No. 704,255. Patented July 8, 1902.

J. G. HODGSON & H. N. NORTON.

CAN ENDING OR HEADING MACHINE.

(Application filed Oct. 22, 1900.)

(No Model.) 6 Sheets—Sheet 1.

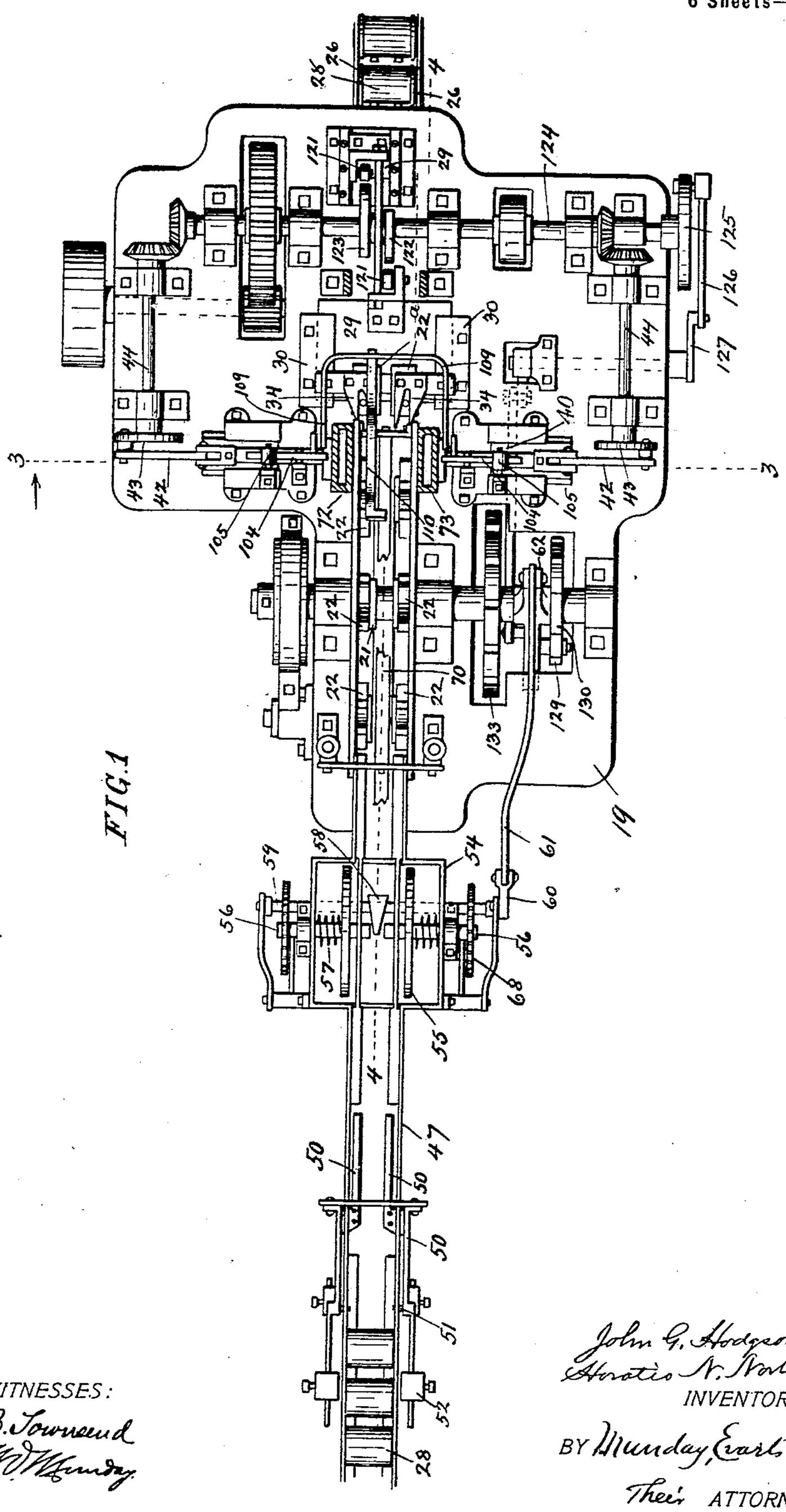

FIG. 1

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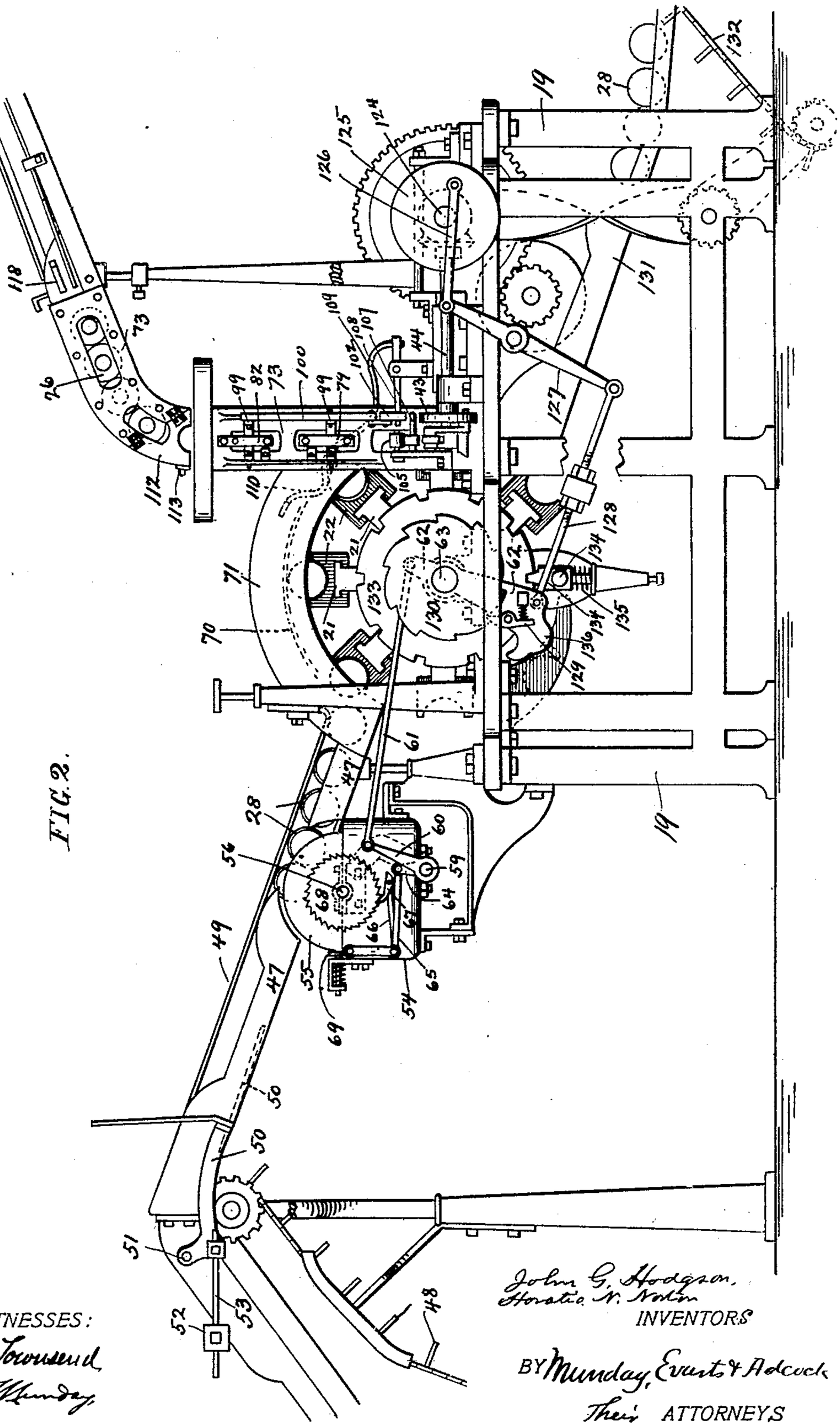

FIG. 2.

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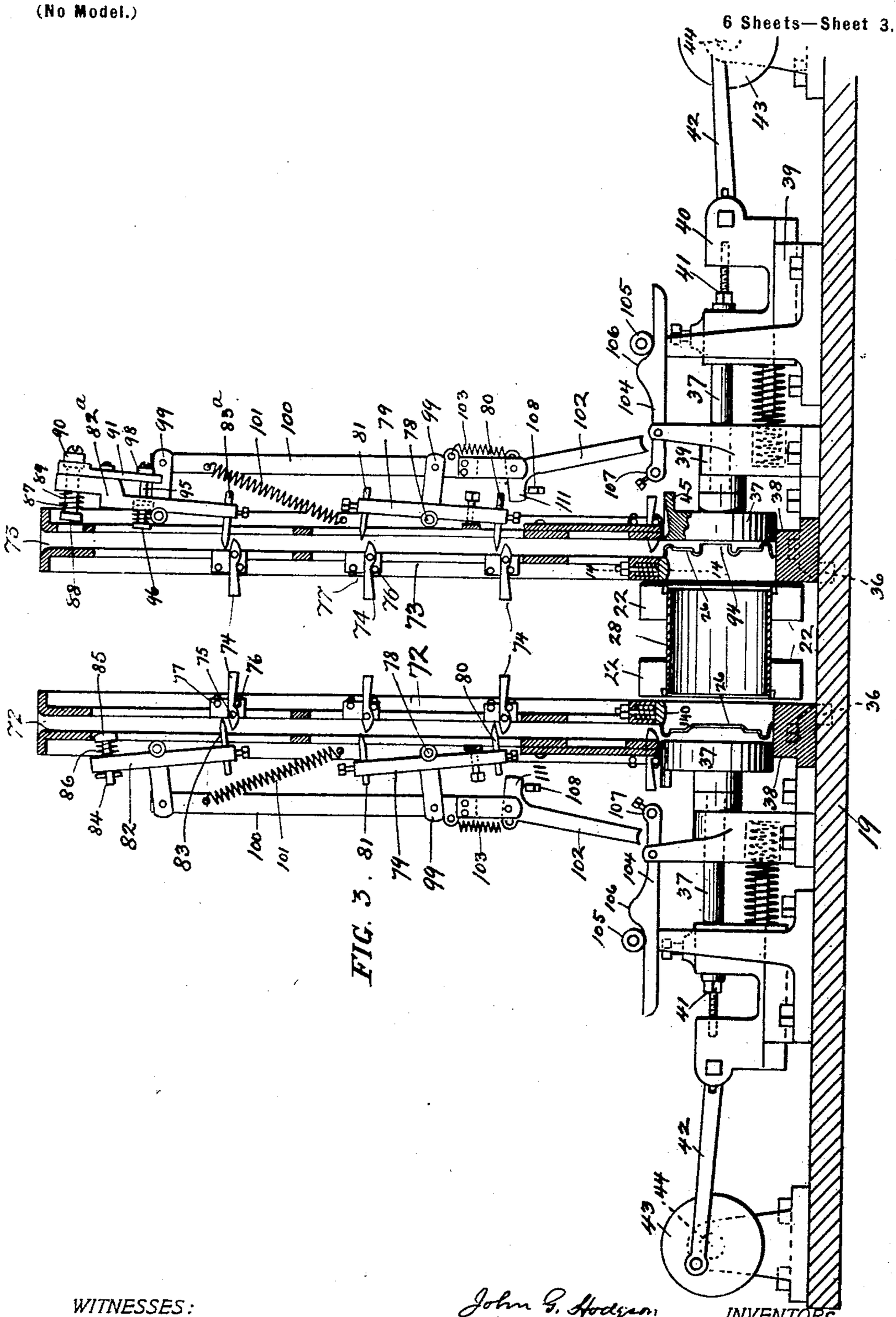

FIG. 3.

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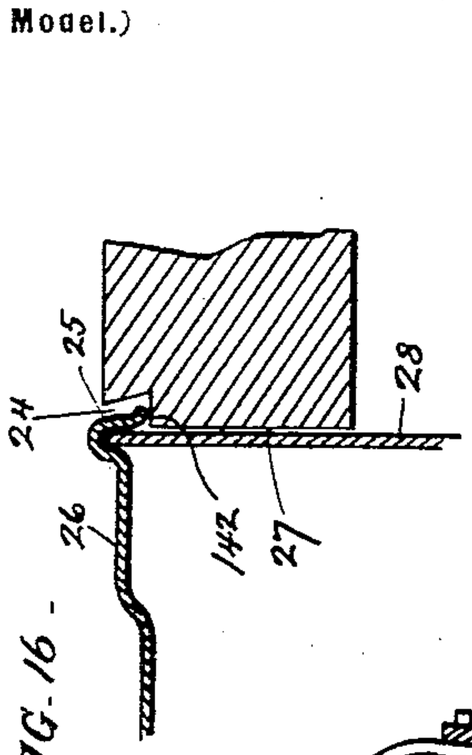
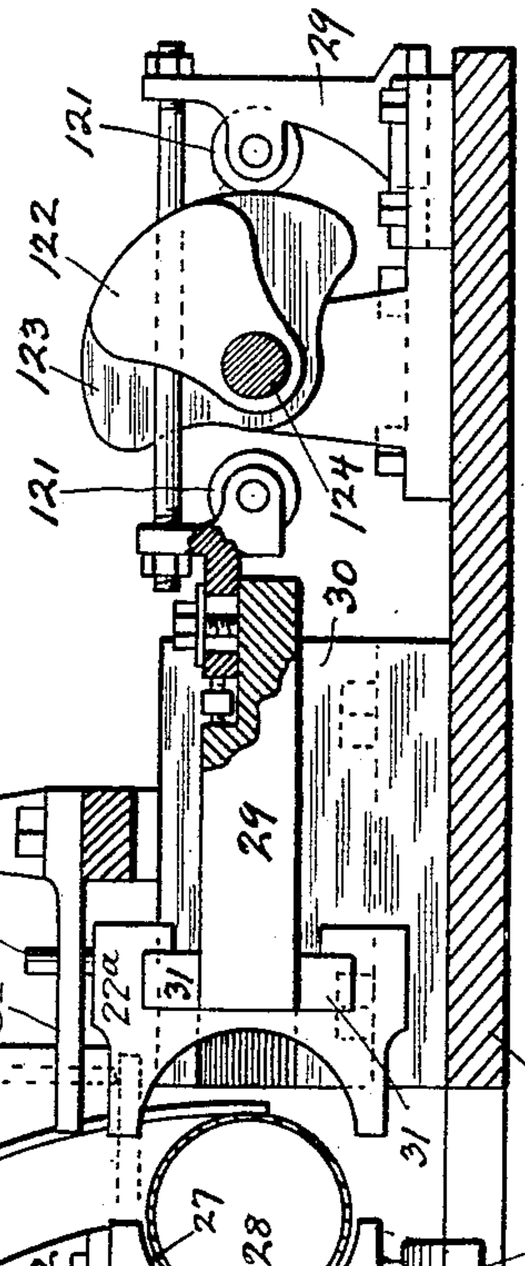
FIG. 16.





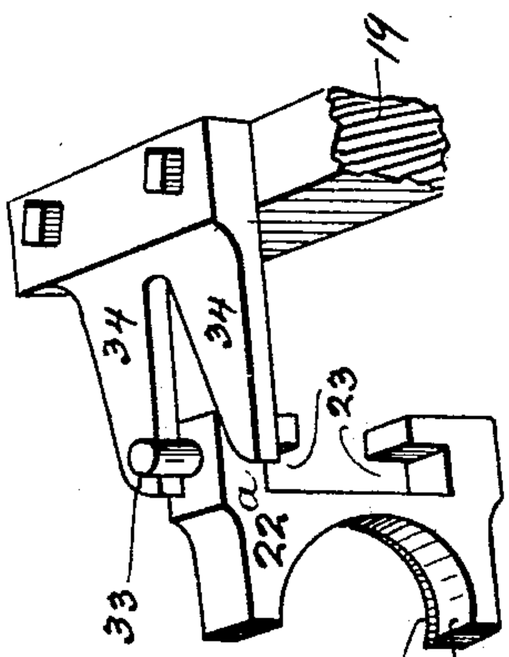
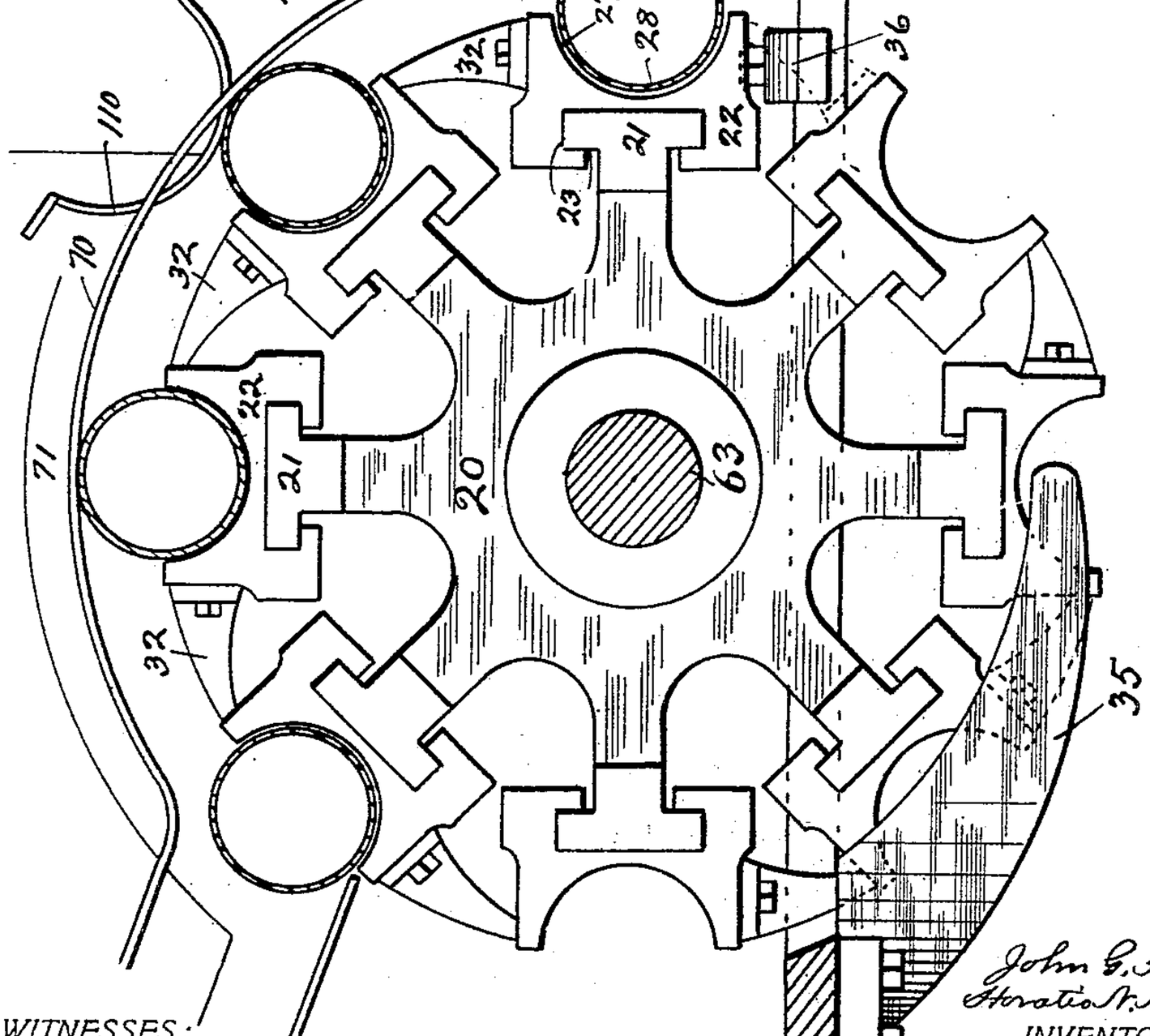


FIG. 10.

FIG. 4.



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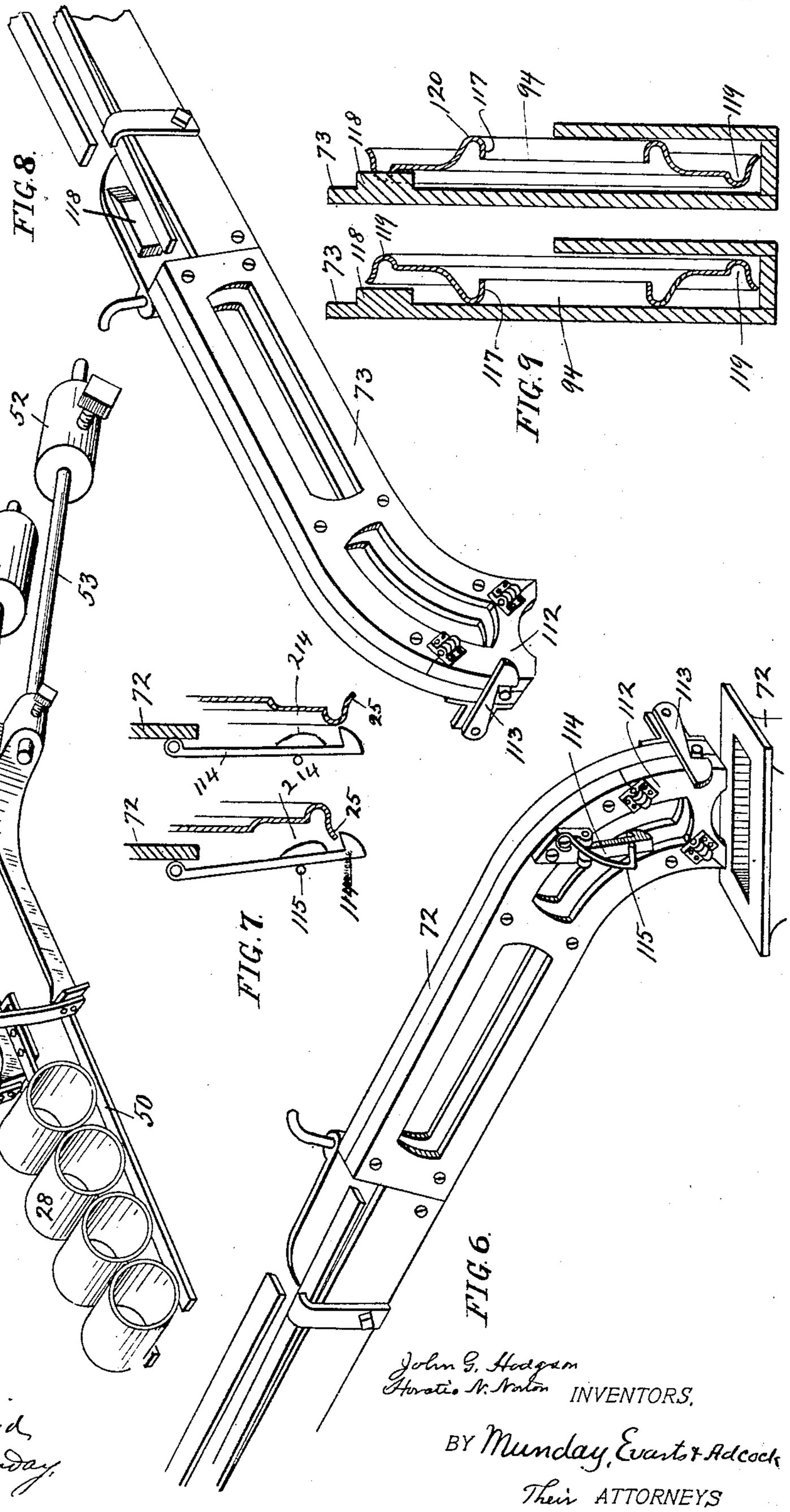

FIG. 8.

FIG. 9.

FIG. 5.

FIG. 7.

FIG. 6.

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FIG. 15.

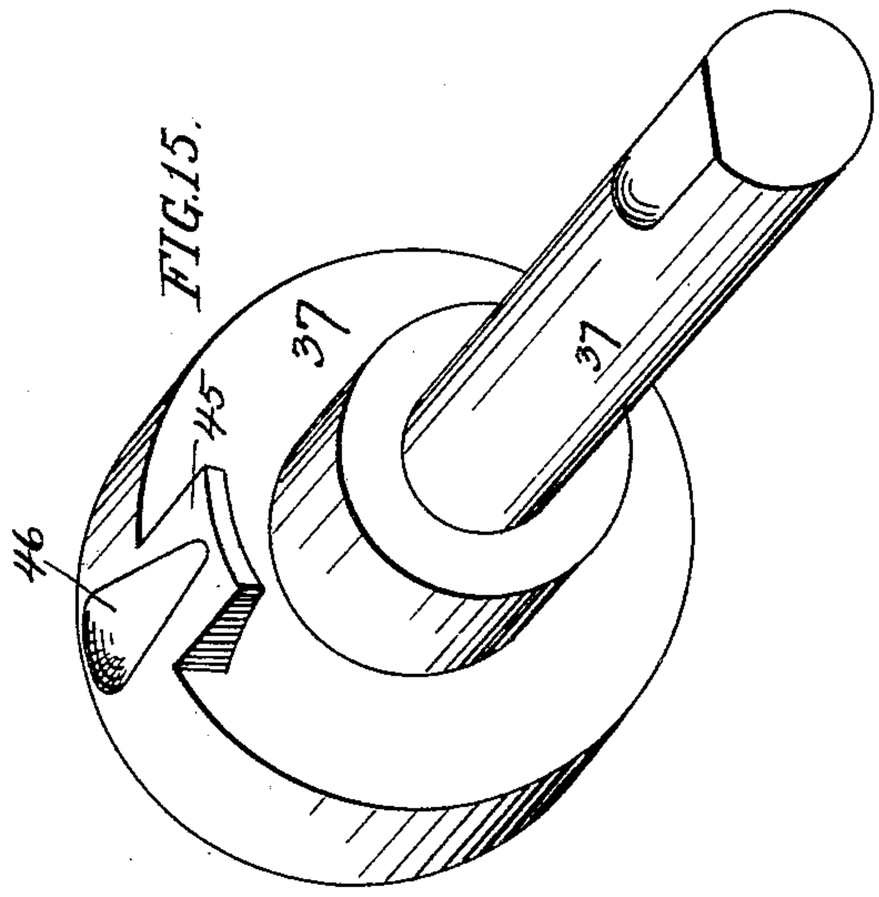
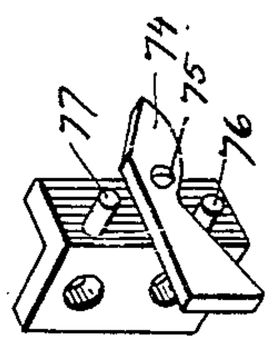


FIG. 13.



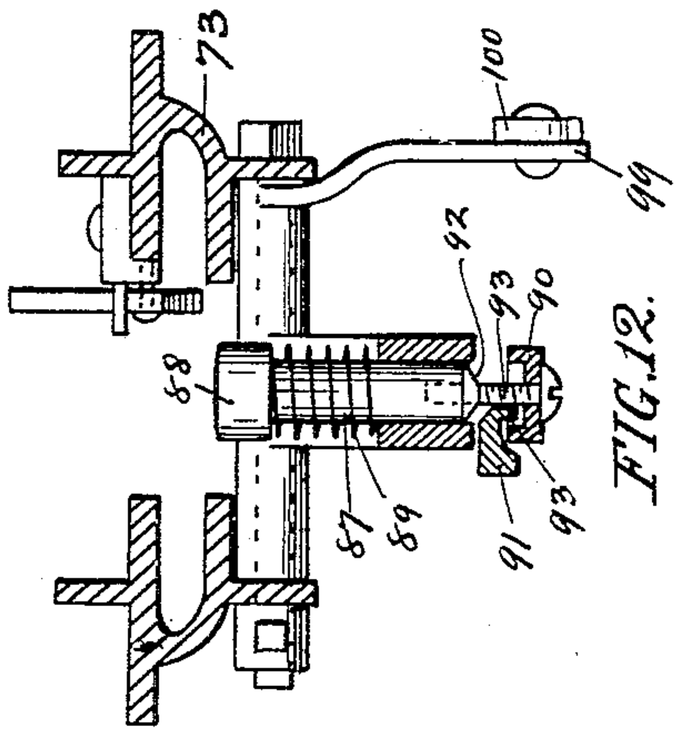


FIG. 12.

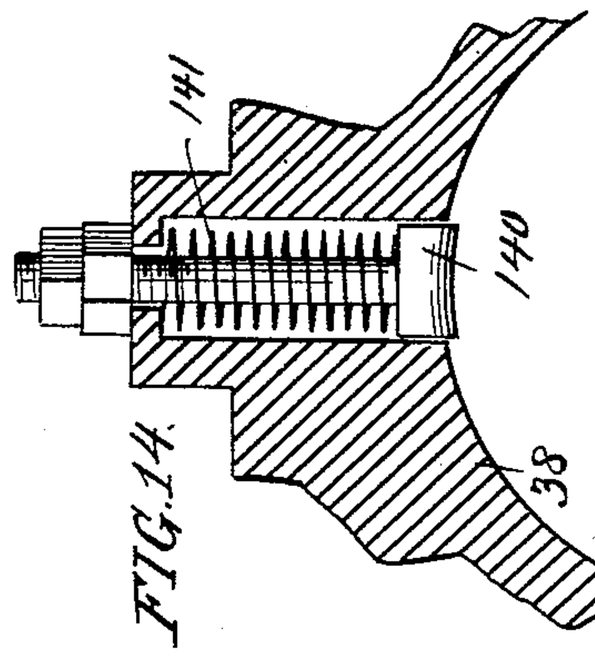


FIG. 14.

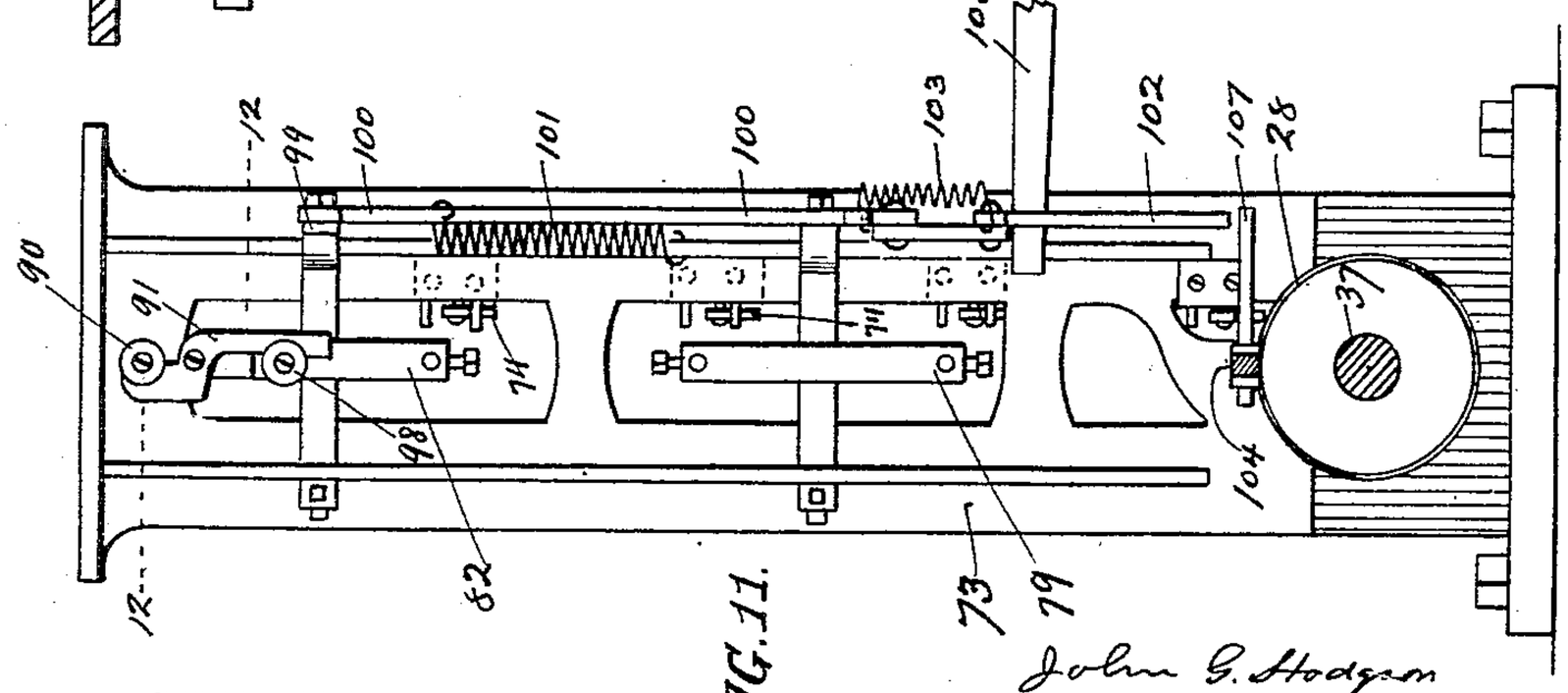


FIG. 11.

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UNITED STATES PATENT OFFICE.

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CAN ENDING OR HEADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 704,255, dated July 8, 1902.

Application filed October 22, 1900. Serial No. 33,963. (No model.)

To all whom it may concern:

Be it known that we, JOHN G. HODGSON and HORATIO N. NORTON, citizens of the United States, residing in Maywood, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Can Ending or Heading Machines, of which the following is a specification.

This invention relates to can ending or heading machines—that is to say, to machines for applying tight exterior-fitting can-heads to can-bodies.

The object of the invention is to provide an automatic can-heading machine of a simple, efficient, and durable construction by means of which the tight exterior-fitting sheet-metal can-heads may be properly, rapidly, and cheaply applied to the sheet-metal can-bodies without danger of failure or of the heads and body clashing or cutting each other as they are forced or telescoped together, and in which stoppage or clogging of the machine or injury to the mechanism by can-heads being fed thereto without can-bodies or by the heads being fed thereto in a reversed position may be effectually prevented, and by which also defective cans, due to the application to a can-body of either two top heads or two bottom heads as contradistinguished from the top head on one end to the bottom head on the other end of the can-body, may be guarded against.

The invention consists in the means employed to practically accomplish this object or result—that is to say, it consists in the novel construction of parts and devices and in the novel combinations of parts and devices herein shown and described and by which such object or result is accomplished, the same being particularlay specified in the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 is a plan view of a can-heading machine embodying the invention. Fig. 2 is a side elevation. Fig. 3 is a detail vertical cross-section on line 3 3 of Fig. 1. Fig. 4 is a vertical section on the broken line 4 4 of Fig. 1. Fig. 5 is a detail perspective view of a portion of the can-body feed chute or passage. Fig. 6 is a detail perspective of a portion of the bottom-head feed-chute, showing the device for arresting the reversed bottom head; and Fig. 7 is a detail view illustrating the operation of this device. Fig. 8 is a detail perspective view of a portion of the top-head feed-chute, showing the device for arresting a reversed top head; and Fig. 9 is a detail view illustrating the operation of this device. Fig. 10 is a detail perspective of parts hereinafter to be described. Fig. 11 is a detail face view of one of the can-head feed-chutes. Fig. 12 is a cross-section on the broken line 12 12 of Fig. 11. Fig. 13 is a detail perspective of parts hereinafter to be described. Fig. 14 is a detail vertical section on line 14 14 of Fig. 3, and Fig. 15 is a detail perspective of the heading plunger or die, and Fig. 16 is a detail sectional view of the heading-jaw.

In the drawings, 19 represents the frame of the machine.

20 is a rotary heading jaw, wheel, or spider having a series of T-shaped arms or heads 21, each carrying a pair of semicircular heading-jaws 22, adapted to slide to and from each other on the T-shaped arms or heads 21, the heading-jaws each having a slot 23 to fit the heads 21. At its outer face each heading-jaw 22 has a recess or enlargement 24 to receive the flange 25 of the can-head 26, while the smaller diameter 27 of the heading-jaw corresponds in size to the can-body 28. A pair of similar transversely-sliding heading-jaws 22^a are mounted on a reciprocating slide 29, which reciprocates in suitable guides 30 on the frame of the machine and which is provided with a head 31, fitting in the slot 23 of said heading-jaws, and which heading-jaws coöperate in turn with each pair of heading-jaws 22 on the carrier wheel or spider 20 as the same rotates. Each of the heading-jaws 22 on the wheel or spider 20 is furnished with an arm or extension 32, secured thereto and bridging the space between itself and the next adjoining heading-jaw on the wheel or spider 20. Each of the heading-jaws 22^a on the slide 29 is provided with a pin or projection 33, which engages a stationary cam or fork 34 on the frame of the machine as the slide 29 makes its backward movement, so as thus to return the

transversely-sliding jaw 22ª to its normal central or proper position after each forward movement, so that the same will be ready for its next forward movement. The frame of the machine is also provided with a stationary heading-jaw-centering cam 35, which projects between the heading-jaws 22 on the carrier 20, and thus serves to return them to position after each heading operation as the carrier 20 revolves. Stationary cams or inclines 36 36 on the frame of the machine and which engage the outer faces of the heading-jaws 22 as the carrier 20 revolves serve to restore the jaws 22 22 to position on the carrier if they should happen to be too widely separated.

37 37 are the heading plungers or dies, each fitting and reciprocating in a can-head guide or ring 38 which is secured to the frame of the machine in position to properly register with the can-heading jaws 22 22 when the carrier 20 rotates to bring the jaws 22ª thereon opposite the jaws 22 on the slide 29 and when said slide 29 closes the pair of heading-jaws 22 thereon against the coöperating pair of heading-jaws on the carrier 20. The heading plunger or die 37 or its stem reciprocates in suitable guides 39 on the frame of the machine and is operated by a slide 40, to which it is adjustably attached by as crew 41, and which slide is connected by a pitman or link 42 with a revolving wheel or crank 43 on the shaft 44.

Each of the heading dies or plungers 37 is furnished with a lip or projection 45 to support the can-heads in the can-head feed-chute when the heading plunger or die makes its forward movement. Each heading-plunger is also provided at its upper part with a curved recess 46, the curvature of which should correspond to that of the flange of the can-head to prevent the flange of the can-heads from being dented when the can-heads drop down against the piston in the can-head chute.

47 is the can-body feed chute or passage down which the can-bodies roll into the heading-jaws 22 on the carrier 20 and to which the can-bodies are delivered by the endless can-body conveyer 48. This can-body feed-chute is provided with an upper guide 49 to prevent the can-bodies crowding or piling on top of each other, and it is provided with an automatic can-body discharge-gate 50, turning on a pivot at 51 and provided with a weight 52 on its arm 53, so that when the can-body chute 49 below this discharge-gate is full of can-bodies and a sufficient number of can-bodies collects on the movable gate 50 to overbalance the weight 53, which holds the gate closed, the gate will automatically open and discharge the surplus cans from the machine, and thus prevent too great crowding or wedging of the can-bodies in the can-body chute or clogging of the machine by reason of the can-body conveyer at any time delivering the can-bodies faster than the heading mechanism of the machine requires. Between the automatic can-body discharge-gate 50 and the can-body heading-jaw carrier 20 the can-body chute 49 is furnished with a fluxing or acid-ing device for fluxing the ends of the can-bodies preparatory to their being headed to facilitate the subsequent soldering operation. This fluxing device consists of a flux or acid tank 54, in which revolve a pair of disks 55, preferably of wood, which rub against the ends of the can-bodies as they pass down the feed-chute and which aciding-disks at this point serve as the side walls or guides of the can-body chute. The fluxing-disks 55 are on separate shafts 56, and the same are pressed toward the can-bodies by springs 57, and the same are separated and held separate by a rocking cam or wedge 58 on the shaft 59, which wedge fits between the ends of said shafts 56. The shaft 59 is rocked by an arm 60 thereon, connected by a link 61 with the vibrating pawl arm or lever 62 on the shaft 63 of the can-heading jaw-carrier 20. The rock-shaft 59 also has an arm 64 connected by a link 65 with a lever 66, carrying a pawl 67, that engages a ratchet 68 on the fluxing-disk shaft 56, thus giving a rotary movement to the fluxing-disks. A spring-brake 69 bears against the periphery of the fluxing-disks to prevent their being turned by the motion of the cans in the can-body chute.

70 is a curved guide extending over the can-bodies from the lower end of the can-body chute 47 to the position where the can-bodies are headed, the lower end of this guide fitting between the pair of heading-jaws 22ª 22ª, which are carried by the reciprocating slide 29. This curved guide 70 is a continuation of the upper guide 49 of the can-body chute. The side walls or guides of the can-body chute are also extended in a curved form at 71 partially around the can-body carrier 20.

72 and 73 are the can-head chutes or feed-passages, the one, 72, being for the bottom heads and the other, 73, for the top heads of the can-body. The construction of these two can-head chutes and of the devices with which they are provided are in the main identical, so that the description of one will suffice for that of the other, excepting so far as each is provided with certain devices peculiar to itself not found in the other and operating to distinguish a bottom head from a top head, on the one hand, and to distinguish a top head from a bottom head, on the other hand.

Each of the can-head chutes 72 73 is provided with a series of can-head retarders 74 to slightly arrest the downward movement of the can-heads in the feed-chutes and also to prevent their dancing or bounding upward. The retarders 74 are pivoted to the can-head chutes at 75, the distance between the same being somewhat greater than the diameter of the can-head, and each preferably consists of a light pawl or dog adapted to be moved out of the way by the weight of the can-head, and thus permit the can-head to pass downward. Stop-pins 76 77 limit the movements

of the retarder 74, preventing the bounding or upward movement of the can-head after it has once got past the retarder. Each of the can-head feed-chutes is further provided with a vibrating can-head feeder 79, hinged at 78 to the chute and furnished at each end with stop-pins 80 81, which are located farther apart than the diameter of the can-head, so that when the feeder 79 vibrates to permit the can-head resting on the lower stop 80 to pass forward or down the chute the upper stop-pin 81 will stop or arrest the next succeeding can-head and hold the same until the feeder again vibrates in the opposite direction, thus bringing the lower stop 80 into position to arrest the next succeeding can-head. Each of the feeder-chutes 72 73 is further provided with an upper vibrating feeder 82 or 82^a, each having a stop 83 or 83^a at its lower end, which is located above the stop 81 on the lower feeder 79 a distance somewhat exceeding the diameter of the can-head, so that one can-head may be between the stop-pins 81, 83, or 83^a. The feeder 82 of the bottom-head feed-chute 72 has a stop-pin 84, having a head 85 and spring 86, which causes the stop-pin to bear with a yielding pressure against the back of the can-head and hold the same while the can-head resting on the lower stop 83 of said feeder 82 is moved out of the way to permit such can-head to pass. The upper feeder 82^a of the top-head can-head feed-chute 73 is provided with a stop 87, having a head 88 and a spring 89 and provided at its opposite end with a catch 90, engaging a pivoted latch 91, which is opened by a cam 92 and which is provided with a catch 93, engaging the catch 90, thus holding the spring-stop 87 in its normal position on the vibrating feeder 82^a. The stop 87 is so located on the feeder 82^a in respect to its lower stop 83 that if a top head is in the feed-chute 73, as it should be, the spring-stop 87 will enter the stud hole or opening 94, in the top head, and thus not compress the spring 89. If, however, a bottom head which has no central opening or stud-hole should through some chance or mistake get into the top-head feed-chute 73, the spring-stop 87 will bear against its back, compress the spring 89, and thus release the pivoted latch 91, so that the cam 92 will cause it to swing out from under the head or catch 90. The upper feeder 82^a is provided with a further spring-pin 95, having a head 96 and spring 97, and a second head 98, which engages the other end of the pivoted latch 91 and which operates when the latch is released or turned to stop further feed of the can-heads in case a bottom head should get into the top-head feed-chute 73, as before described. The feeders 79 and 82 82^a of each can-head chute have each an operating-arm 99, said arms of the upper and lower feeders being connected together by a pivoted bar or link 100. A spring 101 moves the feeder-operating bar 100 in one direction and tends to hold the feeders in the position indicated in Fig. 3. Each of the feeder-operating bars 100 is provided at its lower end with a movable link, lever, or catch 102, which is normally held in its open or disconnected position by a spring 103, so that the can-head-feeder-operating lever 104 may be operated by the roller 105, which is carried by the heading-plunger slide 40, without operating the can-head-feeder bar 100, as will be readily understood from Fig. 3. The lever 104 has a cam 106, which is engaged by the roller 105 when the heading-plunger slide 40 moves forward. The can-head-feeder connecting link or lever 102 is automatically moved into position to engage the front end 107 of the lever 104, and thus be operated by its movement by means of a vibrating lever 108, which is preferably furnished with a spring-arm 109, having a rounded portion 110, which is engaged by the can-body in the header-jaws 22 of the carrier 20 if a can-body is in position therein ready to be headed. If no can-body is in place on the carrier 20 to receive the can-heads, the lever 108, which engages the short arm 111 of the connecting lever, link, or catch 102, will not be operated, and as a consequence the can-head feeders will not be operated and no can-heads will be delivered at the time the heading-plungers 37 are operated for the heading-jaws 22, having no can-body therein. In other words, if no can-body is in place to be headed no can-heads are fed. Each of the can-head feed-chutes 72 73 is provided with a hinged gate or section 112, through which can-heads improperly in the chutes may be removed therefrom, the same being preferably located just above the feeders 82 82 at the beginning of the curved or inclined portions of the feed-chutes. These hinged gate are held closed by latches 113. The bottom-head feed-chute 72 is provided with a spring hook or stop 114, having a hump 214 and which is held slightly projecting into the path of the can-heads by a light spring 115, so that it will permit a bottom head, if in proper position, to slip or pass by it readily, while it will effectually stop or arrest a reversed bottom head by engaging the edge of its flange 25. This stop 114 will also operate to stop and arrest the further feed of a top head in the bottom-head chute in case a top head should by mistake get therein by entering the stud-hole opening 94 of the top head and engaging the flange 117, surrounding such opening. The top-head feed-chute 73 is provided with a device 118 for arresting a reversed top head, while permitting the top heads which are facing in the right direction to freely pass along. This top-head-feed-chute-stopping device preferably consists of a projection having an inclined face and located near the upper edge of one of the side walls of the inclined portion of the feed-chute. This device 118 operates to arrest a reversed top head by causing its annular

shoulders 119 and 120 to engage the side walls of the chute and said projection 118, as will readily be understood from Figs. 8 and 9.

Fig. 9 shows at the left of the figure a top head in proper position passing along unobstructed by the arrester device 118, while the right-hand portion of the figure shows that a reversed top head is arrested by said device. The slide 29, carrying the reciprocating jaws 22, is furnished with antifriction-rollers 121, which are engaged by the cams 122 123 on the shaft 124, thus causing the feeder-jaws on the slide to be reciprocated as required. The shaft 124 has a wheel or crank 115, connected by a link 126 to a lever 127, which is connected by a link 128 with the vibrating pawl-lever 62, which carries a pawl 129, that engages a ratchet 130 on the shaft of the carrier spider or wheel 20, which carries the rotary heading-jaws 22, thus imparting an intermittent or step-by-step movement to the rotary header-jaws as required.

131 is the dischage-chute, into which the headed cans are delivered, and 132 is the can-conveyer, which conveys the headed cans to the can-end-soldering machine. The rotary wheel or carrier 20 is further provided with a registering or stop wheel 133, which is engaged by a lock-bolt 134, having a spring 135 and which is retracted by a cam 136 on the pawl-lever 62 engaging a pin 234 on said lock-bolt 134. The can-head guide holder or ring 38, into which the can-heads are delivered from the feed-chutes 72 or 73 and which in a sense are continuations of the feed-chutes and which may be considered as the bottoms of the chutes, are each provided at its upper portion with a movable block 140, having a curved or beveled face and held in position to prevent a can-head from tipping forward by a light spring 141.

When the endwise-sliding can-heading jaws 22 22^a on the wheel 20 and slide 29 first clamp or embrace a can-body, so as to round the same to a true circular form to enter within the flange of the can-head, the ends of the can-body are just about flush with the shoulder 142 between the smaller and larger diameters 24 27 of the header-jaws, and as the heading-plungers 37 then move forward they push the can-heads into the recess or enlarged portion 24 of the header-jaws, and then the further movement of the heading-plungers 37 pushes the header-jaws endwise toward each other along the can-body until the can-head telescopes over the end of the can-body and is forced home thereon. There is thus no possibility of the edges of the can-body and can-head clashing with or cutting each other.

After the can is headed the pair of heading-jaws on the slide 29 are moved endwise thereon to restore them to position by the cam or fork 34 when the slide 29 moves backward and the pair of heading-jaws on the carrier 20 are likewise slipped endwise to restore them to position by the cam 35.

We claim—

1. The automatic can-heading machine, comprising in coöperative combination a rotary carrier 20, having arms or heads 21, a series of pairs of endwise-sliding heading-jaws 22, a spacer-cam 35, can-body feed-chute 47, having automatic can-body discharge-gate 50, and movable aciding or fluxing disks 55, a reciprocating slide 29 having head 31, and a pair of endwise-sliding header-jaws 22, furnished each with a pin 33, a stationary cam or fork 34, heading-plungers 37, operating-slides 40 therefor furnished with roller or projection 105, can-header-operating levers 104, a bottom-head feed-chute 72, top-head feed-chute 73, can-head feeders 79 and 82 in said chutes, connecting-lever 102, lever 108, engaged by a can-body on said carrier 20 to move said connection 102 into position to be operated by said levers 104, a device in said bottom-head feed-chute for arresting top heads or reversed bottom heads, said feeder 82 in said top-head feed-chute 73 having a device for arresting bottom heads, substantially as specified.

2. In a can-heading machine, the combination with heading-plungers, of two pairs of endwise-sliding heading-jaws, a pair of can-head chutes and a pair of stationary can-head-centering guides or rings in which said heading-plungers reciprocate, substantially as specified.

3. In a can-heading machine, the combination with a rotary wheel or carrier having a series of pairs of endwise-sliding heading-jaws mounted thereon, a reciprocating slide having a pair of endwise-sliding heading-jaws mounted thereon, a pair of can-head chutes and a pair of stationary can-head-centering guides or rings in which said heading-plungers reciprocate, substantially as specified.

4. In a can-heading machine, the combination with a rotary wheel or carrier having a series of pairs of endwise-sliding heading-jaws mounted thereon, a reciprocating slide having a pair of endwise-sliding jaws mounted thereon and heading-plungers, a pair of can-head chutes and a pair of stationary can-head-centering guides or rings in which said heading-plungers reciprocate, substantially as specified.

5. In a can-heading machine, the combination with a rotary wheel or carrier having a series of pairs of endwise-sliding heading-jaws mounted thereon, a reciprocating slide having a pair of endwise heading-jaws mounted thereon, and heading-plungers, and a stationary cam engaged by the heading-jaws on said rotary wheel or carrier to restore the same to position, substantially as specified.

6. In a can-heading machine, the combination with a rotary wheel or carrier having a series of pairs of endwise-sliding heading-jaws mounted thereon, a reciprocating slide having a pair of endwise-sliding jaws mounted thereon, heading-plungers, and a stationary cam or

fork engaged by the heading-jaws on said slide to restore them to position, substantially as specified.

7. In a can-heading machine, the combination with a rotary wheel or carrier having a series of pairs of endwise-sliding heading-jaws mounted thereon, a reciprocating slide having a pair of endwise-sliding jaws mounted thereon, heading-plungers, a stationary cam or fork engaged by the heading-jaws on said slide to restore them to position, and a stationary cam engaged by the heading-jaws on said rotary wheel or carrier to restore the same to position, substantially as specified.

8. In a can-heading machine, a rotary wheel or carrier 20, having a series of heads 21, a series of heading-jaws 22 fitting and sliding on said heads, and cams 35 and 36 for centering said heading-jaws on the carrier, substantially as specified.

9. In a can-heading machine, the combination with a reciprocating slide 29, having head 31, and endwise-sliding heading-jaws mounted thereon and having slots 23 fitting and sliding on said head 31, substantially as specified.

10. In a can-heading machine, the combination with a reciprocating slide 29, having head 31, endwise-sliding heading-jaws mounted thereon provided with jaws or projections 33, and cams 34 engaged by said pins to move the heading-jaws endwise into position, substantially as specified.

11. The combination with rotary carrier 20 having arms or heads 21 and endwise-sliding heading-jaws 22 thereon, of slide 29 having head 31, and endwise-sliding heading-jaws 22^a thereon, heading-plungers 37 and can-head-centering guides or rings 38 on the frame of the machine and means for registering said heading-jaws with said can-head-centering guides, substantially as specified.

12. The combination with rotary carrier 20 having arms or heads 21 and endwise-sliding heading-jaws 22 thereon, of slide 29 having head 31, endwise-sliding heading-jaws 22^a thereon, heading-plungers 37, stationary can-head-centering guides or rings 38 and can-head feed-chutes, substantially as specified.

13. The combination with rotary carrier 20 having arms or heads 21 and endwise-sliding heading-jaws 22 thereon, of slide 29 having head 31, endwise-sliding heading-jaws 22^a thereon, heading-plungers, said heading-plungers 37 having curved recesses 46 in their upper portions, substantially as specified.

14. The combination with rotary carrier 20 having arms or heads 21 and endwise-sliding heading-jaws 22 thereon, of slide 29 having head 31, endwise-sliding heading-jaws 22^a thereon, heading-plungers 37, stationary can-head-centering guides or rings 38, can-head feed-chutes, said can-head feed-chutes being provided with vibrating can-head feeders, substantially as specified.

15. The combination with rotary carrier 20 having arms or heads 21 and endwise-sliding heading-jaws 22 thereon, of slide 29 having head 31, endwise-sliding heading-jaws 22^a thereon, heading-plungers 37, stationary can-head-centering guides or rings 38, can-head feed-chutes, said can-head feed-chutes being provided with vibrating can-head feeders, and a lever engaged by the can-body on the carrier controlling the operation of said can-head feeders, substantially as specified.

16. The combination with a can-head feed-chute provided with a can-head feeder, of a heading-plunger and a can-head-feeder-operating lever operated by the forward movement of the heading-plunger, a trip-lever or connection 102, a can-body carrier and a lever operated by the can-body on the carrier to move the trip-lever or connection into position, substantially as specified.

17. The combination with the can-body carrier 20, of a heading-plunger, a lever 104 operated by the forward movement of the heading-plunger, a can-head feed-chute, a movable feeder therein, a lever 108 operated by the can-body on the carrier, and a movable lever, link or connection 102 operated by said lever 108 to cause said lever 104 to operate the can-head feeder, substantially as specified.

18. In a can-heading machine, the combination with heading-jaws of a can-body feed-chute having a movable automatically-opening gate 50 to automatically discharge surplus cans from the feed-chute and prevent crowding, substantially as specified.

19. The combination with a can-body carrier 20, a feed-chute 47 therefor, furnished with a hinged weighted automatically-opening gate 50 adapted to receive thereon and be depressed by a plurality of cans, substantially as specified.

20. In a can-heading machine the combination with the carrier 20 having heading-jaws 22 thereon to receive the can-bodies, of a can-body feed-chute 47, having rotary acid-ing or fluxing disks 55 at its sides to engage the ends of the can-bodies as they pass along the feed-chute, and springs for pressing said disks together against the can-bodies, substantially as specified.

21. In a can-heading machine, the combination with the carrier 20 having heading-jaws 22 thereon to receive the can-bodies, of a can-body feed-chute 47, having rotary acid-ing or fluxing disks 55 at its sides to engage the ends of the can-bodies as they pass along the feed-chute, springs for pressing said disks together against the can-bodies, and a vibrating wedge or cam for separating said disks, substantially as specified.

22. In a can-heading machine, the combination with the heading-jaws and heading-plungers, of can-head chutes, furnished with pivoted pawls or retarders 74 movable by the weight of the can-head itself and adapted to engage and prevent the can-heads from dancing or rebounding upward in the can-head chutes, substantially as specified.

23. In a can-heading machine, the combination with heading-jaws and heading-plun-

gers, of can-head chutes provided with devices for arresting reversed can-heads in the chutes, substantially as specified.

24. In a can-heading machine, the combination with a can-head feed-chute for feeding bottom heads, of a device for stopping a reversed bottom head, substantially as specified.

25. In a can-heading machine, the combination with heading-jaws and heading-plunger of a can-head feed-chute, for feeding top heads, of a device therein for stopping a reversed top head, substantially as specified.

26. In a can-heading machine, the combination with heading-jaws and heading-plunger of a can-head feed-chute for feeding bottom heads, of a device therein for arresting a top head, substantially as specified.

27. In a can-heading machine, the combination with heading-jaws and heading-plunger of a can-head feed-chute for feeding top heads, of a device therein for arresting a bottom head, substantially as specified.

28. The combination with top-head feed-chute 73, of can-head feeder 82, provided with a spring-stop 87, and a pivoted catch 91, adapted to be released by said spring stop-pin engaging a bottom head, substantially as specified.

29. The combination with can-heading jaws and plunger and bottom-head feed-chute 72, of a spring-hook 114 adapted to stop a top head or a reversed bottom head, substantially as specified.

30. The combination with can-heading jaws and plunger and a can-head feed-chute, of a series of movable retarders 74 therein, substantially as specified.

31. The combination with carrier 20, having heads 21 and endwise-sliding header-jaws 22, of slide 29 having head 31, and endwise-sliding header-jaws 22 thereon, header-plungers 37, reciprocating slides 40 therefor, can-head feeder-levers 104 operated by said slides 40, can-head feed-chutes 72, 73 having each vibrating feeders 79, 82, connecting-bars 100, lever 102, and can-body-operated lever 108, substantially as specified.

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Witnesses:
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