

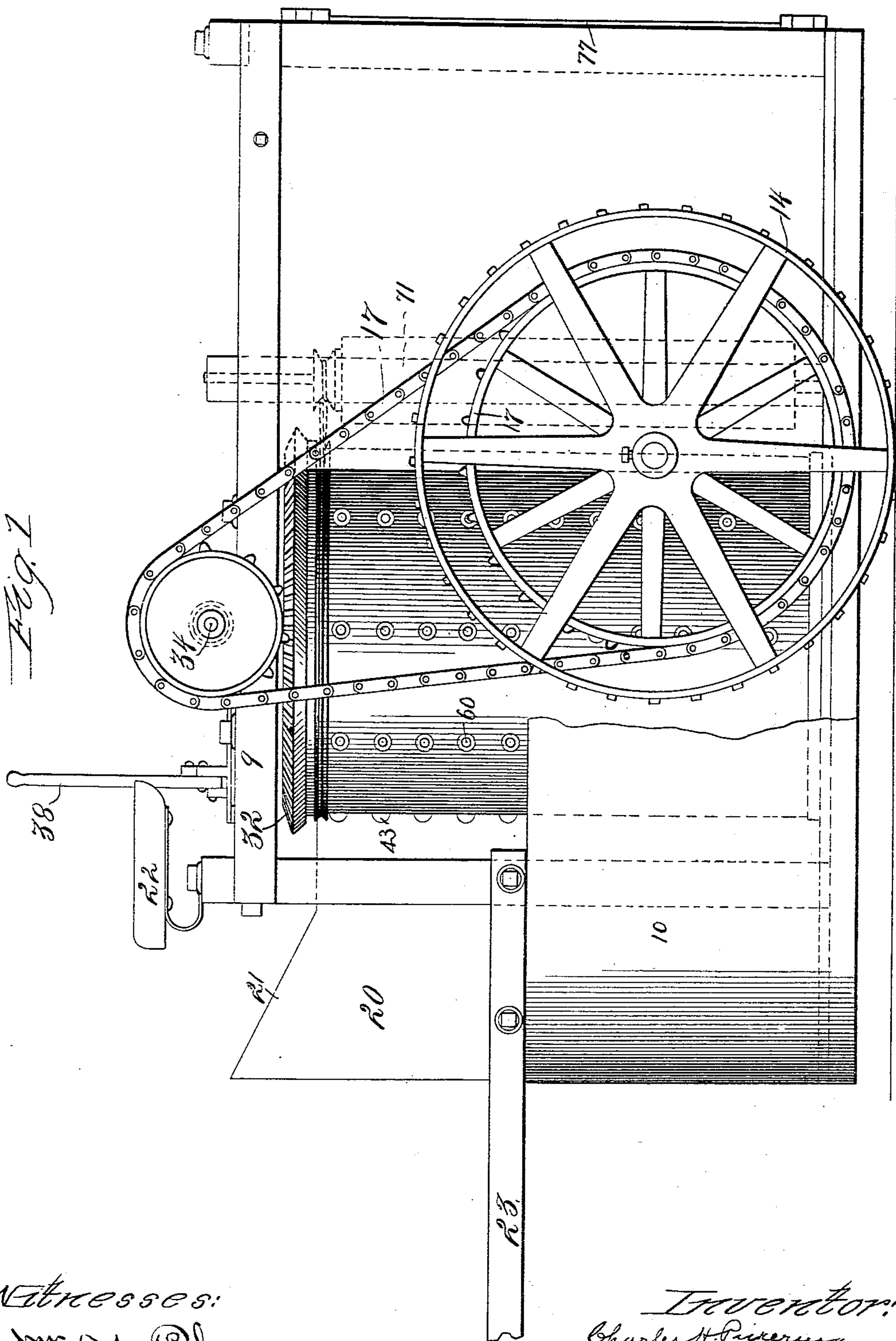
(No Model.)

4 Sheets—Sheet 1.

C. H. PICKERING.  
COTTON HARVESTER.

No. 555,118.

Patented Feb. 25, 1896.



Witnesses:  
S. M. Rheem  
W. L. Kinning

Inventor:  
Charles H. Pickering  
by Bond, Adams, Piskard & Jackson  
his Attys.

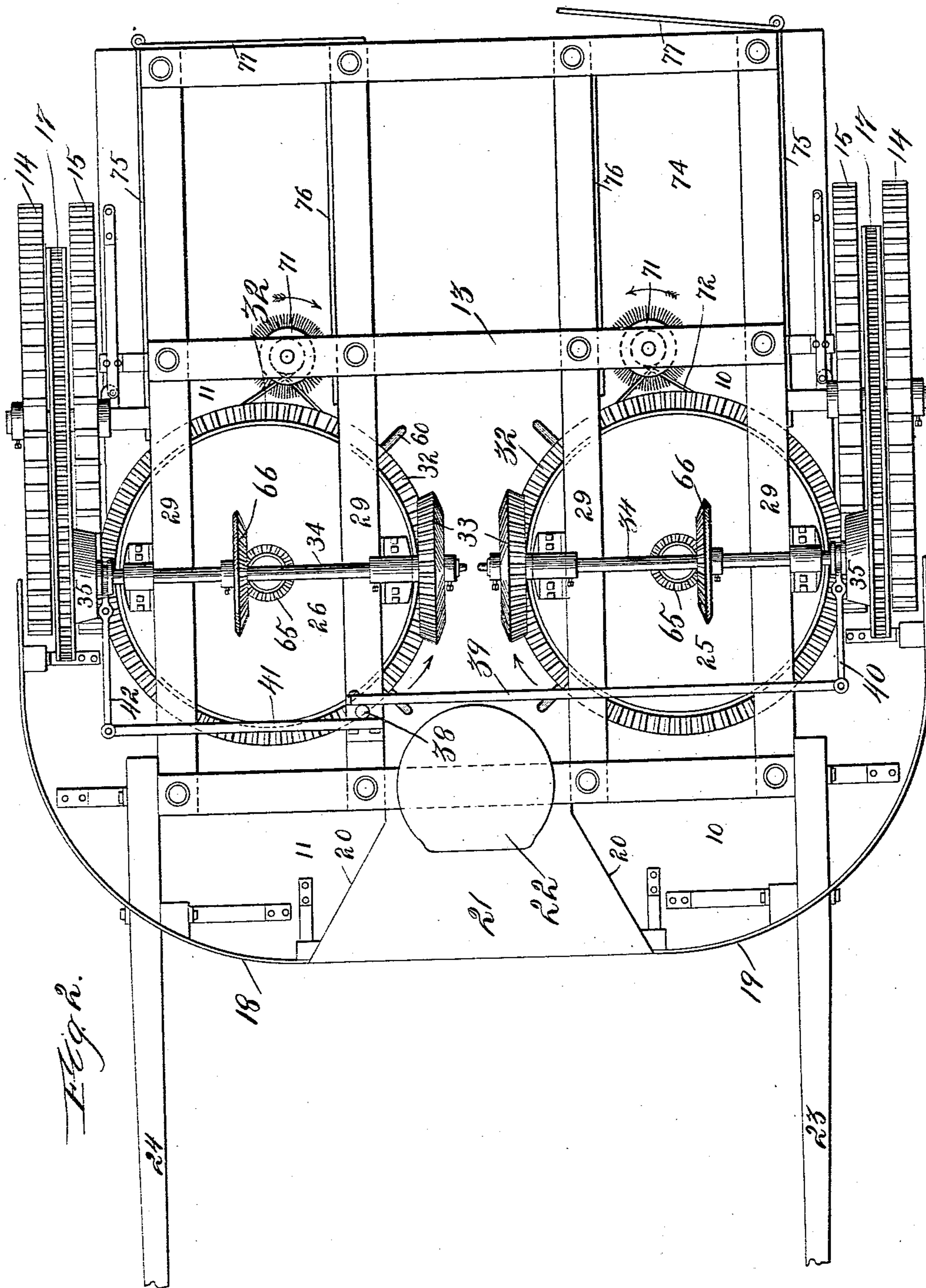
(No Model.)

4 Sheets—Sheet 2.

C. H. PICKERING.  
COTTON HARVESTER.

No. 555,118.

Patented Feb. 25, 1896.



Witnesses:

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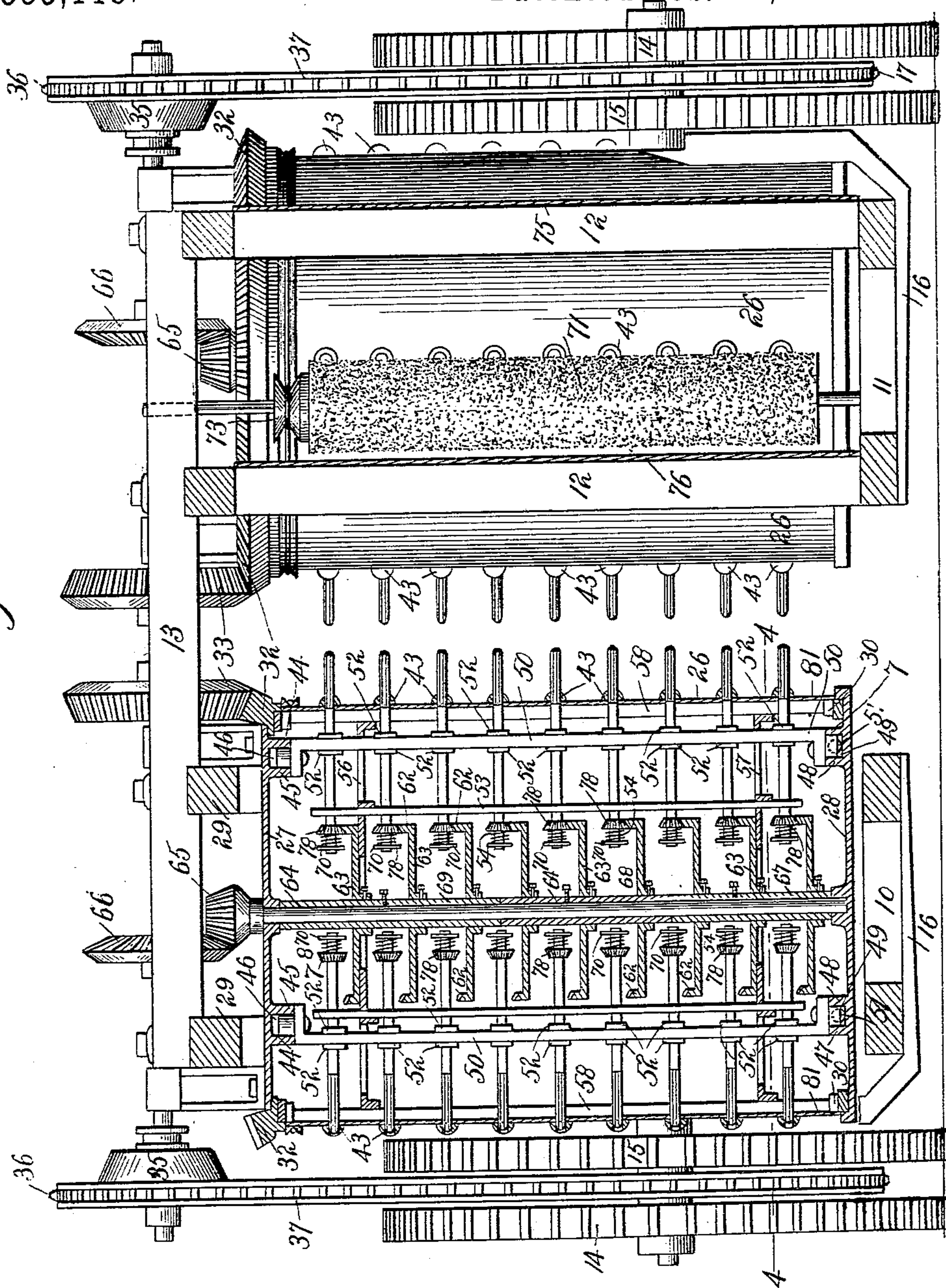


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Fig. 3.



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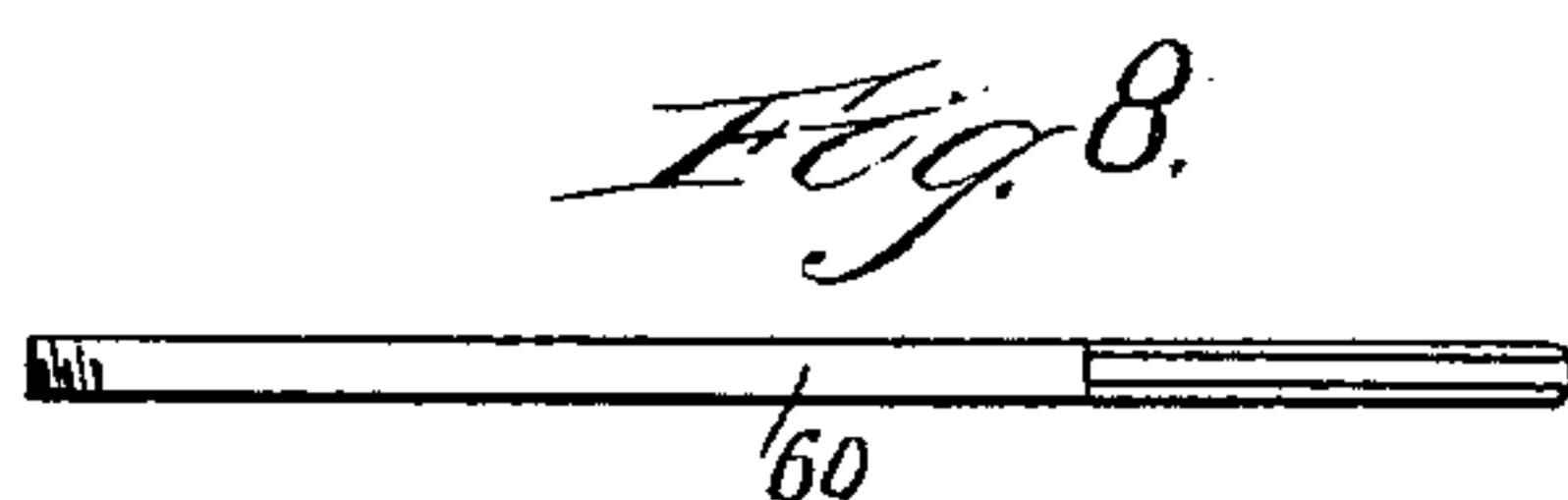
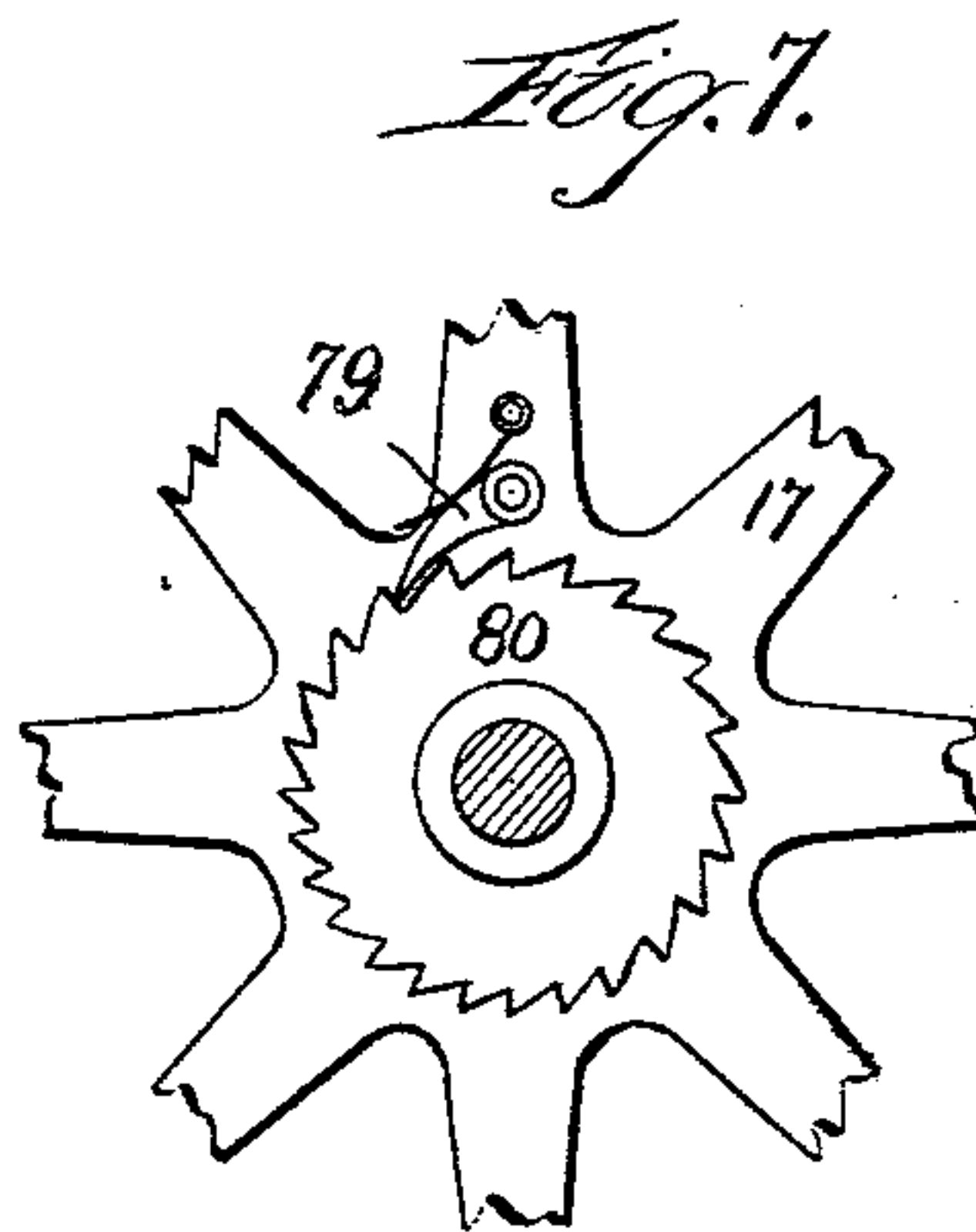
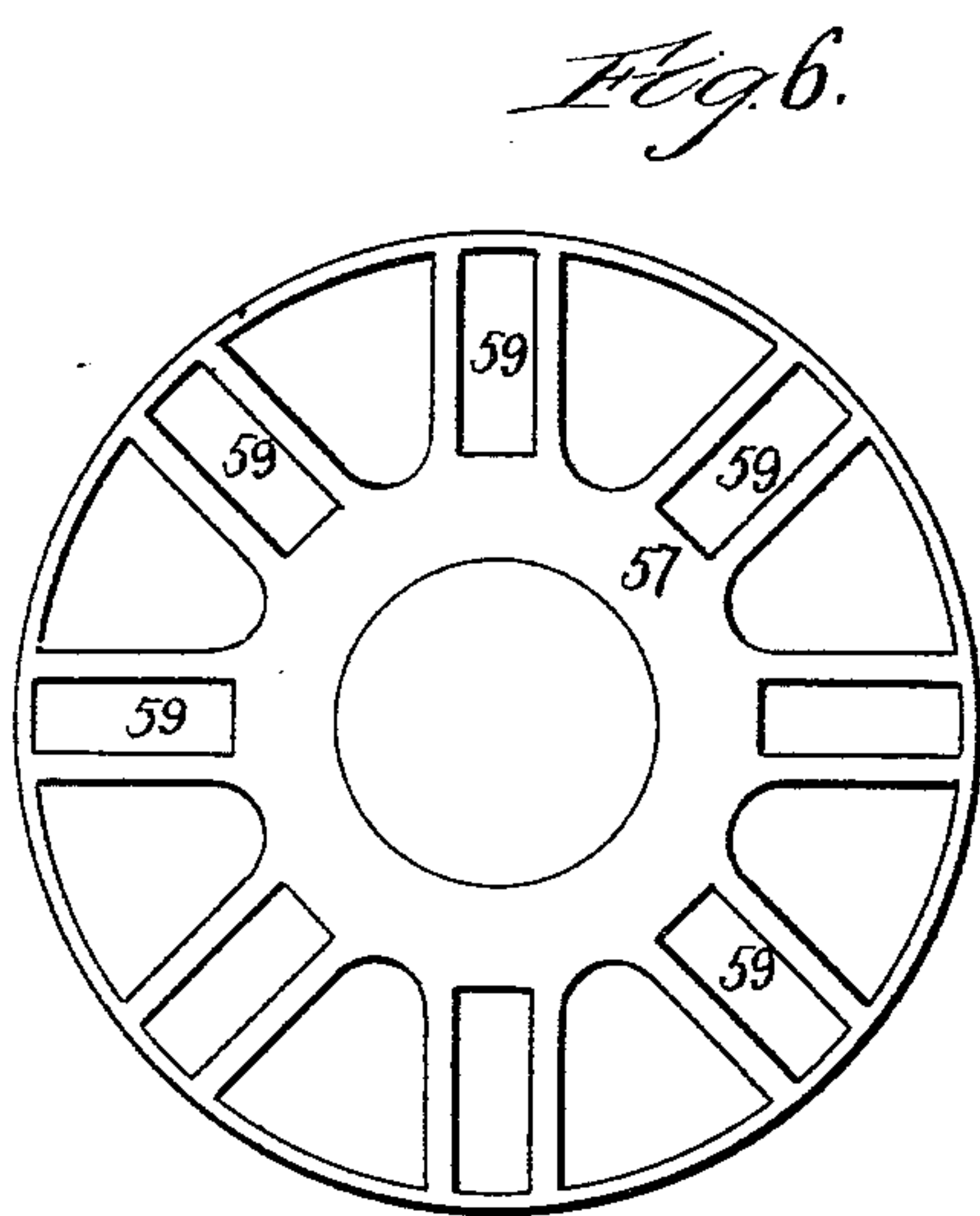
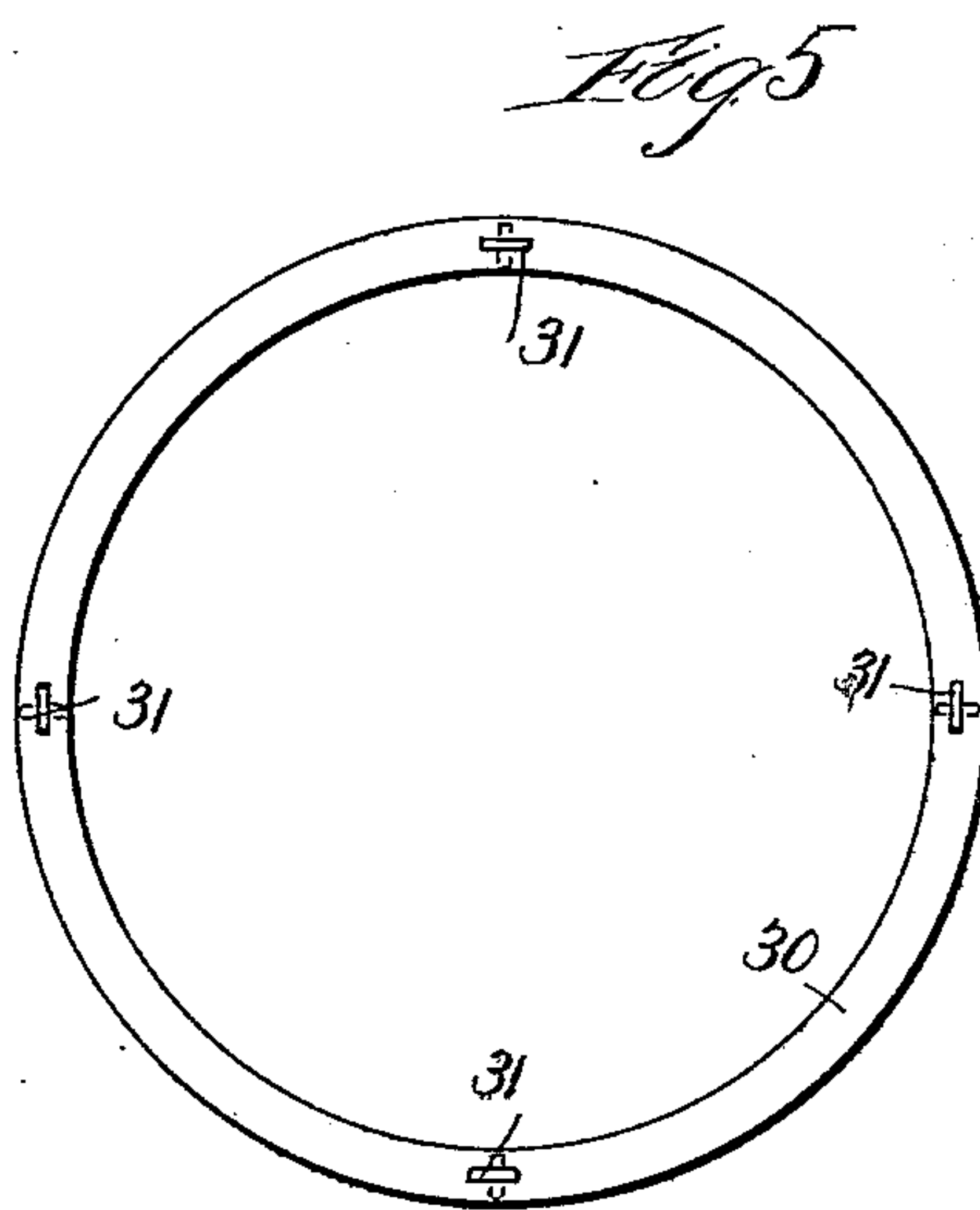
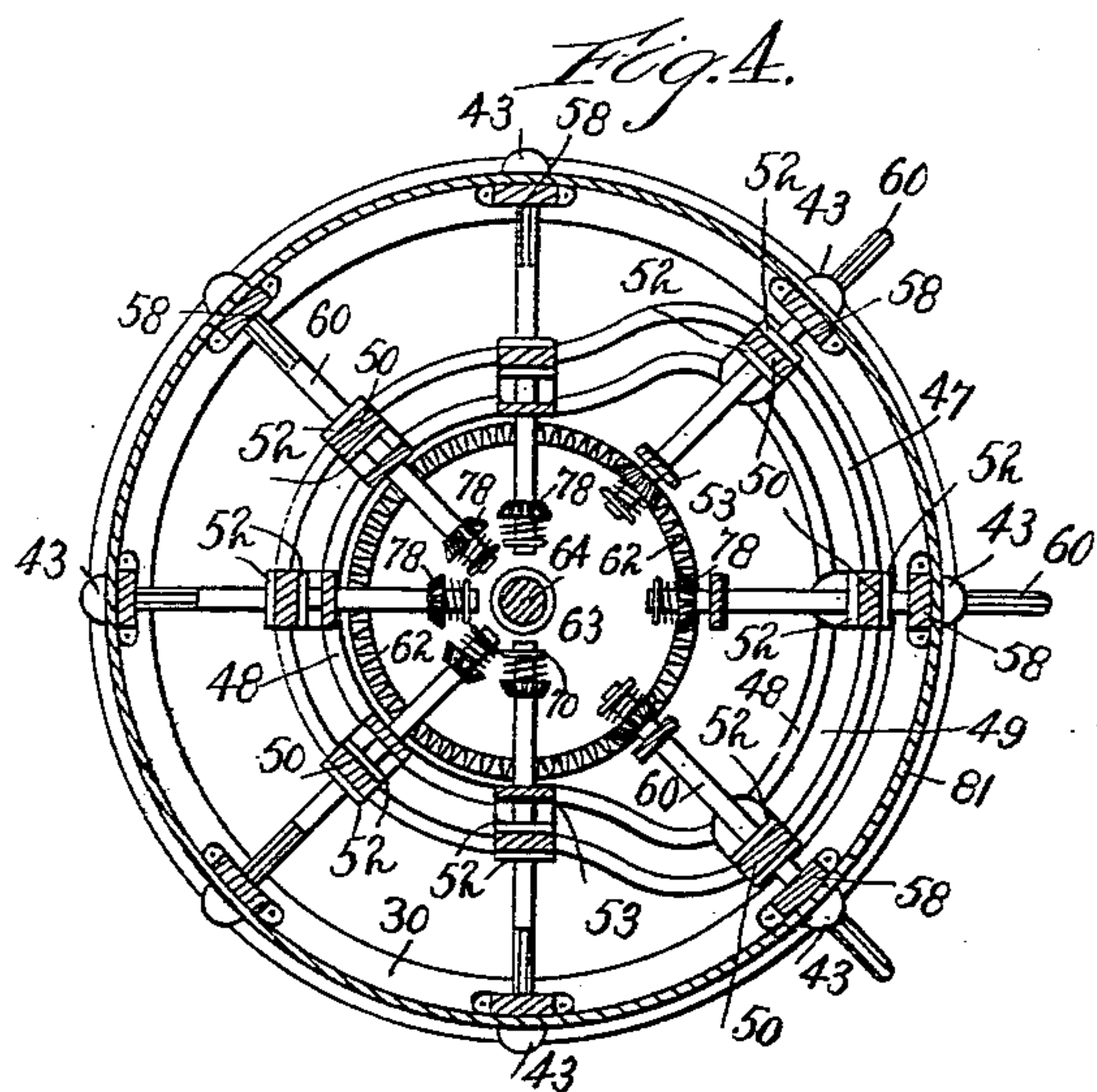
(No Model.)

4 Sheets—Sheet 4.

C. H. PICKERING.  
COTTON HARVESTER.

No. 555,118.

Patented Feb. 25, 1896.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

CHARLES H. PICKERING, OF HOUSTON, TEXAS, ASSIGNOR TO HIMSELF AND  
JOHN A. STEWART, OF SAME PLACE.

## COTTON-HARVESTER.

SPECIFICATION forming part of Letters Patent No. 555,118, dated February 25, 1896.

Application filed December 26, 1893. Serial No. 494,711. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. PICKERING, a citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in Cotton-Harvesters, of which the following is a specification, reference being had to the accompanying drawings, in which—

10 Figure 1 is a side elevation. Fig. 2 is a top or plan view. Fig. 3 is a rear view, one-half of the machine being in section. Fig. 4 is a section on line 4 4 of Fig. 3. Fig. 5 is an under side view of the lower ring. Fig. 6 is a plan view of one of the interior castings of the cylinders. Fig. 7 is an enlarged detail, being a partial view of one of the driving-wheels, showing the pawl and ratchet; and Fig. 8 is a view of one of the pickers.

20 My invention relates to machines for harvesting cotton, and has for its objects to provide a machine which will effectually pick all the ripe cotton without injury to the plants or to the unopened bolls; also to improve the construction of cotton-harvesters in general. I accomplish these objects as hereinafter specified and as illustrated in the drawings. That which I regard as new will be set forth in the claims.

30 In the drawings, 9 indicates the frame of the machine, which consists of two platforms 10 11 arranged at opposite sides of the machine, which platforms are connected by strong upright beams 12 and cross-beams 13 at the top of the beams 12, as best shown in Figs. 2 and 3. The frame of the machine is supported by drive-wheels 14 15, two of which are arranged at each side of the machine and are journaled upon axles 16 rigidly secured to said frame. The spindles of the axles 16 are at such a height that the platforms 10 11 will be held a short distance above the ground, as shown in Fig. 3. I prefer to secure the axles 16 to the frame by bending them, so that they will pass under the platforms 10 11, as shown in Fig. 3, by which construction the machine is made stronger. The platforms 10 11 are spaced a sufficient distance apart to adapt the machine to straddle a row of cotton-plants.

50 17 indicates sprocket-wheels, one of which

is mounted upon each spindle, preferably between the drive-wheels 14 15, as best shown in Figs. 1 and 2, the sprocket-wheels being connected to the drive-wheels by a pawl 79 and ratchet-wheel 80 so arranged that the sprocket-wheels 17 will be operated only by the forward motion of the machine.

The forward ends of the platforms 10 11 are made flaring, as shown in Fig. 2, the better to guide the cotton-plants between the two platforms.

18 19 indicate guards, preferably of sheet metal, which guards are arranged at the front ends of the platforms 10 11 and extend around the outer front edges of said platforms, as shown in Fig. 2, serving also as guides for the plants. The rear ends of the guards 18 19 extend backward to and on the outside of the drive-wheels 14, as shown in Fig. 2.

20 indicates guard-plates arranged at the inclined portions of the platforms 10 11.

21 indicates an upper inclined guard-plate, which extends across between and connects the upper ends of the plates 20. The lower end of the guard-plate 21 is about upon a level with the uppermost picking devices, its forward end being somewhat higher, by which construction it serves to direct the upper parts of the cotton-plants to the pickers.

22 indicates a driver's seat secured upon the forward portion of the frame 9.

23 24 indicate tongues, one of which is arranged at each side of the machine, as shown in Fig. 2.

25 26 indicate cylinders, one of which is mounted upon each platform 10 11. As the cylinders 25 26 and the parts contained in them are identical, it will be necessary to describe the construction of one of such cylinders only, and the corresponding parts in both cylinders will be indicated by similar reference-numerals.

The cylinder 25 is mounted between an upper plate, 27, and a lower plate, 28, the upper plate, 27, being rigidly secured to bars 29 secured at the upper portion of the frame of the machine. The cylinder 25 consists of a sheet-metal covering 81, which is secured upon a series of vertical bars 58 arranged at suitable distances apart and connected at their lower ends by a ring 30 and at their upper ends by



a cogged ring 32. The bars 58 are further braced by circular plates 56 57 connected to the different bars near their ends, as shown in Fig. 3. The lower plate, 28, is secured to the lower ends of the bars 58. The ring 30 is provided on its lower surface with rollers 31, and is adapted to fit in a suitable channel formed in the upper side of the lower plate, 28, in which channel said ring 30 is adapted to rotate, carrying the cylinder 25 with it.

33 indicates a bevel-gear which meshes with the ring 32, as shown in Figs. 2 and 3, and is mounted upon a shaft 34 journaled upon the upper part of the frame of the machine, as shown in Fig. 2, and extending transversely of said frame.

35 indicates a friction-clutch section, which is mounted upon a feather on the shaft 34 and is adapted to engage the other section of a clutch which is loosely mounted upon said shaft.

36 indicates a sprocket-wheel which is loosely mounted upon the shaft 34 and is rigidly secured to the loosely-mounted clutch-section.

37 indicates a link-belt which connects the sprocket-wheel 36 to the sprocket-wheel 17, by which construction the shaft 34 may be rotated from the sprocket-wheel 17 when the clutch-sections are in frictional contact with each other.

The clutch-section 35 is operated by means of a hand-lever 38, to which it is connected by connecting-rods 39 40, as best shown in Fig. 2. As above stated, similar apparatus is provided on the opposite side of the machine for driving the cylinder 26, and the clutch-section 35 on the other side of the machine is operated by means of a lever 38 by connecting-rods 41 42, as shown in Fig. 2, by which construction the two clutch-sections may be operated simultaneously.

The plate 81 is perforated, the perforations being preferably arranged in vertical and horizontal rows, as shown in Fig. 3.

43 indicates buttons, one of which is placed around each perforation in the plate 81. The object of such perforations will be more fully hereinafter set forth.

44 45 indicate flanges formed on the under face of the top plate, 27, forming a cam groove or guide 46, as shown in Fig. 3.

47 48 indicate corresponding flanges formed on the upper face of the bottom plate, 28, which flanges form a cam-groove 49 similar to the cam-groove 46, and located immediately under it. The shape of the groove 49 formed by the flanges 47 48 is best shown in Fig. 4.

50 indicates a number of bars arranged vertically in the cylinder 25. The ends of said bars project into the guides 46 and 49, as best shown in Fig. 3, and they are provided with cup-shaped recesses in their lower ends in which are held steel balls 51, which run in the lower guides, 46. A bar 50 is provided for each vertical row of perforations in the cylinder, as shown in Fig. 4. Each bar 50 is

provided with a series of perforations, one being placed opposite each perforation in the cylinder.

53 indicates upright bars, one of which is secured to the plates 56 57 opposite each bar 50, as best shown in Figs. 3 and 4. When the bars 50 are revolved around the interior of the cylinder, as will be hereinafter described, they will move toward and from the center of the cylinder, owing to the peculiar shape of the cam-guides 46. To permit of such movement of the bars 50, the plates 56 57 are provided with a number of slots 59, through which the bars 50 pass, such slots being of sufficient length to permit the necessary radial motion of the bars 50. In order to prevent said bars from rotating they are flattened where they pass through the slots 59, and said slots are made sufficiently narrow to prevent the rotation of said bars.

60 indicates pickers, a number of which are mounted in the cylinder 25, one being provided for each perforation in said plate 81 when the whole number of pickers are used. The pickers 60 are journaled in the perforations in the bars 50 in such manner that they cannot move longitudinally, which result I secure preferably by providing each picker with collars 52 placed at opposite sides of the bar 50, as best shown in Figs. 3 and 4. The outer ends of the pickers are fluted, or provided with a number of grooves tapering toward the outer ends of the pickers. The inner ends of the pickers pass through bearings formed in the upright bars 53, and are provided with beveled gears 78, which are fixedly secured in position near the inner ends of the pickers, as best shown in Fig. 3.

When the cylinder 25 is rotated the bars 50 will be moved radially in the guides 46 and 49, as above described, thereby retracting or projecting the pickers. The shape of the cam-guides is such that the pickers will be caused to project from the cylinder for about one-fourth of a revolution, being drawn back into the cylinder during the remainder of the revolution; and, as shown in the drawings, the pickers are projected from the cylinder when they are turned toward the row of plants between the two platforms, the pickers upon the opposite platform projecting at the same time, whereby they co-operate to strip the cotton from the plants as the machine progresses.

In addition to their radial movement, the pickers 60 are given a rotary motion by means of the gears 78, which mesh with the teeth of circular racks 62, which are formed upon plates 63 supported by a vertical shaft 64, which is placed centrally of the cylinder 25 and supported between the upper and lower plates 27 28, as shown in Fig. 3. The shaft 64 is provided at its upper end with a beveled pinion 65, which meshes with a beveled gear 66 mounted upon the shaft 34, to which it is keyed. By this construction the forward motion of the machine will cause the shaft 64 to rotate, also rotating the plate 63, and conse-



quently rotating the pickers 60 when the gears 78 carried by them are in mesh with the racks 62. When the pickers are retracted the gears 78 will move back out of mesh with the racks 62. The rotation of the pickers therefore ceases, facilitating the operation of stripping the cotton from them.

In practice the racks 62 and beveled pinions 78 are made comparatively narrow and the end teeth are made to gear somewhat loosely, so that in operation the differences in the speed of travel between the small and large portions of the pinion will be compensated for and the gearing rendered effective.

Owing to the fact that the cotton upon the lower part of the plants is the first to mature, it is desirable that means should be provided for throwing the pickers at the upper part of the machine out of operation when operating in the early part of the season, so that the unopened bolls should not be injured by harvesting the mature cotton. To accomplish this object I mount the plates 63 upon a number of sleeves 67 68 69, which are mounted upon the shaft 64 one above the other, as shown in Fig. 3. The different sleeves 67 68 69 are secured to the shaft 64 by set-screws or other suitable devices, so that any one of them may be thrown out of operation by loosening its set-screws, by which construction all the pickers operated by the sleeves so loosened may be thrown out of operation.

Inasmuch as the pickers will not pick the cotton unless they rotate, the young cotton and the unopened bolls will not be injured by those pickers which are thrown out of operation, as above stated.

I do not wish to limit myself to the use of any particular number of sleeves, as it is obvious that any desired number may be provided.

To secure a yielding engagement between the gears 78 and the racks 62, I provide each picker with a pin or plate 70, which is secured upon its inner end, between which plate and the adjacent gear is placed a spring 54, as shown in Fig. 3. The springs 54 serve to prevent injury to the teeth of the racks and gears when the pickers are moved outward, but their tension is sufficient to hold the gears in operative engagement with the corresponding racks when the pickers are in their projected position.

The cylinders 25 26 rotate in opposite directions, the direction of rotation being indicated by the arrows in Fig. 2, and the pickers are also rotated in opposite directions, which method of operation secures the best results, as the pickers carried by the two cylinders operate together to thoroughly strip the cotton from the plants.

Back of each of the cylinders 25 26 is provided a brush 71, arranged with its axis in a vertical position supported between the base of the machine and the cross-bar 13, as best shown in Figs. 2 and 3. The brushes 71 are adapted to rotate upon their axes, such rota-

tion being imparted to them by belts 72, which pass around the upper ends of the cylinders 25 26 and the upper ends of the brush-hubs 73, as shown in Fig. 3. The belts 72 are crossed, so that the brushes are caused to rotate in a direction opposite to that in which the cylinders rotate. As shown in Fig. 2, the brushes are located in proximity to the rear portions of the cylinders, the arrangement being such that they will aid in stripping the cotton from the pickers and carrying it back into boxes 74 arranged back of the brushes, as shown in Fig. 2. 75 76 indicate the sides of the boxes. Each box 74 is provided at the rear with a door 77 for the removal of the cotton. As best shown in Fig. 3, the boxes 74 are open at the top and are extended to the back of the frame of the machine, so as to provide a large receptacle for the gathered cotton.

The operation of my improved machine is as follows: As the machine moves forward, straddling a row of cotton-plants, the cylinders 25 26 will be rotated in the directions indicated by the arrows in Fig. 2. The arrangement of the gears is such as to make the speed of rotation of said cylinders somewhat slower than that of the machine, which arrangement permits the pickers to drag slightly against the cotton-plants, and, to a certain extent, assist in propelling the machine. It also serves to make the pickers more efficient in stripping the cotton from the plants and permits them to slip off of the limbs. The opposite pickers of each cylinder will project from the cylinder in the position shown in Fig. 3, and by the forward motion of the machine they will be caused to rotate, such rotary motion being sufficiently rapid to wind up upon them and hold any opened cotton that they may touch, but they will not take up leaves or twigs or injure the unopened bolls. As the cylinders rotate, the pickers bearing the cotton will pass to the rear of the cylinders, where they will be retracted, causing the cotton to be stripped from them and to drop into the forward ends of the boxes 74. The brushes 71 will aid in removing the cotton from the pickers, and when so removed will carry it back into their respective boxes. The pickers after being withdrawn will pass around to the front of the cylinders, where they will be again projected as before.

I prefer to make the pickers of steel well tempered, and of such size as to be both strong and flexible and not liable to break. By operating the pickers as above described, their action upon the cotton-plants will be gentle and easy, and there will be no thrashing against the limbs or injury to the unopened bolls or the cotton. This construction also prevents the pickers from gathering anything but clean cotton.

In the drawings I have shown the pickers as provided with beveled gears which mesh with circular racks for rotating the pickers upon their axes, and this construction is the



one which I prefer to use, but I have found that very good results can be obtained by using friction-plates which engage friction-wheels carried by the pickers.

5 That which I claim as my invention, and desire to secure by Letters Patent, is—

1. In a cotton-harvester, the combination with a supporting-frame, of a rotary cylinder mounted thereupon, rotary pickers carried by  
10 said cylinder, means for rotating said pickers, means for projecting said pickers through the wall of said cylinder to cause them to engage the plants, and means for retracting said pickers through the said wall for the re-  
15 moval of the picked cotton from them, substantially as described.

2. In a cotton-harvester, the combination with a supporting-frame, rotary picker-supporting devices carried thereby, and axially-  
20 rotatable and lengthwise-movable pickers carried by said picker-supporting devices, said pickers being arranged at different heights, of means for rotating said pickers, means for projecting said pickers to cause  
25 them to engage the cotton and for retracting the pickers for stripping the cotton therefrom, and means for connecting and disconnecting said rotating mechanism and certain of said  
30 pickers, whereby pickers at different heights may be thrown into or out of operation independently of each other, substantially as described.

3. In a cotton-harvester, the combination with a supporting-frame adapted to straddle  
35 a row of plants, of rotary hollow picker-supporting devices arranged at opposite sides of said frame, axially-rotatable and lengthwise-movable pickers carried by said picker-supporting devices, means for projecting said  
40 pickers through the walls of said hollow picker-supporting devices to cause them to engage the cotton and means for retracting the pickers therethrough for stripping the cotton therefrom, and devices for collecting  
45 the cotton stripped from said pickers, substantially as described.

4. In a cotton-harvester, the combination with a supporting-frame, of upper and lower plates carried thereby, a cylinder mounted  
50 between said plates and adapted to rotate upon said lower plate, a gear secured to said cylinder, means for rotating said gear by the forward motion of the machine, rotary pickers carried by said cylinder, means for rotating  
55 said pickers, and means for projecting and retracting said pickers through the wall of the cylinder, substantially as described.

5. In a cotton-harvester, the combination with a supporting-frame, of a rotary cylinder  
60 mounted thereupon, upper and lower plates arranged at the ends of said cylinder, said plates having cam-grooves, bars arranged within said cylinder and having their ends fitted into said grooves, axially-rotatable and  
65 lengthwise-movable pickers carried by said

bars and adapted to be projected through said cylinder, and means for rotating said cylinder, substantially as described.

6. In a cotton-harvester, the combination with supporting devices, of a rotary cylinder  
70 mounted thereupon, pickers carried by said cylinder, means for projecting and retracting said pickers through the wall of said cylinder, and mechanism for rotating said pickers when  
75 projected, and means for throwing said mechanism out of operation when the pickers are retracted, substantially as described.

7. In a cotton-harvester, the combination with a supporting-frame, of a rotary cylinder  
80 carried thereby, pickers carried by said cylinder and adapted to be moved longitudinally through the walls of the picker and retracted therethrough, gears carried by said pickers, a central shaft mounted in said cylinder, rack-  
85 plates mounted upon said shaft, the teeth of said rack-plates being adapted to mesh with said bevel-gears, and means for rotating said rack-plates, substantially as described.

8. In a cotton-harvester, the combination with a supporting-frame, of a rotary cylinder  
90 mounted thereupon, pickers carried by said cylinder and adapted to be moved longitudinally through the walls of the picker and retracted therethrough, gears carried by said  
95 pickers, a shaft centrally mounted in said cylinder, sleeves mounted upon said shaft, rack-plates mounted upon said sleeves and adapted to mesh with said gears, and means for rotating said shaft, substantially as described.

9. In a cotton-harvester, the combination with a supporting-frame, of a rotary cylinder  
100 carried thereby, pickers carried by said cylinder and adapted to be moved longitudinally through the walls of the picker and retracted  
105 therethrough, gears carried by said pickers, a central shaft mounted in said cylinder, rack-plates mounted upon said shaft, the teeth of said rack-plates being adapted to mesh with said bevel-gears, means for rotating said rack-  
110 plates, said gears being thrown out of mesh with said racks by the retraction of the pickers, substantially as described.

10. In a cotton-harvester, the combination with a supporting-frame, of a rotary cylinder  
115 mounted thereupon, upper and lower plates arranged at the ends of said cylinder, said plates having cam-grooves, bars arranged within said cylinder and having their ends fitted into said grooves, pickers journaled in  
120 said bars, and adapted to be projected through said cylinder, gears 78 carried by said pickers, rack-plates adapted to engage said gears, means for rotating said rack-plates, and  
125 springs 54 upon said pickers, substantially as described.

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Witnesses:

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