

No. 680,064.

Patented Aug. 6, 1901.

E. NELSON.
WRAPPING MACHINE.

(Application filed Apr. 2, 1900.)

(No Model.)

8 Sheets—Sheet 1.

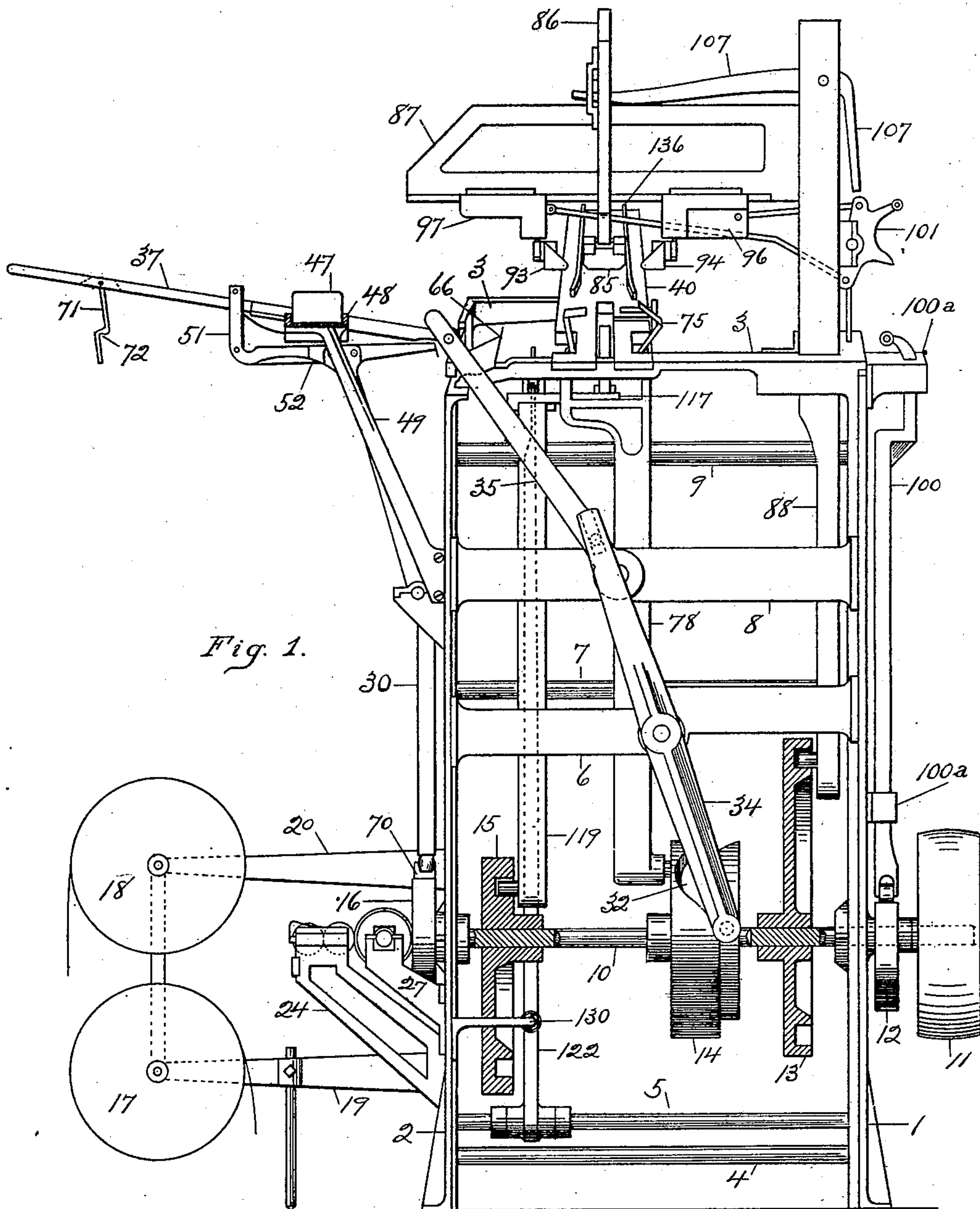


Fig. 1.

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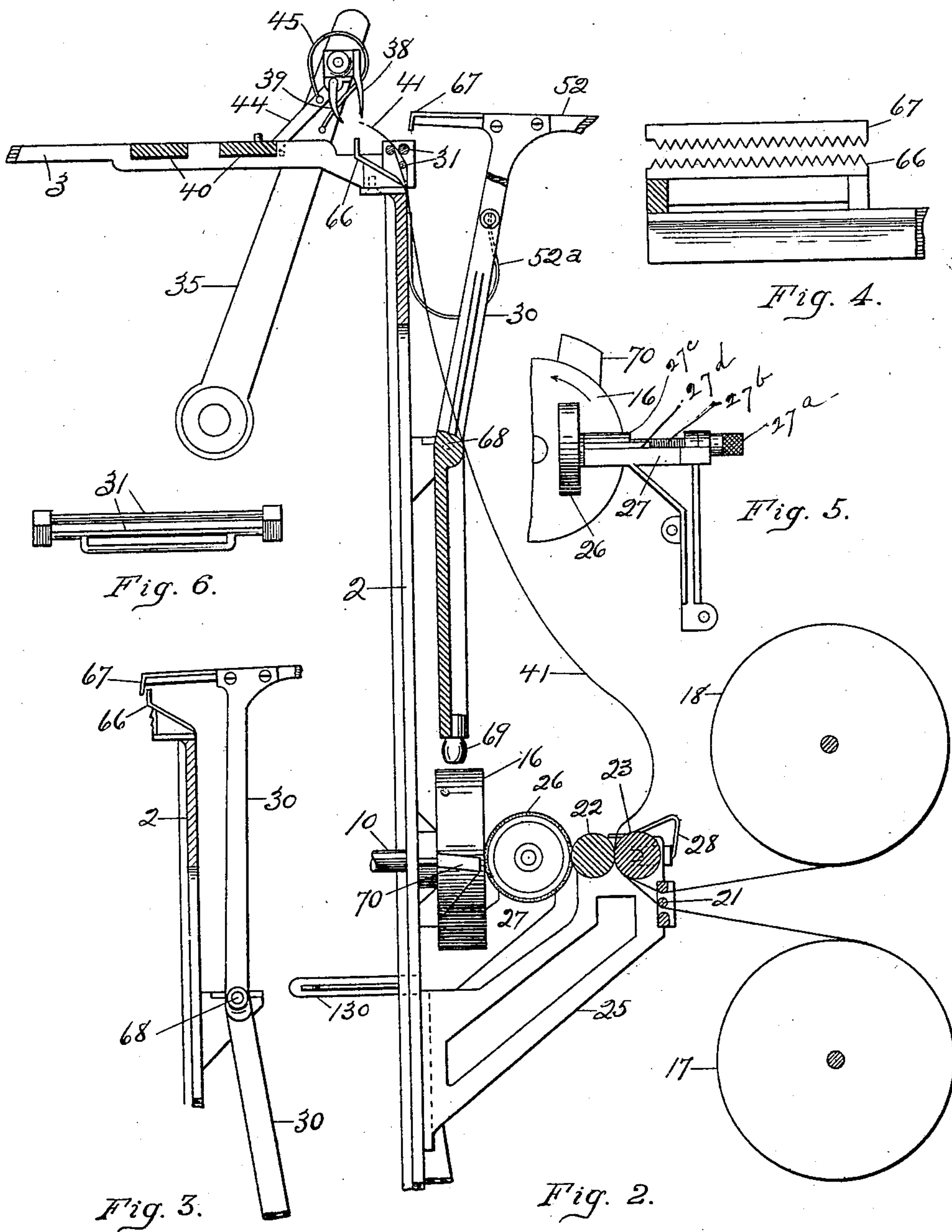
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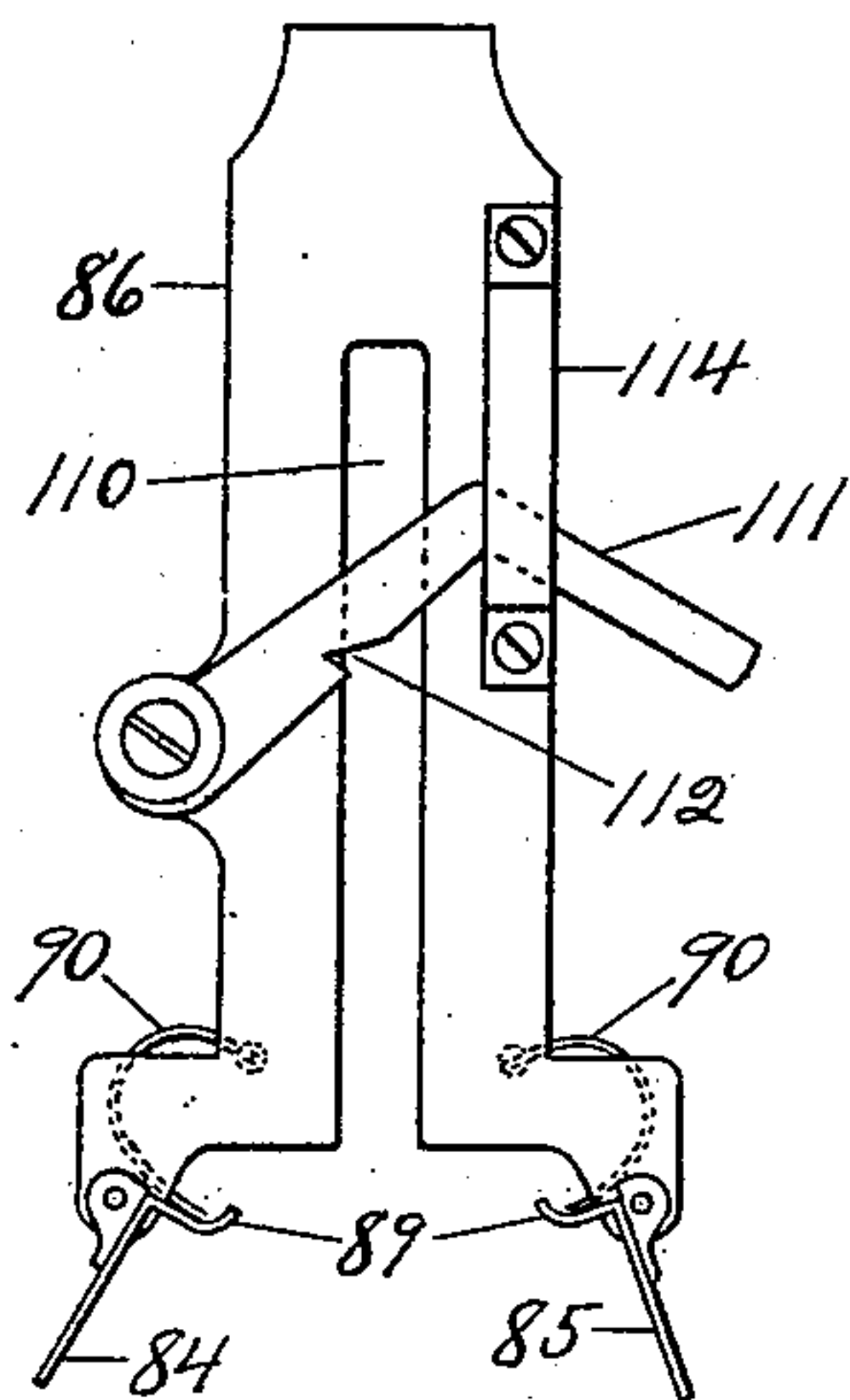


Fig. 22.

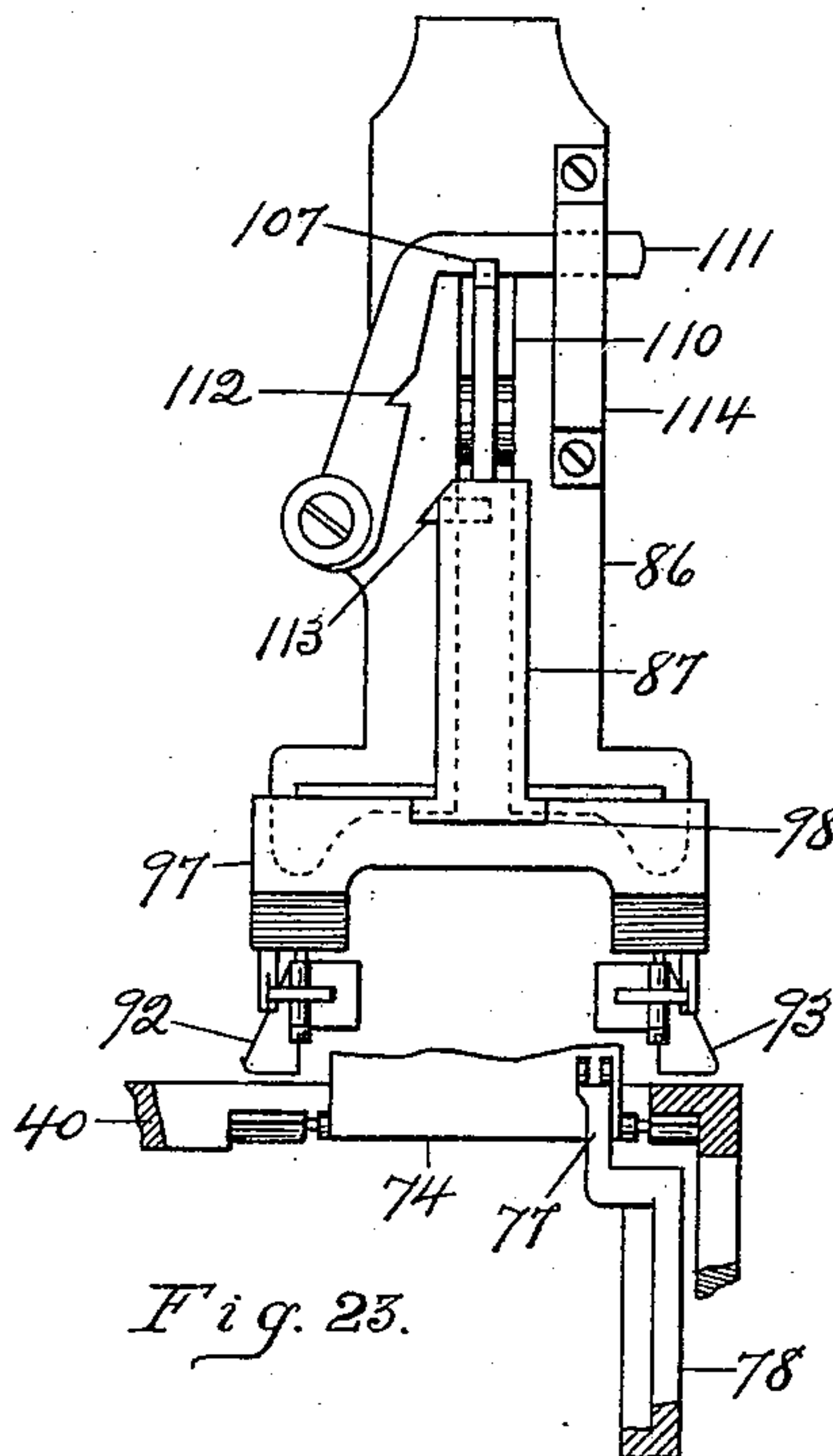


Fig. 23.

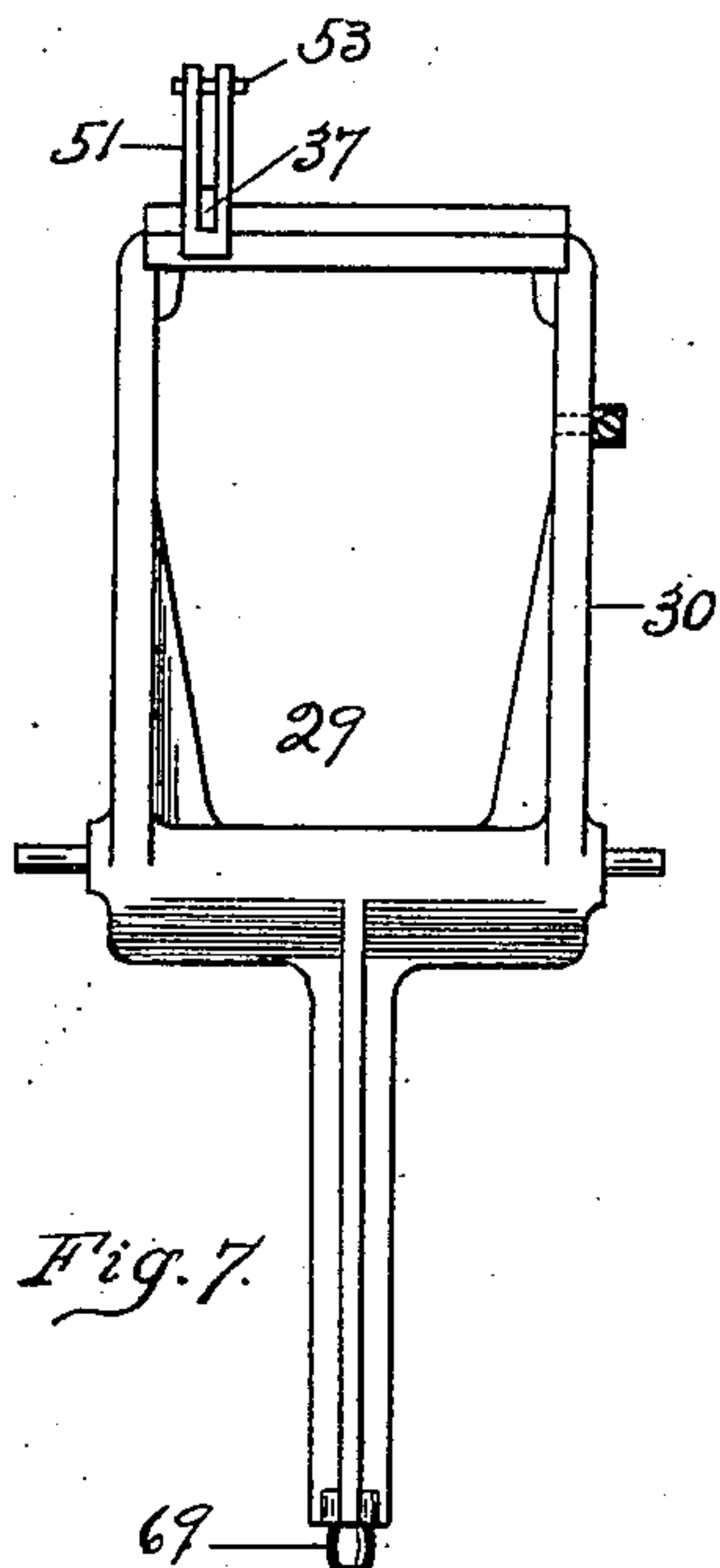


Fig. 7.

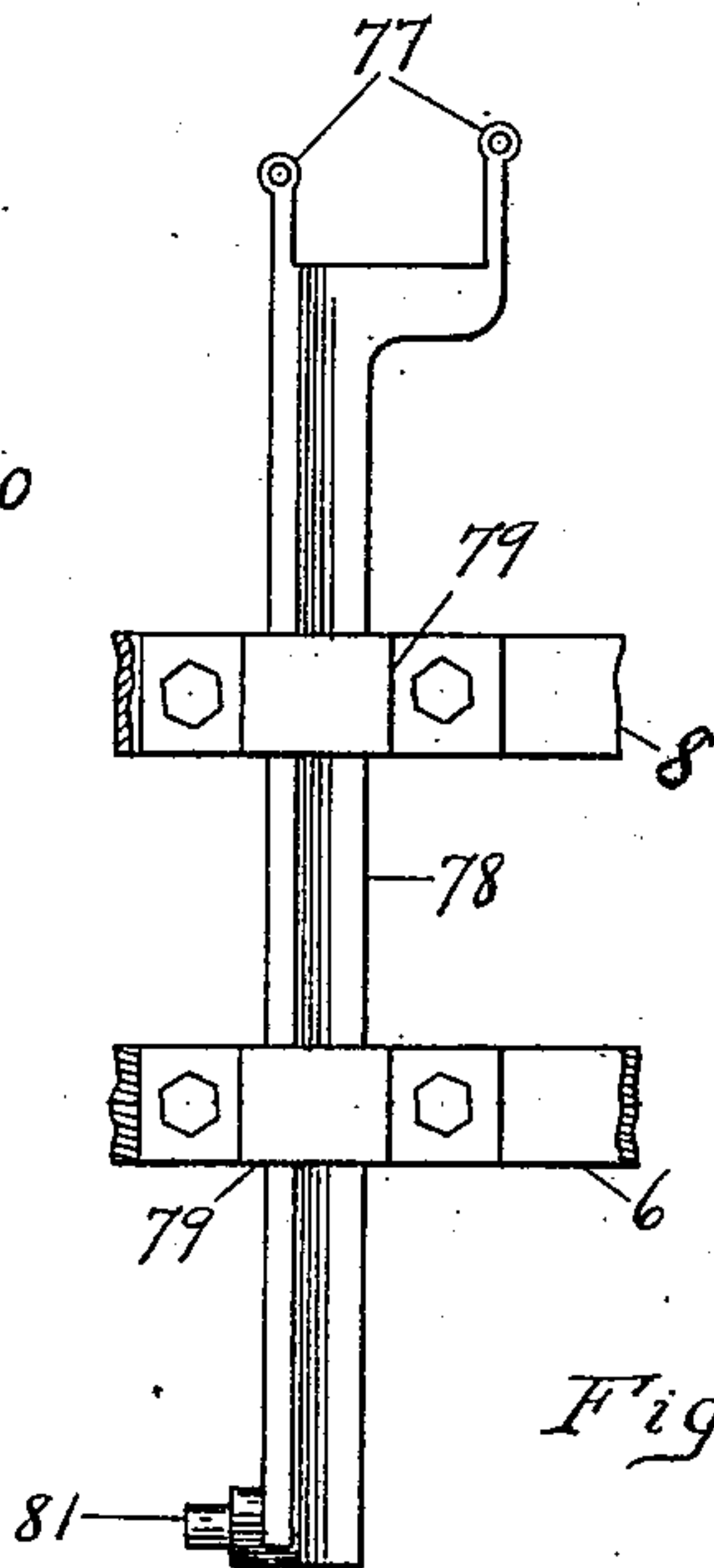


Fig. 20.

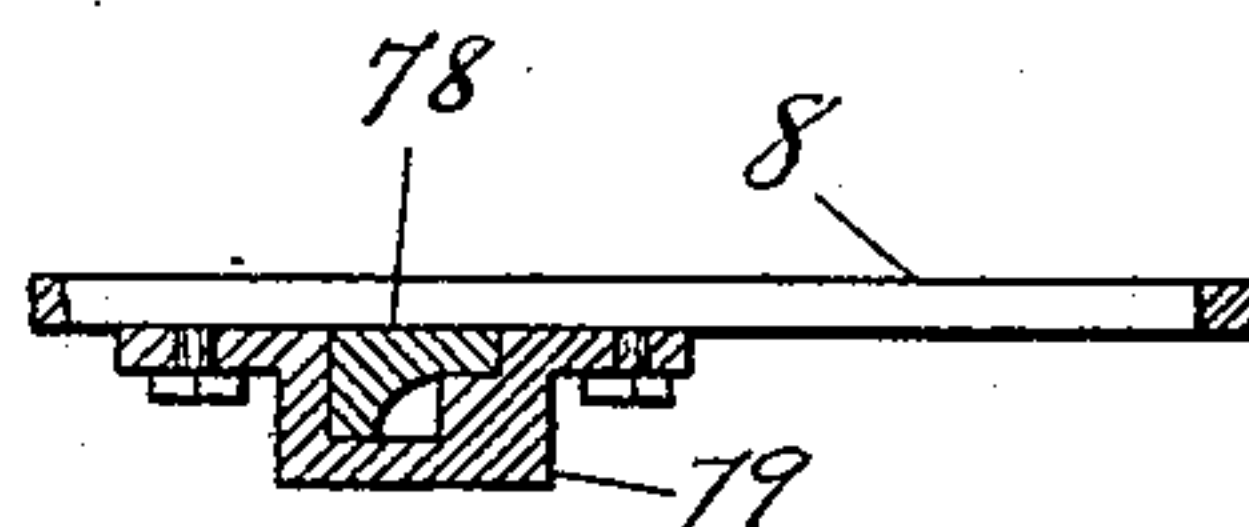


Fig. 21.

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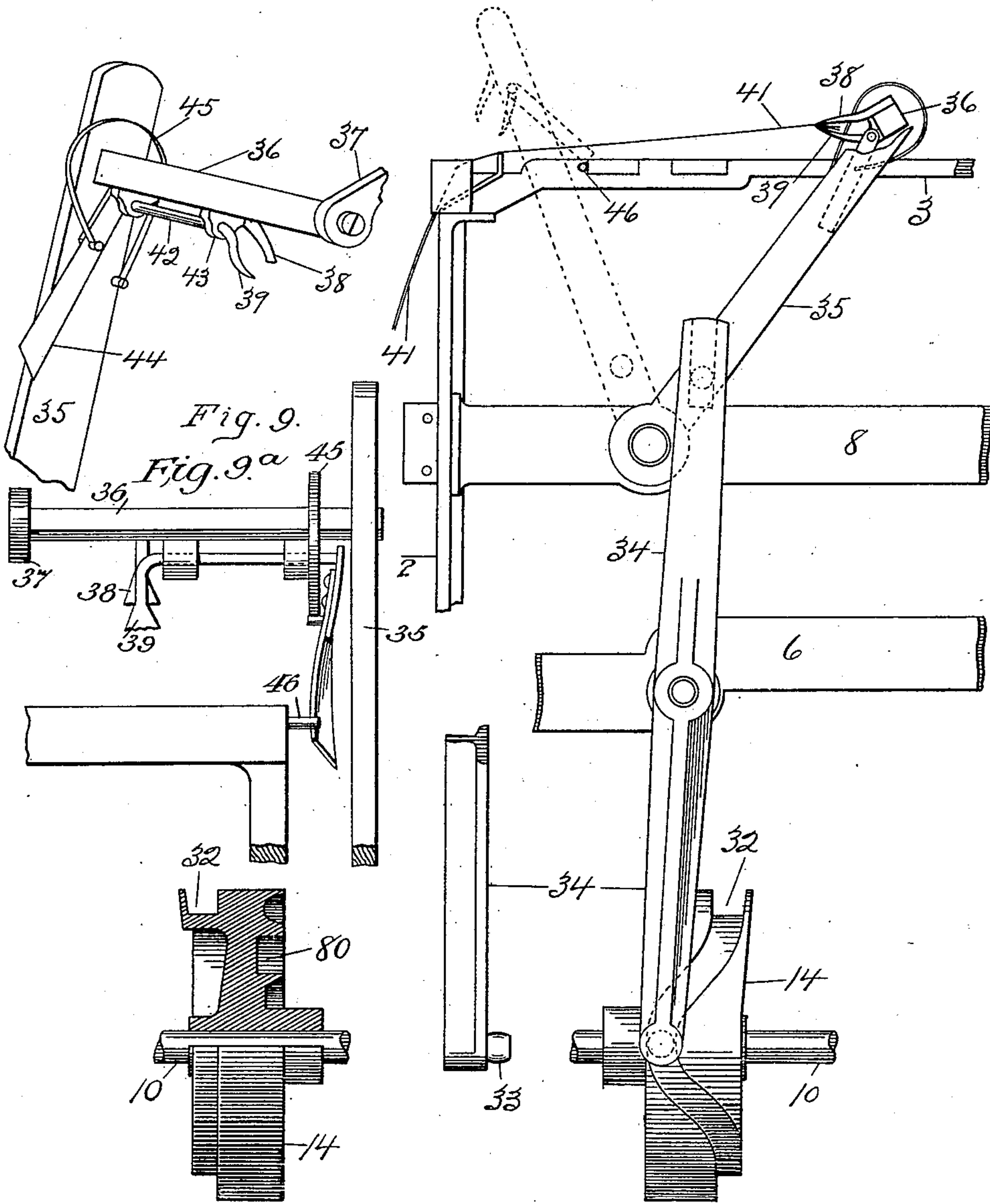


Fig. 10.

Fig. 8.

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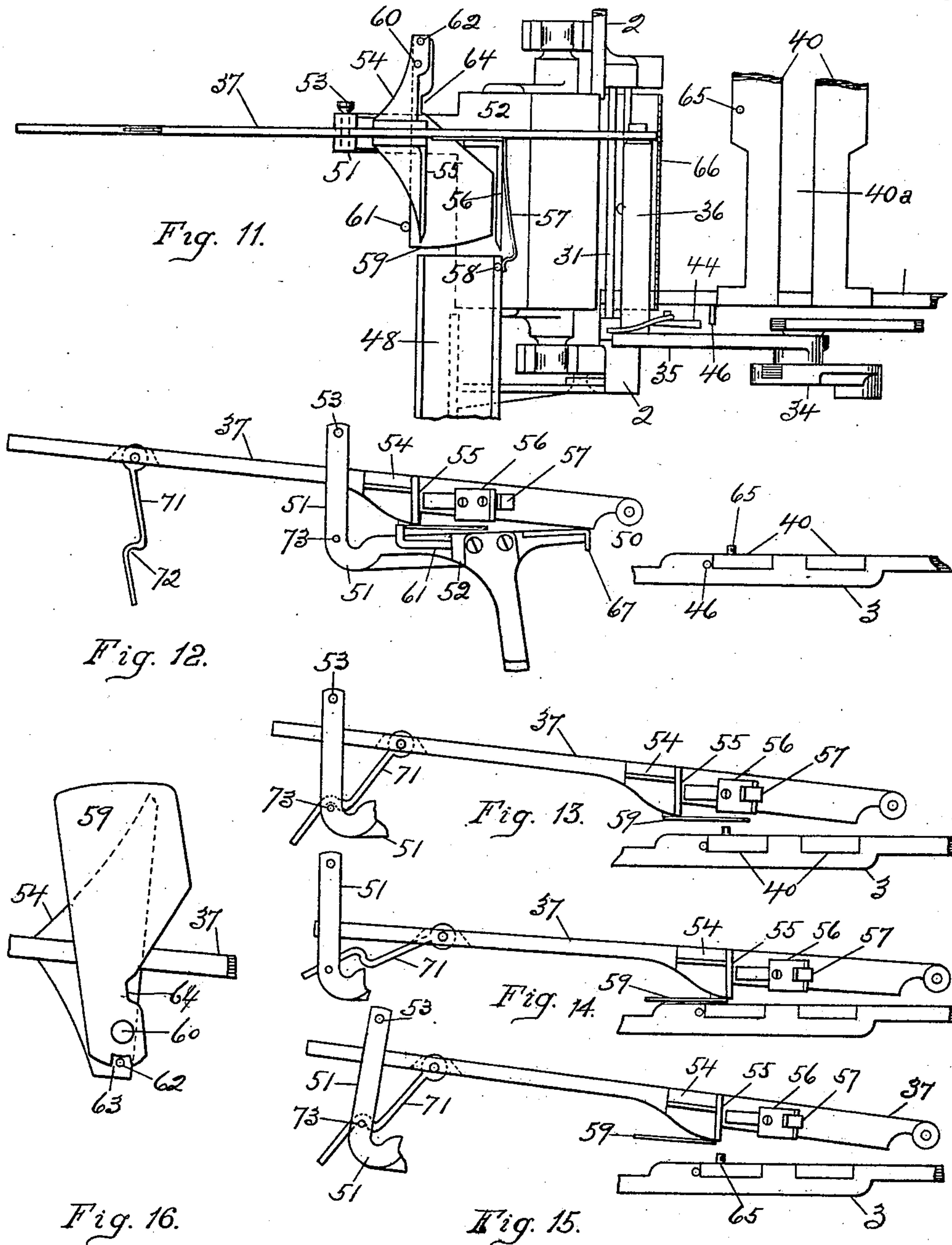
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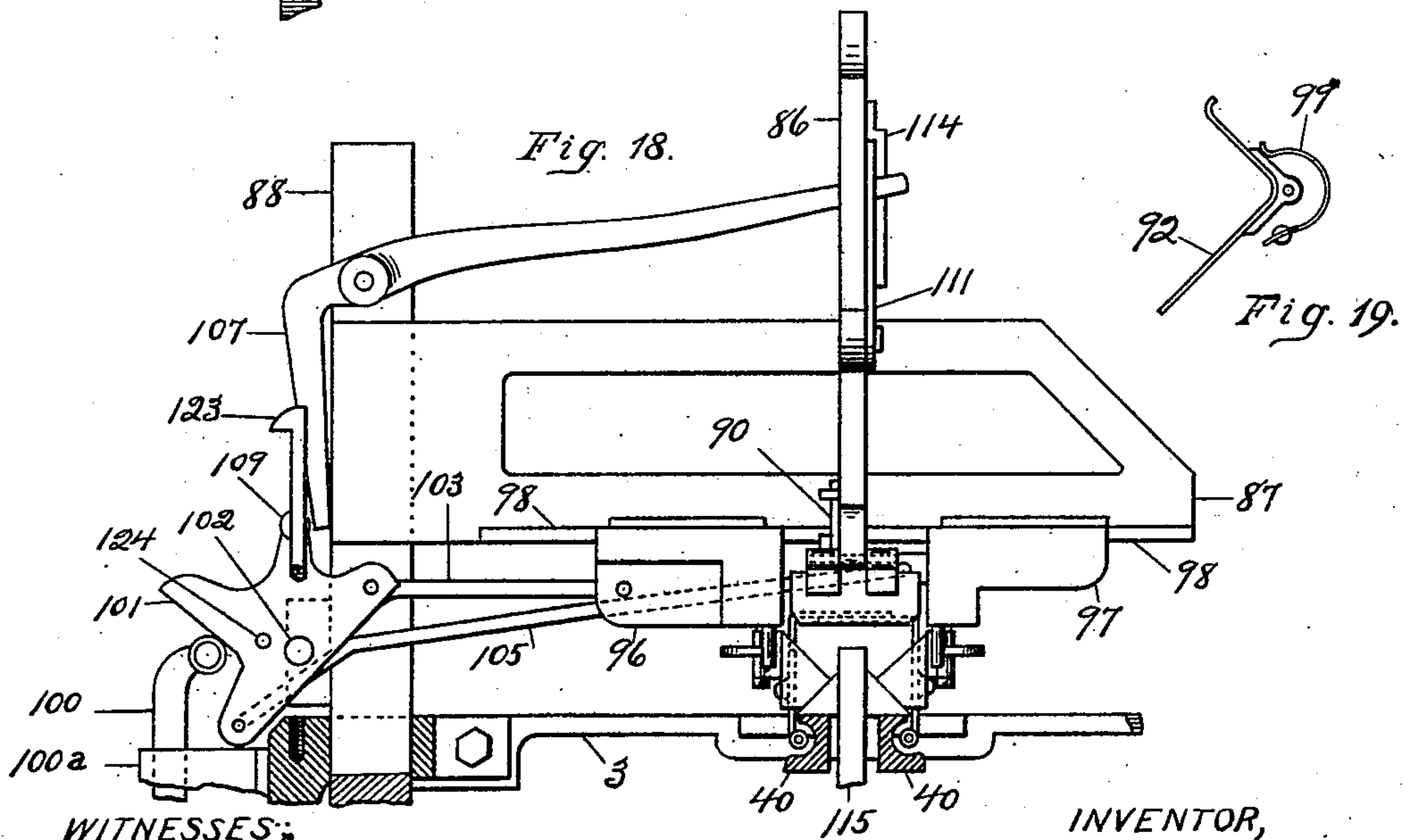
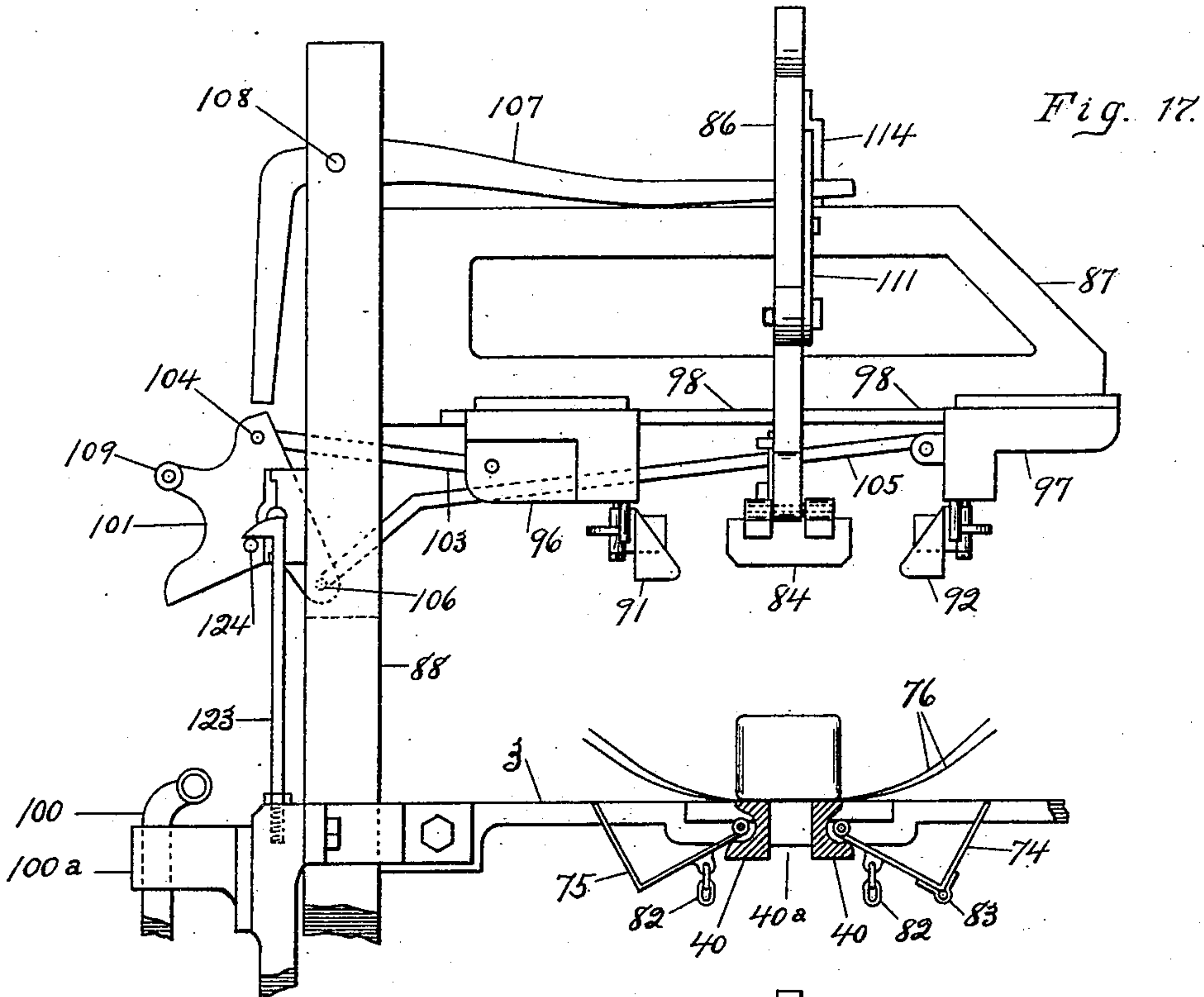
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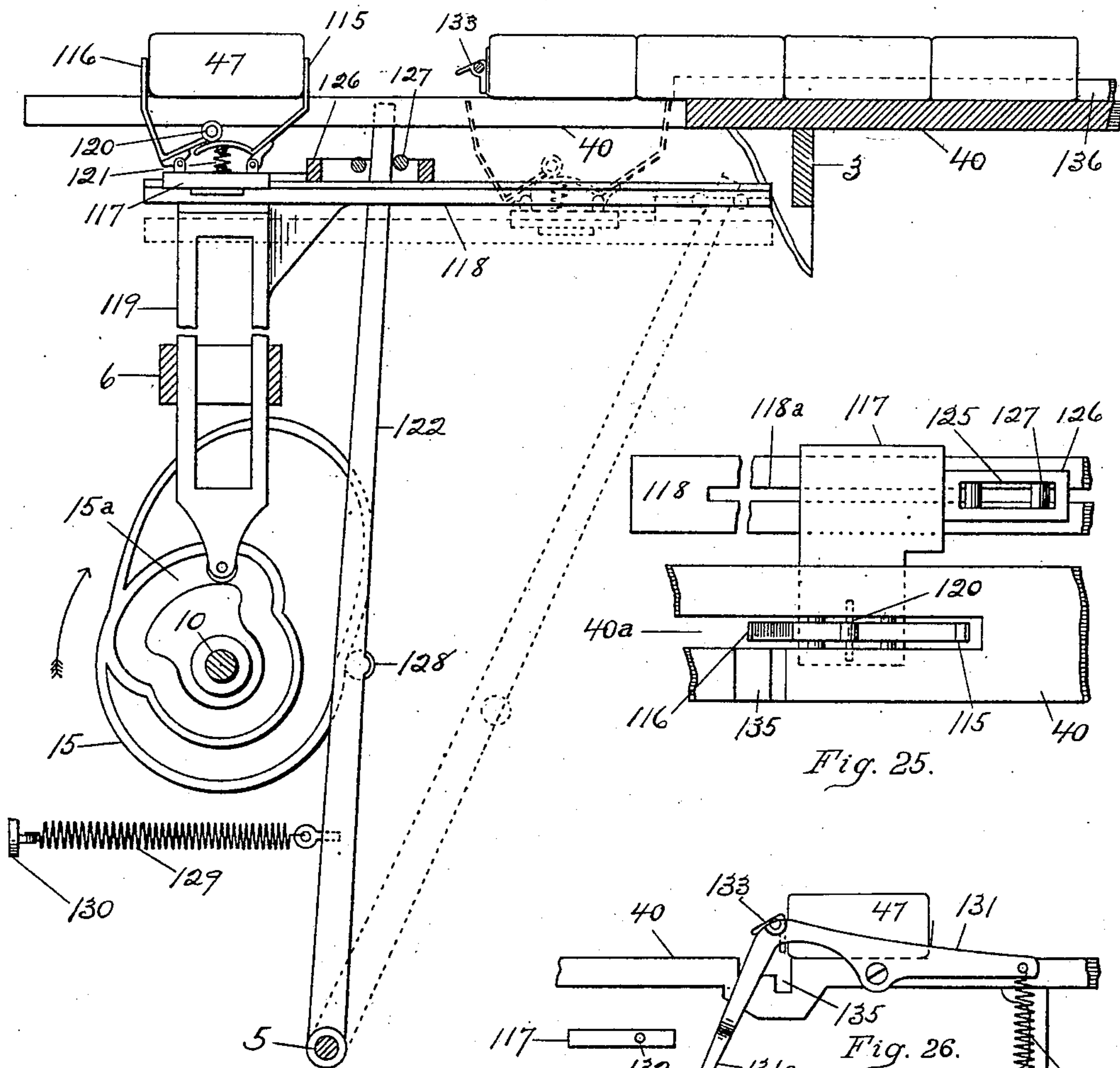


Fig. 24.

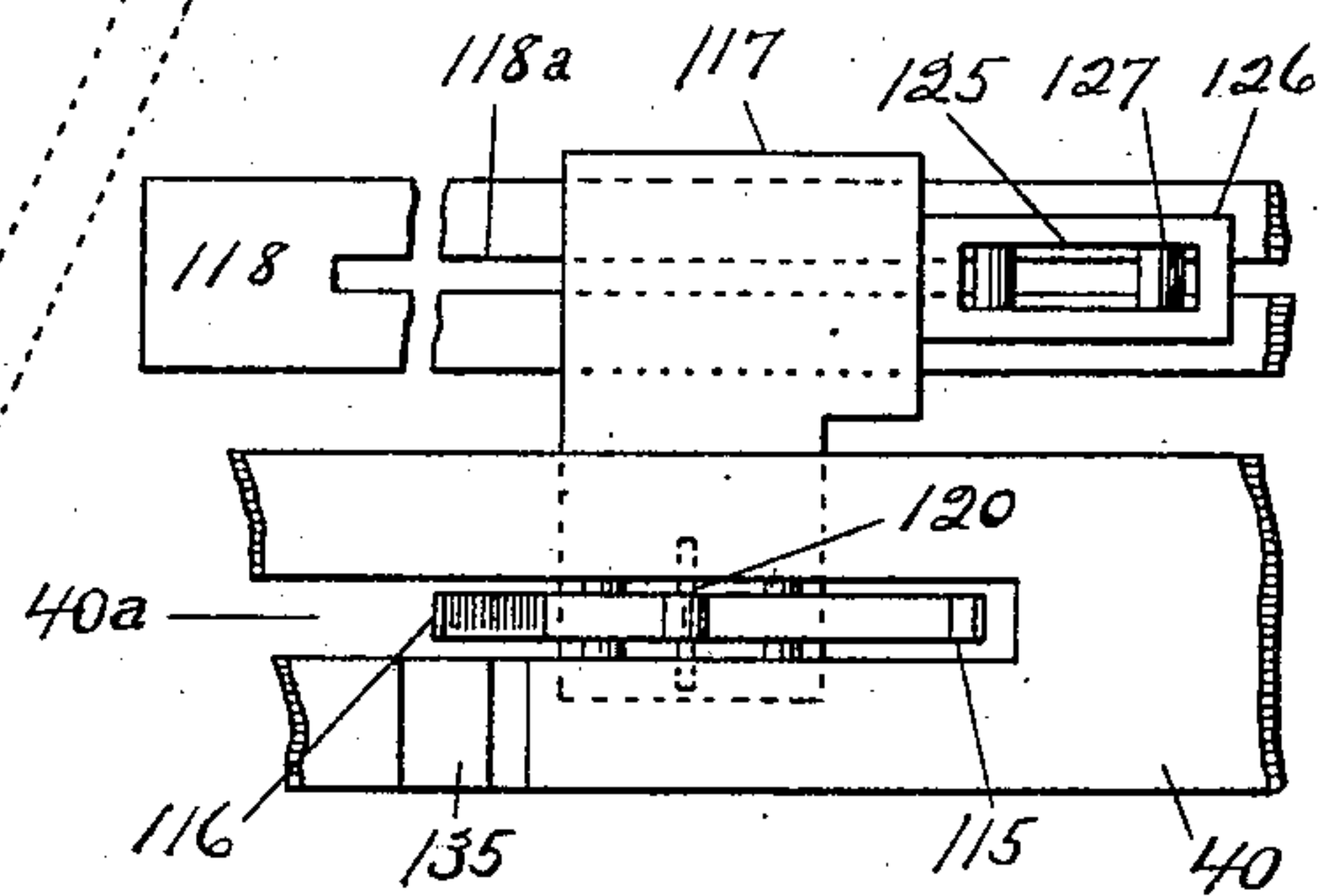


Fig. 25.

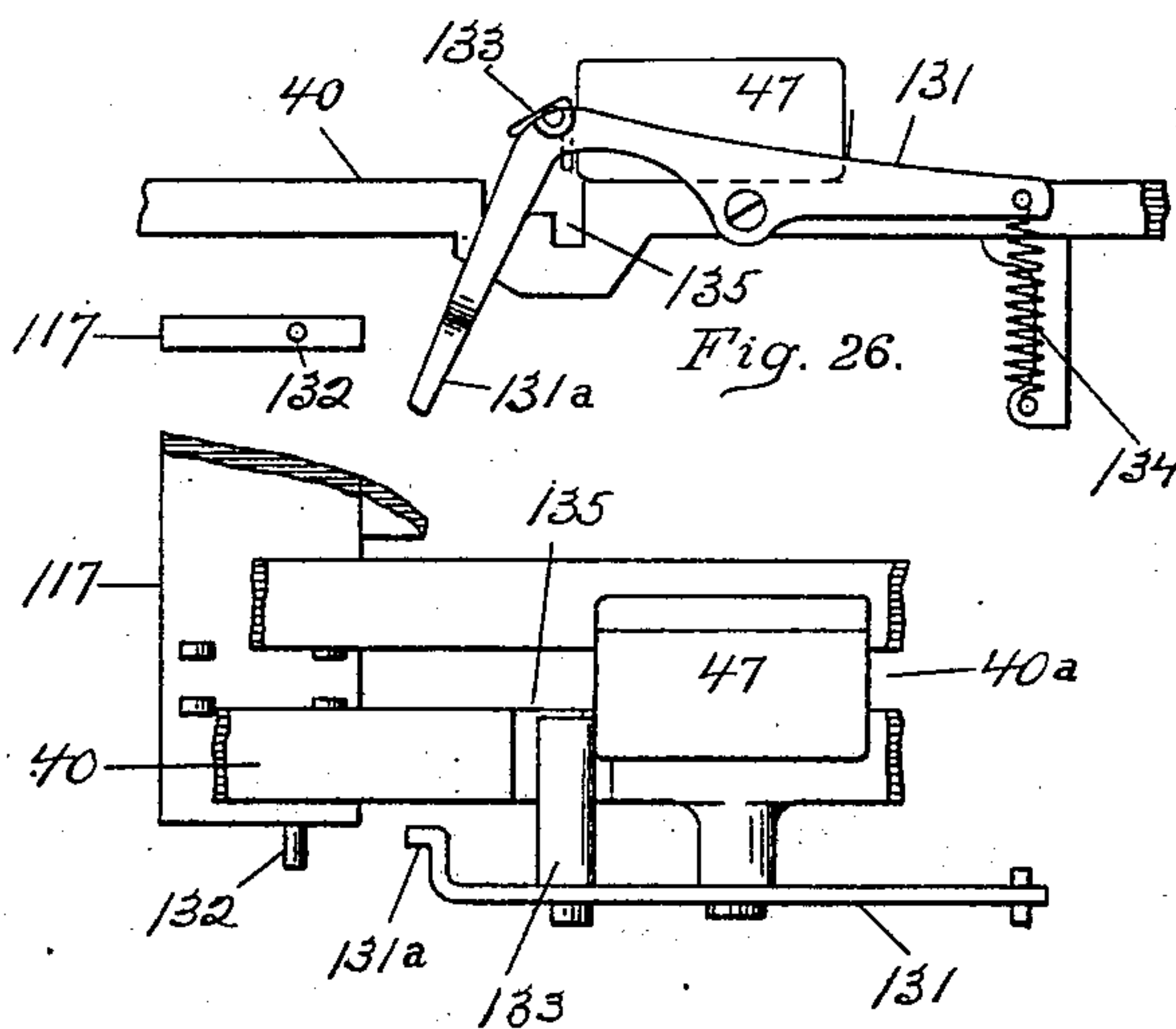


Fig. 26.

Fig. 27.

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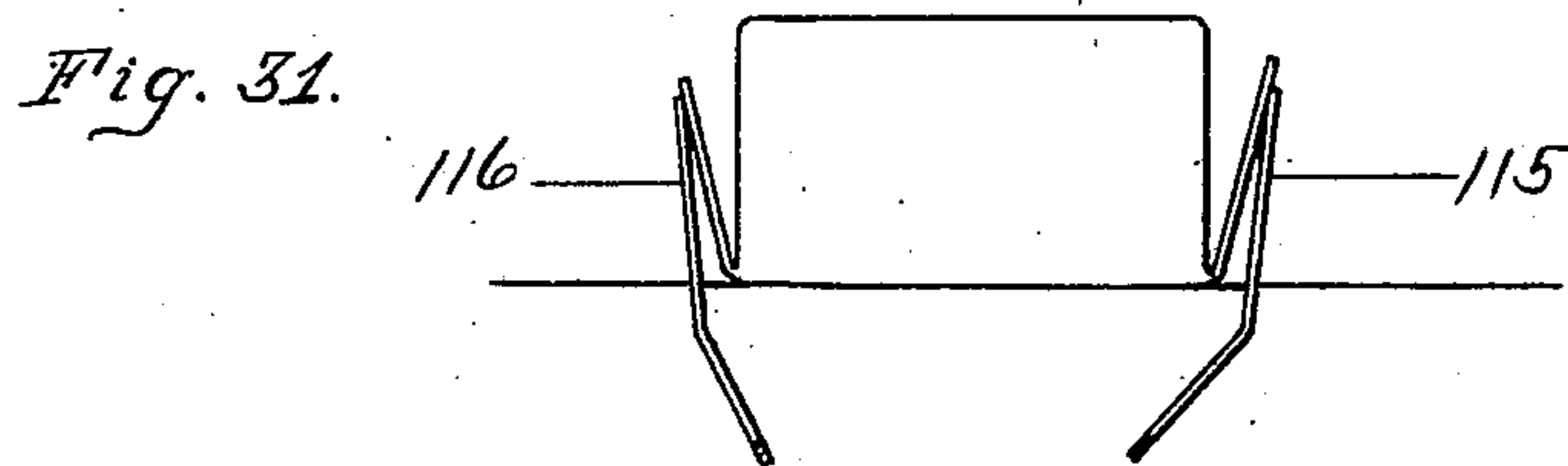
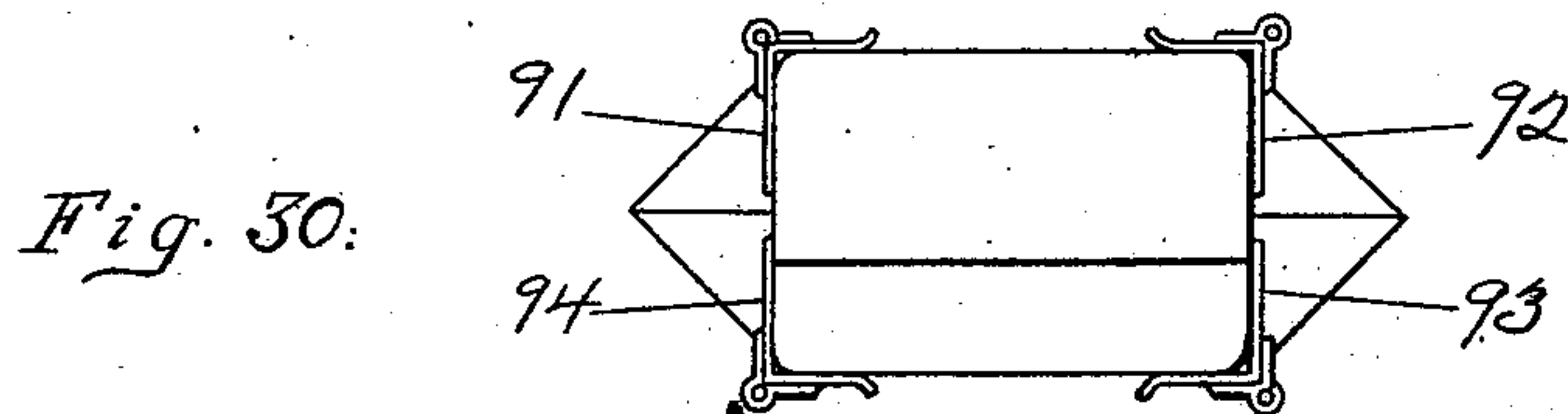
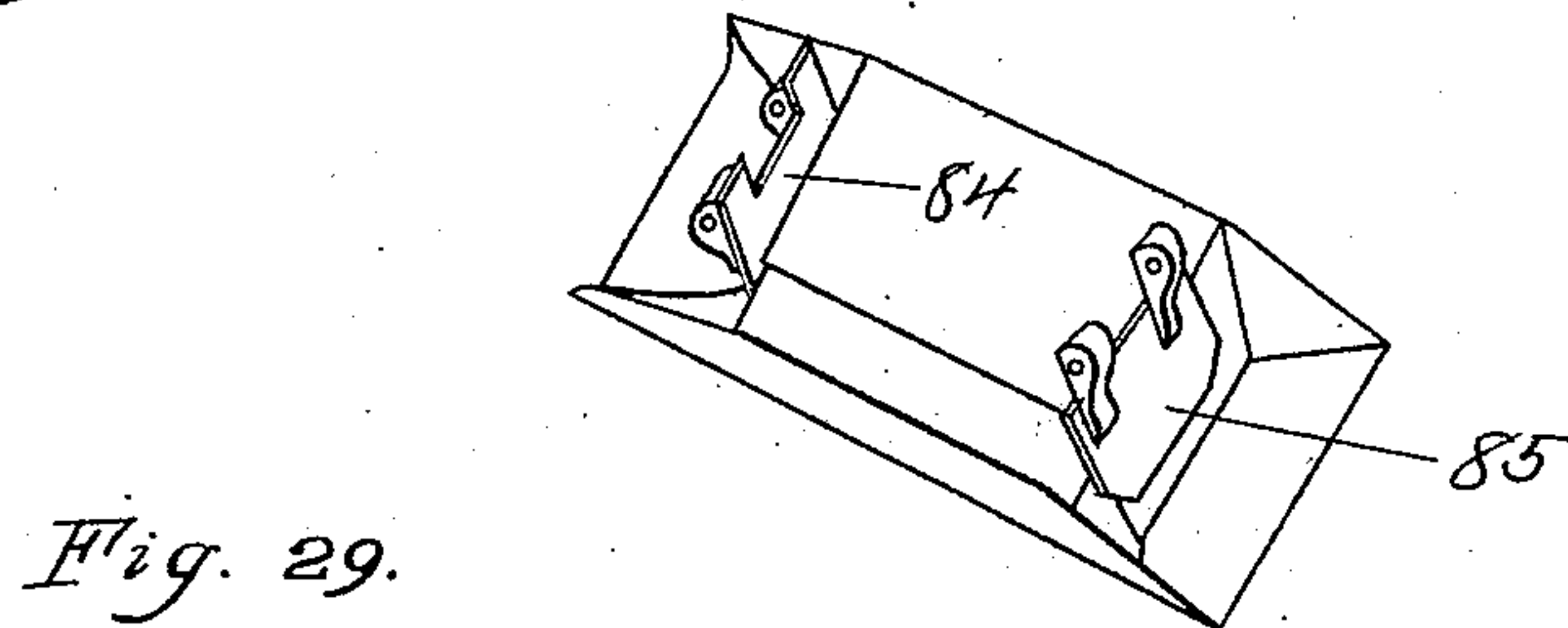
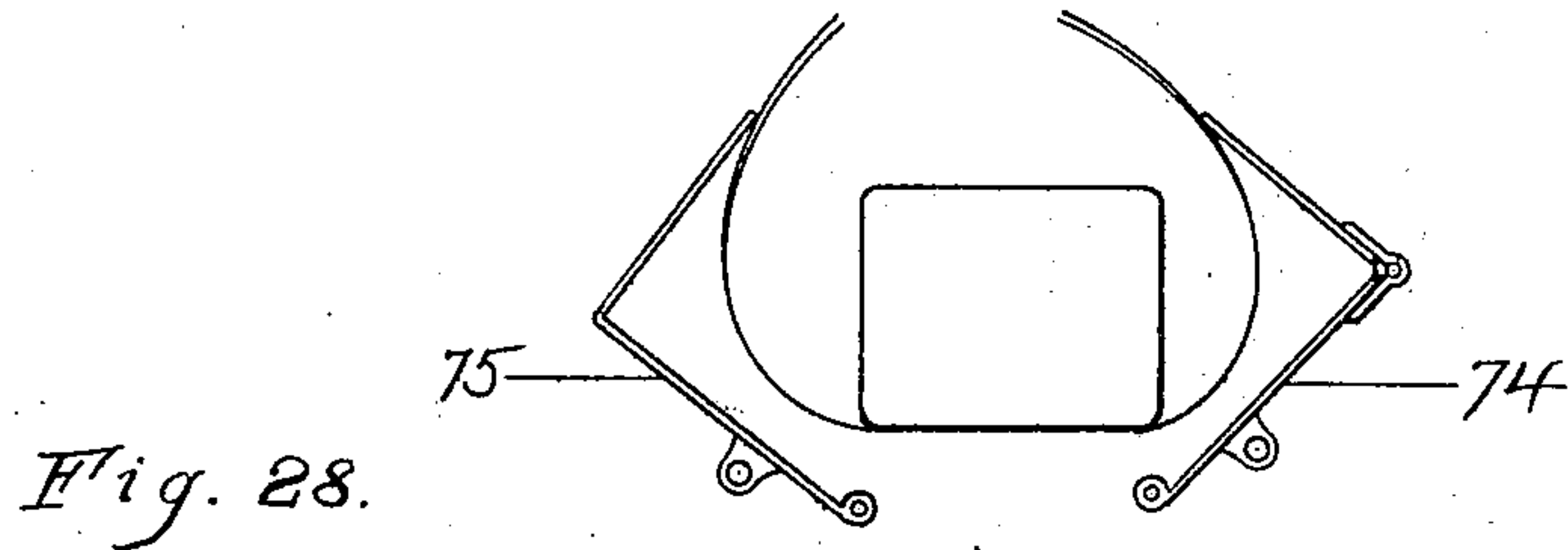
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UNITED STATES PATENT OFFICE.

EDWARD NELSON, OF KANSAS CITY, MISSOURI.

WRAPPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 680,064, dated August 6, 1901.

Application filed April 2, 1900. Serial No. 11,126. (No model.)

To all whom it may concern:

Be it known that I, EDWARD NELSON, a citizen of the United States, and a resident of Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Wrapping-Machines, of which the following is a specification.

My invention relates to improvements in wrapping-machines for folding the necessary wrappers upon cakes of soap, candy, or other material; and it consists particularly in providing new means for feeding the strips of wrapping-paper into the machine and cutting the same off into sections of proper size and new means for feeding the cakes of the material up to the wrapping-point and carrying them therefrom after being wrapped toward the discharge end of the machine; also, in providing folders of new and peculiar construction and adjustment, new means of bringing said folders into action on the package, so as to make the various required folds of the wrappers, and new means of withdrawing the respective folders after they have been operated.

In the accompanying drawings, Figure 1 is a general elevation of the front or feed side of the machine, with some parts removed for greater clearness and others shown in vertical section. Fig. 2 is an elevation seen from the side of the machine opposite to that shown in Fig. 1, with parts not immediately involved removed and others in vertical section, showing the devices for feeding the strips of paper into the machine. Fig. 3 is a detached elevation of the pivoted cutter-arm and stationary cutter shown in Fig. 2, with the cutters in position occupied immediately after cutting the paper. Fig. 4 is a front elevation of the paper-cutters detached, with the support of the stationary cutter partly in section. Fig. 5 is a detached elevation of part of the cam-wheel and the friction-roller for actuating the paper-feed rollers shown from a different point of view in Fig. 2. Fig. 6 is a detached front view of three parallel guide-rods, shown in cross-section in Fig. 2, between which the strips of paper pass on their way to the cutters. Fig. 7 is an elevation, seen from the left-hand side of the machine, of the pivoted cutter-arm shown in side ele-

vation in Figs. 1, 2, and 3. Fig. 8 is an elevation on the front of the machine of parts immediately employed in drawing the paper into the machine. Fig. 9 is a detail perspective view of a cross-head and the grippers attached thereto. Fig. 9^a is a broken-away view of the actuating devices for the movable gripper. Fig. 10 is an additional elevation, partly in section, of the cam-wheel shown in Fig. 8. Fig. 11 is a top plan view of the soap-carrier and other devices for feeding soap into the machine, with adjacent parts. Fig. 12 is a side elevation of the soap-carrier bar, soap-pocket, and cooperating parts. Figs. 13, 14, and 15 are similar views showing said carrier-bar and connected parts in different positions assumed by them during the operation. Fig. 16 is a detached plan view of the under side of the rotating bottom plate of the soap-pocket. Figs. 17 and 18 are general elevations of the top and end folders and immediately-associated parts, seen from the rear of the machine, with parts in section and other parts removed. Fig. 19 is a top plan edgewise view of one of the lateral end-folders. Fig. 20 is a detail elevation of a vertical post for operating the top-folders, shown also in Fig. 1. Fig. 21 is a cross-section of the same. Fig. 22 is an end elevation of a yoke which carries the top end-folders. Fig. 23 is a similar elevation of said yoke and the bracket on which it is mounted, with associated parts, partly in section. Fig. 24 is a side elevation, partly in section, of the slotted folding-table, showing also in edgewise elevation the bottom end-folders, also the carriage on which said folders are mounted and the means for operating said carriage and folders. Fig. 25 is a top plan view of said carriage and a portion of the slotted track-plate on which it travels, also a portion of the slotted folding-table. Fig. 26 is a side elevation of a retaining-lever mounted on the side of the folding-table. Fig. 27 is a top plan view of the same. Fig. 28 shows the top-folders making the top folds of the wrapper. Fig. 29 shows the top end-folders completing the downward end folds. Fig. 30 shows the lateral end-folders completing the lateral end folds. Fig. 31 shows the bottom end-folders making the upward end folds.

In the following description the view shown in Fig. 1 is considered a front view, and ref-

erences to the relative location of various parts, the direction of movements, &c., will for convenience be based on this supposition, without, however, intending to limit the arrangement of the parts to the various positions indicated.

The machine is provided with a suitable frame, including sides 1 2, a skeleton top 3, and cross rods or bars 4 5 6 7 8 9. The power-shaft 10, driven by a pulley 11, is mounted in the sides of the frame and carries a series of cams 12 13 14 15 16, which actuate either by edgewise contact or by means of lateral cam-tracks various vertically or laterally acting members, which in turn actuate the various mechanisms, as hereinafter referred to.

The means of feeding the strips of paper into the machine and cutting them off in suitable sections to form a wrapper will first be described. (See Figs. 1 to 10.) The general object of the machine being to inclose each cake of the material in two wrappers, an inner and an outer one, both of which are applied simultaneously, two paper-reels 17 18 are provided, rotatably mounted in brackets 19 20, extending from the frame, the lower reel 17 for the outer wrapper and the upper one 18 for the inner wrapper, which is usually of less width than the outer one. Fig. 2 shows the course of the paper strips as they pass into the machine. From the reels they first pass between horizontal guides 21 and feed-rollers 22 23, supported on brackets 24 25, extending from the frame. Said feed-rollers are driven by the edgewise contact with roller 22 of a friction-wheel 26, mounted on a bracket 27, said wheel 26 being driven by frictional contact with the lateral face of cam-wheel 16. Friction-wheel 26 has a radial adjustment across the face of cam-wheel 16, said adjustment being effected by turning the knurled wheel or knob 27^a, which turns the screw 27^b, which enters a threaded perforation in the block 27^c, to which the spindle of wheel 26 is secured. Block 27^c is slidably mounted on bracket 27 between guide-plates 27^d, which extend into grooves in the sides of said block and are secured to said bracket. By this means the length of wrappers cut by the machine may be changed for different-sized packages. Rollers 22 23 are kept pressed together by the action of a spring 28, and their tension draws the paper from the reels. In operation said feed-rollers 22 23 are rotated continuously, while the operation of the devices for drawing the paper into the machine is intermittent, so that during the interval a slack in the paper develops, as shown in Fig. 2, sufficient to form a wrapper, so that when the traction devices operate there is no resistance from the rollers. Leaving said rollers, the paper passes through an opening 29 in the lateral face of a pivoted cutter-arm 30, hereinafter described, and thence between horizontal guides 31 on the frame, (shown in detail in Fig. 6,) where the cut end is held after each operation of the cutters projecting

upward in readiness to be engaged by the traction devices, which will now be described. (See Figs. 1, 2, 8, and 9.)

The cam 14 on shaft 10 has on a portion of its periphery a sinuous cam-groove 32, which engages intermittently a pin or roller 33 on the end of a lever 34, pivoted about centrally to a cross-bar 6 of the frame. Said lever 34 is oscillated once from left to right and once from right to left during each revolution of cam 14 and during the intervals is stationary. The upper end of said lever 34 is connected by a pin-and-slot joint to a feed-arm 35, pivoted on a cross-bar 8 of the frame, a slot on the inner face of the lever engaging a pin on the outer face of said arm, or vice versa, so that said arm is oscillated by the movements of said lever. Near the upper end of said feed-arm 35 is firmly secured therein a cross-head 36, which extends inwardly at a right angle to said arm, partly across the machine. Said cross-head 36 carries, pivoted thereto at its outer end, a soap-carrier bar 37, to be hereinafter described. It also carries the grippers 38 39 for seizing the cut end of the paper strips and drawing them across the folding-table 40. Said grippers are two in number, consisting of slightly-curved bills or prongs, flattened at the points, set opposite each other like the blades of a pair of nippers. The upper gripper 38 is rigidly attached to the cross-head 36 at the proper angle, so that when the cross-head is thrown toward the cutters, as in Fig. 2, said upper gripper will pass to the upper side of the edge of the paper 41, held in the guides 31. The lower gripper 39 (see Fig. 9) is pivoted on the under surface of cross-head 36 on an integral shaft 42, rotatably mounted in suitable bearing-blocks 43. Said shaft 42 carries, rigidly secured thereto at its outer end adjacent to feed-arm 35, a depending trip-lever 44, to which is attached a spring 45, fixed at its other end to arm 35. The stress of said spring holds the grippers closed except when they are opened to receive the edge of the paper, which opening is effected while cross-head 36 is moving toward the guide 31, to the right in Fig. 2 or to the left in Fig. 8, by trip-lever 44 coming in contact with a stationary pin 46, projecting from the frame. The grippers are held open until cross-head 36 has completed its throw and the edges of the paper strips have passed between them. At this moment trip-lever 44 is released from contact with pin 46, and the grippers immediately close on the paper by the operation of spring 45. Feed-arm 35 then begins its return throw to the left in Fig. 2 and to the right in Figs. 1 and 8, and the paper is drawn across the folding-table until the throw of arm 35 is nearly completed and the slack in the paper strips, before referred to, has been taken up, at which moment the tension on the paper causes it to slip from between the grippers, after which it lies stationary on the table ready for the deposit of the cake of the material. Trip-lever 44 is so

constructed and adjusted that it wipes past pin 46 during the return throw of arm 35, just described. This construction and adjustment consists in making the trip-lever of springy material and forming a slight twist in it from end to end, the twist being shown as clearly as possible in Fig. 11. The adjustment is such that when the arm 35 moves toward the paper-cutters the forward edge of the trip-lever 44 strikes the pin 46 and is thereby held until it is carried past the pin. When the arm 35 recedes, the other edge of the trip-lever lies in a plane outside of the end of pin 46, so that the pin strikes the inner side or face of the trip-lever, which slips past the pin by virtue of its elasticity.

The soap-feeding devices are illustrated in Figs. 1 and 7 and 11 to 16. The cake of material 47 is delivered to the machine through a chute 48, supported on a bracket 49 at the side of the machine. The carrier-bar 37, as before stated, is pivoted to the rear end of cross-head 36 and is therefore oscillated longitudinally across the machine simultaneously with said cross-head. Said carrier is preferably a flattened bar rectangular in cross-section, as shown in Fig. 7. Its under edge is of irregular outline, having a curved recess 50 near the pivoted end to prevent contact with the cutter-head and widening out in rear of said recess to provide space for the attachment of the parts forming the soap-pocket. The outer end of said rod is guided and supported in a vertically-slotted bracket 51, extending upwardly from the movable cutter-head 52. The upper end of the slot in said bracket (see Fig. 7) is closed by a pin 53 or otherwise to prevent bar 37 from being thrown out of the slot during its movements.

The soap-pocket is attached to bar 37 at such a point that when said rod is retracted to the limit of its throw to the left in Fig. 1 and momentarily at rest said pocket will be in alinement with feed-chute 48 in position to receive a cake of material. Bar 37 carries a horizontal bracket 54, having a curved lower edge, and on the side toward the machine a flat vertical face 55, which forms one side of the rectangular pocket. The inner end of the pocket is formed by the side of bar 37. The side of the pocket opposite the face 55 of bracket 54 is formed by a vertical angular plate 56, secured on bar 37. A spring 57, secured on bar 37 or plate 56 and bent laterally at a right angle across the opening of the pocket, holds the cake of material from slipping out of the pocket after being deposited therein. Said spring 57 is retracted to admit the material by contact with the side of chute 48 or a pin 58 thereon when bar 37 reaches its limit of movement to the left. The movable bottom 59 of the pocket consists of a flat plate of irregular form pivoted at 60 on the under side of bracket 54. It is forced into position to form the bottom of the pocket, as in Fig. 11, when bar 37 approaches the limit of its throw to the left, by

its outer edge contacting with a stop 61, extending from the cutter-head 52, which is at that time stationary. The rotation of said plate in either direction is limited by a stop-pin 62, set in the under surface of bracket 54 within a notch 63, Fig. 16, formed in the outer end of said plate. The cake of material being in position in the pocket is carried into the machine by the movement of cross-head 36, carrier-bar 37, &c., to the right. The first result is to release spring 57, so that its bent portion will lie partly across the hitherto-open end of the pocket and hold the cake therein during the subsequent movement. The pocket first slides along the upper surface of the cutter-head 52, after leaving which the upwardly-curved under edge of bracket 54, moving over the front edge of said cutter-head, permits the pocket to settle to the level of the table. As the pocket approaches the folding-point immediately over the slot in the front end of table 40 a recess 64 in the bottom plate 59 contacts with a stationary pin 65 on the table and rotates said plate backward from under the cake, so that the cake drops from the pocket upon the paper already deposited on the table, as before described. The next operation is the advancement of the cutter-head 52 to cut off the wrapper from the strips to which it is still attached, and the cutters will now be described. (See Figs. 1, 2, 3, 4, and 8.) The stationary cutter 66 consists of a serrated blade secured on the frame and set vertically across and below the path of the paper after it has passed through the guides 31, between said guides and the folding-table. The movable cutter 67 consists of a similarly-serrated blade fixed on the front edge of the cutter-head 52 above the path of the paper. The cutter-head consists of a suitable plate to support said cutter and is carried on the upper end of the bent cutter-lever 30, pivoted on the frame at 68. Said lever carries at its lower end a roller 69, which engages an angular projection 70 on the periphery of cam-wheel 16 once with each revolution of said wheel. When the cutter-head is carried forward by the action of said cam, the teeth of the cutters are brought into intimate engagement with each other and afterward pass each other, as shown in Fig. 3, the paper meanwhile lying between them, and the paper to form the wrappers is severed from the strip, leaving the wrappers lying one over the other on the table, with the cake lying above both. The cutter-head is retracted after operation by a spring 52^a interposed between arm 30 and the frame. The operation of lifting bar 37 to elevate the pocket and entirely disengage the material therefrom occurs simultaneously with the advancement of cutter-head 52 just described and is in part effected thereby. The bar 37 contains near its outer end a vertical slot, (indicated in dotted lines in Fig. 12,) in which is loosely pivoted a depending lifter-rod 71, adapted to pass, with

bar 37, through the vertical slot in bracket 51. Said lifter 71 consists of a slender metal rod or plate bent twice, so as to form an angle 72, adapted to engage a transverse pin 73 near the bottom of the slot in bracket 51. As shown in Figs. 13 and 14, the carrier-bar 37 during its feeding-in throw (to the right) draws the lifter after it through said slot, the cutter-head being stationary, and when the bar has reached the end of its throw said lifter will occupy the position shown in Fig. 15. The cutter-head then begins its advance, elevating bracket 51, and pin 73 contacts with the angle 72 in the lifter, pushing up bar 37. The lifter is rotated backward through the slot on pin 73 as a pivot and when the cutter-head has reached the limit of its advance movement will stand about vertically in the slot. At this stage the pocket will have been lifted entirely clear of the cake of material, and bar 37 is then retracted by the throw to the left of cross-head 36, before described in connection with the paper-feed, the lifter 71 dropping out of engagement with pin 73 into inactive position, as in Fig. 12. The folding operation next occurs, its object being, first, to turn up from below a fold of the paper upon each side over the top of the package, the folders for effecting which will be termed the "top-folders;" second, to turn down from above a fold of the paper upon each end of the package, the folders for effecting which will be termed "top end-folders;" third, to turn in from each side at each end of the package lateral folds, the folders for effecting which will be termed "lateral end-folders," and, fourth, to turn up from below at each end of the package a final fold, the folders for effecting which will be termed "bottom end-folders."

The top-folders 74 75, Figs. 1, 17, and 23, consist of substantially right-angular blades of sheet metal hinged in recesses upon each side of the slot 40^a in the folding-table and are pushed up over the cake of material, carrying the folds of the wrappers 76 with them, by contact with the prongs 77 of a vertically-reciprocating forked post 78, mounted in guides 79, Figs. 20 and 21, on cross-bars 6 8, and actuated at the proper moment by a lateral cam-track 80 in cam-wheel 14, which engages a pin 81 on the lower end of said post. Said folders are shown closed upon the cake of material in Fig. 18. Said folders are retracted at the proper moment, hereinafter stated, by the descent of post 78, which draws said folders after it by means of links 82, Fig. 17, connecting said folders and post. The one of said folders which operates first (number 74, as shown in the drawings) has, preferably, the two portions of its blade hinged together at the angle 83, so that when retracted from the package the upper portion of blade 74 will yield slightly and prevent the throwing up of the fold made by the opposite folder 75, which then lies above said hinged blade. After said top-folders have operated they remain

in position in engagement with the package until all the other folders have been operated. The top end-folders 84 85 for making the downward end folds on the wrappers are pivoted on the lower ends of a yoke 86, which straddles a bracket-arm 87, projecting over the folding-table at a right angle from a vertically-reciprocating post 88, which is actuated intermittently by a lateral cam-track in cam-wheel 13 engaging a pin on said post. While the top folds before described are being made and during most of the other operations of the machine thus far mentioned, post 88, bracket 87, &c., are in elevated position, as shown in Figs. 1 and 17. As said top folds are being completed bracket 87 begins to descend, carrying yoke 86, folders 84 85, &c. Said folders are shown completing the end folds in Fig. 29. Said folders, Figs. 17 and 22, are hinged horizontally on the lower ends of yoke 86 and consist of flat blades which hang downwardly and are provided at their upper margins with inwardly-extending flanges or tongues 89. When said folders are inactive, the vertical blades swing outwardly and are so held by springs 90, which bear against the flanges 89. When said end-folders are brought down to the folding-point, their edges contact with the extending margins of the wrapper and press them downward against the ends of the package. The flanges 89 on said end-folders impinge against the upper blades of the top-folders 74 75, now lying in folded position over the package, rotating said end-folders on their pivots against the stress of springs 90 and pressing their vertical blades firmly against the package, completing the top end folds. When said end-folders 84 85 are released from the package at a later stage of the operation, they are returned to their normal open or flaring position, as in Fig. 22, by the action of springs 90. Before the release of said last-mentioned folders from the package the lateral end-folders 91 92 93 94, Figs. 1, 17, 18, 23, and 30, are brought into action. Said folders are hinged vertically on reciprocating carriages 96 97, which slide in opposite directions on ways 98 on bracket-arm 87. Said folders (see detail Fig. 19) are four in number, one for each corner of the package, and consist of substantially right-angular blades or wings provided with springs 99, so adjusted that the longer wings, which are to engage the margins of the paper, are made to normally swing outward, as seen in Fig. 23, the better to engage the margins of the paper, and when in action said wings are pressed inward upon the package against the stress of said springs by contact of the top-folders 74 75, which still inclose the package, with the shorter wings. End-folders 91 92 93 94 are shown completing the lateral end folds in Fig. 30. After being released from the package said lateral end-folders are retracted by the operation of said springs. Said lateral end-folders are lowered to the level of the package by the descent of post 88, bracket 87,

&c., and immediately thereafter one set of said folders 91 94 is pushed against the package by the action of the eccentric cam 12, Fig. 1, elevating a vertically-reciprocating post 100, mounted in guides 100^a on the frame, which post impinges on an irregularly-shaped block 101, pivoted in the frame at 102, which lever in turn pushes on a rod 103, pivoted to it at 104, which rod 103 is also pivoted to the folder-carriage 96. Simultaneously with the operation just described the other set of lateral end-folders 92 93 is pulled against the package by a rod 105, pivoted to folder-carriage 97, and also at 106 to a downward projection of block 101. Just before said lateral end-folders are brought into close contact with the package to complete their folds and before bracket 87 is elevated the top end-folders 84 85 are lifted from engagement with the package and out of the way of said lateral folders by the action of a lever 107, Figs. 17, 18, and 23. Said lever is of substantially right-angular form and is pivoted at 108 in post 88. One arm of said lever extends downwardly into the path of a projection 109 on the rotating block 101, by which said lever is actuated, as in Fig. 18. The other arm extends horizontally and passes through the vertical slot 110 in yoke 86. Said yoke has a vertical movement in grooves on bracket 87, being lifted to its elevated position on the bracket by the operation of lever 107, and, when said lever permits, falling to its lower position by gravity. It is held in its lower position, so as to operate the top end-folders 84 85 when bracket 87 descends, by a bent latch 111 on the yoke, having a notch 112 engaging a catch 113, fixed on the bracket 87. The upper extension of said latch passes over the outer end of lever 107, projecting through slot 110, the outer end of said latch being movably held in a bridge-piece 114 on yoke 86. When the moment for lifting folders 84 85 arrives, lever 107, actuated as stated, first lifts latch 111 out of engagement with catch 113, and then bearing against the upper end of slot 110 lifts the yoke itself to the position shown in Fig. 18. This lifting of yoke 86 is merely sufficient to take folders 84 85 out of the way of the lateral end-folders, all said folders subsequently partaking in the general upward movement of bracket 87, post 88, &c. All the folders thus far described being in the positions shown in Fig. 18, the bottom end-folders 115 116 are next operated. (See Figs. 18, 24, and 25.) Said bottom end-folders are hinged on a carriage 117, which reciprocates on a slotted track-plate 118, rigidly secured to the upper end of a vertically-reciprocating post 119, actuated intermittently by a cam-track 15^a in the side of cam 15, by the action of which cam the track-plate, carriage, and the folders thereon alternately rise and fall. Said track-plate 118 is located immediately below the stationary cutter 66 and extends partly across the machine transverse to the path of the paper and parallel with but below the longitudinal slot 40^a in the table 40. The

carriage extends under the table 40 and the folders are so located thereon that they project up into or through said slot. Said bottom end-folders 115 116 consist of two irregularly curved or bent blades, each pivoted, about midway of its length, to carriage 117, with the inner edge of one them, 116, lapping over the inner edge of the other, 115. Said overlapping edge carries a transverse pin 120 of greater length than the width of slot 40^a in the table. The inner flange of the other folder 115 is provided with a spring 121, interposed between it and the carriage-body, the stress of which spring tends to throw said folders apart into the open position shown in dotted lines in Fig. 24. The wrapping process being at the stage last referred to, the blades 115 116, in open position, are projected up through slot 40^a, one of them at each end of the package, by the elevation of carriage 117, as before described, and when transverse pin 120 on blade 116 strikes the undersurface of table 40 at the margins of slot 40^a the upper ends of said blades are forced inward against the ends of the package, carrying with them the bottom end folds of the wrappers and completing all the folds. Said folds are shown forming the final end folds in Fig. 31. Said folders 115 116, owing to the position of the various folds on the package, are now sufficient to hold the wrappers in place, and all the other folders are withdrawn. Those carried on bracket 87 are first lifted from the package by the action of cam 13, post 88, &c., elevating said bracket. Top folders 74 75 are then lowered by the action of cam 14 drawing down post 78, connected to said folders by the links 82, and simultaneously with the latter movement the fully-wrapped package still held between the blades 115 116 is carried along the table toward the discharge end by the operation of a carriage-reciprocating lever 122, hereinafter described. Folder-carriage 96 is retracted to inoperative position, as in Fig. 17, when the bracket 87 ascends by means of a stationary hook 123 on the frame engaging a projecting pin 124 on block 101, rotating said block and pulling on rod 103. Folder-carriage 97 is retracted at the same time in the opposite direction by rod 105, pivoted on the lower end of block 101, pushing against it.

The lever 122, Figs. 1 and 24, which causes carriage 117 to reciprocate on track-plate 118, is pivoted at its lower end to a cross-rod 5 of the frame. It extends upwardly and passes through slot 118^a in plate 118, and also through a slot 125 in an extension 126 of the carriage. Within said slot 125 are mounted transversely antifriction-rollers 127, between which the lever extends, so as to always bear against one of them. Said lever 122 carries on one side a pin or roller 128, which contacts with the peripheral edge of the eccentric cam-wheel 15, being held in contact with said cam by a spring 129, secured at its outer end to a bracket 130 on the frame. In Fig. 24 the parts are shown in the positions occupied by

them immediately after the folders 115 116 have been brought into engagement with the package. Cam-wheel 15 now rotating in the direction of the arrow, lever 122 is thrown to the position shown in dotted lines, drawing carriage 117, conveying the wrapped package, after it. The plate 118, carriage 117, and folders 115 116 continue in elevated position until lever 122 has reached the end of its throw, when they are drawn down to position shown in dotted lines by the action of lateral cam-track 15^a on post 119, said folders falling to open position by the action of spring 121. Said lever and carriage are retracted at the proper moment when permitted by cam 15 by the tension of spring 129. Carriage 117 is always in elevated position when moving toward the discharge and in lowered position when being retracted, and remains in lowered position until the time arrives for folders 115 116 to engage the package. The wrapped package is now left on the table in contact with the last of the row of packages which have preceded it. Such contact is sufficient to hold the folds of the wrapper in place at the outer end of the package after folders 115 116 are withdrawn; but inasmuch as the folds at the inner end toward the machine would otherwise spread and become loose when released from folder 116 means are provided to hold said last-mentioned folds in place until the following package is brought against them. Figs. 26 and 27 show the device referred to. A lever 131 is pivoted on one side of table 40, so as to move in a vertical plane. It has a downward extension 131^a, bent inwardly and then again downwardly, so that its lower end will lie in the path of a pin 132, extending from the moving carriage 117. An angular arm or stop 133, fixed on said lever, extends part way across the table as far as the margin of slot 40^a, so that when in elevated position it will lie in the path of the wrapped packages passing along the table toward the discharge, in which position it is normally held by a spring 134, connected to the lever and frame. When the carriage reciprocates toward the discharge, the pin 132 thereon contacts momentarily with the lower end of lever 131, depressing said lever against the stress of spring 134, the arm 133 dropping into a transverse slot 135, provided for it in the table. During the continuance of such depression of said arm the margin of the package passes partly over it, and when the arm is released by the disengagement of pin 132 and lever 131 said arm presses upward, owing to the tension of spring 134, against the bottom of the moving package, and as soon as the package has moved far enough said arm rises and its vertical outer face contacts with the inner end folds of the wrappers, as in Figs. 26 and 27, and so remains until the coming of the succeeding package. In this manner a continuous succession of wrapped packages in contact end to end are moved on toward the

discharge. The inner face of the angular arm 133 is inclined downwardly to prevent undue friction with the packages passing over it.

To keep the packages in line, guides 136 (shown in Fig. 1) are provided, extending longitudinally along the extension of the table 40.

The operation of the various parts of the machine having been stated in connection with the description of their construction, a recapitulation of the operation is unnecessary. It is to be understood that while the description has followed as nearly as possible the order of the operation of the parts upon the material the operations first described are taking place before those last described are completed, the parts being so arranged and adjusted as to operate and cooperate at the proper moment and in as rapid succession as possible. In the machine as shown a fully-wrapped package is discharged with each revolution of the shaft.

The specific construction of the details of the machine in which the novel features are embodied may be variously changed without departing from the essential principles claimed as new, and I do not limit my invention to the precise details shown.

Having described my invention, I claim as new and desire to secure by Letters Patent—

1. In a wrapping-machine, a paper traction device comprising an oscillating arm, a cross-head secured to the upper end of said arm transversely to the path of the paper; an upper gripping-bill secured rigidly to the cross-head; a rocker-shaft parallel to the cross-head and mounted in bearings secured thereto; a movable gripping-bill secured to one end of said shaft in alinement with said upper bill; a depending lever secured to the opposite end of said shaft, said lever being made of springy or resilient material and slightly twisted; a spring having one end secured to said oscillating arm and its other end secured to said lever, for pressing said bills together; and a stationary pin, arranged in the path of said lever, operating to engage the lever and separate said bills when the bills are moved toward the paper to engage it, and said lever slipping past said pin when the bills carry the paper back; substantially as described.

2. In a wrapping-machine, a folding-table, a cross-head, means for oscillating said cross-head intermittently across said table, a carrier-bar actuated by said cross-head, means for supporting the outer end of said bar, a pocket secured to said bar, adapted to receive a cake of the material, carry it to the folding-table and deposit the same thereon, substantially as set forth.

3. In a wrapping-machine, a folding-table, a cross-head oscillating intermittently above said table, a carrier-bar actuated by said cross-head, means for supporting the outer end of said bar, a feed-pocket secured on said

bar, having its sides formed by lateral projections from said bar, a pivoted bottom for said pocket, adapted to support the material during the feeding-in movement of said arm, and means for rotating said bottom out of such supporting position, at the end of said movement, substantially as set forth.

4. In a wrapping-machine, a folding-table, a cross-head oscillating intermittently above said table, a carrier-bar actuated longitudinally by said cross-head, means for supporting the outer end of said bar, a stationary feed-chute, a feed-pocket secured on said bar and adapted to register with said chute at the proper moment, said pocket having its sides formed by lateral projections from said bar, a pivoted bottom for said pocket adapted to support the material during the feeding-in movement of said bar, means for rotating said bottom out of such supporting position, to deposit the material on the table, a spring at the outer end of the pocket adapted to hold the material therein, and means for retracting said spring to admit the material from said chute, substantially as set forth.

5. In a wrapping-machine, a folding-table, a cross-head oscillating intermittently above said table, a carrier-bar actuated longitudinally by said cross-head, a feed-pocket mounted on said bar, a pivoted arm at the side of the frame, means for alternately advancing and retracting said pivoted arm, a bracket mounted on said arm, provided with a vertical slot through which the outer end of said bar extends, a lifter-rod vertically pivoted to said bar near its outer end and adapted to be drawn through said slot by said bar during the inward movement of said bar, said lifter being provided with a notch or angle adapted to engage the bottom of said slot, when said pivoted arm is advanced, and elevate said carrier-bar, substantially as set forth.

6. In a wrapping-machine, a folding-table, means of feeding a strip of wrapping material into the machine, traction devices for drawing such strip across said table, means for carrying a cake of the material to be wrapped into the machine and depositing it on said table, over the wrapper, means for severing the wrapper from the strip, means for releasing and retracting the carrying-in devices, and means for effecting the first folds of the wrapper over the top of the cake, consisting of substantially right-angular blades hinged at the sides of the table, a vertically-reciprocating post beneath the table, having a forked upper end adapted to engage said blades and push them up over the top of the package, and means of actuating said post intermittently, substantially as set forth.

7. In a wrapping-machine of the character described, a folding-table, top-folders consisting of substantially right-angular blades hinged at the sides of the table, a vertically-reciprocating post beneath the table, having a forked upper end adapted to engage said

blades and push them up over the package, flexible links connecting said blades and the forked ends of said post, for retracting said blades when said post descends, and means for actuating said post intermittently, substantially as set forth.

8. In a wrapping-machine of the character described, a folding-table, top-folders consisting of substantially right-angular blades hinged at the sides of the table, a vertically-reciprocating post beneath the table, having a forked upper end adapted to engage said blades and push them up over the package, one prong of said forked end being higher than the other, so that the folder against which it bears will be operated first, flexible links connecting said folders and the prongs of said fork, and means for actuating said post intermittently, substantially as set forth.

9. In a wrapping-machine of the character described, a folding-table, a vertically-reciprocating post at the side of the machine, means for actuating said post intermittently, a horizontal bracket-arm, fixed to said post and extending transversely over said table, a yoke straddling said bracket-arm, above said table, and having a vertical movement on said arm, means for holding said yoke stationary on said arm during its descent, top end-folders hinged to the lower ends of said yoke, parallel with said arm, and adapted to turn down the top end folds of the wrapper on the package, and means for releasing said yoke and moving it upward on said arm after said folders have operated, substantially as set forth.

10. In a wrapping-machine, a folding-table, a vertically-reciprocating post, means for actuating said post intermittently, a horizontal bracket-arm fixed to said post and extending over said table, a yoke straddling said bracket-arm vertically above said table, and having a vertical movement in guides on said arm, folders carried on the lower ends of said yoke for turning down the top end folds of the wrapper, a latch, having a notch therein, pivoted on said yoke and extending over said arm, a catch on said arm adapted to engage said notch and hold said yoke fixed on said arm during its descent, an angular lever pivoted on said post and having a horizontal arm extending through the slot in said yoke, beneath said latch, and means for tilting said lever at the proper moment, to release said latch and elevate said yoke on said arm, substantially as set forth.

11. In a wrapping-machine, a folding-table, a vertically-reciprocating post, means for actuating said post intermittently, a horizontal bracket-arm fixed to said post and extending transversely over said table, horizontal slide-ways on each side said arm, oppositely-reciprocating folder-carriages adapted to traverse said slideways, means for reciprocating said carriages at proper intervals, lateral end-folders pivoted vertically on said carriages, adapted to engage the lateral end folds of the wrap-

per and press them against the ends of the package, lying on said table, when said carriages are moved inward, substantially as set forth.

5 12. In a wrapping-machine, a folding-table, a vertically-reciprocating post, means for actuating said post intermittently, a horizontal bracket-arm fixed to said post and extending transversely over said table, horizontal slide-
10 ways on each side of said arm, oppositely-reciprocating folder-carriages adapted to traverse said slideways, folders pivoted vertically on said carriages, adapted to effect the lateral end folds, a rotating block pivoted on said
15 post, rods pivotally connected to said block and said carriages, so as to carry them both inward to the folding-table, to effect said folds, when said block is rotated in one direction, and to retract both said carriages when said
20 block is rotated in the opposite direction, and means for rotating said block intermittently, substantially as set forth.

13. In a wrapping-machine, a folding-table having a vertical longitudinal slot therein, a
25 vertically-reciprocating post mounted in the frame below said table, means for actuating said post intermittently, a track-plate mounted horizontally on said post, a reciprocating carriage slidably mounted on said track-plate,
30 means for reciprocating said carriage, folding-blades hinged on said carriage, adapted to be projected upward through said slot, to engage the partially-wrapped package on said table and effect the bottom end folds, sub-
35 stantially as set forth.

14. In a wrapping-machine, a folding-table having a vertical longitudinal slot therein, a vertically-reciprocating post mounted in the frame below said table, means for actuating
40 said post intermittently, a track-plate mounted horizontally on said post, a reciprocating carriage slidably mounted on said track-plate, means for reciprocating said carriage, bottom end-folders hinged on said carriage, said fold-
45 ers having upwardly-extending blades projecting into said slot, and inwardly-extending blades, one of which overlaps the other, a spring bearing against said overlapped blade, tending to hold said folders in open position,
50 a transverse pin on said overlapping blade, adapted to engage the sides of said slot when the folders are carried upward, and force said

upwardly-extending blades, against the stress of said spring, into engagement with the wrapper and package lying on said table, substantially as set forth. 55

15. In a wrapping-machine, a folding-table having a vertical longitudinal slot therein, a vertically-reciprocating post mounted in the frame below said table, means for actuating
60 said post intermittently, a track-plate mounted horizontally on said post, having a vertical longitudinal slot therein, a reciprocating carriage slidably mounted on said track-plate, folders carried on said carriage, adapted to
65 make the bottom end folds of the wrapper on the package, a lever pivoted on the frame, extending upward through the slot in said track-plate and attached to said carriage, and means for throwing said lever and carriage
70 toward the discharge end of said table and retracting the same to normal position, substantially as set forth.

16. In a wrapping-machine, a folding-table having a vertical longitudinal slot therein, a
75 reciprocating folder-carriage mounted below said table, folders mounted on said carriage, adapted to be projected upward through said slot and make the final folds of the wrapper on the package, means for throwing said car-
80 riage and the wrapped package held between the blades of said folders toward the discharge, means for withdrawing said blades from the package, and means for holding the folds of the wrapper at the inner end of the
85 package after said blades are withdrawn, consisting of a lever pivoted on the side of said table, an arm projecting inwardly from said lever into the path of the packages passing toward the discharge, at the point where each
90 package is left by the withdrawal of the folders, means for depressing said arm to permit the package to pass, a transverse recess in said table to receive said arm when depressed, and means for reëlevating said arm into con-
95 tact with the inner end of the package, substantially as set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

EDWARD NELSON.

Witnesses:

M. L. LANGE,

F. A. SPENCER.