G. F. REINHARDT.

LIFT COMPRESSING AND DISTRIBUTING MACHINE.

APPLICATION FILED APR. 27, 1910.

976,215. Patented Nov. 22, 1910.

6 SHEETS—SHEET 1.

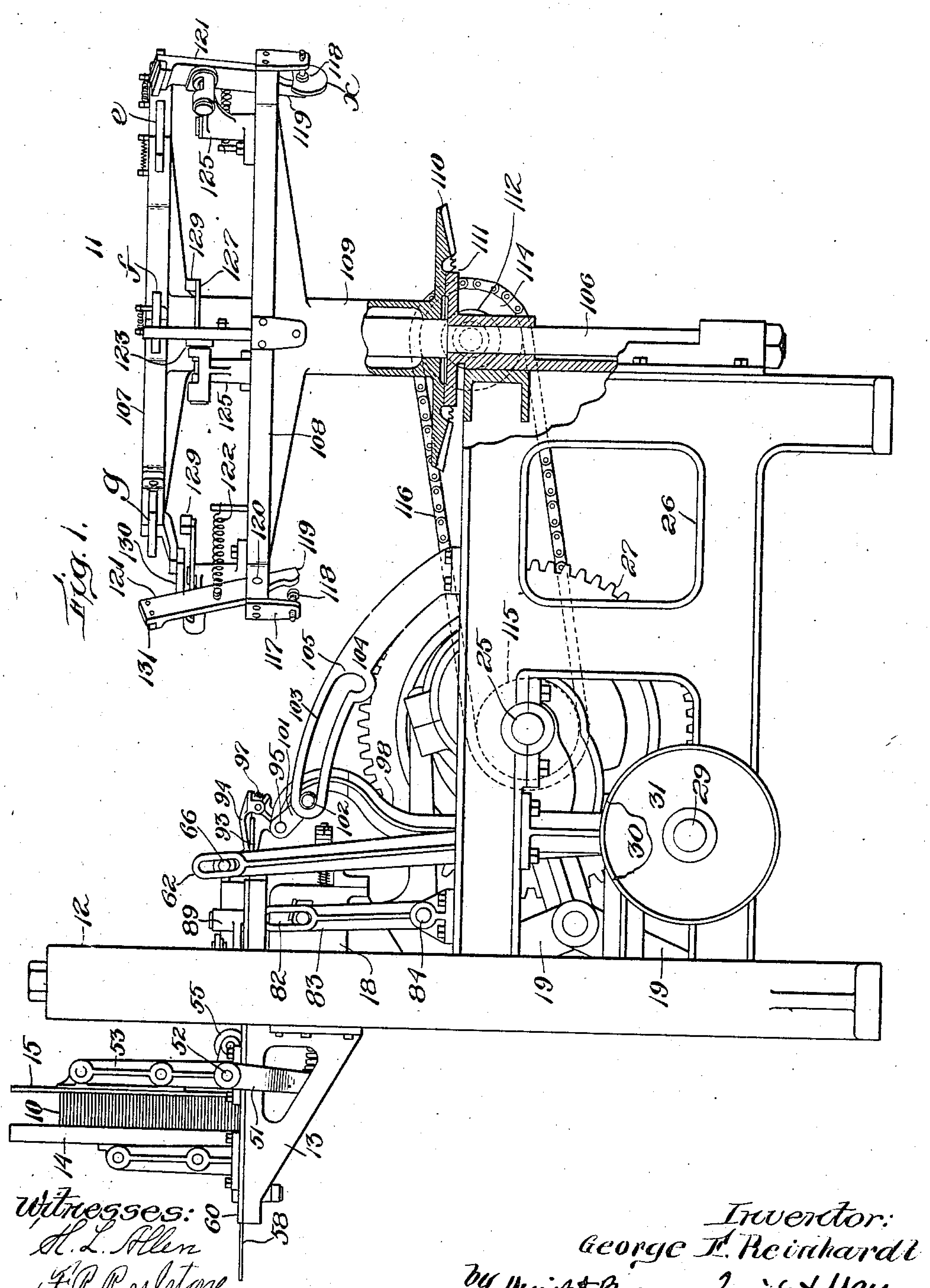

Fig. 1.

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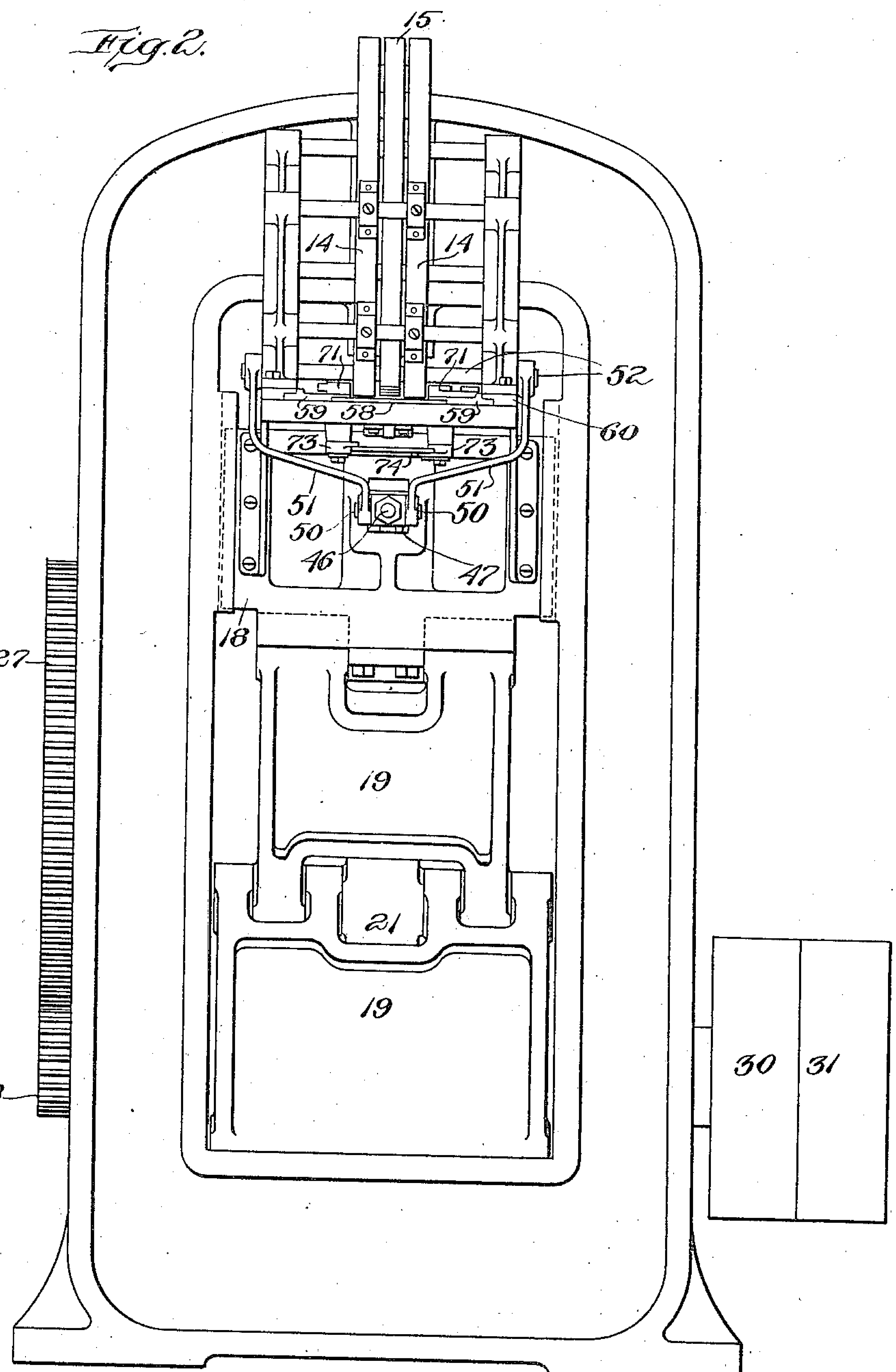
Fig. 2.



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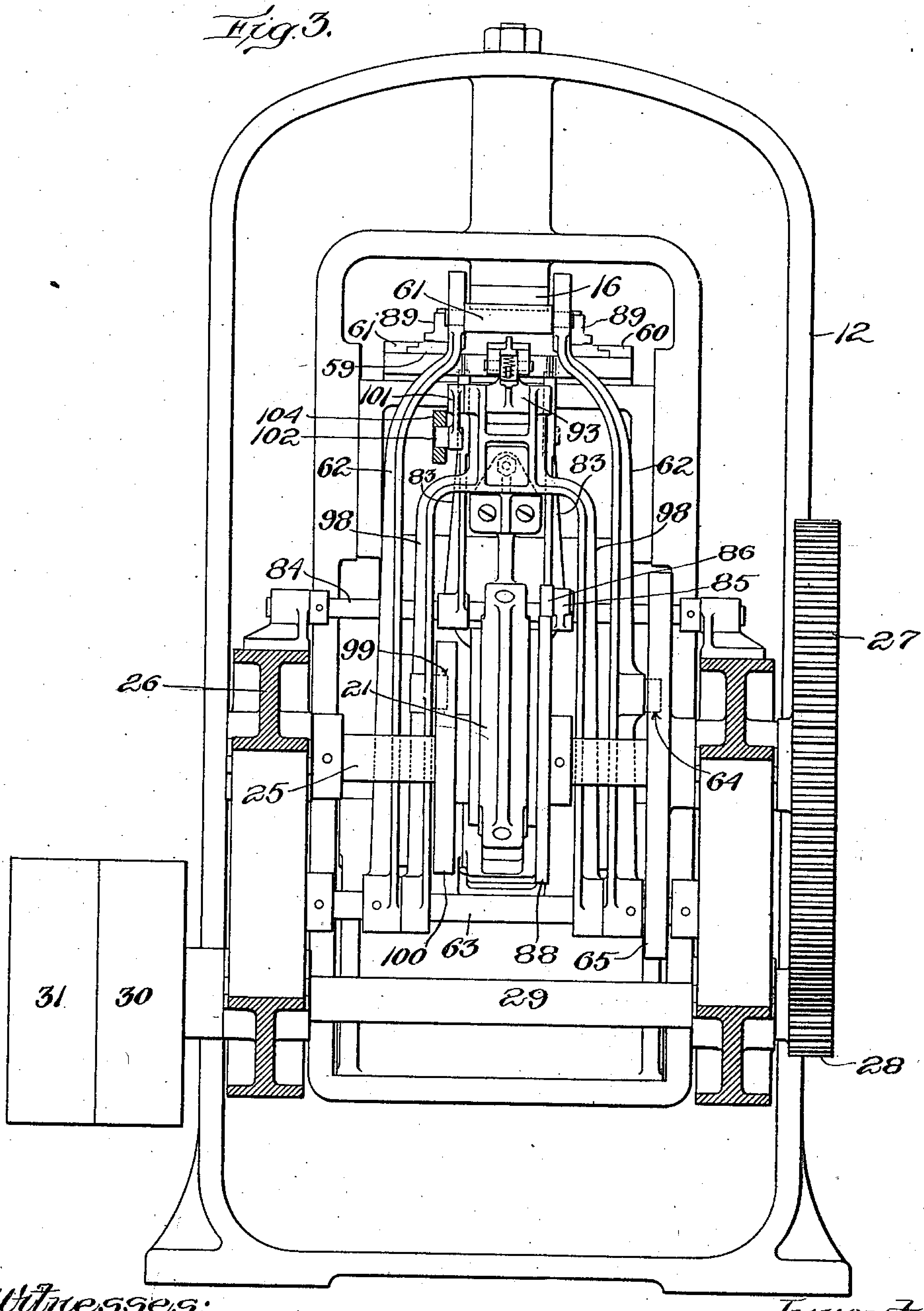
6 SHEETS—SHEET 3.

Fig. 3.



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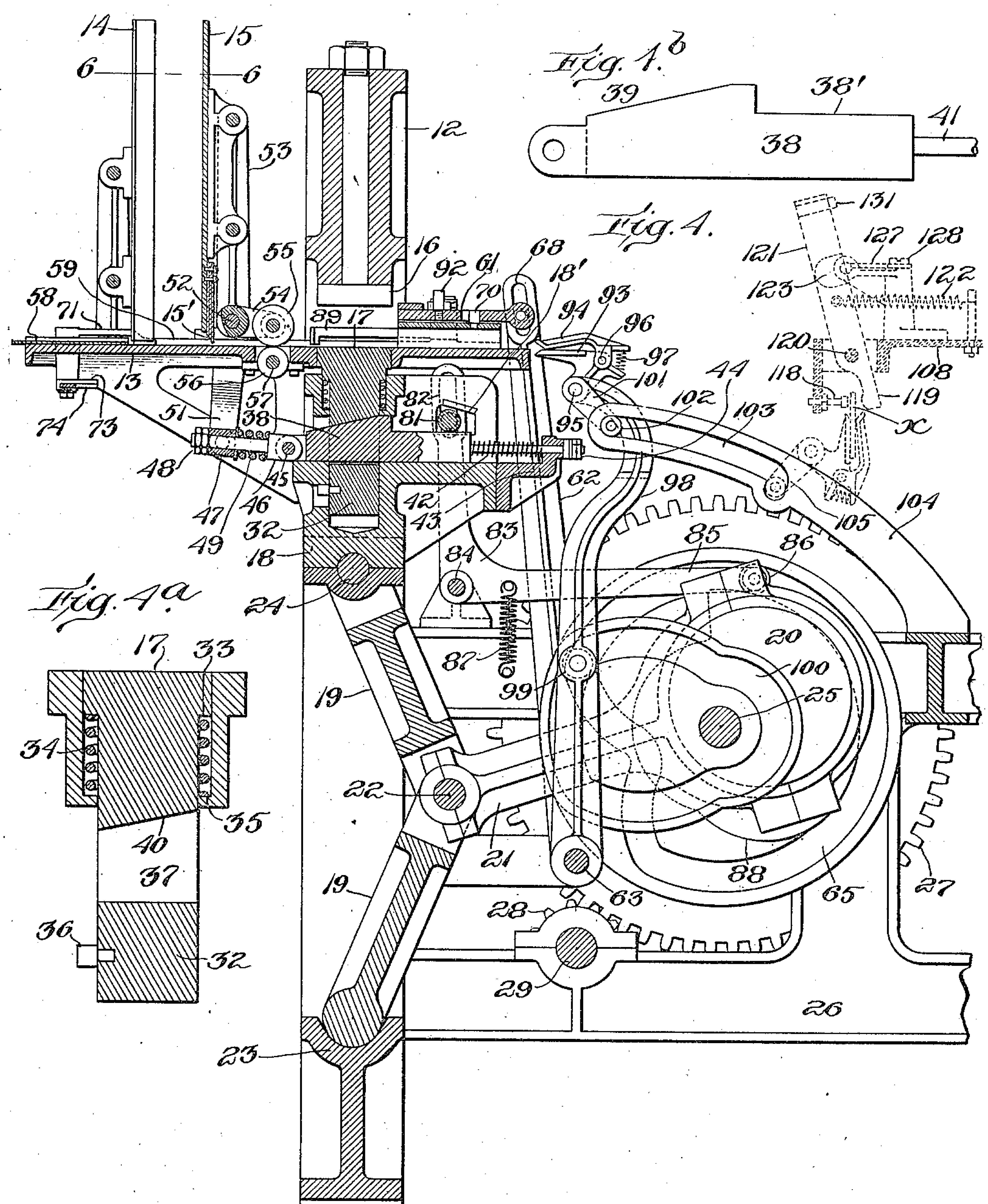

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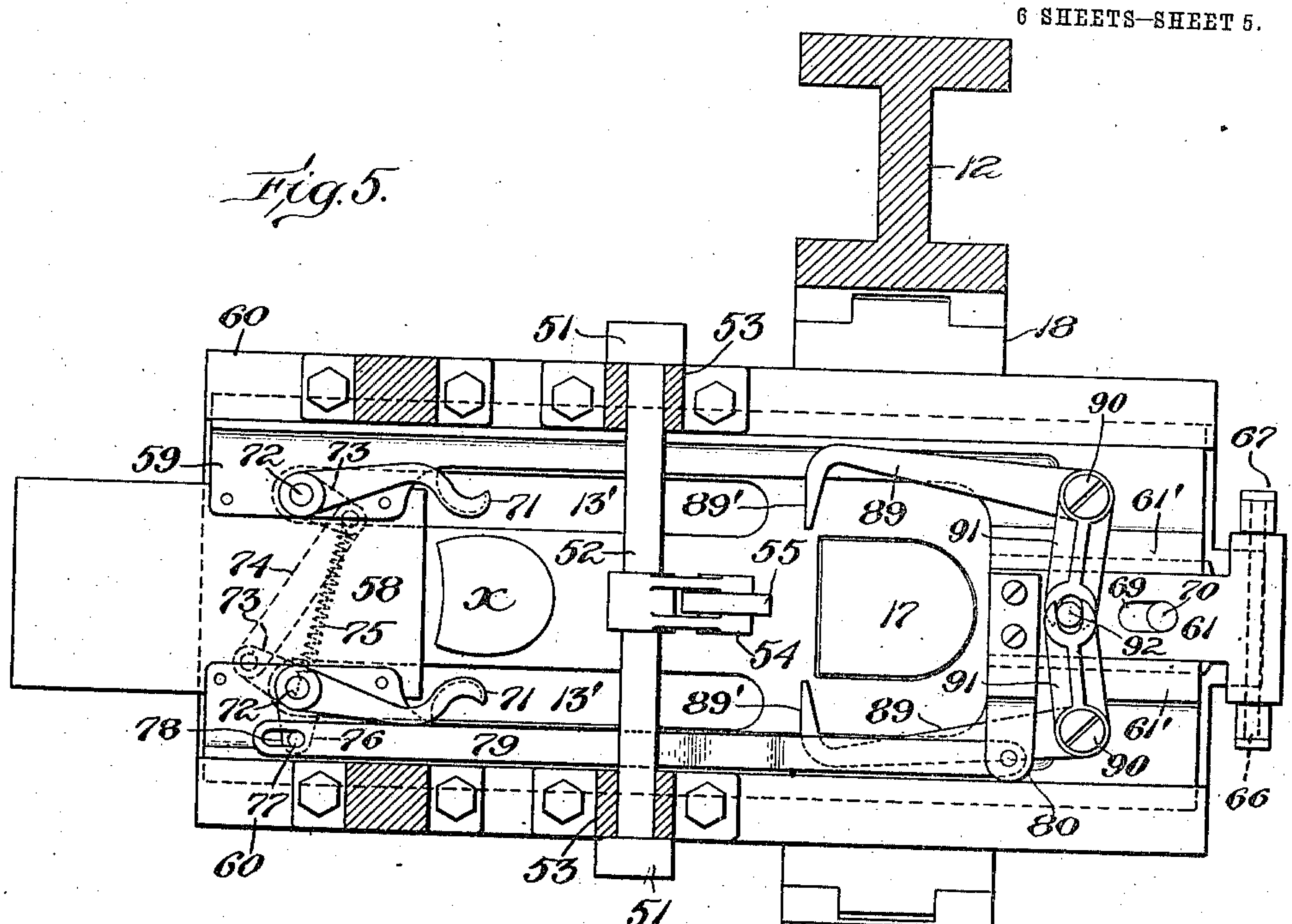
6 SHEETS—SHEET 5.

Fig. 5.



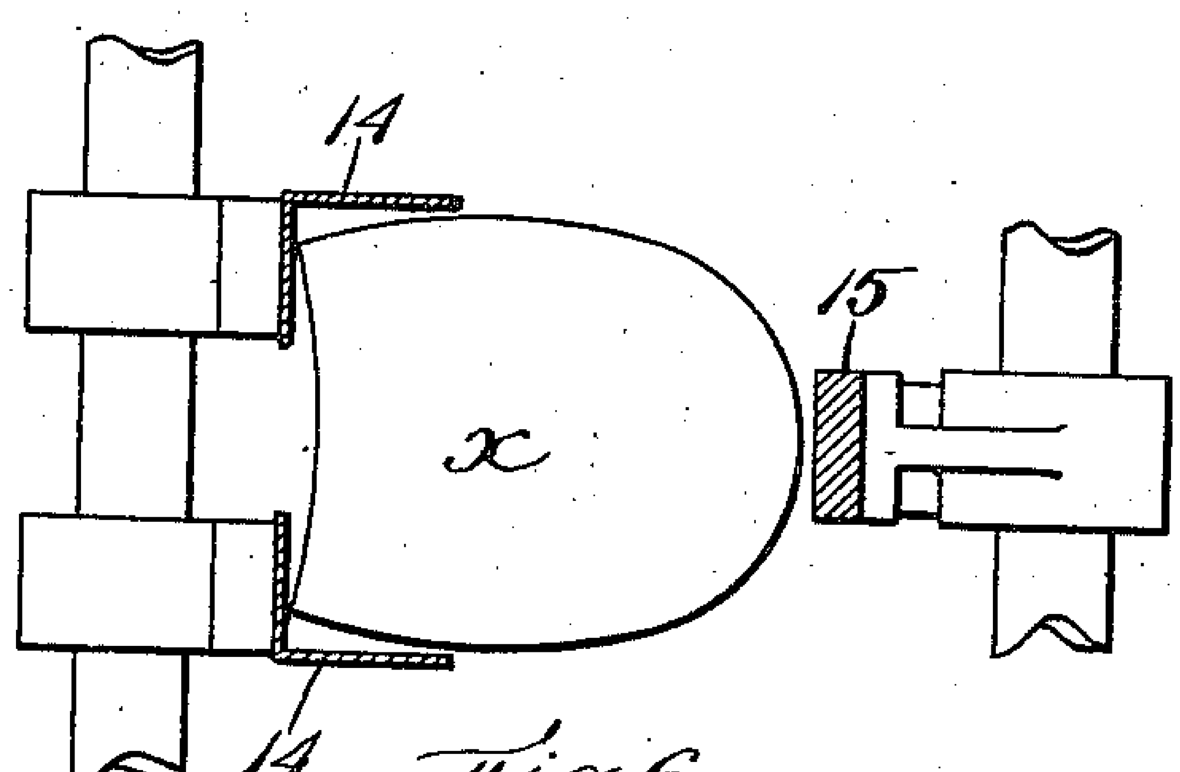


Fig. 6.

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6 SHEETS—SHEET 6.

Fig. 7.

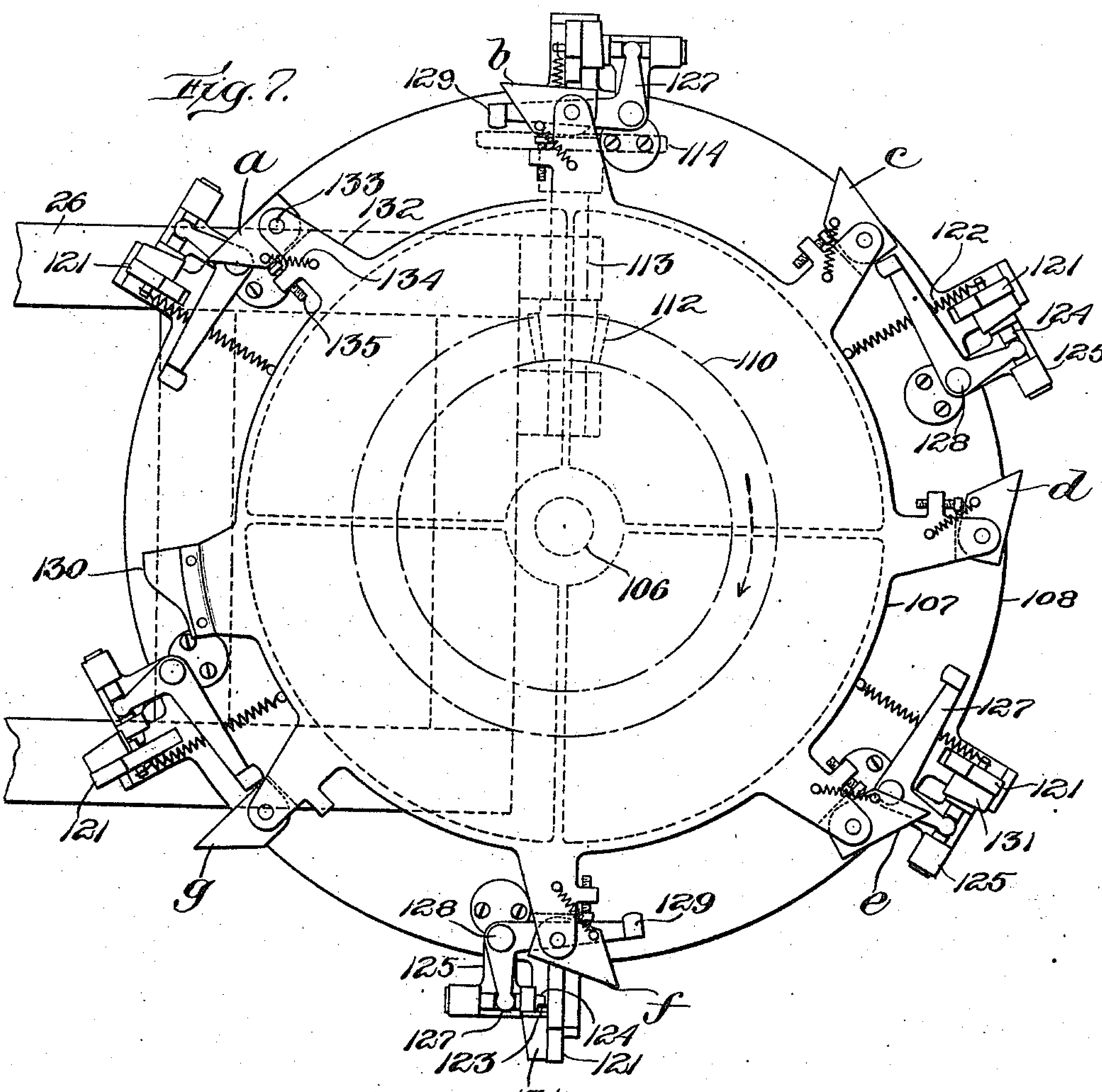
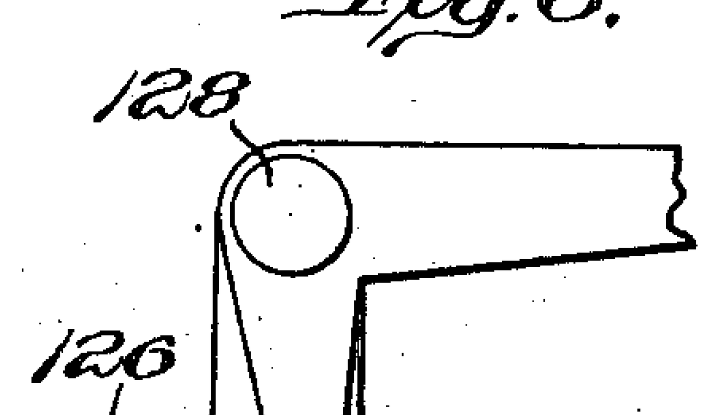


Fig. 8.



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UNITED STATES PATENT OFFICE.

GEORGE F. REINHARDT, OF BOSTON, MASSACHUSETTS.

LIFT COMPRESSING AND DISTRIBUTING MACHINE.

976,215. Specification of Letters Patent. Patented Nov. 22, 1910.

Application filed April 27, 1910. Serial No. 557,922.

To all whom it may concern:

Be it known that I, George F. Reinhardt, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Lift Compressing and Distributing Machines, of which the following is a specification.

The object of the present invention is to provide an improved machine for compressing and distributing heel lifts. In the manufacture of top-lifts for boot and shoe heels, it is customary to compress the top-lifts to increase their density, and it is desirable to compress them so that the density shall be uniform. The thickness of the lifts as they are produced from a hide varies, and in order to produce uniform density of the lifts when they are compressed, it is necessary to vary the compressing mechanism as the thickness of the lifts varies.

The present method of producing, compressing, and sorting heel-lifts, requires a relatively great number of separate operations, and entails a relatively great expense for manual labor because of the number of operations required. For example, the lifts, after being cut are graded according to their thickness and are deposited in various receptacles each designated for lifts within a predetermined range of variation. After this preliminary grading, the lifts are compressed, and in order to attain a degree of density approximately uniform throughout the several lots of lifts, the lifts of one lot are compressed and then the lifts of another lot are compressed, the compressing mechanism being adjusted for each lot. After the compressing operation it is necessary to regrade the lifts, because the texture or fibers of the lifts varies, with the result that one lift may expand more than another after being compressed, and the purpose of re-grading the lifts after compression is to guide the operative in distributing the lifts to their appropriate receptacles.

The foregoing operation is unsatisfactory in other respects than a waste of time and money for manual labor. Hitherto no compressing machine has been provided with automatic means for adjusting the compressing members, the adjusting of said members requiring at the present time some manipulation on the part of the operative. Accurate compression and uniform density of the lifts demand adjustment of the compressing members for each individual lift whenever the thickness of the lifts varies. For example, if the compressing members are adjusted for a relatively thick lift and then, while so adjusted, a relatively thin lift is introduced to them for compression, the thin lift does not receive the degree of compression required. If, on the other hand, the compressing members are adjusted for a relatively thin lift, and while so adjusted, a relatively thick lift is introduced, the degree of density produced by the compressing members is too great, and the lift is oftentimes rendered worthless because of being unduly crushed by excessive pressure. It is obviously impracticable to manually adjust the compressing members for each successive lift, and for this reason the requisite adjustment has hitherto been neglected because of the absence of automatic adjusting means.

The gaging or grading operation has hitherto been accomplished by means of a measuring instrument having two coacting members between which a lift is inserted, a dial, and a pointer coöperating with the dial, and means actuated by one of the coacting members for positioning the pointer according to the thickness of the lift. By means of such instrument, a visual indication is given and the lift is afterward manually deposited in an appropriate receptacle.

The foregoing method of grading serves for the preliminary grading operation and is repeated after the lifts are compressed to re-grade for the purpose hereinbefore stated. The preliminary grading and the adjusting of the compressing members for the several lots of lifts does not insure absolute uniformity of density of the lifts of one lot because there remains after the preliminary grading a degree of variation in the thickness of the lifts of one lot, however limited that degree of variation may be.

The present invention provides a machine including compressing members of which one is adjustable, and automatic means controlled by the thickness of the several lifts for adjusting the compressing members for each individual lift with the result that absolute uniformity of density of the lifts is insured. The automatic adjusting means for the compressing members is arranged in the path through which the lifts move in approaching the compressing members and the lifts are fed to the compressing members by automatic mechanism. It is apparent therefore that the provision of the said automatic adjusting mechanism dispenses with the necessity of a manual grading operation and that an improved quality of work is produced.

In addition to the aforesaid compressing mechanism, adjusting mechanism, and feeding mechanism therefor, the invention consists in the combination of said mechanisms, and means for automatically gaging the compressed lifts and for distributing the lifts so gaged in appropriate receptacles according to their thickness.

The present invention also includes automatic means for transferring the compressed lifts from the compressing members and for presenting them to the gaging and distributing mechanism in such position that they may be grasped by the gaging and distributing mechanism while the latter continues in motion.

The present invention therefore provides a machine which automatically gages and compresses lifts which are intermingled without regard to their thickness, and which thereafter gages and distributes them at various points according to their thickness after being compressed, the entire operation requiring no manual labor other than supplying the lifts in a column at the front of the machine.

Of the accompanying drawings which illustrate one embodiment of this invention, Figure 1 is a side elevation of a machine including automatic compressing mechanism, automatic gaging and distributing mechanism, and automatic mechanism for transferring the lifts from the compressing mechanism to the gaging and distributing mechanism. Fig. 2 represents a front elevation of the compressing mechanism. Fig. 3 is a rear elevation, partly in section, of the compressing mechanism. Fig. 4 is a vertical front to rear section of the compressing mechanism. Fig. 4^a is a vertical section of an adjustable compressing die. Fig. 4^b is a side elevation of the wedge member which controls the adjustable compressing die. Fig. 5 is a horizontal section of the compressing mechanism in a plane between the upper and lower compressing dies. Fig. 6 is a horizontal section on line 6—6 of Fig. 4. Fig. 7 is a top plan view of the automatic gaging and distributing mechanism. Fig. 8 is a top plan view, partly in section, of a locking device included in Fig. 7.

The same reference characters indicate the same parts wherever they occur.

Referring first to Fig. 1, a machine is illustrated which includes a chute for a vertical column 10 of lifts, automatic gaging and distributing mechanism indicated generally at 11, compressing mechanism arranged in a frame 12, mechanism for transferring the bottom lift from the column 10 to the compressing mechanism hereinafter described, and mechanism for transferring the lifts from the compressing mechanism to the gaging and distributing mechanism 11. The column 10 of lifts is supported upon a vertically reciprocating table 13. The lifts are confined in a vertical column by guides 14, 14, and 15 attached to the table 13 in any suitable manner (see Fig. 6).

The lower lift of the column is moved along the upper surface of the table 13 to a point between the coöperative compressing dies 16 and 17. The upper die 16 is affixed in a transverse portion of the press frame 12 (see Fig. 3). The lower die 17 is mounted in a carriage or cross-head 18 which is reciprocated vertically toward and from the fixed die 16. The means for reciprocating the carriage comprises coacting toggle links 19, 19, an eccentric 20, and an eccentric rod 21 connecting the eccentric to the pivot stud 22 by which the adjacent ends of the toggle links are joined. The lower toggle link is cylindrical at its lower end and is seated in a semi-cylindrical portion 23 of the press frame 12. The upper end of the upper toggle link is connected with the carriage 18 by a pivot stud 24. The eccentric 20 is affixed upon a cam shaft 25, mounted in bearings in a frame 26. A gear 27 affixed upon the shaft 25 is driven by a pinion 28 affixed upon a prime power shaft 29. The prime power shaft 29 is also mounted in bearings in the frame 26 and is provided with tight and loose pulleys 30 and 31.

The lower die 17 is movable with relation to its carriage 18 and is formed with a downwardly extending column or shank 32 arranged in a chamber in the carriage. At the upper end of the shank 32 is a shoulder 33 which is engaged by a helical spring 34. The spring is seated upon an annular shoulder 35 of the carriage, and it exerts its tension to normally elevate the die 17 with relation to the carriage. The lower end of the shank 32 may be provided with a stud 36 to abut against a portion of the carriage to limit the upward yielding movement of the die. The shank 32 is formed with a transverse opening 37 which is occupied by a wedge member 38. The wedge member is seated upon a horizontal surface of the carriage 18 and is provided with an inclined face 39 which coacts with a correspondingly inclined face 40 of the shank 32. Projecting horizontally from the wedge member is a rod 41 which is surrounded by a helical spring 42. The spring is compressed between the end of the wedge member and a bracket 43 affixed to the carriage 18. The tension of the spring 42 tends to move the wedge member into engagement with the face 40. The movement occasioned by the spring 42 may be limited by nuts or collars 44 affixed upon the rod 41 so as to engage the bracket 43.

The forward end of the wedge member 38 is connected by a pivot stud 45 with one end of a connecting rod 46. The connecting rod extends loosely through a collar 47 and is provided with a nut or nuts 48 at its forward end. The collar 47 is normally held against the nut 48 by a helical spring 49 coiled about the connecting rod 46 and engaging the opposite faces of the connecting rod and collar. The collar is provided with horizontal trunnions 50 which are mounted in the lower ends of arms 51 (see Fig. 2). The arms 51 are both affixed to a rock-shaft 52 mounted in horizontal bearings of a bracket 53 affixed upon the table 13. Between the arms 51 a third arm 54 is affixed to the rock-shaft. At the free end of the arm 54 is mounted a roll 55 which is one of two complemental rolls for engaging the bottom lift which passes from the column 10 to the compressing dies. The other of said complemental rolls is indicated at 56 and is fixed with relation to the table 13 except that it is free to rotate upon its stud 57. The wedge member 38, the coacting rolls 55 and 56, and the connecting devices therefor all reciprocate vertically with the carriage 18 and table 13.

The bottom lift x (see Fig. 5) is transferred from the column 10 to the compressing dies by a plate or other abutment 58 affixed to a main slide 59 arranged in guides 60 upon the table 13. The main slide 59 is movable from front to rear of the table and the edge of the plate 58 abuts against the forward edge of the bottom lift and pushes the lift along the upper surface of the table 13 to a position upon the lower die 17. The plate 58 lies upon the upper surface of the table and is no thicker than a lift. It is therefore adapted to remove the bottom lift without engaging the next lift. For the purpose of preventing displacement of the lifts above the bottom lift the perpendicular guide 15 (see Fig. 4) is provided with one or more flexible wipers 15′ which engage the rear edge of the second lift, and possibly the third and fourth lifts.

Referring again to Fig. 5, the main slide 59 supports a secondary slide 61 which is arranged in guides 61′ formed upon the main slide parallel to the guides 60. The rear end of the secondary slide is connected to the upper end of an actuating lever comprising two complemental arms 62, 62 (see Fig. 3). The lower ends of the arms 62 are affixed upon a rock-shaft 63 mounted in bearings in the frame 26. One of the arms 62 carries a cam roll or stud 64 which occupies a cam groove 65 in a cam disk affixed upon the shaft 25. The cam oscillates the arm 62 from front to rear and the arms reciprocate the secondary slide 61 through the medium of a transverse pin 66 extending through the slide and through the arms 62. The pin 66 may be provided with rolls or bushings 67. The arms 62 are provided with radial slots 68 for the reception of the rolls 67, said slots permitting the free rise and fall of the slide, due to the reciprocation of the carriage or cross-head 18.

The secondary slide is formed with a longitudinal slot 69 which is occupied by a stud 70 affixed in the main slide 59. With the exception of lost movement due to the length of the slot 69 the main slide 59 is reciprocated by the arms 62. The purpose of the secondary slide is to open and close jaws which engage the lifts. One pair of jaws 71 is affixed to pivot studs 72 at the forward end of the main slide 59. The pivot studs extend downwardly through the slide 59 and through longitudinal slots 13′ in the table 13. At the lower ends of the studs 72 are affixed arms 73 which are connected with each other by a pivoted link 74. The arrangement of the arms 73 and link 74 is such as to cause the jaws 71 to move in opposite directions. A spring 75 is connected to one of the arms 73 and exerts its tension tending to close the jaws 71. The jaws are arranged to engage the side edges of the bottom lift and to center the lift with relation to the longitudinal center line of the lower die 17. One of the jaws 71 is provided with a bell crank arm 76 which carries a stud 77. The stud occupies a slot 78 formed in the forward end of a link 79 arranged parallel to the length of the slide. The rear end of the link is pivotally connected to an arm carried by the secondary slide 61.

The main slide and secondary slide, as shown by Fig. 5 are in their respective forward positions. When the arms 62 are oscillated to move the secondary slide to the rear the link 79 is moved so as to permit closing of the jaws 71 which are at all times subject to the tension of the spring 75. Continued movement of the secondary slide effects rearward movement of the main slide 59. Thus the jaws 71 are brought together to engage the side edges of the bottom lift, and the plate 58 is moved into engagement with the forward edge of said lift. The main slide continues to move to the rear until the lift is deposited upon the lower die 17. When the arms 62 are oscillated in the opposite direction the secondary slide is moved first and then the main slide is moved when the secondary slide engages the rear of the stud 70. The initial movement of the secondary slide effects the opening of the jaws 71 and the two slides then return to their respective forward positions. If desired the feed plate 58 may be sufficiently long to underlie the column of lifts when the slide is at its rear position so as to support the remaining lifts in the column until the plate is returned to its forward position.

The lift in passing from the column 10 to the compressing die is passed between the normally closed rolls 55 and 56. The roll 55 is elevated coextensively with the thickness of the lift, and through the medium of the rock-shaft 52, arms 51, collar 47, spring 49, and connecting rod 46 the wedge member 38 is positioned with relation to the die 17. It will be observed by reference to Fig. 4 that the spring 49 is stouter than the spring 42 and that the former is therefore adapted to overpower the latter. The retraction of the wedge member disengages the wedge surface 39 from the coacting wedge surface of the shank 32 and the space thus provided results in a loss of motion of the die 17 when the die carriage 18 is elevated. During the first stage of the upward movement of the carriage 18 the die 17 upon which a lift is resting moves in unison with the carriage because of its supporting spring 34. When, however, the upper surface of the lift engages the upper die 16 the upward movement of the lower die is arrested, but the carriage 18 continues to rise thus compressing the spring 34. The wedge member 38, however, continues to rise with the carriage 18, being supported by a transverse surface of the carriage, and the wedge surface 39 is moved into engagement with the surface 40 with the result that the wedge member acts as a rigid abutment for the lower die. The final stage of the upward movement of the carriage 18 effects the compressing of the lift between the dies which are both positively supported at this time. During the first stage of descent of the carriage 18 the die 17 remains stationary, being held against the upper die by the spring 34, but when the carriage engages the upper side of the stud 36 the die 17 descends in unison with the carriage, its upper surface being once more in the plane of the table 13.

In order to preserve adjustment of the wedge member after the latter has been retracted by the movement of the roll 55 the machine is provided with a locking device which engages the wedge member at the appropriate time and clamps it in whatever position it occupies. The locking device is shown by Fig. 4 and comprises a roll 81 which coacts with a surface 38′ of the wedge member and with an inclined surface 18′ of the carriage 18. The roll lies upon and is supported by the surface 38′ and extends through openings in the carriage 18 and through radial slots 82 formed in a pair of complemental arms 83. The arms are affixed to a rock-shaft 84 which is mounted in bearings in the frame 26. One of the arms 83 is provided with a second arm 85 which carries at its free end a cam roll 86. A spring 87 connected to the arm 85 holds the arm toward a cam 88 with which the roll 86 coacts. The cam 88 is so formed and arranged as to disengage the locking roll 81 from the inclined surface 18′ while the bottom lift is advancing from the column to the coacting rolls 55 and 56. But at the instant when the lift is between the coacting rolls the cam 88 releases the roll 86 and permits the spring 87 to oscillate the arms 83 so as to move the locking roll 81 toward the rear. The locking roll in moving to the rear engages the inclined face 18′ and becomes wedged between said face and its supporting face 38′ and in this way the wedge member is clamped upon its horizontal seat in the carriage 18 by the tension of the spring 87 through the medium of the devices described. Thus adjustment of the wedge member is preserved after the lift passes beyond the coacting rolls 55 and 56 and until the compressing stroke of the carriage 18 is completed. After each compressing stroke the arm 85 is lifted by the cam 88 and the wedge member is released so that it may be restored to its normal position by its spring 42. It will thus be apparent that each lift which is advanced to the compressing die effects a loss of motion of the lower die, the loss being greater for a relatively thick lift and less for a relatively thin lift. The relative proportions of the automatic adjusting devices for the lower die are such as to compress all lifts to a uniform degree of density.

It will be observed that the slots 82 in the arms 83 are adapted to permit free rise and fall of the locking roll 81, and that the arms 83 are therefore adapted to hold the roll 81 in locking position irrespective of the rise and fall thereof.

Each lift after being compressed between the dies 16 and 17 is automatically removed from the dies and presented to the gaging and distributing machine hereinafter described. For the purpose of removing a lift from the die 17 the main slide 59 is provided with a second pair of jaws indicated in Figs. 4 and 5 by the numeral 89. The jaws are mounted upon pivots 90 and are provided with bell crank arms 91 which extend toward each other over the secondary slide 61. The inner ends of the arms 91 are forked and overlap. They embrace a stud 92 affixed to the secondary slide and are therefore oscillated by the relative movement of the secondary slide.

The jaws 89 are formed with transverse extensions or fingers 89′ which are adapted to overlap and engage the forward edge of the lift lying upon the die 17. The initial movement of the secondary slide to the rear effects closing of the jaws 89 so that when the main slide 59 is moved to the rear the fingers 89′ may engage and remove a lift. The lift is thus removed from the die 17 and placed upon the rear end of the table 13. When the secondary slide 61 is moved toward the front of the machine after having deposited a compressed lift at the rear end of the table 13 the jaws 89 are first opened and then moved forwardly. In the meantime another lift has passed through the stages hereinbefore described and rests upon the die 17. The fingers 89′ which are separated beyond the width of the lift on the die pass by the lift and are subsequently closed so as to engage the forward edge of the lift in the manner described. The rear edge of each lift is moved beyond the rear edge of the table 13 into a pair of coacting jaws 93, 94 by which the lift is presented to the gaging and distributing mechanism. The jaw 93 is affixed upon a rock-shaft 95 and the jaw 94 is pivotally connected to the jaw 93 by a pin 96. A spring 97 compressed between the rear ends of the jaws normally closes the forward ends. The rock-shaft 95 is mounted in bearings at the upper end of a forked lever having arms 98. One of the arms 98 (see Fig. 3) is provided with a cam roll or stud 99 which occupies a cam groove 100 formed in a cam upon the shaft 25. The lower ends of the arms 98 are loosely mounted upon the rock-shaft 63 which supports the arms 62, but otherwise the arms 98 are entirely independent of the arms 62.

Affixed to one end of the rock-shaft 95 is an arm 101 which carries a roll 102. The roll occupies a slot 103 formed in a fixed arm or bracket 104. The slot 103 is concentric to the shaft 63 with the exception of the rear end of the slot which is curved as indicated at 105.

When a lift is moved to the rear by the jaws 89 the rear edge of the lift is forced between the yielding jaws 93, 94 whose forward ends are slightly beveled as shown by Fig. 4, to permit the lift to open them. The jaws 93, 94 upon receiving a lift are moved to the rear by the action of the cam 100 upon the arms 98. The lift which is delivered in a horizontal position to the jaws 93, 94 is gradually turned as it travels about the axis of the shaft 63, the jaws being held in their original position with relation to the arms 98 by the roll 102 which travels through the concentric slot 103. Before the arms 98 reach the limit of their movement the roll 102 engages the curved face at the rear end of the slot 103 and is diverted from a concentric motion about the shaft 63. As the arms 98 continue to move to the rear the rock-shaft 95 is rotated in its bearings so that the jaws 93, 94 are finally moved to the position shown by dotted lines in Fig. 4. In this position the work engaging surfaces of the jaws 93, 94 are vertical and the lift extends vertically instead of horizontally. In this position the jaws 93, 94 remain for a considerable period of time, during which the lift is removed from them by the gaging and distributing mechanism. The arms 98 are afterward moved toward the table 13 to receive the next lift. The gaging and distributing mechanism indicated in Fig. 1 by the numeral 11 receives its motion from the cam shaft 25 so that it is caused to coöperate with the transferring jaws 93, 94.

At the rear of the frame 26 is a fixed column or post 106. At the upper end of the column is affixed a plate 107 which is of a generally circular outline. Below the stationary plate 107 is a rotary table 108 mounted upon the column 106. The table 108 is provided with a hub or sleeve 109 at the lower end of which is a beveled gear 110. A horizontal surface within the gear 110 bears upon and is supported by a horizontal flange 111 extending from the support for the column 106. The gear 110 is driven in the direction indicated by the arrow in Fig. 7 by a pinion 112 affixed at one end of a shaft 113. The shaft is further provided with a sprocket 114 which is connected with a sprocket 115 by a chain 116. The sprocket 115 is affixed upon the cam shaft 25 and thus rotates the table 108 in accordance with the speed of the compressing and transferring mechanisms. The table 108 is of a generally circular shape and it has attached to its periphery at equal distances apart a series of depending plates 117. Each plate carries an adjustable abutment 118 which constitutes a gaging jaw. The table 108 is provided with an equal number of movable jaws 119 which coact respectively with the abutments 118. The jaws 119 are pivotally mounted upon pins 120 and are provided with arms or extensions 121. Each arm 121 is engaged by a spring 122 which normally moves the jaw 119 toward the abutment 118. The coacting surfaces of the abutments 118 and jaws 119 are substantially parallel to their rotation on the axis of the column 106.

As shown by Fig. 4 an abutment 118 is in the act of passing at one side of a lift x while its complemental jaw 119 is passing the other side of the lift, the lift being held stationary by the jaws 93, 94. In this position the jaw 119 is locked but is about to be released as hereinafter explained, so that the spring 122 may close it to grasp the lift and remove it from the jaws 93, 94. Each lift is thus removed from the jaws 93, 94 and is carried in an arc about the column 106 and is released at an appropriate point according to its thickness by devices which effect the opening of the jaws 119.

On one side of each arm 121 is an abutment 123. At the side of each arm is a spring follower or bolt 124 (see Fig. 8) adapted to lie in front of the abutment 123 when the arm 121 is retracted, and thus lock the arm in open position. Each bolt 124 is mounted to slide in a bracket 125 mounted upon the table 108. The outer end of each bolt 124 is engaged by a spring 126 by which the bolt is held in locking position. The bolt is formed with a recess in its exterior, which recess is occupied by one end of a bell crank 127. The bell crank is mounted in the bracket 125 by a pivot stud 128 and its other arm is provided with a block or plate 129 which is adapted to engage and pass a stationary cam 130 attached to the plate 107. The cam 130 is arranged near the point where the lifts are presented to the gaging and distributing mechanism, and the blocks 129 are deflected by the cam while the abutment 118 and jaw 119 are respectively one on either side of the lift in the jaws 93, 94. The effect of the cam 130 is to swing the bell crank 127 on its pivot 128 and thereby retract the bolt 124 and release the arm 121. The spring 122 thereupon closes the jaw 119 and the lift is grasped and removed from the jaws 93, 94. The upper end of each arm 121 is provided with a hardened piece 131 which is hereinafter termed a detector. It is apparent that the position to which the spring 122 may draw the arm 121 is governed by the thickness of the lift between the abutment 118 and the jaw 119. The abutments 118 are all adjusted so as to be equally distant from the center of the column 106 and the detectors 131 would therefore be positioned equally distant from the axis of rotation if the lifts were all of equal thickness. But a relatively thin lift would permit its detector to move closer to the axis of rotation than a relatively thick lift, and when lifts of various thicknesses are introduced to the gaging jaws the detectors are positioned by the lifts so as to travel in larger or smaller circles about the axis of the column 106. This variation in the positioning of the detectors is utilized as hereinafter explained to effect selective opening of the jaws 119 at various points for the purpose of distributing the lifts according to their thickness.

Referring now to Fig. 7, *a*, *b*, *c*, *d*, *e*, *f*, and *g* indicate tripping devices hereinafter termed actuators. These tripping devices are pivotally mounted in radial arms 132 extending from the rim of the plate 107. The pivots of the actuators are indicated at 133. Each actuator is normally drawn toward the center of the plate 107 by a spring 134 and is adapted to be swung outwardly against the tension of the spring. Each arm 132 is provided with an adjustable stop 135 against which the actuator is held by its spring. The outer ends of the several actuators are preferably pointed and the several stops 135 are so adjusted as to position the successive actuators, beginning with the actuator *a*, in successively larger circles with relation to the column 106. A pair of gaging jaws, namely a coacting abutment 118 and jaw 119, after grasping a lift presented thereto, carries the lift until the detector 131 associated therewith engages the first pivoted actuator lying in its path. The actuator so engaged is turned about its pivot 133 because of the movement of the detector in the direction of the arrow in Fig. 7. The detector and actuator thereupon coact with the result that the arm 121 is retracted and the lift is released so that it may drop.

Suitable bins or other receptacles (not shown) may be provided at the respective tripping devices to receive the lifts which are released, and in this way a plurality of lifts of various thickness become distributed according to their thickness.

A detector, after being retracted by an actuator, is locked in its retracted position by its bolt 124 which is projected in front of its abutment 123. The actuator is restored to its original position against its stop 135 as soon as it is released by the detector. The jaws which are thus opened remain in open position until their locking bolts 124 are retracted by the action of the cam 130. It is desirable to effect the release of all lifts before the jaws again pass the receiving point, and for this reason the actuator *g*, which is the last of the series, is preferably formed and arranged to open all unopened jaws which pass it. This actuator therefore does not require any adjustable stop 135 or spring 134.

Having thus described the nature of my said invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, what I claim is:—

1. A compressing machine comprising coactive compressing members, and means controlled by the thickness of the work independently of said compressing members for causing said members to close positively and in proportion to the thickness of the work.

2. A compressing machine comprising coactive compressing members, means independent of said compressing members for gaging the thickness of the work, and means controlled by said gaging means for causing said compressing members to close positively and in proportion to the thickness of he work.

3. A compressing machine comprising coactive compressing members, a feed table, means arranged to be engaged by the work moving along said feed table for gaging the thickness of the work, and means con-

trolled by said gaging means for causing said compressing members to close positively in proportion to the thickness of the work.

4. A compressing machine comprising coactive compressing members, means for feeding the work to said compressing members, means for gaging the thickness of the work being fed, and means controlled by said gaging means for causing said compressing members to close positively in proportion to the thickness of the work.

5. A compressing machine comprising coactive compressing members, adjustable means for causing said compressing members to close positively more or less, means at one side of the compressing members for gaging the thickness of the work, and means connecting said gaging means and said adjustable means for causing said compressing members to close in proportion to the thickness of the work.

6. A compressing machine comprising coactive upper and lower compressing members, one of said members being fixed, a reciprocatory carrier for the other compressing member, an adjustable member carried by said carrier for causing the movable compressing member to close more or less with relation to the fixed compressing member, means for gaging the thickness of the work, and means controlled by said gaging means for positioning said adjusting member to cause the movable compressing member to close in proportion to the thickness of the work.

7. A compressing machine comprising coactive upper and lower compressing members, the upper member being fixed, a reciprocatory carrier having a yielding support for the lower compressing member, an adjusting member carried by said carrier for causing said lower compressing member to close more or less with relation to the upper compressing member, means for gaging the thickness of the work, and means controlled by said gaging means for positioning said adjusting member to cause said lower compressing member to close in proportion to the thickness of the work.

8. The combination with means for positively compressing an article, of means for gaging and carrying the work and releasing it at any one of a series of points, the releasing means being controlled by the thickness of the work, and means for transferring the work from said compressing means and presenting it to said gaging and carrying means in position to be received by the same.

9. A compressing machine comprising coactive compressing members, means for positively closing said members, and means controlled by the thickness of the work independently of said compressing members for adjusting said closing means to cause said members to close in proportion to the thickness of the work.

10. A compressing machine comprising coactive compressing members, means for gaging the work, means for feeding the work to said compressing members, and means controlled by said gaging means for causing said compressing members to close positively and in proportion to the thickness of the work.

11. The combination with means for positively compressing an article, of means for removing the article from said compressing means, means for receiving the article from said removing means, and means controlled by the thickness of the article for causing said receiving means to give the article a predetermined position.

12. The combination with means for positively compressing an article, of means controlled by the thickness of the article for giving the article a predetermined position, and means for transferring such article from said compressing means to said positioning means.

13. The combination with means for positively compressing articles one at a time, of means controlled by the thickness of the several articles for distributing such articles according to their thickness, and means for transferring the articles from the compressing means to the distributing means.

14. The combination with means for positively compressing an article, of means for removing the article from said compressing means, and means controlled by the thickness of the article for giving it a predetermined position.

In testimony whereof I have affixed my signature, in presence of two witnesses.

GEORGE F. REINHARDT.

Witnesses:

W. P. Abell,

P. W. Pezzetti.