

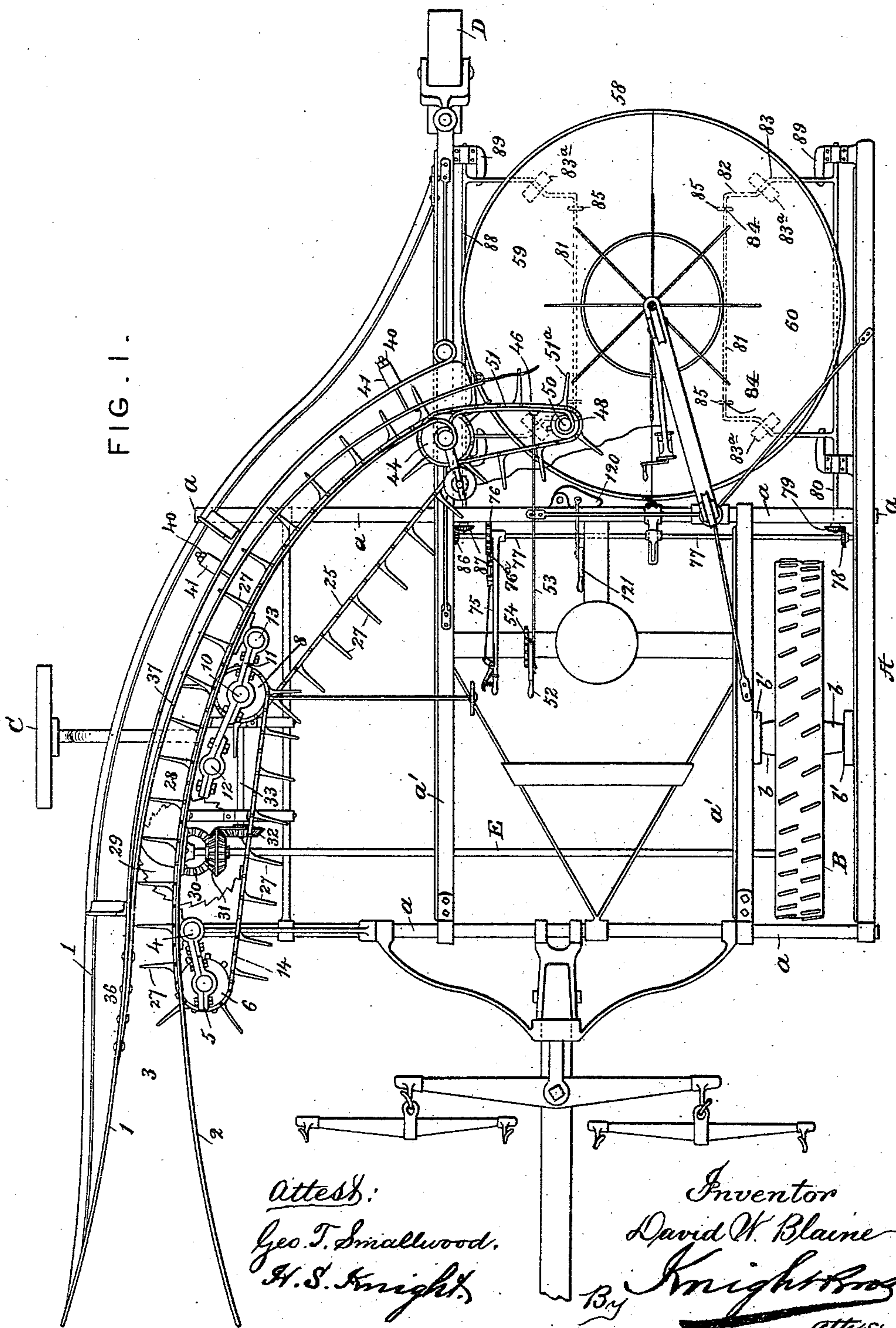
(No Model.)

5 Sheets--Sheet 1.

D. W. BLAINE.
CORN HARVESTER,

No. 444,723.

Patented Jan. 13, 1891.



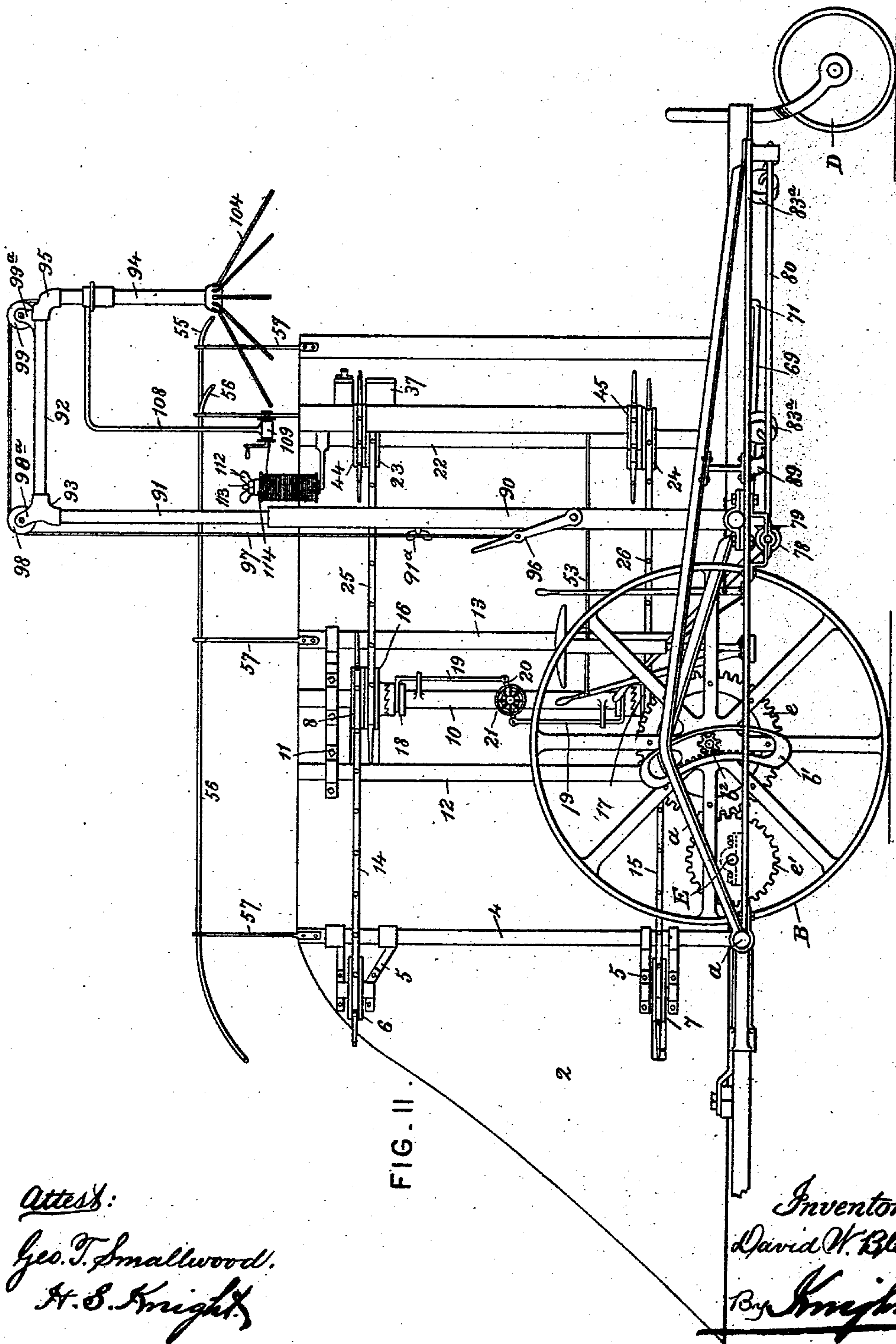
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Attest:

Geo. T. Smallwood.
H. B. Knight.

Inventor:

David W. Blaine

By Knight

attys.

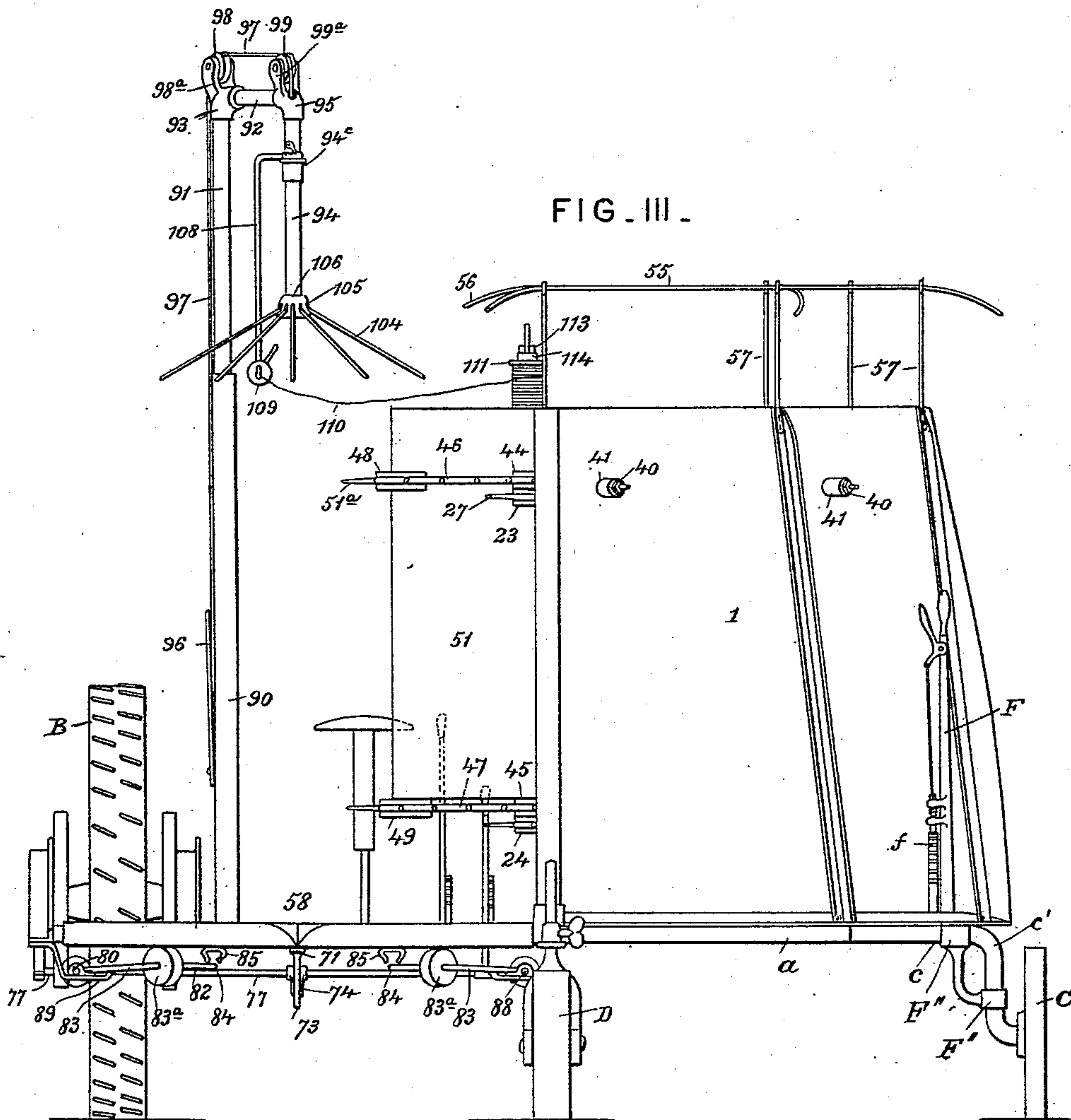
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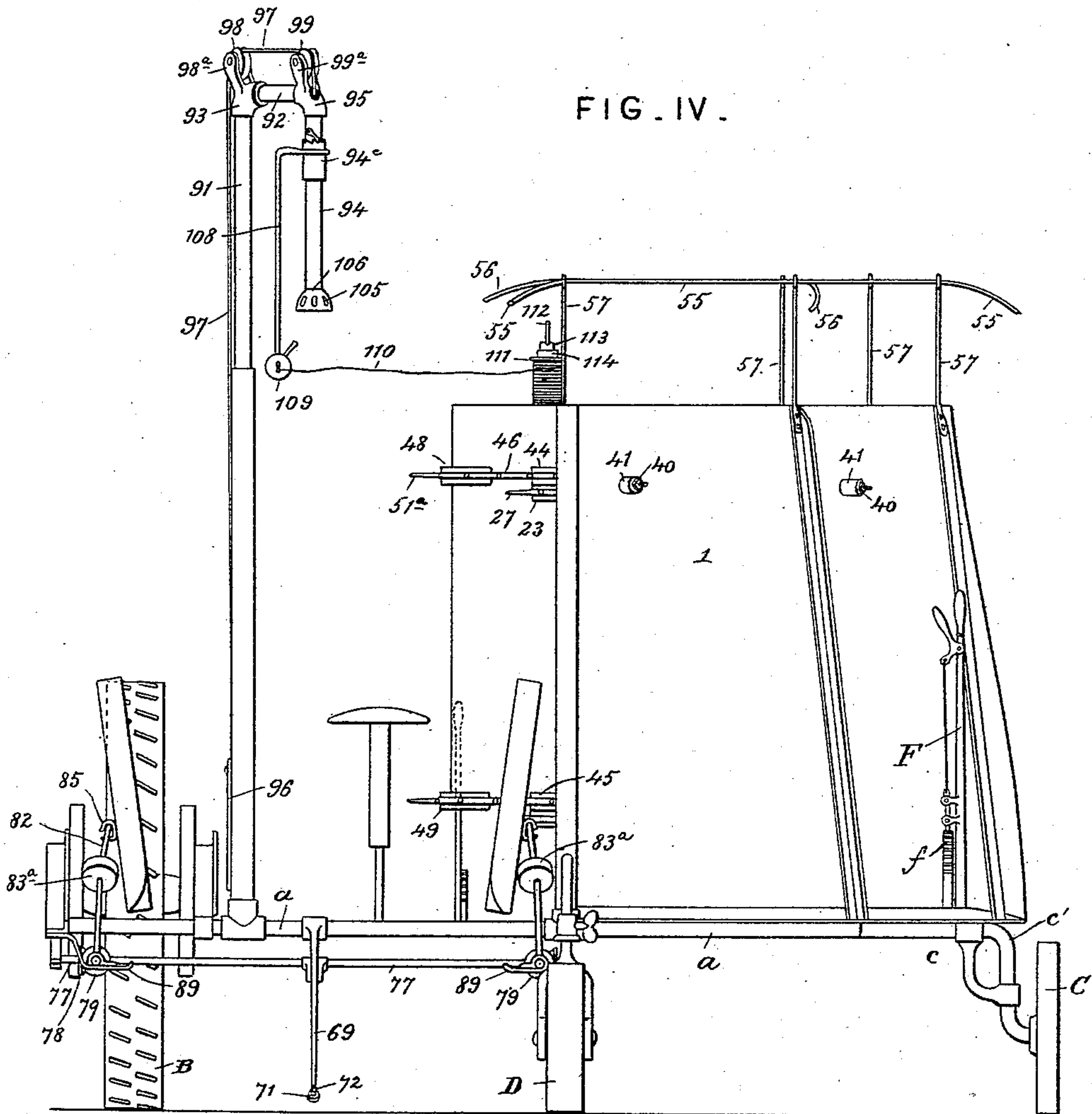
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(No Model.)

5 Sheets—Sheet 5.

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FIG. VI.

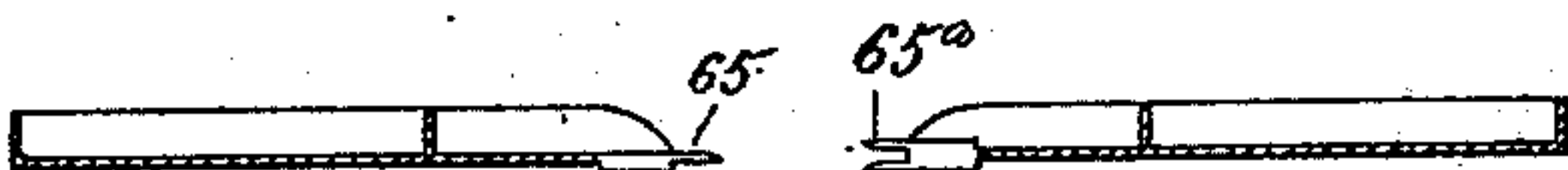


FIG. V.

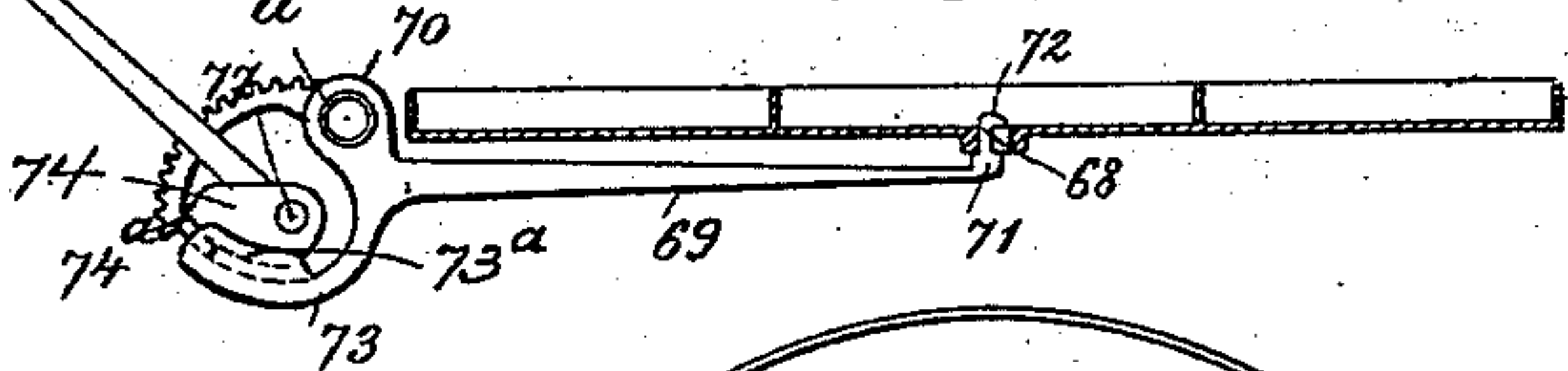


FIG. VII.

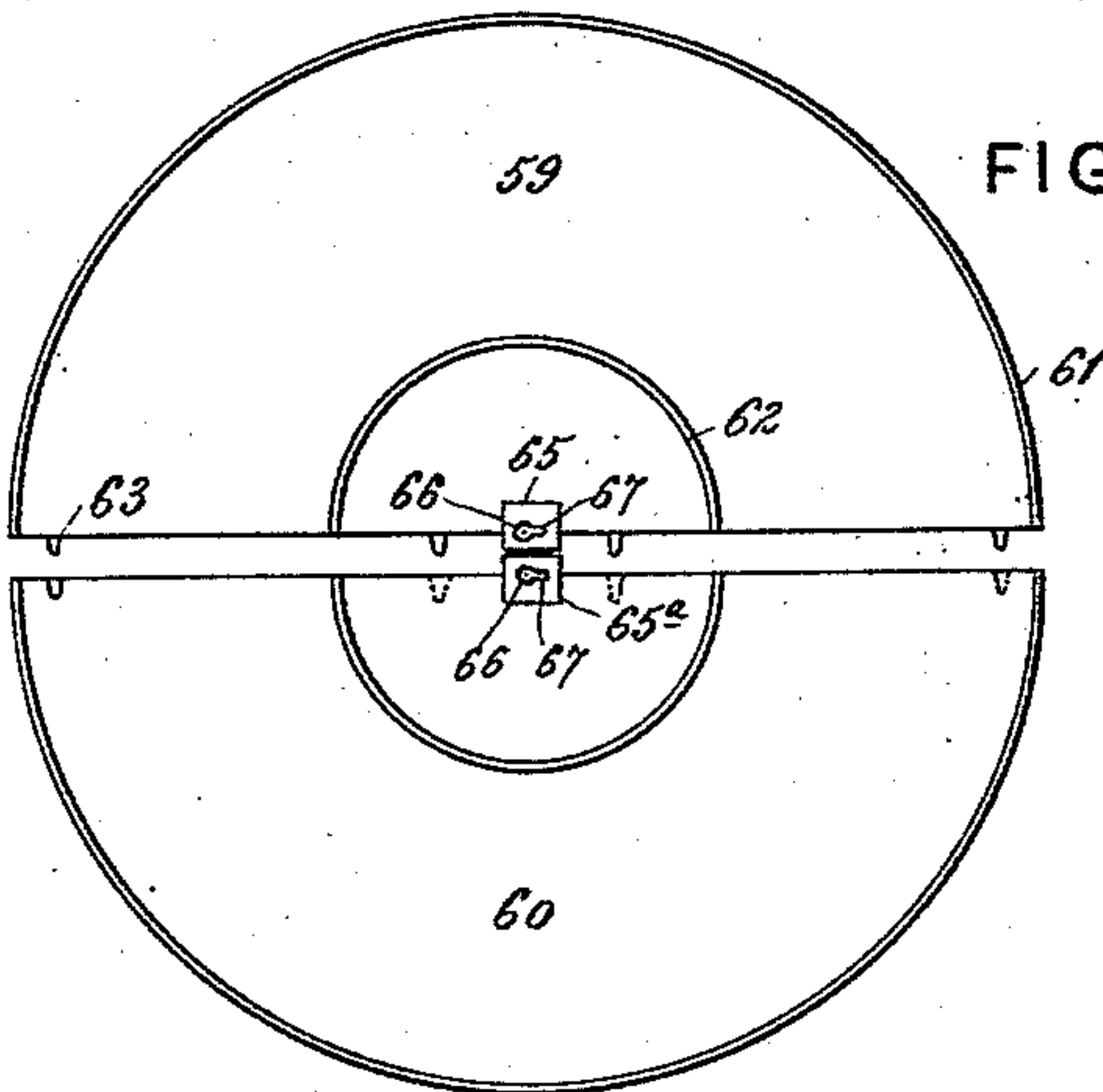


FIG. VIII.

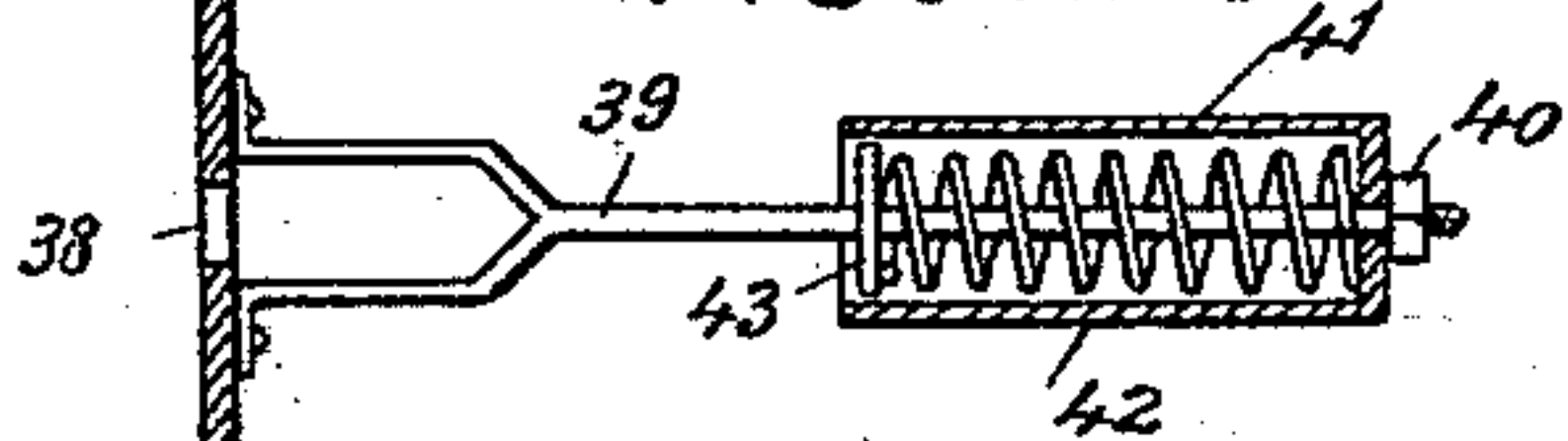


FIG. IX.

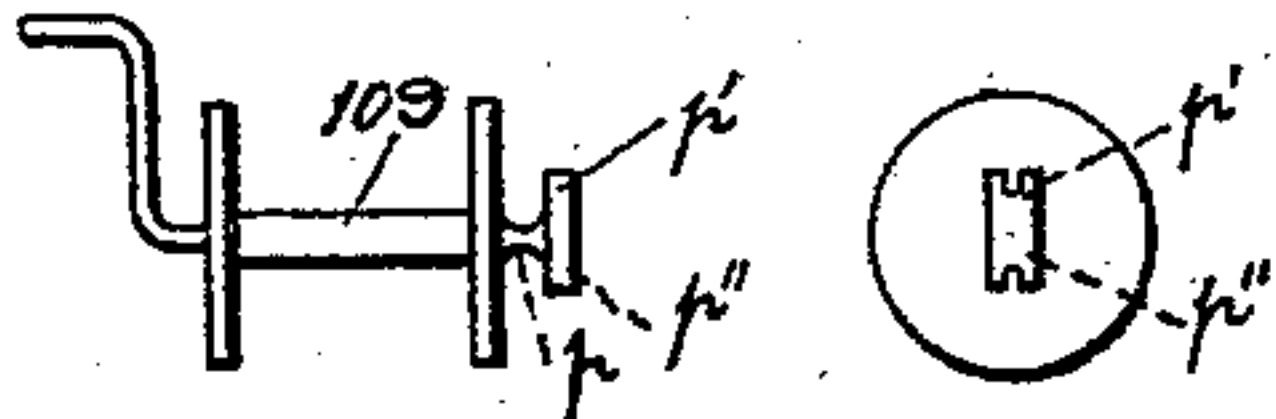


FIG. X.

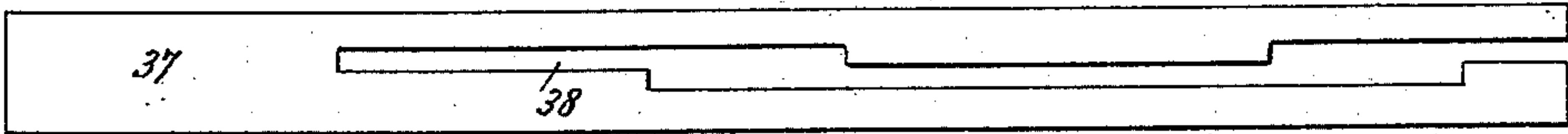


FIG. XI.

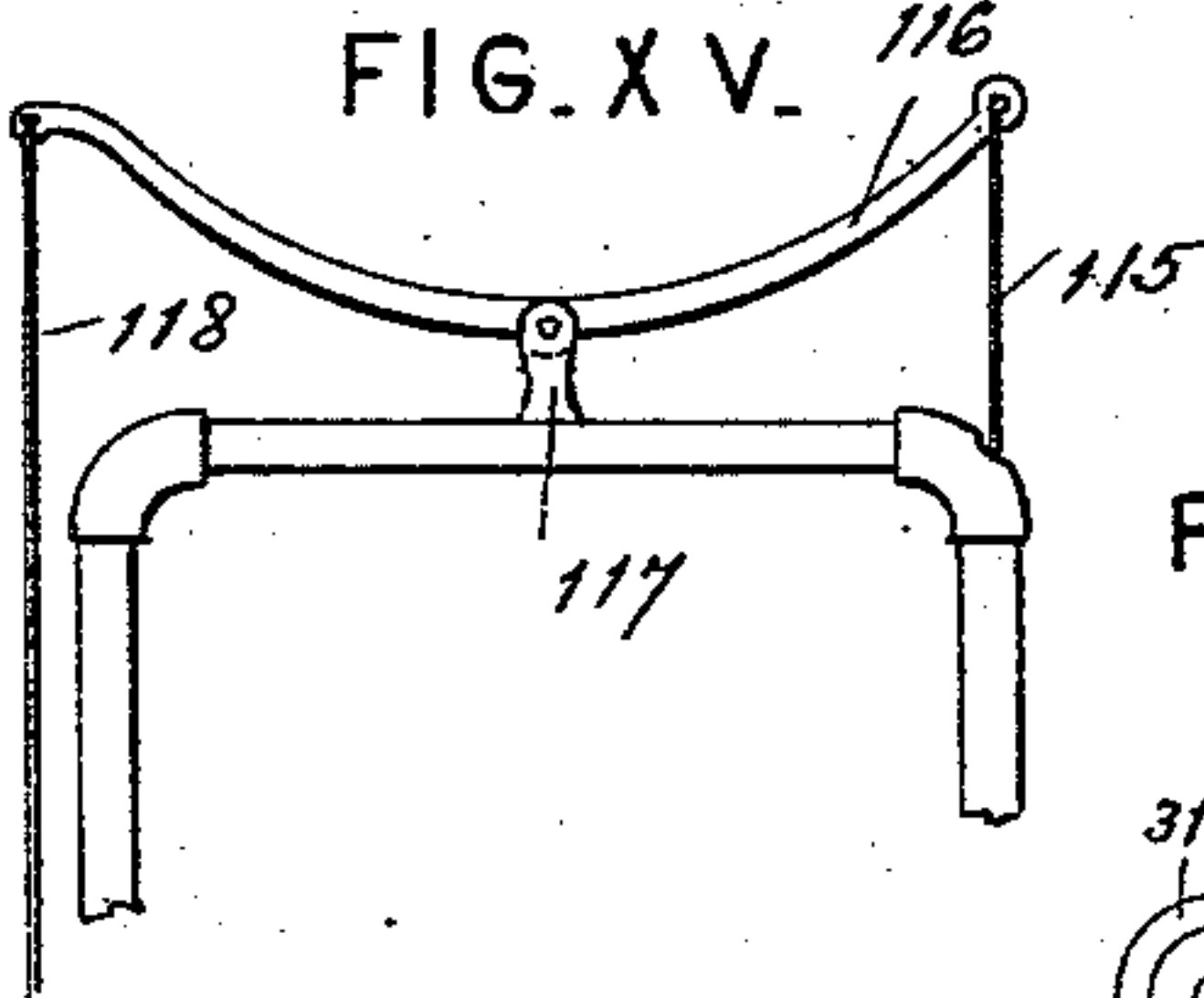


FIG. XII.

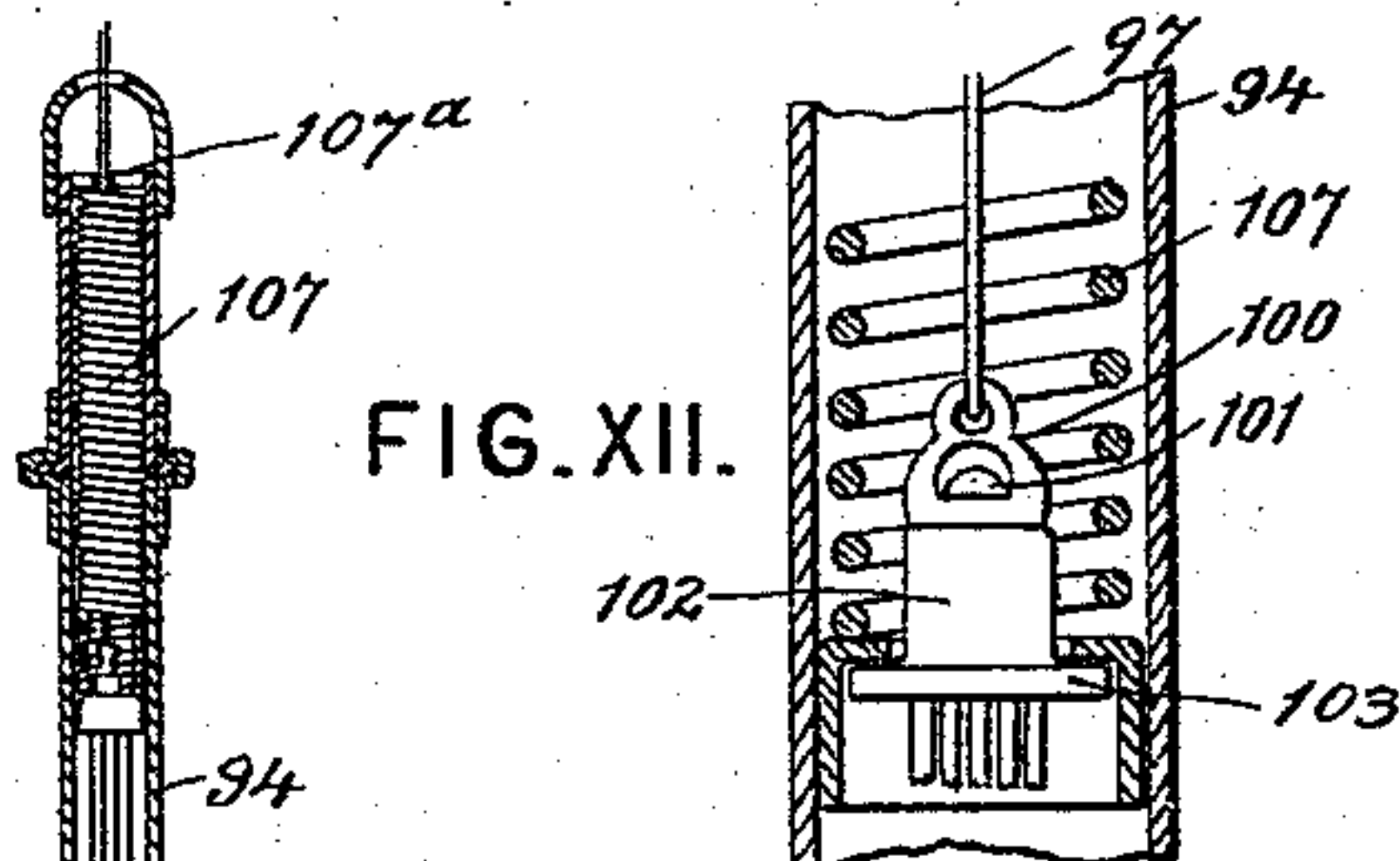


FIG. XIII.

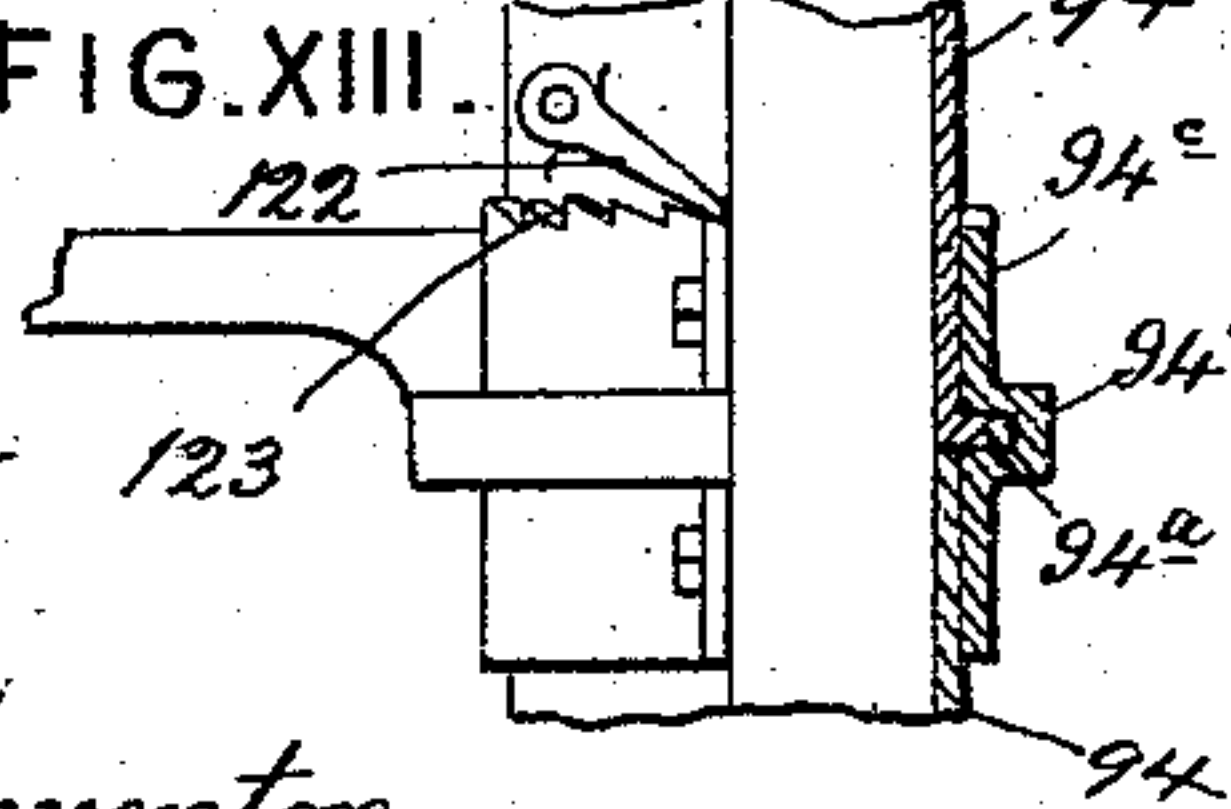
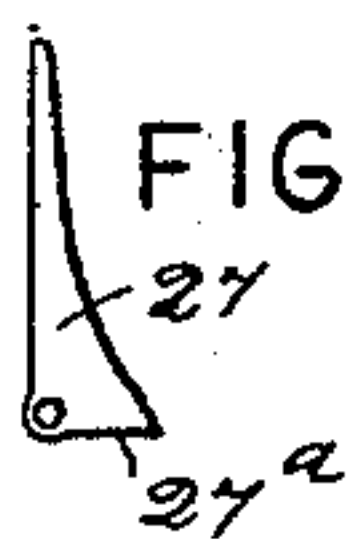


FIG. XIV.



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UNITED STATES PATENT OFFICE.

DAVID W. BLAINE, OF PRATT, KANSAS.

CORN-HARVESTER.

SPECIFICATION forming part of Letters Patent No. 444,723, dated January 13, 1891.

Application filed September 28, 1889. Serial No. 325,338. (No model.)

To all whom it may concern:

Be it known that I, DAVID W. BLAINE, a citizen of the United States, residing at Pratt, in the county of Pratt and State of Kansas, have invented certain new and useful Improvements in Corn-Harvesters, of which the following is a specification.

My invention relates to a machine for cutting corn, cane, or like vegetation in rows, in which the stalks are caused to pass in an upright position to a shock-gathering device, where the shock is bound in a suitable manner and then deposited on the ground in an upright position; and my invention consists in certain features of novelty to be hereinafter described, and then pointed out in the claims.

In order that my invention may be fully understood, I will proceed to describe the same with reference to the accompanying drawings, in which—

Figure I is a plan view of my improved corn-harvester. Fig. II is a side view looking toward the main or driving wheel. Fig. III is a rear view, and Fig. IV is a similar view, showing parts of the machine in the position in which the shock is deposited on the ground. Fig. V is a detail side view of the revoluble table and its central support. Fig. VI is another detail view of the table, showing the joint of the sections, said sections being separated. Fig. VII is a plan view of the table, showing the sections separated. Fig. VIII is a detail view of the means for adjusting the pressure-spring at the side of the passage for the stalks. Fig. IX is a face view of said spring. Fig. X is a detail view of the cutting-saw and its operating mechanism. Figs. XI, XII, and XIII are detail views of the central support above the table for the tops of the incoming stalks. Fig. XIV is a detail view showing the construction of gathering-fingers. Fig. XV is a modification of the mechanism for operating the fingers of the central support. Fig. XVI shows the twister, the portion on the left being a side view and that on the right an end view opposite the handle.

Referring to the drawings, A represents the framing of the machine, which is constructed preferably of gas-pipe and angle iron or steel, as shown, or of wood, if desired. The trans-

verse beams *a* are of gas-pipe and the longitudinal beams *a'* are of angle-iron.

B is the main or driving wheel, C the grain-wheel, and D a caster-wheel at the rear.

The machine is preferably constructed so that the stalks of corn may be cut at variable heights, and to this end the main wheel B is mounted on a short axle *b*, adjustable by means of a rack *b'* and pinion *b''* in the usual manner. The wheel may be fixed relatively to the frame in any suitable manner. Fixed to the drive-wheel is a large cog-wheel *e*, that meshes with a smaller cog-wheel *e'*, fixed on the main drive-shaft E. The grain-wheel C is adjustable with respect to the frame by means of a rock-shaft *c*, having an arm *c'*, on which the wheel is journaled, and a lever F, sleeved at F' on the shaft and extending below the shaft and sleeved at F'' on the arm *c'* and having the usual pawl-and-ratchet mechanism *f*. The shifting of the lever one way or the other will raise and lower the grain-wheel.

I will now proceed to describe the operative features of the machine.

1 and 2 are walls of sheet-iron or other material on each side of a passage 3, the front ends flaring outwardly and being downwardly inclined and constituting dividers to pass on each side of the stalks. These walls extend in a curve from the front right-hand corner of the machine rearwardly toward the middle, for the purpose of carrying the stalks away from the row being cut, so that they may be deposited in a shock a sufficient distance from the next row to be cut to allow the team and machine to pass in making the next round.

4 is a post near the outer end of the passage outside the inner wall 2, on which are supported brackets 5, on which brackets are mounted sprocket-wheels 6 and 7 at the upper and lower ends of the post, respectively. Half-way along the passage on the outside of the wall 2 are other sprocket-wheels 8 at the upper and lower ends of a revolving vertical shaft 10, (the lower sprocket-wheel being out of sight,) that is journaled in brackets 11, fixed to posts 12 13 one on each side of said shaft. Around the upper sprocket-wheels 6 and 8 the sprocket-chain 14 passes and around

the lower sprocket-wheels 7 and 9 the sprocket-chain 15. Fitted loosely on the shaft 10 are sprocket-wheels 16 and 17, and these are caused to revolve with the shaft, when desired, by means of any suitable clutch mechanism. The clutch mechanism shown consists of sliding ratchet-sleeves 18, links 19, and an oscillating bar 20, to each end of which the links are pivoted, and which bar is oscillated by a hand-wheel 21. The teeth of these sleeves, when the sprocket-wheels 16 and 17 are to be revolved, are brought into engagement with ratchets on the hubs of the wheels. At the rear end of the passage 3 at the outer side of the inner wall 2 is another vertical rotating shaft 22, carrying at its upper and lower ends sprocket-wheels 23 and 24, respectively. Passing around the upper sprocket-wheels 16 and 23 is a sprocket-chain 25, and passing around the lower sprocket-wheels 17 and 24 is another sprocket-chain 26. The sprocket-wheels project through the wall 2 into the passage and the inner sides of the chains run over the curved inner surface of said wall. All of the sprocket-chains are provided with the usual pivoted gathering-fingers 27 at suitable distances apart, and the upper series are so arranged that each finger will be directly over a finger of the lower series, so that incoming stalks will be caught and carried rearwardly in a vertical position. These fingers are provided with heels 27^a, that when the fingers are running in the passage engage with the wall 2, so as to hold them stiff to effectually perform the operation of passing the stalks along in vertical position over the floor 28, which is slightly inclined upwardly. At the rear ends of the sprocket-chains the slots for the wheels are made sufficiently long to permit the fingers to pass through, and just before the fingers of the second series of chains operate to catch the corn the fingers of the preceding series tilt or fall down, so that they will not carry the stalks through the slots.

To the rear of the front ends of the forward chains, so that the fingers will first catch the stalks, is arranged the cutting device, which, as shown, (see Fig. X,) consists of a circular saw 29, so inclined that the butts of the stalks will ride up on the upper side of the saw onto the floor 28, immediately in the rear. The saw is provided with a bevel-wheel 30 on its upper side, which is engaged by one of the series of cogs of a double vertical bevel-wheel 31, keyed to the main driving-shaft E for rotating the saw. The other series of cogs of the double bevel-wheel engages a bevel-wheel 32 at right angles thereto, keyed on a horizontal shaft 33, extending toward the shaft 10. This shaft 10 is provided with a bevel-wheel 34, engaged by a vertical bevel-wheel 35 at right angles thereto on shaft 33. Both of the series of chains described are driven from the vertical shaft 10.

In the passage 2 and fastened to the wall 1 at 36 by suitable means is a rearwardly-pro-

jecting spring-plate 37, (see Figs. I, VIII, and IX,) that is slotted at 38 to permit the gathering-fingers to project through. The upper plate only can be seen in the drawings; but the lower one is exactly the same, and hence no further illustration is necessary. The pressure of these springs is regulated by means of adjusting-rods 39, secured to them, and screw-threaded at their outer ends for the reception of nuts 40 that engage the ends of tubular casings 41, within which are contained spiral springs 42, the outer ends of which engage the ends of the casings and the inner ends bear on collars or flanges 43 on the rods 39. These spiral springs re-enforce the natural self-adjusting action of the spring plate or strip, and the nuts and rods regulate the outward position of the same, the action of the plate or strip being such that it always adjusts itself to the bulk of stalks passing through.

Keyed on the vertical shaft 22 are sprocket-wheels 44 45, and passing around them are sprocket-chains 46 47, (an upper and a lower one,) that also pass around other sprocket-wheels 48 49 on a shaft 50 at the outer end of an extension and adjuster 51, pivoted on the shaft 22. Pivoted to these sprocket-chains are fingers 51^a, similar to the fingers on the other chains. This extension and adjuster is movable backward and forward by means of a lever 52, pivoted to the frame and connected to the extension and adjuster by a link or rod 53. The lever is set in fixed position by means of a pawl-and-ratchet device 54, as usual.

55 56 are guard-rails supported above the walls 1 and 2 by means of bars 57, secured to the walls on each side of the passage.

At the rear of the machine and at the end of passage 3 is a revolving shock-gathering table 58. This table is circular and is composed of two sections 59 and 60, alike in shape. The curved edges of the sections are provided with upwardly-extended flanges, that constitute a rim 61 to the table. Concentric with this rim and near the center of the table are flanges, constituting an inner rim 62. Between the flanges of the table the stalks are carried by the fingers 51^a on the pivoted extension and adjuster. The meeting edges of the sections of the table are provided with dovetail-pins 63 (see Fig. VII) and corresponding holes 64, so as to prevent the warping or twisting of the table. At the central inner edge of one of the sections (see Fig. VI) is a single plate 65, and on the corresponding edge of the other section are two plates 65^a, said single plate being adapted to pass between the two plates 65^a, and all of said plates being provided with perforations 66, similar to key-holes. Extending up through these holes when the sections are together is the central support, consisting of a vertical projection 68, Fig. V, on a horizontal rock-arm 69, fixed at 70 to an oscillating shaft 77. At the base of the projection 68 is a shoulder 71 for support-

ing the table, and at the upper end of the projection is a hook 72, that passes through the offset portions of the perforations 66 when the table is in proper position, and prevents the table from being lifted or shaken off during a single revolution. This rock-arm has a curved hook 73, projecting toward the front of the machine under a flange 73^a, on the inner side of which engages a flange 74^a of the rocking shoe 74, that retains the rock-arm in elevated position when the lever 75 that moves it is thrown forward. The lever 75 is retained in its forward position by means of a suitable device—such as a quadrant 76—provided with ratchet-teeth and engaged by a pawl 76^a on the lever. (See Fig. V.) When the lever is thrown back, the rock-arm is forced down.

When it is desired to deliver the shock, the sections of the table are separated and swung up into vertical position by means of the following instrumentalities: The lever 75 is fixed to the oscillating shaft 77, (see Figs. I and V,) and this shaft has a bevel-wheel 78, that intermeshes with a bevel-wheel 79 on an oscillating shaft 80 at right angles to shaft 77 and extending rearwardly. Secured to the shaft 80 is a swinging frame consisting of a rod 81, jointed to the shaft by rock-arms 82 bent therefrom. At 83 the rock-arms 82 are provided with rollers 83^a, that support the table near its outer edge. The rod 81 is flattened at 84, where it engages with catches 85 on the under side of the section 60. At the inner end of the oscillating shaft 77 is a bevel gear-wheel 86, that meshes with a bevel gear-wheel 87 on the rearwardly-projecting oscillating shaft 88. A swinging frame similar to that carried by the oscillating shaft 80 is also carried by shaft 88, and similar reference-numerals are applied thereto. It will be observed that when the lever is operated the central support is withdrawn, the swinging frames rising, the rollers acting as a fulcrum, the flattened portions of the frames engaging the catches of the sections of the table, said sections turning thereon as on a hinge, the inner edges dropping down and the outer rising until the sections are brought into vertical position. When in horizontal position, the table is supported by the rollers and the rock-arm 69. Small brackets 89 project under the arms of the swinging frames near where they join their oscillating shafts to support the swinging frames in horizontal position, and are not in the way when the sections of the table are opened.

Projecting vertically from the frame of the machine in front of and a little to the left of the gathering-table is a tube or column 90, preferably of gas-pipe, and into this telescopes a tube 91, adjustable in height and fastened by means of a set-screw 91^a or any other preferred fastening and having a tubular arm 92 connected thereto by an elbow-coupling 93. Pendent from this arm is a tubular sleeve 94, joined thereto by an elbow-coupling 95. The tubular sleeve is made in

two parts, the upper section having at its lower end a flange 94^a, that is received by an annular groove 94^b in a collar 94^c, that is welded or otherwise secured onto the upper end of the lower section, thus constituting a swivel-connection. These parts are all preferably constructed of gas-pipe. The tubular sleeve hangs over the center of the platform, and affords, in connection with devices mounted thereon, a support for the top of the shock.

96 is a lever pivoted to the upright tube or column, to which is attached a cord, rope, or cable, that is carried up over pulleys 98 and 99—one at each end of the tubular section 92—and mounted in brackets 98^a and 99^a. The cord or cable 97 extends down through an opening in the elbow-coupling 95 into the tubular sleeve or section 94 and supports a link 100, that has an opening in which swivels a headed pin 101 of a bell-shaped carrier or support 102, having an annular flange 103, within which and at the top of the bell proper are pivoted a suitable number of pendent arms or fingers 104, that, when drawn up by the cable, are within the tubular sleeve, their lower ends being curved and projecting into slots or openings 105 in the head or cap 106, that may be soldered or otherwise secured to the lower end of the tubular sleeve.

107 is a spiral compression-spring within the tubular sleeve or section 94, through which passes the suspending cord or cable, and which bears upon a flange 107^a and upon the swiveled carrier or support 102 of the pendent arms or fingers 104, so that the tendency of said spring is to press the arms or fingers down and outwardly through the openings in the head or cap 106. When the operating-lever 96 is raised, the spring presses the arms down and spreads them, as shown in Figs. I, II, III, and IV.

108 is an L-shaped spring-arm, the short limb of which is secured to the collar 94^c or other swiveled part of the sleeve 94, and the long limb of which extends downwardly. The lower end of this L-shaped spring-arm carries a suitable wire-twister 109, that is adapted to rotate with the arms or fingers 104. The twister carries the free end of the binding-wire 110, that runs from a spool 111 mounted on a spindle 112. Greater or less tension may be imparted to the movement of the spool as the wire is unwound by means of a thumb-nut 113, screwed onto the upper end of the spindle, and a rubber, leather, or other friction washer 114 interposed between the nut and spool.

In the modification shown in Fig. XV the fingers are raised and lowered by means of the rod 115, extending down into the tubular sleeve and swiveled to the bell 102, and the upper end of which is pivoted to one end of a lever 116, curved downward near its mid-length, where it is fulcrumed in a bracket 117. The other end of the lever is pivotally connected with a rod 118, that extends down-

wardly, and is raised and lowered by means of hand-lever, such as 96, whereby the arms or fingers 104 are raised and lowered in a manner similar to that before described. In this modification the compression-spring is not required. If the table 58 is caused to revolve too rapidly, it may be slowed up by a suitable brake-block 120, operated by a lever 121. The end of the twister opposite the handle is formed with a stem *p*, having oppositely-projecting notched projections *p'* and *p''*.

The operation of the machine is as follows: The machine is drawn by a suitable team that passes to the left of the row to be cut, the dividers passing one on each side of the row of corn. The points of the dividers will act as gatherers and raise up all down stalks, and as the machine advances the stalks are brought into contact with the gathering-fingers 27 both at top and bottom. The fingers in their backward movement hold the stalks until the forward movement of the machine brings them in contact with the saw 29, which cuts them, the gathering-fingers of the first series of chains carrying them back in an upright position, the spring-adjuster 37 holding the stalks closely against the chains, and the second series of chains continuing to carry them in their backward movement to the end of the passage, where they are delivered to the extension and adjuster 51, which in turn delivers them on the platform 58, over which is suspended the overhanging sleeve with the elongated arms or fingers 104, together with the combined compressor and binder attachment. The overhanging arms or fingers receive and support the top of the shock and the gathering table or platform 58 supports the bottom. The adjustable wing delivers the stalks to the center first, and through the medium of the lever 52 the operator draws it out toward the outer edge of the table. As the section between the contiguous arms or fingers is filled up the pressure of the incoming stalks, imparted by the fingers of the extension and adjuster, turns the table and the arms or fingers, which motion is checked to the proper speed by the tension on the wire at the top and the brake-block of the table at the bottom, and thus the shock is formed. The wire supports and compresses the outside of shock at top as it is carried around and the raised rim 61 of the table supports it at the bottom. The inner rim or flange 62 keeps the stalks from crowding the center. When a complete circuit is made by the table and arms, the shock is completed. The operator by means of the clutch mechanism now stops the movement of the second series of chains, and the gathering-fingers of this series of chains are thrown down by the pressure from the incoming stalks, allowing the stalks to pass in compact form toward the rear, and a temporary receptacle is thus formed so that the stalks are not thrown out on the gathering-table while the shock is being delivered.

The manner in which this is accomplished is this: The incoming stalks will cause the innermost fingers of the second series of chains to fall one at a time by reason of the packing in of the stalks, and the foremost of those packed in being pushed farther back by the incoming stalks will act on and depress those fingers toward the end of the passage one at a time, and by the time the packed stalks nearly reach the end of the passage the bound shock will have been deposited and the leaves returned to position. Therefore it is not necessary to stop the team in making a delivery. The extension or adjuster 51 is then drawn toward the operator clear of the platform, and the arms or fingers 104 are drawn up into the sleeve out of the way of delivery. The operator now grasps the handle of the wire-twister 109 with one hand, the other holding the wire from the spool, the free end of the wire having, before the operation of the machine commenced, been secured to the stem *p* of the twister and engaged in the notch of projection *p'*. The wire is then crossed and the part held by the hand engaged in the notch of projection *p''* and all the slack drawn from around the shock, when by a few turns of the twister the shock is bound and the wire cut and the new end held in the twister. The spring-arm 108 is held in position after the arms 104 have been withdrawn from the shock by means of a pawl 122, that engages a circular ratchet 123 at the top of the collar 94. The lever 75 is then drawn backward by the operator to withdraw the pivotal point 68 and force down the rock-arm, the same operation causing the swinging frames to move up into engagement with the catches 85 on the sections of the table and move the sections outward away from each other, the inner edges dropping down and the outer edges rising until sufficient space is given for the shock to drop through. The shock is steadied in its descent by the overhanging sleeve until it clears itself by its downward movement, and is thus set squarely on the ground in the rear of the machine as the latter is drawn along. When the machine has cleared the shock, the operator drops the table or platform back into position, extends the overhanging arms or fingers, pushes the extension and adjuster 51 to its proper position, and starts the chains, thus proceeding, as before, to construct another shock.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a corn-harvester having a cutter and a passage for the stalks leading therefrom, conveyers on one side of said passage and a spring on the opposite side having adjusting devices, substantially as set forth.

2. In a corn-harvester having a cutter and a walled passage for the stalks leading therefrom, conveyer-chains on one side of the passage having gathering-fingers, a spring-pressure plate on the opposite side having slots

into which the fingers pass, and adjusting devices for the spring, substantially as set forth.

3. In a corn-harvester having a cutter and a passage for the stalks leading therefrom, a series of conveyer-chains working in said passage, a second series of chains at the rear ends of the first series, provided with pivoted gathering-fingers adapted to be overthrown by the incoming stalks, and mechanism for throwing said second series of chains into and out of action to form a receptacle, substantially as and for the purpose set forth.

4. In a corn-harvester having a walled passage for the stalks, means for conveying the stalks through the latter, a gathering table or platform, and an extension consisting of an extended wall at one side of the end of said passage, provided with conveyers, substantially as and for the purpose set forth.

5. In a corn-harvester having a passage for the stalks, means for conveying the stalks through the passage, a gathering table or platform, and an extension of the conveyer, consisting of sprocket-chains provided with fingers and mounted on a support adjustable in horizontal angle to distribute the cut stalks on the platform.

6. In a corn-harvester, the combination of a passage to receive the cut stalks, a conveyer working therein, an extension of said conveyer adjustable in horizontal angle and driven with positive motion to deliver the stalks, and a revoluble platform receiving the stalks from the conveyer-extension and deriving rotation from pressure of the incoming stalks.

7. In a corn-harvester having a passage for the cut stalks and gathering-table arranged to receive the stalks from said passage, a conveyer arranged to pass the stalks through the passage, and a swinging extension of said conveyer, provided with conveyers projecting over the gathering-table, substantially as and for the purpose set forth.

8. In a corn-harvester having a passage for the stalks, means for conveying the stalks through the latter, a gathering table or platform, a conveyer-extension adjustable in horizontal angle, and means for moving the latter, consisting of a lever and a rod connecting the latter with the conveyer-extension, substantially as set forth.

9. In a corn-harvester, a rotary table or platform made in sections, means for supporting said table so as to permit of rotation, and rock-arms for opening and closing the sections, substantially as set forth.

10. In a corn-harvester, a rotary table or platform made in two sections, swinging frames or rock-arms below and having detachable connection with the sections and adapted to bring the sections to upright position to deliver the shock, and means for swinging said frames, substantially as set forth.

11. In a corn-harvester, a rotary table or platform made in two sections, a pivotal cen-

tral support on which the table turns, and means for bringing the sections to open position, substantially as set forth.

12. In a corn-harvester, a rotary table or platform made in two sections, overlapping plates at the inner edges of the sections having openings, a pivotal central support received by said openings, and means for opening and closing the sections, substantially as set forth.

13. In a corn-harvester, a rotary table or platform made in two sections, overlapping plates at the inner edges of the sections having openings in the shape of key-holes, a pivotal central support having a hook received by said openings, and means for opening and closing the sections, substantially as and for the purpose set forth.

14. In a corn-harvester, a rotary table or platform made in two sections, swinging frames consisting of hinge-rods below and having detachable connection with the sections and provided with arms, oscillating shafts to which said arms are attached, and means for oscillating said shafts, substantially as set forth.

15. In a corn-harvester, a rotary table or platform made in two sections, swinging frames or arms below and having detachable connection with the sections, providing a hinge for the latter, and rollers journaled on said frames, substantially as and for the purpose set forth.

16. In a corn-harvester, a rotary table or platform and a brake for retarding the movement of the same, substantially as set forth.

17. In a corn-harvester, a rotary table, an extensible standard independent of the table, an overhanging arm carried by said standard projecting to a point centrally over the table; and suitable means carried by the arm for supporting the top of the shock, substantially as set forth.

18. In a corn-harvester, a shock-gatherer consisting of a rotary platform forming a support for the base of the shock and a swiveled support for the upper ends of the stalks suspended concentrically over the platform and independent of the gearing of the machine, said support being adapted to be carried around by the stalks as they are caused to rotate the platform, substantially as herein set forth.

19. In a corn-harvester, a rotary table or platform, an extensible support independent of the latter and extending to a point centrally over the table, and revoluble radial fingers projecting from the upper support at said central point, substantially as set forth.

20. In a corn-harvester, the combination of a rotary table, a swinging conveyer projecting over said table, and centrally overhanging rotary arms or fingers above the table, substantially as set forth.

21. In combination with a corn-harvester, a rotary platform on which the stalks are received to form the shock, folding radial arms

or fingers for holding the upper parts of the stalks while the shock is being formed, and a suitable support for said arms or fingers, substantially as set forth.

5 22. In a corn-harvester, a rotary platform on which the stalks are received to form the shock, folding radial arms or fingers, and a suitable support, said arms being retractible within the support, substantially as set forth.

10 23. In a corn-harvester, a rotary platform, folding radial arms or fingers, means for supporting said arms, the retracting-sleeve, and means for moving said arms and sleeves relatively, whereby the arms are collapsed and
15 the discharge of the completed shock facilitated, substantially as set forth.

24. In a corn-harvester, a rotary table, a device overhanging said table, a sleeve swiveled to said device, pendent arms or fingers pivoted
20 within the sleeve, and means for spreading and withdrawing the arms or fingers, substantially as and for the purpose set forth.

25. In a corn-harvester, a table or platform, a support extending from the main frame and
25 overhanging said table, a sleeve swiveled to said support centrally over the table, arms or fingers projecting through openings in the sleeve, and a vertically-movable bell in the sleeve in which the arms or fingers are piv-
30 oted, substantially as and for the purpose set forth.

26. In a corn-harvester, a table or platform, a support extending from the main frame and overhanging said table, a sleeve depending
35 from said support centrally over the table, arms or fingers projecting through openings in the sleeve, and a movable bell in the sleeve in which the arms or fingers are pivoted, substantially as and for the purpose set forth.

40 27. In a corn-harvester, a table or platform, a support extending from the main frame and overhanging said table, a sleeve depending from said support centrally over the table, arms or fingers, a swivel attachment within
45 the sleeve, to one part of which the arms or fingers are pivoted, and means attached to the other part of said attachment whereby the fingers are adapted to be spread and with-
50 drawn, substantially as and for the purpose set forth.

28. In a corn-harvester, a table or platform, a sleeve overhanging the center of the table, arms or fingers, a spring within said sleeve, a swivel attachment on one part of which said
55 spring bears and to which the arms or fingers are pivoted, and means attached to the other part of said attachment whereby the fingers are adapted to be spread and with-
60 drawn, substantially as and for the purpose set forth.

29. In a corn-harvester, a table or platform, a support independent of the latter and extending to a point centrally over the same, a rotary arm projecting radially from said support above the table and which carries one
65 end of the binding-wire, said wire supporting, compressing, and tying the outside of the shock, and means for supporting the center of the top of the shock, substantially as and
70 for the purpose set forth.

30. In a corn-harvester, a table or platform, a rotary spring-arm suspended above the table, a wire-twister carried by the arm, means for supplying wire to said twister, said wire
75 supporting, compressing, and tying the outer side of the shock, and means for supporting the center of the top of the shock, substantially as and for the purpose set forth.

31. In a corn-harvester, a table or platform, a fixed support, a rotary sleeve supported
80 on the latter and overhanging said table, arms or fingers carried by said sleeve, an arm attached to said sleeve, pawl-and-ratchet connection between the latter and said support, a twister carried by said arm, and means for
85 supplying wire to the twister, substantially as set forth.

32. In a corn-harvester, a table or platform, a support independent of and overhanging the latter, a rotary arm suspended from said
90 support above the table, a wire-twister carried by the arm, means for supplying wire to said twister, and arms or fingers overhanging the center of the table and pending from said support, substantially as and for the purposes
95 set forth.

33. In a corn-harvester, a rotary table, a support independent of and overhanging the latter, rotary fingers supported on the support centrally over the table, a wire-twister, also
100 supported with said fingers on said support above the table and rotatable in a circular path, all of said parts being adapted to move together, and means for supplying wire to said twister, substantially as set forth.
105

34. In a corn-harvester, a table, a support independent of and overhanging said table, a rotary arm suspended from said support over the table, a wire-twister carried by the arm, a spool, and wire leading from said spool and
110 attached to the twister, whereby it is adapted to be carried around the top of the shock, forming means for tying the shock, substantially as set forth.

DAVID W. BLAINE.

Witnesses:

OCTAVIUS KNIGHT,
HERVEY S. KNIGHT.