

No. 632,125.

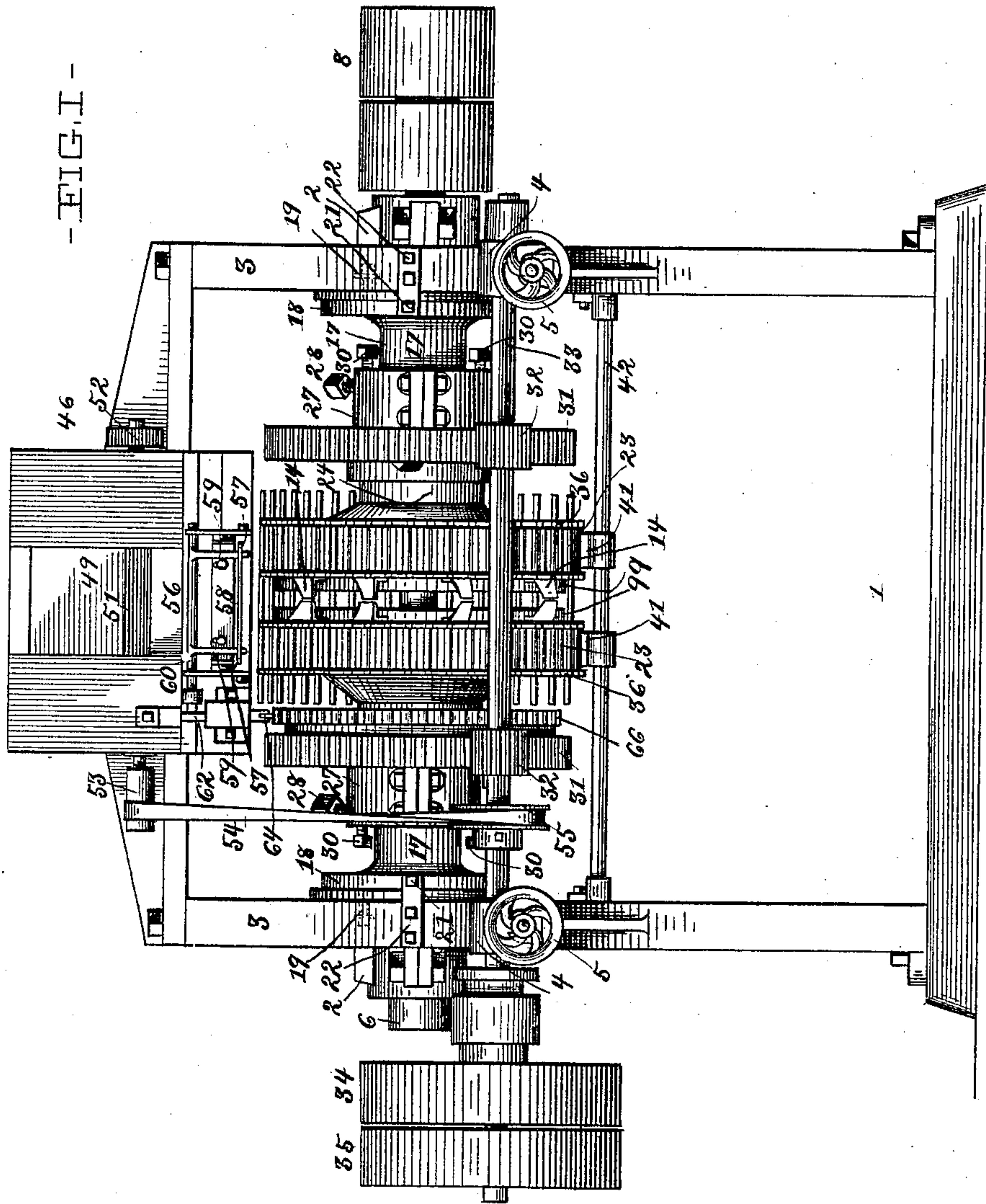
Patented Aug. 29, 1899.

E. J. KERSHAW.
SKEWER MAKING MACHINE.

(Application filed Sept. 16, 1896.)

(No Model.)

5 Sheets—Sheet 1.



WITNESSES:

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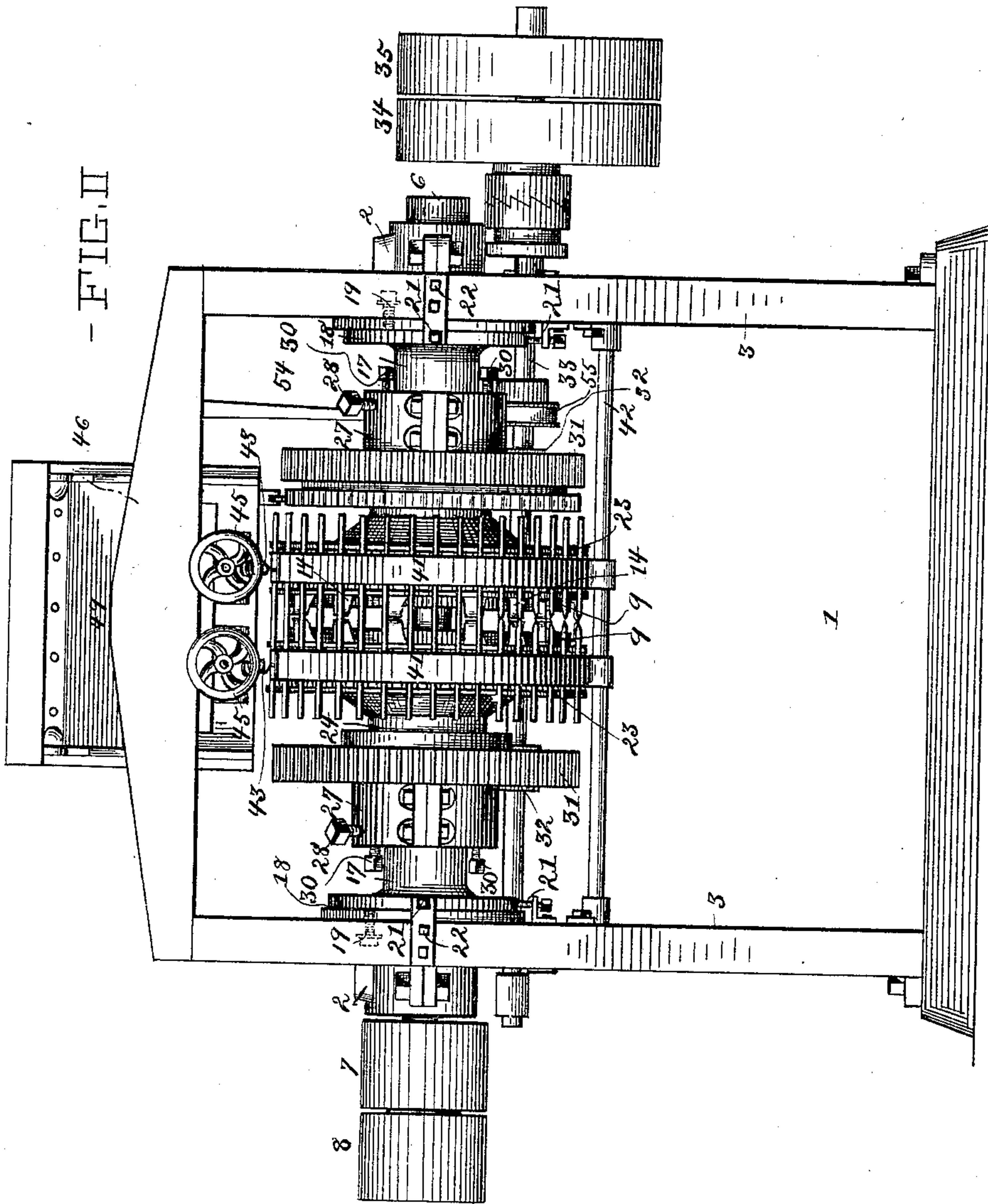
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(Application filed Sept. 18, 1896.)

(No Model.)

5 Sheets—Sheet 2.



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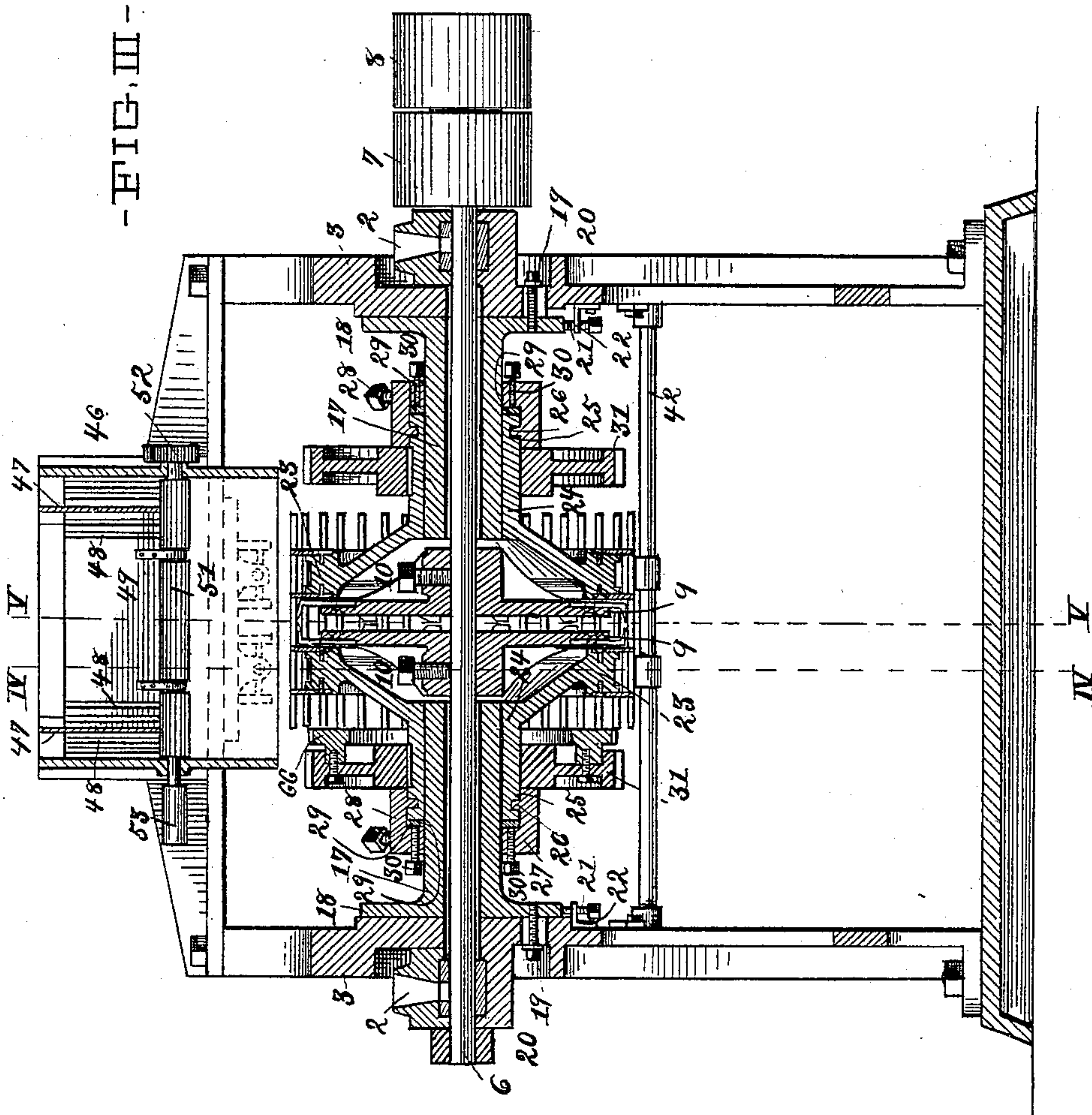
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5 Sheets—Sheet 3.



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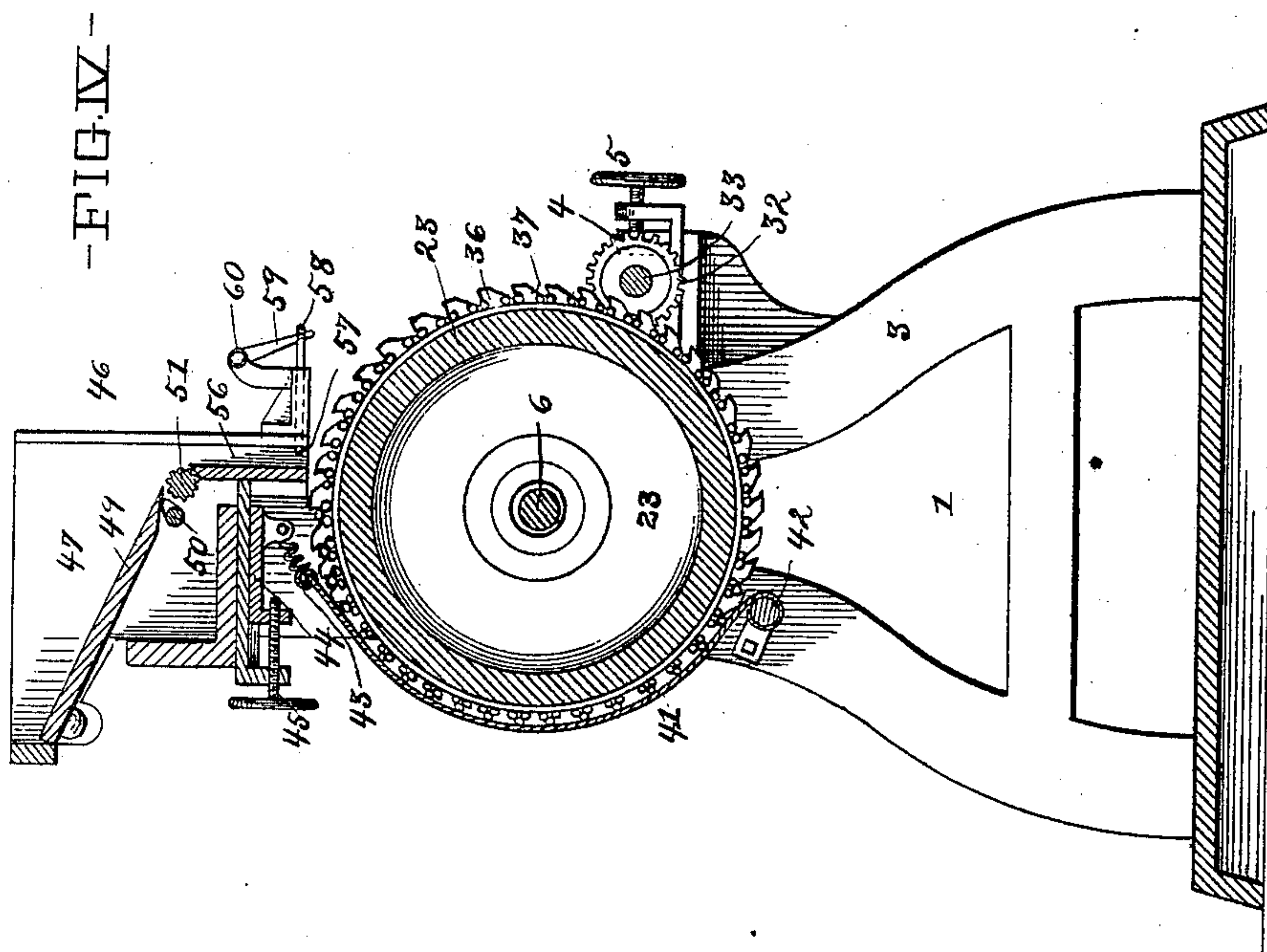
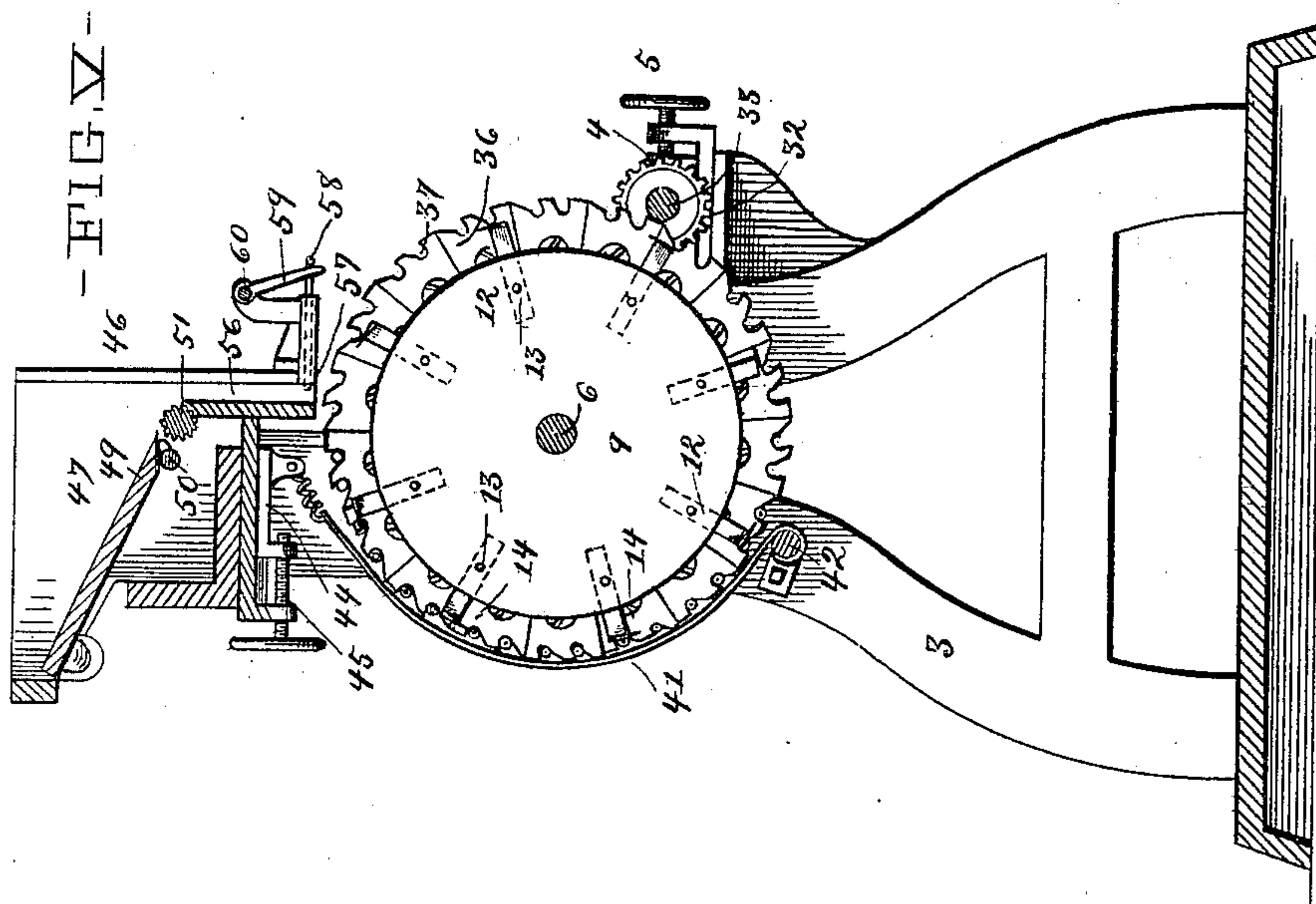
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SKEWER MAKING MACHINE.

(Application filed Sept. 16, 1896.)

(No Model.)

5 Sheets—Sheet 4.



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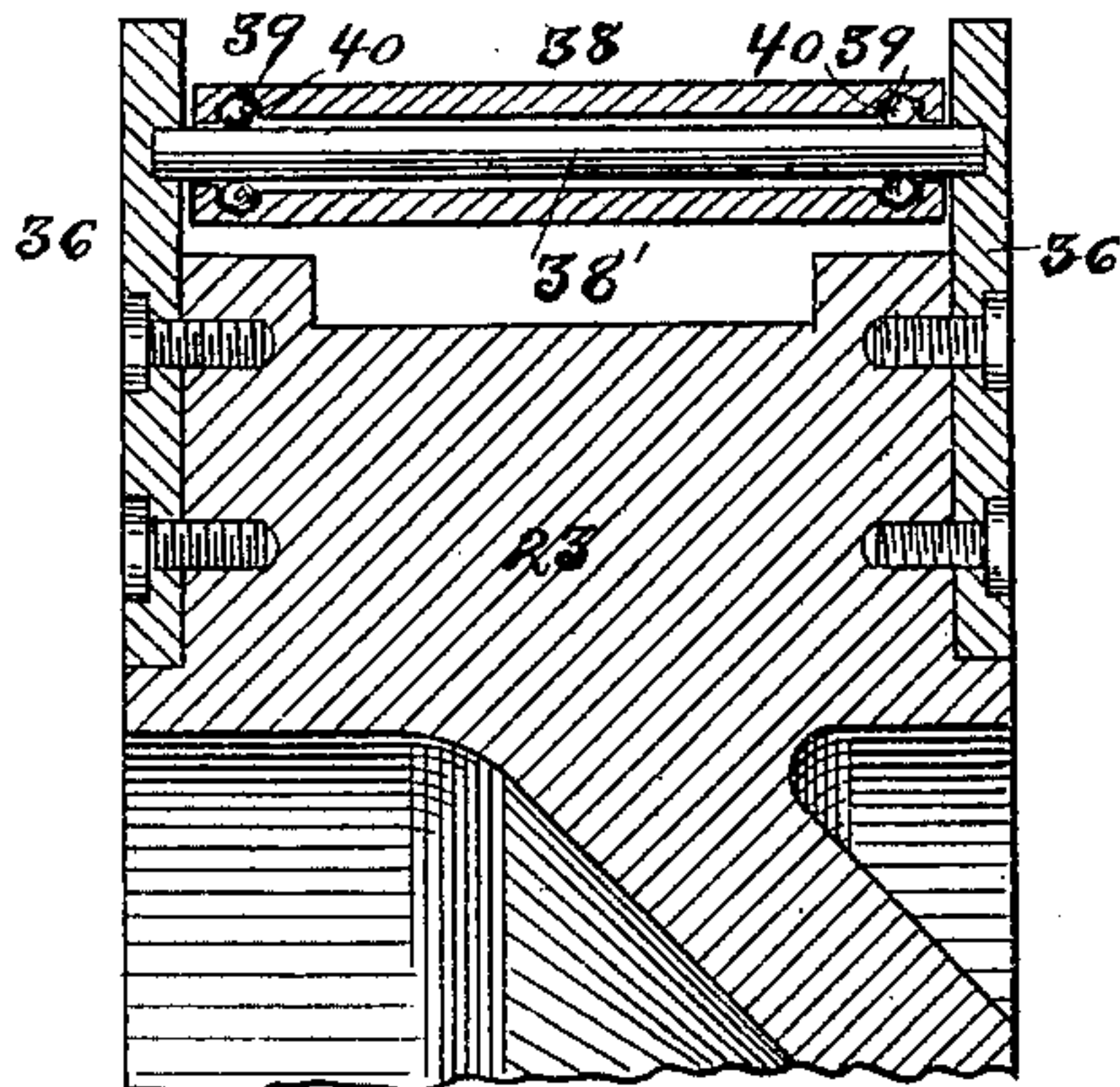
E. J. KERSHAW.
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(Application filed Sept. 16, 1896.)

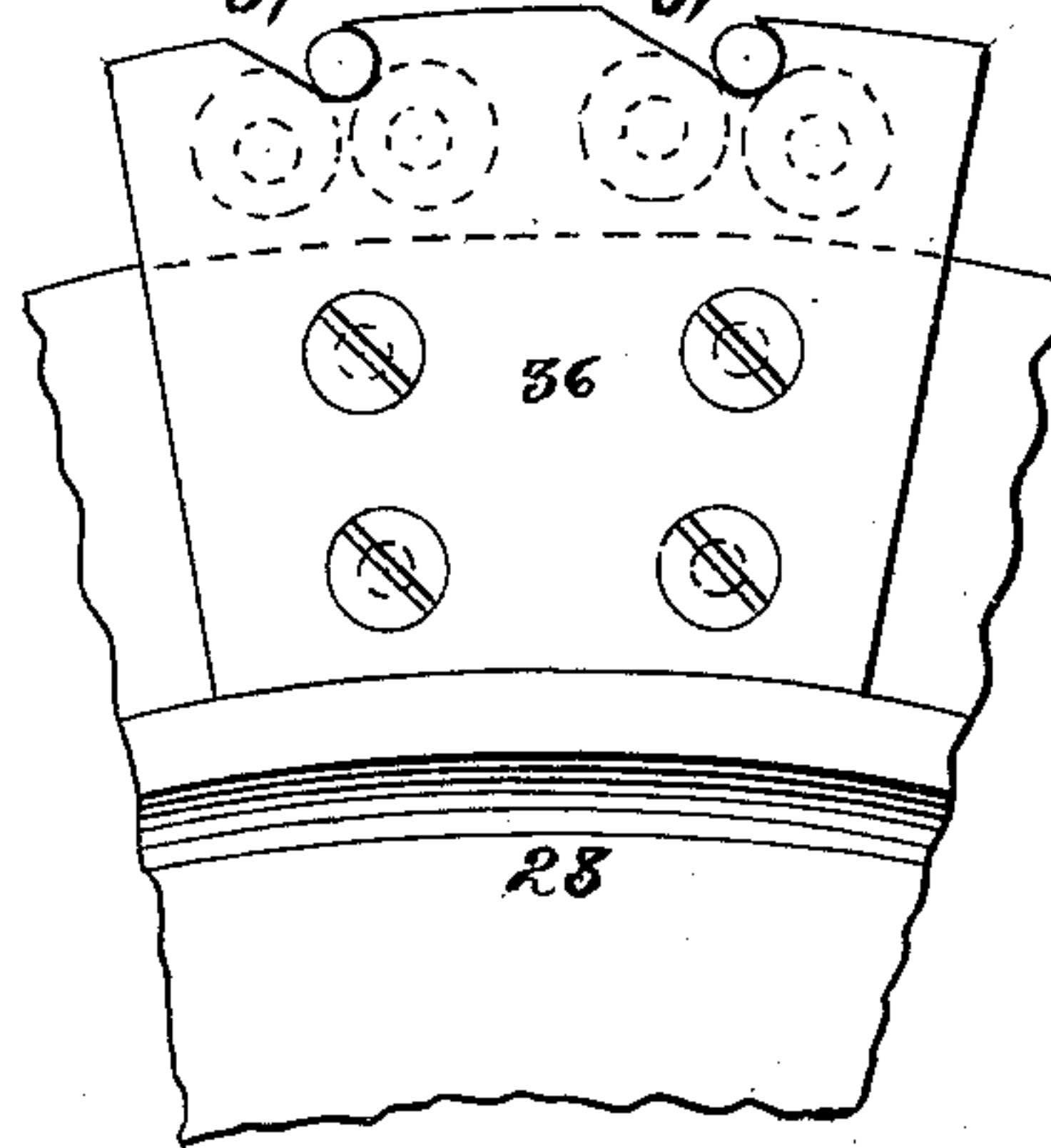
(No Model.)

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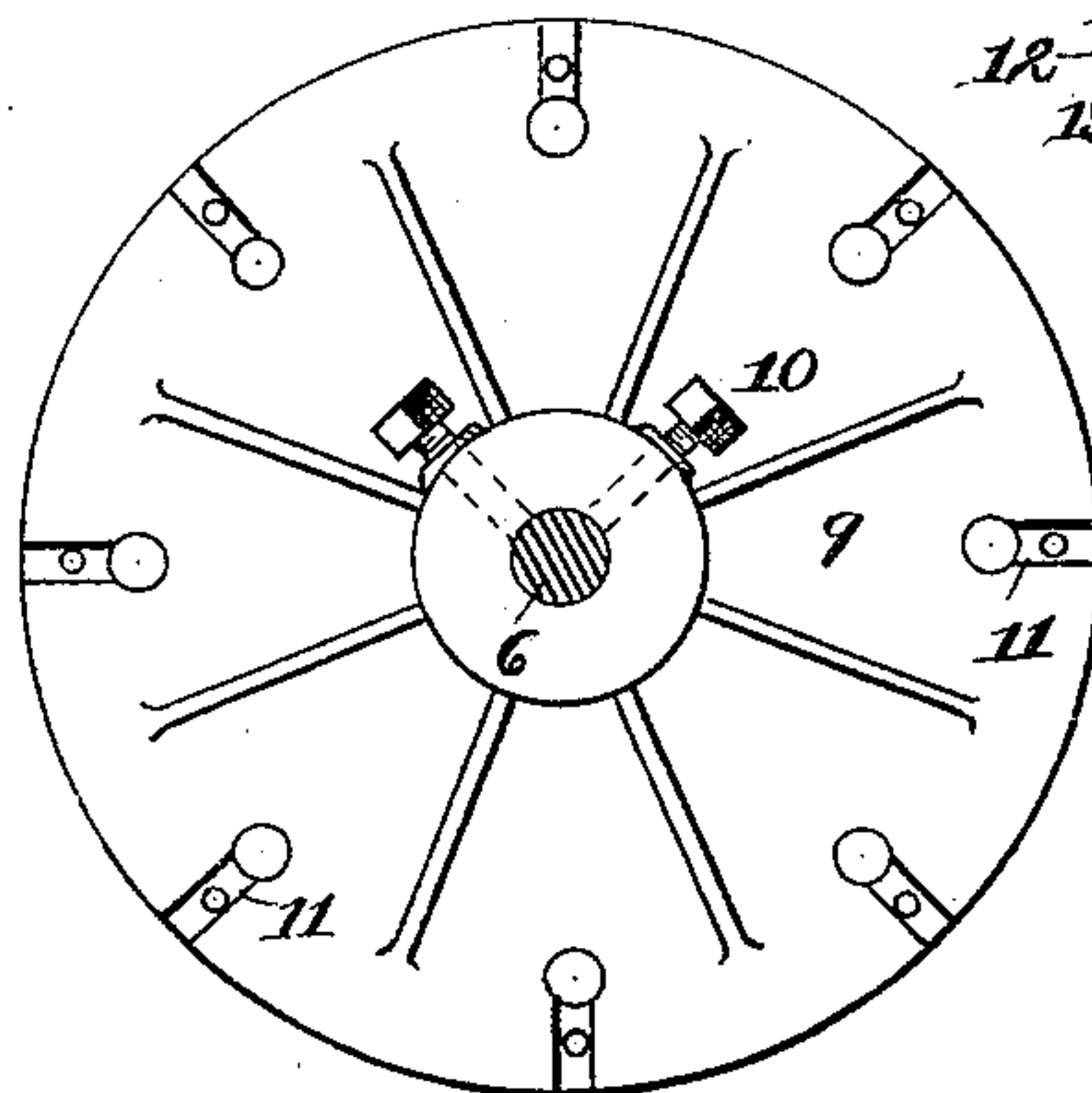
-FIG. VI-



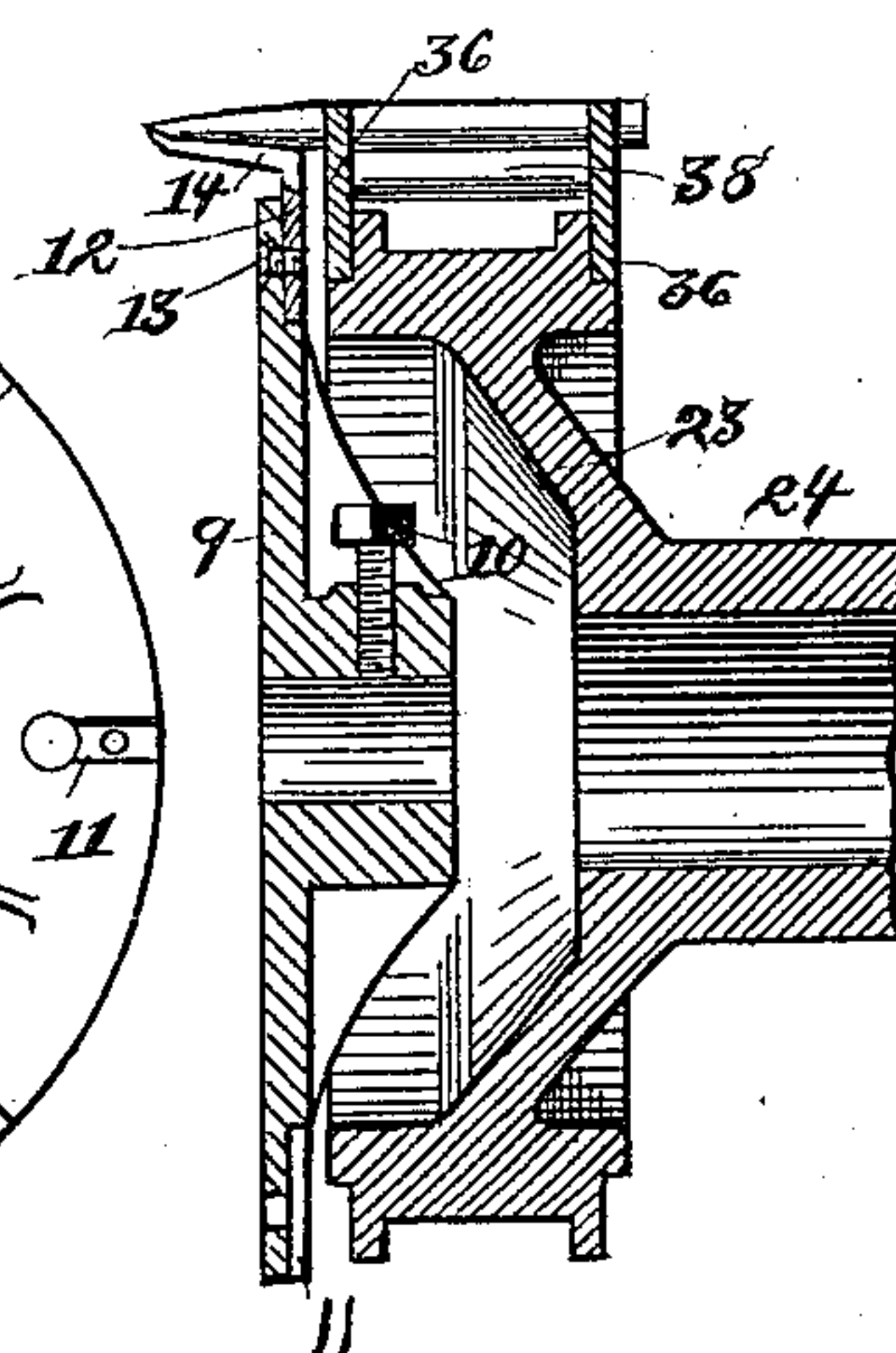
-FIG. VII-



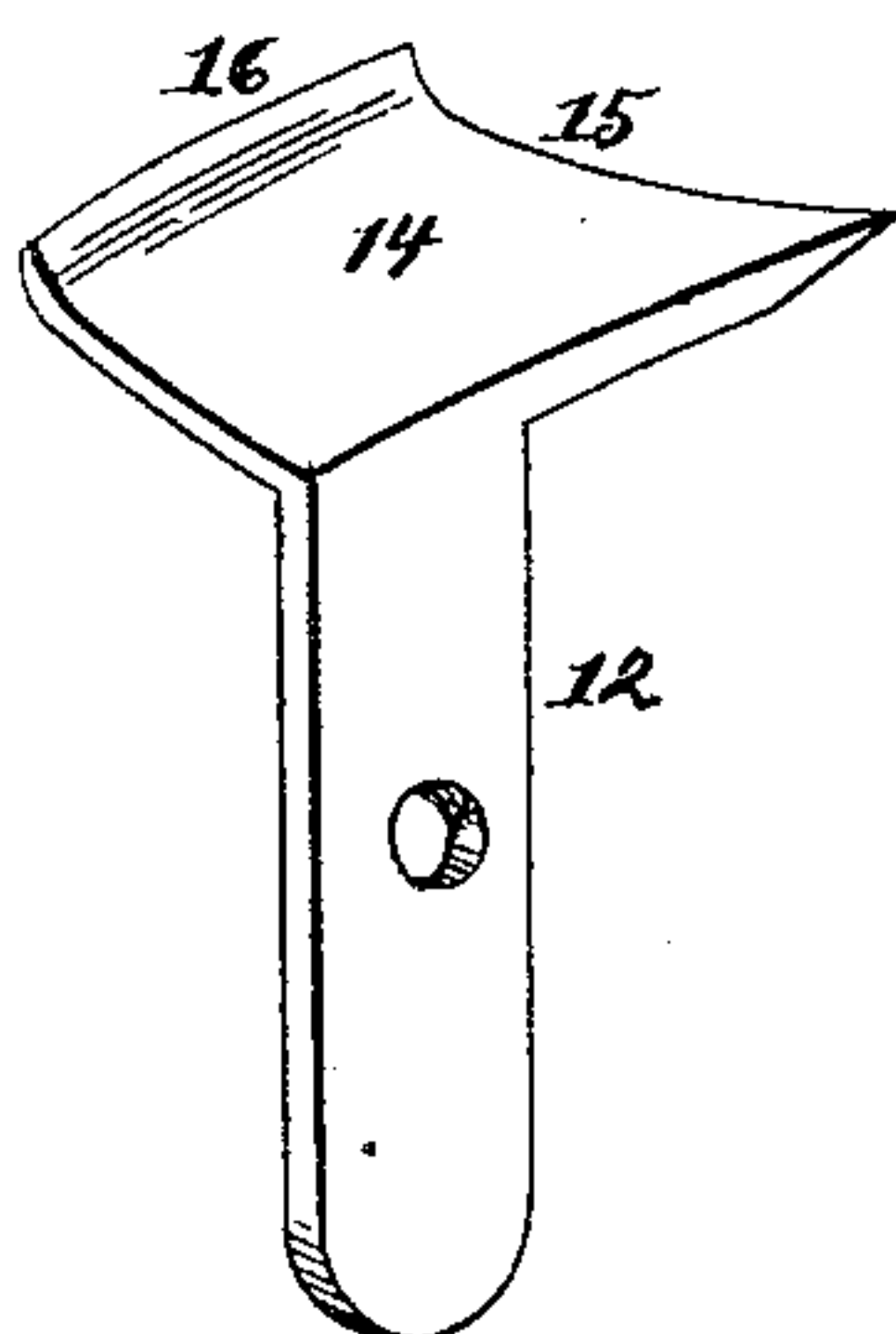
-FIG. VIII-



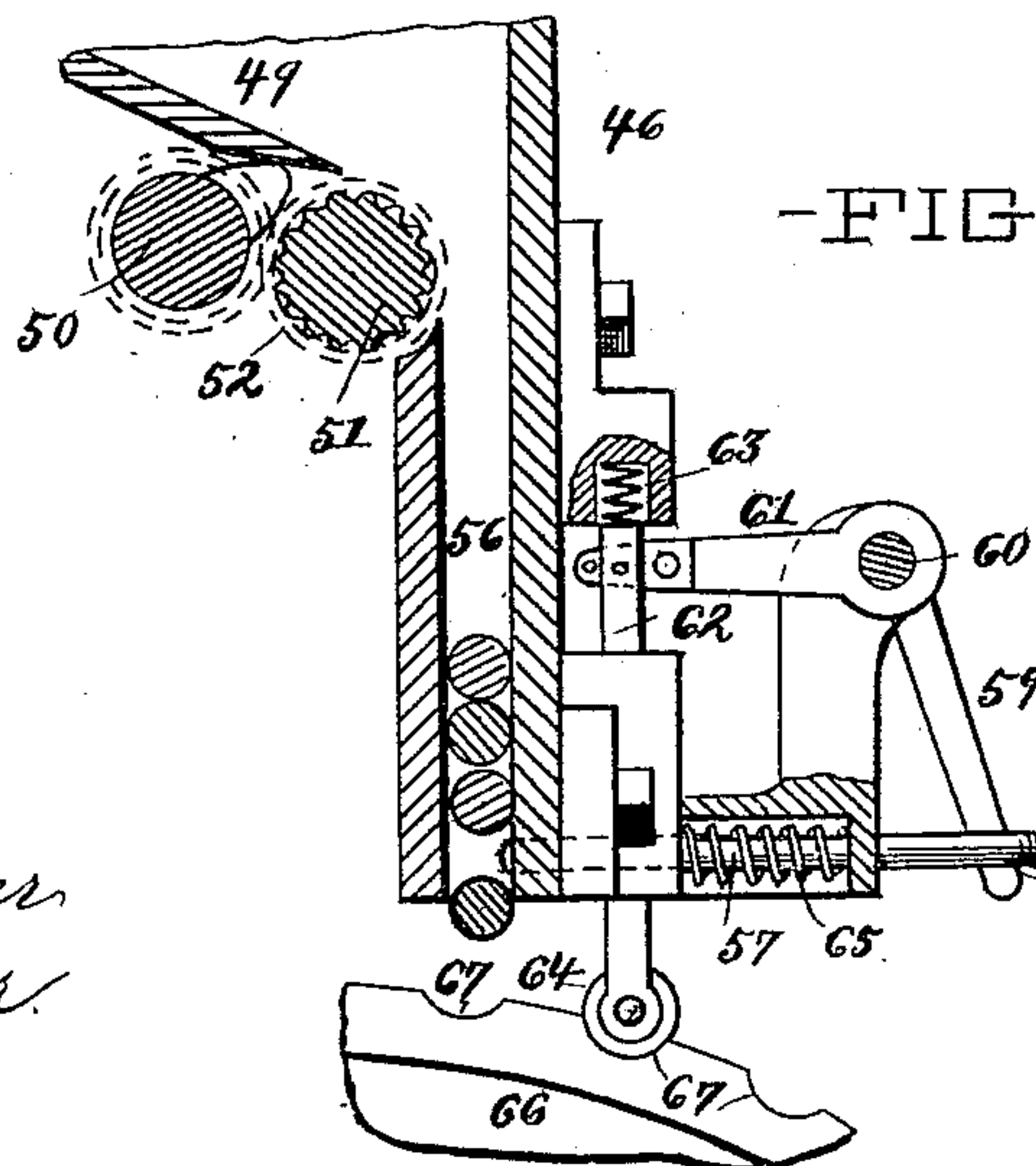
-FIG. IX-



-FIG. IX-



-FIG. XI-



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UNITED STATES PATENT OFFICE.

EARNEST J. KERSHAW, OF CLEVELAND, OHIO, ASSIGNOR TO SALEM KILE
AND GEORGE H. KILE, OF GRAFTON, OHIO.

SKEWER-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 632,125, dated August 29, 1899.

Application filed September 16, 1896. Serial No. 605,970. (No model.)

To all whom it may concern:

Be it known that I, EARNEST J. KERSHAW, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Skewer-Making Machines, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The annexed drawings and the following description set forth in detail one mechanical form embodying the invention, such detail construction being but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure I represents a front elevation of my improved machine for making skewers; Fig. II, a rear elevation of the machine; Fig. III, an axial section of the machine; Fig. IV, a transverse section on the line IV IV in Fig. III; Fig. V, a transverse section on the line V V in Fig. III; Fig. VI, a sectional detail view of the rim of the skewer-carrying wheel; Fig. VII, a side view of a portion of the rim of said wheel; Fig. VIII, a side view of the cutter-disk; Fig. IX, a perspective view of one of the cutters; Fig. X, an axial section of the cutter-disk and skewer-carrying wheel, illustrating the pointing of one skewer; and Fig. XI a sectional view of the lower portion of the skewer-stick hopper and the mechanism for singly dropping the skewer-sticks upon the carrying-wheels.

Skewers such as largely used by butchers, meat-dealers, cooks, or other persons, as well as tree-nails or similar wooden pins, usually form a by-product of some hard-wood manufacturing industry and are made from strips or slabs of wood which cannot be profitably worked up in other forms. As the prices at which such pins sell are very low it is of importance that their manufacture should be as inexpensive as possible and that as great a number as possible should be made in a given time. For my machine, like for almost all machines proposed for the purpose of making skewers, the waste stock is cut up into cylindrical sticks having the length of two

skewers, whereupon the sticks are fed to the machine and pointed and cut into two halves, each forming a finished skewer.

The machine has an upright frame 1, provided with a pair of central bearings 2 2 in its end pieces 3 3 and with a pair of bearings 4 4 parallel with said former bearings and upon the front edges of the end pieces. Said latter bearings 4 4 are horizontally movable forward and back and have hand-screws 5 5, by means of which they may be adjusted. A shaft 6 is journaled in the central bearings 2 and has a fast and a loose pulley 7 and 8 upon one end. Two cutter-disks 9 9 are secured upon the middle of the shaft by means of set-screws 10, and said disks have radial recesses 11 at the edges of their outer faces, in which the shanks 12 of the cutters are secured by means of screws 13, passing through the shanks and bottoms of the recesses. The cutter-blades 14 project into the space between the disks at an obtuse angle to the shanks and have sharp forward edges 15 and upturned outer side edges 16, which serve to sever the skewer-sticks at their middles and to form the points of the skewers. Two bearing-sleeves 17 have flanges 18 at their outer ends, and said flanges are adjustably secured to the inner faces of the end pieces of the frame by means of screws 19, extending through slots 20 in said end pieces and into the flanges. Adjusting-screws 21 are threaded through brackets 22 upon the end pieces of the frame and bear against the lower and side edges of the flanges, so that when the fastening-screws 19 are loosened the flanges and sleeves may be raised, lowered, or moved sidewise by the adjusting-screws. The bores of the bearing-sleeves are of sufficiently-greater diameter than the cutter-shaft that the sleeves may be adjusted in all directions without coming in contact with the shaft. A pair of skewer-stick-carrying wheels 23 are formed with hubs 24, which are journaled to revolve upon the bearing-sleeves. The outer ends of these hubs are formed with circumferential grooves 25, into which annular tongues 26 in the interior recesses of two collars 27 engage. Said collars are secured upon the bearing-sleeves by means of set-screws 28. Packing-washers 29 are placed in the bottoms of the annular

recesses of the collars and are held against the ends of the hubs by means of screws 30. The carrying-wheels may be longitudinally adjusted upon the bearing-sleeves by means of the collars and their set-screws. Cog-wheels 31 are keyed upon the hubs of the carrying-wheels and mesh with pinions 32 upon a shaft 33, journaled in the horizontally-sliding bearings 4 and provided with a loose and a fast pulley 34 and 35. Flanges 36 are secured to the faces of the skewer-stick-carrying wheels and project beyond the peripheries of the same. The edges of said flanges are formed with skewer-holding notches 37, which are of sufficient depth to hold the thickest size sticks treated in the machine and are preferably formed with inclined rearwardly-facing edges, round bottoms, and radial forwardly-facing edges, so that the sticks may be carried around in the pockets thus formed as the wheels are revolved. Antifriction-rollers 38 are journaled between the flanges of the wheels, one pair for each set of notches, and said rollers are so arranged that they will support the skewer-sticks to freely revolve in the pockets of the wheels, forming a roller-bottom for such pockets. The rollers are preferably journaled upon pins 38', secured at their ends in the flanges, and have antifriction-balls 39 placed in grooves 40 in the bores of the rollers to bear against the pins, and thus form ball-bearings for the rollers. Flexible bands 41, of rubber, leather, metal, or other suitable material, are secured at their lower ends to a bar 42, extending between the end pieces of the frame below the carrying-wheels and are secured at their upper ends to spring 43, which have their other ends secured to slides 44, sliding forward and back in the top of the machine-frame above the carrying-wheels and having adjusting-screws 45 for moving them. The bands bear against the peripheries of the carrying-wheels between the flanges and may be adjusted according to the position of the carrying-wheels by means of the screws 45.

A hopper 46 for the reception of the skewer-sticks is secured at the top of the machine-frame. Said hopper is provided with partitions 47, which are adjustable in the hopper according to the length of the skewer-sticks to be fed to the machine, and consequently according to the lengths of skewers finished in the machine. The adjustability of the hopper-partitions is attained by guides 48, formed in the inner faces of the front and back of the hopper and into which the partitions may slide. The hopper has a forwardly-inclined bottom 49, which is hinged at its upper and rear edge, and has its lower and forward portion resting upon a cam-shaft 50, so as to be vibrated by the rotation of said shaft. A fluted roller 51 is journaled parallel to said cam-shaft and at the lower and forward edge of the hinged bottom. The cam-shaft and roller-shaft has each a pinion 52, one meshing with the other, and the roller-shaft has a

pulley 53, around which passes a belt 54, which passes around a pulley 55 upon the horizontally-adjustable shaft 33. A narrow throat 56 extends from the fluted roller to near the upper sides of the peripheries of the carrying-wheels, and the belt which drives the fluted roller, which is located at the upper end of said throat, is crossed, so as to revolve the exposed portion of said roller in a rearward direction, and thereby prevent choking of the throat by the skewer-sticks. The throat is sufficiently wide to allow skewer-sticks of the greatest diameter acted upon by the machine to pass freely through it, while it is sufficiently narrow to prevent more than one skewer-stick of the smallest diameter acted upon to pass through it at one time. Stop-fingers 57 are supported to slide transversely to the throat and to have their inner ends project across the lower end of the throat. The outer ends of said fingers are connected by a rod 58, and said rod is engaged by arms 59, projecting from a rock-shaft 60. Said shaft has an inwardly-projecting arm 61, which is pivotally connected to a vertically-sliding bolt 62, forced downward by means of a spring 63, and having a roller 64 upon its lower end. A spring 65 serves to retract each of the stop-fingers. The roller upon the lower end of the bolt bears against the periphery of a cam-disk 66, secured to one of the cog-wheels 31 and of circular outline and having notches 67 in its periphery, which notches correspond in number and position to the pockets in the skewer-stick-carrying wheels. By means of this device one skewer-stick only will be dropped in each pocket of the carrying-wheels, as the sticks are retained in the throat of the hopper by the fingers 57 until the roller of the bolt 62 enters a notch in the cam-disk, when the rock arm and shaft will be rocked to to withdraw the fingers from the throat for a sufficient space of time to allow one stick to drop, whereupon the fingers will again bar the throat as the cam-disk raises the bolt.

In practice the pulleys upon the two drive-shafts of the machine are connected to suitably-driven pulleys by means of belts, and suitable belt-shafting mechanisms may be provided for changing the belts from the loose to the fast pulleys, and vice versa.

The skewer-sticks are cut to the required length of two skewers to one stick and are thereupon fed into the hopper of the machine. The partitions are placed so as to center the skewer-sticks at the proper point where they are to be divided. When the machine is started, the vibrating bottom of the hopper will cause the skewer-sticks to fall down into the throat of the hopper, and the fluted roller will by its backward revolution prevent the skewer-sticks from choking as they pass into the throat. As the skewer-stick-carrying wheels revolve beneath the lower end of the throat the stop-fingers in the latter will be retracted and a skewer-stick dropped into each

pair of pockets of the carrying-wheels. The cutter-disks are revolved at a considerably greater speed than the carrying-wheels, and the cutter-blades will point and sever the skewers as the sticks are rotated in the pockets by passing against the bands. The ball-bearings for the rollers admit of very free revolution for the skewer-sticks, which will insure smooth and finished points for the skewers. The carrying-wheels are adjusted eccentric to the cutter-disk shaft and cutter-disks, so that the cutters may gradually cut into the sticks. This eccentric adjustment and the degree of the same is controlled by adjusting the bearing-sleeves upon the end pieces of the frame. The cutter-disks and carrying-wheels may be adjusted closer together and farther apart according to the lengths of points desired and the lengths of the skewer-sticks. As the skewers are pointed and severed at the same time all skewers will be of the same length, the skewer-sticks having been cut to even lengths before being fed into the hopper. The cutter-disks and the carrying-wheels revolve in the same direction, (the cutter-disks revolving with a greater speed than the carrying-wheels,) and this motion of the disks and wheels will admit of the machine running at a very high speed, and consequently pointing a great number of skewers in a comparatively short space of time, as the action of the cutters will be in the same direction as the feed of the skewers and will have no tendency to lift the skewers out of their pockets or to retard their forward feed, as the cutters would be liable to have if they rotated in a direction opposite to that of the carrying-wheels. The position of the skewer-sticks in the pockets of the carrying-wheels in their relation to the cutters will be continually the same on account of the rigid support for the sticks in the pockets upon the antifriction-rollers in the same. This will prevent unequal cutting work for the cutters, which is liable to occur in machines of this class having the skewer-sticks fed to be presented to the cutters between a stationary bed and a yielding periphery of a wheel. The yielding band encircling a portion of the periphery of the wheel admits of differences in the thickness of the skewer-sticks, so that sticks having slight variations in their diameters may pass through the machine without obstructing the same. It is also advantageous in a machine of this style, in which the sticks are rotated by being carried between a moving surface and a stationary surface, to have said latter surface—in the present instance, the band—yielding and the moving surface rigidly supported, as a yielding support for the center of the wheel would require more or less complicated gearing and would make the position of the wheel in its relation to the cutters too irregular, and a yielding periphery, of rubber or similar substance, is too liable to wear and cannot be absolutely uniform at all points. The skewer-

sticks will gradually form depressions in the yielding periphery into which the sticks will rest and by friction be prevented from rotating, whereby the pointing of the sticks will be incomplete. By providing the skewer-stick-carrying wheels with pockets the sticks will be regularly presented to the cutters and regularly fed through the machine, and the antifriction-rollers will allow the sticks to be freely rotated from their frictional contact with the band in a much more complete degree than if the sticks were retarded by frictional resistance in pockets which were not provided with antifriction-rollers, in which latter case all rotation of the sticks might even be prevented.

The present feeding or carrying apparatus for the sticks will admit of a great speed being imparted to the wheels and the cutter-disks, and will consequently render the machine very efficient, as proved by the fact that the machine from which the present description and drawings were made, driven by the same power and with the same force of labor, will point and daily does point twice as many skewers as the machine in present use.

Other modes of applying the principle of my invention may be employed for the mode herein explained. Change may therefore be made as regards the mechanism thus disclosed, provided the principles of construction set forth respectively in the following claims are employed.

I therefore particularly point out and distinctly claim as my invention—

1. In a skewer-making machine, the combination with a skewer-stick-carrying wheel having means for revolving it and a concave encircling a portion of said wheel, of a cutter-disk arranged at the side of said wheel and having cutters upon its periphery and having means for revolving it in the same direction as and at greater speed than the wheel, substantially as set forth.

2. In a skewer-making machine, the combination of a frame, a shaft journaled in the end pieces of said frame, cutter-disks secured upon said shaft, bearing-sleeves secured with their outer ends upon the end pieces of the frame and surrounding the shaft and having means for adjusting their axial alinement relative to the shaft, skewer-stick-carrying wheels journaled upon said sleeves and formed with transverse pockets in their peripheries, and yielding bands encircling a portion of the peripheries of said wheels, substantially as set forth.

3. In a skewer-making machine, the combination of a skewer-stick-carrying wheel having transverse pockets in its periphery, a hopper arranged above said wheel and formed with a narrow throat, stop-fingers sliding across said throat, a cam-disk journaled to revolve with the carrying-wheel and having notches in its periphery corresponding to the pockets in the wheel, and a rod bearing against the periphery of said cam-disk and connected

to the stop-fingers to withdraw the same from the throat when it engages a notch in the cam-disk, substantially as set forth.

4. In a skewer-making machine, the combination of a hopper provided with a vibrating bottom, a fluted roller journaled to have a portion of its periphery exposed at the lower edge of the vibrating bottom and to revolve said exposed portion toward the edge of the vibrating bottom, and a throat extending from said roller and of a capacity equal to

the largest size skewer-stick fed and sufficiently narrow to prevent two sticks from passing through it at the same time, substantially as set forth.

In testimony that I claim the foregoing to be my invention I have hereunto set my hand this 13th day of August, A. D. 1896.

EARNEST J. KERSHAW.

Witnesses:

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J. C. TURNER.