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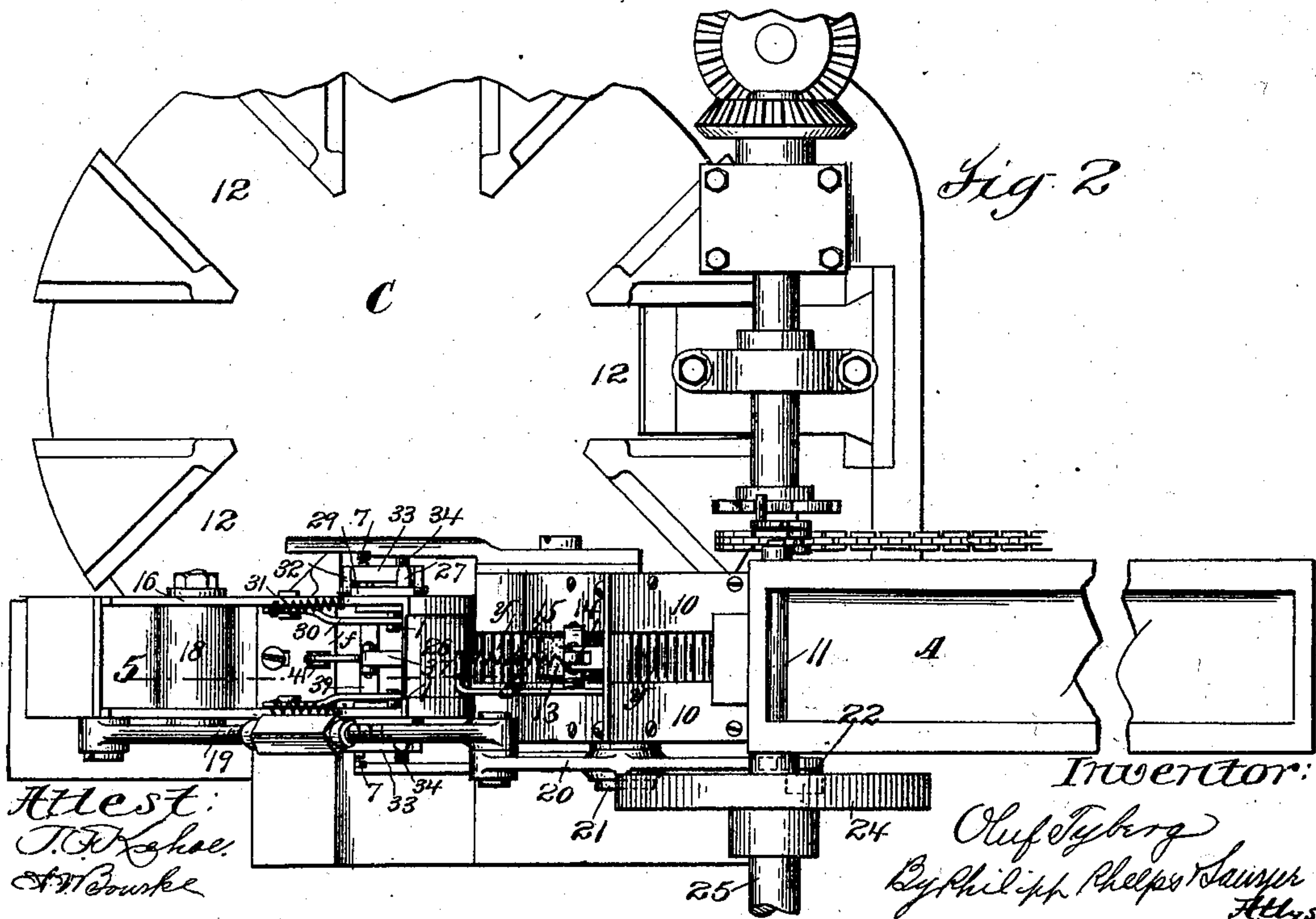
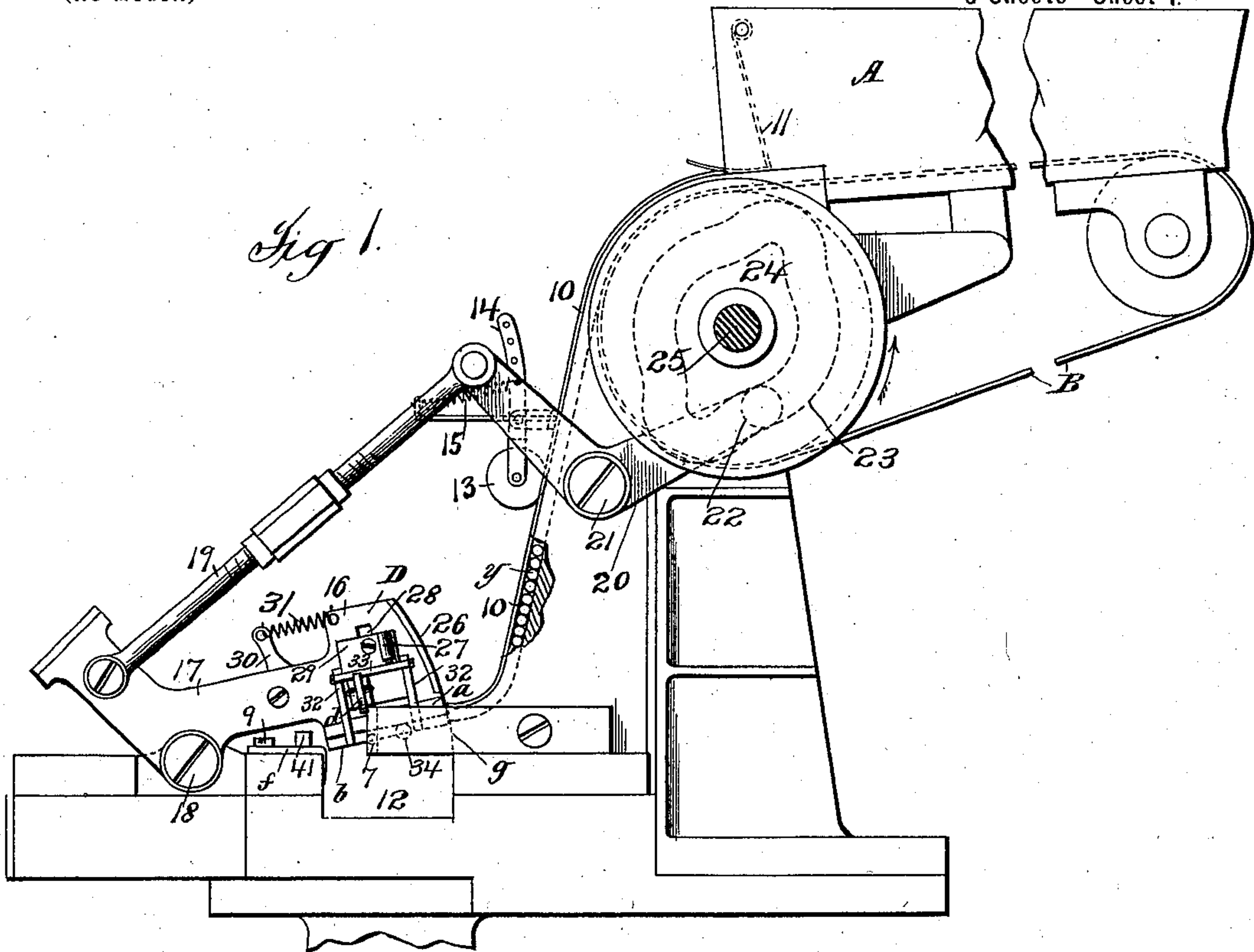
Patented Sept. 9, 1902.

O. TYBERG.
PACKING MECHANISM.

(Application filed Nov. 22, 1898.)

(No Model.)

3 Sheets—Sheet 1.



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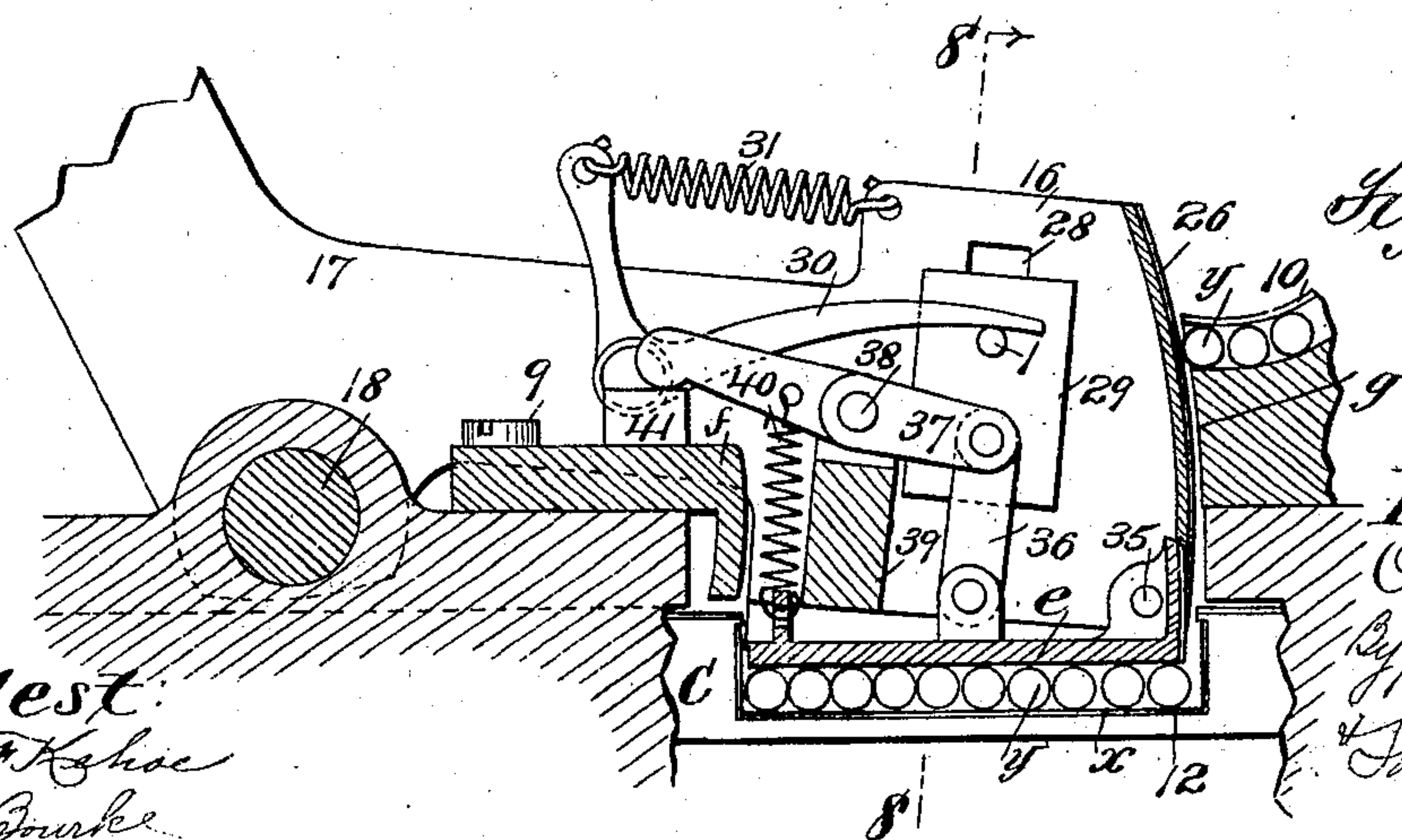
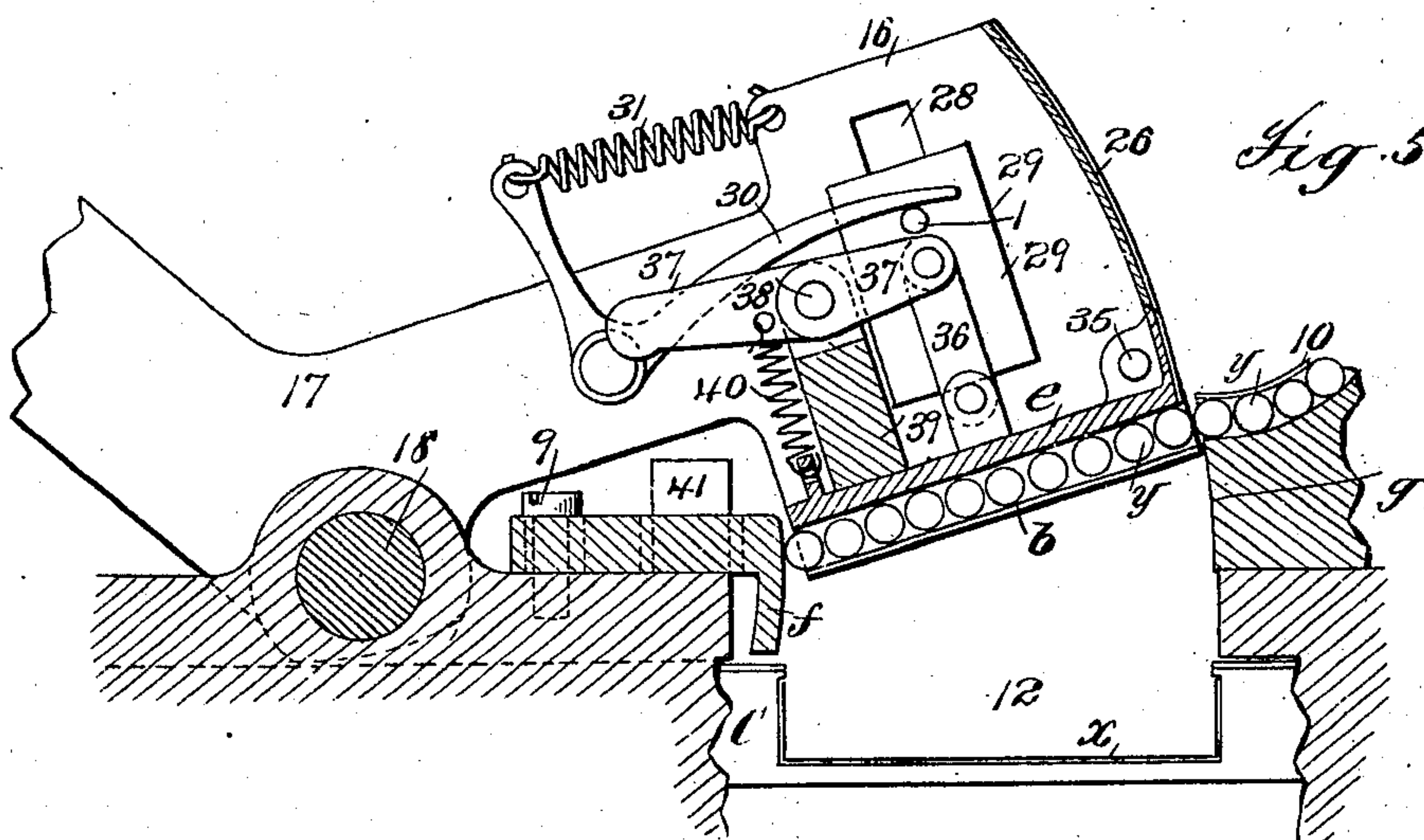
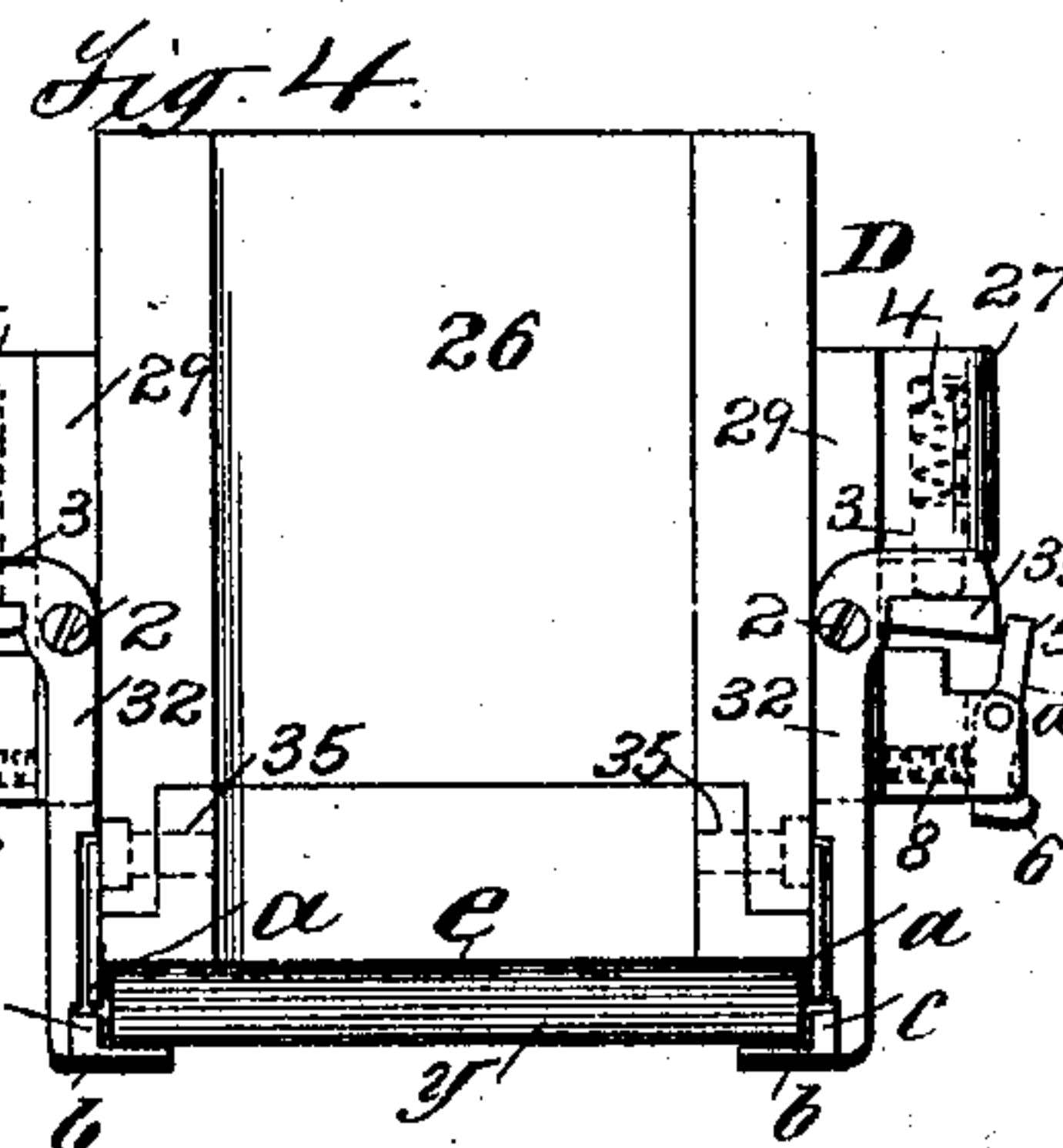
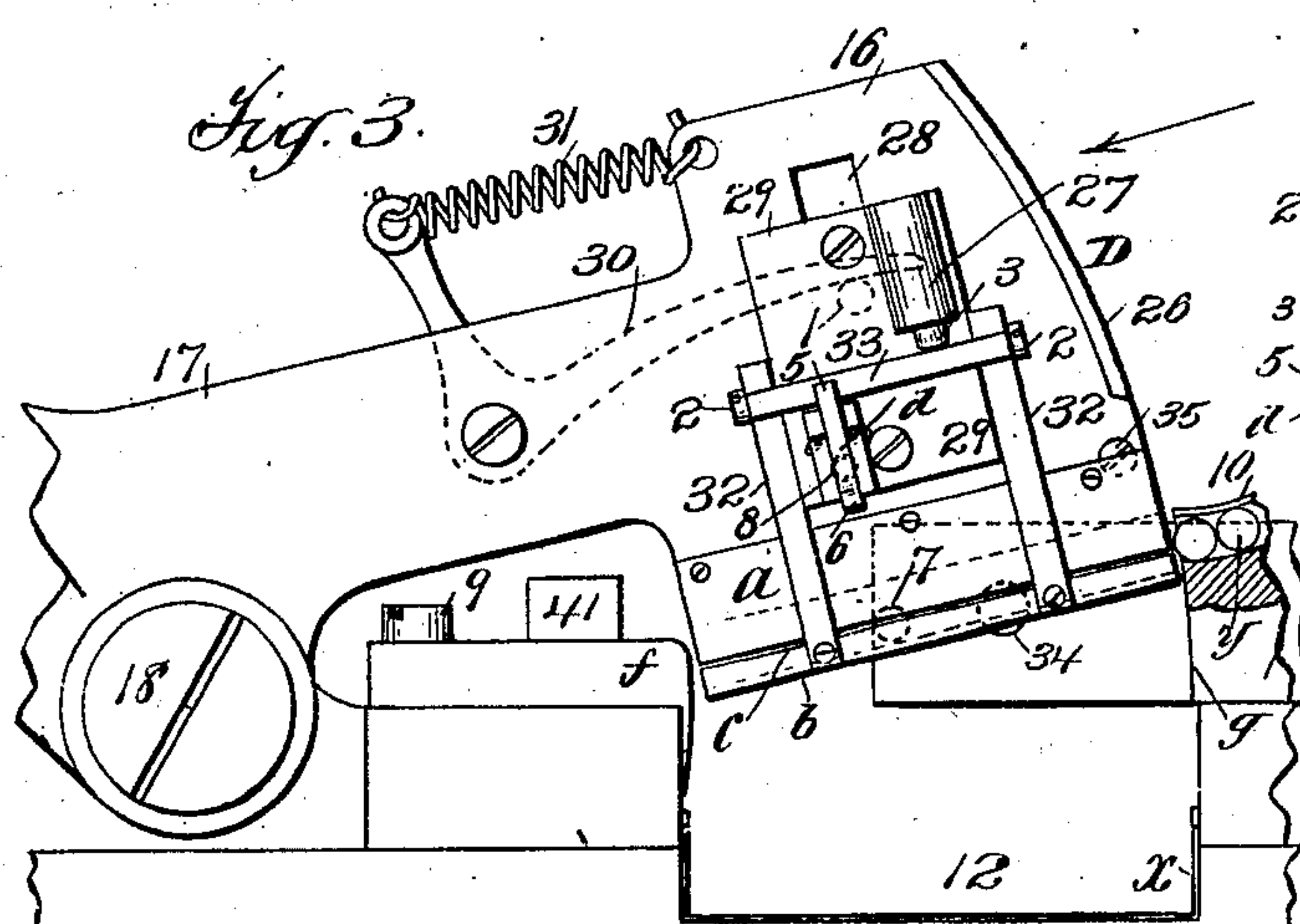
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3 Sheets—Sheet 2.



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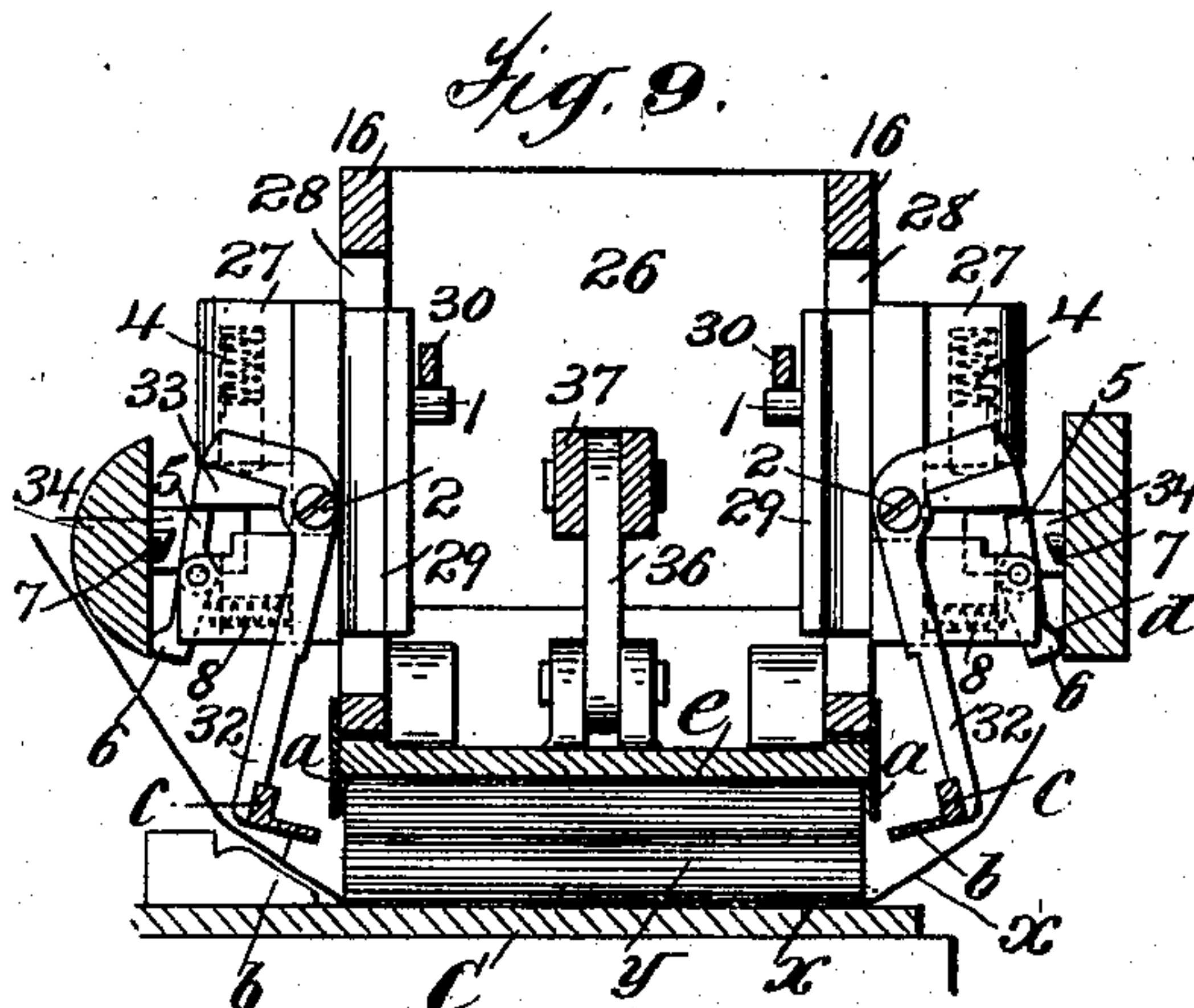
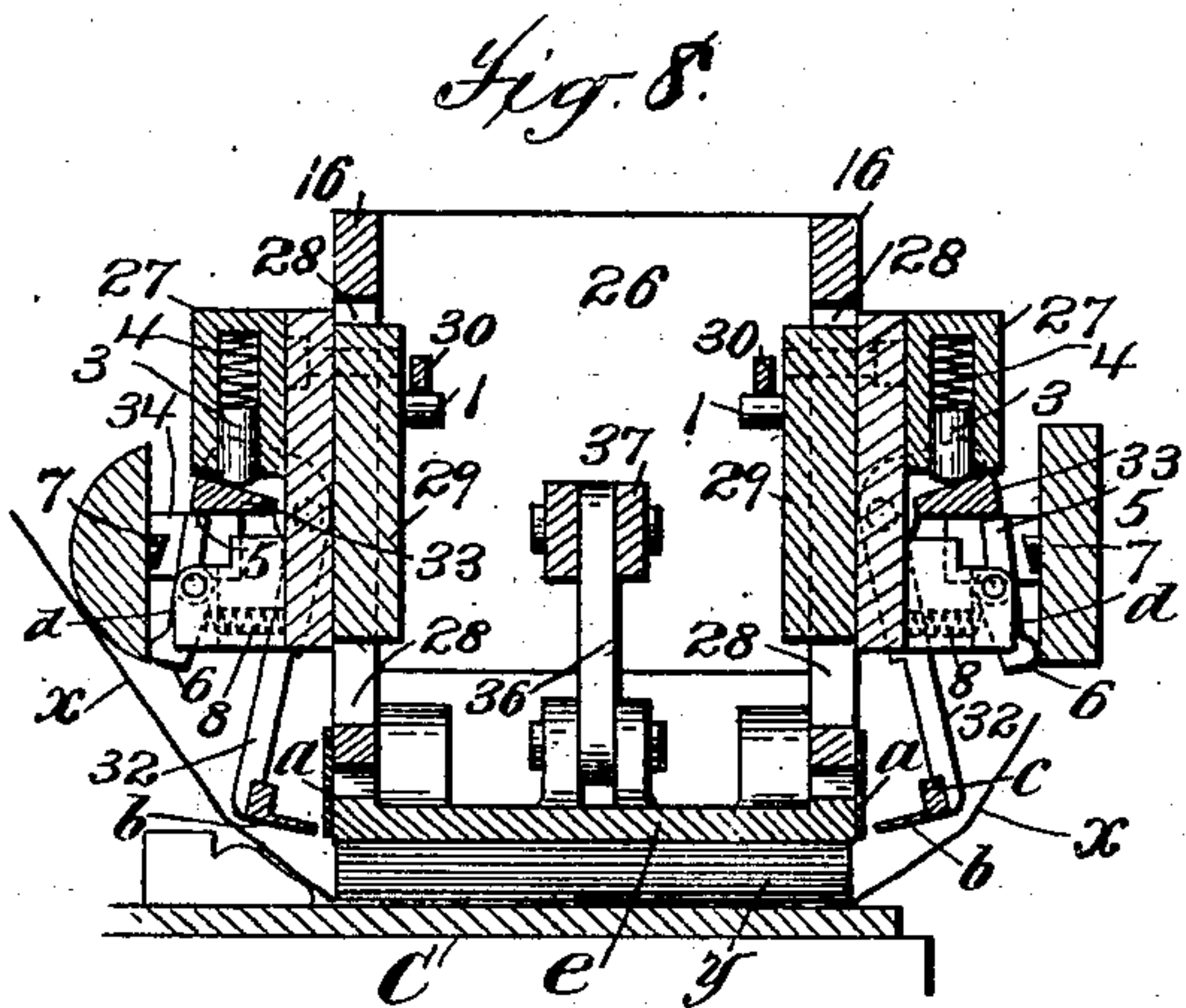
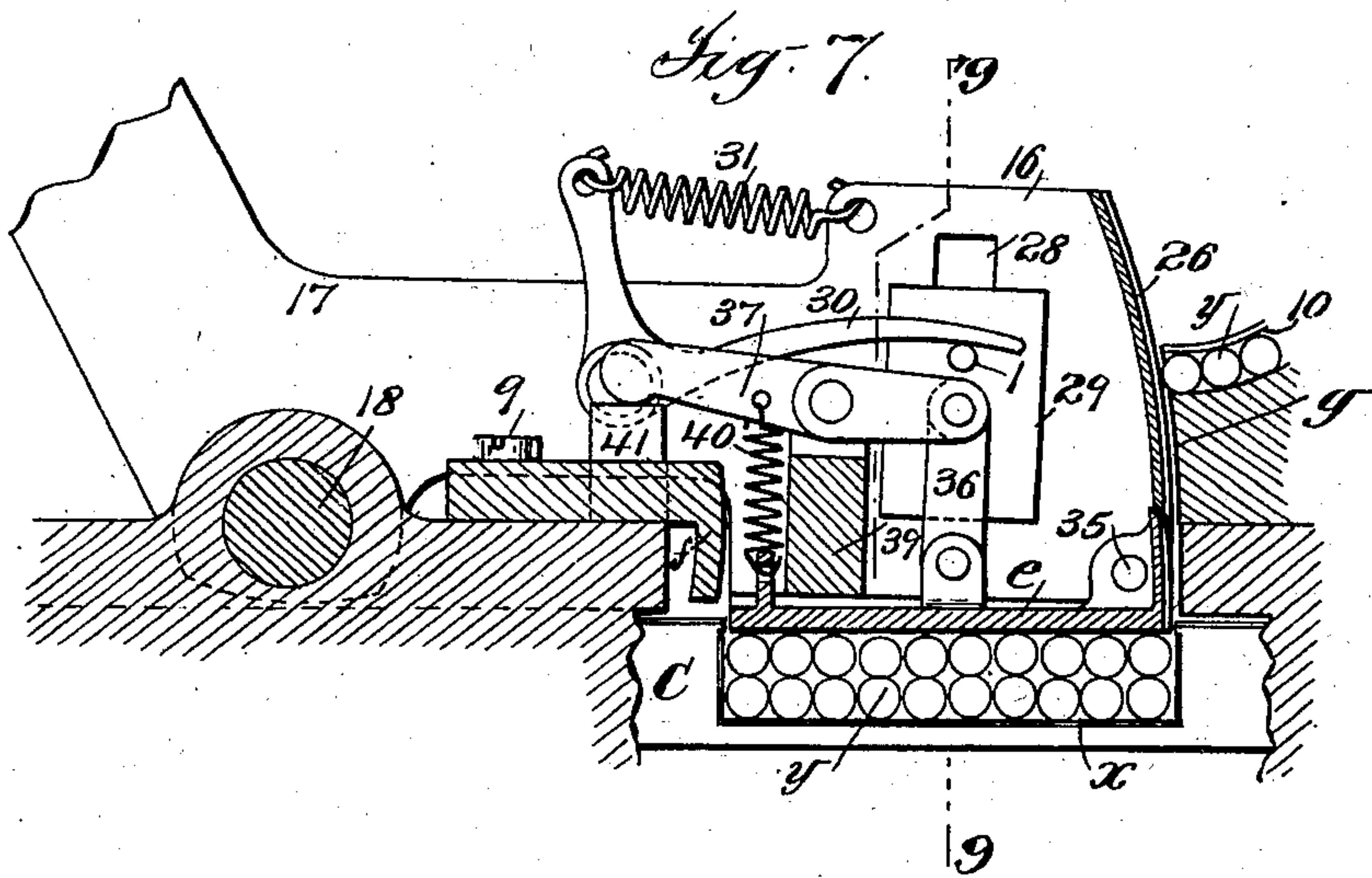
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(No Model.)

3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

OLUF TYBERG, OF NEW YORK, N. Y., ASSIGNOR TO THE AMERICAN TOBACCO COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

PACKING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 708,787, dated September 9, 1902.

Application filed November 22, 1898. Serial No. 697,123. (No model.)

To all whom it may concern:

Be it known that I, OLUF TYBERG, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Packing Mechanism, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 The object of the present invention is to provide an improved mechanism for delivering cigarettes or similar articles in proper position and number to receivers, such as boxes, in which the articles are to be packed or to machines of any suitable form by which the articles are to be packed or otherwise handled in certain quantities.

20 The invention is especially designed for use in packing cigarettes, the mechanism embodying the present invention being especially adapted for counting cigarettes and delivering them to the boxes in which they are to be packed, and I aim especially to provide a machine that may be operated at a high rate of speed without danger of injury to the cigarettes and especially to secure the proper and rapid packing of a plurality of rows of cigarettes with a considerable number of cigarettes in each row.

30 The invention has been made in connection with the production of a machine for packing twenty cigarettes in two rows of ten cigarettes each and will be illustrated and described in connection with such a machine. In machines that pack such a large number of cigarettes in a row it is especially important for operating at a high rate of speed and without danger of cutting the cigarettes that the cigarettes shall be fed to the packing mechanism at a high rate of speed, so as to secure the passage of ten cigarettes to position with short feeding intermissions in the operation of the packing mechanism, while at the same time much feeding pressure upon the fragile cigarettes must be avoided and great certainty in the feeding of the cigarettes into the packing mechanism in proper time relatively to the movement of the packing mechanism must be secured to avoid injury to the cigarettes. For these reasons it is very desirable that the cigarettes should be fed into the pack-

ing mechanism on an incline, so that the cigarettes will roll into position in the carrier rapidly and without substantial pressure thereon, while it is also desirable that the cigarettes should be delivered by the carrier to the packing-box or other receiver or mechanism in a horizontal position, as this position is best adapted for securing the proper packing and wrapping of the cigarettes. As the cigarettes, therefore, are to be delivered on a horizontal plane from a plane inclined to the horizontal, the most efficient and rapid operation is secured by a cigarette-carrier moving from the inclined position in which the cigarettes are received to the horizontal position in which they are delivered. A very simple and efficient construction for this purpose capable of operating at a very high rate of speed is secured by a pivotally-mounted carrier, so that the carrier swings in the arc of a circle from the receiving to the delivering position, and vice versa, and a carrier having such a movement forms an important feature of the present invention. As is well known, cigarettes must be handled with great care, not only on account of their fragile character and liability to break and bend, but also because any shock or jar tends to loosen the tobacco at the ends of the cigarettes. For this reason it is important that the cigarettes shall be dropped as short a distance as possible in delivering them to the packing-box or other receiver, so that it is desirable that the supports below the cigarettes, which are withdrawn for the delivery of the cigarettes, shall remain in position to support the cigarettes until the cigarettes are carried to or substantially to their final position and then be withdrawn to release the cigarettes. One of the important features of the present invention relates to a construction by which this result is secured, and consists in mounting the supports so that they move substantially parallel with the cigarettes or delivering-surface while being withdrawn from position to support the cigarettes. I am thus enabled to provide a construction in which the supports move with the cigarettes to such a point relatively to the final position of the cigarettes that the dropping movement of the cigarettes after

release by the supports is so reduced that all danger of injury to the cigarettes from this cause is avoided. In delivering cigarettes onto a plane surface, so that free movement of the supports outward from beneath the cigarettes is possible, the supports may move substantially into contact with the surface upon which the cigarettes are delivered and then be withdrawn, so that the cigarettes are practically laid upon the delivering-surface. I preferably secure this result by supports mounted to swing on horizontal pivots and mount my supports by suspending them from pivots placed at a considerable distance above the supports, so that in withdrawing they swing away from the ends of the cigarettes in an arc of so long radius that their movement is approximately parallel with the cigarettes. The movement of the supports may be varied, however, and they may be mounted otherwise in any suitable manner so as to secure the movement desired. It is desirable that the cigarettes be followed into the packing-box or other receiver by a presser-plate parallel with the cigarettes, so as to secure the proper position of the cigarettes in the box and prevent their piling up therein. If the supports for the cigarettes move substantially into contact with the delivering-surface before the cigarettes are released, it is possible to use a carrier having no further movement after the withdrawal of the supports, the top of the cigarette-receiving chamber in the carrier being sufficiently close to the cigarettes to prevent piling of the cigarettes and perform this function of the presser-plate; but even in such case it is desirable that a light pressure on the cigarettes should be secured by a further movement of the carrier or presser-plate after the supports are withdrawn and the cigarettes deposited in the box or other receiver, and it is especially important that this further movement of the carrier or presser-plate should be employed when the cigarettes are dropped a substantial distance. I preferably, therefore, provide for a further movement of the carrier independently of the supports after the supports are withdrawn for the delivery of the cigarettes.

Many of the features of the present invention, including a carrier moving independently of the supports after the latter are withdrawn, as above described, may be applied in machines in which a single row of cigarettes or other articles are packed or otherwise handled or two or more rows are packed or otherwise handled simultaneously; but certain features of the invention relate to mechanism in which a plurality of rows of cigarettes or other articles are superposed by packing or delivering one row and then another row upon the same, and so on for successive rows. In such constructions employing a pivoted carrier it is obvious that a presser-plate occupying a fixed position in the carrier cannot be exactly parallel with the cigarettes in pack-

ing successive rows, as the carrier must move through different arcs in its successive packing movements. Assuming that the cigarettes are delivered upon a horizontal surface, the presser-plate, if fixed in the carrier, may be exactly horizontal in packing one row, but will be inclined to the horizontal in packing other rows. It is very desirable that substantial parallelism of the presser-plate with the cigarettes be secured in packing successive rows, as otherwise there is a tendency to force the cigarettes out of position, which tends to injure the cigarettes or interfere with their proper packing, and I preferably secure this result by mounting and operating the presser-plate in the carrier in such a manner that a movement of the presser-plate independently of the carrier shall be secured sufficient to compensate for the difference in movement of the carrier in packing successive rows. For this purpose I preferably pivot the presser-plate in the carrier and provide means for swinging the presser-plate on its pivot sufficiently to secure the parallelism of the plate with the cigarettes in packing the successive rows.

The invention includes various other features of improvement in this class of machines in addition to those above pointed out, all of which will be fully described hereinafter and particularly pointed out in the claims.

The invention has been made in connection with a machine such as shown and described in United States Letters Patent No. 482,542, dated September 13, 1892, in which cigarettes are counted and delivered into partially-formed boxes within holders on the packing-machine and the box-blank then folded to complete the box and inserted in a slide-cover, one of the especial objects of the invention being to provide an improved mechanism for counting the cigarettes and delivering them to the boxes of such machines, and the invention will be illustrated and described as thus applied.

For a full understanding of the invention a detailed description of a construction embodying all the features of the invention will now be given in connection with the accompanying drawings, forming a part of this specification and showing a part of a packing-machine similar to that of Letters Patent No. 482,542, above referred to, with my improvements applied thereto in their preferred form, and the features forming the invention will then be specifically pointed out in the claims.

In the drawings, Figure 1 is a side elevation of the cigarette counting and delivering portion of the machine with the cigarette-raceway partly broken away. Fig. 2 is a plan view of the same. Fig. 3 is a side elevation of the carrier on an enlarged scale, showing the carrier in position to receive cigarettes from the raceway. Fig. 4 is a front view of the same. Fig. 5 is a section on the line 5 of Fig. 2, showing the parts in the same position as in Figs. 3 and 4. Fig. 6 is a similar view

showing the carrier in the position of delivering the first or bottom row of cigarettes to the box. Fig. 7 is a similar view showing the carrier in the position of packing the second or top row of cigarettes. Fig. 8 is a vertical cross-section on the line 8 of Fig. 6, and Fig. 9 is a similar section on the line 9 of Fig. 7.

Referring now to said drawings, A is the cigarette machine or hopper, from which the cigarettes are fed by belt B, forming the bottom of the hopper, the cigarettes being fed by said belt B out of the hopper A to and through the vertical raceway 10, vibrating separator 11 being preferably used to prevent clogging of the outlet from the hopper and the raceway 10, extending downward to a point above the rotary table C, having the holders 12 for the boxes *x*, which are successively brought into position to receive the cigarettes *y* by the rotation of the table and then carried onward by the further rotation of the table C for the later operations of packing. All these parts may be and are shown as of the same construction and arrangement as fully described and shown in said Letters Patent No. 482,542, except that the lower end of the raceway 10 is preferably changed somewhat in form, as shown and as fully described hereinafter. The roller 13 is preferably used, bearing against the cigarettes in the part of the raceway, so as to partly support the latter and allow only the pressure of the cigarettes below the roller to be applied to the cigarettes as they pass from the lower end of the raceway 10. This roller is preferably positioned, as shown, so that only a comparatively small number of cigarettes are below it. In the construction shown, in which twenty cigarettes are to be packed in a box, the roller will preferably be positioned so as to provide for only about twenty cigarettes below it; but this is not essential. This roller 13 also serves as a gate to retard one end of the cigarettes in case they reach the roller out of parallelism therewith, and thus assure the correct position of the cigarettes at right angles to the raceway 10 as they pass below the roller. The roller 13 may be mounted and operated in any suitable manner, but is preferably mounted, as shown, in vertical pivoted arm 14, spring-pressed by a spring 15 to secure the desired pressure upon the roller, this spring being shown as adjustable by connection to the arm 14 at different points. Any other suitable form of retarding device for securing the same result may be used; but a roller is preferable. The cigarettes are received from the lower end of the raceway 10 by a carrier D, which moves vertically from its upper position, where it receives the desired number of cigarettes in a row to its lower position, in which it delivers the cigarettes to a box *x* in a holder 12 and then returns after such delivery to position for receiving another row of cigarettes to be carried downward and delivered upon the top of the previous row, the construction shown be-

ing adapted for packing two rows of cigarettes in a box, with ten cigarettes in each row, although it will be understood that the number of cigarettes in a row may be varied and only one row or more than two rows may be superposed, the machine being changed accordingly. Certain of the more specific features of the invention, however, relate to constructions for packing a plurality of rows one upon the other.

The carrier D is constructed and operated as follows: The two side plates 16, forming the body of the carrier and in which all the parts are mounted, are carried by bell-crank levers 17, pivoted at 18 to the frame of the machine, so that the carrier swings vertically on this pivot. The side plates 16 are shown as formed integral with the bell-crank levers 17, and this is preferred, although it will be understood that they may be formed separately therefrom and secured thereto in any suitable manner and that the carrier may be mounted otherwise, so as to secure the desired vertical movement. The bell-crank levers 17 are connected by pitman 19 to bell-crank lever 20, mounted at 21 on the machine-frame and carrying stud or bowl 22, running in a cam-groove 23 in a rotating cam 24 on the shaft 25. This cam-groove 23 is formed to actuate the bell-crank lever 20 for two movements of the carrier D at each rotation of the shaft 23, so as to pack two rows of cigarettes at each rotation of the shaft, and is so formed as to actuate the lever 20 with alternately a long and a short throw, so that the carrier is moved downward farther in delivering the first or bottom row of cigarettes than in delivering the second or top row. If more than two cigarettes or other articles are to be superposed, it will be understood that the cam will be correspondingly changed to lessen the extent of downward movement of the carrier D with each successive row. The side plates 16 of the carrier are placed at a distance apart substantially equal to the length of the cigarettes and the plates are connected on the side next the raceway 10 by a plate 26, formed integral with or secured to the plates in any suitable manner, which plate is curved concentrically with the path of movement of the carrier and forms a guard by which the delivery or lower end of the raceway 10 is closed during the movement of the carrier, so as to hold the cigarettes in the raceway from the time that the carrier starts its downward movement until it is returned to position to receive another row of cigarettes. In the construction shown the lower part of this guard is formed separately from the upper part and pivoted so as to move independently of the upper part with the presser-plate presently to be described. Each of the side plates 16 is provided with a plate *a*, extending below the edge of the plate 16 and forming a portion of the side walls of the chamber in which the cigarettes are received by the carrier, the cigarettes being

received endwise to these plates *a*, so that they form endwise positioning-plates for the cigarettes. The side plates 16 are provided with vertical slots 28, in which slots are
 5 mounted, so as to move vertically, slides 29. The construction of the slides, the parts carried thereby, and the operating devices therefor, are duplicated at opposite sides of the carrier and a description of one side will apply to both, the same reference-letters being
 10 used for corresponding parts. The carrier-plate 16 and slide 29 on each side have an independent relative movement permitted by the mounting of the slide in slot 28 and the
 15 slide is pressed down in the slot by a spring-pressed bell-crank lever 30, mounted on the carrier actuated by spring 31, connected to the carrier, this lever bearing on pin 1, projecting inwardly from the slide 29. Upon
 20 pivots 2 in the slide 29 are pivoted to swing in vertical planes and transversely to the carrier the arms 32, which are connected by cross-bar 33 and extend downward below the side plates 16 and plates *a*, where these arms 32
 25 carry an inwardly-extending support *b*, the two supports on opposite sides of the carrier forming the bottom of the chamber in the carrier and supporting the cigarettes during the downward movement of the carrier D.
 30 Above the horizontal surface of the supports *b* and formed integral with the supports or otherwise, as preferred, are vertical plates or surfaces *c*, which in the cigarette-receiving position of the supports *b* lie directly beneath and form continuations of the plates
 35 *a*, so that these plates *a c* together form a continuous side wall of the cigarette-receiving chamber above the supports *b*. Each pair of arms 32 is pressed inward toward the side
 40 plate 16, so as to hold the support *b* in position to support the cigarettes when the carrier is in receiving position by a spring-pressed pin 3, mounted in holder 27 on the slide 29 and inclosing spring 4, bearing upon
 45 pin 3, which pin bears upon the top of the cross-bar 33. Upon the slide 29, below the cross-bar 33, is mounted a pivoted catch *d*, pivoted to swing transversely to the slide 29 and having its upper end 5 adapted to take
 50 under the cross-bar 33 in a certain position of the parts and its lower end 6 adapted to engage a stationary trip-pin 7, mounted in the frame by the side of the carrier. Spring
 55 8 presses the lower end 6 of the catch *d* outward, thus throwing the end 5 under the cross-bar 33 and holding the lower end 6 in position to engage the trip-pin 7 for the rocking of the catch against the pressure of spring 8 to release the cross-bar 33. In the path of
 60 movement of the cross-bar 33 is mounted the stationary abutment 34, shown as formed by a pin projecting inwardly from a fixed part of the machine. The presser-plate *e*, which lies over the cigarettes and forms the top of
 65 the chamber within which the cigarettes are received by the carrier, is pivoted in the side plates 16 at the front of the carrier—that is,

next the raceway 10—by pivots 35, so as to have a rocking movement on the carrier sufficient to bring its lower surface horizontal
 70 in the down position of the carrier D, although the latter is not horizontal, and thus secure an even pressure upon the cigarettes which then lie upon a horizontal surface in the machine shown. It will be under-
 75 stood that in any machine in which the cigarettes are delivered on an inclined surface the moving of the presser-plate *e* will be correspondingly changed, so as to bring its surface parallel with the surface on which the cigarettes lie. This presser-plate *e* is connected
 80 centrally by a link 36 to a lever 37, pivoted at 38 to a cross-bar 39, connecting the side plates 16, and the presser-plate is drawn up against the cross-bar 39 and the under side of the
 85 side plates 16, as shown in Figs. 5 and 9, by a spring 40, connecting the lever 37 and presser-plate. Under the rear end of the lever 37—that is, the end on the opposite side of the
 90 pivot 38 from the link 36—is mounted a stationary abutment 41, by which the lever 37 is actuated against the spring 40 to rock the plate *e* on the pivots 35, as presently to be described. The first cigarette entering the carrier from the raceway 10 is stopped at the rear
 95 end of the chamber in the carrier by the fixed abutment *f*, which thus forms the rear wall of the chamber and holds the row of cigarettes from passing through the chamber, and as the carrier moves downward the end cigarette of the row moves downward along the
 100 face of this abutment, and thus into the box. The face of this abutment is preferably curved on substantially the line of movement of the carrier, as shown, and the face *g* of the frame
 105 on the opposite side of the carrier also is preferably curved similarly, as shown, so that the rear wall of the carrier and guard-plate 26 may move close to these surfaces throughout the movement of the carrier. The abutment
 110 *f* also is preferably made adjustable toward and from the carrier, so as to secure its accurate positioning, being shown as adjustable by set-screw 9 passing through a slot in the top of the abutment-plate. Returning now
 115 to the form of the lower end of the raceway, it is desirable that the raceway be approximately vertical, so as to secure the proper and rapid feed of the cigarettes by gravity, while at the same time the pressure upon the cigarettes on the bottom of the raceway shall be
 120 reduced, so as to lessen as far as possible the liability of injury to the cigarettes from their being forced by the pressure behind them into the path of moving parts of the carrier
 125 and permit them to be readily pressed back by the engagement of the carrier. For this purpose the extreme lower end of the raceway 10 is curved from the sharp incline of the main part of the raceway into approxi-
 130 mately a horizontal plane, from which the cigarettes pass on to the incline of carrier-support *b*, as shown clearly in the drawings. It will be understood, however, that this fea-

ture is not absolutely essential, although preferable, especially with cigarettes and similar fragile articles.

The operation of the machine is as follows:

5 As shown in Figs. 1 to 5, the carrier D is in position to receive and has just received the first or bottom row of cigarettes to be deposited in a box *x* in one of the holders 12 on rotating table C, which is now stationary. In
10 this position of the parts it will be seen that the cam 24 is just about to actuate the bell-crank lever 20 for its longer throw, the slides 29 are in their lower position in slots 28, the arms 32 held by spring-pressed pins 3 in position
15 with the supports *b* beneath the cigarettes, and the presser-plate *e* lies above the cigarettes in position with the lower pivoted part of the guard carried by the presser-plate continuous with the upper part of the guard 26.
20 As the machine continues its operation from this position and the cam 24 actuates the bell-crank lever 20, the levers 17 are actuated through pitman 19 to move the carrier downward in a curved path about the pivot 18. As
25 the carrier commences its downward movement the bottom of the guard 26 comes in contact with the last cigarette in the raceway 10, and the guard holds the cigarettes in the raceway back during the movement of the
30 carrier, so as to prevent their passing out of the raceway until the return of the carrier into position to receive them. The carrier thus moves downward with the parts in the position shown in Figs. 1 to 5 until the cross-
35 bars 33 on slides 29 strike the abutments 34, which occurs just as the carrier is approaching the limit of its downward movement, when the cross-bars 33 are rocked with arms 32 against the pressure of springs 4 on pins 3,
40 and the supports *b* thus thrown outward in opposite directions and from beneath the cigarettes, so as to release the latter for deposit in the partially-formed box *x* in holder 12. As the cross-bars are thus rocked the catches
45 *d* are released as the cross-bars rock out of contact with the upper ends 5 of these catches, and the catches *d* are then rocked by springs 8, so as to throw the lower ends 6 of the catches outward and the upper ends 5 of the
50 catches inward beneath the cross-bars 33, so as to hold these cross-bars 33 in rocked position with the supports *b*, swung outward on the return of the carrier. At the limit of this rocking movement of the cross-bars 33 and
55 arms 32 the cross-bars 33 come in contact with the under side of the holders 27 on slides 29, thus preventing the further movement of the slides by the engagement of cross-bars 33 with the stationary abutments 34, when the carrier, with all parts except the slides 29 and
60 parts carried thereby, moves downward without the slides, which movement is permitted by the slots 28, in which the slides are mounted, the levers 30, which press upon pins 1, yielding against the tension of springs 31 and holding the slides firmly in position while the carrier is moving. During this final portion

of the movement of the carrier after the cigarettes have been dropped therefrom into the box *x* by the withdrawal of the supports *b* 70 the presser-plate *e* follows the cigarettes and acts to prevent rebound or piling in the box and to assure their proper delivery and packing, the lower surface of the presser-plate *e* being brought into horizontal position parallel 75 with the bottom of the box *x* by the engagement of the rear end of the lever 37 with fixed abutment 41, which rocks the plate *e* downward upon its pivots 35, the bottom of the carrier being inclined downward toward 80 its front end in depositing the first row of cigarettes in the box on account of the larger downward movement of the carrier in depositing the first or bottom row of the cigarettes than in depositing the second or top 85 row. The position of all the parts, with the carrier in its extreme downward position and the first row of cigarettes *y* deposited in the box *x* and the presser-plate *e* in its horizontal position acting upon the top of the cigarettes, is shown in Figs. 6 and 8. As the machine continues its operation and the cam 24 returns the bell-crank lever 20 to position, which is preferably done with a quick movement, as shown by the form of the cam in 95 Fig. 1, the carrier is raised with a corresponding quick action and the parts return to the position shown in Figs. 1 to 5, the guard 26 during this movement closing the raceway 10 until the carrier is fully returned. During 100 the first part of this return movement of the carrier the side plates 16 are raised independently of the slides 29, which are held down by the pressure of springs 31, acting through bell-crank levers 30 upon studs 1, and the 105 presser-plate *e* is swung upward to its normal position bearing against cross-bar 39 and side plates 16, by the spring 40 as the lever 37 is moved away from the abutment 41. As the carrier continues its vertical movement and the bottoms of the slots 28 strike the slides 29 the latter are raised with the carrier, and as the lower ends 6 of catches *d* strike the trip-pins 7 the lower ends of the catches are thrown inward against the pressure of springs 8 and the upper ends 5 thrown 115 outward from beneath the cross-bars 33, so as to release the latter, when the springs 4, acting through pins 3 upon the upper surfaces of the cross-bars 33, rock the cross-bars 33 120 and arms 32 upon their pivots 2, so as to move the supports *b* into position to support the cigarettes as they enter from the raceway 10. The cross-bars 33 are returned to normal position before the catches *d* are released by catch-pins 7, so that upon the release of the catches they are held in position by the engagement of their ends 5 with the sides of the cross-bars 33, as shown in Figs. 3 and 4. All the parts are thus returned to 125 the position shown in Figs. 1 to 5, and the carrier is ready to receive another row of cigarettes to be deposited in the box *x* on top of the previous row, and this second or top 130

row of cigarettes now passes from the raceway 10 into the carrier between the plates *a* and *c* and upon the supports *b*, the row of cigarettes being stopped by the abutment *f* in exactly the same manner as shown in connection with the previous row in Fig. 5. The next downward movement and return of the carrier is performed in exactly the same manner as just described, except that the lever 20 is actuated with a shorter throw by the other side of the cam 23, so that the carrier *D* is moved downward a less distance corresponding to the depth of the row of cigarettes and in the machine shown substantially to the horizontal, and the presser-plate *e* in this movement is rocked on its pivots 35 through a shorter movement than before or not at all, as the lever 37 is moved but little or not at all by the abutment 41, on account of the shorter movement of the carrier. The position of all the parts in packing the top row of cigarettes in the box *x* is shown in Figs. 7 and 9, which correspond exactly to Figs. 6 and 8, except that these two pairs of figures illustrate the packing of the different rows of cigarettes.

It will be seen that the invention provides a very efficient mechanism for packing cigarettes and that the machine is capable of operating at a high rate of speed without danger of injury to the cigarettes. While, however, my especial object has been to provide a packing mechanism which would handle cigarettes and similar fragile articles without injury, (and the machine shown has been constructed especially for this purpose,) it will be understood that a similar machine may be used for packing material or articles of a non-fragile character. While all the features of the machine shown are preferably employed, it will be understood that the invention includes many features of construction which may be used in other machines and that under some conditions features forming parts of the machine shown may be omitted, while at the same time providing an efficient packing mechanism of high capacity. For instance, the presser-plate *e* and its actuating devices may be omitted, and in packing some articles it may be found of little importance, but in packing many materials and articles it is preferable to use it. The pivoted carrier forms an important part of the invention; but the invention includes many features not limited thereto.

It is evident that many modifications may be made in the construction and arrangement of parts in the machine shown as embodying the invention, and I am not to be limited to the specific form or construction of any of the devices shown.

What I claim is—

1. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and adapted to receive a row of cigarettes or similar articles on a surface inclined in the direction of movement of

the cigarettes into the carrier, supports for the cigarettes in the carrier, and means for withdrawing said supports to deliver the cigarettes, substantially as described.

2. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and adapted to receive a row of cigarettes or similar articles on a surface inclined in the direction of movement of the cigarettes into the carrier, supports in the carrier having a withdrawal movement substantially parallel to the delivering plane of the cigarettes, and means for actuating said supports, substantially as described.

3. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and adapted to receive a row of cigarettes or similar articles on a surface inclined in the direction of movement of the cigarettes into the carrier, supports in the carrier having a withdrawal movement substantially parallel to the surface on which the cigarettes are delivered, a presser-plate in the carrier, and means for actuating said supports and giving said carrier a further movement toward the cigarettes after the supports are withdrawn, substantially as described.

4. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and adapted to receive a row of cigarettes or similar articles on a surface inclined in the direction of movement of the cigarettes into the carrier, supports in the carrier having a withdrawal movement substantially parallel to the surface on which the cigarettes are delivered, means for actuating said supports and giving said carrier a further movement independently of the supports after the latter are withdrawn, and a presser-plate pivoted in said carrier and having a movement independently of the carrier to bring the presser-plate into position parallel with the delivered cigarettes, substantially as described.

5. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and adapted to receive a row of cigarettes or similar articles on a surface inclined in the direction of movement of the cigarettes into the carrier, supports in the carrier having a withdrawal movement substantially parallel to the surface on which the cigarettes are delivered, a presser-plate pivoted in the carrier, and means for swinging the presser-plate independently of the carrier to bring the presser-plate into position parallel with the delivered cigarettes, substantially as described.

6. The combination with a carrier pivoted to swing vertically between its receiving and delivering positions and adapted to receive a row of cigarettes or similar articles on a surface inclined in the direction of movement of the cigarettes into the carrier, of means for actuating said carrier with long and short movements to deliver superposed rows of cigarettes, supports in the carrier for the ciga-

rettes, means for withdrawing said supports to deliver the cigarettes, and a presser-plate having a movement independently of the carrier to bring the presser-plate into position parallel with the delivered cigarettes, substantially as described.

7. The combination with a carrier pivoted to swing vertically between its receiving and delivering positions and adapted to receive a row of cigarettes or similar articles on a surface inclined in the direction of movement of the cigarettes into the carrier, of means for actuating said carrier with long and short movements to deliver superposed rows of cigarettes, supports in the carrier for the cigarettes, means for withdrawing said supports to deliver the cigarettes, means for giving the carrier a further movement toward the cigarettes independently of the supports after the latter are withdrawn, and a presser-plate in the carrier having a movement independently of the carrier to bring the presser-plate into position parallel with the delivered cigarettes, substantially as described.

8. The combination with a carrier pivoted to swing vertically between its receiving and delivering positions and adapted to receive a row of cigarettes or similar articles on a surface inclined in the direction of movement of the cigarettes into the carrier, of means for actuating said carrier with long and short movements to deliver superposed rows of cigarettes, supports in the carrier for the cigarettes, means for withdrawing said supports to deliver the cigarettes, a presser-plate pivoted in the carrier, and means for moving the carrier and presser-plate independently of the supports after the latter are withdrawn and rocking the presser-plate on its pivot in the carrier to bring the presser-plate into position parallel with and pressing upon the delivered cigarettes, substantially as described.

9. The combination with a carrier pivoted to swing vertically between its receiving and delivering positions and adapted to receive a row of cigarettes or similar articles, of means for actuating said carrier with long and short movements to superpose rows of cigarettes, supports for the cigarettes in the carrier, means for withdrawing said supports to deliver the cigarettes, a presser-plate pivotally mounted in the carrier, and means for moving said presser-plate independently of the supports after the latter are withdrawn to bring the presser-plate into a position parallel with and pressing upon the delivered cigarettes, substantially as described.

10. The combination with a carrier having an inclined receiving-surface for cigarettes or similar articles, of a raceway adapted to secure the feed of the cigarettes to the carrier by gravity and having the bottom surface of its lower end curved to substantially a horizontal plane from which the cigarettes are delivered to the inclined receiving-surface, substantially as described.

11. The combination with a carrier having

an inclined receiving-surface for cigarettes or similar articles and pivoted to oscillate vertically, of a raceway adapted to secure the feed of the cigarettes to the carrier by gravity and having the bottom surface of its lower end curved to substantially a horizontal plane from which the cigarettes are delivered to the inclined receiving-surface, substantially as described.

12. The combination with a carrier having an inclined receiving-surface for cigarettes or similar articles, of a raceway adapted to secure the feed of the cigarettes to the carrier by gravity and having the bottom surface of its lower end curved to substantially a horizontal plane from which the cigarettes are delivered to the inclined receiving-surface, and a guard-plate on the carrier for closing the raceway during the movement of the carrier, substantially as described.

13. The combination with a carrier having an inclined receiving-surface for cigarettes or similar articles and pivoted to oscillate vertically, of a raceway adapted to secure the feed of the cigarettes to the carrier by gravity and having the bottom surface of its lower end curved to substantially a horizontal plane from which the cigarettes are delivered to the inclined receiving-surface, and a curved guard-plate on the carrier for closing the raceway during the movement of the carrier, substantially as described.

14. The combination with a carrier adapted to receive a row of cigarettes or similar articles on an inclined surface, and an inclined raceway for feeding cigarettes or similar articles to the carrier by gravity, of a roller pressing against the cigarettes in the raceway and acting to support the cigarettes in the upper part of the raceway, substantially as described.

15. The combination with an inclined way for feeding cigarettes or similar articles, of a roller pressing against the cigarettes as they pass down the way, substantially as described.

16. The combination with an inclined way for feeding cigarettes or similar articles, of a spring-pressed roller pressing against the cigarettes as they pass down the way, substantially as described.

17. The combination of a packing-carrier having supports carried thereby and moving therewith for the material or articles to be packed extending beneath the material or articles in the carrier when in supporting position and having a delivery movement substantially parallel with the surface on which the material or articles are delivered, and means for withdrawing said supports for delivery, substantially as described.

18. The combination of a packing-carrier having supports carried thereby and moving therewith for the material or articles to be packed extending beneath the material or articles in the carrier when in supporting position and pivoted to secure a delivery move-

ment substantially parallel with the surface on which the material or articles are delivered, and means for withdrawing said supports for delivery, substantially as described.

5 19. The combination of a packing-carrier having pivoted supports carried thereby and moving therewith and extending beneath the material or articles in the carrier when in supporting position and having their axis
10 transverse to the line of movement of the carrier and mounted to swing in an arc of such radius as to secure a delivery movement of the supports substantially parallel with the surface on which the material or articles are
15 delivered, and means for withdrawing said supports for delivery, substantially as described.

20 20. The combination of a packing-carrier provided with supports for the material or articles to be packed, means for withdrawing said supports for delivery, and means for giving the carrier a further movement independently of the supports after the supports are withdrawn, substantially as described.

25 21. The combination of a packing-carrier provided with supports for the material or articles to be packed, means for withdrawing said supports for delivery, and a presser-plate for the material or articles having a
30 further movement independently of the supports after the supports are withdrawn, substantially as described.

35 22. The combination of a packing-carrier provided with supports for the material or articles to be packed, means for withdrawing said supports for delivery, a presser-plate mounted in the carrier, and means for giving the carrier a further movement independently of the supports after the supports are withdrawn and moving said presser-plate independently of the carrier to position it relatively to the surface on which the material or articles are delivered, substantially as described.

45 23. The combination of a packing-carrier pivoted to swing vertically between its receiving and delivering positions and provided with supports for the material or articles to be packed, means for withdrawing said supports for delivery, a presser-plate pivoted in
50 the carrier, and means for giving said presser-plate a further movement after the supports are withdrawn and swinging said presser-plate on its pivot in the carrier to bring the
55 presser-plate into position parallel with and pressing upon the delivered material or articles, substantially as described.

60 24. The combination with a carrier, of slides mounted in the carrier, supports pivotally mounted on said slides to swing transversely to the direction of movement of the carrier and spring-pressed into supporting position, and fixed abutments for moving the supports against the spring-pressure for delivery and
65 holding the slides stationary while the carrier completes its delivering movement, substantially as described.

25. The combination with a carrier, of slides mounted in the carrier, supports pivotally mounted on said slides to swing transversely
70 to the direction of movement of the carrier and spring-pressed into supporting position, fixed abutments for moving the supports against the spring-pressure for delivery and holding the slides stationary while the carrier
75 completes its delivering movement, catches carried by the slides for holding the supports withdrawn during the further movement of the carrier, and means for tripping said catches to release the supports, substantially
80 as described.

26. The combination with a carrier, of slides mounted in the carrier, supports pivotally mounted on said slides to swing transversely to the direction of movement of the carrier
85 and substantially parallel with the delivery-surface, and spring-pressed into supporting position, fixed abutments for moving the supports against the spring-pressure for delivery and holding the slides stationary while the
90 carrier completes its delivering movement, catches carried by the slides and acting to hold the supports withdrawn, and means for tripping the catches for the return of the supports to supporting position after the re-
95 turn movement of the carrier has moved the supports out of position to engage the delivered material or articles, substantially as described.

27. The combination with the carrier D pivoted to swing vertically, and slides 29 mounted in the carrier and spring-pressed in the direction of the delivery movement of the carrier, of supports carried by said slides and pivoted to swing transversely to the line of
100 movement of the carrier, and fixed abutments for withdrawing the supports and holding the supports and slides stationary during the latter part of the delivering movement of the carrier, substantially as described. 110

28. The combination with the carrier D pivoted to swing vertically, and slides 29 mounted in the carrier and spring-pressed in the direction of the delivery movement of the carrier, of supports carried by said slides and
115 mounted to swing transversely to the line of movement of the carrier, fixed abutments for withdrawing the supports and holding the supports and slides stationary during the latter part of the delivering movement of the
120 carrier, presser-plate *e* pivoted in the carrier, and means for swinging said presser-plate in the carrier, substantially as described.

29. The combination with the carrier D pivoted to swing vertically and slides 29 mounted in the carrier, of supports mounted in said slides to swing transversely to the line of movement of the carrier, fixed abutments for withdrawing the supports and holding the supports and slides stationary during the latter part of the delivering movement of the carrier, presser-plate *e* pivoted in the carrier, lever 37 mounted in the carrier and connected to the presser-plate, and a fixed abutment en-
130

gaging said lever 37 during the latter part of the delivering movement of the carrier to swing the presser-plate in the carrier, substantially as described.

5 30. The combination of the carrier D pivoted to swing vertically, means for actuating said carrier with long and short strokes to superpose articles successively delivered by the carrier, supports in the carrier for the ar-
10 ticles, means for withdrawing the same, a presser-plate pivoted in the carrier, and means for swinging the presser-plate in the carrier to bring the presser-plate into position parallel with the articles delivered at successive
15 movements of the carrier, substantially as described.

31. The combination with a box-support, of a depositing-plunger, supporting devices upon which the articles rest carried by the plun-
20 ger, means for moving the plunger toward the box, and means for moving the supporting devices to cause them to deliver the articles, substantially as described.

32. The combination with a box-support, of
25 a depositing-plunger, supports upon which the articles rest carried thereby, means for delivering articles to the supports in the plunger, means for moving the plunger toward the box, and means for moving the supports to
30 cause them to deliver the articles, substantially as described.

33. The combination with a box-support, of a plunger, movable supports carried by the
35 plunger, means for giving the plunger different amounts of movement toward the box in order to enable it to deposit the articles in layers therein, and means for moving the sup-
40 ports out of the way for each movement of the plunger toward the box, substantially as described.

34. The combination of a packing-carrier having a support, as *b*, mounted on the car-
45 rier to swing on an axis transverse to the line of movement of the carrier, a receiving-surface onto which the material or articles to be packed is delivered by the carrier, means for moving the carrier toward the receiving-sur-
50 face, and means for withdrawing the supports when the carrier has been moved to carry the material or articles to the delivery position, substantially as described.

35. In a packing-carrier for delivering the material or articles to be packed onto a suit-
55 able receiving-surface, a support, as *b*, carried by an arm or arms mounted to swing on an axis transversely to the line of movement of the carrier, the arm being of such length as to secure a delivery movement of the support substantially parallel with the delivery-sur-
60 face, substantially as described.

36. The combination with a carrier for delivering the material or articles carried onto
65 a suitable receiving-surface, which carrier is provided with supports for the material or articles carried extending beneath the material or articles in the carrier when in supporting

position, and means for actuating the carrier and withdrawing the supports for delivery, of catches for holding the supports withdrawn and tripped for the return of the supports, 70 substantially as described.

37. The combination with a carrier for delivering the material or articles carried onto a suitable receiving-surface, which carrier is provided with supports for the material or ar- 75 ticles carried extending beneath the material or articles in the carrier when in supporting position, of means for actuating said carrier and withdrawing said supports, and means for holding said supports withdrawn during 80 the return movement of the carrier until the supports are moved beyond the delivered material or articles, substantially as described.

38. The combination with a carrier for delivering the material or articles carried onto 85 a suitable receiving-surface, which carrier is provided with supports for the material or articles carried extending beneath the material or articles in the carrier when in supporting position and mounted to move during with- 90 drawal substantially parallel with the surface on which the material or articles are delivered, of means for actuating said carrier and withdrawing said supports, and means for holding said supports withdrawn during the 95 return movement of the carrier until the supports are moved beyond the delivered material or articles, substantially as described.

39. The combination with a vertically-mov-
ing carrier for delivering the material or arti- 100 cles carried onto a suitable receiving-surface, which carrier is provided with supports for the material or articles to be carried extend-
ing beneath the material or articles in the car- 105 rier when in supporting position, of means for actuating said carrier and withdrawing said supports for delivery, substantially as de-
scribed.

40. The combination with a vertically-mov-
ing carrier having a pressing-surface and pro- 110 vided with supports for the material or articles to be carried, of means for withdrawing said supports for delivery and giving said car-
rier a further movement independently of the 115 supports after the latter are withdrawn to bring the pressing-surface into action, sub-
stantially as described.

41. Carrier D having the side plates 16 pro-
vided with slots 28, slides 29 mounted to move in said slots, spring-pressed arms 32 pivoted 120 in said slides and carrying supports *b*, and abutments for withdrawing said supports, substantially as described.

42. Carrier D having the side plates 16 pro-
vided with slots 28, slides 29 mounted to move 125 in said slots, spring-pressed arms 32 pivoted in said slides and carrying supports *b*, spring-pressed catches *d* for holding the supports when withdrawn, and abutments for with-
drawing said supports and tripping said 130 catches to permit the return of the supports, substantially as described.

43. A packing-carrier having pivoted arms 32 on opposite sides of the carrier, said arms carrying inwardly-extending supports *b* and side plates *c* extending upward from the supports, substantially as described.

5 44. A packing-carrier having plates *a* forming portions of opposite side walls of the receiving-chamber and pivoted arms 32 on the sides of the carrier having the plates *a*, said
10 arms carrying inwardly-extending supports *b*

and side plates *c* extending upward from the supports, substantially as described.

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

OLUF TYBERG.

Witnesses:

C. J. SAWYER,

T. F. KEHOE.