

1,166,780.

L. C. PALMER.
LABELING MACHINE.
APPLICATION FILED DEC. 30, 1911.

Patented Jan. 4, 1916.
6 SHEETS—SHEET 1.

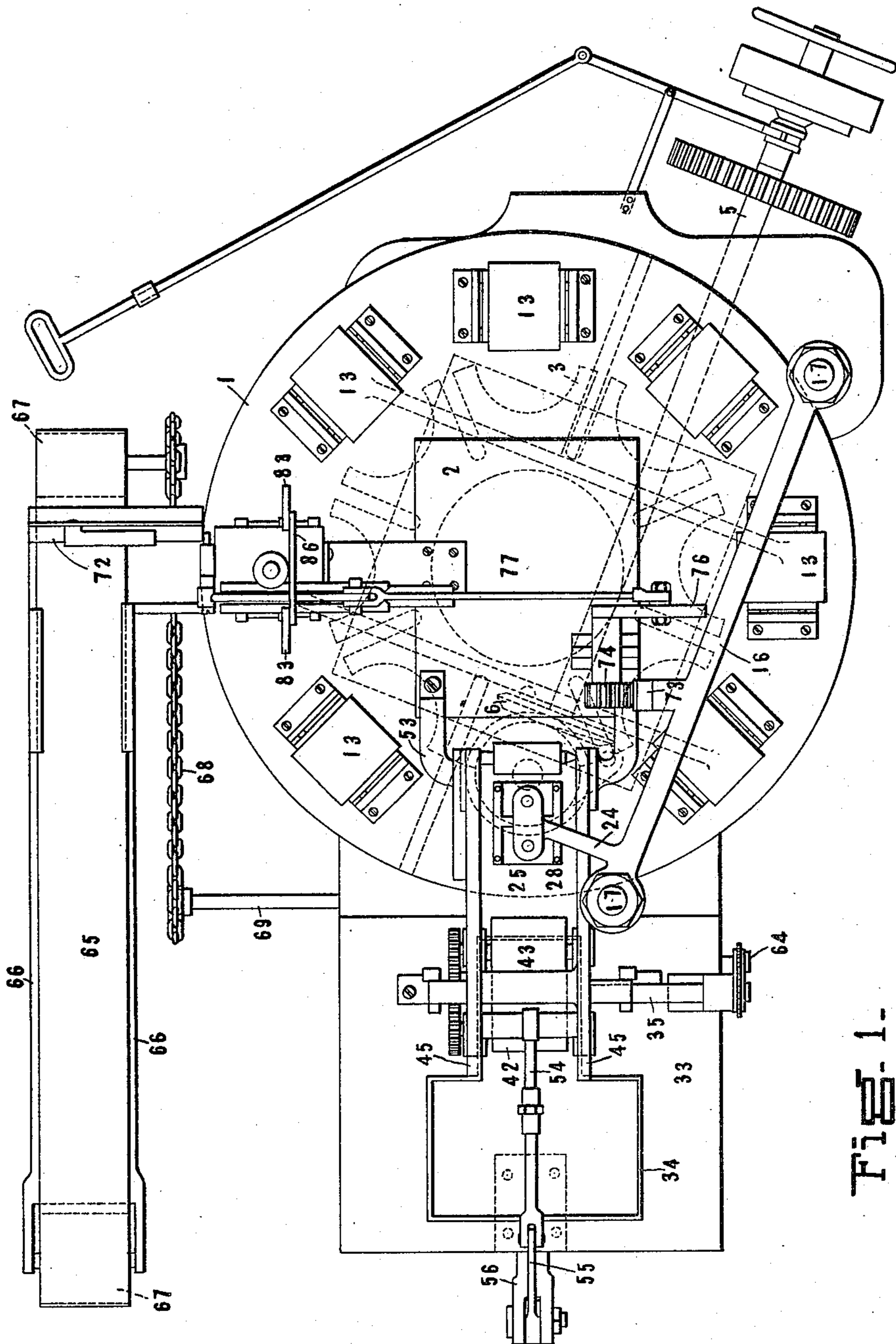


Fig. 1-

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Dull Warfield Dull

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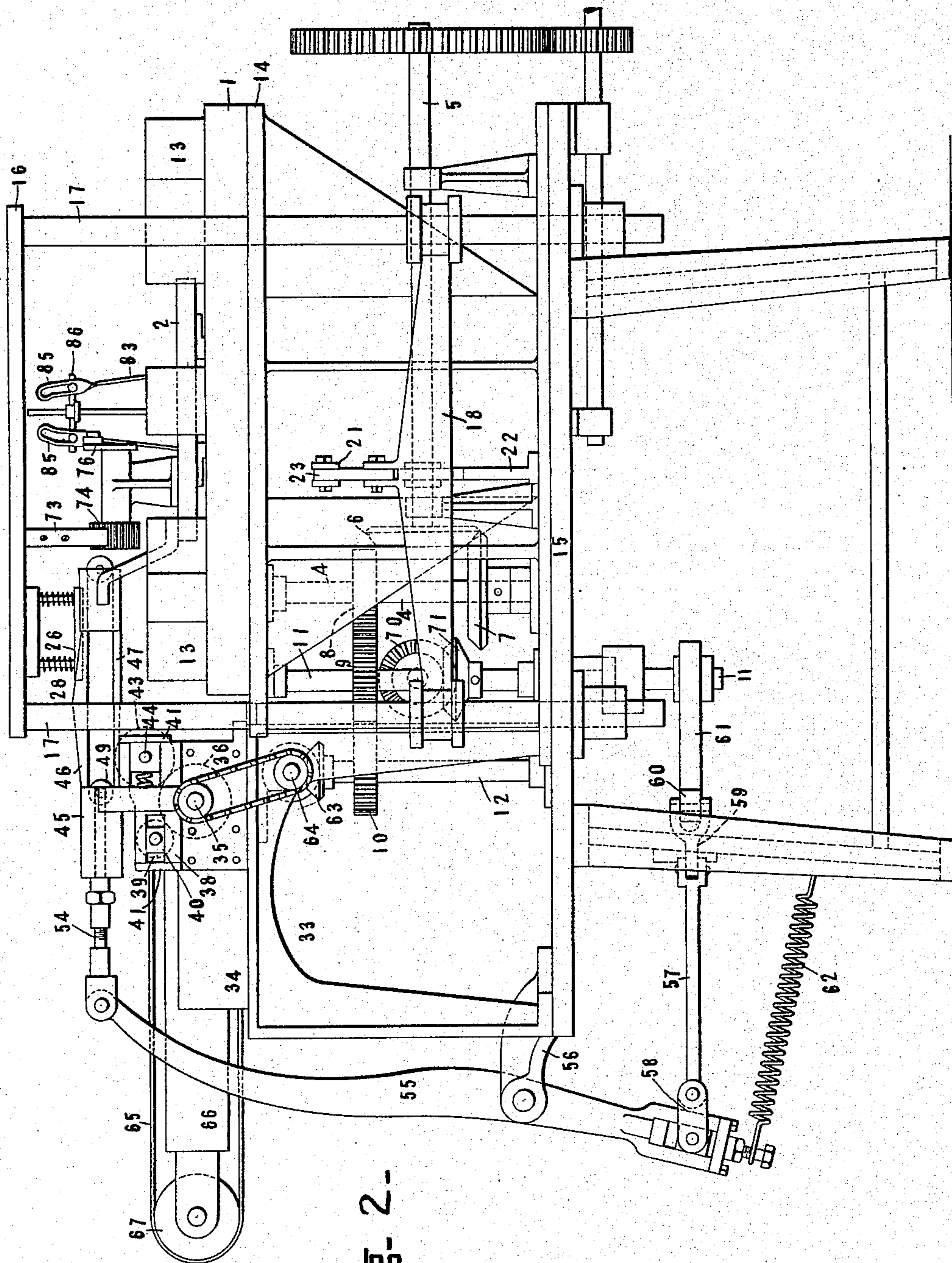


FIG. 2-

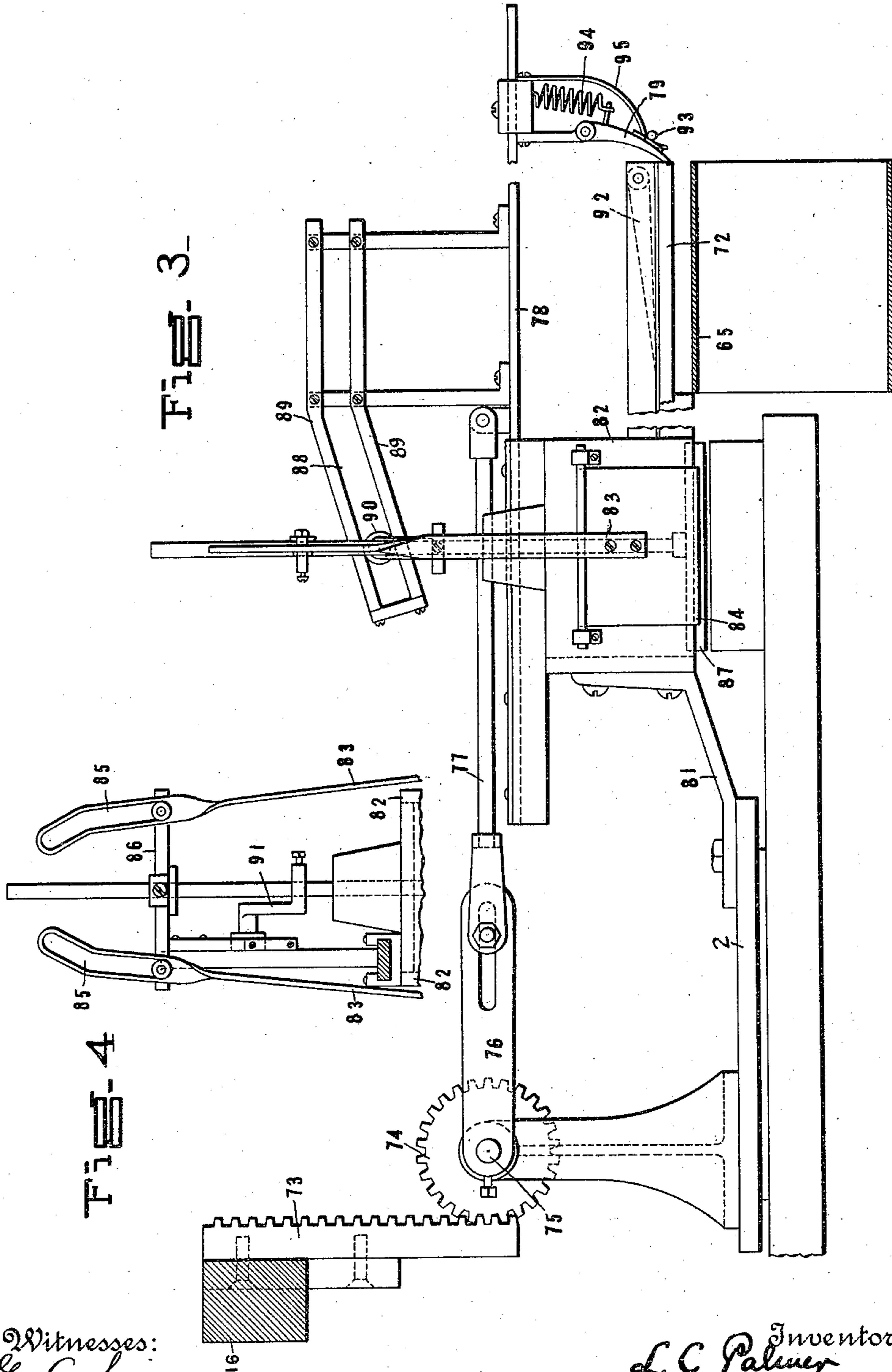
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6 SHEETS—SHEET 3.



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6 SHEETS—SHEET 4.

Fig. 5-

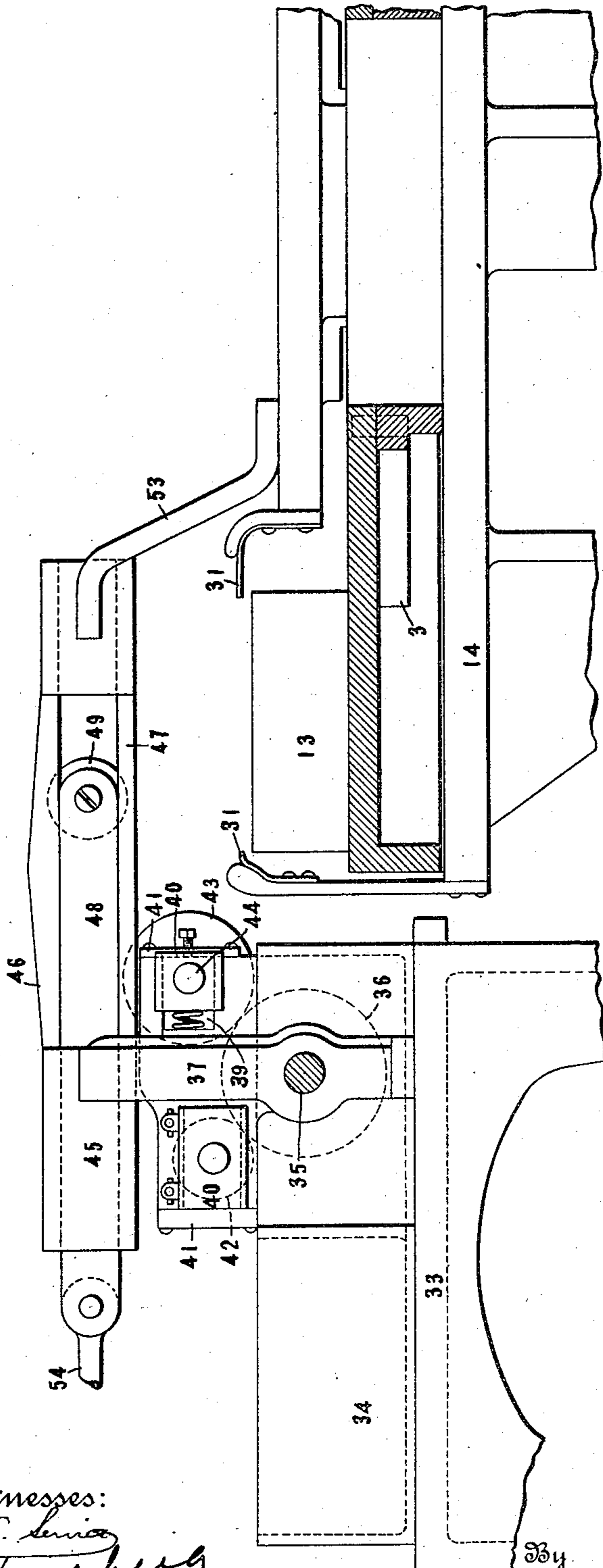


Fig. 9-

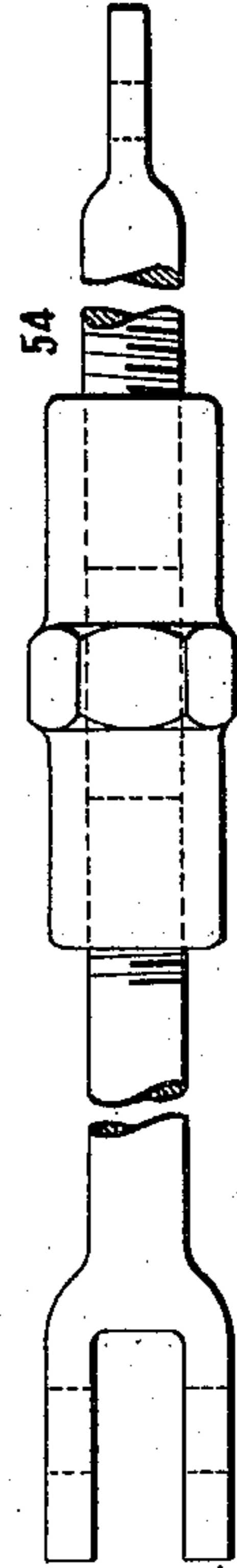
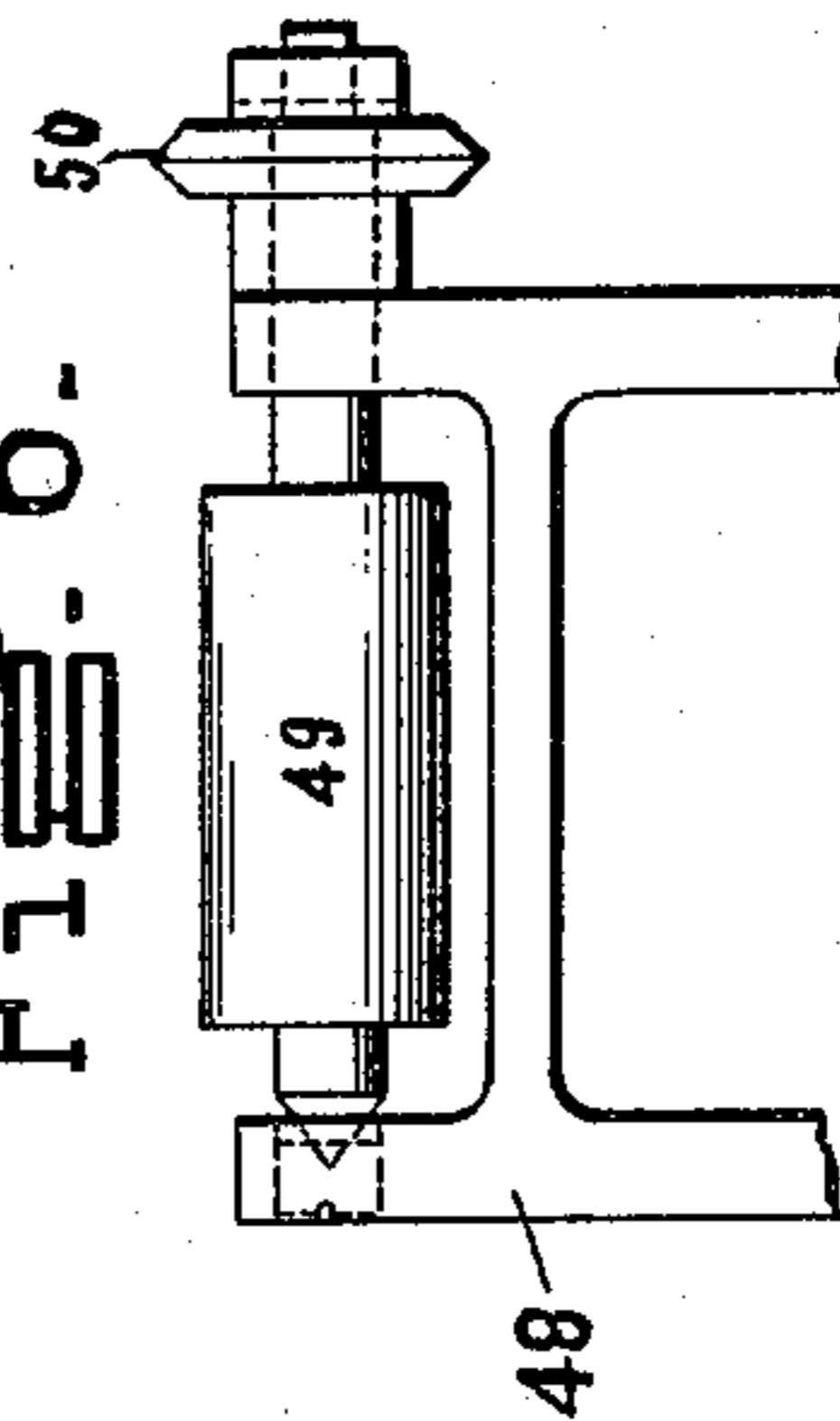


Fig. 6-



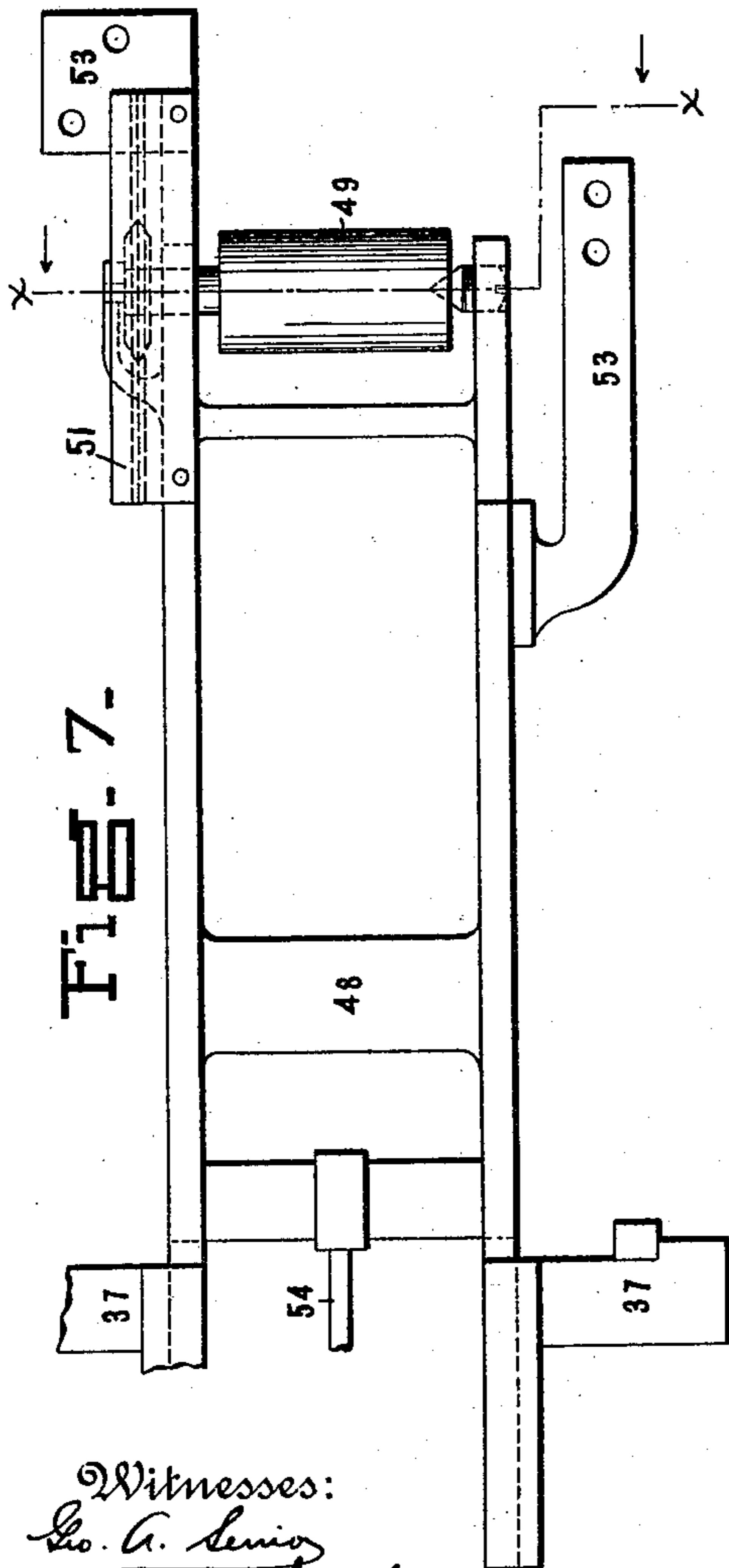
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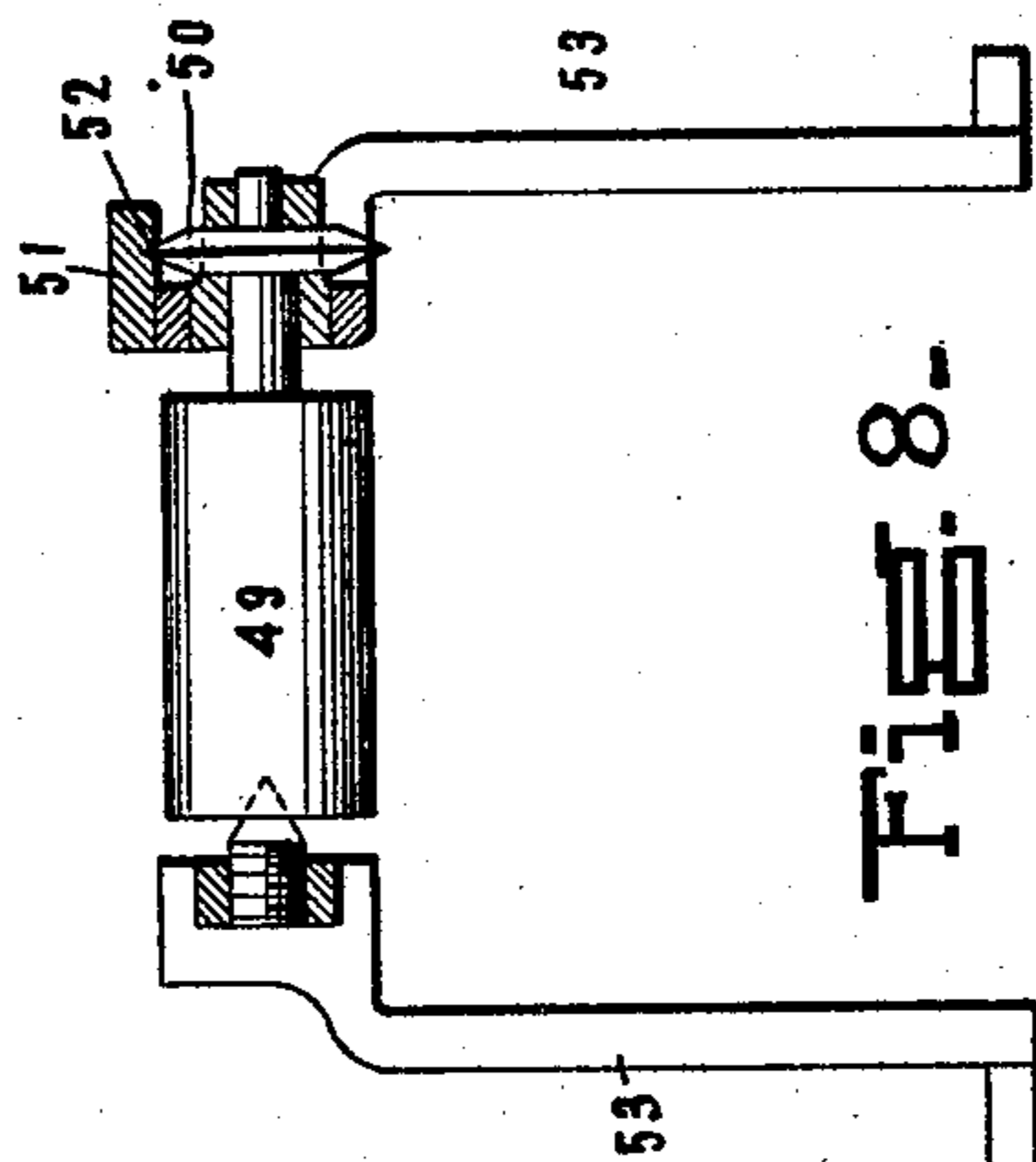
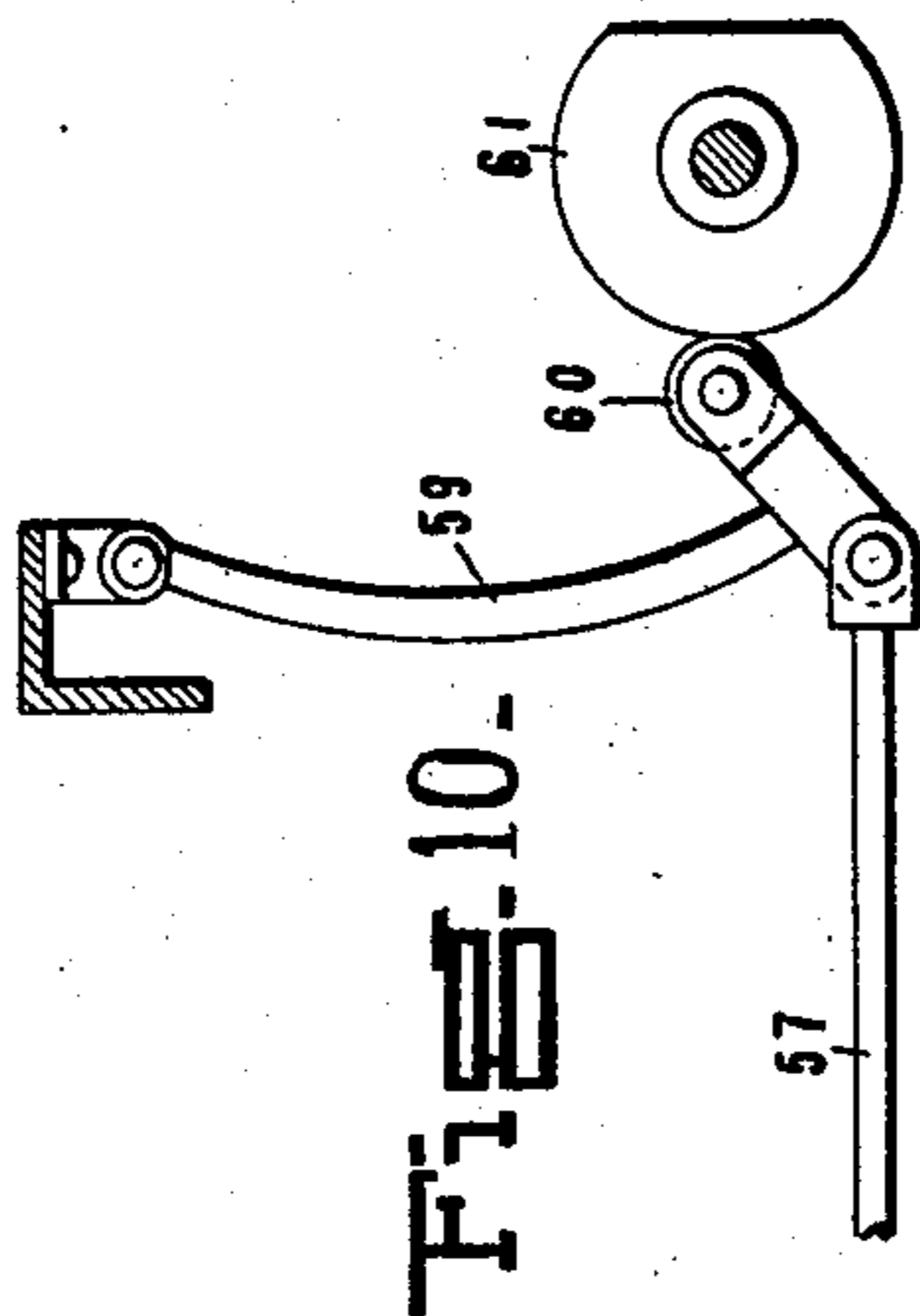
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6 SHEETS—SHEET 6.

Fig. 12-

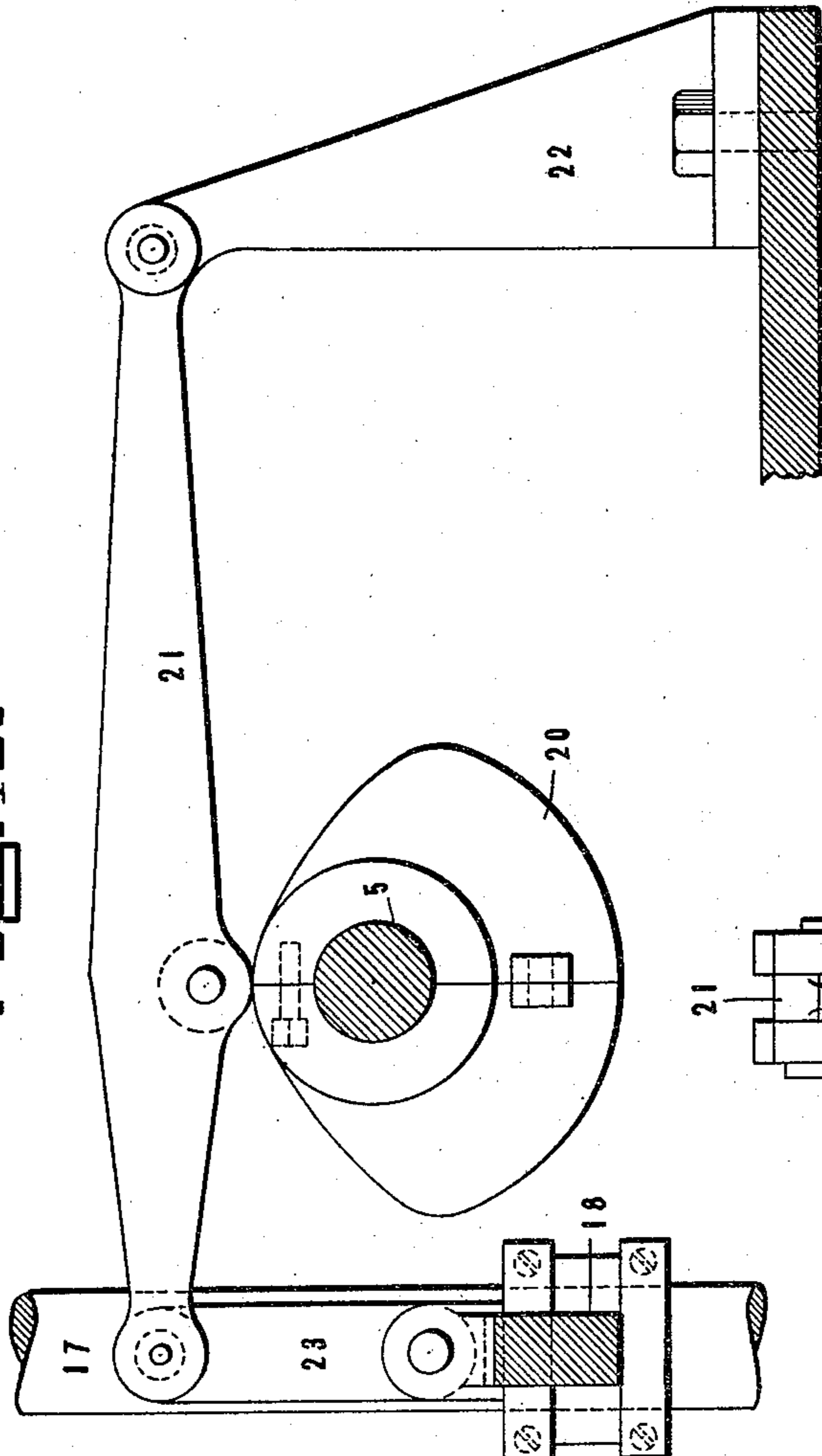
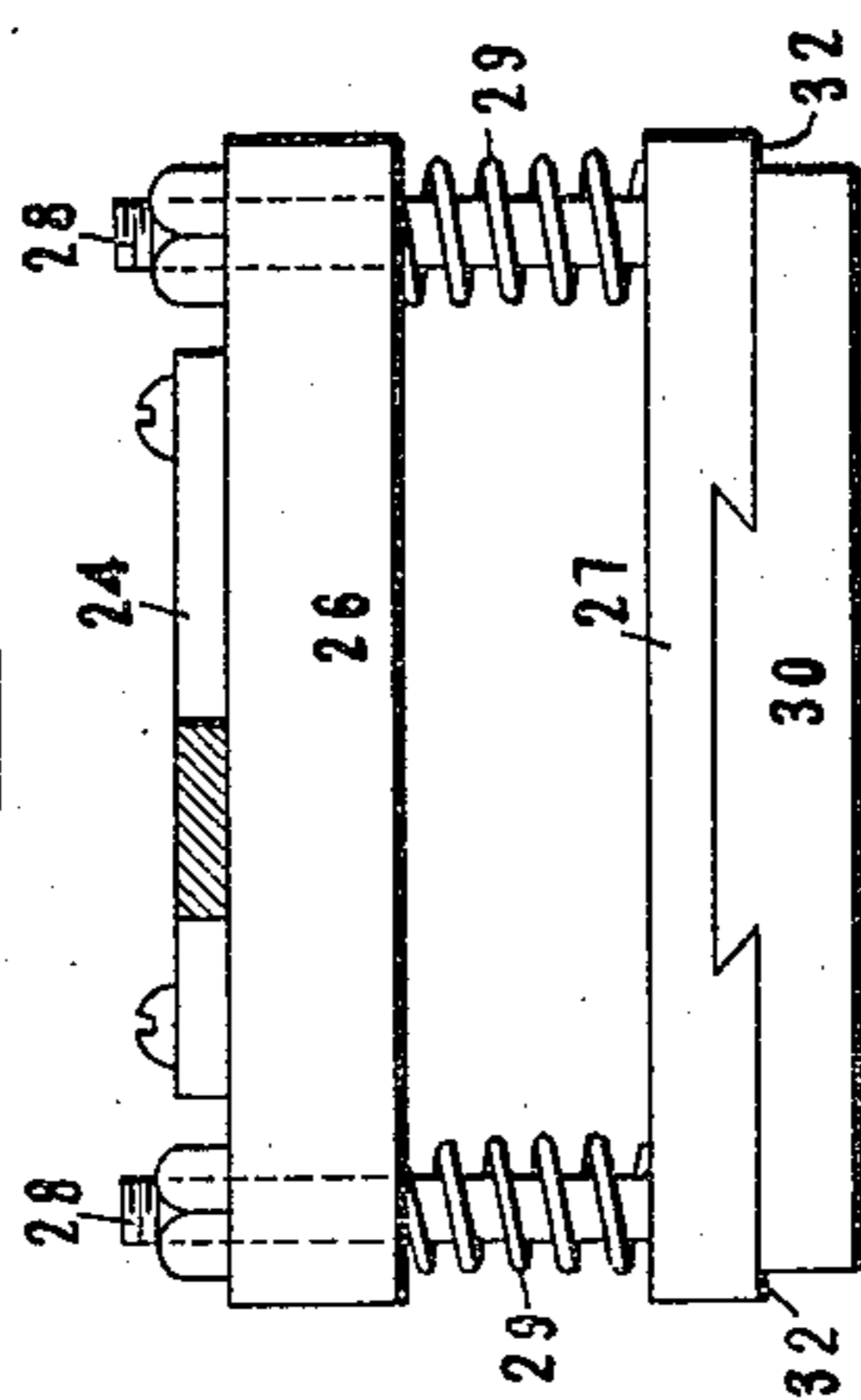
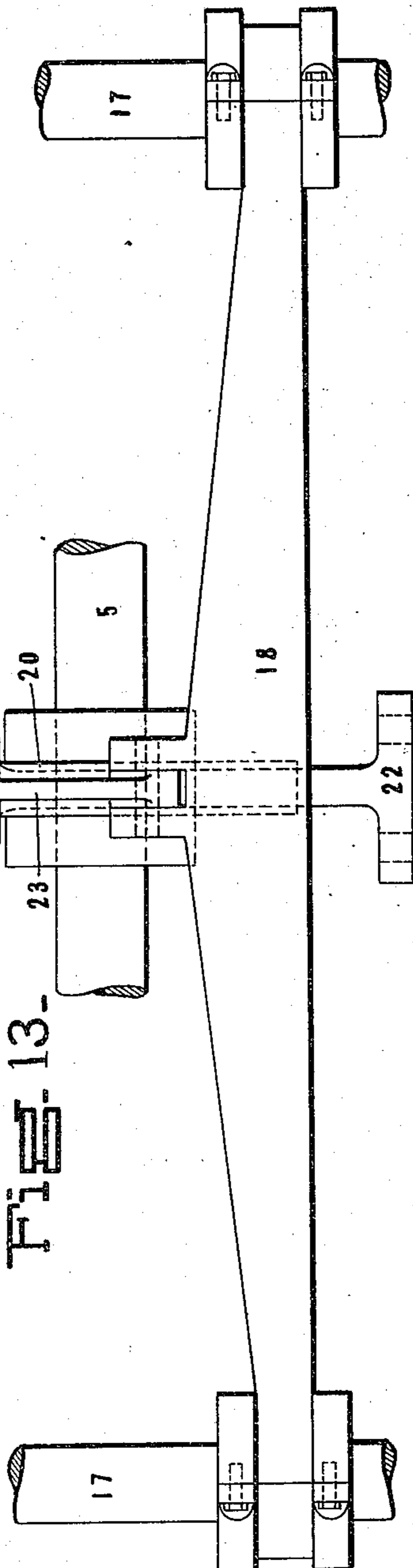


Fig. 11-



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Fig. 13-



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UNITED STATES PATENT OFFICE.

LYNDON CONSTANTINE PALMER, OF BUFFALO, NEW YORK, ASSIGNOR TO F. N. BURT COMPANY, LIMITED, OF BUFFALO, NEW YORK, A CORPORATION OF CANADA.

LABELING-MACHINE.

1,166,780.

Specification of Letters Patent.

Patented Jan. 4, 1916.

Original application filed December 17, 1910, Serial No. 597,914. Divided and this application filed December 30, 1911. Serial No. 668,690.

To all whom it may concern:

Be it known that I, LYNDON CONSTANTINE PALMER, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Labeling-Machines, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to mechanism for coating articles with liquid, and more especially to devices for applying adhesive to paper articles, for the subsequent attachment of labels.

One object of the invention is the provision of mechanism for efficiently coating a surface or wall of a hollow article, such as a paper box with glue.

Another object of the invention is the provision of a comparatively simple mechanism for coating a large number of boxes with glue in a short space of time.

Another object is to provide a device in which the adhesive is accurately and economically applied to the parts to be glued, without waste and without gumming up adjacent parts.

Another object is the provision of a practical device for applying adhesive to the wall of an empty box.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, wherein is shown one of the possible embodiments of this invention, Figure 1 is a plan view of the machine; Fig. 2 is a side elevation thereof; Fig. 3 is a side view of the mechanism for transferring the articles to be glued from an endless belt conveyer to the rotary carrier; Fig. 4 is a detail of Fig. 3, partly in section; Fig. 5 is an enlarged side elevation, partly sectional, showing the glue tank, the box carrier and the guides for the glue-applying roller; Fig. 6 is a plan showing the glue-applying roller and attached friction roller;

Fig. 7 is a plan of the guide for the glue-applying roller, showing the friction plate and the friction roller; Fig. 8 is a section on line $x-x$, Fig. 7; Fig. 9 is a detail view; Fig. 10 is a plan of a cam and coöperative links and levers employed in operating the glue-applying roller; Fig. 11 is a detail view showing the glue pad carrier; Fig. 12 is a sectional side elevation showing the operating mechanism for the cross-head; Fig. 13 is a view at right angles to Fig. 12.

The general arrangement of the preferred embodiment of the invention is similar to that disclosed in applicant's co-pending application, Serial No. 597,914, filed December 17, 1910, of which this application is a division.

In the present embodiment it is designed to coat boxes which are open or uncovered, as for instance one section of a cigarette box, which latter often comprises two sections, each section composed of a head or bottom and a surrounding flange, one section serving as the receptacle portion and the other as the cover. The coat may be applied either on the inside or outside of the box, the present embodiment comprising mechanism more particularly adapted for applying a coat of adhesive, such as glue, to the outside of the head or bottom. In order to efficiently coat the sections with glue in definite places, and in order that the coat of glue shall be uniformly applied so as to efficiently receive, for instance, a label to be attached to the section, it is desirable that the wall to be coated shall be substantially supported and braced so as not to move or be distorted, in which latter instance the coat might not be accurately or evenly applied. Accordingly, when a box is to be coated on the outside, the present embodiment offers especial facilities, as it permits the box to be located on a support in what may be termed an inverted position, when an open box is considered.

Referring now more particularly to the drawings, the numeral 1 represents an intermittently rotatable horizontal table or disk, and 2 a stationary platform centrally disposed relative to the table. Intermittent movement is given the table by any efficient means, preferably by a Geneva gear 3 driven from a shaft 4 through a main horizontal driving shaft 5, and bevel gears 6 and 7.

The shaft 4 is provided with a gear wheel 8 which, by means of gears 9 and 10, communicates motion to vertical shafts 11 and 12 on which said latter gears are respectively mounted, as disclosed in the aforesaid application.

To the upper face of the disk 1 are adjustably secured blocks or box rests 13 of a size to accurately fit and support in relative stationary position the elements or boxes to which the adhesive is to be applied. A plurality of the rests 13 are equally spaced around the disk near the periphery thereof, and as the disk or rotary table 1 is moved by its operating mechanism the rests move in an endless path intermittently, their periods of rest being preferably longer than their periods of motion. The articles or boxes to be coated with adhesive may be applied to the rests in any suitable manner, but preferably are automatically fed thereto as hereinafter described. As the disk rotates step by step, the boxes are carried one by one into position adjacent a device which applies glue to a surface or wall thereof, and they remain in this position while the coat of adhesive is applied thereto.

As before stated, the present embodiment of the invention is more particularly intended to coat the heads of box elements which are open or uncovered, such as one element of a two-part cigarette box, and the rests are designed to accurately fit and receive thereover, or telescope with, such a box, with its head resting in horizontal position on the upper face of the rest, so as to be braced thereby, the telescopic engagement maintaining the relative alinement of the box in the machine.

The numeral 14 indicates a horizontal bed plate supported above a lower fixed table 15, the former supporting the intermittently rotating table 1.

The numeral 16 indicates a cross head of a movable plunger device operating adjacent the path of the box rests on the disk 1.

17 are the guide and supporting rods of the plunger, which are connected at their upper portions by the cross head 16, and at their lower portions intermediate the bed plate and the fixed table by a cross piece 18 securely clamped to each rod at its ends, respectively. The guide rods 17 respectively pass through alined guide openings in the fixed table and bed plate. The plunger is designed to reciprocate vertically, for a purpose which will hereinafter appear, and in order to effect such movement the main driving shaft 5 is provided with a cam 20 which coöperates with the roller of a rock lever 21 pivoted at one end to a standard 22 on the table and at its other end connected by a link 23 to the cross piece 18. As the shaft 5 rotates, reciprocatory motion is communicated to the cross head

in a manner which will be obvious from the construction just described, and the contour of the cam 20 is, of course, designed to effect such movement to the proper extent and at the proper time in the operation of the machine.

Laterally projecting from the cross head 16 is an arm 24 which supports a glue pad carrier 25 above and in vertical alinement with the path of the box rests and in that point of the path where the box rests are held stationary by the operation of the driving devices of the carrier disk 1. It is preferable to apply the glue to the boxes by means of a yielding or elastically constructed carrier, and to this end the carrier 25 comprises a plate 26 secured beneath the arm 24, below which is a preferably rectangular plate 27 spaced from the plate 26 and loosely secured thereto by means of pins 28 attached adjacent the corners of the plate 27 and passing freely through guide openings in the plate 26, stop nuts being threaded on the pins 28 above the latter. Around each pin 28, between the plates 26 and 27, is a spring 29 tending to resist movement of said plates toward each other. The glue carrier is provided with a suitable glue retaining surface, preferably a removable pad 30 of sponge rubber covered with canvas. It is designed to apply glue to the pad and to subsequently lower the pad so that its glued surface shall contact with the box on the box rest immediately therebeneath, this latter movement being accomplished by the downward movement of the cross head 16 under the influence of the cam 20, as before described. Inasmuch as the pad may be reciprocated by the cross head when a box is not in position on the rest, it is designed that the pad, under such circumstances, when in its lowest position shall not touch the upper surface of the box rest. Fingers 31 are, accordingly, secured to the bed plate 14 and the platform 2, respectively, and project horizontally over the edges of the rest. The distance between the fingers 31 and the surface of the rest 13 is such that they will contact with the shoulder 32 of the glue pad carrier and stop its descent before its glued surface reaches the surface of the rest. When a box is in position on the rest, however, its thickness fills up a part of the distance between the fingers and the upper surface of the rest, permitting the glued surface of the pad to contact with the box. When the glue pad retreats or rises from glue-applying position on the box the latter might adhere to the pad, and the fingers 31 also serve as strippers to detach the box from the pad under such condition.

One of the important uses of this invention is the coating of boxes or labels with adhesive in order to secure them together

neatly and smoothly and the preferred substance to secure the labels to the boxes comprises an adhesive such as paste or glue, the same being applied to the parts by mechanism which automatically and accurately coats one of the parts, preferably the box elements, with the adhesive. It is evident, however, that the coating mechanism may be employed to coat parts with other substances which would take part in effecting the affixing of the label to the box, and such uses are therefore not outside the purview of the invention.

Glue is applied to the glue pad by a roller moving thereover and to and from a glue supply. Mounted on the fixed table 15 is a glue tank table 33 which is substantially level with an extension of the bed plate 14. Supported upon the glue tank table is a glue reservoir comprising a glue tank 34, through which passes a shaft 35 of a glue feeding roller 36, which dips into the glue in the tank. The shaft 35 passes through the sides of the tank 34 and is supported by standards 37 on either side of the tank. Mounted at opposite sides of the forward portion of the tank are plates 38 which extend above the tank and have horizontal slots 39 in their forward and rear edges, in which are located bearing boxes 40 held in place in the slots by plates 41 secured, respectively, to the inner and outer edges of the plate 38. Supported by the bearing box in the rear slot 39 is a gage roller 42 which may be adjusted toward and from the feed roller to regulate the thickness of the glue carried beyond the gage roller and transferred to the glue delivery roller 43, which is mounted parallel with the feed roller 36 on a shaft 44 supported in the forward bearing box 40. A spring is interposed between the forward bearing box and the rear wall of the slot 39 serving to cushion the roller 43 and to provide for the ready adjustment of said roller 43 toward and from the roller 36, by a set screw, as clearly shown. The amount of adhesive taken from the roller 36 may be quickly regulated by this means. The gage roller and the supply roller are continuously driven through toothed gears attached thereto, respectively, outside the tank, and meshing with a gear wheel on the shaft 35, which latter is continuously driven through sprocket and chain connection with the shaft 12, as clearly shown.

The standards 37 extend toward each other at their upper portions and support one end of horizontal guide rods 45 in substantially vertical alinement with walls of the glue tank. Each guide rod 45 is composed of upper and lower parallel portions 46, 47 spaced apart and forming slots therebetween within which reciprocates the sides of a frame 48 formed of parallel spaced connected bars having removably mounted at

one end between the bars a glue-applying roller 49. The shaft of the roller 49 extends through its supporting bar at one side and is provided with means to govern the rotative movement thereof, in this instance comprising a disk 50 fast to the shaft and adapted to contact with a friction plate 51 projecting from one side of the upper surface of one of the guide rods 45 adjacent that point in the path of the applying roller where the glue is applied to the pad. Preferably the disk 50 has a beveled edge and the friction plate is provided with a groove 52 having inclined walls to receive and guide the edge of the roller 50. Brackets 53 project from the platform 2 and serve to support the guide rods 45 at their inner ends. The frame 48 is adapted to reciprocate in the guide bars 45 to move the roller 49 from the glue supply roller 43 to the glue pad and in order to effect this movement, said frame is pivotally joined at its rear portion by an adjustable connecting rod 54 to the upper end of a glue roller operating lever 55 fulcrumed on a bracket 56 mounted on the supporting table of the machine, the lower end of the lever 55 being pivotally joined to a connecting rod 57 by a link 58. Mounted beneath the table 15 is a horizontal rock arm 59 pivotally connected to the rod 57 and provided with a cam roller 60 which is engaged by a horizontally arranged cam 61 immediately driven from the lower portion of the vertical shaft 11. A strong spring 62 is connected to the end of the lever 55 and to the frame of the machine to maintain the roller 60 in contact with the cam and cause the operation of the lever 55 in one direction.

In operation, the main driving shaft communicates motion through the gears 8 and 9 to the shaft 11, which in turn, through the cam 61, the lever 55 and connecting devices, reciprocates the frame 48, moving the roller 49 and transferring glue from the glue supply roller to the glue pad on the cross head 16. The movement of the roller 49 across and in contact with the face of the glue pad preferably takes place while the box rests are moving from one position to an immediately succeeding position, and consequently the glue pad is at a sufficient elevation at this time to permit the roller 49 to pass across the path of the boxes and apply glue to the pad without coming in contact with the boxes. When the glue-applying roller 49 leaves the rotating roller 43, or rolls off of either end of the glue pad, rotary motion has been communicated thereto which may continue until said roller again makes contact with the pad. This motion may be the reverse of that given by its next contact with the pad, and under such conditions a disproportionate amount of glue might be applied to the pad at its edge, and it is desirable, therefore, to bring the roller in con-

tact with the pad while the roller has no rotary motion, or motion only in the direction which would be given by immediate subsequent contact with the pad. Furthermore, the roller, when applying glue to the pad, should preferably roll thereon. Mechanism is accordingly provided to control the motion of the roller 49 before it contacts with the pad and to insure rolling motion while in contact, comprising the friction roller 50 and the plate 51. Friction roller 50 contacts with the plate 51 just before the roller 49 contacts with the pad and, as the latter passes across the pad, the friction roller 50 rolls along the plate 51, the direction of its rotary movement on the plate being the same as that of the rotary movement communicated to the roller 49 by its movement across the pad. When the roller 49 leaves the pad it might continue to rotate until it returned thereto and for this reason the friction plate 51 projects beyond the opposite end of the pad so as to contact with the friction roller 50 just before the delivery roller contacts with the pad on its reverse movement. Thus the contact of the roller 49 with the pad is made when the roller has practically no rotary motion or has rotary motion in the same direction as that communicated thereto by contact with the pad, and in this manner is prevented the application of a disproportionate amount of glue to the ends of the glue pad and the subsequent application of a blot of glue to the surface of the box, as explained above, thus effecting the application of a uniform surface of adhesive to the boxes. The shaft 12 is provided with a bevel gear 63 which communicates motion to a stub shaft 64, which in turn, by means of sprocket wheel and chain connections, drives the horizontal glue feeding roller shaft 35.

The numeral 65 indicates an endless conveyor belt moving over the horizontal surface of a trough having upstanding walls 66 to guide and retain the boxes which are placed on the belt, preferably by hand. The belt 65 passes over rollers 67, one of which is positively driven from the shaft 5 through chain 68, shaft 69 and bevel gear 70 meshing with a bevel gear 71 on the shaft 11, the belt 65 being thus continuously driven during the operation of the machine. The boxes are placed on the belt open side down and are successively frictionally carried thereby to a predetermined position against a stop 72 extending across the trough, whereby the boxes are successively positioned in line with mechanism which transfers the boxes one by one from the belt to position above the path of the box rests 13, and eventually places the boxes on the rests, respectively, as they pass beneath the boxes so held. The mechanism for transferring the boxes from the belt to the carrier is specifically described

and claimed in the co-pending application hereinbefore referred to, hence only a general description herein will be made.

As the cross head 16 rises and falls, a rack 73 thereon, through gear 74, rocks shaft 75, which in turn rocks arm 76 pivotally joined to one end of connecting rod 77, the other end of which is pivotally connected to a picker rod 78 having a picker finger 79 pivotally depending therefrom and adapted to pass back and forth across the belt 65. In its movement in one direction the finger 79 will engage the side wall of the box in position against the stop 72 and push or draw the same from the belt along a track or guide and into a retaining device supported by a bracket 81 projecting from the platform 2. The retaining device is positioned to support the box above that point in the path of the box rests where they are temporarily held stationary, and comprises spaced vertical side walls 82 between which the box is received, and pivoted levers 83 having wide fingers 84 adapted to project across the walls 82 and temporarily support the box. The upper ends of the levers 83 have cam slots 85 engaged by rollers of a cross piece 86 secured to the rod of a plunger comprising a head 87 adapted to reciprocate between the walls 82. The rod 78 is provided with a cam slot 88 formed by bars 89, and the slot 88 engages an anti-friction roller 90 mounted on an arm 91 fastened to the plunger. The parts are so proportioned and timed that a box will be transferred from the belt to a box rest whenever a rest is in stationary position beneath the retainer. In order that the picker may not injure or displace the box on the belt in its movement to feeding position, a pivoted switch 92 operates with a pin 93 carried by the picker finger to raise the latter above the boxes as it passes back thereover, a spring 94 returning the finger to picking position against a stop spring 95.

The operation of the machine will be apparent from the foregoing description. As the boxes arrive against the stop 72 they are transferred one by one to the rests 13, which are brought to stationary position beneath the retainer. The boxes either drop onto the rests or are pushed thereon by the plunger head 87, telescoping with the rests and being securely held thereon. When the box arrives beneath the glue pad, the latter descends and coats the surface of the box with a smooth and uniform surface of glue. The machine is automatic in operation, the boxes being successively transferred from the belt to the carrier and successively presented to the gluing mechanism, so that a large number of boxes may be efficiently coated in a relatively short time, economically without waste of glue, and without gumming up adjacent parts. It is obvious

that any efficient form of mechanism might be provided for removing the coated boxes from the machine, such, for example, as that described in my prior application herein-
5 before referred to.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from
10 the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense. It is also to be understood
15 that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention, which, as a matter of lan-
20 guage, might be said to fall therebetween.

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

1. In an apparatus of the character described, in combination, a glue supply, a
25 glue pad, means adapted to roll on the pad to apply glue thereto, and means to insure rolling motion of the last-mentioned means on the pad.

2. In an apparatus of the character described, in combination, a glue supply, a
30 glue pad, roller means adapted to transfer glue from the supply to the pad, and means to govern the rotation of the roller.

3. In an apparatus of the character described, in combination, a glue supply, a
35 glue pad, roller means adapted to transfer glue from the supply to the pad, and means to direct the rotation of the roller.

4. In an apparatus of the character described, in combination, a glue supply comprising a delivery roller, means to rotate
40 the delivery roller, a glue pad spaced from the delivery roller, means adapted to transfer glue from the delivery roller to the pad
45 comprising a glue-applying roller, and friction means to direct the rotation of the glue-applying roller in contact with the pad.

5. In an apparatus of the character described, in combination, a glue supply comprising a delivery roller, means to rotate the
50 delivery roller, a glue pad spaced from the delivery roller, means adapted to transfer glue from the delivery roller to the pad comprising a glue-applying roller, a friction
55 wheel on the glue-applying roller, and a plate in the path of the wheel adapted to contact therewith prior to contact of the applying roller and pad.

6. In an apparatus of the character described, in combination, a glue supply, a
60 glue pad spaced therefrom, means adapted to transfer glue from the supply to the pad comprising a reciprocatory device including a glue-applying roller adapted to pass be-

yond the pad at either side, a friction plate located adjacent the pad and extending beyond the same at either end, and means carried by the transfer means adapted to contact with the friction plate to direct rota-
70 tion of the roller prior to contact with the pad in either direction of movement.

7. In an apparatus of the character described, in combination, a glue supply, a
75 box-supporting device, a glue pad adapted to reciprocate toward and from the supporting device, and a stop device adapted to be interposed between the pad and supporting device.

8. In an apparatus of the character described, in combination, a glue supply, a
80 box-supporting device, a glue carrier, means adapted to cause the carrier and box-supporting device to approach each other, comprising mechanism to so limit their ap-
85 proach that they will not contact, and a device adapted to strip the box from the glue carrier when it adheres thereto.

9. In an apparatus of the character described, in combination, a rotary table, box
90 rests carried thereby in an endless path, a reciprocatory glue pad, means to rotate the table step by step to position the rests in line with the pad, stationary fingers above
95 the path of the box rests in alinement with the pad, and means to reciprocate the pad toward and from the rest.

10. In an apparatus of the character described, in combination, a glue supply, means to convey a series of boxes, horizon-
100 tally spaced guideways leading from the glue supply across the path of the boxes, a frame adapted to reciprocate in the guideways, a glue-applying roller carried by the frame, a glue pad adapted to reciprocate in
105 the path of the boxes and between the guideways and receive glue from the applying roller, and means to reciprocate the glue-applying roller.

11. In an apparatus of the character described, in combination, a movable member
110 adapted to support an article to be glued, a glue pad member, means adapted to cause relative reciprocatory movement between said members in line with each other, a glue
115 delivery roller spaced from said pad, means adapted to transfer glue from said delivery roller to said pad comprising guide rods, a frame slidably supported on said rods and
120 a glue applying roller mounted on said frame and adapted to contact said delivery roller and said pad, a friction plate, and a disk mounted on the applying roller and adapted to contact said plate.

12. In an apparatus of the character described, in combination, a series of rests,
125 means adapted to feed hollow articles and cause them to respectively telescopically engage over said rests so that the walls of said articles will be braced by said rests, and
130

means adapted to apply adhesive directly to braced walls of said respective articles.

13. In an apparatus of the character described, in combination, a series of rests, 5 means adapted to feed hollow articles and cause them to respectively telescopically engage over said rests so that the walls of said articles will be braced by said rests, a yield- 10 ingly mounted adhesive carrying pad, and means adapted to press the adhesive face of said pad against said braced walls of said articles.

14. In an apparatus of the character described, in combination, a series of rests, 15 means adapted to feed hollow articles and cause them to respectively telescopically engage over said rests so that the walls of said articles will be braced by said rests, a yield- 20 ingly mounted adhesive carrying pad, means adapted to press the adhesive face of said pad against said braced walls of said articles, and means adapted to strip an adhering article from said pad.

15. In an apparatus of the character described, in combination, a series of rests, 25 means adapted to feed hollow articles and cause them to respectively telescopically engage over said rests so that the walls of said articles will be braced by said rests, a pad 30 adapted to carry adhesive, a glue applying roller adapted to roll on said pad and there-

by transfer adhesive to said pad, and means to direct the rotation of said glue applying roller relative to said pad.

16. In an apparatus of the character de- 35 scribed, in combination, a series of rests, means adapted to feed hollow articles and cause them to respectively telescopically engage over said rests so that the walls of said articles will be braced by said rests, a 40 yieldingly mounted adhesive carrying pad, means adapted to press the adhesive face of said pad against said braced walls of said articles, and means adapted to prevent the 45 adhesive face of said pad from contacting with said rests.

17. In an apparatus of the character described, in combination, a series of rests, means adapted to feed hollow articles and cause them to respectively telescopically 50 engage over said rests so that the walls of said articles will be braced by said rests, and means adapted to apply a liquid coat directly to braced walls of said respective 55 articles.

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

LYNDON CONSTANTINE PALMER.

Witnesses:

H. C. COPPINS,
J. H. PATERSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."