

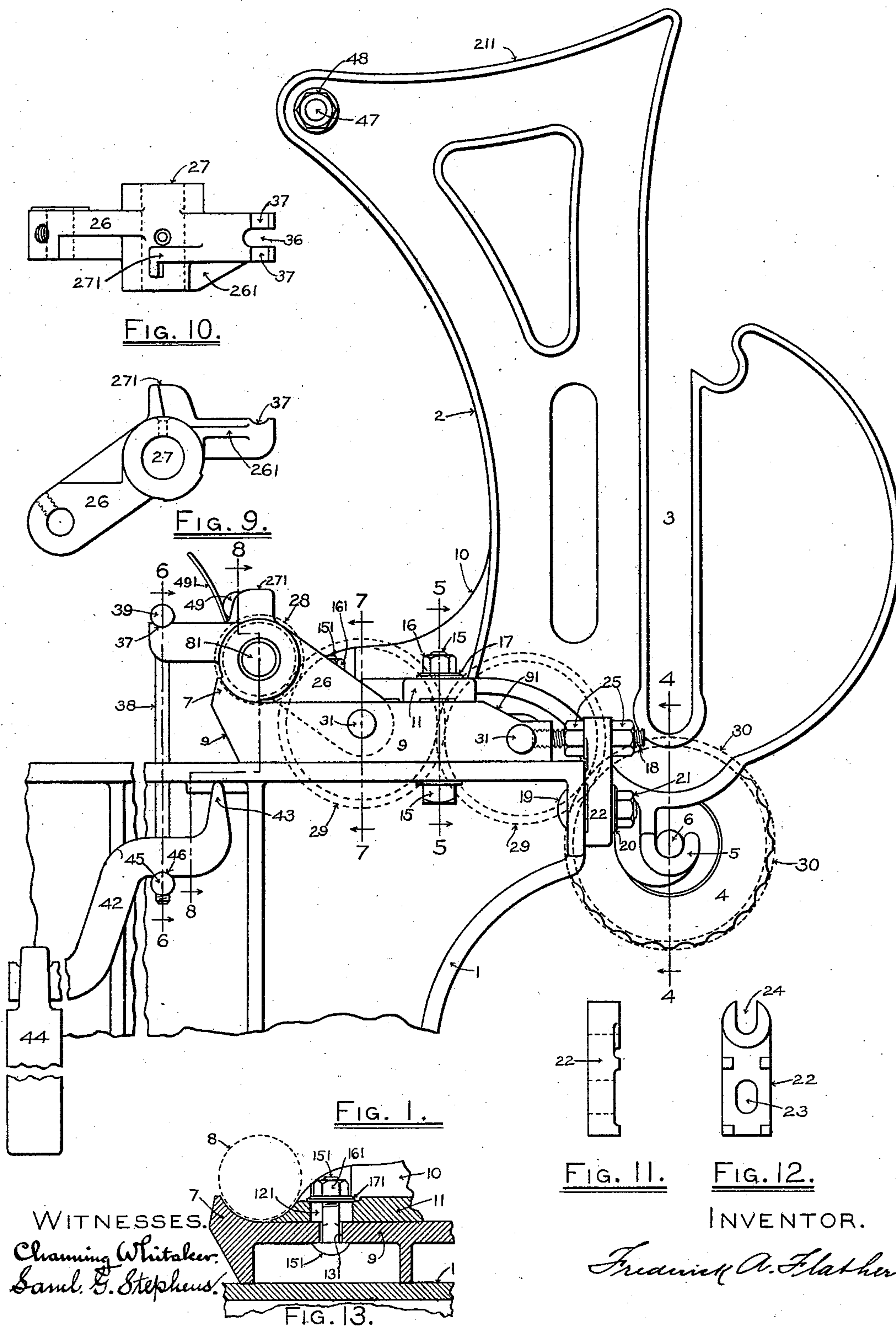
(No Model.)

3 Sheets—Sheet 1.

F. A. FLATHER.  
FEEDING MECHANISM FOR CARDING ENGINES.

No. 553,671.

Patented Jan. 28, 1896.



(No Model.)

3 Sheets—Sheet 2.

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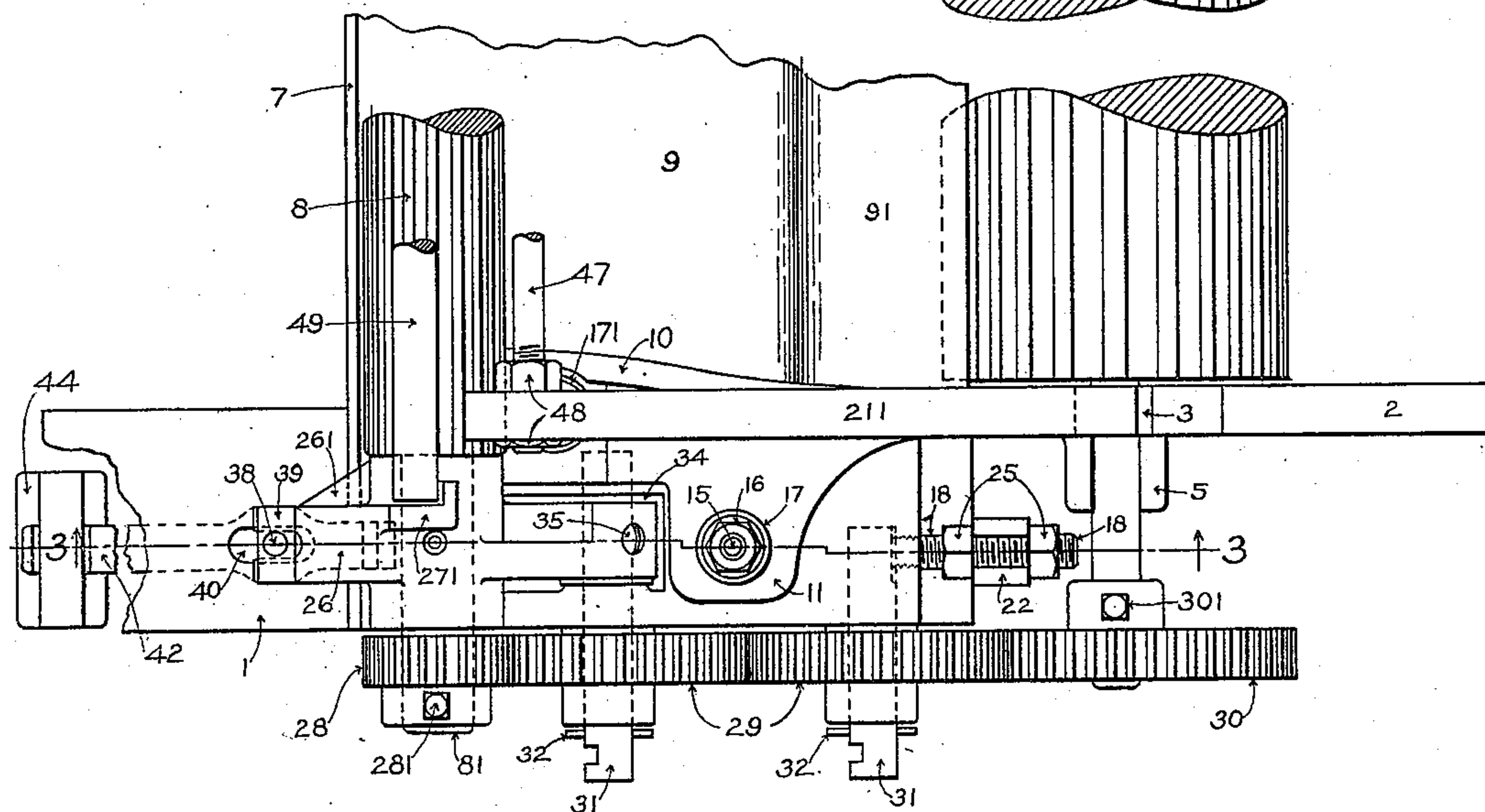
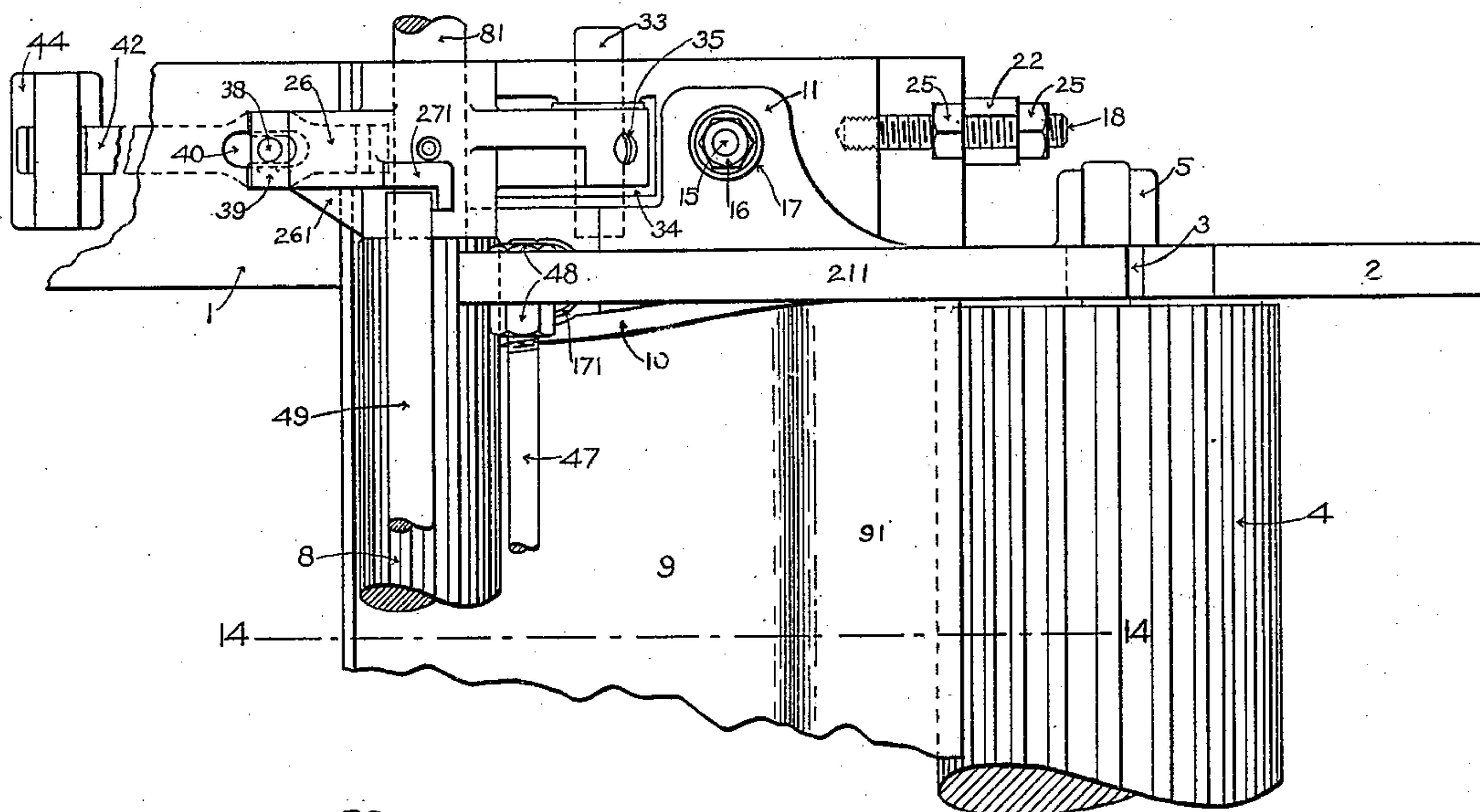
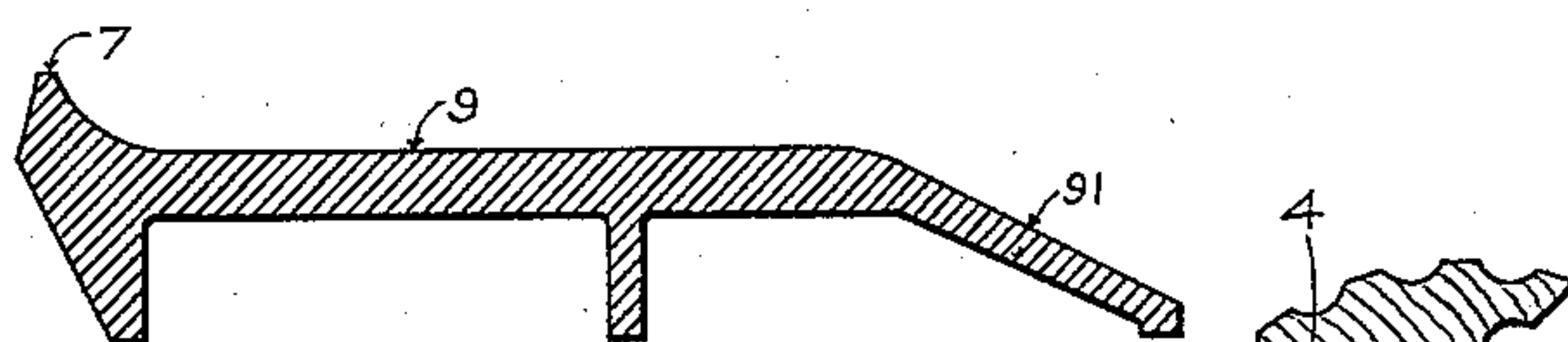


FIG. 2.



WITNESSES.

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FIG. 14.

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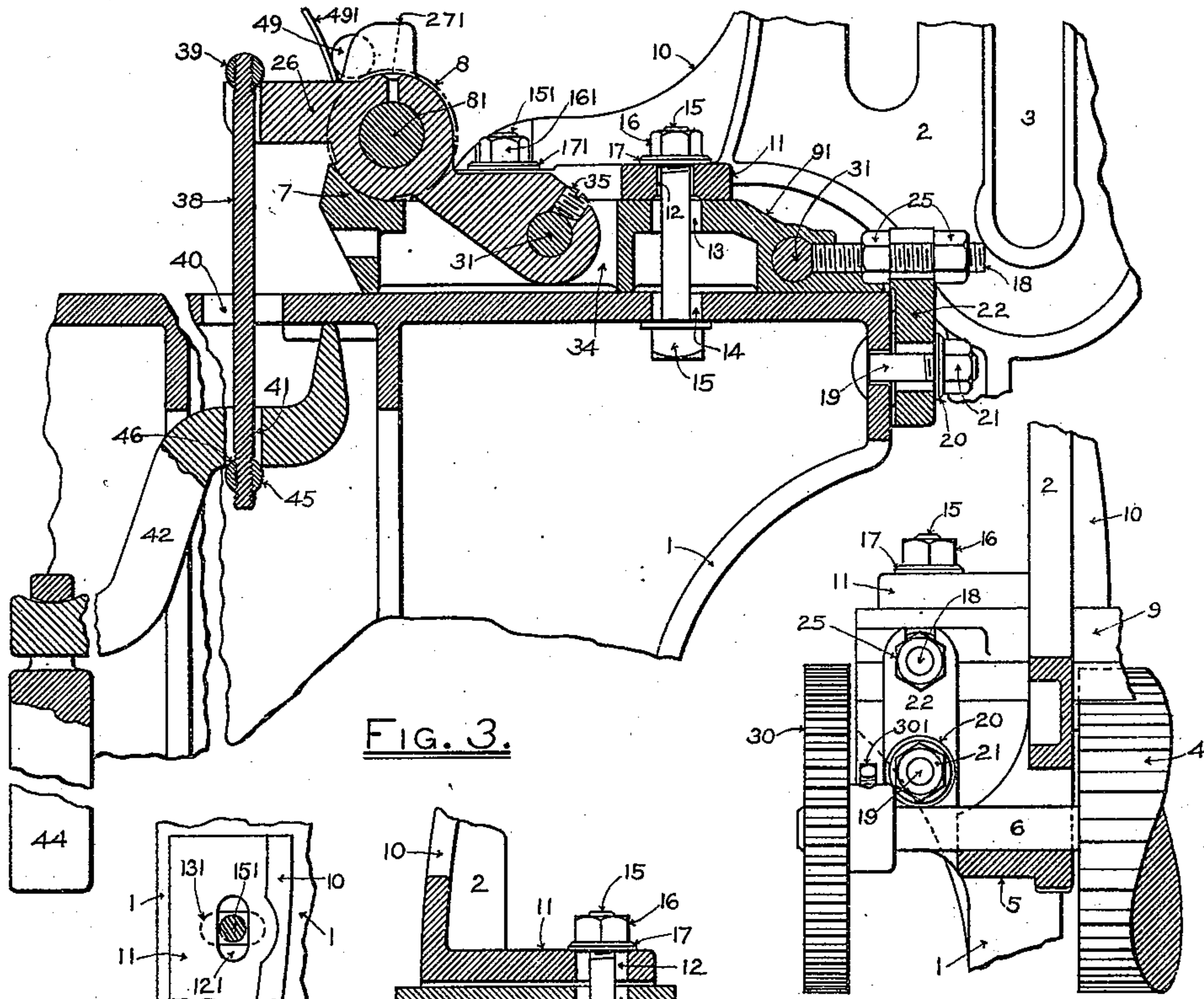


FIG. 3.

FIG. 4.

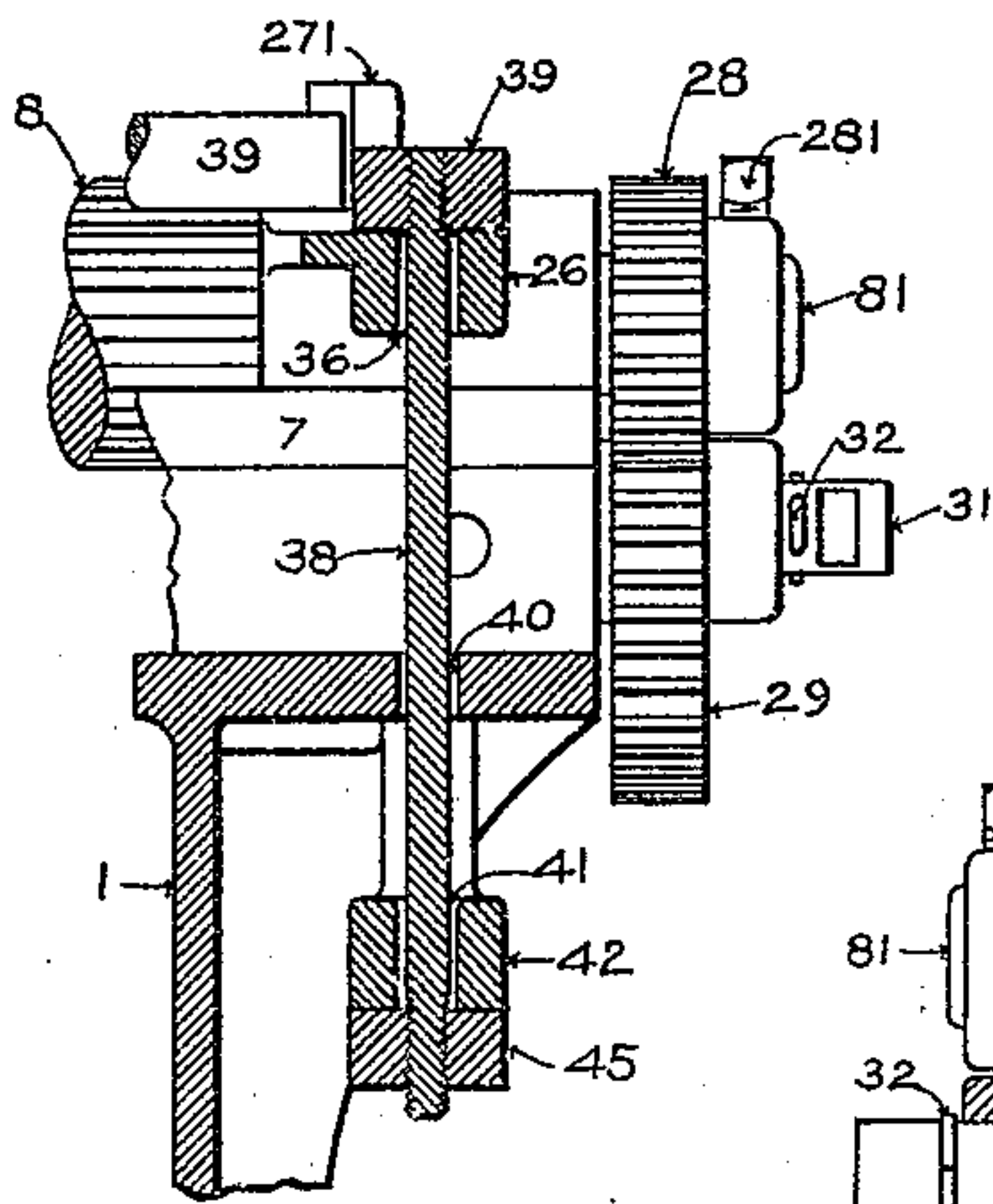


FIG. 5.

FIG. 6.

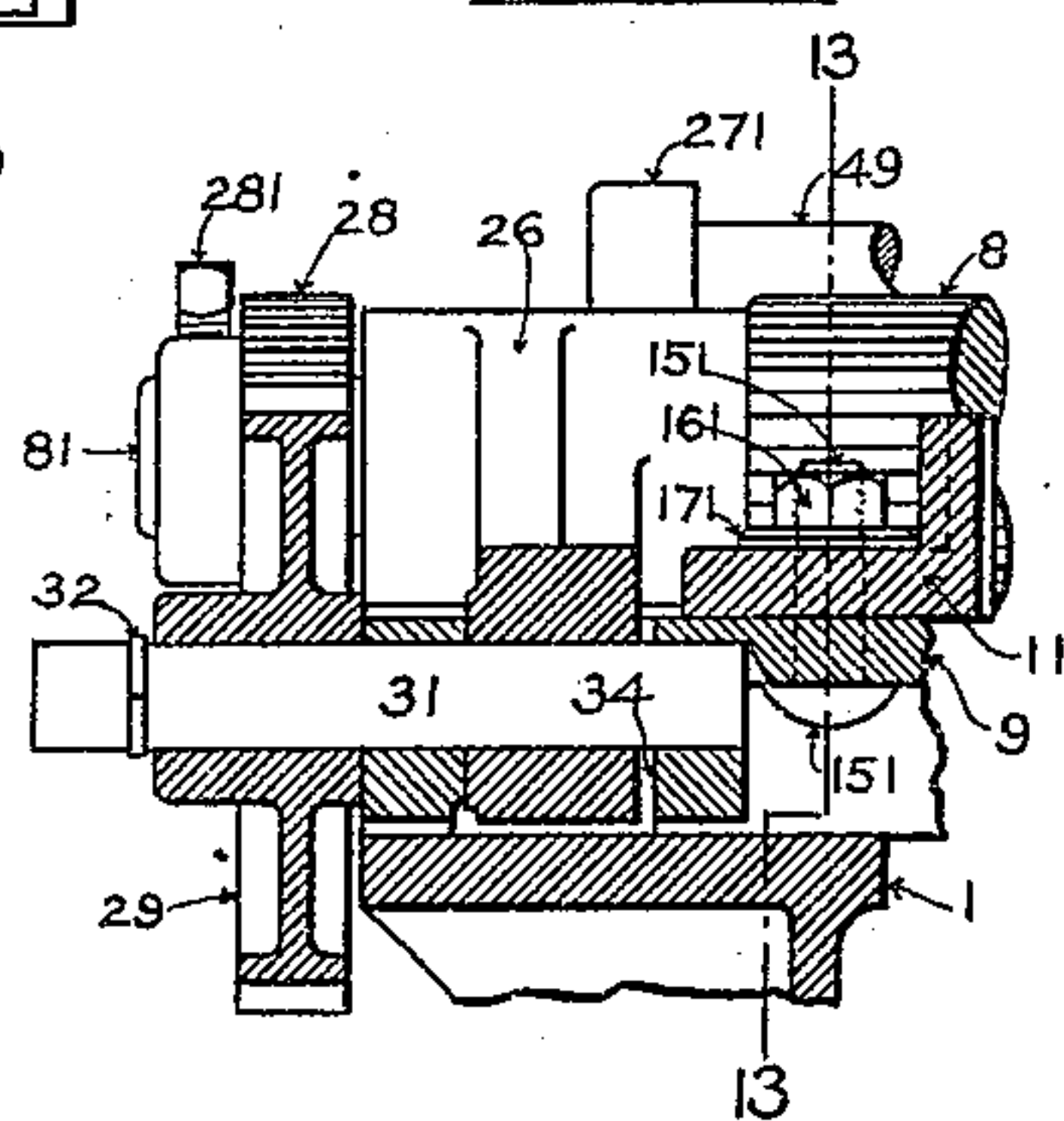


FIG. 7.

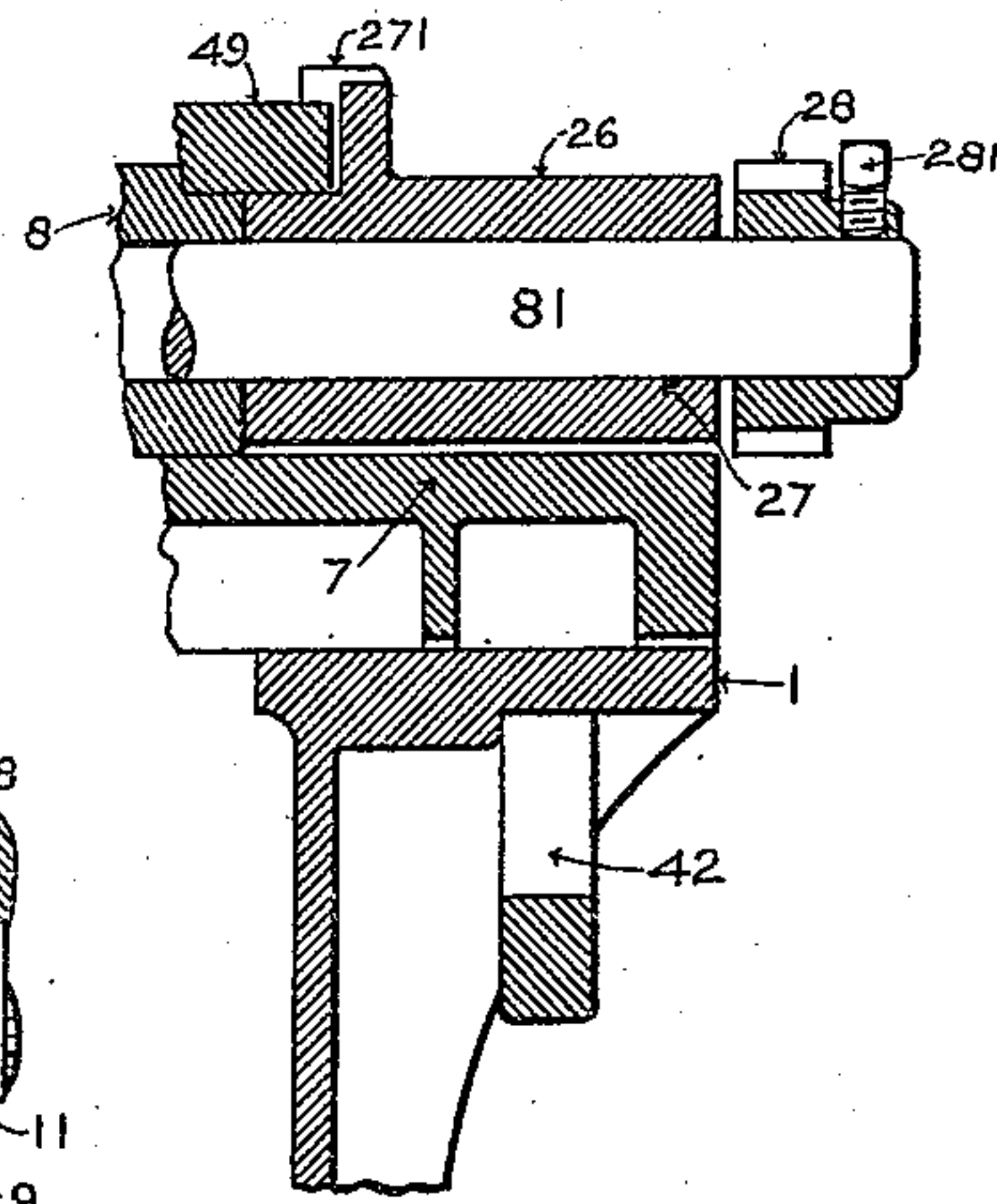


FIG. 8.

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# UNITED STATES PATENT OFFICE.

FREDERICK A. FLATHER, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO THE  
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## FEEDING MECHANISM FOR CARDING-ENGINES.

SPECIFICATION forming part of Letters Patent No. 553,671, dated January 28, 1896.

Application filed December 9, 1895. Serial No. 571,521. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK A. FLATHER, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Feeding Mechanisms for Carding-Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates more particularly to the devices which are provided at the feeding end of a carding-engine for the purpose of supporting the feed-laps and delivering the material therefrom to the card-clothed rollers and cylinders.

It consists in certain features of novel and improved construction and arrangement, and novel and useful combinations of parts, all as first will be described fully with reference to the accompanying drawings, and afterward will be more particularly pointed out and distinctly defined in the claims at the close of this specification.

Figure 1, Sheet 1, of the drawings shows in side elevation a portion of the feed end of a carding-engine with my invention applied thereto, sufficient of the machine-framing being shown to make clear the application and relations of the various parts. Fig. 2, Sheet 2, is a view showing in plan the parts which are shown in Fig. 1, certain portions being broken out. Fig. 3, Sheet 3, is a view in section along the dotted line 3 3 in Fig. 2. Figs. 4, 5, 6, 7, and 8, Sheet 3, respectively are views mainly in section on the vertical planes which respectively are indicated by the dotted lines 4 4, 5 5, 6 6, 7 7, and 8 8 in Fig. 1, each of such figures showing the parts as viewed in the direction that is indicated by the arrows at the ends of the corresponding dotted line. Figs. 9 and 10, Sheet 1, are views in side elevation and plan, respectively, of the swinging support for the feed-roll. Figs. 11 and 12, Sheet 1, are views in side and front elevation, respectively, of a stand which is provided for use in adjusting the feed devices. Fig. 13, Sheet 1, is a view in section on line 13 13 of Fig. 7, Sheet 3, the feed-roll being indicated by a dotted circle. Fig. 14, Sheet 2, is a view in vertical section on line 14 14, Fig. 2, Sheet 2. Fig. 15, Sheet 3, is a view in plan, hereinafter referred.

1 1 are portions of the machine-framing.

2 2 are the upright plates or stands which are located at the opposite sides of the machine-framing, at the feeding end of a carding-engine, and serve to hold the feed-laps in place.

3 3 are vertical slots in the said side plates 2 2, in which are received the opposite ends of the rod or roller which passes through the center of the wound roll of lap.

4 is the grooved or fluted roller below the slots 3 3, on which the under surface of the wound roll of lap rests, and by which the said roll is supported.

5 5 are open bearings provided in downwardly-extending projections of the side plates 2 2, and receiving the journals 6 6 of the grooved roller 4.

7 is the feed shell or trough.

8 is the feed-roll working in the said feed shell or trough.

9 (see particularly Fig. 2) is an apron or plate formed integral with the feed shell or trough and extending into close proximity to the surface of the grooved roller 4 to constitute a support for the lap as it passes from the roll of lap, after unwinding from the latter, to the line at which it is nipped between the feed-roll 8 and the feed-shell 7.

10 10 are converging vertical portions that are provided on the side plates 2 2, to direct inwardly the ragged edges of the advancing lap, and thereby produce good selvages in the fleece. The ends of these side plates are continued into the closest possible proximity to the surface of the feed-roll 8, in order to close up the spaces which would intervene between such ends and the said surface. When such spaces are left, the edges of the lap expand laterally into them and the result is the formation of a fleece having ragged and irregular selvages. I provide against this by bringing the said ends up close to the surface of the feed-roll, as in Fig. 13, Sheet 1. The said ends are concaved so as to fit the surface of the feed-roll and also rounded off so as to permit the feed-roll to be swung upwardly on its supports. (See Fig. 13, in which the ends referred to are shown most clearly.)

The opposite ends of the combined feed-shell and apron or plate rest on the upper surfaces of the sides of the machine-framing,



and are fitted to be adjusted thereon toward and from the licker-in. (Not shown.) The side plates 2 2 are mounted upon the said combined feed-shell and apron or plate, and are provided with outwardly-extending horizontal portions or feet 11 11. (See Figs. 1, 2, 7, and 13.) Holes are made through the outer portions of the said horizontal portions or feet, and also through the ends of the combined feed-shell and apron or plate, and through the horizontal flanges of the side portions of the machine-framing, as indicated at 12, 13, and 14, respectively, in Figs. 3 and 5 of Sheet 3. A bolt 15 is passed through the series of holes 12, 13, and 14 at each side of the carding-engine, it having applied thereto the nut 16 and washer 17. By means of the bolts 15 15, the side plates 2 2 are secured upon the combined feed-shell and apron or plate, and the latter is secured upon the machine-framing. The holes 12 are somewhat elongated in a direction extending transversely of the carding-engine, so that the side plates may be adjusted toward and from each other on the top of the apron or plate. (See Figs. 3 and 5, Sheet 2.)

The holes 13 are somewhat greater in diameter than the bolts 15 15, so that the combined feed-shell and apron or plate may be adjusted universally in a horizontal plane as required to bring it into the desired position. The holes 14 are elongated in the direction of the length of the side portions of the machine-framing, (see Figs. 3 and 5,) to enable the bolts 15 15 to move in such direction therein, and thereby permit adjustment of the side plates, &c., toward and from the licker-in. Other bolts, 151, Fig. 13, Sheet 1, and Fig. 15, Sheet 3, are employed for clamping the inner ends of the side plates to the apron or plate. Each of these bolts passes through a slot 121 in the horizontal portion 11 of one of the side plates, and also through a slot 131 in the apron or plate. The slot 121 extends lengthwise of portion 11, and the slot 131 extends crosswise in the apron or plate, to permit the desired adjustment of the side plate. A nut 161 and washer 171 are applied to the bolt 151.

For the purpose of facilitating the adjustment of the feed-shell, &c., toward and from the licker-in, I apply screws 18 18 to the opposite ends of the combined feed-shell and apron or plate. These screws project in the direction of the length of the side portions of the machine-framing. To the vertical surfaces at the outer ends of the said side portions (see Figs. 1, 2, 3, and 4) I secure by bolts 19, having washers 20 and nuts 21, the stands 22, one of which is shown detached in Figs. 11 and 12, Sheet 1. The said stands are slotted vertically at 23 for the passage of the bolts 19, and also have each an open-ended slot 24 for the reception of the projecting portion of the corresponding screw 18. Nuts 25 25 are applied to each of the said screws 18 18 on opposite sides of the corresponding stand

22, and enable the combined feed-shell and apron or plate and the parts mounted thereon to be adjusted toward and from the licker-in. The slots 23 in the stands 22 enable the latter to be adjusted so as to fit properly upon the screws 18 18.

26 26 are arms which are pivotally connected with the opposite ends of the combined feed-shell and apron or plate, and they are provided with bearings, as at 27, Figs. 9 and 10, Sheet 1, for the shaft 81 of the feed-roll 8. The feed-roll 8 is driven in any convenient and suitable manner.

28 is a gear-wheel that is slipped upon one end of the shaft 81 of the feed-roll and made fast thereon by a clamping-screw 281, Figs. 1, 6, 7, and 8. The said gear-wheel, through carriers or idlers 29 29 and a gear-wheel 30 made fast upon one journal of the grooved or fluted lap-supporting roll 4 by a screw 301, transmits movement of rotation to the said roll 4. The carriers or idlers 29 29 turn loosely upon pins or studs 31 31, which project from one end of the combined feed-shell and apron or plate, and said carriers or idlers are held removably in place on the said pins or studs by means of cotters or split pins 32 32 passing through transverse holes in said pins or studs.

One of the arms or bearing-pieces 26 26 is fitted upon one of the pins or studs 31, while the other of such arms or bearing-pieces is fitted upon a pin or stud 33 at the opposite end of the combined feed-shell and apron or plate. The pivotal ends of the said arms or bearing-pieces fit into vertical slots 34 that are formed in the ends of the combined feed-shell and apron or plate, and the inner ends of said slots constitute stops to arrest the arms when they are swung backwardly—that is, to the right in the drawings—to raise the feed-roll. The walls of the said slots prevent the said arms or bearing-pieces from moving laterally. The clamping-screws 35 35, Figs. 2 and 3, passing through threaded holes in arms or bearing-pieces 26 26, secure the pivotal pins 31 and 33 from endwise displacement. The other pivotal pin, 31, is held in place by the engagement of the inner end of one of the adjusting-screws 18 therewith, as indicated in Fig. 3.

As will be perceived, the combined feed-shell and apron or plate constitutes a sliding support for the feed-roll, the side plates, the grooved lap-supporting roll, and the gearing by which the said lap-supporting roll is rotated from the feed-roll, and when adjustment of the parts toward and from the licker-in is sought to be made all the said parts move together without the slightest disturbance in their position relative to one another.

The free end of each arm or bearing-piece 26 is formed with an open slot or notch 36, (see Figs. 6 and 10,) extending vertically through the same, and on its upper surface it has transverse grooves 37 37, Figs. 9 and 10. The vertical slot receives the stem of a ver-



tical link 38, the latter having a threaded upper end which enters a correspondingly-threaded hole in a cross-piece 39, which is caused to lie across the free end of the arm or bearing-piece 26, and rests normally in the grooves 37 37 without danger of becoming dislodged therefrom. The said link passes downward through a slot 40 in the horizontal flange of the side framing, and also through a slot 41 in a weight-lever 42, which is placed below the said flange. The toe 43 of the said weight-lever bears against the under side of the flange, while the free end of the said weight-lever supports a weight 44. The lower end of link 38 has screwed thereon a second cross-piece 45, which occupies normally a position in transverse grooves 46, which are formed in the under side of the weight-lever. The described weighting devices admit of being very quickly and conveniently connected with the arm or bearing-piece 26 or disconnected therefrom. All that is necessary in either case is to raise the weighted end of the weight-lever slightly, and then slip the upper end of the link either into the slot in the free end of the arm or bearing-piece or out of the said slot. When the said end is in the said slot, the fitting of the cross-piece in the transverse grooves of the arm or bearing-piece insures safety against accidental disengagement of the link. It will be understood that a set of weighted devices is employed in connection with each arm or bearing-piece 26.

The slow rotation of the grooved or fluted roll 4 causes the wound roll of lap which rests on top of the roll 4 to rotate also in the manner required for delivering the lap to the feed-roll 8. Usually in practice heretofore the parts have been so arranged that the lap quits or leaves the wound roll of lap at the bottom thereof, where it rests upon the grooved or fluted roll 4. When unwinding at this place it frequently happens that the convolution of lap which is unwinding from the roll clings to the next inside one, with the result that tearing or improper splitting of the lap frequently occurs. This is in large measure due to the fact that the unwinding is effected at a place where the successive convolutions are closely compacted and matted together by the compression resulting from the weight of the roll of lap.

In order to obviate the tendency of two layers or convolutions of the wound lap to adhere or mat together and split or tear as the unwinding proceeds, I arrange the parts so that the unwinding shall take place at a point where the convolutions of the wound roll of lap no longer are compressed together by the weight of the said wound roll and after they have had an opportunity of resuming, through their elasticity, their normal relations to one another and of separating somewhat. To this end I locate the bearings 5 for the journals of the grooved or fluted roll 4 in a low or depressed position, so that the upper portion of the periphery of the said roll 4 shall be some-

what below a horizontal plane passing along the upper surface of the main portion of the apron or plate 9 and into the bite of the feed-roll 8 and shell 7. The portion of the apron or plate 9 next adjacent to the grooved or fluted roll 4 is inclined upwardly from the axis of the said roll, as at 91, to afford an opportunity to the roll of lap to expand as its surface passes from the roll 4 in rotating. From this construction and arrangement it follows that the unwinding takes place at some distance from the place at which the wound roll of the lap rests upon the top surface of the grooved or fluted roll 4, so that the layers or convolutions of the lap separate from each other easily and without tearing or splitting.

Mounting the feed-roll in swinging arms 26 and connecting the weighting devices with the said arms in the detachable manner which has been shown and described enables me quickly and conveniently to disconnect the weighting devices from the said arms and to turn the latter backwardly whenever it is desired to separate the feed-roll from the feed-shell or to expose the latter to view.

The feed-roll moves toward and from the feed-plate as the cotton which separates the roll from the plate varies in thickness. The movements of the roll are so controlled that the space between the roll and the plate at any plane at right angles to the roll is always of substantially equal thickness. The object is to cause the lap to be compressed with a comparatively uniform pressure for a length which is considerable when compared with the length of the staple. It results from such compression that the cotton fibers are more perfectly separated from one another as they are teased from the lap by the licker-in.

The upper ends of the plates 2 2, adjacent to the edges of the said plates which are nearest to the licker-in, are connected together by a cross-rod 47, having nuts 48 48 on each end thereof, the said ends being screw-threaded for the purpose of fitting them to receive the said nuts. These nuts come in contact with the opposite sides of each of the plates 2 2, and thereby confine the upper ends of the said plates from lateral movement either toward or from each other. The portions of the plates 2 2 which are to the left-hand side of the slots 3 3 in Figs. 1 and 2 are sufficiently high to permit the ends of the rod or roller which passes through the center of a second roll of lap to be rested on their top edges, thereby to support the said second roll of lap above and out of contact with the first roll of lap, the latter resting, as has been described, on the grooved or fluted roll 4. The top edges 211 211 of the side plates 2 2 are suitably shaped to support the ends of the rod or roller of the second roll of lap, and are inclined downwardly somewhat toward the cross-rod 47, so as to cause the second roll of lap to gravitate toward the cross-rod 47 until its periphery rests in contact with the said cross-



rod. The cross-rod 47 serves to retain the second roll of lap in proper position ready to be lowered onto the fluted roll when the first lap has run out, and fed between the feed-  
5 roll and feed-shell of the licker-in.

On the hub of each of the arms 26 26 is formed an L-shaped projecting piece 271, one arm or portion of which extends inwardly toward the middle of the carding-engine.  
10 Along the horizontal portion of each arm 26 there extends a web 261. A clearer-roll 49 is dropped in place on the inwardly-projecting portions of the hubs of the arms 26 26, it resting on top of the feed-roll, and in the angle  
15 between the said feed-roll and the cover 491 of the leader or licker-in. A portion of such cover is shown in Figs. 1 and 3. When the arms 26 are raised and drawn upward and to the right in the drawings the clearer-roll 49 is  
20 lifted and carried with the said arms, it being prevented from dropping out of place by the webs 261 261 and the inwardly-turned portions of the L-shaped-parts 271 271.

I claim as my invention—

25 1. The combination with a plate provided with a feed-shell, a feed-roll, supports for the said feed-roll pivotally mounted upon the said plate, side-plates to retain the lap in place and bearings for the lap-supporting roll, the  
30 said plate carrying the said side-plates and bearings, and a lap-supporting roll mounted in such bearings, of means to adjust the plate transversely of the length of the feed-roll, substantially as described.

35 2. The combination with a plate provided with a feed-shell, a feed-roll, supports for the said feed-roll pivotally mounted upon the said plate, side-plates to retain the lap in place and bearings for the lap-supporting roll, the said  
40 plate carrying the said side-plates and bearings, and a lap-supporting roll mounted in such bearings, of screws 18, 18, stands 22, 22, slotted at 24, the main framing having such stands secured thereto, and nuts 25, 25, ap-  
45 plied to the said screws, substantially as described.

50 3. The combination with a plate provided with a feed-shell, a feed-roll, supports for the said feed-roll pivotally mounted upon the said plate, side-plates to retain the lap in place and bearings for the lap-supporting roll, the said  
plate carrying the said side-plates and bearings, means to adjust said side-plates and bearings sidewise on said plate, and a lap-sup-  
55 porting roll mounted in such bearings, of means to adjust the plate transversely of the length of the feed-roll, substantially as described.

4. The combination with a plate provided

with a feed-shell, a feed-roll, supports for the 60 said feed-roll pivotally mounted upon the said plate, side-plates to retain the lap in place and bearings for the lap-supporting roll, the said plate carrying the said side-plates and bear- 65 ings, means to adjust said side-plates and bearings sidewise on the said plate, and a lap-supporting roll mounted in such bearings, of screws 18, 18, stands 22, 22, slotted at 24, the main framing having such stands secured thereto, and nuts 25, 25, applied to the said 70 screws, substantially as described.

5. The combination with the feed-roll, and the pivoted arms by which the same is supported, said arms having open slots as de- 75 scribed, of the weight-levers, and links 38, 38 on which said weight-levers act, said links having cross-pieces 39, 39, and being fitted to be entered into said slots to engage the cross- 80 pieces with the pivoted arms, as set forth, and also to be swung out of said slots to disengage the cross-pieces from the arms, substantially as described.

6. The combination with the feed-roll, and the pivoted arms by which the same is supported, said arms having open slots and cross- 85 grooves as described, of the slotted weight-levers also having cross-grooves, the links 38, 38, passing through the slots in the weight-levers, and fitted to be swung into and out of the open slots of the pivoted arms, and the 90 cross-pieces at the upper and lower ends of said links, engaging the pivoted arms and weight-levers, respectively, and normally resting in the cross-grooves, substantially as described. 95

7. The combination with a feed-roll, and a clearer-roll resting on said feed-roll, of pivoted arms in which the feed-roll is journaled, said arms having retaining devices to keep the clearer-roll in place when the arms are swung 100 back to raise the feed-roll, substantially as described.

8. The combination with the lap-supporting roll, of the side-plates 2, 2, having the vertical slots for the reception of the rod or roll of a 105 wound lap, and also having the top edges thereof adapted to support the ends of the rod or roll of a second wound lap, and a cross-rod uniting the said side-plates and serving as a stop against which the surface of the said sec- 110 ond lap may rest, substantially as described.

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

FREDERICK A. FLATHER.

Witnesses:

SAML. G. STEPHENS,  
MARY CAVERLY.