

No. 663,743.

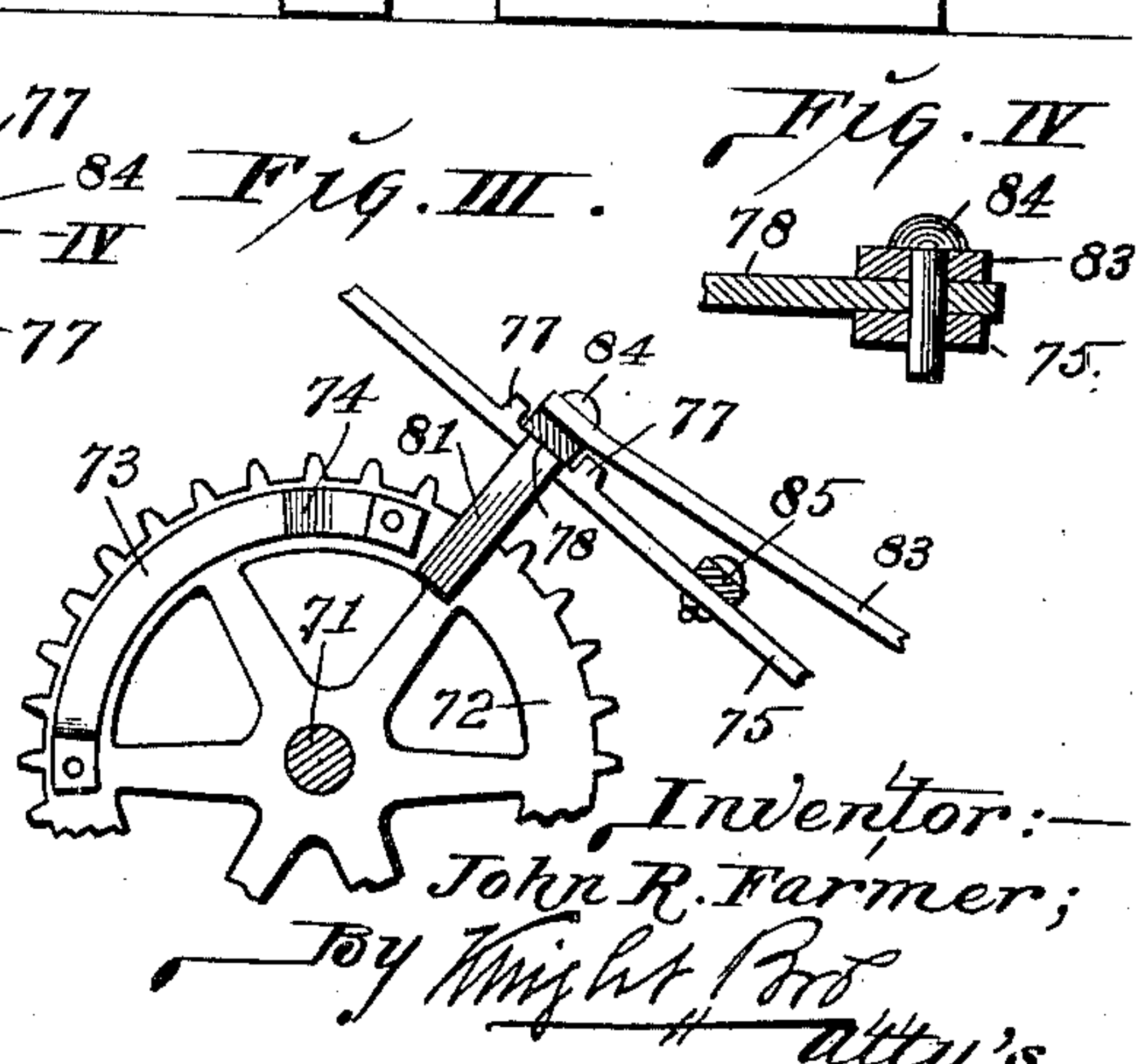
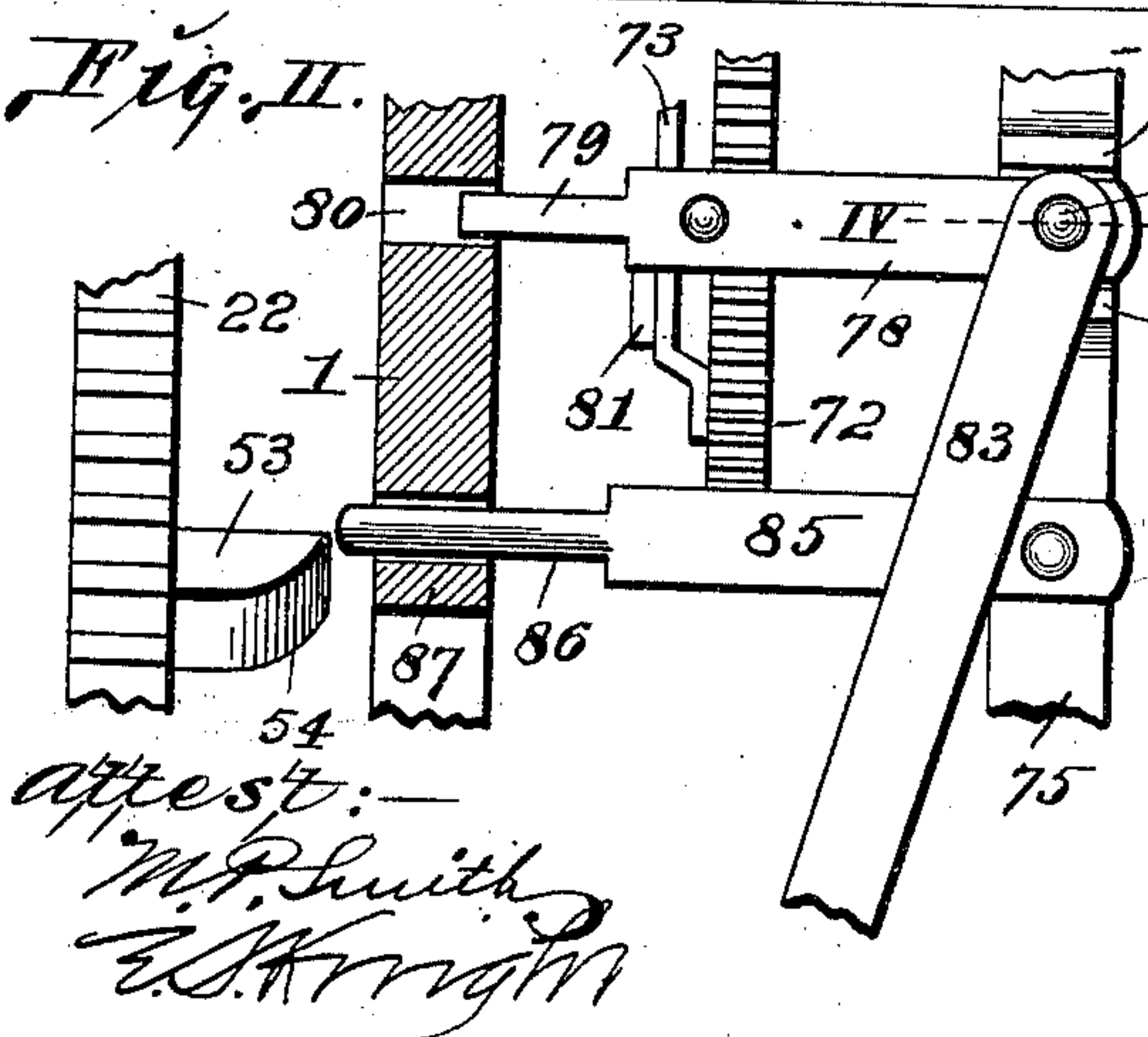
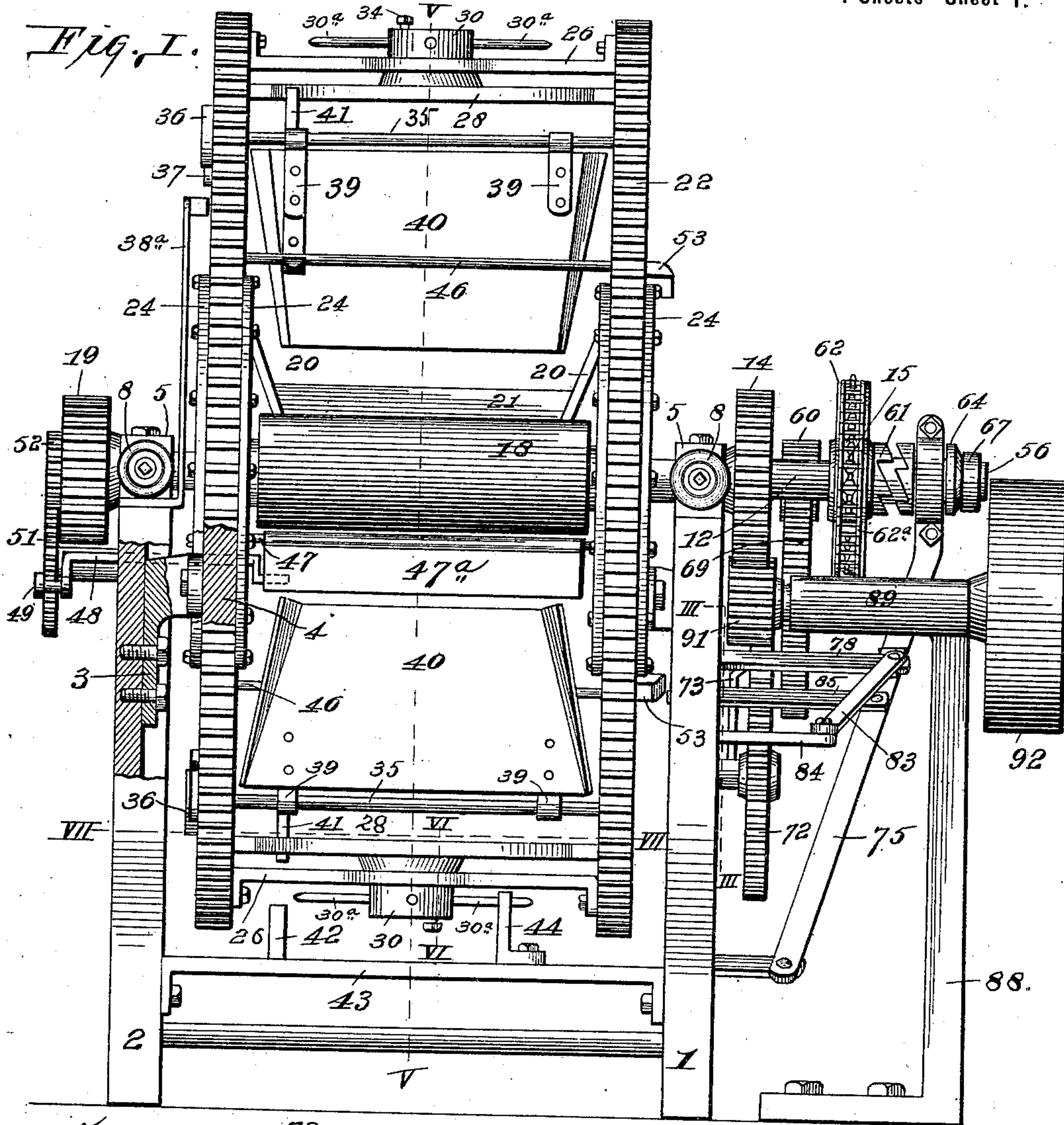
Patented Dec. 11, 1900.

J. R. FARMER.
DOUGH ROLLING MACHINE.

(Application filed Sept. 4, 1900.)

(No Model.)

4 Sheets—Sheet 1.



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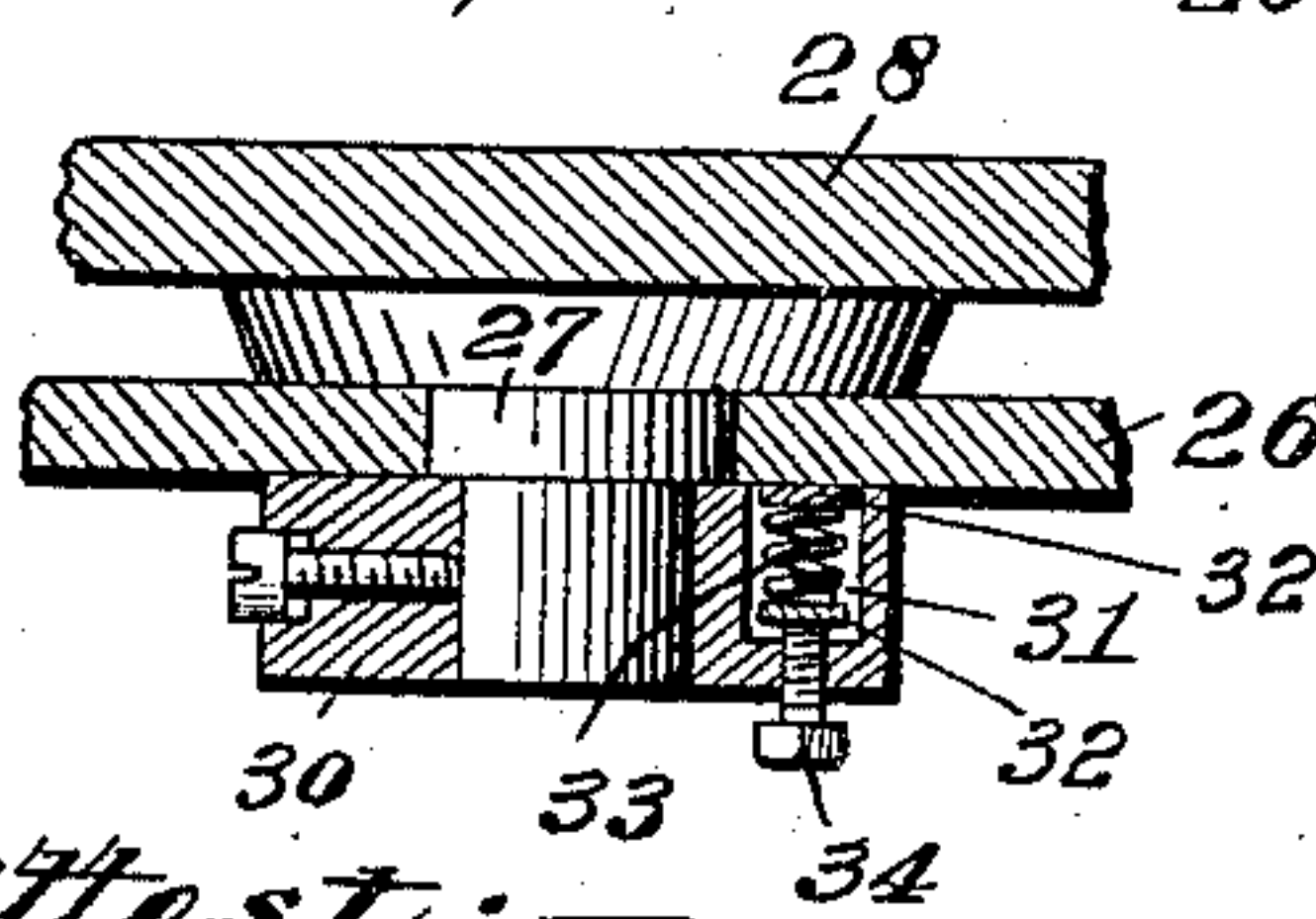
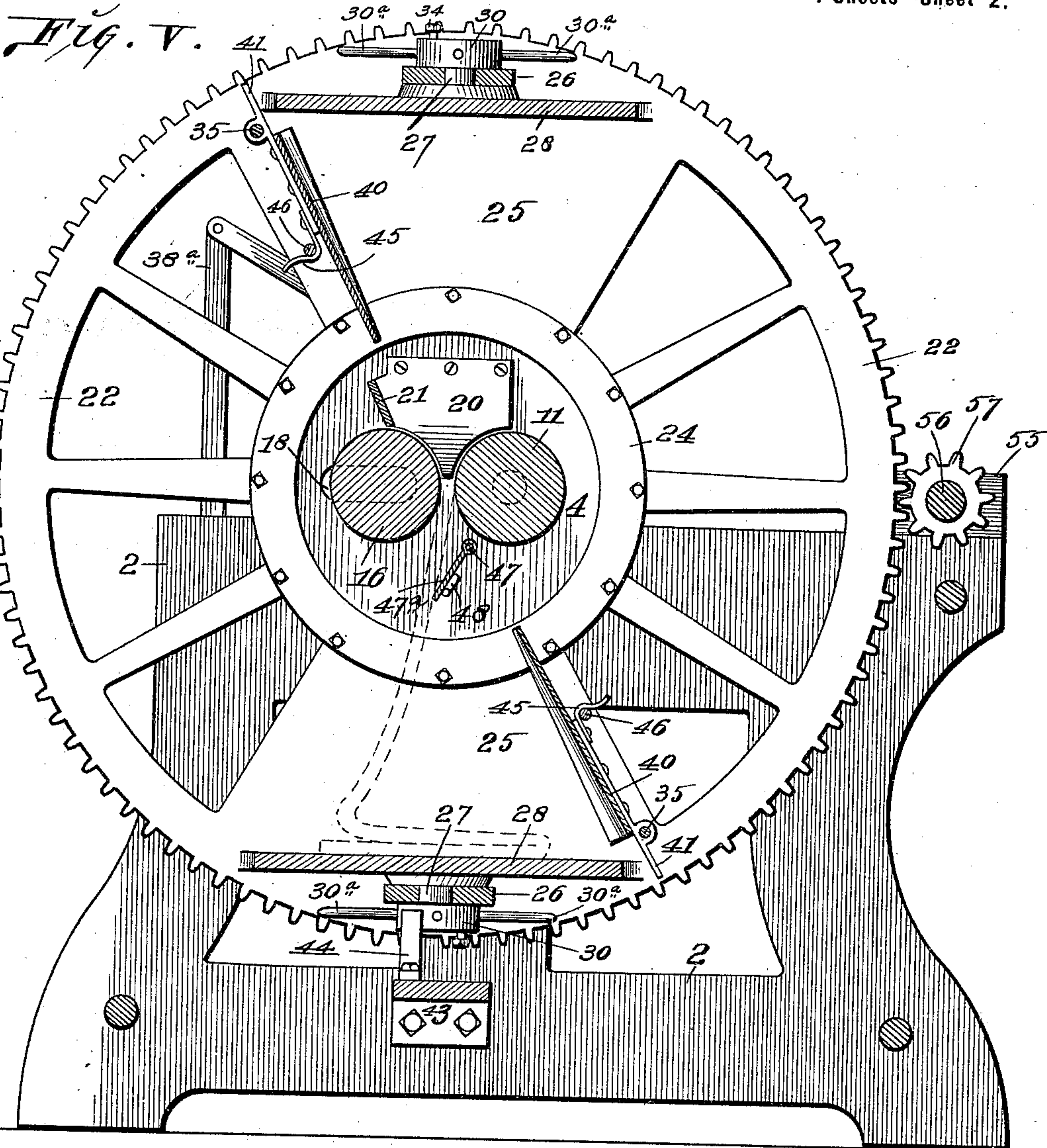
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4 Sheets—Sheet 2.



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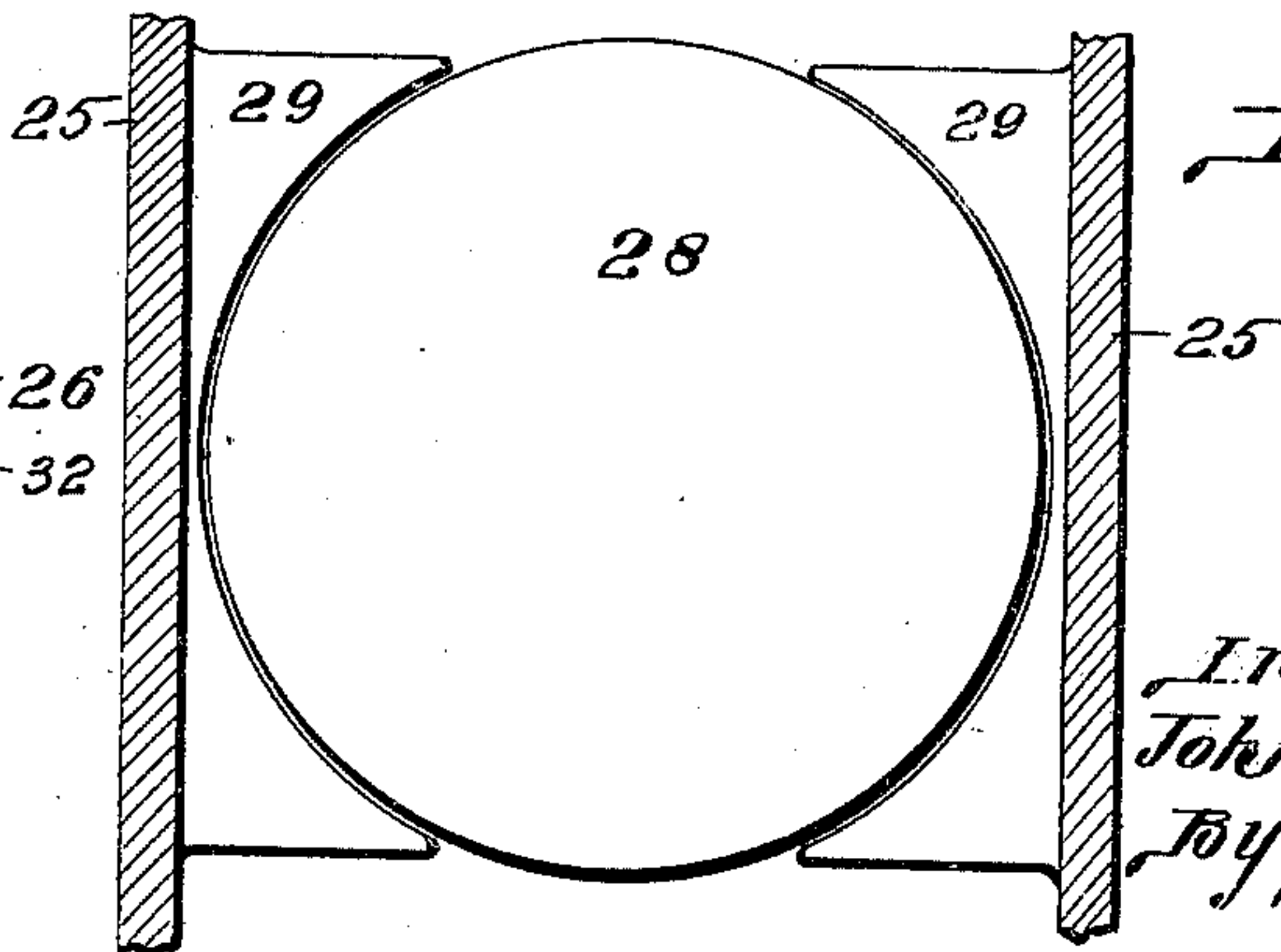


Fig. VII.

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Fig. VIII.

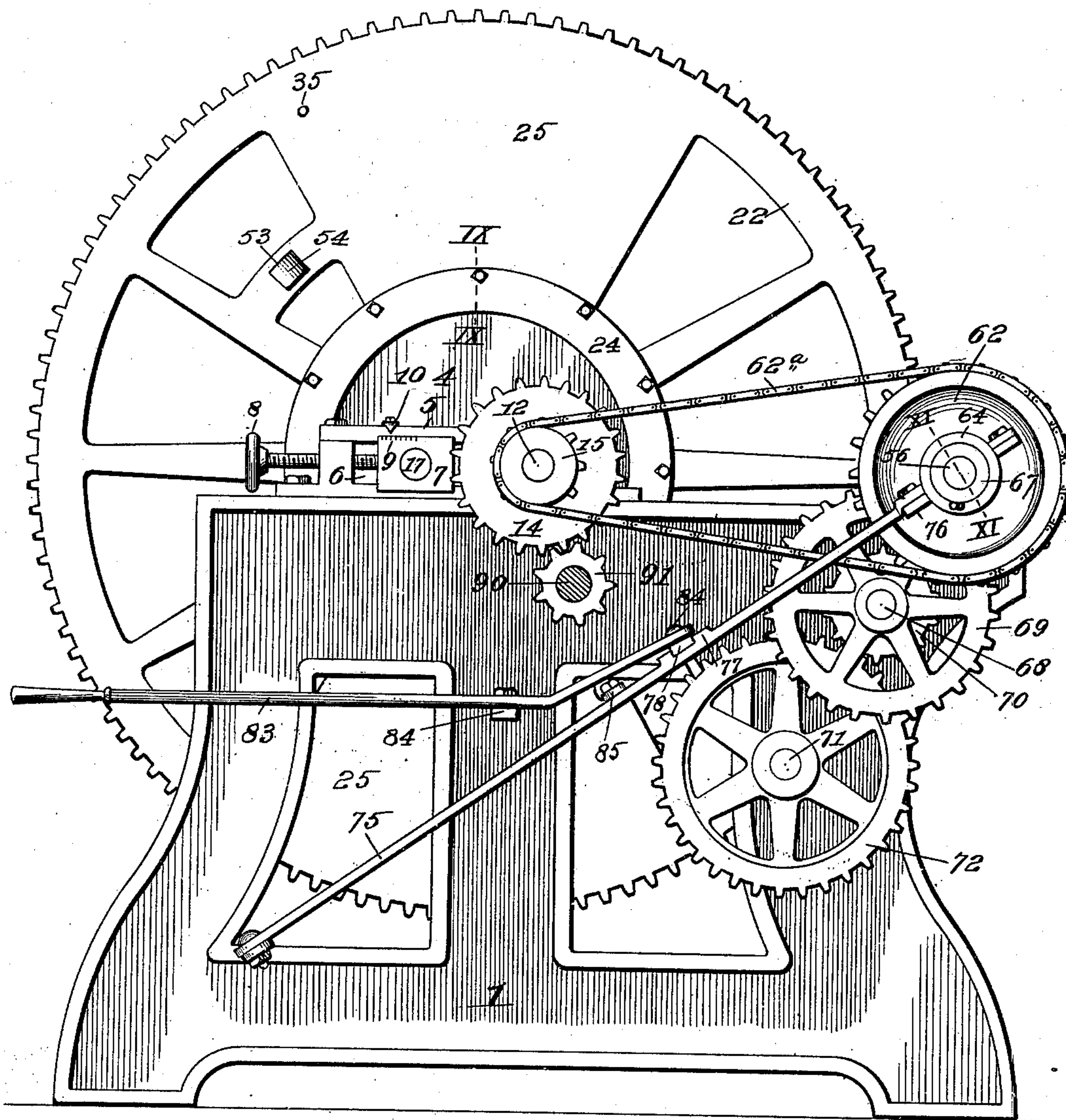
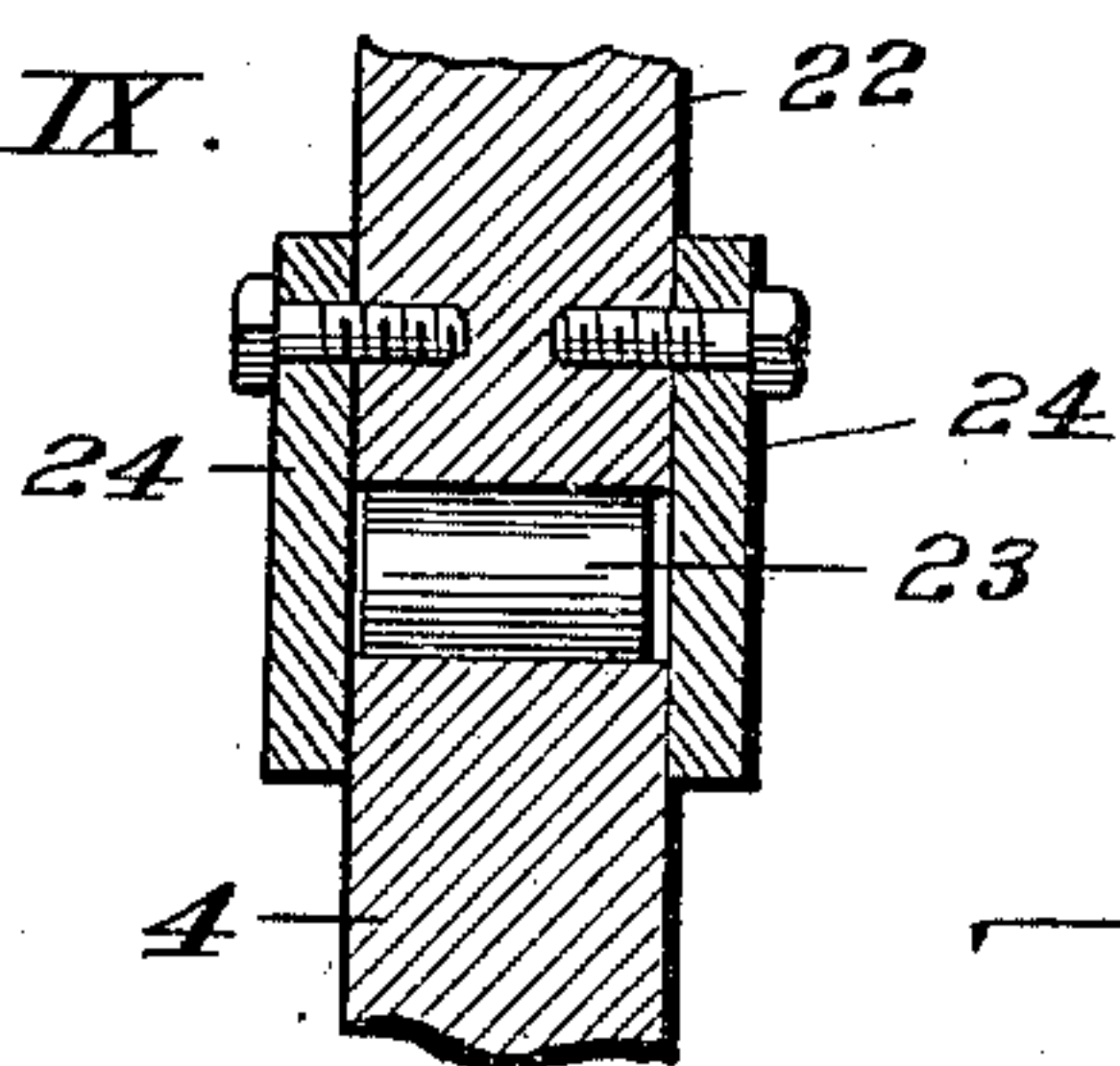


Fig. IX.



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Fig. X.

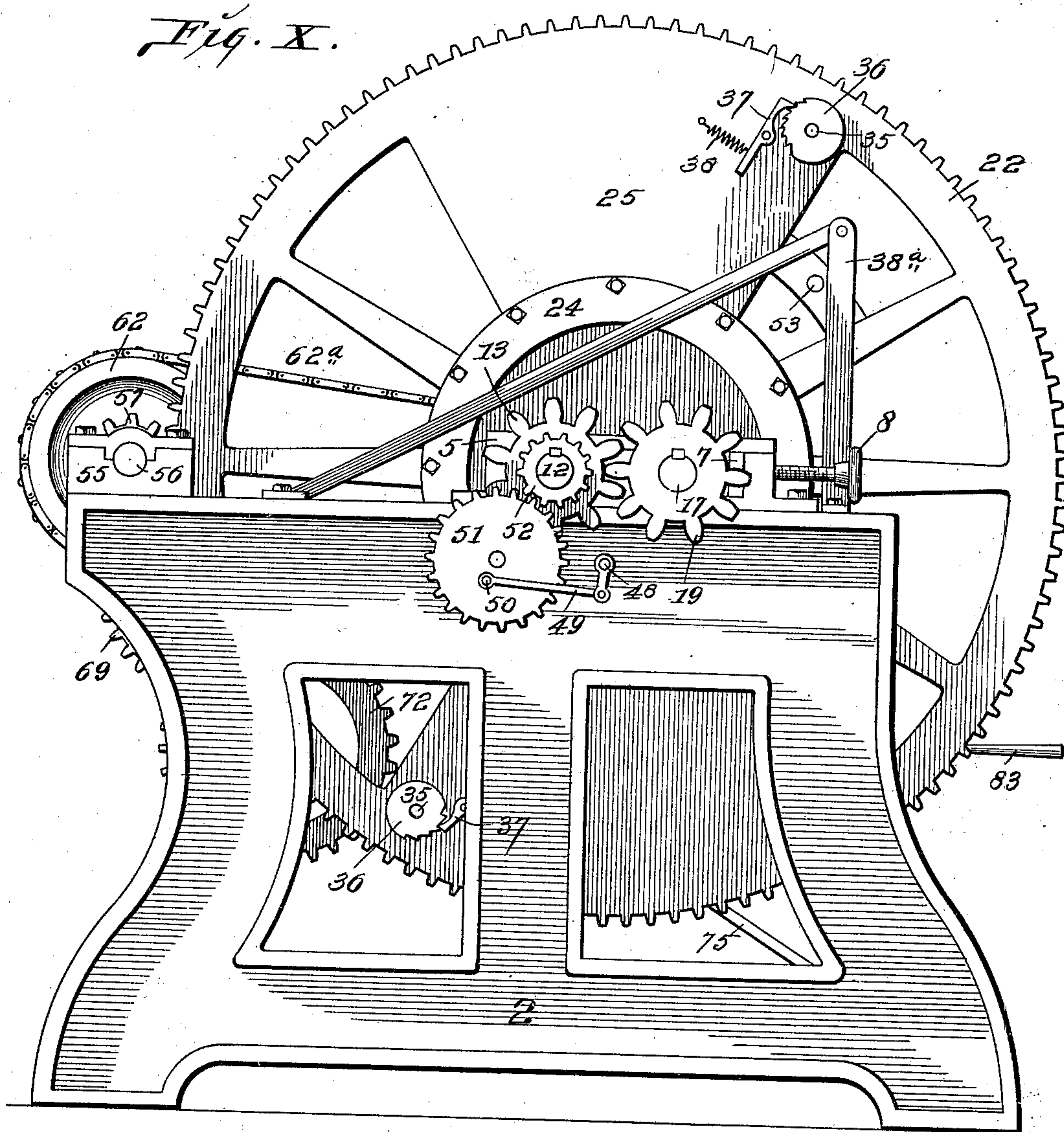
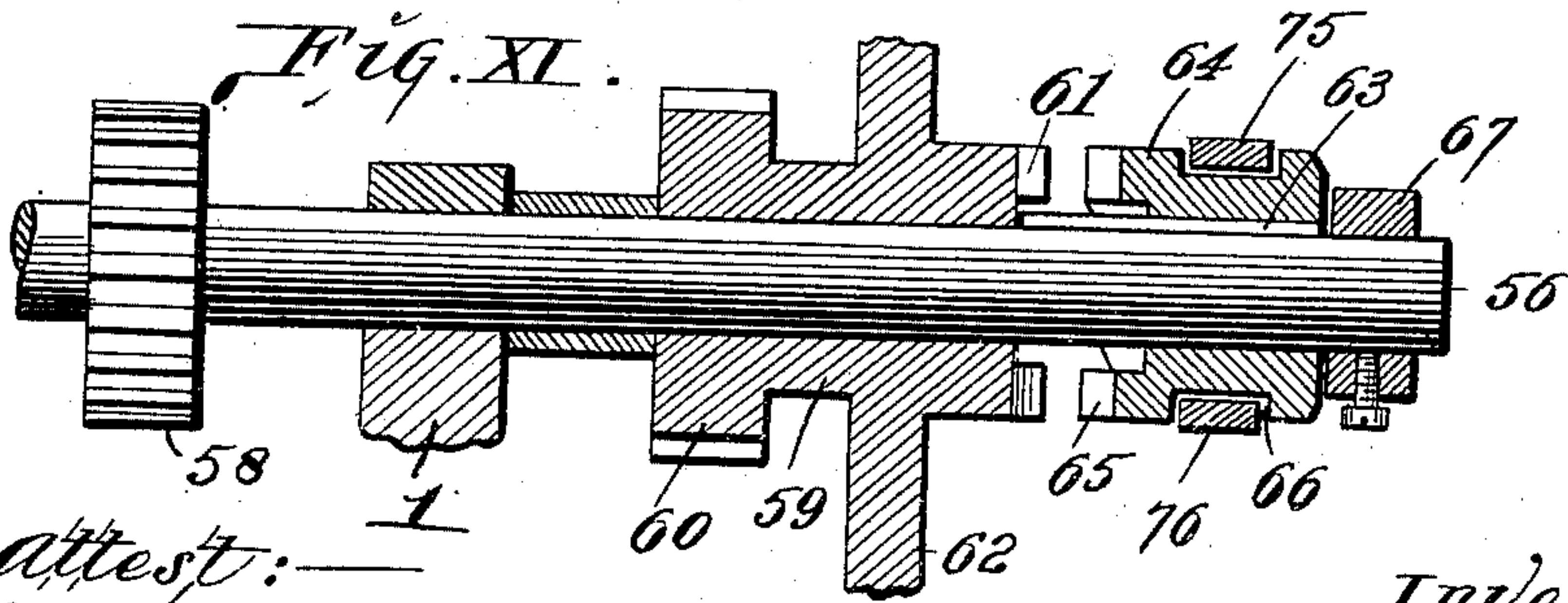


Fig. XI.



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UNITED STATES PATENT OFFICE.

JOHN R. FARMER, OF ST. LOUIS, MISSOURI, ASSIGNOR OF FIVE-SIXTHS TO ADOLPH BOETTLER, HENRY F. W. RUHE, AND EDWARD CORNET, OF SAME PLACE.

DOUGH-ROLLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 663,743, dated December 11, 1900.

Application filed September 4, 1900. Serial No. 28,867. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. FARMER, a citizen of the United States, residing in the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Dough-Rolling Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

The invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a front elevation of my improved dough-rolling machine. Fig. II is an enlarged detail partial sectional view of the starting and stopping mechanism. Fig. III is a detail sectional view taken on the line III III, Fig. I. Fig. IV is a detail sectional view taken on the line IV IV, Fig. II. Fig. V is a vertical sectional view taken on line V V, Fig. I. Fig. VI is a detail vertical sectional view taken on the line VI VI, Fig. I. Fig. VII is a horizontal sectional view taken on the line VII VII, Fig. I. Fig. VIII is an elevation of the right-hand side of the machine. Fig. IX is an enlarged detail sectional view taken on the line IX IX, Fig. VIII. Fig. X is an elevation of the left-hand side of the machine. Fig. XI is a detail sectional view taken on line XI XI of Fig. VIII.

In the construction of the machine as shown 1 and 2 designate the right and left hand side frames of the machine, the same being alike in form and size and framed together in any suitable manner. Bolted to the inside faces of the upper portions of these frames 1 and 2 are brackets 3, the upper ends of which extend inwardly toward one another and being bolted to the lower outside faces of bearing-

disks 4. Bolted to the tops of the side frames 1 and 2, adjacent the disks 4, are the bearing-boxes 5, provided with longitudinally - extending slots 6 in their forward ends, in which are adjustably held the bearing-blocks 7, that are manipulated by the hand-wheels 8. A scale or series of marks of graduation 9 are placed on the outside faces of the upper edges of the blocks 7, and fingers 10 are fixed on the top sides of the bearing-boxes 5, the purpose

of these fingers and scales being presently shown.

The rear roller 11 of the machine is positioned between the bearing-disks 4, its trunnions 12 passing through suitably - located apertures in said disks and being journaled in the fixed bearing-boxes 5. A gear-wheel 13 is fixed upon the end of the left-hand trunnion that projects beyond the left bearing-box, and a gear-wheel 14 and a small sprocket-wheel 15 are positioned upon the right-hand trunnion 12 outside the right-hand bearing-box 5. The front roller 16 is of the same size and occupies the same horizontal plane with the rear roller 11, said front roller being provided with trunnions 17, which extend through horizontally-arranged slots 18, formed in the bearing-disks 4, and are journaled in the adjustable bearing-blocks 7. Upon the trunnion 17, that projects through the left-hand one of the blocks 7, is fixed a gear-wheel 19, which meshes with the gear-wheel 13. By manipulating the hand-wheels 8 to move the bearing-blocks 7 backwardly or forwardly the distance between the rollers 11 and 16 can be regulated as desired, and the distance between said rollers can be instantly ascertained by glancing at the scales 9 beneath the fingers 10. The teeth of the gear-wheels 13 and 19 are necessarily elongated in order to accommodate this adjustment of the rollers.

Fixed to the inner faces of the bearing-disk 4 above the rollers are the plates 20, which extend inwardly and downwardly and, together with a transversely-extending strip 21, positioned above the adjustable roller 16, form a hopper that discharges between the rollers.

Arranged for rotation upon each bearing-disk 4 is a large gear-wheel 22, there being antifriction-rollers 23 positioned between the peripheries of said bearing-disk and the bearing-surfaces of the wheels 22, these rollers being held in position by the rings 24, that are bolted to the gear-wheels 22 and extend over the edges of the disks 4, these rings also retaining the wheels upon the disks. (See Fig. IX.) Each gear-wheel 22 is constructed with an oppositely-arranged solid web portion 25, and extending from these web portions

of one wheel to the other at points adjacent the peripheries of the wheels are the bars 26. Journalled in the center of each bar 26 is a short shaft 27, upon the inner end of which
 5 is fixed a rotating table or disk 28, the same operating between flanges 29, that are formed integral with the web portions 25 of the wheels 22. (See Figs. VI and VII.) Remov-
 10 27, that project through the bars 26, are circular heads 30, each provided with four radially-arranged outwardly-projecting fingers 30^a. Formed in each head 30 is a recess 31, occupied by a pair of washers 32, between
 15 which is arranged an expansive coil-spring 33. The outer one of these washers bears directly against the face of the bar 26, and the inner washer is engaged by a set-screw 34. Thus an adjustable tension is provided which
 20 regulates the rotation of the heads 30 and consequently of the disks 28. (See Fig. VI.) Extending between and rotatably arranged in the gear-wheels 22 at one side of the web portions 25 are the shafts 35, the left-hand ends
 25 of which project through the left gear-wheel 22 and are there provided with the ratchet-wheels 36. Detents 37 are pivotally arranged on the outer face of the left-hand gear-wheel 22 adjacent these ratchet-wheels, and retract-
 30 ile coil-springs 38 are secured to said detents in such a manner as to cause their points to engage between the notches of the ratchet-wheels. (See Fig. X.) Bolted to the top of the side frame 2 in front of the bearing-box 5 thereon is a standard 38^a, suitably
 35 braced, the upper end of which lies in the path of travel of the rear ends of the detents 37.

Secured by a pair of hinges 39 to each
 40 shaft 35 is a sheet-metal plate 40, which acts as a retainer for the dough while it is on the rotating disk or platform and also as a chute for causing the dough to pass into the hopper above the pair of rollers 11 and 16. One
 45 member of each pair of hinges is provided with an outwardly-extending finger 41, which during the rotation of the gear-wheels 22 strikes against a vertically-arranged pin 42, carried by a bar 43, that extends between and is fixed
 50 to the lower portions of the frames 1 and 2. (See Fig. I.) This bar 43 also carries an upwardly-projecting finger 44, which lies directly in the path of travel of the fingers 30^a, carried by the head 30. Secured to the rear
 55 side of each of the sheet-metal plates 40 is a spring hook or catch 45, which when the plate swings outwardly from the rotating disk or platform 28 engages upon a rod 46, which is transversely arranged between each pair
 60 of the web portions 25. (See Figs. I and V.)

Loosely journalled upon a rod 47, that is positioned between the disks 4 below the rear roller 11, is an apron 47^a, which is for the purpose of causing the dough as it passes
 65 from between the rollers 11 and 16 to fold backwardly and forwardly upon the lower one of the disks or tables 28. Motion is im-

parted to this apron by means of a crank-shaft 48, that is journalled in the left-hand side frame 2 and left-hand disk 4, the inner
 70 end of said crank-shaft engaging behind the left-hand end of said apron and the outer end of said shaft being connected to one end of a short pitman 49. The opposite end of this
 75 pitman 49 is journalled upon a wrist-pin 50, carried by a gear-wheel 51, rotatably arranged on a suitable bearing and driven by a small gear-wheel 52, that is fixed upon the left-hand trunnion 12 of the roller 11, which trunnion
 80 also carries the gear-wheel 13. Fixed to the right-hand end one of the gear-wheels 22, to one side of the web portions 25 thereof, is a pair of oppositely-arranged outwardly-projecting pins 53, the outer faces of which are curved or beveled, as indicated by 54. The
 85 object of these pins 53 is to throw out of operation the mechanism which intermittently rotates the gear-wheels 22 and the mechanism carried thereby.

Journalled for rotation in bearings 55, that
 90 are fixed on top of the frames 1 and 2 at the rear ends thereof, is a shaft 56, the right-hand end of which extends beyond the right-hand side frame 1. Fixed upon the left-hand end
 95 of this shaft 56 adjacent the left-hand bearing-box 55 is a pinion 57, which meshes with the left-hand gear-wheel 22, and a corresponding pinion 58 is fixed upon the shaft 56 adjacent the right-hand side frame 1, which
 100 last-mentioned pinion meshes with the right-hand gear-wheel 22. Loosely mounted for rotation upon the projecting right-hand end of the shaft 56 is a hub 59, with the inner end of which is formed integral a pinion 60 and the outer end of which is provided with
 105 teeth 61, forming one side of a clutch. Formed integral with this hub 59 is a large sprocket-wheel 62, that is in direct alinement with the small sprocket-wheel 15 upon the shaft 12, and a sprocket-chain 62^a connects these
 110 sprocket-wheels 62 and 15. The end of the shaft 56 outside the hub 59 is provided with a feather 63, and upon this portion of said shaft is arranged to slide a sleeve 64, the inner end of which is provided with teeth 65,
 115 forming a clutch-face in opposition to the clutch-face formed by the teeth 61. Formed in the periphery of the sleeve 64 is a groove 66, and the outward movement of said sleeve is limited by a collar 67, removably fixed upon
 120 the end of the shaft 56.

Rotatably arranged upon a stub-shaft 68, that projects outwardly from the side frame 1 at a point below and in front of the shaft
 125 56, is a large gear-wheel 69, which meshes with the pinion 60, and formed integral with the inner end of the hub of this gear-wheel is a pinion 70. A second stub-shaft 71 projects outwardly from the side frame 1 at a point below and in front of the stub-shaft 68,
 130 and upon this stub-shaft 71 is rotatably arranged a gear-wheel 72, that meshes with the pinion 70. Fixed to the inner face of this gear-wheel 72 is an outwardly-projecting

curved strap 73, one end of which is inclined, as indicated by 74. The lower front end of a bar 75 is pivotally secured in any suitable manner to the lower front portion of the side frame 1, the upper rear end of said bar passing around the sleeve 64 in the groove 66 therein and being held in said groove by a strap 76, which is bolted to the bar 75. Formed integral with the top of the bar 75 at a point above and in front of the gear-wheel 72 is a pair of ribs 77, between which is positioned the outer end of a short bar 78, the inner end 79 thereof operating through a bearing 80, formed in the side frame 1. Fixed to and depending from the under side of this bar 78 is a finger 81, which lies in the path of travel of the strap 73, carried by the gear-wheel 72. (See Figs. II and III.) The rear end of a hand-lever 83, which is loosely pivoted to a bracket 84, extending outwardly from the side frame 1, is positioned on top of the outer end of the bar 78, and formed through the rear end of this hand-lever, the outer end of the bar 78, and the bar 75 are coinciding apertures that are occupied by a bolt or pin 84. Pivotally secured to the bar 75 at a point in front of the ribs 77 is the outer end of a short bar 85, the inner end of which is formed into a pin 86, that operates through a horizontally-arranged bearing 87, formed in the side frame 1, the end of this pin occupying a position in the path of travel of the outwardly-projecting pins 53, carried by the right-hand gear-wheel 22. (See Fig. II.) Positioned adjacent the right-hand frame 1 is a standard 88, with the upper end of which is formed integral a horizontally-arranged bearing 89, in which is rotatably arranged a shaft 90, carrying upon its inner end a pinion 91, that meshes with the gear-wheel 14, and upon the outer end of said shaft 90 is located a belt-wheel 92.

The operation of the machine is as follows: A belt being applied to the wheel 92 drives the shaft 90 and pinion 91, carried thereby, and in turn rotary motion is imparted to the gear-wheel 14, carried by the trunion 12, and also to the sprocket-wheel 15. The rollers 11 and 16 are thus rotated toward one another at the same rate of speed, for the reason that they are geared together by the corresponding gear-wheels 13 and 19, and simultaneously with this rotation the apron 47^a will be swung backwardly and forwardly by the engagement of the inner end of the crank-shaft 48 against its rear side, said crank-shaft being rocked by the reciprocating movement of the pitman 49, which is actuated by the gear-wheel 51, driven by the pinion 52. The rotary motion of the sprocket-wheel 15 is imparted to the hub 59 by the sprocket-chain 62^a, passing around the sprocket-wheel 62, and in turn this rotary motion is imparted to the gear-wheel 69 and pinion 70, for the reason that said gear-wheel 69 meshes with the pinion 60, carried by the hub 59. The gear-wheel 72, meshing with the pinion 70, is rotated, and

the curved plate 73, carried upon the inner face of said gear-wheel 72, will travel around, and the beveled or inclined face 74 of said plate will strike against the finger 81, carried by the short bar 78. As said finger 81 rides along the inclined face 74 to the main body portion of the curved plate 73 the short bar 78 will be shifted laterally toward the frame 1, which movement shifts the bar 75 in the same direction. This movement shifts the short bar 85 inwardly toward the frame 1, so that the end of the pin 86 passes through the bearing 87 and occupies a position in the path of travel of the pins 53. At the same time the bar 75 is shifted its upper end, engaging the sleeve 64, will move said sleeve upon the shaft 56 and upon the feather 63 toward the teeth 61, forming a clutch-face on the end of the hub 59. As soon as the opposing clutch-faces are engaged the sleeve 64 and shaft 56 and pinions 57 and 58, carried, thereby, will be rotated, and in turn the gear-wheels 22, which have heretofore been standing still, will be rotated. The dough to be rolled is positioned upon the lowermost one of the rotating disks or tables 28 during the period the gear-wheels 22 are standing still, and as soon as the rotary motion is imparted to said gear-wheels, as described, one of the fingers 30^a, carried by the head 30, will engage against the finger 44, and as soon as the movement of the gear-wheels 22 continues the lowermost one of the disks or tables 28, carrying the dough to be rolled, will be moved one-quarter of a complete rotation. The continued rotation of the gear-wheels 22 brings the finger 41 into contact with the finger 42, and by so doing the spring-catch 45 is disengaged from its corresponding rod 46 and the sheet-metal plate 40 will swing downwardly onto the dough carried by the lowermost one of the disks or tables 28, and as the gear-wheels 22 continue to rotate the dough is held between the disk 28 and plate 40, said plate 40 being locked in this position by the engagement of the point of the corresponding detent 37 in the notches of the corresponding ratchet-wheel 36. At an instant preceding the completion of a half rotation of the gear-wheels 22 one of the pins 53 will engage against the end of the pin 86, and as a result thereof said pin, together with the short bar 85, is shifted outwardly to its original position, this movement necessarily shifting the bar 75 to its original position and sliding the sleeve 64 laterally upon the shaft 56, thus engaging the clutch and stopping the rotation of the shaft 56, pinions 57 and 58, and gear-wheels 22. This movement of the short bar 85 also shifts the bar 78 to its original position and brings the depending finger 81 into a position in the path of travel of the strap 73. As the gear-wheels 22 are about to complete their half-rotation the free end of the detent 37, that engages the teeth of the ratchet-wheel 36 of the plate 40, that holds the dough upon the disk or table 28, strikes against the upper end of

the standard 38^a, thus disengaging the point of said detent from the ratchet-wheel, and the corresponding plate 40 will swing downwardly until its spring-catch 45 engages the corresponding rod 46. The dough thus being freed will pass into the hopper comprising the plates 20 and 21 and thence between the rollers 11 and 16. The gear-wheels 22 complete their half-rotation at the time the disks 28 are in direct vertical alinement with the rollers 11 and 16. The dough passes between the rollers 11 and 16 and is folded backwardly and forwardly upon the lowermost one of the disks or tables 28 by the action of the apron 47, as hereinbefore described, and the throwing-in operation, together with the other movements, as previously described, is brought about as the strap 73 comes around and engages the depending finger 81 to shift the bars 78 and 75. Thus it will be seen that the gear-wheels 22 are intermittently rotated a half-revolution at a time, and during the period the gear-wheels are stopped the dough passes between and is rolled by the rollers 11 and 16 and is folded in layers upon the lowermost one of the rotating disks 28. By providing means for rotating the disk 28 a quarter of a turn after the dough has been deposited thereon the dough will reënter the rollers with the folds crosswise or at right angles to the transversely-disposed rollers, and this continued rolling and lapping over of the dough, which may be likened to a kneading operation, very quickly brings the dough into the proper condition to be formed into loaves.

To throw the machine out of operation, the operator disengages the pin 84 from the aperture in the bar 75 and manually shifts the hand-lever 83 and the bar 78 toward the frame 1 or until the depending finger 81 is out of the path of travel of the strap 73. While so positioned the gear-wheel 72, carrying the strap 73, can rotate continuously without shifting the bars 75 and 85.

A machine so constructed is entirely automatic in all its operations, is comparatively simple and inexpensive, and by its use a large quantity of dough can be rolled to the desired consistency in a short space of time.

I claim as my invention—

1. In a machine of the class described, a pair of rollers, means whereby motion is imparted to said rollers, and a plurality of dough-receiving disks arranged to revolve around said rollers, substantially as specified.

2. In a machine of the class described, a pair of rollers, means for imparting rotary motion to said rollers, and a plurality of rotating dough-receiving disks arranged to revolve around said rollers, substantially as specified.

3. In a machine of the class described, a

pair of rollers, means whereby rotary motion is imparted to said rollers, a plurality of rotatably-arranged dough-carrying disks arranged to revolve around said rollers, and means whereby said disks are intermittently revolved, substantially as specified.

4. In a machine of the class described, a pair of rollers, a plurality of dough-carrying disks arranged to revolve around said rollers, means whereby said disks are intermittently revolved, means whereby said disks are rotated during their revolution, and means whereby the dough passing from between the rollers is folded upon one of the dough-carrying disks, substantially as specified.

5. In a machine of the class described, a framework, a pair of rollers journaled in said framework, a pair of large gear-wheels, a plurality of rotating dough-carrying disks arranged between said gear-wheels, means whereby rotary motion is imparted to said gear-wheels, means whereby the disks are rotated a quarter of a turn at a time, and means for causing the dough to fold upon the lowermost one of the dough-carrying disks as it passes from between the rollers, substantially as specified.

6. In a machine of the class described, a frame, a pair of rollers journaled in said frame, means whereby one of said rollers is moved to and from the opposite roller, and a plurality of rotating dough-carrying disks arranged to be intermittently revolved around said rollers, substantially as specified.

7. In a machine of the class described, a frame, a pair of rollers journaled in said frame, a plurality of rotating dough-carrying disks arranged to be intermittently revolved around said rollers, means whereby the intermittently-revolving means is automatically thrown into and out of operation, means whereby the dough in passing from between the rollers is folded upon one of the dough-carrying disks, means whereby the dough is retained upon the disk, onto which it is folded while said dough is being carried forwardly above the rollers, which last-mentioned means performs the function of a chute for the dough to be guided between the rollers, substantially as specified.

8. In a machine of the class described, a pair of rollers, one of which is adjustable to and from the opposite roller, and a plurality of rotating disks arranged to carry the dough from below the rollers to a point above the same, and means whereby said dough-carrying disks are intermittently revolved around said rollers, substantially as specified.

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In presence of—

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