

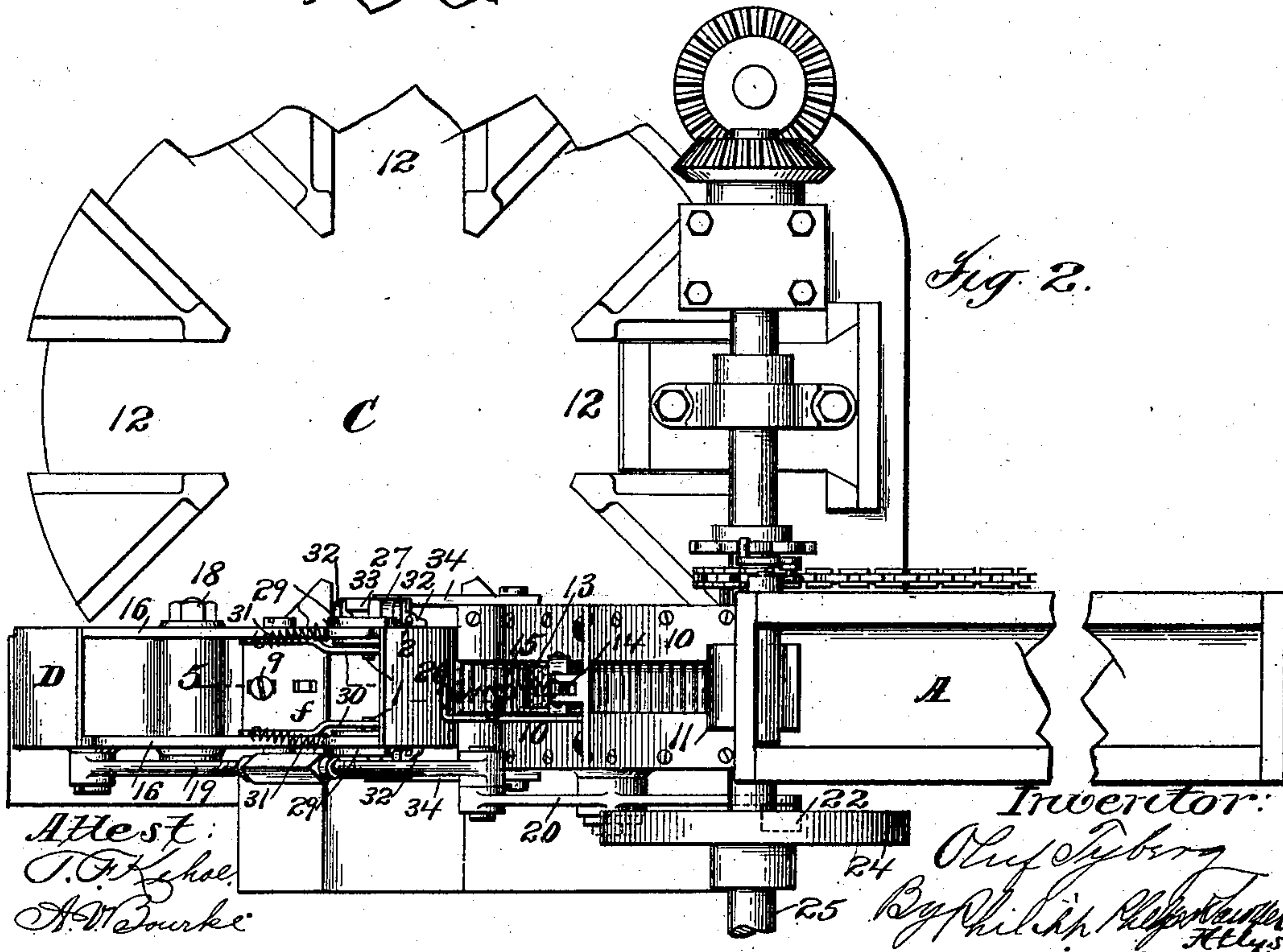
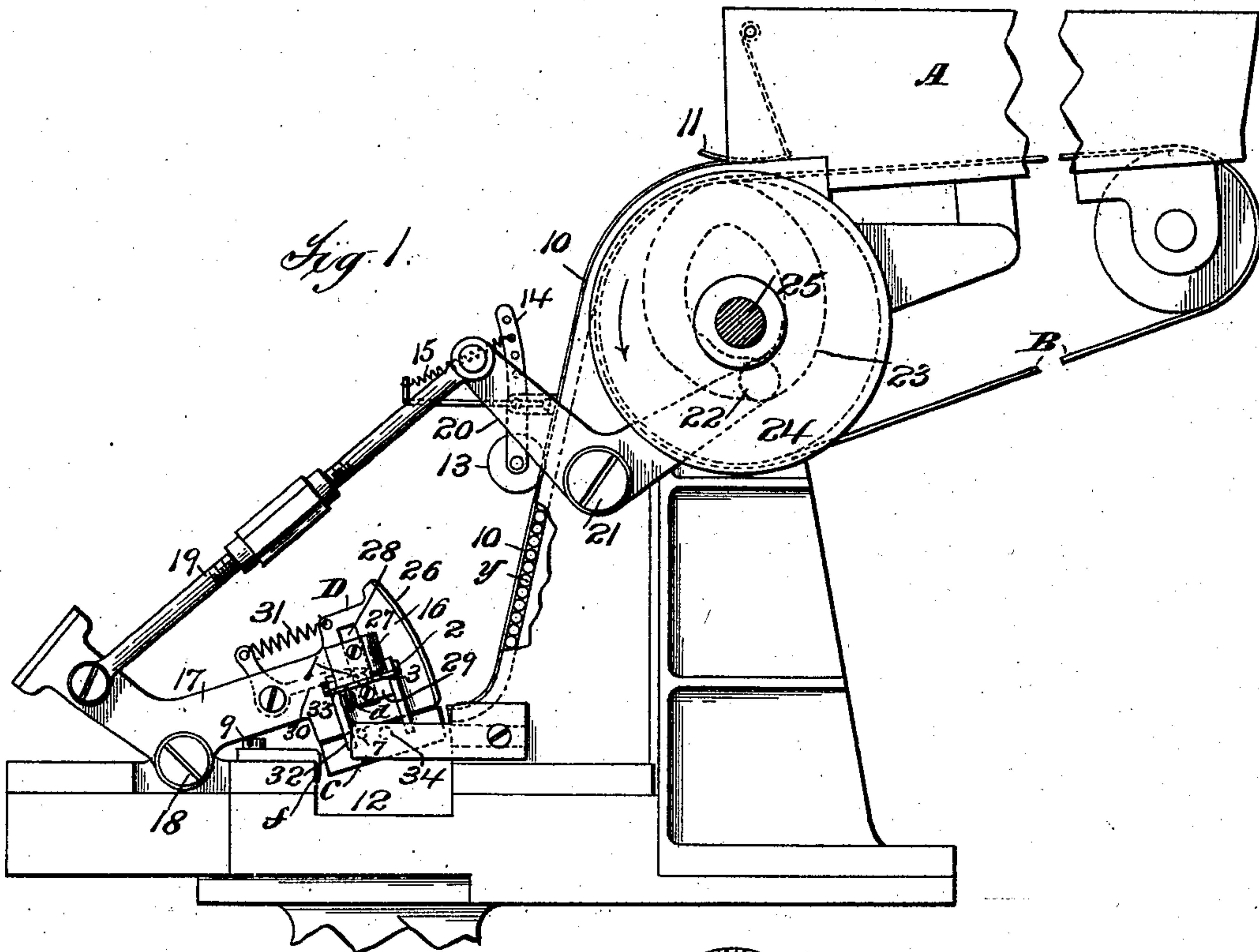
No. 708,682.

Patented Sept. 9, 1902.

O. TYBERG.
PACKING MECHANISM.
(Application filed Nov. 22, 1898.)

(No Model.)

2 Sheets—Sheet 1.



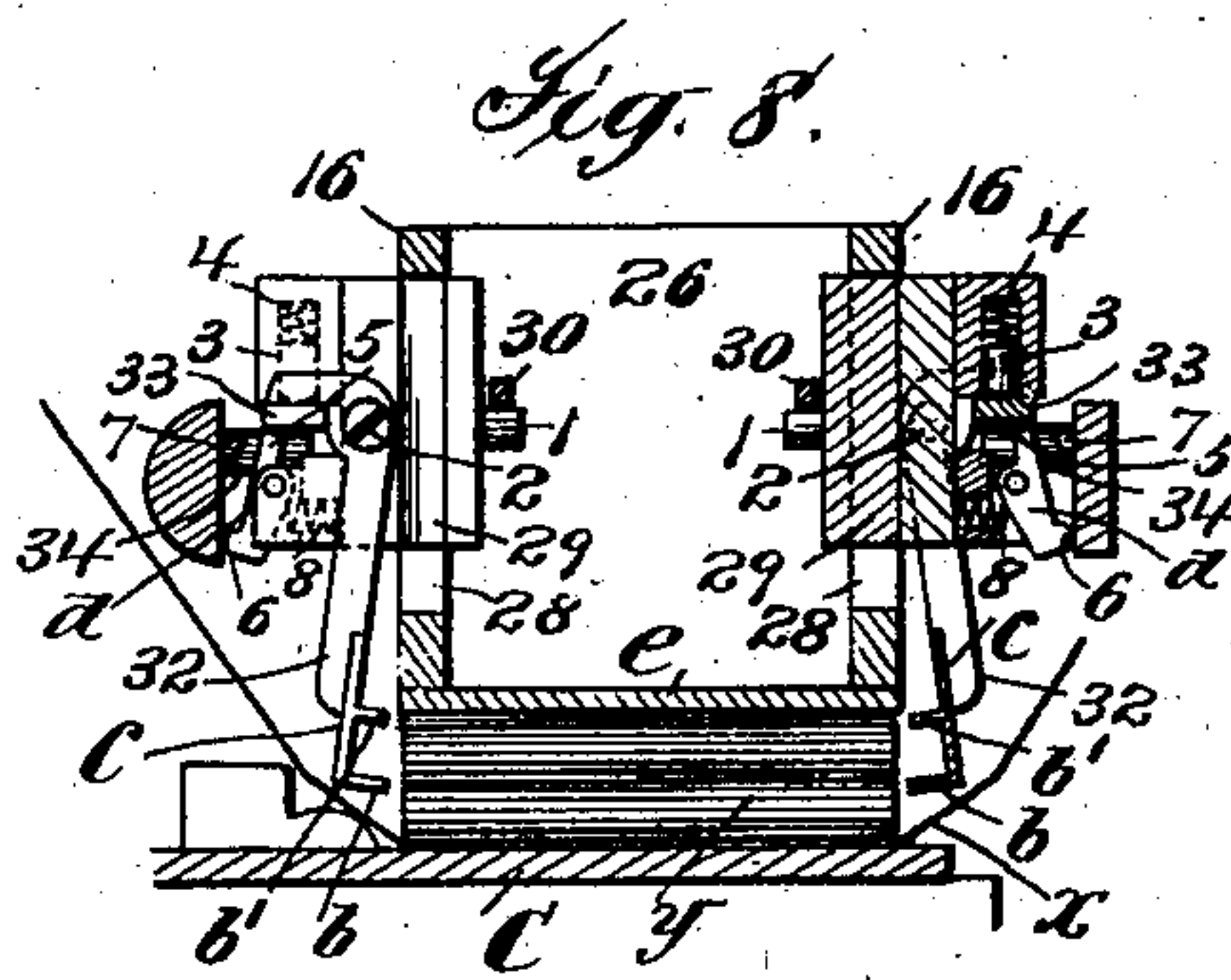
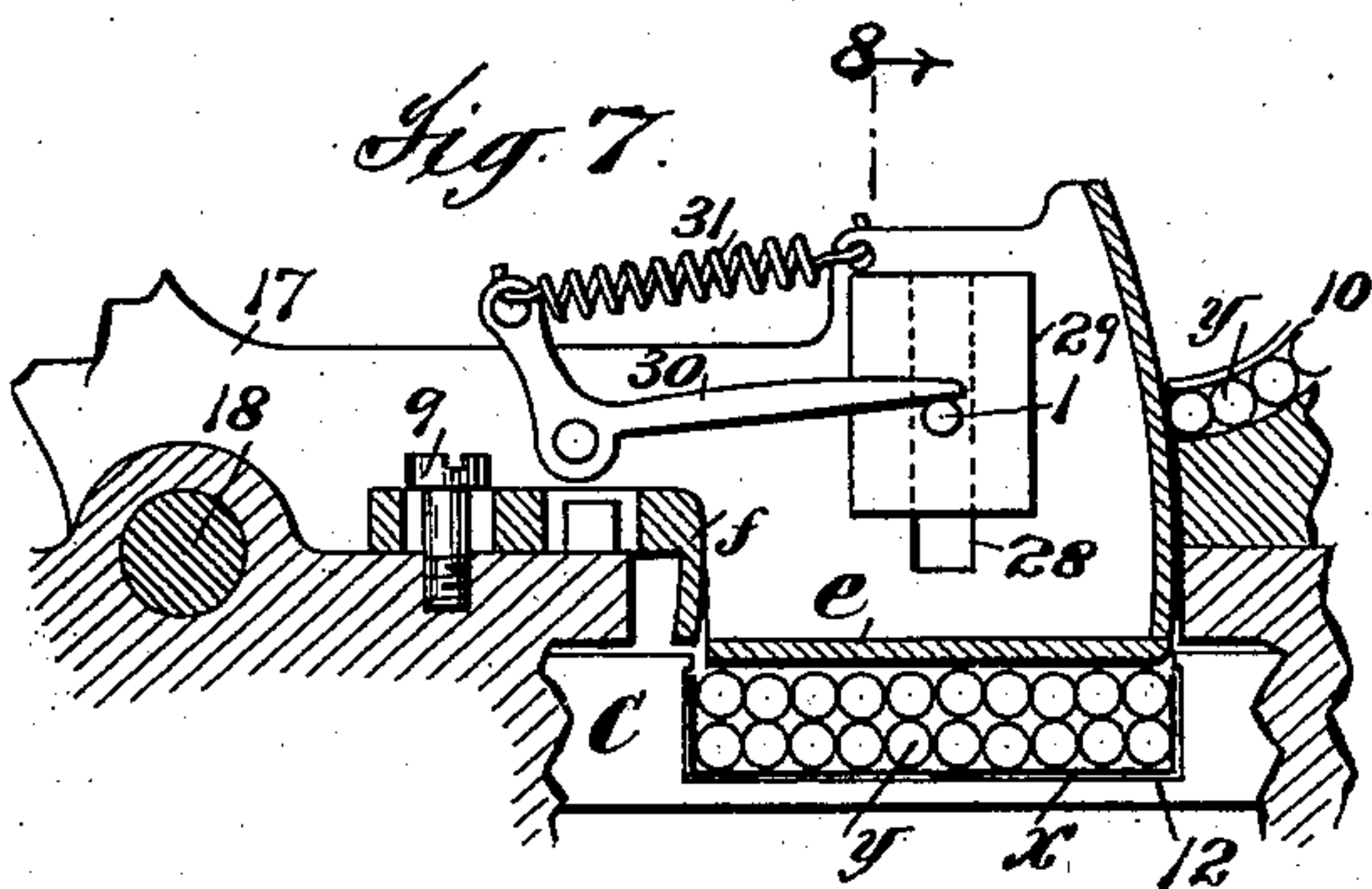
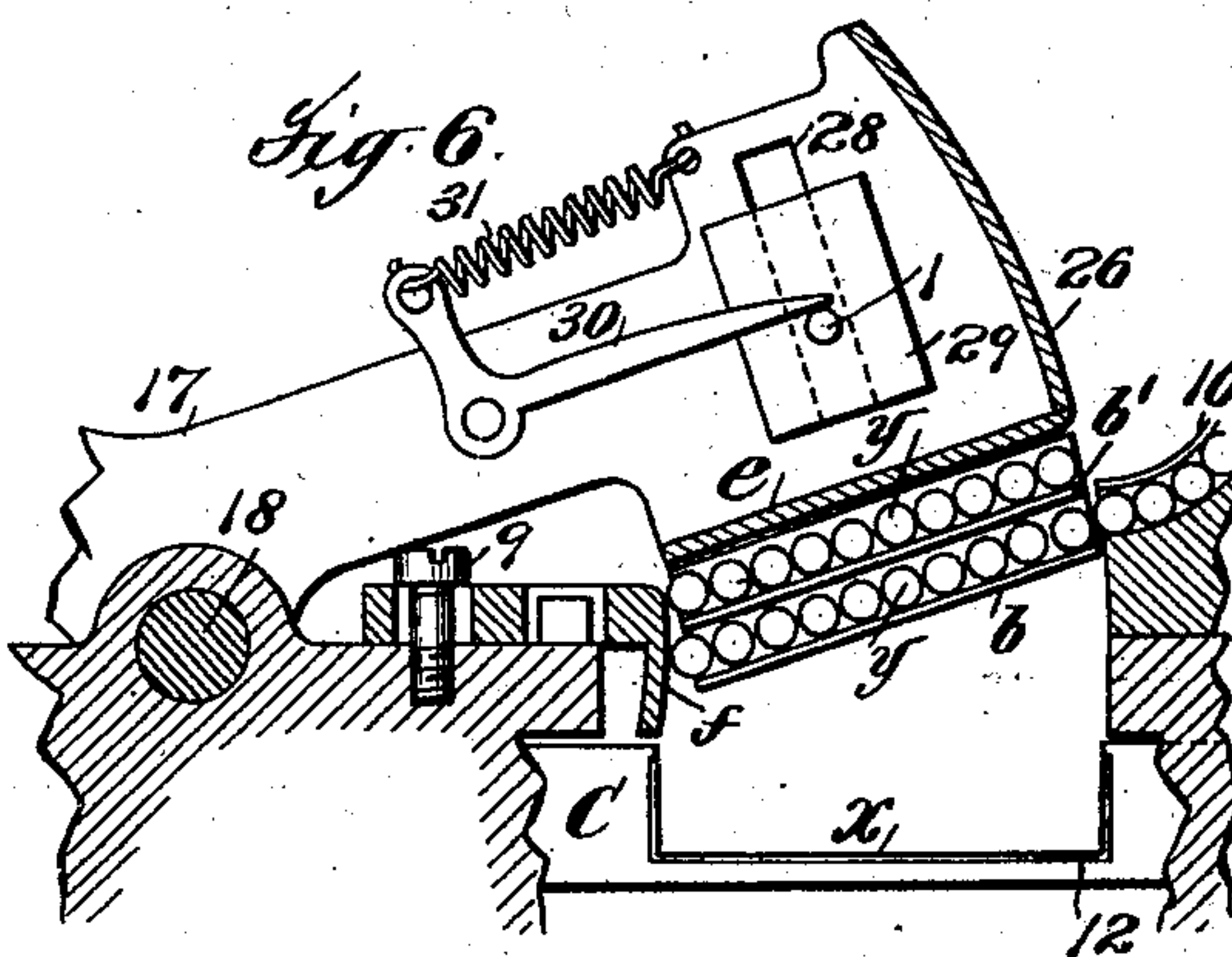
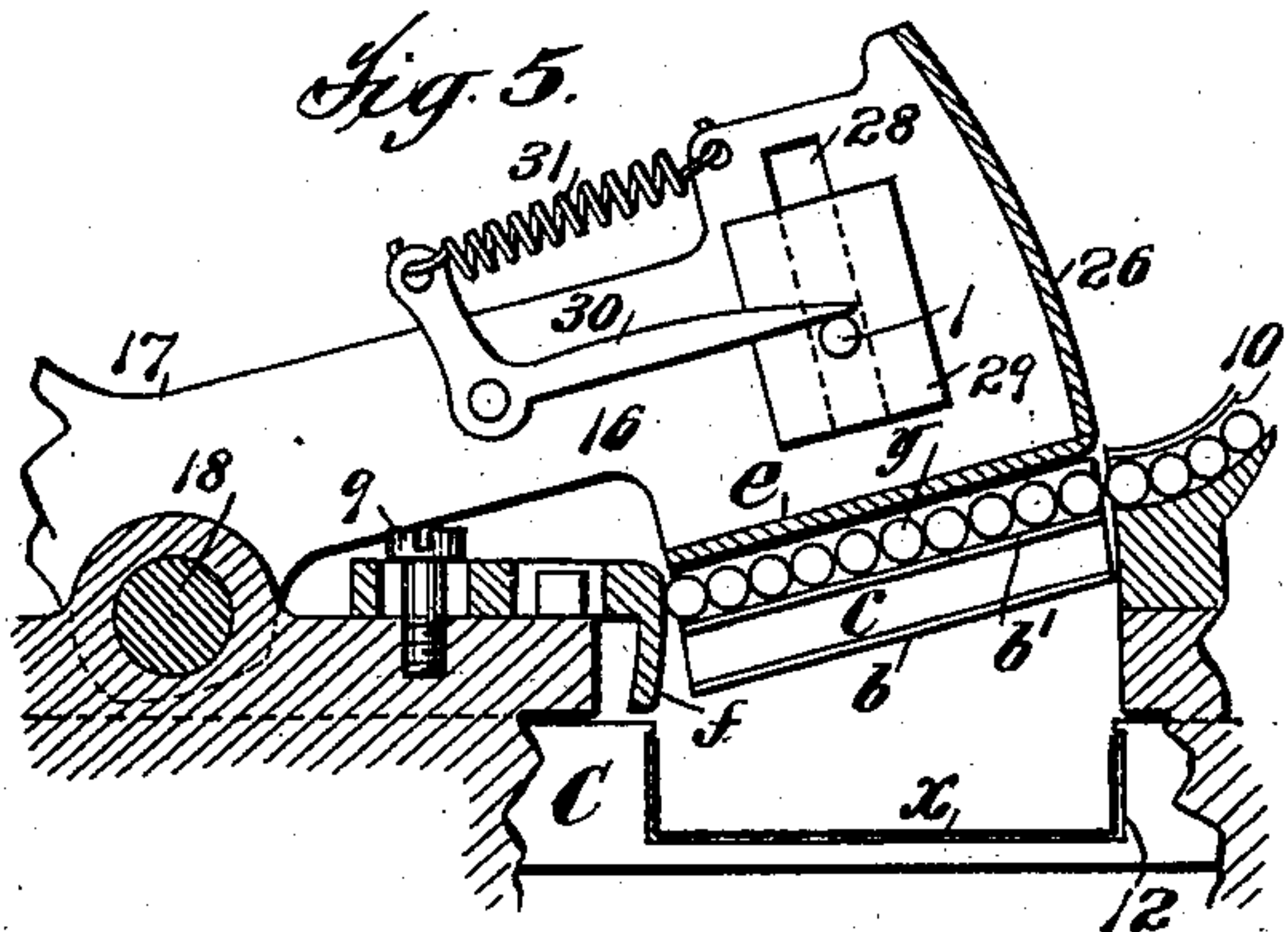
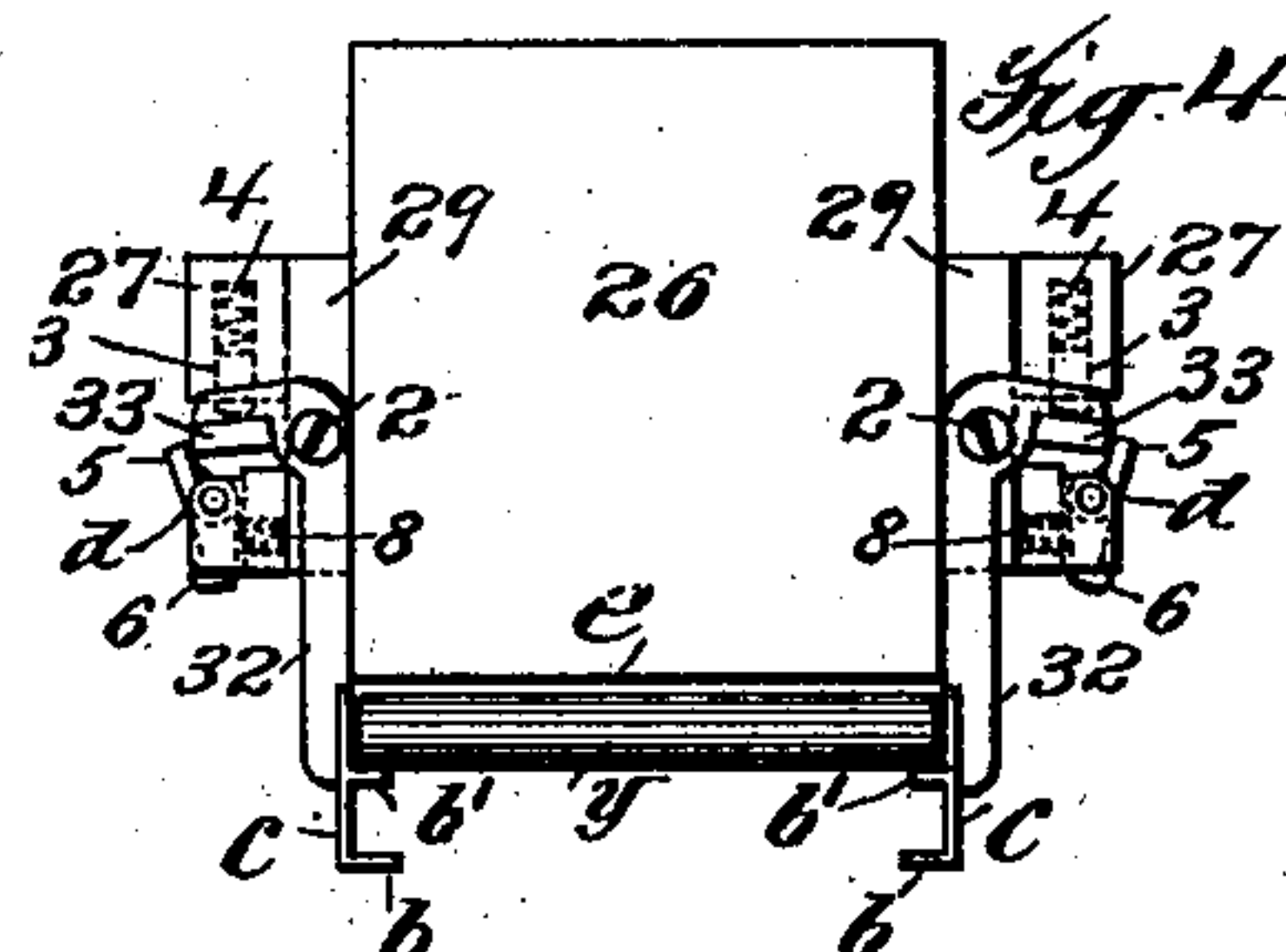
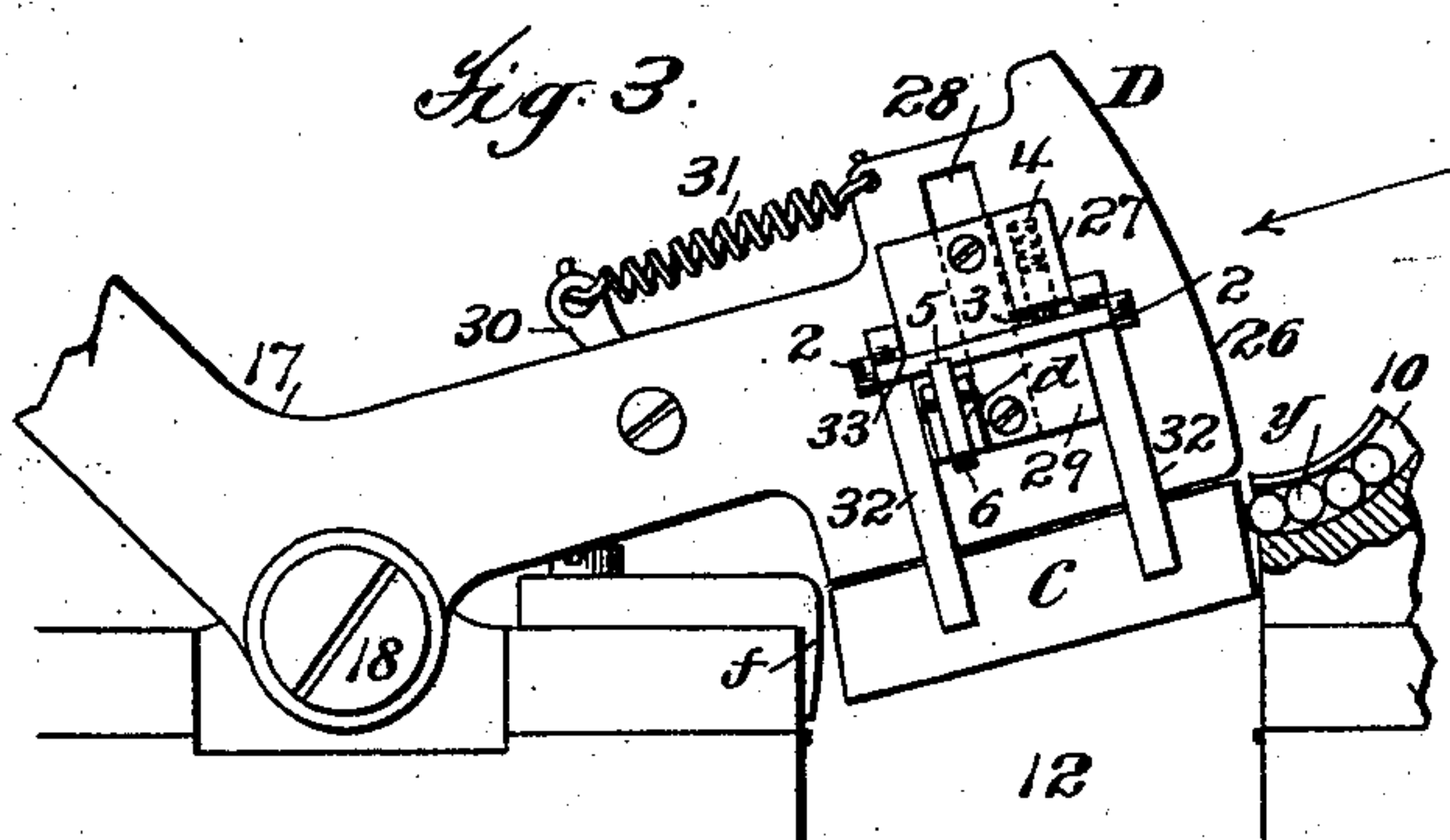
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2 Sheets—Sheet 2.



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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. 708,682, dated September 9, 1902.

Application filed November 22, 1898. Serial No. 697,124. (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.

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.

The invention is especially designed for use in packing cigarettes and will be illustrated and described as applied 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, the present invention providing an improved mechanism for counting the cigarettes and delivering them to the boxes of such machines, although the invention may be applied also in connection with machines of other classes and used for other purposes.

I aim especially to provide a machine that will rapidly and efficiently pack two or more rows of cigarettes by delivering a plurality of rows of cigarettes simultaneously as distinguished from delivering the rows successively, as in the machine of the Letters Patent above referred to.

The invention has been made in connection with the production of a machine for packing twenty cigarettes in two rows of ten cigarettes each. In machines that pack such a large number of cigarettes in a row it is especially desirable for operating at a high 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 into po-

sition 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 secured to avoid injury to the cigarettes. For these reasons it is very desirable that the cigarettes should be fed into the packing 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 to the packing-box or other receiver or mechanism in a horizontal position, as this position is best adapted for securing the proper packing or 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, and as it is desirable that the cigarettes be followed into the packing-box or other receiver by a presser-plate parallel with the cigarettes a very simple and efficient construction for this purpose is secured by a carrier with a single delivering movement by which both rows of cigarettes are delivered simultaneously, the horizontal position of the carrier and presser-plate in the delivering position thus being secured simply by the movement of the carrier, while such a pivoted carrier must necessarily be somewhat inclined to the horizontal or other delivering position of the cigarettes if the rows of cigarettes are delivered separately, as the carrier and presser-plate must swing through a greater arc in delivering the bottom or first row of cigarettes with the presser-plate in contact therewith than in delivering the top or second row of cigarettes. The invention therefore secures a special result in connection with such pivoted carrier-machines in that it enables the presser-plate to act upon the cigarettes in delivering without special devices for securing the parallelism of the plate with the cigarettes in both delivering

positions, as in delivering successive rows separately, and the invention includes certain features of construction and combinations of parts in such machines. While, however, the invention is especially applicable to such machines in which the cigarettes are fed into the packing mechanism on an incline and a pivoted carrier is used for transferring the cigarettes from receiving to delivering position, the invention includes also broader features relating especially to the receiving of a plurality of rows or layers of cigarettes or other articles to be packed and delivering these rows or layers of articles simultaneously, by which construction is made possible an increase of speed over constructions for packing successive rows separately, as in the Letters Patent above referred to, as the number of delivering movements of the packing mechanism is lessened and the feeding speed of the cigarettes may be decreased or more time allowed for the receiving operation, thus securing greater certainty of operation and less liability of injury to the cigarettes or other articles handled.

For a full understanding of the invention a detailed description of a construction embodying the same as applied to a machine of the preferred form for packing twenty cigarettes in two rows of ten each will now be given in connection with the accompanying drawings, showing so much of a packing-machine as is necessary to illustrate the invention, 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 partially 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 the position of receiving the top or first row of cigarettes from the raceway as in Fig. 1. 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 receiving the bottom or second row of cigarettes. Fig. 7 is a similar view showing the carrier in the position of delivering the two rows of cigarettes. Fig. 8 is a cross-section on the line 8 of Fig. 7.

Referring now to said drawings, A is the cigarette magazine 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 into the top of 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 and then carried on 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 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, and this roller is preferably positioned, as shown, so that only approximately the number of cigarettes for a box are below it when twenty are to be packed, as shown. 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, on a vertical pivoted arm 14, spring-pressed by a spring 15 to secure the desired pressure upon the roll, 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 an inclined position, where it receives the first or top row of cigarettes, to a higher inclined position, in which it receives the second or bottom row of cigarettes, and then moves to its lowest or horizontal position, in which it delivers the cigarettes to the box x in a holder 12 and then returns after such delivery to position for receiving another first or top row of cigarettes, the construction shown being 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 more than two rows may be superposed, the machine being changed accordingly. The carrier D is constructed, mounted, and operated as follows: The two side plates 16, forming the body of the carrier 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 its pivot, the side plates 16 being shown as formed integral with the bell-crank levers 17, although it will be understood that this is not essential 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 a 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 three movements of the carrier D at each rotation of the shaft 25—viz., an upward short movement from the position of receiving the first or top row to the position for receiving the second or bottom row of cigarettes, a downward long movement for carrying the two rows of cigarettes to delivering position, and the return movement of the carrier from its lowest position to its position for receiving another top row. The form of the cam-groove 23 is shown clearly in Fig. 1, in which the cam is shown as just about to actuate the bell-crank 20 through bowl 22 to move the carrier upward from its lower inclined position to its highest inclined position for receiving the second row of cigarettes, and it will be understood that if more than two rows of cigarettes or other articles are to be superposed the cam will be correspondingly changed to secure the carrier movements required for this purpose by providing for three or more upward movements of the carrier corresponding to the distance between the successive rows of cigarettes in the carrier. 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 D and forms a guard by which the delivery or lower end of the raceway 10 is closed during the delivering movement of the carrier, so as to hold the cigarettes in the raceway from the time the carrier starts its downward delivering movement until it is returned to position to receive the cigarettes. At the lower end of the guard-plate 26 is the presser-plate *e*, parallel to the cigarettes and extending entirely across the bottom of the carrier, so as to completely cover the top row of cigarettes and press evenly upon the cigarettes in packing, as described hereinafter. The side plates 16 are provided with vertical slots 28, in which slots are mounted vertically-moving slides 29. The construction of the slides, the supports 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 characters being used for corresponding parts. The slide 29 on each side has a movement in slot 28 independently of the carrier-plate 16 and is pressed down by a spring-pressed bell-crank lever 30, actuated by spring 31 and bearing on pin 1, projecting inwardly from the slide 29. Upon horizontal pivots 2 in the slide 29 are pivoted to swing sidewise of the carrier arms 32, connected by cross-bar 33 and extending downward below the side plates 16, where these arms 32 carry inwardly-extending supports *b' b'*, which form, respectively, the bottoms of the chambers into which the first and second rows of cigarettes are received from the raceway 10 and

which support the cigarettes during the downward movement of the carrier D, these supports *b b'* being formed on and carried by vertical plates *c*, which are carried by arms 32 and which in the cigarette-receiving position of the supports *b b'* form the side walls of the cigarette-receiving chambers above the supports *b b'*. Each arm 32 is pressed inward toward the side plate 16, so as to hold its supports *b b'* in position to support the cigarettes when the carrier is in its receiving position by spring-pressed pin 3, mounted in holder 27 on the slide 29 and inclosing spring 4, bearing upon pin 3, which pin bears upon the top of the cross-bar 33. In the path of movement of each cross-bar 33 is mounted on the frame of the machine a stationary abutment 34, shown as formed by a pin on a bracket secured to the frame of the machine in proper position to engage the cross-bar 33 at the proper moment to rock the arms 32 on their pivots 2 and withdraw the supports *b b'* from beneath the cigarettes for their delivery to the box *x* as the carrier descends. 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 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 bracket by the side of the pin 34. Spring 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. The first cigarette entering the carrier from the raceway 10 in each row is stopped at the rear end of the chamber in the carrier by the fixed abutment *f*, which thus forms the rear wall of the chamber in the carrier and holds the row of cigarettes from passing through the chamber, and as the carrier moves downward the end cigarette of each row moves downward along the face of this abutment, and thus into the box. As shown, the face of this abutment *f* is curved on substantially the line of movement of the carrier, although this is not essential, and the abutment is preferably made adjustable toward and from the rear end of the carrier, so as to secure its accurate positioning, being shown as adjustable by set-screw 9, passing through a slot in the abutment-plate. The operation of the machine is as follows: As shown in Figs. 1 to 5 the carrier D is in position to receive and has just received on supports *b'* the first or top row of cigarettes to be deposited in the box *x* in one of the holders 12 on rotating table C. In this position of the parts it will be seen that the cam 24 is just about to actuate the bell-crank lever 20 for a short upward throw, so as to bring the supports *b* below the raceway 10 for the reception of the second or bottom row of cigarettes thereon, and the slides 29 are in their lower position in slots 28, with the arms 32

held by spring-pressed pins 3 in position, with the supports *b b'* thrown inward for the reception and support of the cigarettes. 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 upward in a curved path about the pivots 18, and this movement continues until the parts are in the position shown in Fig. 6, and the carrier is then held in this position until the second or bottom row of cigarettes is received upon the supports *b*, as shown in this figure. The carrier *D* then moves downward with the parts in the position shown in Fig. 6, the guard 26 passing and closing the raceway 10 until the cross-bars 33 on slides 29 strike the abutments 34, which occurs just as the carrier is approaching the limit of its downward movement, and the cross-bars 33 are then rocked with arms 32 against the pressure of springs 4 on pins 3 and the supports *b 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 *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 catches inward beneath the cross-bars 33, so as to hold these cross-bars 33 in rocked position, with the supports *b b'* swung outward on the return of the carrier. At the limit of this rocking movement of the cross-bars 33 and arms 32, which movement is limited to the engagement of the cross-bars 33 with the under side of the holders 27 on slides 29, the further movement of the slides is prevented by the engagement of the cross-bars 33 with the stationary abutments 34, and the carrier *D* then moves downward without the slides, which movement is permitted by the slots 28, in which slides 29 are mounted. 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 b'* the presser-plate *e* acts upon the top of the cigarettes to assure their proper delivery and packing in the boxes, the lower surface of the presser-plate *e* being parallel with the cigarettes throughout the movement and in the delivery position of the carrier. The slides 29 are held firmly in position while permitting the downward movement of the carrier independently of the slides by the pressure of springs 31 acting through levers 30 upon the pins 1. The position of all the parts, with the carrier in its extreme downward position and the cigarettes deposited in the box *x*, with the presser-plate *e* acting upon the top of the cigarettes, is shown in Figs. 7 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 Fig. 1, the carrier is raised with a corresponding quick action and the parts returned 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 to position for receiving the top row of cigarettes for the next box. During 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 supports are held withdrawn by catches *d*. When the bottoms of the slots 28 strike the slides 29, the slides are raised with the carrier and with levers 30 and springs 31, 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 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 and arms 32 upon their pivots 2, so as to move the supports *b 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 the position shown in Figs. 1 to 5 and the carrier is ready to receive another row of cigarettes on the supports *b'*, and this row of cigarettes now passes from the raceway 10 into the carrier upon the supports *b'* and are stopped by the abutment *f*, as shown and previously described.

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 at the bottom of the raceway should be reduced, so as to lessen as far as possible the liability of injury to the cigarettes from being forced by the pressure behind them into the path of moving parts of the carrier, especially as the supports *b'* and presser-plate *e* pass the raceway 10 in the upward or downward movement. 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 approximately a horizontal plane, from which the cigarettes pass onto the inclined carrier-supports *b b'*, as shown clearly in the drawings. It will be understood, however, that this feature is not absolutely essential, although preferable, especially with cigarettes and similar fragile articles. The movement may be changed, so that the bottom row of cigarettes is received first, the carrier returning from the position shown in Figs. 7 and 8 to that shown in Fig. 6, and then after taking the bottom row having a

short downward movement to take the top row of cigarettes; but the movement shown is preferred, as the passage of the unfilled supports *b'* past the channel 10 on the upward movement is more liable to injure the cigarettes than the movement shown unless special devices be added to avoid this.

It will be seen that the invention provides a packing mechanism capable of operating at a very high rate of speed and that while especially intended for packing cigarettes and similar articles the invention may be applied for counting and packing many other articles and may be applied in connection with machines of widely-different character from that shown. It is evident also that many modifications may be made in the construction and arrangement of the parts shown as embodying the invention, and I am not to be limited to the specific form or construction of the devices illustrated. While the invention is especially intended for use in machines for handling rows of cigarettes or other articles, the broader features of the invention are applicable also in machines in which a single article of any character is received on each support, single separate articles thus being supported in the carrier in the line of delivery, so as to deliver one upon the other in vertical delivery or one behind the other in horizontal delivery, according to the operation of the machine in which these features of the invention are embodied.

This application is limited to constructions embodying two or more supports arranged in the line of delivery, so that one or more articles may be held by each support, and thus a plurality of separate articles be packed, carried, or otherwise handled simultaneously, the broader features of the mechanism shown being included in another application, Serial No. 697,123, filed November 22, 1898.

What I claim is—

1. The combination of a carrier having a plurality of supports arranged in the line of delivery of the articles from the carrier and adapted for holding articles in a plurality of separate layers, and means for withdrawing said supports for the delivery and packing together of the separate articles, substantially as described.

2. The combination of a carrier having a plurality of supports arranged in the line of delivery of the articles from the carrier and adapted for holding articles in a plurality of separate layers, means for withdrawing said supports for the delivery and packing together of the separate articles, and a pressure-plate acting upon the delivered articles after the supports are withdrawn, substantially as described.

3. The combination of a carrier having a plurality of supports arranged in the line of delivery of the articles from the carrier and adapted for holding articles in a plurality of separate layers, and means for simultaneously withdrawing said supports for the si-

multaneous delivery of the articles, substantially as described.

4. The combination of a carrier having a plurality of supports arranged one above the other adapted to hold separate articles simultaneously, and means for withdrawing said supports for the delivery of the articles superposed, substantially as described.

5. The combination of a vertically-moving carrier having a plurality of supports arranged one above the other adapted to hold separate articles simultaneously, and means for actuating said carrier and withdrawing said supports for the delivery of the articles superposed, substantially as described.

6. The combination of a vertically-moving carrier having a plurality of supports arranged one above the other adapted to hold separate articles simultaneously, means for actuating said carrier and withdrawing said supports for the delivery of the articles superposed, and a presser-plate acting upon the delivered articles after the supports are withdrawn, substantially as described.

7. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and having a plurality of supports arranged one above the other adapted to hold separate articles simultaneously, and means for actuating said carrier and withdrawing said supports for the delivery of the articles superposed, substantially as described.

8. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and having a plurality of supports arranged one above the other adapted to hold separate articles simultaneously, and means for actuating said carrier and withdrawing said supports for the delivery of the articles superposed, said carrier having a further movement toward the articles independently of the supports after the latter are withdrawn, substantially as described.

9. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and having a plurality of supports arranged one above the other adapted to hold separate articles simultaneously, means for actuating said carrier and withdrawing said supports for the delivery of the articles superposed, and a presser-plate in the carrier moving toward the articles after the supports are withdrawn, substantially as described.

10. The combination of a carrier having a plurality of supports arranged one above the other adapted to hold separate articles simultaneously and having a withdrawal movement substantially parallel to the surface on which the articles are delivered, and means for withdrawing said supports for the delivery and packing of the articles together, substantially as described.

11. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and having a plurality of

supports arranged one above the other adapted to hold separate articles simultaneously, said supports being pivoted on a horizontal axis to swing during withdrawal in a plane substantially parallel to the surface on which the articles are delivered, and means for withdrawing said supports for the delivery of the articles, substantially as described.

12. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and having a plurality of supports arranged one above the other for holding separate articles, said supports being pivoted on a horizontal axis to swing during withdrawal in a plane substantially parallel to the surface on which the articles are delivered, means for withdrawing said supports for the delivery of the articles, and a presser-plate in the carrier having a movement toward the articles after the supports are withdrawn, substantially as described.

13. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and provided with a plurality of supports arranged one above the other and each 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, and means for actuating said carrier and withdrawing said supports for the delivery of the rows of cigarettes superposed, substantially as described.

14. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and provided with a plurality of supports arranged one above the other and each 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, means for actuating said carrier and withdrawing said supports for the delivery of the rows of cigarettes superposed, and a presser-plate in the carrier having a further movement toward the cigarettes after the supports are withdrawn, substantially as described.

15. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and provided with a plurality of supports arranged one above the other and each adapted to receive a row of cigarettes or similar articles, and means for moving said carrier intermittently to bring the successive supports into position to receive the cigarettes and to carry the superposed rows of cigarettes to delivering position and withdraw the supports for the delivery of the cigarettes superposed, substantially as described.

16. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and having a plurality of supports arranged one above the other and each adapted to receive a row of cigarettes or similar articles, of a single way through which the cigarettes are fed into the carrier, and means for moving said carrier intermittently

to bring the successive supports into position to receive the cigarettes and to carry the superposed rows of cigarettes to delivering position and withdraw the supports for the delivery of the cigarettes superposed, substantially as described.

17. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and having a plurality of supports arranged one above the other and each adapted to receive a row of cigarettes or similar articles, of a single way through which the cigarettes are fed into the carrier, means for moving said carrier intermittently to bring the successive supports into position to receive the cigarettes and to carry the superposed rows of cigarettes to delivering position and withdraw the supports for the delivery of the cigarettes superposed, and a presser-plate having a further movement toward the cigarettes after the supports are withdrawn, substantially as described.

18. The combination of a carrier pivoted to swing vertically and having a plurality of supports arranged one above the other and arranged with the supports inclined when in receiving position, a single raceway down which the cigarettes or similar articles are fed to the carrier by gravity, and means for moving said carrier intermittently to bring the supports successively into position to receive the cigarettes from the raceway and to carry the superposed rows of cigarettes to delivering position and withdraw the supports for the delivery of the cigarettes, said way having the bottom surface of its lower end curved to a substantially horizontal plane from which the cigarettes pass to the inclined supports, substantially as described.

19. The combination of a carrier pivoted to swing vertically and having a plurality of supports arranged one above the other and arranged with the supports inclined when in receiving position, a single raceway down which the cigarettes or similar articles are fed to the carrier by gravity, means for moving said carrier intermittently to bring the supports successively into position to receive the cigarettes from the raceway and to carry the superposed rows of cigarettes to delivering position and withdraw the supports for the delivery of the cigarettes, said way having the bottom surface of its lower end curved to a substantially horizontal plane from which the cigarettes pass to the inclined supports, and a roller pressing against and supporting the cigarettes in the upper part of the raceway, substantially as described.

20. The combination of a carrier having a plurality of receiving-chambers, a single way delivering to said chambers, and means for moving said carrier intermittently to bring successive receiving-chambers into position for delivery from the way to said chambers and for moving the carrier from receiving to delivering position, substantially as described.

21. The combination of a carrier having a

plurality of supports arranged in the line of delivery for holding articles in separate layers, means for withdrawing said supports for the delivery and packing together of the separate articles, catches for holding the supports withdrawn and means for tripping the catches for the return of the supports, substantially as described.

22. The combination of a carrier having a plurality of supports arranged in the line of delivery for holding articles in separate layers, means for withdrawing said supports for the delivery and packing together of the separate articles, and means for holding said supports withdrawn during the return movement of the carrier until the supports are moved beyond the delivered articles, substantially as described.

23. The combination of a vertically-moving carrier having a plurality of supports arranged one above the other for holding separate articles, means for actuating said carrier and withdrawing said supports for the delivery of the articles superposed, catches for holding the supports withdrawn and means for tripping the catches for the return of the supports, substantially as described.

24. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and having a plurality of supports arranged one above the other for holding separate articles, means for actuating said carrier and withdrawing said supports for the delivery of the articles superposed, said carrier having a further movement toward the articles independently of the supports after the latter are withdrawn, catches for holding the supports withdrawn and means for tripping the catches for the return of the supports, substantially as described.

25. The combination of a carrier having a plurality of supports arranged one above the other for holding separate articles and having a withdrawal movement substantially parallel to the surface on which the articles are delivered, means for withdrawing said supports for the delivery and packing of the ar-

ticles together, catches for holding the supports withdrawn and means for tripping the catches for the return of the supports, substantially as described.

26. A carrier having the supports *b*, *b'* arranged one above the other and carried by arms pivoted to swing on a horizontal axis, and means for actuating said carrier and swinging said arms to withdraw the supports, substantially as described.

27. The combination with a vertically-moving carrier having the supports *b*, *b'* arranged one above the other and carried by arms pivoted to swing on a horizontal axis, of slides having a vertical movement in the carrier and in which said arms are mounted, and means for actuating said carrier and swinging said arms to withdraw the supports with the carrier moving independently of the slides after the supports are withdrawn, substantially as described.

28. The combination of a carrier pivoted to swing vertically and having supports *b*, *b'* arranged one above the other, of means for actuating said carrier and withdrawing said supports, and a presser-plate in the carrier acting upon the delivered articles, substantially as described.

29. In a packing-carrier, pivoted arms carrying side plates *c* and supports *b* *b'* arranged in the line of delivery of the articles from the carrier and adapted for holding articles in separate layers, substantially as described.

30. In a packing-carrier, pivoted arms carrying supports *b* *b'* arranged in the line of delivery of the articles from the carrier and adapted for holding articles in separate layers, 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.