 164, adjustably supported on the end of a lever 165 pivoted beneath the table at the front of the machine. The gumming roll 164 may be carried on a strip 265 that slides in a slotted portion of the lever 165, and has a slot therein through which passes a screw 266 tapped into the lever 165. By the loosening of this screw the roller can be moved up or down relative to the lever 165, and thereby control its positions to which carried by a cam 167. The latter lever rests normally on the concentric portion of a cam 167 fast on the main shaft 12, and is raised from such position by the rise in the cam, thus causing the roll 164 to strike the lower face of the strip in said position and apply gum thereto. The latter operation is assisted by means of a stop bar 168, shown in Fig. 45, supported from the table immediately above the opening therein 163. The ascent of the gumming roll will tend to elevate the strip, which will be prevented by the engagement of the latter with this stop, thereby insuring its being properly gummed. To supply gum to this roll, in its normal lower position, it rests on the periphery of a gumming drum 169, rotatably supported to extend partly out from a box 170, suitably carried by the frame of the machine. This drum is continuously rotated by a belt 171 from the shaft of the roller 23 of the web feeding mechanism; the belt running between a pulley 172 on the drum shaft and a pulley 173 on the shaft of the said roll. In order to preserve the proper supply of gum on the periphery of the drum 169, the top of the box 170 is slotted at 173, that is adjustable to move to and from the drum to secure therefrom an oversupply of the gum. Connected with one end of the box is a bracket 176 in

which operates a screw 177, engaging the extremity of the top 175 and serving to move it into proper engagement with the gumming drum.

The normal positions of the platform and the folding blocks at each end are shown in Fig. 48, the bridge piece 155 operating the folding blocks resting on a concentric lower portion of the cam, as also shown in Fig. 51. In the same figures the broken curved line indicates the shape and relative position of the cam 149 engaging the cross bar 148 of the platform. In these figures it will be seen that the raised portion of this cam engages the piece 148, and hence the platform is elevated to its uppermost position. Upon rotation of these cams in the direction of the arrow it will be seen that the piece 148 will descend to the position indicated in Fig. 52 by reason of the fall in the cam, and the platform will be lowered to the dotted line shown in Fig. 48. At this stage a strip feeding and advancing means is made to deliver the strip on to the channeled portions of the table, and it will be placed beneath the article that will be suspended on the table across the recess by the lowering of the platform; thus the intermediate portion of the strip will rest on the platform and between the latter and the suspended article. The movement of the cam 157 from the position of Fig. 51 to that of Fig. 52 being concentric will not disturb the folding blocks 153. The cams advancing to the position of Fig. 53, the cam 149 will move the piece 148 upward by reason of its raise and thereby elevate the platform to its normal upper position, and raise the strip into engagement with the lower face of the article. The further advance of the cams to the position of Fig. 54 will have the effect of still holding the platform in its raised position by reason of the concentric portion of the cam 149; while the rise in the cam 157 will elevate the cross piece 155 and move the folding blocks 153 upward. As soon as the upper ends of these blocks engage the lower face of the paper just beyond the extremities of the article, their continued rise will force the paper upward against the ends of the article in close engagement therewith, causing the extending portions to project upward, as indicated in Fig. 49. In order to fold the end pieces in close engagement with the article hinged portions 153 are pressed against the article by means of coil springs 178 carried in suitable apertures 179 in the table. The upper ends of the blocks are preferably inclined where they engage the article to prevent abrasion thereof or undue friction. To prevent the cake or other article from being moved upward by reason of the folding blocks 153 a suitable member is arranged in alignment with the top of the article, such as a strip or finger 278, suitably secured above the table, and shown as fast on the bridge plate supported above the table. This strip is made of very thin sheet metal, and the folding down of the end portions of the strip thereon will not be affected.

The end portions of the strip having been folded upright against the ends of the cake, a suitable horizontally swinging member is now moved inward on each side adjacent the top of the article to engage the end portions of the strip and fold them down on to the article. One form of such means is shown as comprising an arm 180 pivoted on the table at each side with

its free end arranged in alinement with the channel portion of the table. The blocks 153 are recessed at their intermediate portion to permit these arms to engage the strip at the top edge of the article and thereby fold the strips down on top of the article, as indicated in Fig. 50, in close engagement therewith. The strip is such a length that its end portions will overlap, and the gummed portion adjacent one end will now be on the upper side of the strip, and this end is brought down first, and then the other end folded on top of it in engagement with this gummed portion.

The arms 180 are pivoted on the table at 181, and their other extremities are slotted, into which extends the ends of upright levers 182, 183, pivoted on the frame of the machine to swing in a transverse vertical plane. The lever 183 carries a roller 185 held in engagement with a cam 186 fast on the shaft 12 by a spring 187. This cam will serve to rock the lever 183 at the proper time, and the latter will simultaneously operate the lever 182 through a connecting link 188; which levers will operate the arms 180 to fold down the end portions of the strip as above set forth. The cams 149 and 157 each have a dwell to hold the platform and folding blocks in their upper position after the folding arms have moved inward, and the cam 186 is also provided with a dwell arranged to hold these arms in their inner position for a short time. Suitable means is provided whereby during such retention of the strip in the folded position, the article is advanced along the table between suitable members engaging its top and bottom portion to thereby press the folded and lapping portions of the strip against the article to insure the proper adhesion of the gummed ends of the strip. In Fig. 50 is shown a set of endless belts 190, passing around suitable rollers 191 carried by the table; the rollers being idly supported so that the belts are operated by the advancement of the articles. Three superposed pairs of such belts 190 are provided, the lower ones operating in the plane of the table, and the upper ones a sufficient distance removed to snugly engage the top of the article and secure the strip in position. In the present instance this strip folding mechanism is arranged to cooperate with the wrapping mechanism hereinbefore set forth for wrapping the articles with paper and tin foil. As the successive articles are advanced by the one last wrapped through the advance of the clearing ram, they are moved along in the guideway under the bridge piece 66, and the strip folding mechanism is arranged at the other end of the bridge piece, with the platform in alinement with the path of movement of the articles on the table. The platform is so positioned on the table relative to this line of advancing articles that one of the two advanced movements given to the clearing ram during each revolution of the main shaft will serve to move the article at the front of this line of articles on to the raised platform 145, as indicated in Fig. 50. All of the operating cams for the strip folding mechanism being on the same main shaft 12, and thereby operated to complete the wrapping of the article by the strip during one revolution, the latter cams operating the strip folding mechanism are so set that the plunger will be in its normal upright position ready to receive this article when advanced by the plunger at the end of its

second advance during the said wrapping operation. Thereupon the several cams operate to advance the strip and completely fold it before the next succeeding movement of the clearing ram. But the cams retain the plunger, folding blocks, folding arms, in their advanced positions until this next advance of the clearing ram, which will have the effect of advancing this article carrying the folded strip between the belts 190 that will retain the folded strip in engagement with the article for the length of time required to advance the several articles through the belts. This first movement of the clearing ram will advance the strip-folded article for a portion of its length between the belts 190, and the succeeding article will be partially advanced on to the platform 145. But the second advance of the clearing ram that is effected during one revolution, will advance the said article in proper position on the platform, and the latter will advance the strip folded article between the belts 190, clear of the strip folding mechanism. From this it will be seen that the two advance movements of the clearing ram not only serves to directly effect the separate folding operations in the initial wrapping or enveloping of the article in paper and foil, but also perform a double function of placing the article in proper position on the strip folding platform, and further of advancing the article partly into engagement with the securing belts while still engaged by the strip folding means to insure the proper securement of the strip on the article.

Another means for folding the upturned ends of the strips down on to the article is shown in Figs. 57 to 61, in which instead of the two arms 180 separate from the folding blocks or members 153, a folding member is mounted on and carried by each of the folding blocks similar to 153, pivoted on the upper ends of the posts 152. These folding blocks 192 have identical channels in their top portions in which slide folding plates 193, that are normally flush with the inner edges of the folding blocks, but can be advanced over the article or platform and serve to fold down the upright portions on to the article, in the manner above set forth. One means of operating these sliding plates comprises a pair of arms 194, pivoted underneath the table, and having at one extremity a slotted portion 195, each of which latter engages rocking levers 196 vertically supported below the table. One of these levers has a roller 197 on the extension that is held against a cam 198 on the shaft 12 by a spring 199. This cam and spring will serve to rock the extension lever, that will simultaneously rock the other lever through a connecting strip 200; similar to the means for rocking the levers 180. The other extremities of the levers 194 have a suitable aperture into which extends a vertical pin 201, secured to and projecting downwardly through slots 211 in blocks 192 from each of the plates 193. By this means the rocking of the levers 194 will reciprocate the folding plates 193; and the pins 201 sliding free in the levers 194 will permit a vertical movement of the folding blocks 192 without affecting the relative position of the folding plates on the blocks. After these blocks have been raised by the posts 152, as above described, the swinging of the levers 194 will move each of the folding plates inward and fold down the upturned ends. And the plates will be held in this po-

sition by a dwell in the cam until the article shall have been advanced beneath the belts 191, as hereinbefore set forth.

Having thus described my invention, I claim:

- 5 1. In a wrapping machine, the combination of a table having an opening therein, a platform movable vertically in said opening, a bridge-plate supported above the table on two opposite sides of said opening, operating means for platform arranged to raise it up to said bridge-plates,
- 10 means for feeding a wrapper on the platform and bridge-plates, article-advancing means arranged to feed an article on the wrapper upon the platform, a plunger vertically movable above said platform, operating means for the plunger arranged to lower the plunger on the article and
- 15 also for lowering the plunger and the platform further whereby the wrapper extending beyond the article on the bridge-plates is folded upward at each side of the article, a folding ram slidable on the table, operating means for the folding ram arranged to advance it over the article to
- 20 fold down one of said upturned portions of the wrapper, the bridge-plate on the opposite side being raised above the table, a clearing ram movable on the table, operating means for the clearing ram arranged to move the ram to advance the article between the table and said latter
- 25 bridge-plate whereby the other upturned portion of the wrapper is folded down upon the article, a creasing plunger having downwardly extending plates on opposite sides arranged to engage the end portions of the article, said latter movement of the creasing ram being arranged to advance the article under said creasing plunger, the creasing
- 30 plunger being arranged when lowered to engage the top projecting portions of the wrapper at each end and fold them down, a side-wiper-slide movable on the table to engage the projecting portions of the wrapper along one side edge at each end, operating means for thereupon advancing the side-wiper to fold down the wrapper at each end
- 35 along one side, a stationary folding block arranged in the path of movement of the article from its position under the creasing plunger, the article being further advanced by the clearing ram to engage said blocks and fold down
- 40 the opposite side portions at each end, and folding blocks arranged in advance of said blocks arranged to folding up the bottom portions of the wrapper upon the article being further advanced.
- 45 2. The combination with a table, a movable platform, a plunger, and suspended bridge plates, of a suspended deflecting plate extending downward into proximity to one bridge plate adjacent the edge thereof and also adjacent the path of the plunger.
- 50 3. The combination of a table, a suspended bridge plate, means for folding one side of a wrapper down on the article, a ram slide, means for advancing the slide to move the article under the bridge plate and thereby fold the other
- 55 side of the wrapper down on the article, means for folding a flap from the top down against each end of the article, folding blocks arranged in the path of the wrapper arranged to engage the article upon further advance of the ram slide and produce additional folds of the wrapper at the ends of the article.
- 60 4. The combination of a support, upwardly moving means organized to bend upward the opposite projecting end portions of a strip placed beneath an article on the support and separated means for folding the projecting upturned portions of the strip down on the top of the article.
- 65 5. The combination of a support, upwardly moving means organized to bend upward the opposite projecting end portions of a strip placed beneath an article on the support, supplemental means for folding the projecting upturned portions of the strip down on the top of the article, and means for preventing upward movement of the article during such bending.
- 70 6. The combination of a support, upwardly movable means organized to bend upward the opposite projecting end portions of a strip placed beneath an article on the support, supplemental means for folding the projecting upturned portions of the strip down on the top of the article, suspended means on the support adjacent the article organized to engage the bent strips at the top of the article
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to press them together upon the article being advanced on the support beneath such pressing means.

7. The combination of a support, upwardly moving means arranged to bend upward the projecting end portions of a strip placed beneath an article on the support, and means carried by said means arranged to engage the upwardly projecting end portions and fold them down on top of the article.

8. The combination of a table having a channel narrower than the article to be wrapped whereby the article can be supported by the margins of two opposite sides, means for inserting a strip beneath article supported by said means, means for gumming one end portion of the strip in such position, upwardly moving means for bending upward the projecting ends of the strip, and supplemental means for folding the upturned strip portions down on the article with the gummed portion overlapping the other end portion of the strip.

9. The combination of a table having a channel in its top, and an opening at the intermediate part of the channel, a platform movable vertically in said opening, operating means for depressing the platform in the opening to enable a strip to be inserted between the article and the platform, said means being arranged to elevate the platform causing the strip to engage the bottom of the article, a block vertically movable in the table adjacent each end of the platform to fold upward the end portions of the strip, means for elevating such blocks, a horizontally movable member on each side of the platform arranged to fold the upturned portions of the strip down on the article, and means for moving the latter folding members.

10. The combination of a table having a channel in its top, and a recess at the intermediate part of the channel, a platform movable vertically in said recess, operating means for depressing the platform in the recess to enable a strip to be inserted between the article and the platform, said means being arranged to elevate the platform causing the strip to engage the bottom of the article, a block vertically movable in the table adjacent each end of the platform to fold upward the end portions of the strip, means for elevating such blocks, a horizontally movable member on each side of the platform arranged to fold the upturned portions of the strip down on the article, means for moving said latter members, and means arranged to engage the top of the wrapped article when advanced and press the folded strip against the article.

11. The combination of a table having a channel in its top, and a recess at the intermediate part of the channel, a platform movable vertically in said recess, operating means for depressing the platform in the recess to enable a strip to be inserted between the article and the platform, said means being also arranged to elevate the platform causing the strip to engage the bottom of the article, a block vertically movable in the table adjacent each end of the platform to fold upward the end portions of the strip, means for elevating such blocks, a horizontally movable member on each side of the platform arranged to fold the upturned portions of the strip down on the article, means for moving said latter members, and an endless belt device arranged to engage the top and bottom of the article when advanced to press the folded strip against the article.

12. The combination of a table having a channel in its top, and a recess at the intermediate part of the channel, a platform movable vertically in said recess, operating means for depressing the platform in the recess to enable a strip to be inserted between the article and the platform, a finger extending across above the channel in the table, said means being also arranged to elevate the platform causing the platform to engage the bottom of the article and press it against said finger, a block vertically movable in the table adjacent each end of the platform to fold upward the end portions of the strip, means for elevating each block, a horizontally movable member on each side of the platform arranged to fold the upturned portions of the strip down on the article, and means for moving said latter members.

13. In a wrapping machine, the combination of a table having a channel therein of less width than the article to enable the article to be supported bridging the channel, a recess at the intermediate part of the channel, a platform

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movable vertically in said recess, operating means for depressing the platform in the recess to enable a strip to be inserted between the article and the platform, said means being also arranged to elevate the platform causing the
 5 strip to engage the bottom of the article, a block vertically movable in the table adjacent each end of the platform to fold upward the end portions of the strip, means for elevating the blocks, a horizontally movable member on each side of the platform arranged to fold the upturned portions
 10 of the strip down on the article, and means for moving said latter members.

14. The combination of a table having a channel in its top, and a recess at the intermediate part of the channel, a platform movable vertically in said recess, operating
 15 means for depressing the platform in the recess to enable a strip to be inserted between the article and the platform, said means being also arranged to elevate the platform causing the strip to engage the bottom of the article, a block vertically movable in the table adjacent each end of
 20 the platform to fold upward the end portions of the strip, means for elevating such blocks, a plate transversely movable in each block, and means for advancing such plates when the blocks have been raised to fold the upturned end portions of the strip down on the article.

25 15. The combination of a table having a channel in its top and a recess at the intermediate part of the channel, a platform movable vertically in said recess, operating means for depressing the platform in the recess to enable a strip to be inserted between the article and the platform, said
 30 means being also arranged to elevate the platform causing the strip to engage the bottom of the article, a slotted block vertically movable in the table adjacent each end of the platform to fold upward the end portions of the strip, means for elevating such blocks, a
 35 longitudinally movable plate carried by each block, a pair of horizontally movable levers each having an opening therein, a pin on each plate extending through said block slots into the lever openings, and means for swinging the levers when the blocks have been raised to slide the plates
 40 and fold down the upturned end portions of the strip against the article.

16. The combination of a table having a channel in its top, and a recess at the intermediate part of the channel, a platform movable vertically in said recess, operating means
 45 for depressing the platform in the recess, means for feeding a strip between the article and the platform with its extremities lying in said channeled portions, said means being also arranged to elevate the platform causing the strip to engage the bottom of the article, a member ver-
 50 tically movable in the table adjacent each end of the platform to fold the end portions of the strip upward, means for elevating said members, a horizontally movable member on each side of the platform arranged to fold down the upturned portions of the strip on the article, and means for moving said latter members. 55

17. The combination of a table having a channel in its top and a recess at the intermediate part of the channel, a platform movable vertically in said recess, operating means
 60 for depressing the platform in the recess to enable a strip to be inserted between the article and the platform with its extremities lying in said channeled portions, said means being also arranged to elevate the platform causing the strip to engage the bottom of the article, a block vertically
 65 movable in the table adjacent each end of the platform to fold the end portions of the strip upward, means for elevating such blocks and retaining them in such positions, a horizontally movable folding member on each side of the platform arranged to engage the upturned portions of the strip and fold them down on the article, means for moving
 70 said latter members to fold down the strip ends and retain them in such positions, means on the table arranged to engage the top of the article when advanced, and means for advancing the article while the said blocks and folding members are retained in said positions.

Signed at Nos. 9-15 Murray street, New York, New York, 75
 this 29th day of August, 1905.

LINGAN C. WING.

Witnesses:

WILLIAM H. REID,
 FRED. J. DOLE.