

No. 810,608.

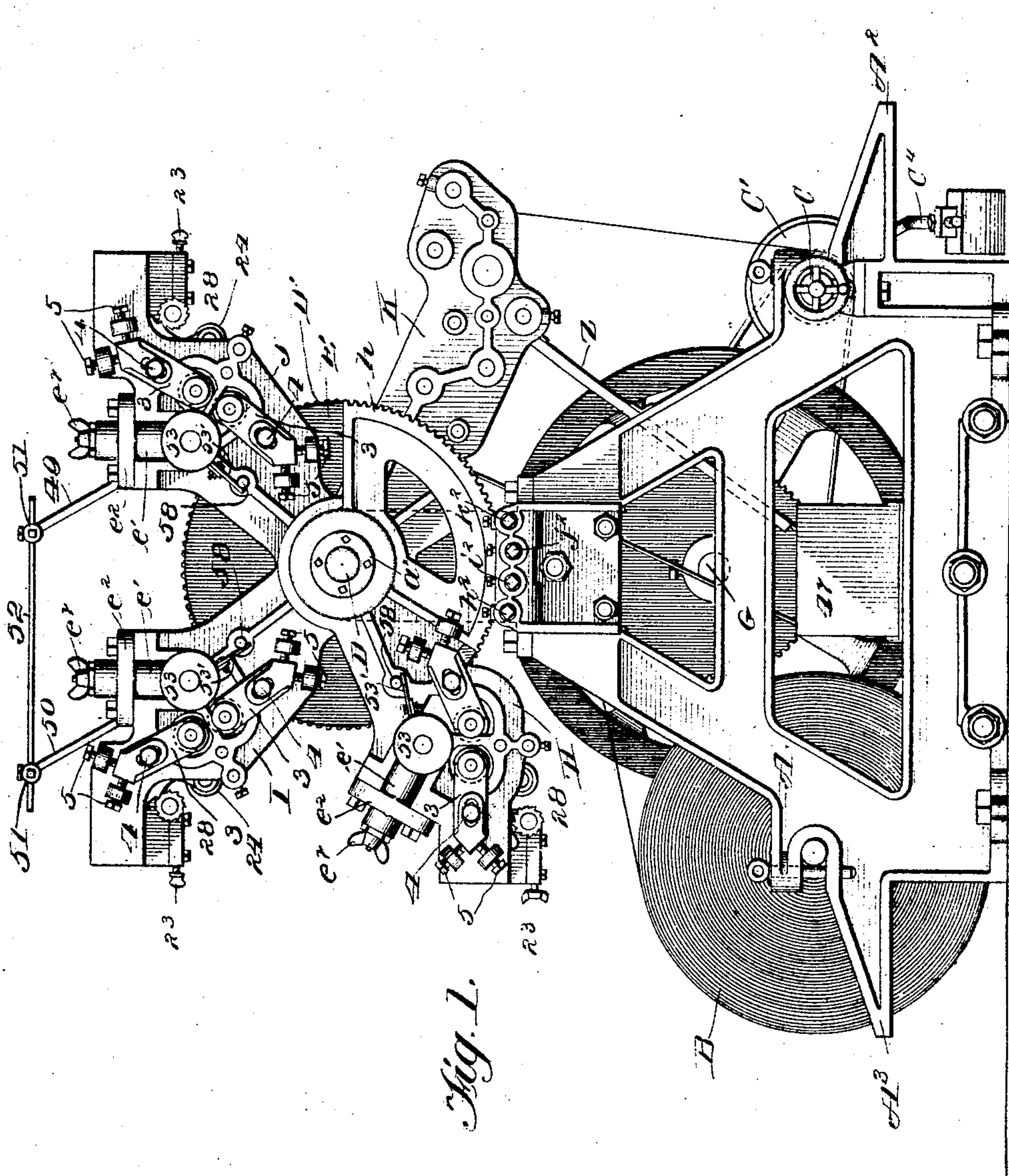
PATENTED JAN. 23, 1906.

E. J. BARKER.

WEB PERFECTING PRINTING PRESS.

APPLICATION FILED APR. 24, 1902. RENEWED APR. 24, 1905.

10 SHEETS—SHEET 1.



Witnesses
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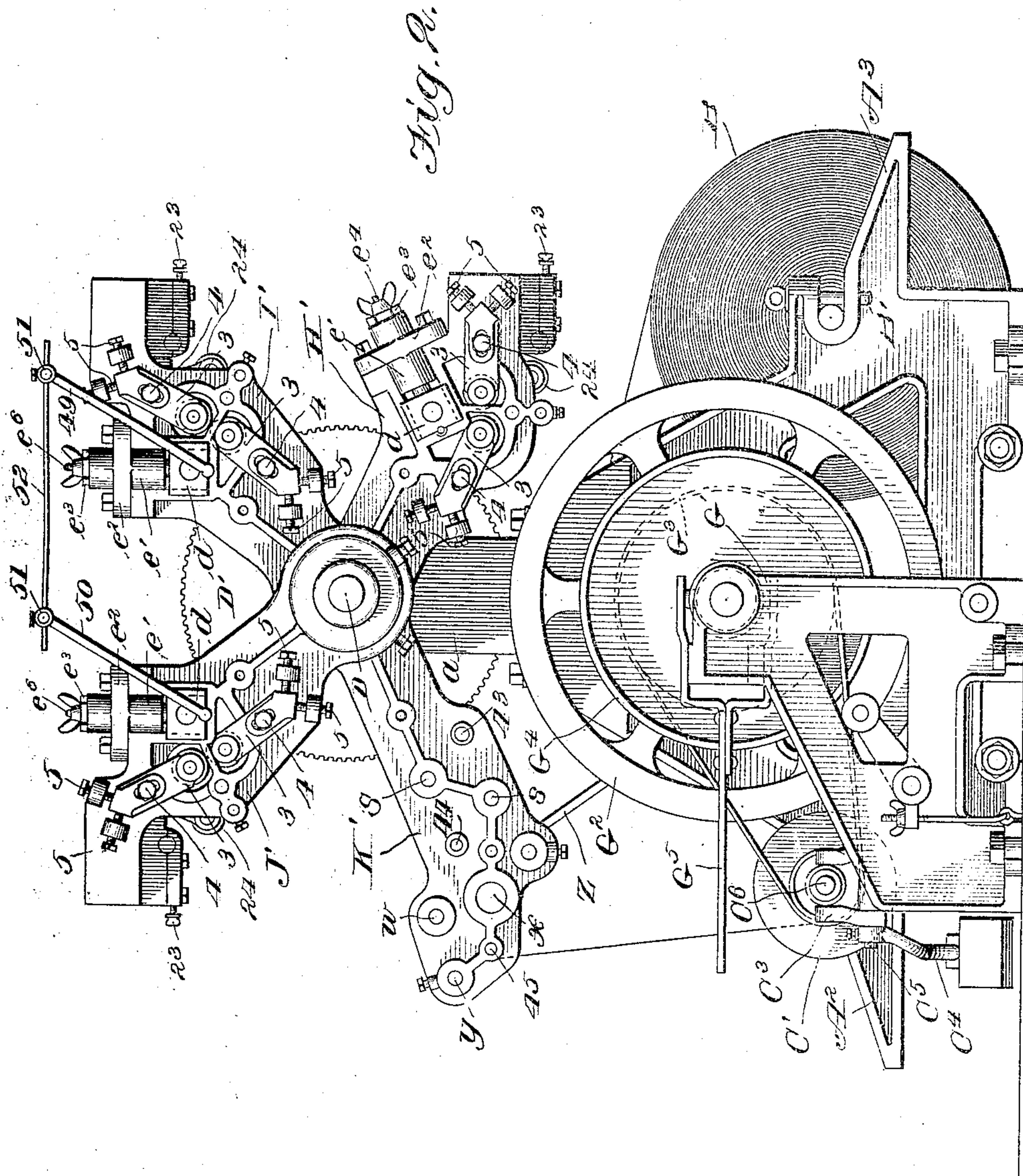
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10 SHEETS—SHEET 2.



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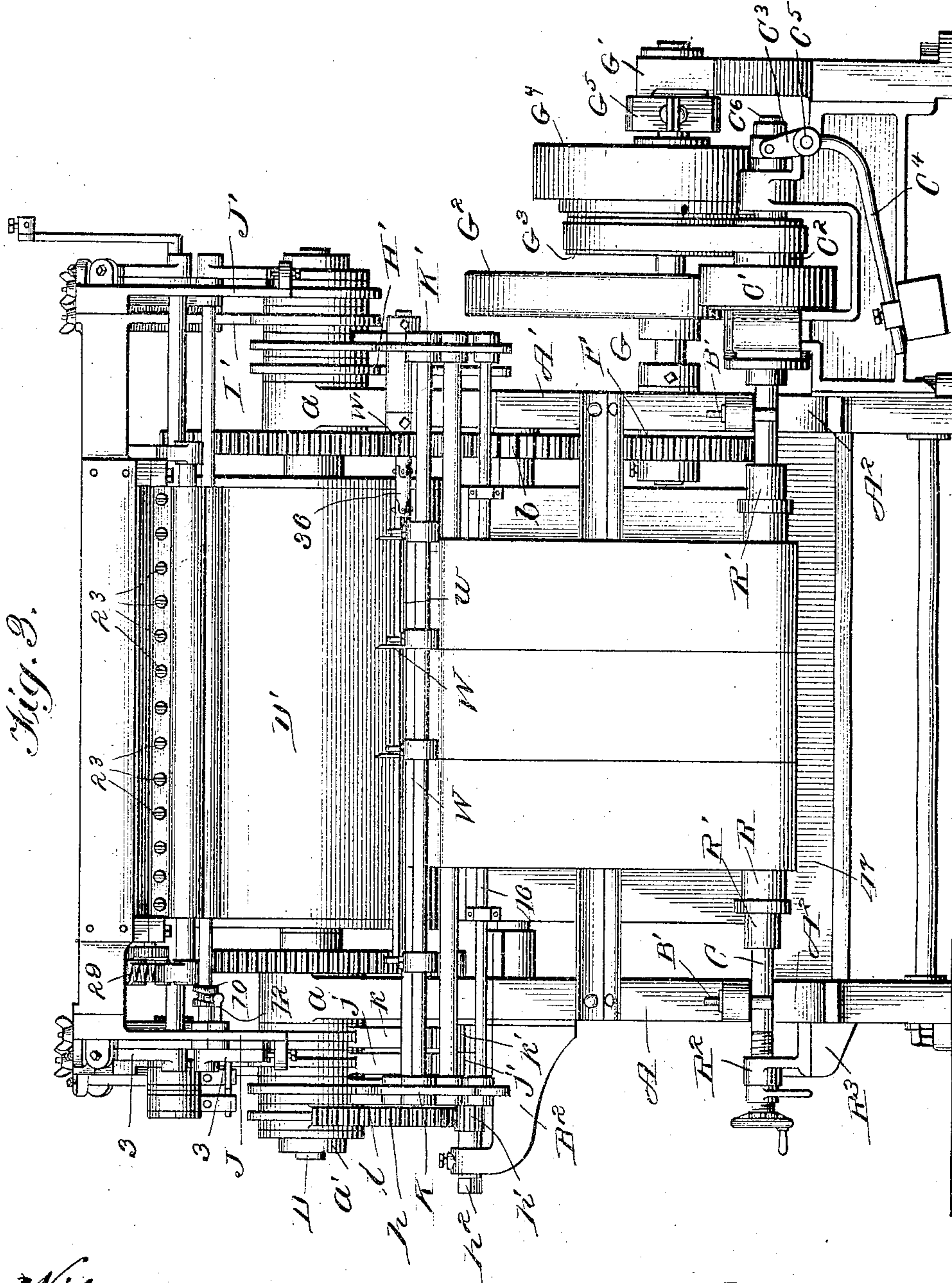
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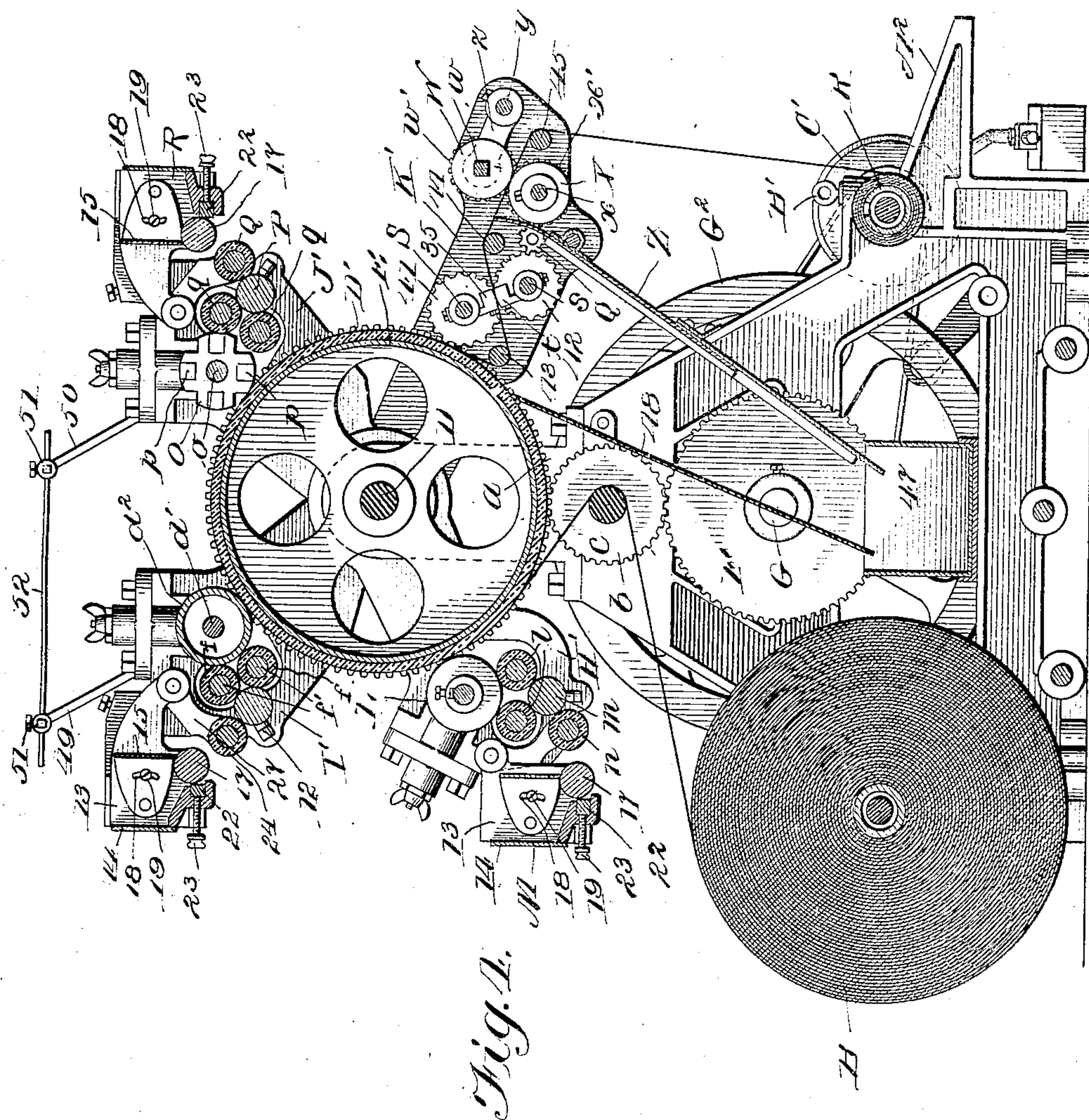


Fig. 1.

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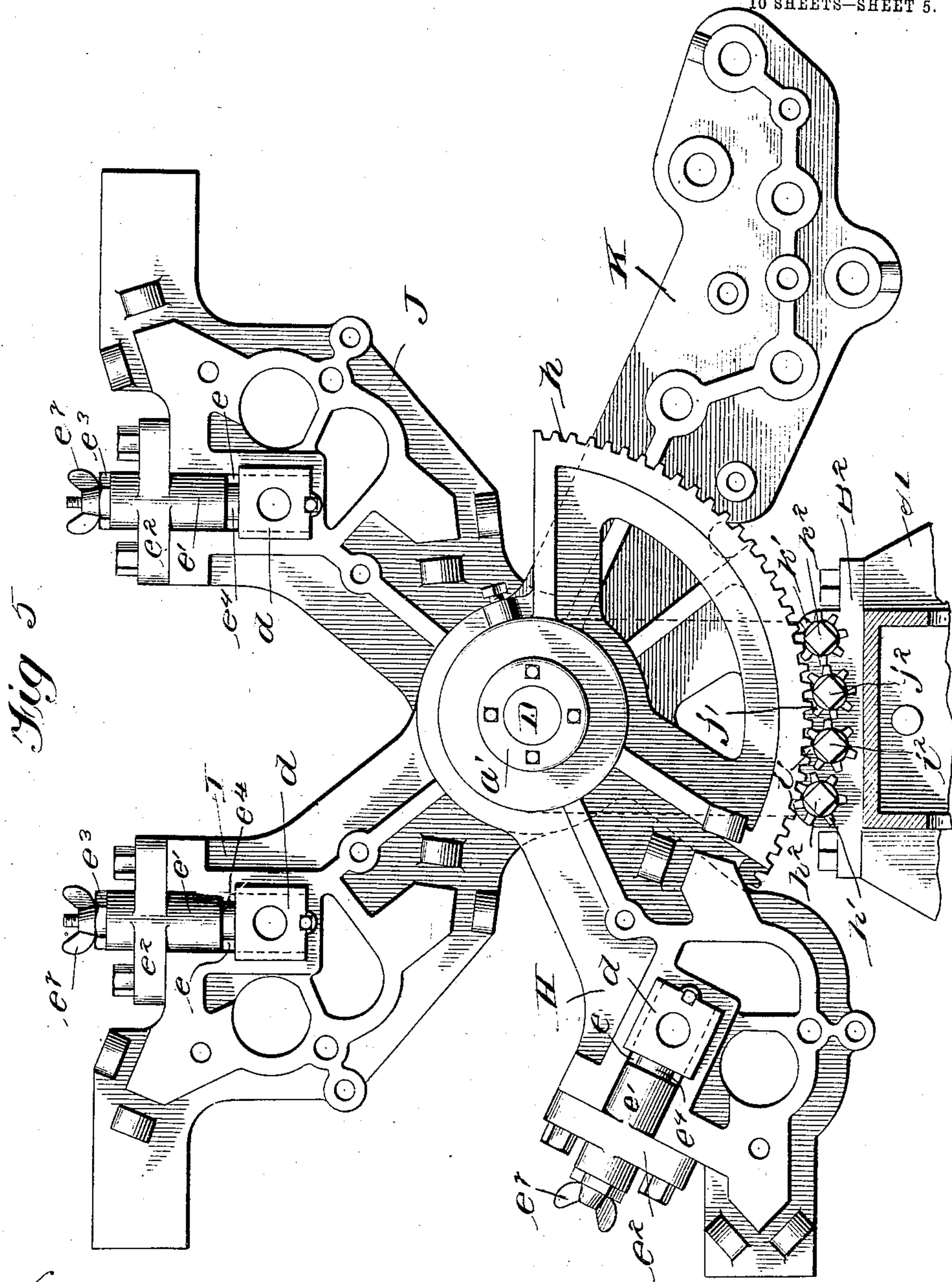
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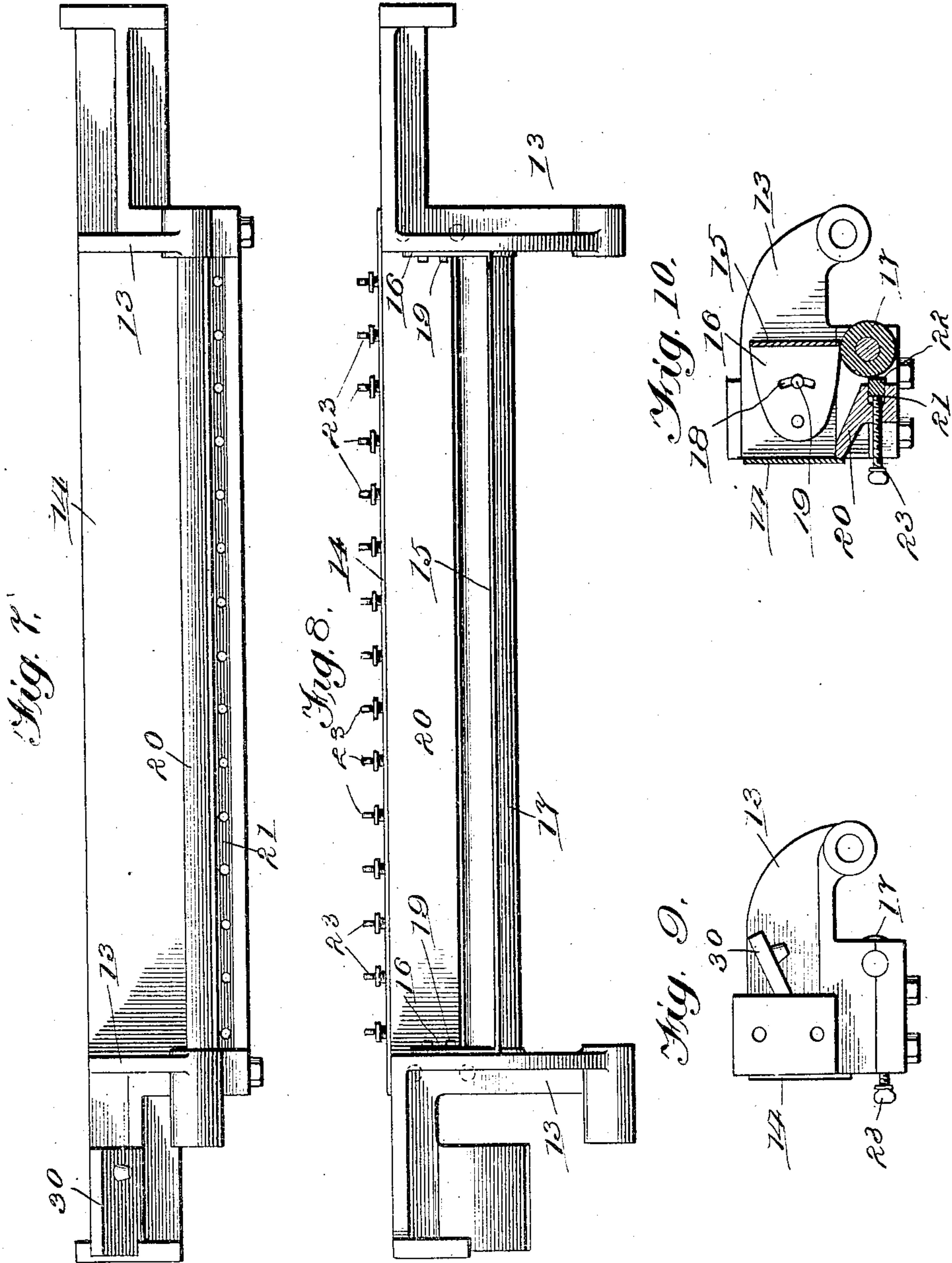
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10 SHEETS—SHEET 7.



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10 SHEETS—SHEET 8.

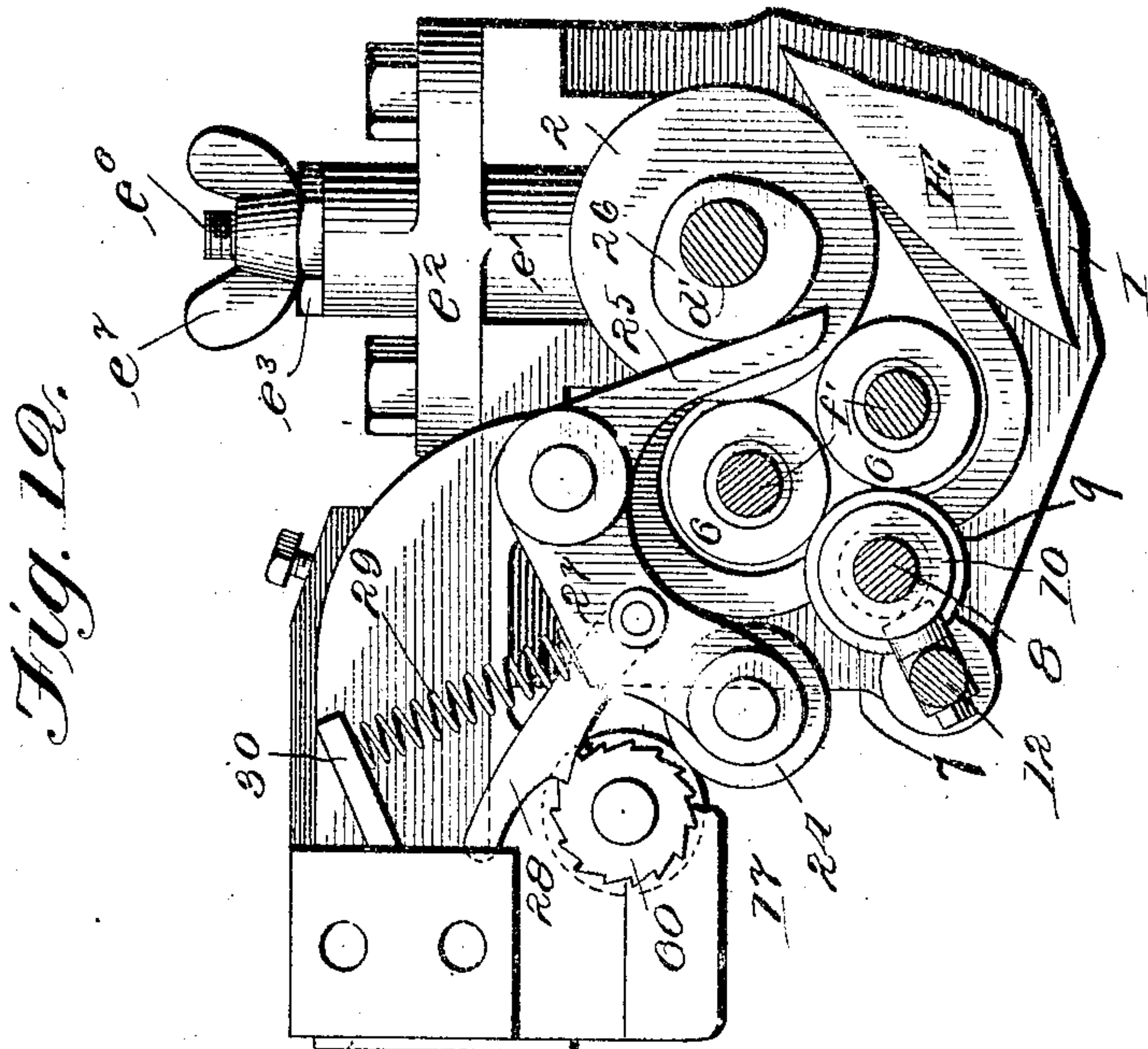


Fig. 19.

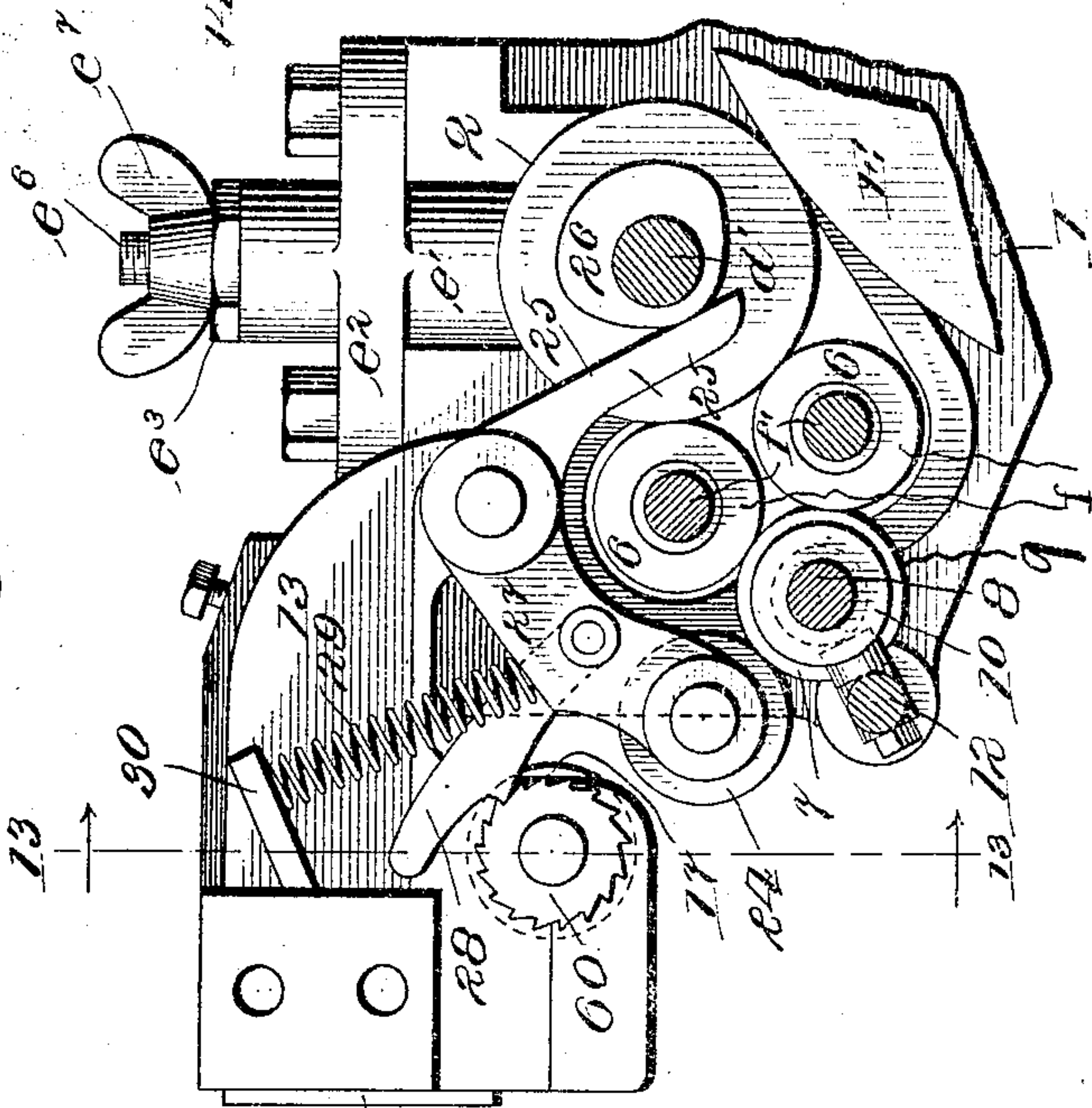


Fig. 11.

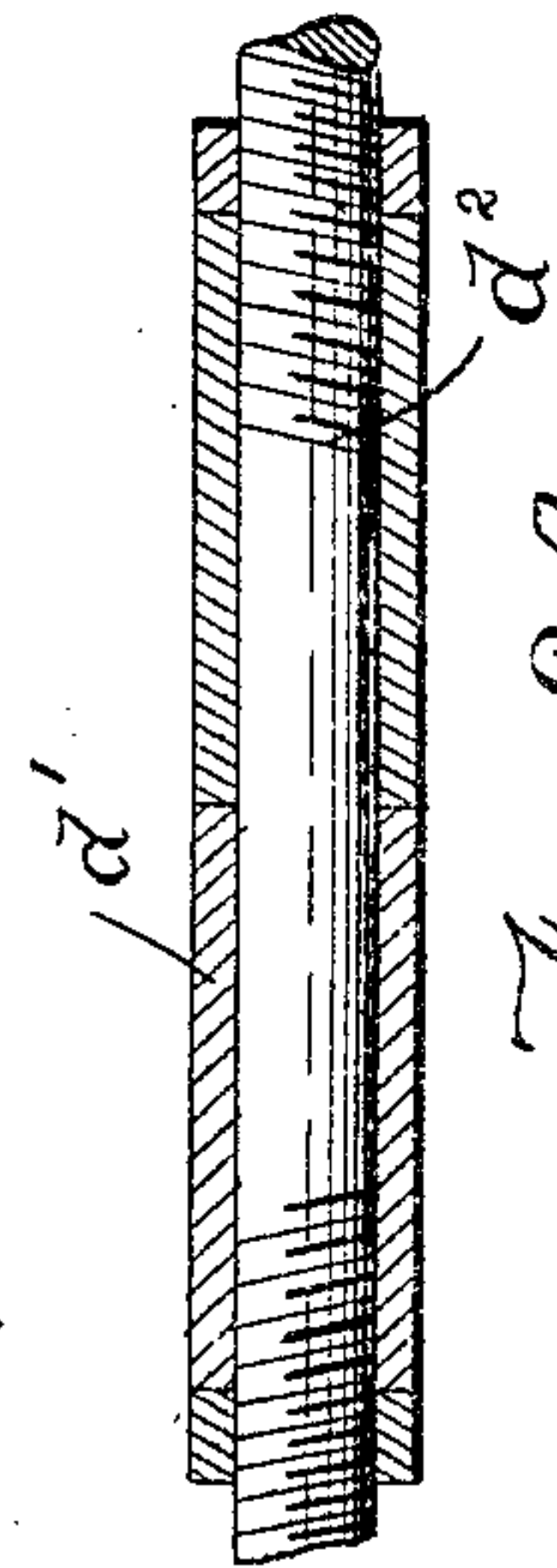


Fig. 24.

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10 SHEETS—SHEET 9.

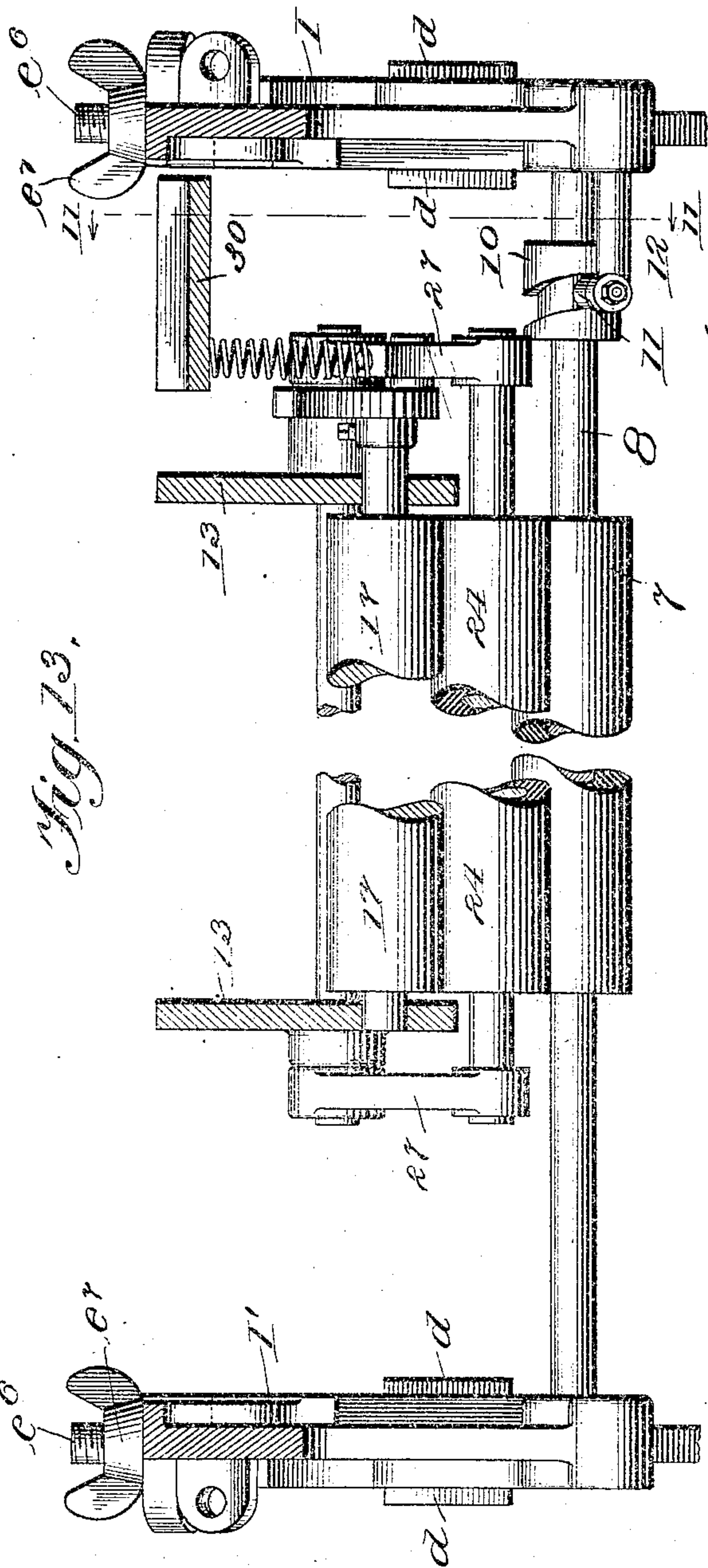


Fig. 13.

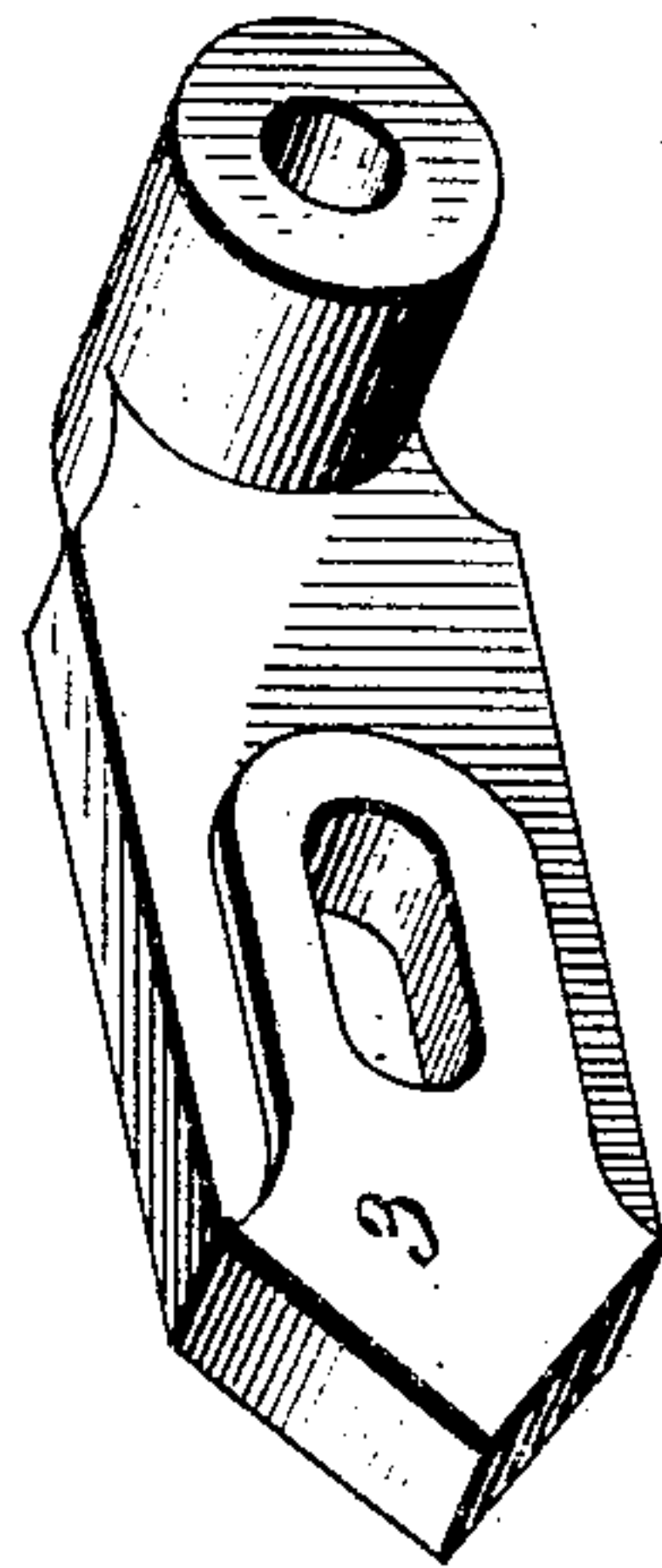


Fig. 22

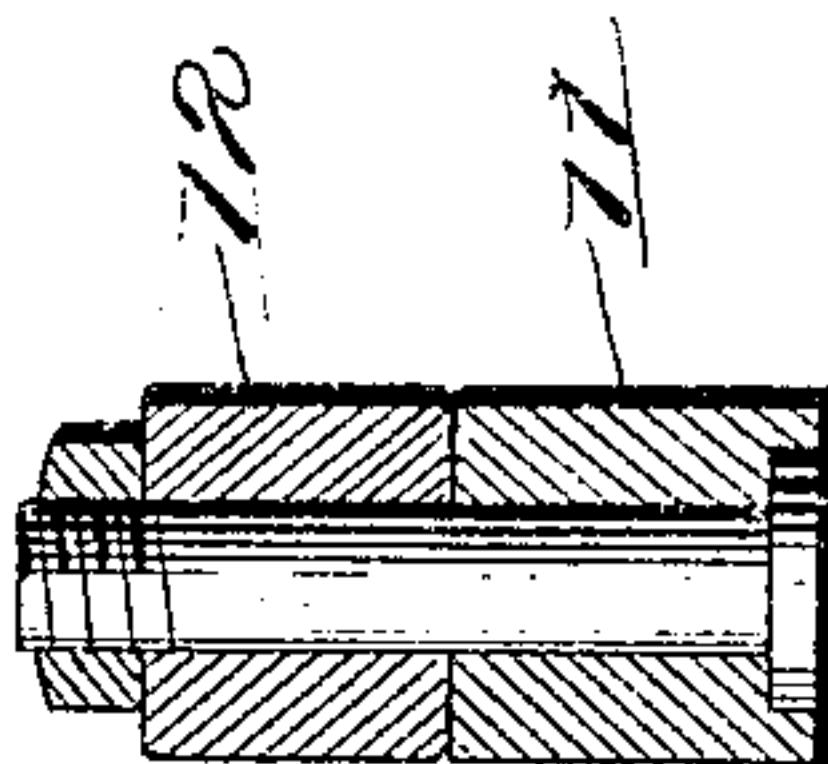


Fig. 21

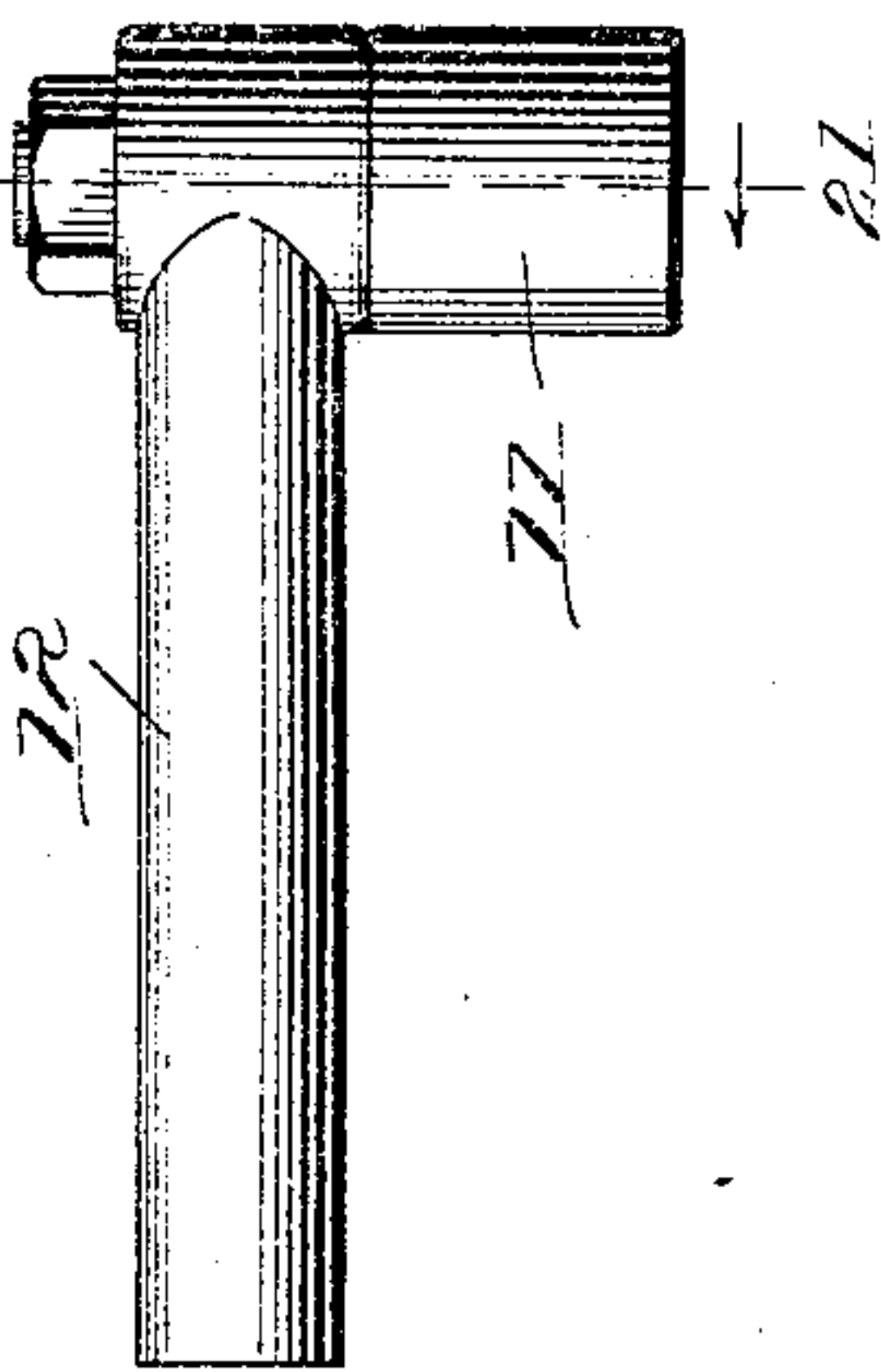


Fig. 20.

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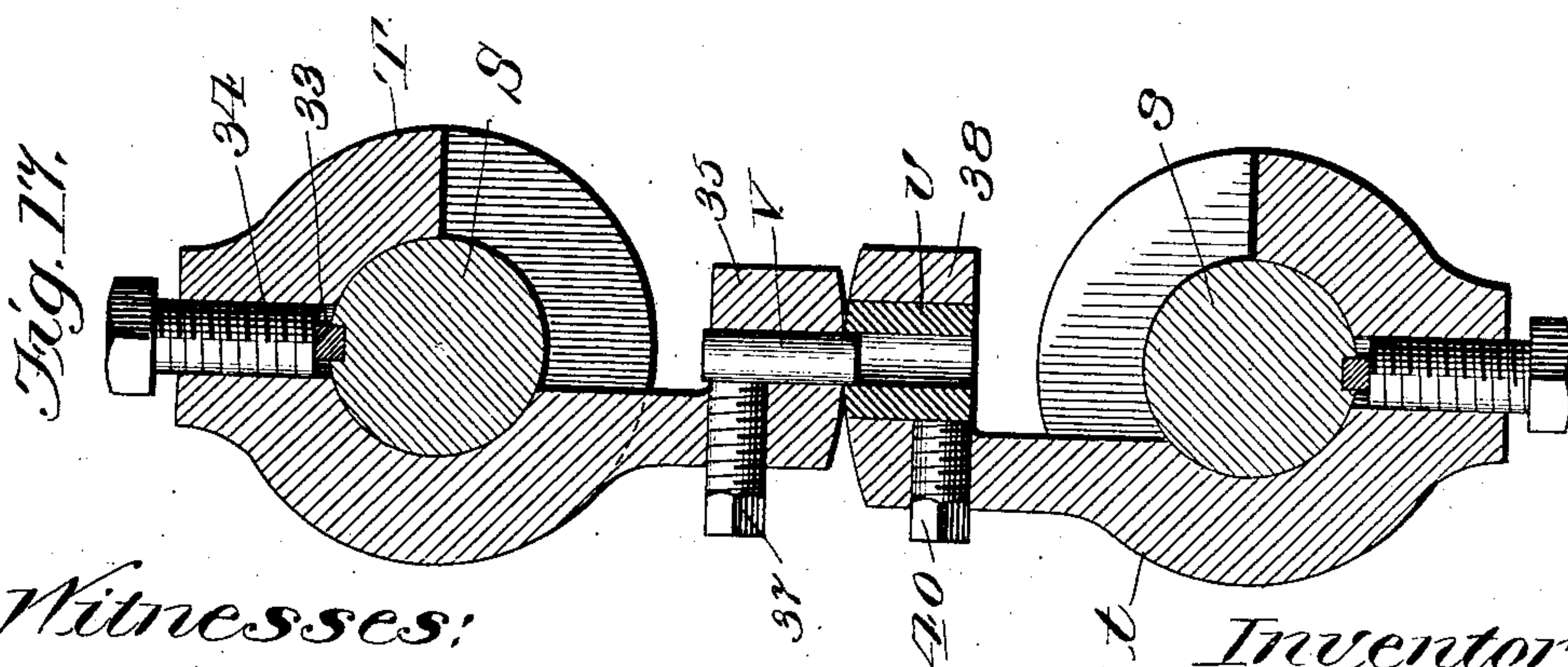
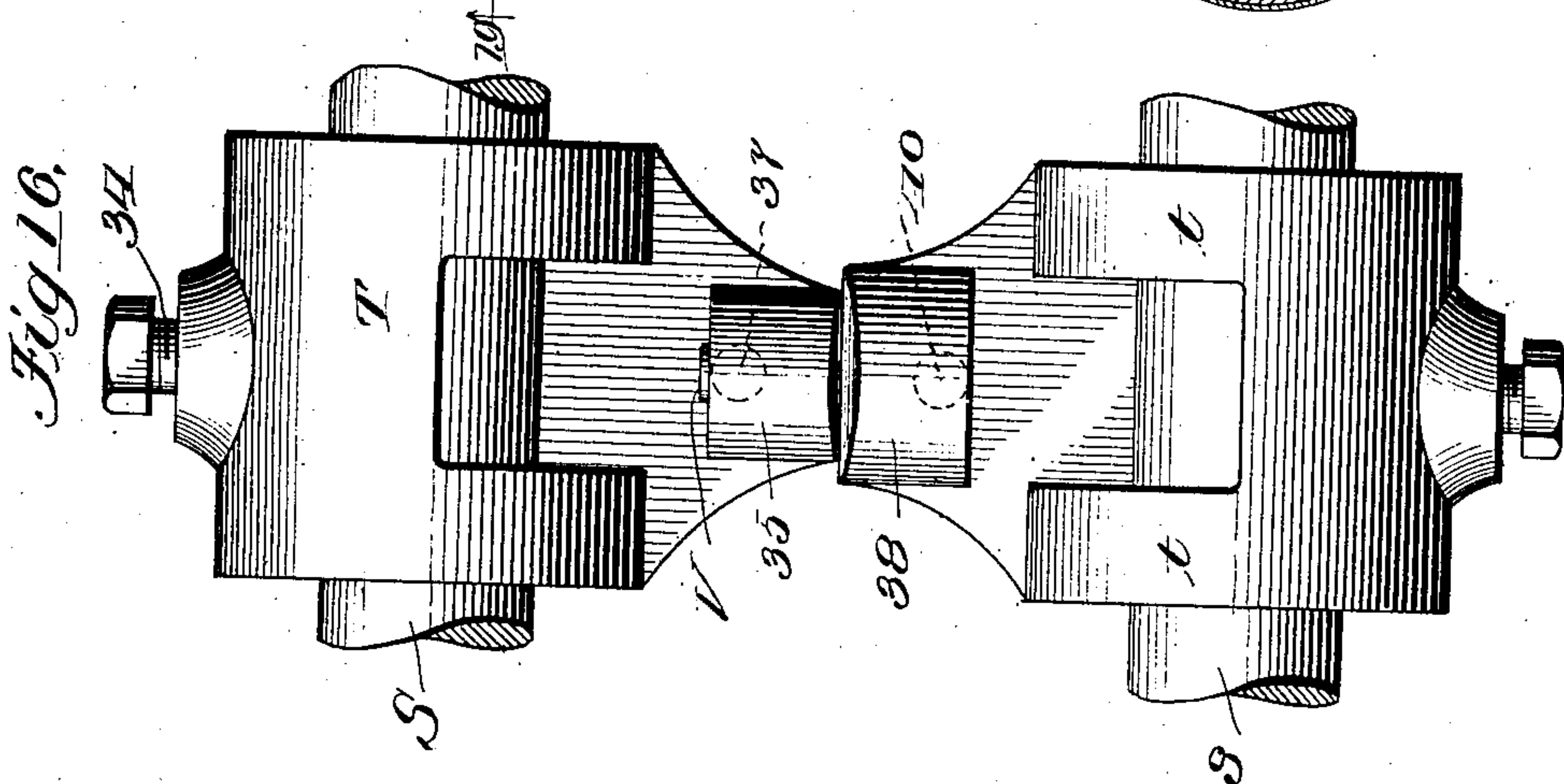
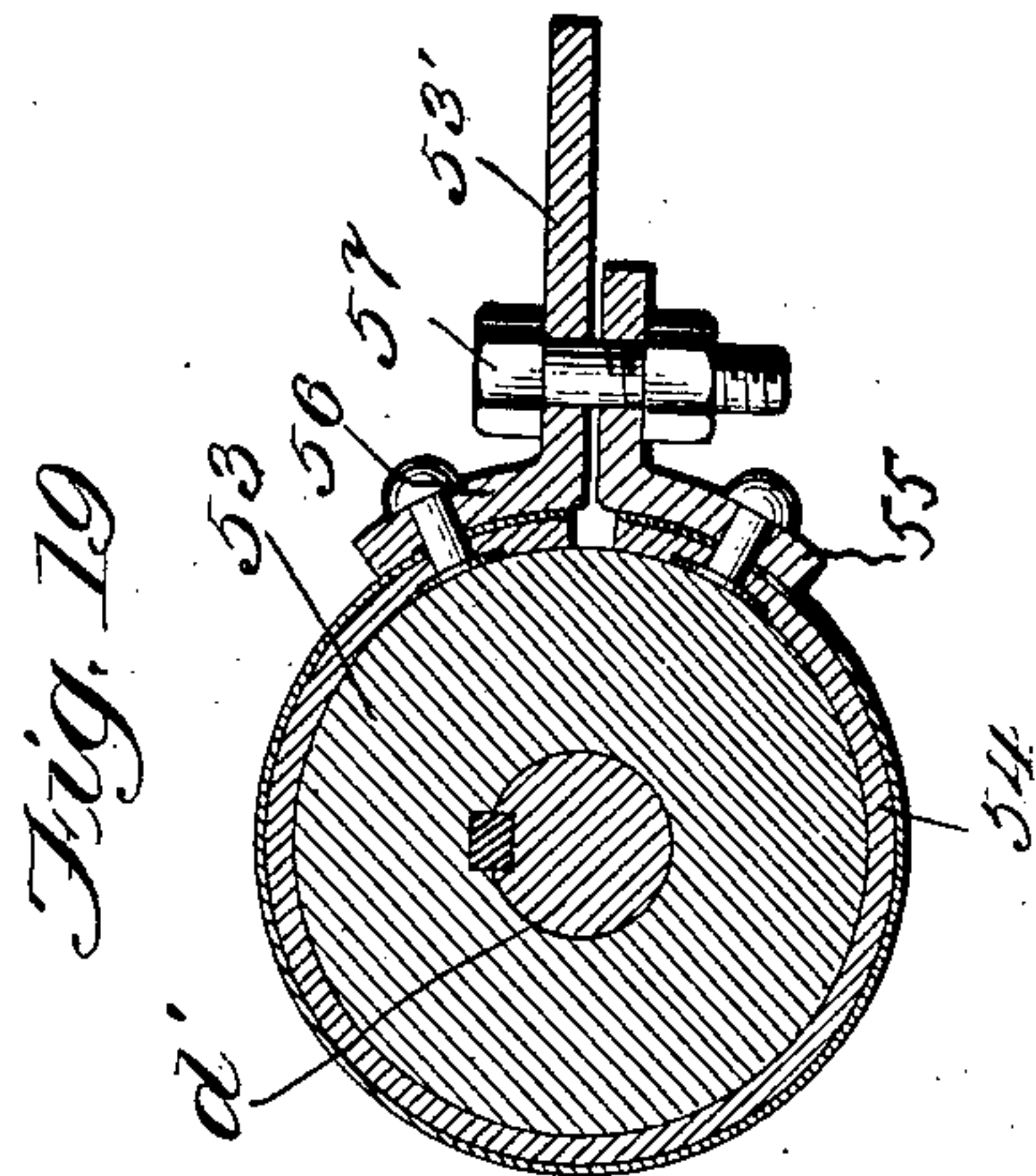
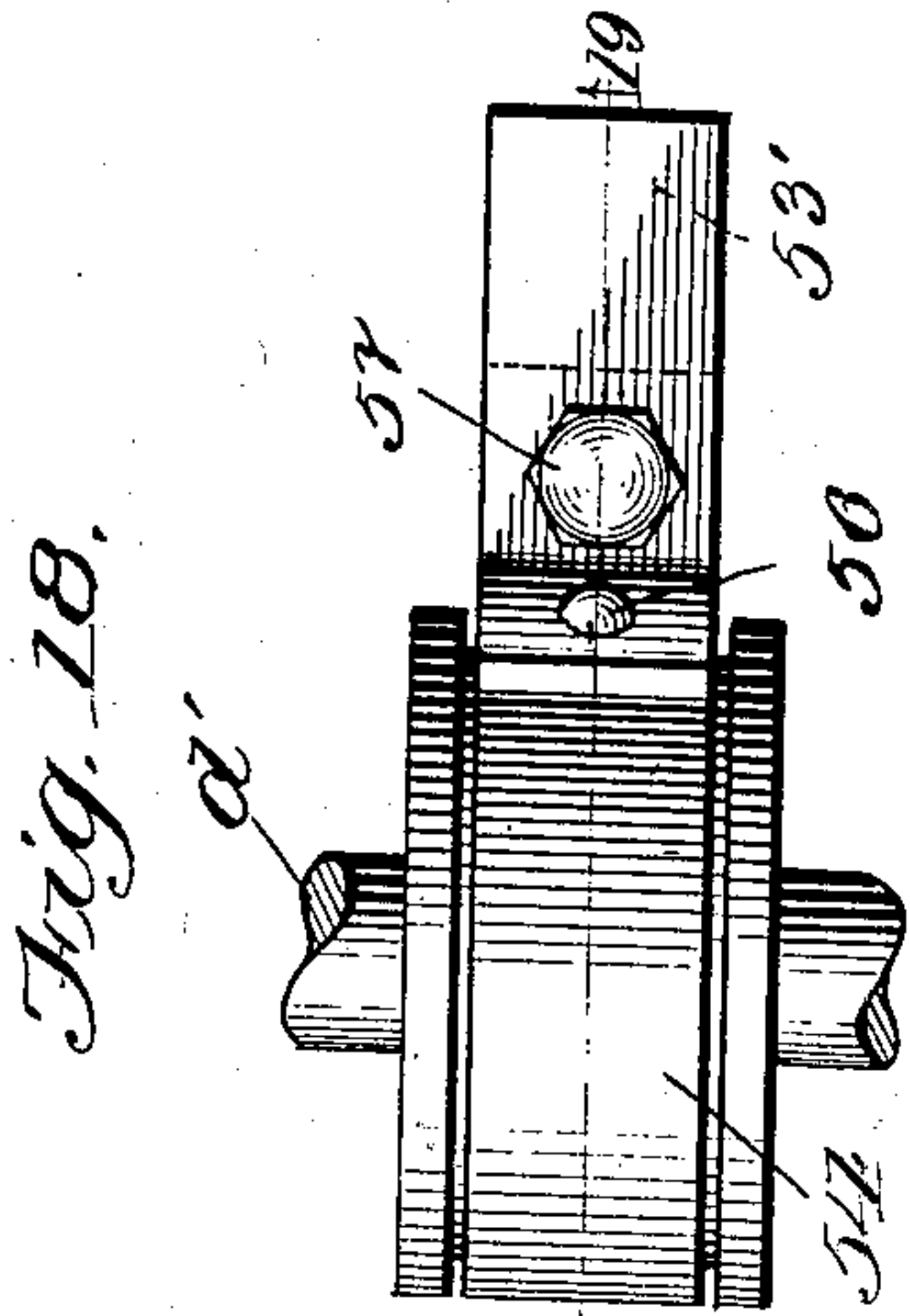
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10 SHEETS—SHEET 10.



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UNITED STATES PATENT OFFICE.

ENGLAND J. BARKER, OF MORGAN PARK, ILLINOIS.

WEB-PERFECTING PRINTING-PRESS.

No. 810,608.

Specification of Letters Patent.

Patented Jan. 23, 1906.

Application filed April 24, 1902. Renewed April 24, 1905. Serial No. 257,095.

To all whom it may concern:

Be it known that I, ENGLAND J. BARKER, a citizen of the United States, and a resident of Morgan Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Web-Perfecting Printing-Presses, of which the following is a full, clear, and exact specification.

The object of my invention is to provide a web-perfecting printing-press which while just as capable of use for printing other matter is particularly adapted for use in the printing of the continuous strips of paper used in autographic manifolding registers, which it can consecutively number, can punch and tint in whole or part, besides slitting the paper into as many strips as are printed at one time. This I accomplish by the means hereinafter fully described and as particularly pointed out in the claims.

In the drawings, Figure 1 is an elevation of the left-hand end of my invention. Fig. 2 is an elevation of the right-hand end of the machine. Fig. 3 is a front elevation of the same. Fig. 4 is a vertical section thereof, taken on dotted line 4 4, Fig. 3, looking in the direction indicated by the arrows. Fig. 5 is a side elevation of the adjustable supporting-frames of the type-roller, the tinting-cylinder, the numbering mechanism, and the punching and slitting devices and the upper portion of the main frame drawn to a larger scale. Fig. 6 is a front edge view of the same, showing the forward portion of the supporting-frame of the punching and slitting mechanism broken away. Fig. 7 is a detail view showing a rear elevation of the ink-fountain. Fig. 8 is a plan view of the same. Fig. 9 is an end view thereof. Fig. 10 is a transverse section of the fountain, taken on dotted line 10 10, Fig. 8, looking in the direction indicated by the arrows. Figs. 11 and 12 are detail views showing similar end elevations of the said ink-fountain, respectively, and the conjunction mechanism for conveying the ink therefrom to the type-cylinder, drawn to a larger scale. Fig. 13 is a vertical longitudinal section of the same, taken on dotted line 13 13, Fig. 11, looking in the direction indicated by the arrows. Fig. 14 is a detail view showing the bearings of the type-cylinder shaft in side elevation. Fig. 15 is a vertical section taken on dotted line 15 15, Fig. 14. Fig. 16 is a detail view showing a side elevation of the rotary punches used in the machine. Fig. 17 is a transverse section thereof. Figs. 18, 19,

20, 21, 22, 23, and 24 are detail views of minor parts of the invention.

The means for supporting the mechanism embraced in my invention comprise two main frames A and A', which rest upon the floor and are connected near their bases by suitable tie-bars. At a suitable point above the floor these frames are provided with projecting shelves A² and A³. The upper edges of these shelves are inclined from the extremity to the main body of the frame, and at the upper end of these inclines of the rear shelves A³ they are provided with open bearings in which the journals of the shaft of the roll of paper B to be fed to the machine are journaled and retained by a suitable pin B'. At the upper end of the inclined edge of the front shelves A² of the frame another bearing is provided, in which the shaft C for winding the completed work on is journaled. The inclined upper edges of these portions A² and A³ are designed for the purpose of facilitating the rolling of the journals of the shafts of said roll of paper and the journals of the shaft C, on which the printed paper is wound, to and from said bearings when removing the same or when adjusting the same in position in the machine. Above these open bearings the main frame is A-shaped and have secured to and support on their upper edges corresponding standards a a, in the upper ends of which bearings a' are provided for the shaft D of the impression-cylinder E, which extend laterally a suitable distance to form a journal for other elements of the machine, as will hereinafter fully appear. One end of this cylinder is closed by a gear D', which is driven by a gear F on the drive-shaft G through the medium of an interposed idle gear b. This idle gear b is mounted on a longitudinal shaft c, which connects and is journaled in the main frames A and A' and between its bearings serves as a guide for the web of paper as it pays out from roll B.

Drive-shaft G has one end journaled in one of the side frames and the other in an auxiliary frame G' and between its journals is provided with a fly-wheel G², a pulley G³, and a combined friction-clutch and drive-pulley G⁴. Pulley G⁴ is loose on the shaft and is thrown into engagement with the counter of the clutch, which is made integral with pulley G³ in any suitable manner.

The end of shaft C contiguous to the drive-shaft extends through its bearings and at a point in the same transverse plane as the fly-

wheel G^2 has fast thereto a disk C' , that has lugs projecting from the face thereof farthest from the contiguous bearing of shaft C , which are adapted to be engaged by a suitably-shaped head of a clutch C^2 , which latter is loose on a counter-shaft C^6 , alining with but separate from shaft C , and is driven by pulley G^2 through the medium of a suitable belt. By shifting shaft C longitudinally away from shaft C^6 the disk C' disengages from the clutch C^2 , and said shaft can then be easily removed from its bearings. This clutch is shot to and from its counterpart by means of corresponding arms C^3 , projecting up from the transverse rock-shaft C^5 , journaled in the front wall of frame G' . These arms engage a loose collar on the extended boss of the clutch, and through their instrumentality a weighted arm C^4 , projecting horizontally from the forward end of shaft C^5 , keeps the clutch in engagement with its counterpart.

The ends of the impression-cylinder shaft D extend beyond their bearings and have loosely supported and journaled on the extended bearings a' of the drive-shaft are the bosses of the end frames carrying the circumferentially-adjustable tinting-roller mechanism, the type-cylinder mechanism, the numbering mechanism, and the punching mechanism of the press, respectively lettered $H H'$, $I I'$, $J J'$, and $K K'$. Each pair of these end frames are substantially alike in construction, except that the end frames H' , I' , J' , and K' have set-screws tapped radially therethrough that bite into bearings a' , whereas the bosses of the frames H , I , J , and K have segmental gears h , i , j , and k , respectively, projecting downward therefrom in such relative position to their respective frames that when adjusted as shown in Fig. 5 of the drawings said segments are all substantially in the same radially-adjusted position. Frames H , I , J , and K are arranged side by side on shaft D , and the segmental gears h , i , j , and k are parallel to each other and are respectively engaged by one of the four pinions h' , i' , j' , and k' , which are respectively secured on the parallel spindles h^2 , i^2 , j^2 , and k^2 , journaled in the main frame A and the upturned end wall of a bracket B^2 , projecting therefrom. The outer ends of the spindles h^2 , i^2 , j^2 , and k^2 extend through their bearings in said end wall and are squared, so that they may be engaged by a suitable key. The position of these pinions on said spindles is in the same vertical plane as the segment engaged thereby, and thus the turning of one spindle will not affect the others, and any one of these adjustable frames may be moved independent of the others. The advantage of this is apparent. Circulars, bills, or other similar printed matter may be made of any length, and the relative positions of the type-cylinder, the numbering-head, and the punching mechanism

may be changed so as to make their impressions and perform their part of the work at any point desired on each circular.

Frame I , which carries the type-cylinder, has at a suitable point beyond the circumference of the impression-cylinder bearings d for the shaft d' , on which the type-cylinder d^2 is suitably mounted. These bearings d comprise rectangular blocks having grooves in their longitudinal sides which adapt them to be placed and be capable of longitudinal adjustment in the vertical slot e in said frames I . The upper end of this slot is occupied by the hollow cylindrical boss e' of the plate e^2 , removably bolted to the edge of the frame I , so as to bridge across and close the outer end of slot e . This boss preferably extends out beyond plate e^2 a suitable distance, and the outer end of its bore is closed by a screw-plug e^3 . The inner end of this bore is open and has a plunger e^4 movable therein, which is kept pressing against bearing d by a coil-spring e^{11} between it and plug e^3 . Seated in a suitable groove in the bottom of slot e is a cam-pin e^5 , which is semicircular in cross-section and has semicircular heads on its extended ends that lap against the sides of frame I and prevent longitudinal displacement of said pin. Projecting from the outer head of the pin is a squared boss which is adapted to be engaged by a suitable key or wrench to turn it. When so turned, the heads of the pin engage and raise the bearings d , and thus move the shaft d' and the type-cylinder out of engagement with the impression-cylinder. Tapped longitudinally and centrally through plug e^3 is a gage-bar e^6 , the outer screw-threaded end of which is engaged by a thumb-nut e^7 , by means of which it can be adjusted longitudinally. The inner portion of this gage-bar extends through the spring e^{11} and into engagement with the end of the plunger e^4 . By means of this construction a very nice adjustment of the type-cylinder d^2 to and from the impression-cylinder can be had. It will be apparent from Fig. 24 that the type-cylinder d^2 can be adjusted longitudinally upon shaft d' to any position desired and that my invention contemplates the use of a cylinder of comparatively small diameter, the length of which will correspond to the cylinder E or any portion thereof. Just inside its bearings at one end shaft d' is provided with a disk or friction-gear 2, which engages the circumference of the impression-cylinder, and thus imparts motion to said shaft.

Ink is supplied to the type-cylinder d^2 by the ink-rollers $f f$. The shafts upon which these ink-rollers are made have their ends extended out through suitable openings in frame I and are journaled in suitable bearings in the ends of rocking frames 3 3, which are pivoted to the outer surface of frames I by bolts 4 4, passing through longitudinally-

elongated openings in said frame, as shown. These rocking frames 3 3 are arranged in a plane at right angles to a line passing between rollers *f* and intersecting the center of the type-cylinder substantially in alinement with each other, and their ends opposite the ink-roller bearings are pointed, and the beveled edges producing this point are preferably at right angles to each other. The beveled edges of these pointed ends are engaged by the gage-screws 5 5, which are tapped through lugs projecting from frame I. By manipulating these gage-screws 5 the relative position of the ink-rollers to the type-cylinder and to each other can be determined to a nicety.

The end portions of the ink-roller shafts *f'* adjacent to the friction-gear 2 are each provided with friction-pinions 6 6 on disks through the medium of which the motion of shaft *d'* is imparted to the ink-rollers, and said ink-rollers are engaged by a vibrating ink-distributing roller 7, mounted on the vibrating shaft 8, which derives motion through the medium of a friction-gear 9, secured thereon, that is engaged by the friction-pinion on disk 6, and is given its vibratory movement by means of a cam 10, having a spiral groove 11 journaled on the stud projecting from the stationary arm 12 enters, the shank of arm 12 is rigidly secured in the adjacent frame I.

Ink is supplied by means of devices hereinafter to be more fully described to the vibratory distributing-roller 7 from an ink-fountain. This ink-fountain comprises, end frames 13 13, the side edges of which nearest the type-cylinders are extended and secured to the inner surface of the frames I. The outer wall of the fountain consists of a plate 14, secured to the outer ends of frames 13, and the inner wall consists of a longitudinally-disposed plate 15, the ends of which are provided with corresponding inwardly-projecting ears which are pivoted to the inner surface of frames 13 between said plate 15 and the outer plate 14, as shown. The lower edge of this plate 15 rests upon the circumference of an ink-roller 17 and serves as sort of a doctor to regulate the film of ink on the roller 17, which will be taken from the fountain, and to permit the adjustment of plate 15 for this purpose I have made a segmental slot 18 in said ears and inserted there-through a set-nut 19, by manipulating which the adjustment of plate 15 with reference to roller 17 can be satisfactorily accomplished. The bottom of the ink-fountain comprises a casting having an inclined upper web that has a drop-wall depending from its lower edge. In the vertical surface of this drop-wall opposed to roller 17 is a longitudinal groove, and seated in this groove is a doctor 22, preferably rectangular in cross-section, which is adjusted to and from roller 17 by

means of a series of set-screws 23. The upper edge of the inclined portion of casting 20 is connected to the lower edge of plate 14 of the fountain, and this casting, the doctor 22, and roller 17 form the bottom of the ink-fountain. The ends of roller 17 are journaled in bearings in a depending rectangular extension of end frames 13, and these bearings may be formed in any suitable manner.

In order to transfer the ink from roller 17 to the vibratory distributing-roller 7, I have provided a roller 24, which is journaled in the ends of arms 27, that are pivoted to the extremity of the forward curved extensions of the end frames 13 of the ink-fountain. These arms 27 have extensions 25, that are engaged by cams 26 on the type-cylinder shaft *d'*, which as said shaft revolves oscillates arms 27 and moves roller 24 first in contact with roller 17 and the vibratory roller. Roller 17 has a ratchet 60 and is given an intermittent rotary motion by the engagement of this ratchet a gravity-pawl 28, by which it is pivotally connected to arm 27 at one end of the machine or ink-fountain. In order to insure the engagement of extensions 25 of these arms 27 with the cams 26 at all times, I prefer to place a coil-expansion spring 29 between the projecting overhanging wall 30 of end frame and arms 27.

It is often desirable to illuminate or tint the paper or a portion of the paper of each printed copy of matter passed through the machine. This it is desirable to do before the type impression is made thereon. The frame H, carrying the tinting mechanism, is therefore so adjusted that its operation precedes that of the printing-cylinder. The tinting-cylinder L, the inking-rollers *l l*, the vibratory distributing-shaft *m*, the ink-fountain M, and the oscillating roller *n* for transferring the ink from the fountain occupy the same relation to each other and cooperate in a similar manner as do the type-cylinder *d*², rollers *f, f, 7, 17*, and 24, and the ink-fountain supported by frame I. The changed position of the tinting-cylinder with relation to the impression-cylinder necessitates a slightly-different arrangement of the inking-rollers and ink-fountain—that is, the inking-rollers are placed below instead of alongside of the tinting-cylinder, and the ink-fountain is therefore located in a plane below said cylinder instead of above, as in frame I. With these differences, however, and the slight alterations in shape to permit of the same the bearings of the cylinder and of the inking-rollers, the means for vibrating the distributing-roller and for journaling and oscillating the transmitting ink-roller and the construction of the ink-fountain are the same as are employed in connection with similar element carried by frame I, and further explanation concerning the same is not considered necessary.

The numbering mechanism of the printing-press which is carried by frame J and said frame itself are identically the same as frame I and the mechanism carried by it, with the exception that the numbering-head carrier carried by the former is substituted for the type-cylinder of the latter. The only difference is in the position—viz., frame J and its mechanism are the reverse of frame I and its mechanism. The numbering-head carrier O, which I prefer to use, has been made the subject of an application for Letters Patent of the United States, filed by me March 27, 1902, Serial No. 100,241, and it is therefore unnecessary to go into detail concerning it, except to state that it comprises a carrier secured and fastened to and revolving with shaft *o* and that it has recesses in its periphery, in which one or more numbering-heads *p* are removably and adjustably secured. This shaft *o* is actuated in a similar manner and with similar means as shaft *d'*, and two inking-rollers *q q* engage the numbering-heads, and a vibratory distributing-roller *P* engages said inking-rollers, and an oscillating transmission-roller *Q* supplies the ink to said distributing-roller from a similar ink-fountain *R*, all the same as similar elements in frame I.

The frame *K* and the punching devices and mechanism connected therewith are entirely different from the other adjustable frames and the mechanism carried thereby. The punching mechanism comprises shafts *S* and *s*, which are journaled at each end in said frames *K* and have adjustably secured thereon holders *T* and *t* for the male punch *V* and the female counterpart *v*, respectively. The holders *T* comprise a suitable boss, which is fastened to the shaft *S* by means of a spline 33 and set-screw 34, substantially as shown in Figs. 16 and 17. This boss has an arm projecting therefrom which has a head 35 projecting laterally from its outer end, which is provided with an opening extending radially therethrough for the reception of the male punch *V*, which is secured therein by means of the set-screw 37, substantially as shown. The boss *t* also has an arm projecting from it, which has a head 38 projecting laterally from its outer end, and this end has a radial opening in it, in which the female counterpart *v* is secured by means of a set-screw 40. The female die is tubular, and its bore is of the same diameter as the male punch *V*. The length of these arms is such that their peripheries touch at a point midway between shafts *S* and *s*, and the male punch *V* is so adjusted in head 35 that its engaging end projects just sufficiently beyond the periphery of the head that when said holders *T* and *t* are properly adjusted on their respective shafts the male punch will enter the female counterpart once every revolution thereof, substantially as shown in the drawings. Near the end of shaft *S* adjacent to gear

D' on the cylinder-shaft *D* it is provided with a small gear 41, that meshes with and derives motion from gear *D'*. This gear 41 engages a similar gear 42 on shaft *s* and revolves said shaft at the same rate of speed as the shaft *S*.

In order to pass the printed web of paper between these revolving punches, I pass the web as it leaves the impression-cylinder around a guide-roller 43 and then over a guide-roller 44 after the paper is passed between shafts *S* and *s*, and from guide-roller 44 the paper is run to and over a guide-roller 45, from whence it runs to a winding-cylinder *R* on the shaft *C*, referred to in the first part of this description. These rollers 43, 44, and 45 are journaled in the frames *K*. As the paper passes from guide-roller 44 to 45 it is engaged by a series of rotary cutters *W* and *X*. The cutters *X* comprise a disk the circumference of which is suitably sharpened and which is adjusted longitudinally upon and secured to the shaft by means of a suitable set-screw. The cutters *W* are constructed substantially the same as cutters *X* and are adjusted longitudinally upon and secured to the shaft *w*, which latter is journaled in the ends of corresponding arms *x*, secured to a shaft *y*, the ends of which latter are journaled in bearings in frame *K*. Shaft *w* is provided with a flexible joint 36 near one end, and its opposite end is not journaled, but is free, so that the cutters *W* thereon can bear heavily on cutters *X*. Shaft *x* has a gear *x'* near one end thereof, which is engaged by and derives motion from the idle pinion *Q*, which meshes with and is actuated by gear 42, and the shaft *w* has a gear *w'* near its journaled end, which is similar to and derives motion from gear *x'*.

There may be one or several pairs of punches adjusted upon shafts *S* and *s*, so as to punch each copy of printed matter at the point thereon desired either when one or several copies of the printed matter are printed side by side on the web of paper at the same time. In like manner there may be one or several pairs of the rotary cutters *X* and *W* adjusted longitudinally on their respective shafts, so as to cut and separate said parallel copies apart.

In order to prevent the pieces of paper cut from the web of paper by the revolving punches from falling and scattering over the parts of the machine below the same, I have provided an inclined chute *Z*, comprising one or more sheets of metal, the vertical side edges of which are flanged upward, which is supported by having its upper portion secured to the transverse rod 46, connecting the frames *K K*, so that the lower end thereof discharges into a box 47. If desired, I can use an apron 48 in conjunction with chute *Z*. In this event apron 48 would comprise one or more single plates of sheet metal and have its upper portion secured in suitable manner to the side frames *A A*.

The web of paper wound upon the cylinder R must have provision for its removal. I accomplish this by securing the winding-cylinder R between the heads R', which is suitably secured to shaft C. One end of shaft C, which extends through its bearings in frame A, is screw-threaded and provided with a hand-wheel on its end, and this screw-threaded portion extends through the tapped opening in a standard R², which rests upon and is supported by a bracket R³, projecting from said side frame A. By manipulating the hand-wheel shaft C can be moved longitudinally and its opposite end disengaged and withdrawn longitudinally from the boss of the clutch counterpart C', and then by removing the pins shaft C can be rolled out of its open bearings in the main frames A and A' and the paper-roll on its cylinder be bodily removed and a new cylinder placed back upon the shaft and said shaft put back in its bearings again and connected with the clutch counterpart C', as before.

It is desirable that the type-cylinder d² and the numbering-head be simultaneously adjusted to and from the impression-cylinder. This I accomplish by extending the eccentric-pins, which pass under the adjustable bearings of the shafts d' and o, and secure to them corresponding arms 49 and 50, which project upward at a suitable angle and have heads 51 pivoted thereto, which are connected by a connecting-rod 52. Thus when one of said arms 50 or 49 is moved the eccentric-pins under both bearings are similarly moved to effect the adjustment of the type-cylinder d² and numbering-head shafts relatively to the circumference of the impression-roller. At the opposite end of these shafts d' and o' I prefer to apply a brake to regulate and make the movement of the revolution of said shafts continuous and even. These braking devices comprise a disk 53, keyed to the extension of said shafts, which are surrounded by a band 54, the ends of which latter are secured to end pieces 55 and 56, the extremities of which extend laterally outward parallel to each other and are united by the bolt or nut 57. One of these extremities extends farther than the other and is adapted to come in contact with a pin 58, projecting laterally from frames I and J, which hold said braking device stationary while the type-cylinder and numbering device are printing; but when the said type-cylinder and numbering device are moved in the reverse direction these braking devices would move with the shafts thereof. The shaft of the tinting-cylinder carried by frame H is provided with a similar brake 59 on the end thereof, extending through its bearings.

When it is desired to remove the adjustable bearings of the shafts on which the tinting-roller, the type-cylinder, and the numbering device are secured from the frames H,

I, and J, respectively, I swing the plate e² and the boss carried thereby, containing the spring-tension devices for holding said bearings in place, out from the slots in which said bearings are seated. This I am able to do by making the opening at one end of the plate e², through which the bolt fastening it to the frame passes, elongated laterally through the side edge of said plate. By loosening the bolts said plates can thus be swung as if pivoted from the other bolt.

What I claim as new is—

1. In a web-perfecting printing-press, the combination with an impression-cylinder, of a type-cylinder and a numbering device, each capable of a planetary adjustment around the circumference of said impression-cylinder, said type-cylinder being movable longitudinally of its shaft.

2. In a web-perfecting printing-press, the combination with an impression-cylinder, of a type-cylinder and a numbering device, each capable of a planetary adjustment independently of each other, around the circumference of said impression-cylinder, said type-cylinder being movable longitudinally of its shaft.

3. In a web-perfecting printing-press, the combination with an impression-cylinder, of a type-cylinder and a revolving numbering device, each capable of a planetary adjustment independently of each other around the circumference of said impression-cylinder, said type-cylinder being movable longitudinally of its shaft.

4. In a web-perfecting printing-press the combination with an impression-cylinder, of a type-cylinder capable of a planetary adjustment around the circumference of said impression-cylinder and having a limited radial adjustment to and from the same, said type-cylinder being movable longitudinally of its shaft.

5. In a web-perfecting printing-press the combination with an impression-cylinder, of a type-cylinder, and a revolving numbering device, each capable of a planetary adjustment independent of each other and having a limited radial adjustment to and from said cylinder, said type-cylinder being movable longitudinally of its shaft.

6. In a web-perfecting printing-press, the combination, with an impression-cylinder, and means for guiding the web of paper through the press, of revolving punches having a planetary adjustment around said impression-cylinder, and operating on said paper independently of said cylinder.

7. In a web-perfecting printing-press the combination with an impression-cylinder, and means for guiding the web of paper through the press, of revolving punches and a type-cylinder, both of which are adjustable independently of each other.

8. In a web-perfecting printing-press the combination with an impression-cylinder, of

a frame adjustable concentric to said cylinder, and means for guiding the web of paper therethrough and revolving punches said guiding means and punches being carried by said frame.

9. In a web-perfecting printing-press the combination with an impression-cylinder, of a frame adjustable concentric to said cylinder, and means for guiding the web of paper therethrough, and longitudinally-adjustable revolving punches said guiding means and punches being carried by said frame.

10. In a web-perfecting printing-press the combination with an impression-cylinder, of a frame adjustable concentric to said cylinder, and means for guiding the web of paper therethrough and revolving punches said guiding means and punches being carried by said frame and deriving motion from the shaft of said impression-cylinder.

11. In a web-perfecting press the combination with an impression-cylinder, of a frame adjustable concentric to said cylinder, means for guiding the web of paper therethrough, revolving punches and means for slitting said paper longitudinally, all of which are carried by said frame.

12. In a web-perfecting press the combination with an impression-cylinder, of a frame adjustable concentric to said cylinder, means for guiding the web of paper therethrough, revolving punches and revolving cutters for slitting said paper longitudinally, all of which are carried by said frame.

13. In a web-perfecting printing-press the combination with an impression-cylinder, of a frame adjustable concentric to said cylinder, means for guiding the web of paper therethrough, revolving punches, a pair of revolving cutters for slitting said paper longitudinally the axis of one of which is movable to and from the axis of the other, all of which are carried by said frame.

14. In a web-perfecting printing-press the combination with an impression-cylinder, of a frame adjustable concentric to said cylinder, means for guiding the web of paper therethrough, revolving punches, two revolving shafts, a revolving cutter on one of said shafts, an arm projecting from the other shaft and a revolving cutter journaled in the free end thereof, and adjustable to and from the other cutter, all of which are carried by said frame.

15. In a web-perfecting printing-press, the combination with an impression-cylinder, of a frame adjustable concentric to said cylinder, means for guiding the web of paper therethrough, two revolving shafts one of which is stationary and the other flexible a revolving cutter on said stationary shaft, an arm projecting from said flexible shaft, and a revolving cutter journaled in the free end thereof, and adjustable to and from the other cutter, all of which are carried by said frame.

16. In a web-perfecting printing-press the combination with an impression-cylinder, of a frame adjustable concentric to said cylinder comprising two side frames suitably connected together beyond the circumference of the cylinder and journaled concentric to the cylinder adjacent to the ends thereof, and one of said frames having a segmental gear extending therefrom, a pinion engaging said segmental gear, and devices carried by said frame coöperating with said cylinder.

17. In a web-perfecting printing-press, the combination with an impression-cylinder, of several independent frames each adjustable concentric to said cylinder, a printing-cylinder carried by one of said frames, a numbering device carried by another of said frames, and punching device carried by yet another of said frames.

18. In a web-perfecting printing-press, the combination with an impression-cylinder, of several independent frames each adjustable concentric to said cylinder, a printing-cylinder carried by one of said frames, a multiple numbering device carried by another of said frames and a punching device carried by yet another of said frames.

19. In a web-perfecting printing-press, the combination with an impression-cylinder, of several independent frames each adjustable concentric to said cylinder, a printing-cylinder carried by one of said frames, a revolving numbering device carried by another of said frames, and revolving punching device carried by yet another of said frames.

20. In a web-perfecting printing-press, the combination with an impression-cylinder, of a printing-cylinder, numbering mechanism and punching devices, adjustable in curved paths struck from the center of the impression-cylinder to and from each other.

21. In a web-perfecting printing-press, the combination with an impression-cylinder and the supporting-frame therefor having bearings for the shaft of said cylinder, the outer cylindrical ends of which are extended, of a frame adjustable concentric to said cylinder on the extensions of said bearings, devices carried by said frame coöperating with said cylinder, and means for adjusting said frame.

22. In a web-perfecting printing-press, the combination with an impression-cylinder and the supporting-frame therefor having bearings for the shaft of said cylinder, the outer cylindrical ends of which are extended, of several frames independently adjustable concentric to said cylinder on the extensions of said bearings devices carried by said frames coöperating with said cylinder, and means for adjusting said frame.

23. In a web-perfecting printing-press, the combination with an impression-cylinder and the supporting-frame therefor having bearings for the shaft of said cylinder, the outer cylindrical ends of which are extended, of a

frame adjustable concentric to said bearings, and having a segmental gear projecting therefrom, pinion engaging said segmental gear, devices carried by said frame cooperating with said cylinder, and means for adjusting said frame.

24. In a web-perfecting printing-press, the combination with an impression-cylinder and the supporting-frame therefor having bearings for the shaft of said cylinder, the outer cylindrical ends of which are extended, of several frames independently adjustable concentric to said cylinder on the extensions of said bearings and having a segmental gear projecting therefrom, pinion engaging said segmental gear, devices carried by said frames cooperating with said cylinder, and means for adjusting said frame.

25. In a web-perfecting printing-press, the combination with the impression-cylinder, of a frame adjustable concentric to said cylinder, a revolving printing device, shaft therefor having spring-depressed removable bearings in said frame, and eccentric-pins for adjusting said bearings to and from said impression-cylinder.

26. In a web-perfecting printing-press, the combination with the impression-cylinder, of frames adjustable concentric to said cylinder, revolving printing devices, shafts therefor respectively having spring-depressed removable bearings in said frames, eccentric-pins for adjusting said bearings to and from said impression-cylinder and means for connecting pins in the several frames, whereby they operate simultaneously.

27. In a web-perfecting printing-press, the combination with the impression-cylinder, of a frame adjustable concentric to said cylinder, an ink-fountain carried thereby comprising a suitable receptacle a roller forming part of its bottom by means of which alone ink is mechanically taken from said fountain, a revolving printing device, shaft therefor, deriving motion from said impression-cylinder, an inking-roller in constant engagement with said printing device, and means for transferring said ink from said fountain to said inking-roller, all of which are carried by said frame.

28. In a web-perfecting printing-press, the combination with the impression-cylinder, of a frame adjustable concentric to said cylinder, an ink-fountain carried thereby comprising a suitable receptacle a roller forming part of its bottom by means of which alone, ink is mechanically taken from said fountain, a revolving printing device, a shaft therefor, deriving motion from said impression-cylinder, an inking-roller in constant engagement with said printing device, an oscillatory ink-roller for transferring to said constantly-engaging ink-roller, all of which are carried by said frame.

29. In a web-perfecting printing-press, the

combination with the impression-cylinder, of a frame adjustable concentric to said cylinder, an ink-fountain carried thereby comprising a suitable receptacle a roller forming part of its bottom by means of which alone, ink is mechanically taken from said fountain, a revolving printing device, shaft therefor, deriving motion from said impression-cylinder, an inking-roller in constant engagement with said printing device, a cam-actuated oscillatory ink-roller for transferring to said constantly-engaging ink-roller, all of which are carried by said frame.

30. In a web-perfecting printing-press, the combination with the impression-cylinder, of a frame adjustable concentric to said cylinder, an ink-fountain carried thereby comprising a suitable receptacle a roller forming part of its bottom by means of which alone, ink is mechanically taken from said fountain, a revolving printing device, cam-actuated oscillatory arms, and roller journaled in the free ends thereof whereby said ink is transferred from said fountain to said constantly-engaging ink-roller.

31. In a web-perfecting printing-press, the combination with the impression-cylinder, of a frame adjustable concentric to said cylinder, an ink-fountain, carried thereby comprising a suitable receptacle a roller forming part of its bottom by means of which alone ink is mechanically taken from said fountain, a ratchet on the extended end of one of the journals thereof, a revolving printing device, shaft therefor, deriving motion from said impression-cylinder, an inking-roller in constant engagement with said printing device, cam-actuated oscillatory arms a pawl pivoted to one of said arms and engaging and imparting an intermittent movement to said ratchet, and roller journaled in the free ends of said arms whereby said ink is transferred to said constantly-engaging ink-roller.

32. In a web-perfecting printing-press, the combination with the impression-cylinder, of a frame adjustable concentric to said cylinder, an ink-fountain carried thereby comprising a suitable receptacle a roller forming part of its bottom by means of which alone ink is mechanically taken from said fountain and a longitudinal side wall therefor the lower edge of which bears down upon said roller, a revolving printing device, shaft therefor, deriving motion from said impression-cylinder, an inking-roller in constant engagement with said printing device, and means for transferring said ink-roller, all of which are carried by said frame.

33. In a web-perfecting printing-press the combination with the impression-cylinder, of a frame adjustable concentric to said cylinder, and means carried thereby and cooperating with said impression-cylinder comprising a revolving printing device, a shaft there-

for deriving motion from said impression-cylinder, an inking-roller engaging said printing device, a longitudinally-vibrating distributing ink-roller engaging said first-mentioned
5 inking-roller, a cam on the shaft of said distributing-roller, a stationary arm engaging the same, an ink-fountain, and a cam-actuated oscillating ink-roller for transmitting the ink from the ink-fountain to said vibratory roller.
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34. In a web-perfecting printing-press, the combination with an impression-cylinder, of a frame adjustable concentrically around said cylinder, a revolving printing device,
15 inking-roller in constant engagement therewith, a vibratory distributing-roller engaging said inking-roller, a cam on the shaft of said distributing-roller, a stationary arm engaging the same, an ink-fountain comprising
20 a suitable receptacle, a roller forming part of its bottom by means of which alone ink is mechanically taken from said fountain, cam-actuated oscillatory arms and a roller journaled in the free ends of the same whereby ink is

transferred from said fountain-roller to said distributing-roller. 25

35. In a web-perfecting printing-press, the combination with an impression-cylinder, of a frame adjustable concentrically around said cylinder, a revolving printing device,
30 spring-depressed removable bearings therefor in said frame, an inking-roller in constant engagement therewith, a vibratory distributing-roller engaging said inking-roller, a cam on the shaft of said distributing-roller, a stationary arm engaging the same, an ink-fountain comprising a suitable receptacle, a roller forming part of its bottom by means of which
35 alone ink is mechanically taken from said fountain, cam-actuated oscillatory arms and a roller journaled in the free ends of the same whereby ink is transferred from said fountain-roller to said distributing-roller. 40

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