

No. 637,567.

Patented Nov. 21, 1899.

E. HETT.

TRANSFER PRESS.

(Application filed Nov. 13, 1895.)

(No Model.)

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Fig. 23.

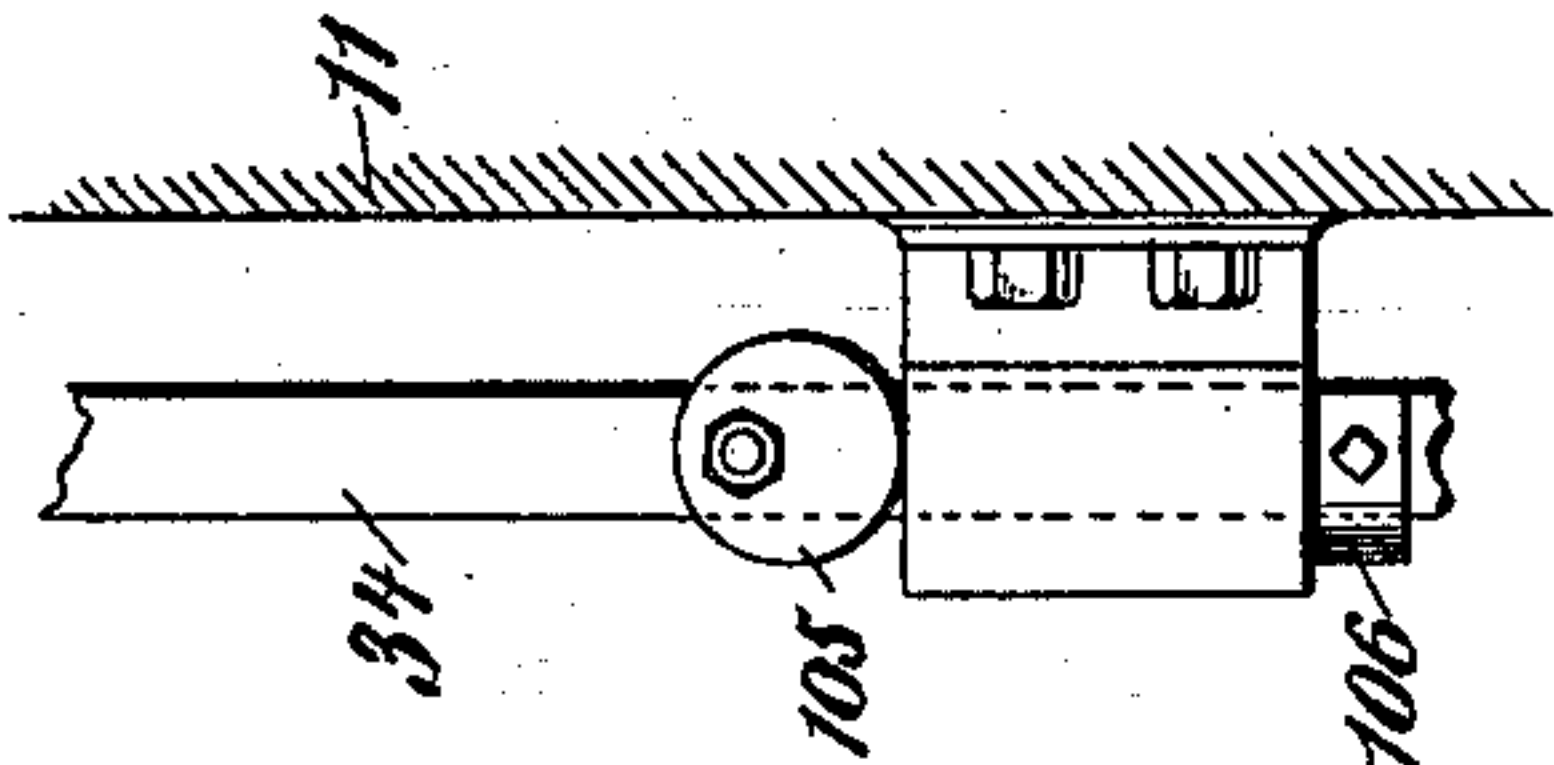
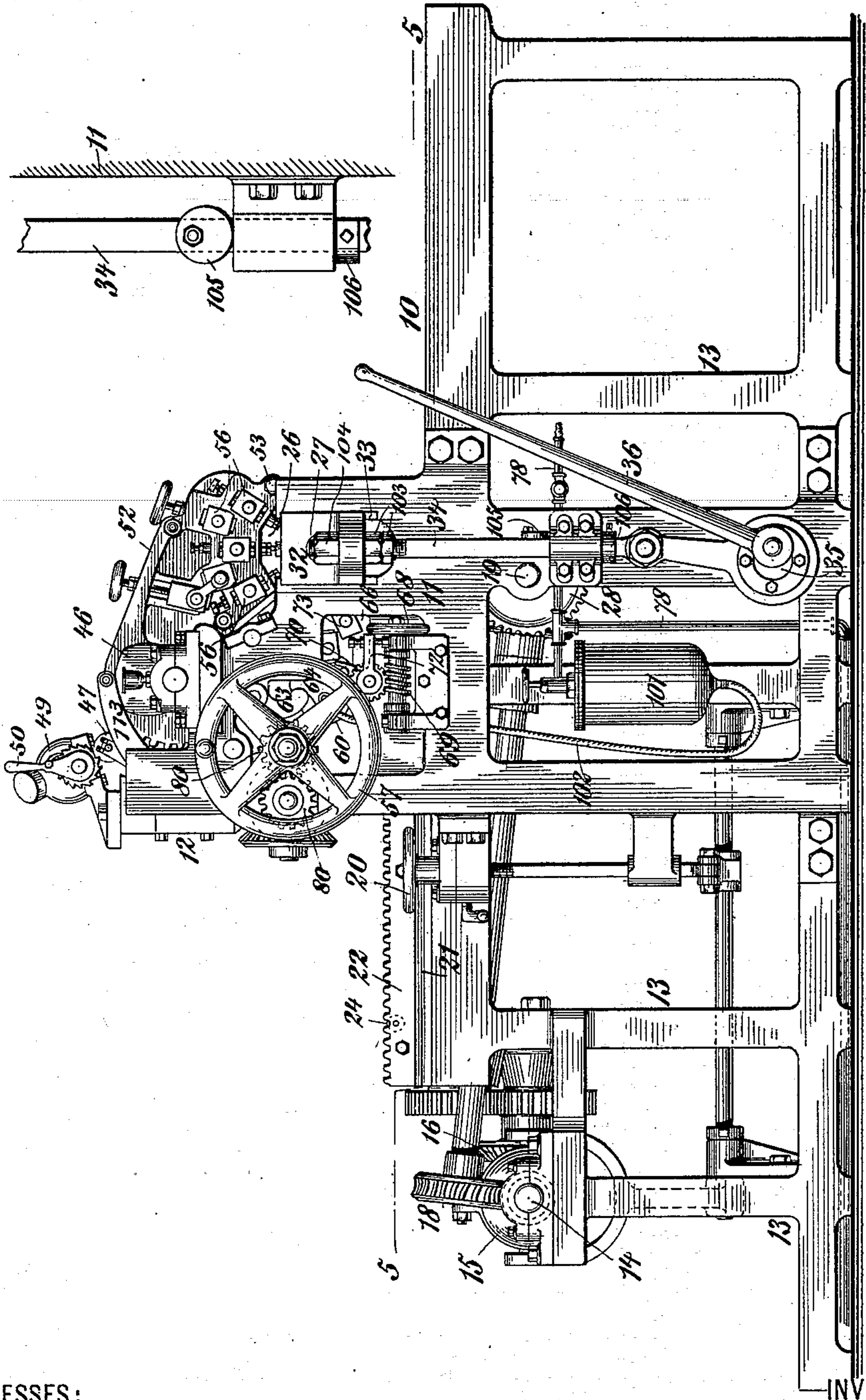


Fig. 1.



WITNESSES:

*N. H. Hayworth*  
*Edwin Seger*

INVENTOR

*Edward Hett*  
BY *Mitter & Kemper*  
his ATTORNEYS

No. 637,567.

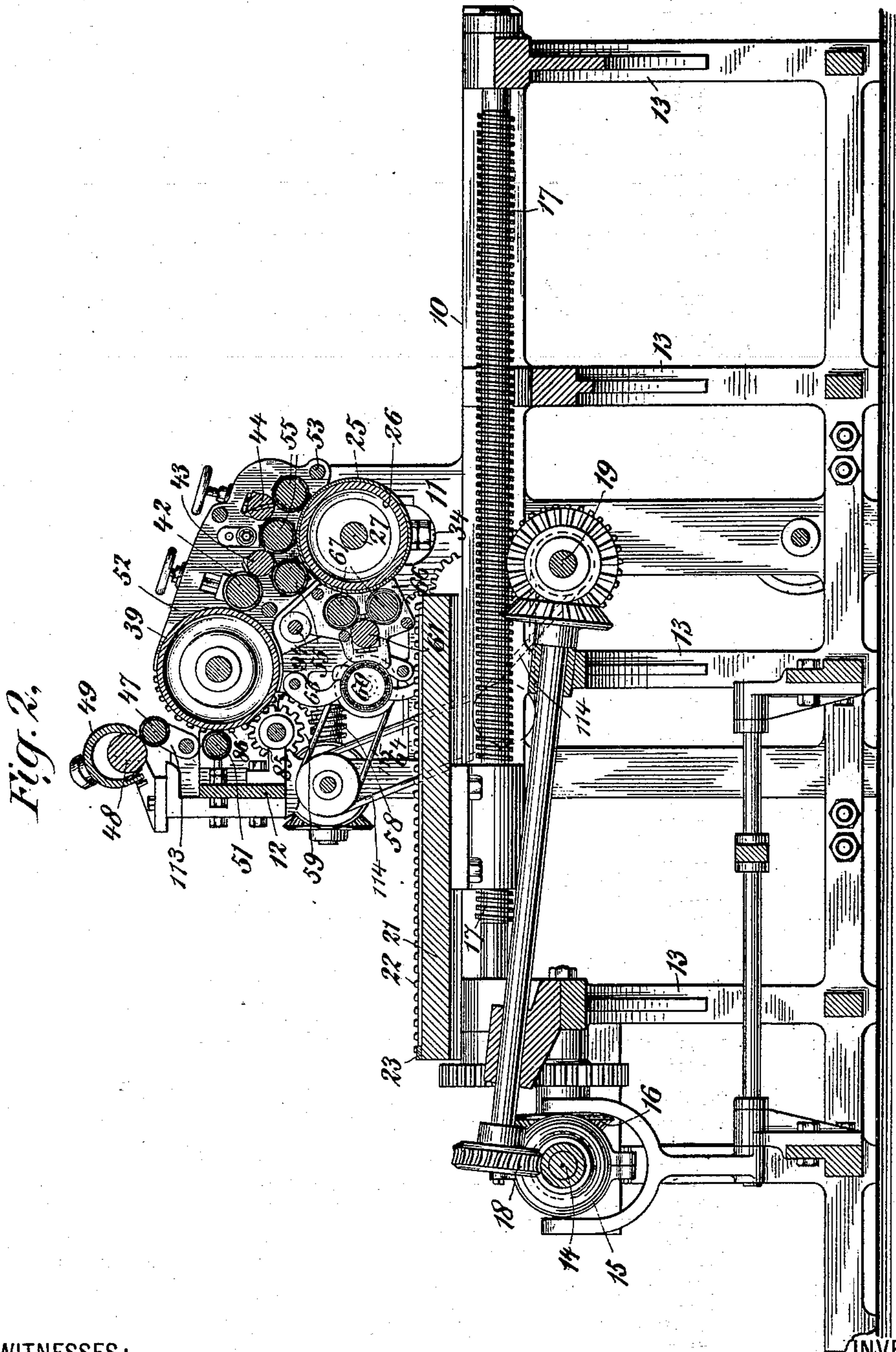
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E. HETT.  
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(No Model.)

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WITNESSES:

*B. H. Raymond*  
*Edwin Seger*

INVENTOR

*Edward Hett*

BY *Mitter & Kerym*  
his ATTORNEYS



No. 637,567.

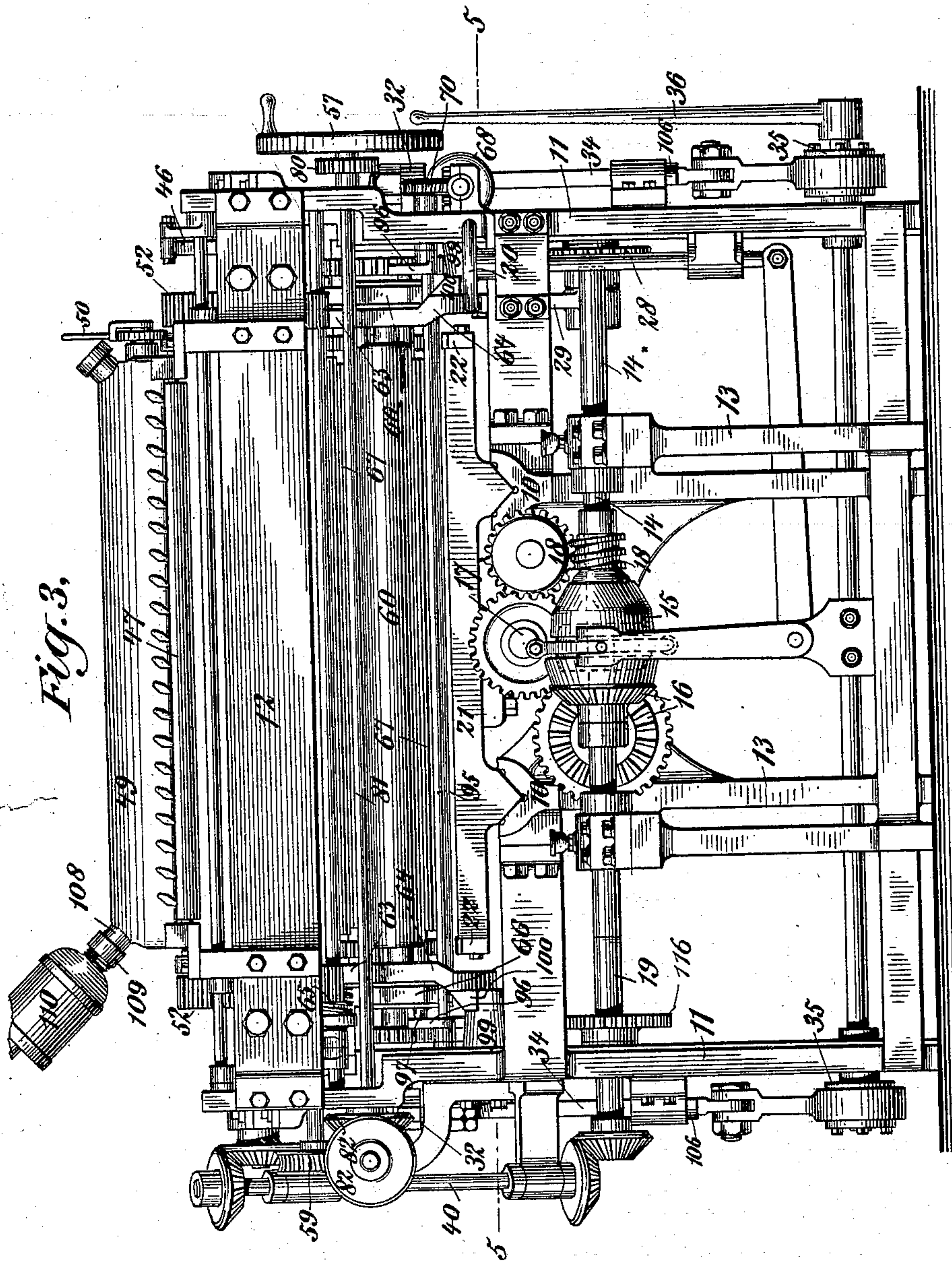
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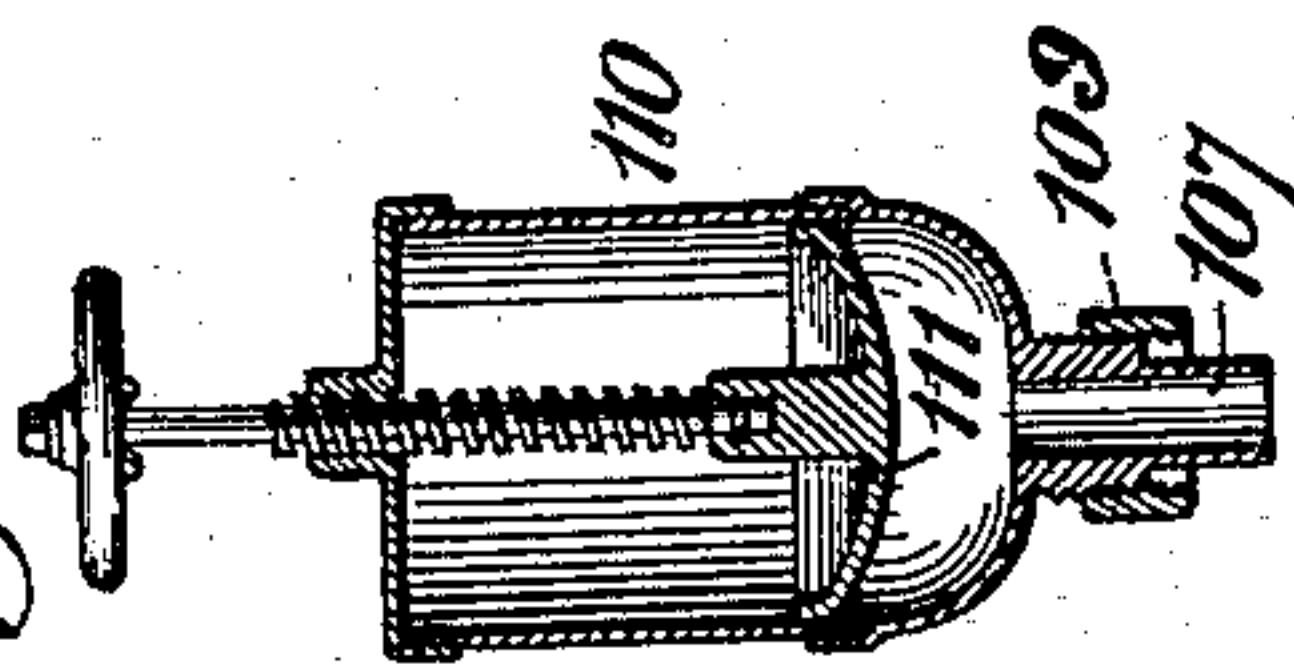
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WITNESSES:

*W. H. Haywood*  
*Edwin Seger*

Fig. 24.



INVENTOR

*Edward Hett*

BY

*Mitter & Kenyon*

his ATTORNEYS

No. 637,567.

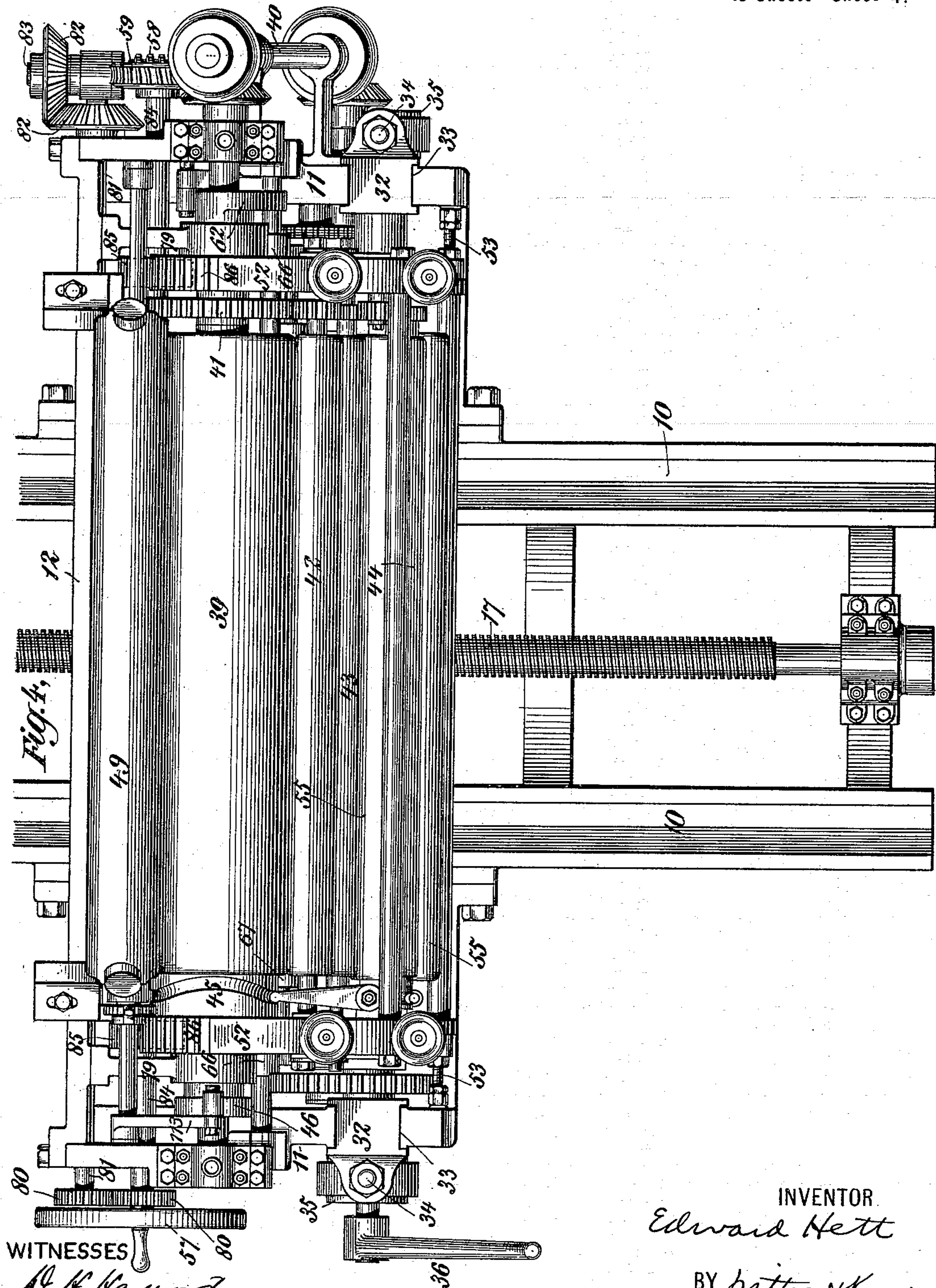
Patented Nov. 21, 1899.

E. HETT.  
TRANSFER PRESS.

(Application filed Nov. 13, 1895.)

(No Model.)

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WITNESSES

*N. K. Haywood*  
*Edwin Seger*

INVENTOR

*Edward Hett*

BY *Hitter & Kern*

his ATTORNEYS



No. 637,567.

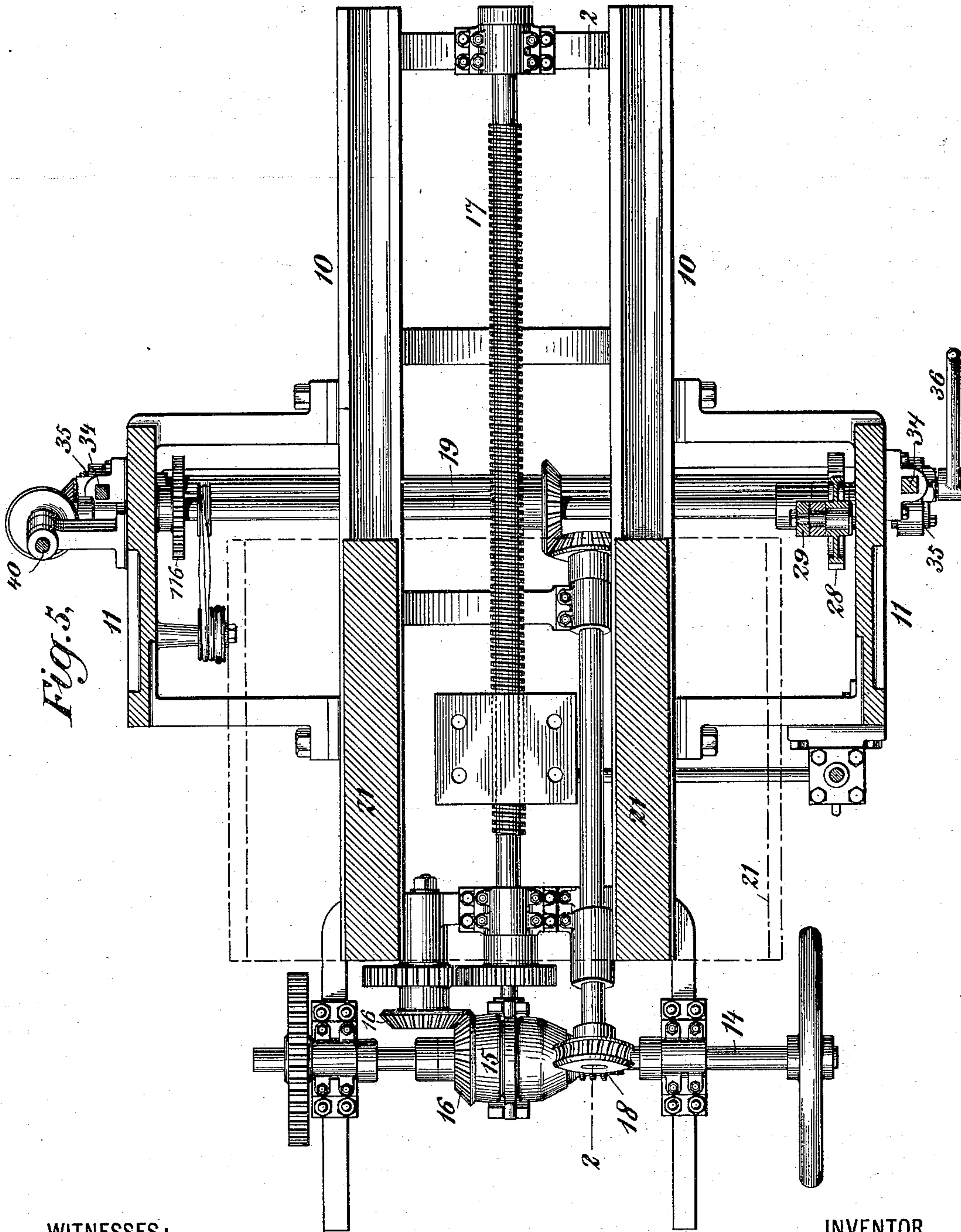
Patented Nov. 21, 1899.

E. HETT.  
TRANSFER PRESS.

(Application filed Nov. 13, 1895.)

(No Model.)

10 Sheets—Sheet 5.



WITNESSES:

*B. H. Raymond*  
*Edwin Seger*

INVENTOR

*Edward Hett*

BY

*Witter & Kerrison*

*his* ATTORNEYS



No. 637,567.

Patented Nov. 21, 1899.

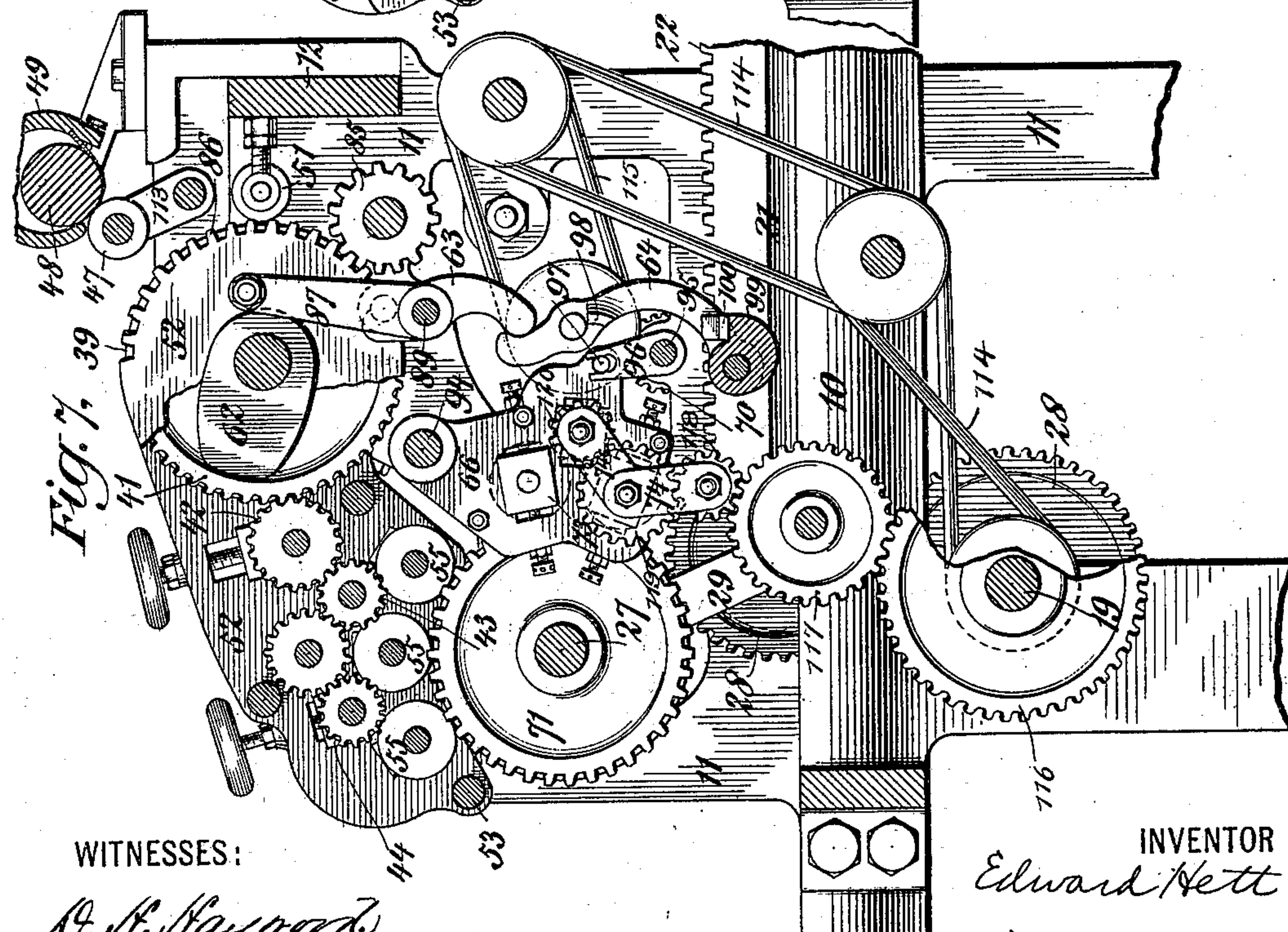
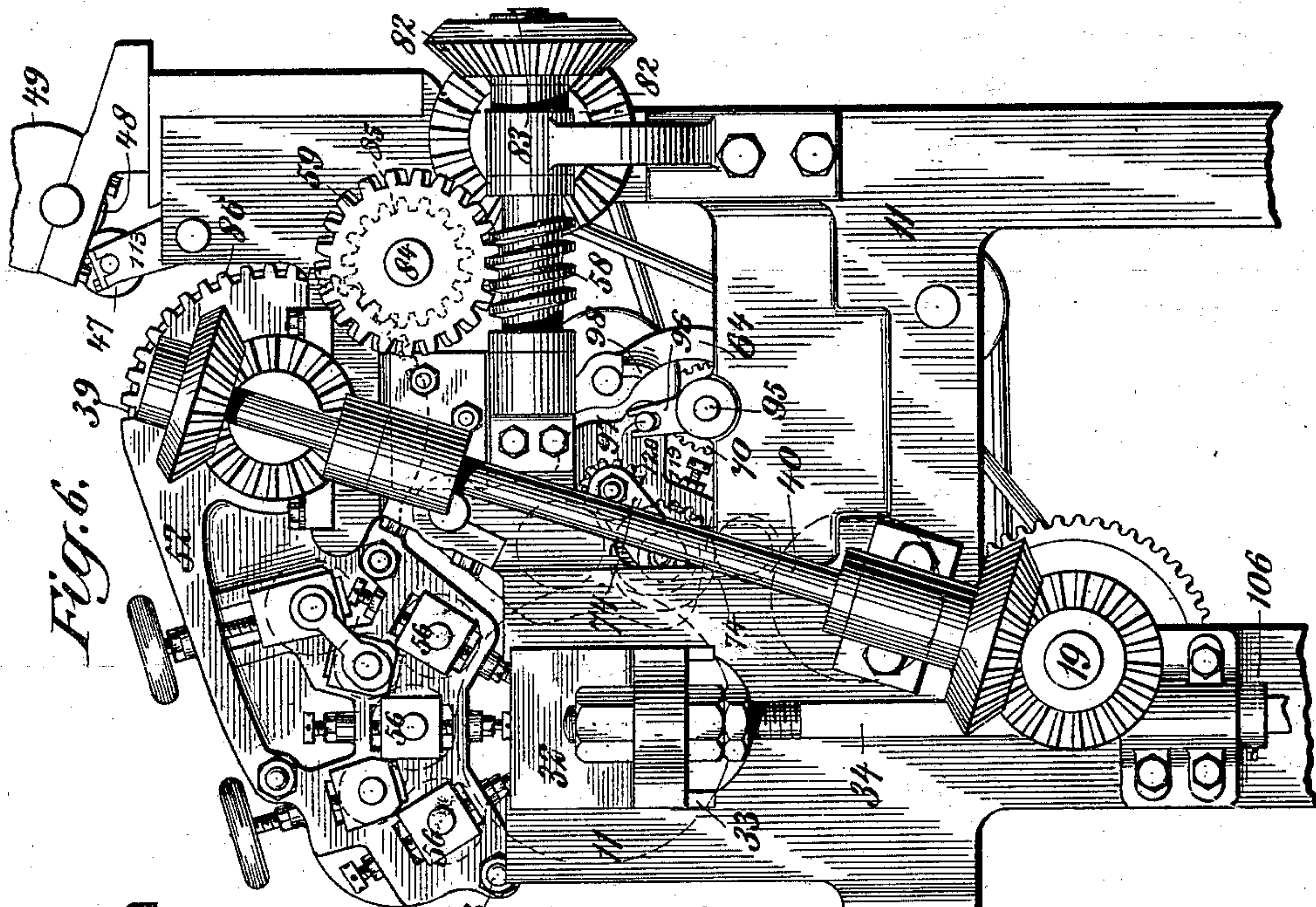
E. HETT.

TRANSFER PRESS.

(Application filed Nov. 13, 1895.)

(No Model.)

10 Sheets—Sheet 6.



WITNESSES:

*B. H. Raymond*  
*Edwin Seger*

INVENTOR

*Edward Hett*

BY

*Mitter & Keryn*

his ATTORNEYS



No. 637,567.

Patented Nov. 21, 1899.

E. HETT.  
TRANSFER PRESS.

(Application filed Nov. 13, 1895.)

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Fig. 9.

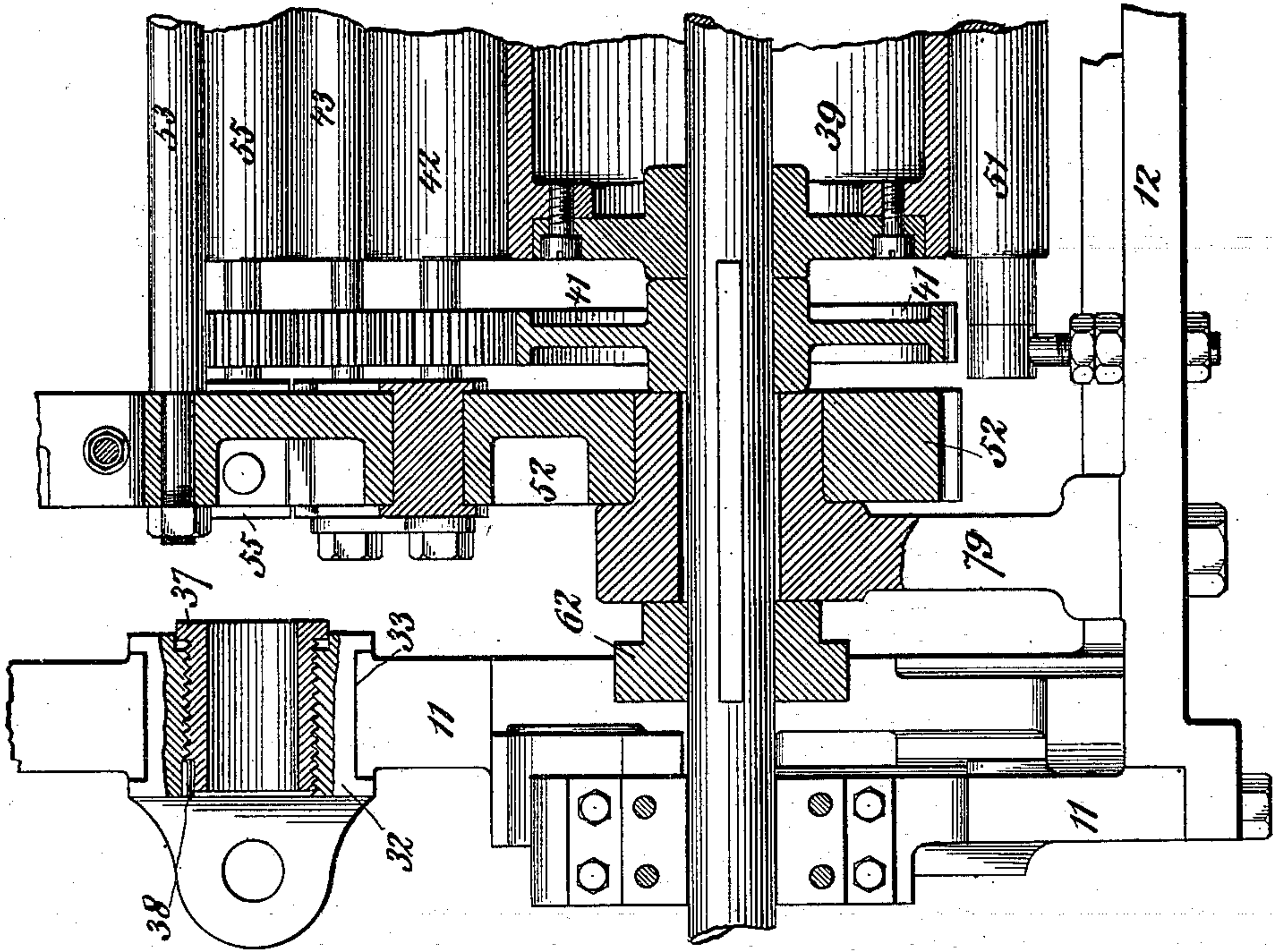
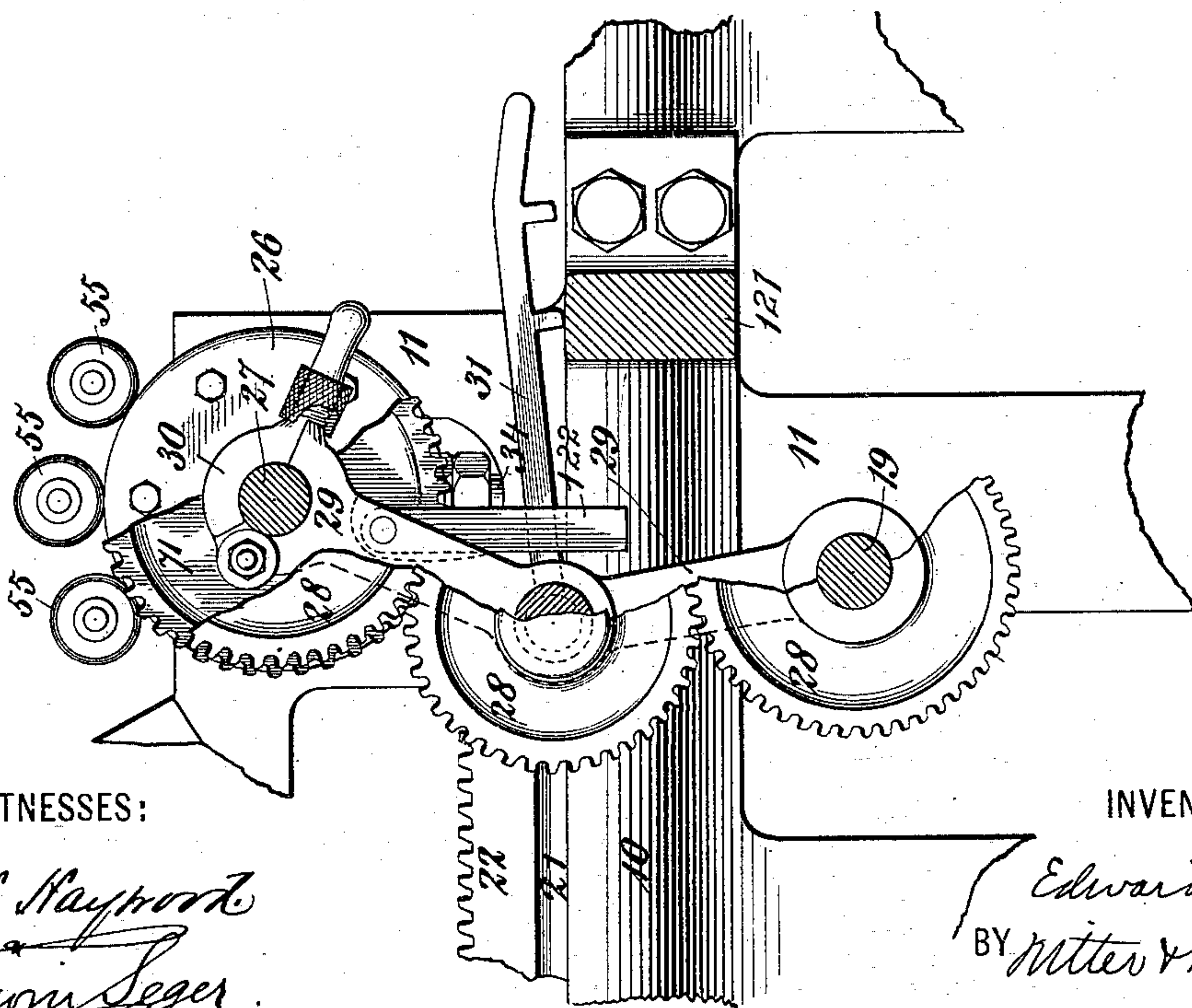


Fig. 8.



WITNESSES:

*D. H. Maybrook*  
*Edwin Seger*

INVENTOR

*Edward Hett*  
BY *Mitter & Keryn*  
his ATTORNEYS

No. 637,567.

Patented Nov. 21, 1899.

E. HETT.  
TRANSFER PRESS.

(Application filed Nov. 13, 1895.)

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Fig. 11.

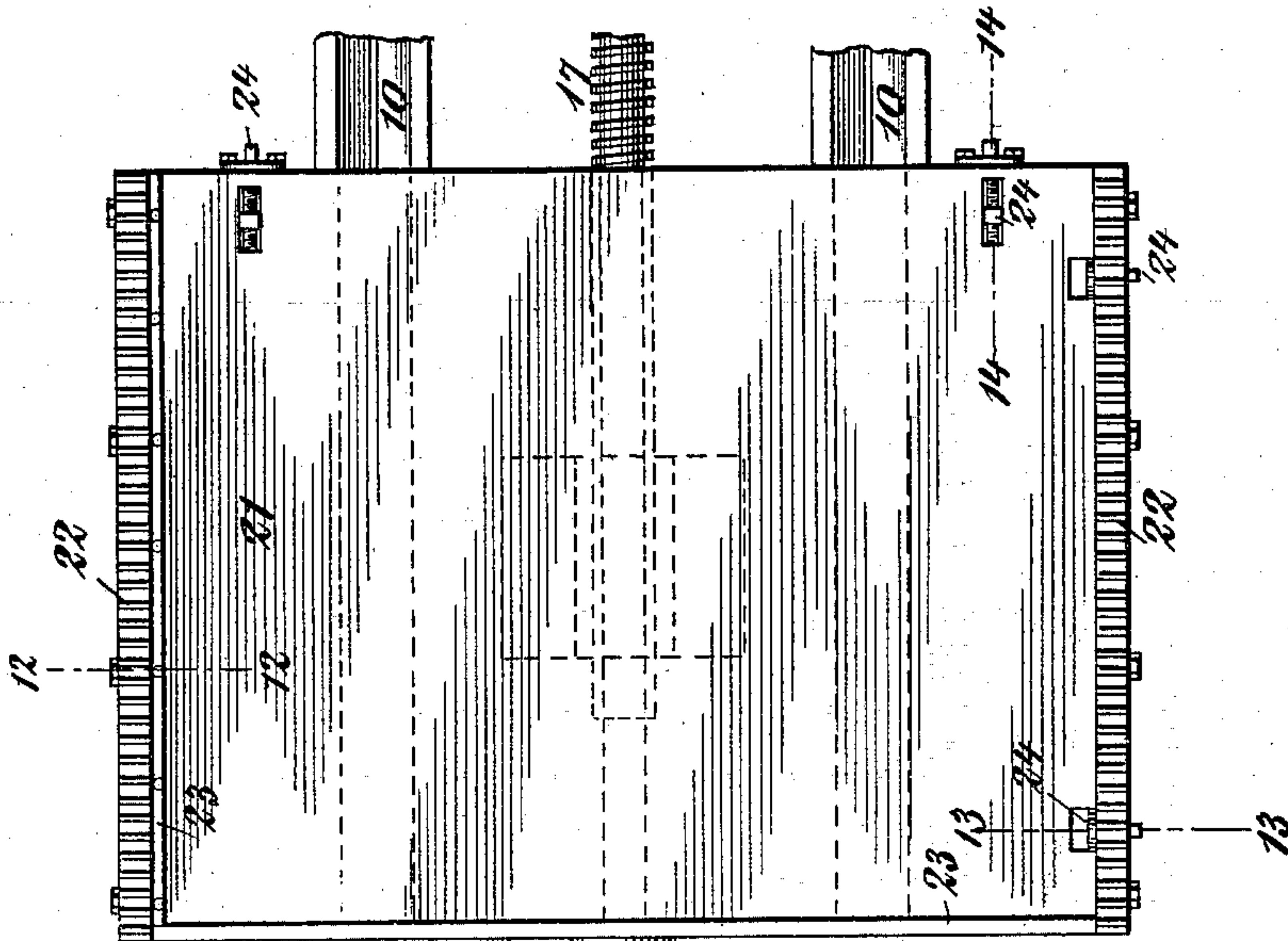


Fig. 10.

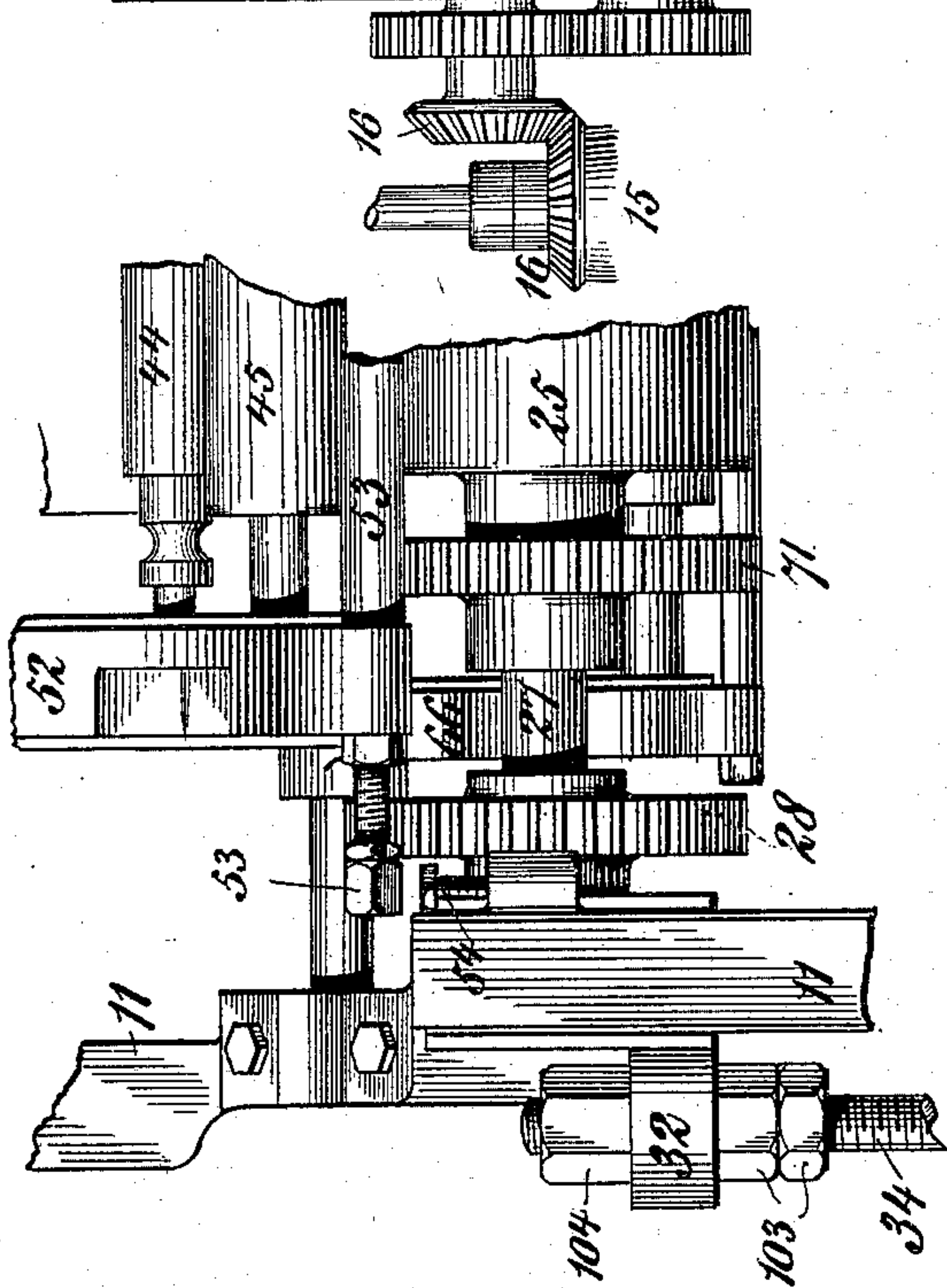


Fig. 14.

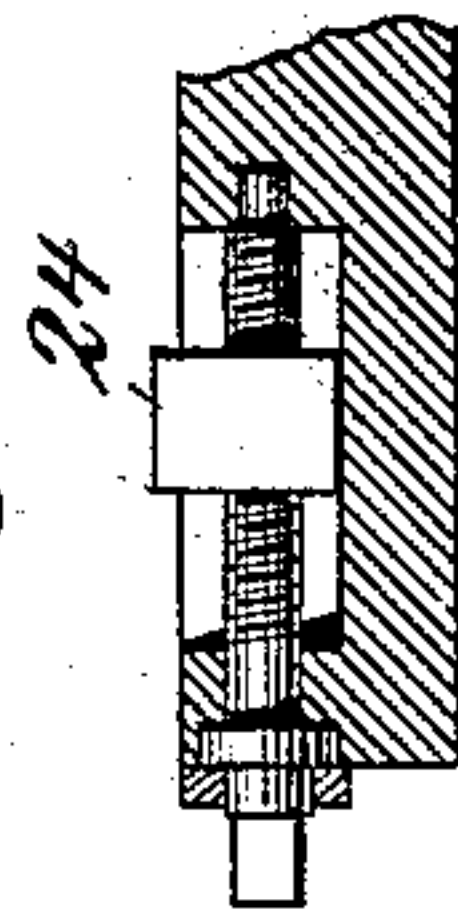


Fig. 13.

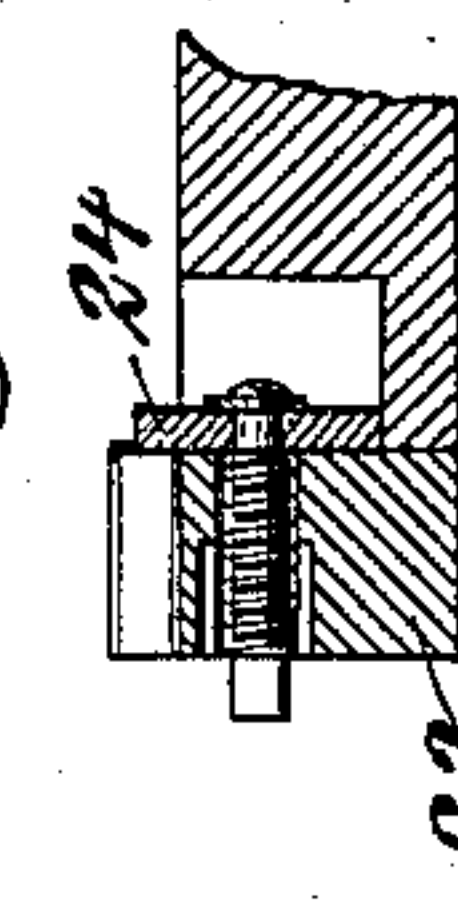
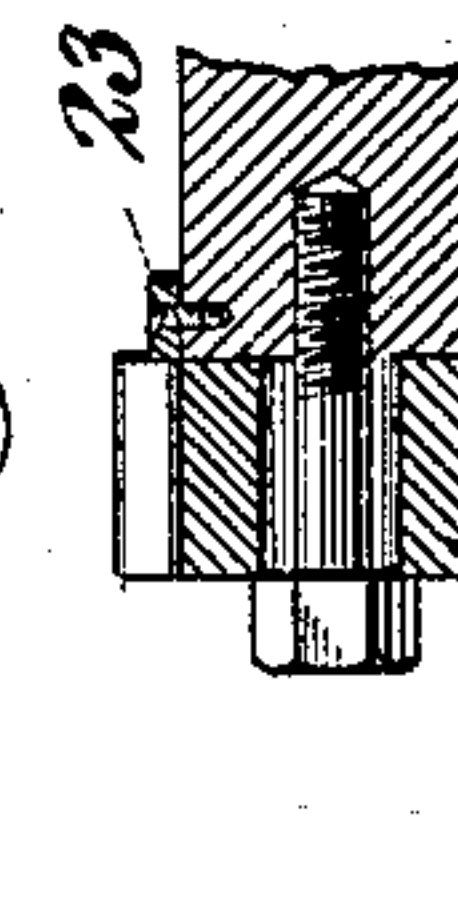


Fig. 12.



WITNESSES:

*D. H. Raymond*  
*Edwin Seger*

INVENTOR

*Edward Hett*

BY

*Vitter & Kenyon*  
his ATTORNEYS



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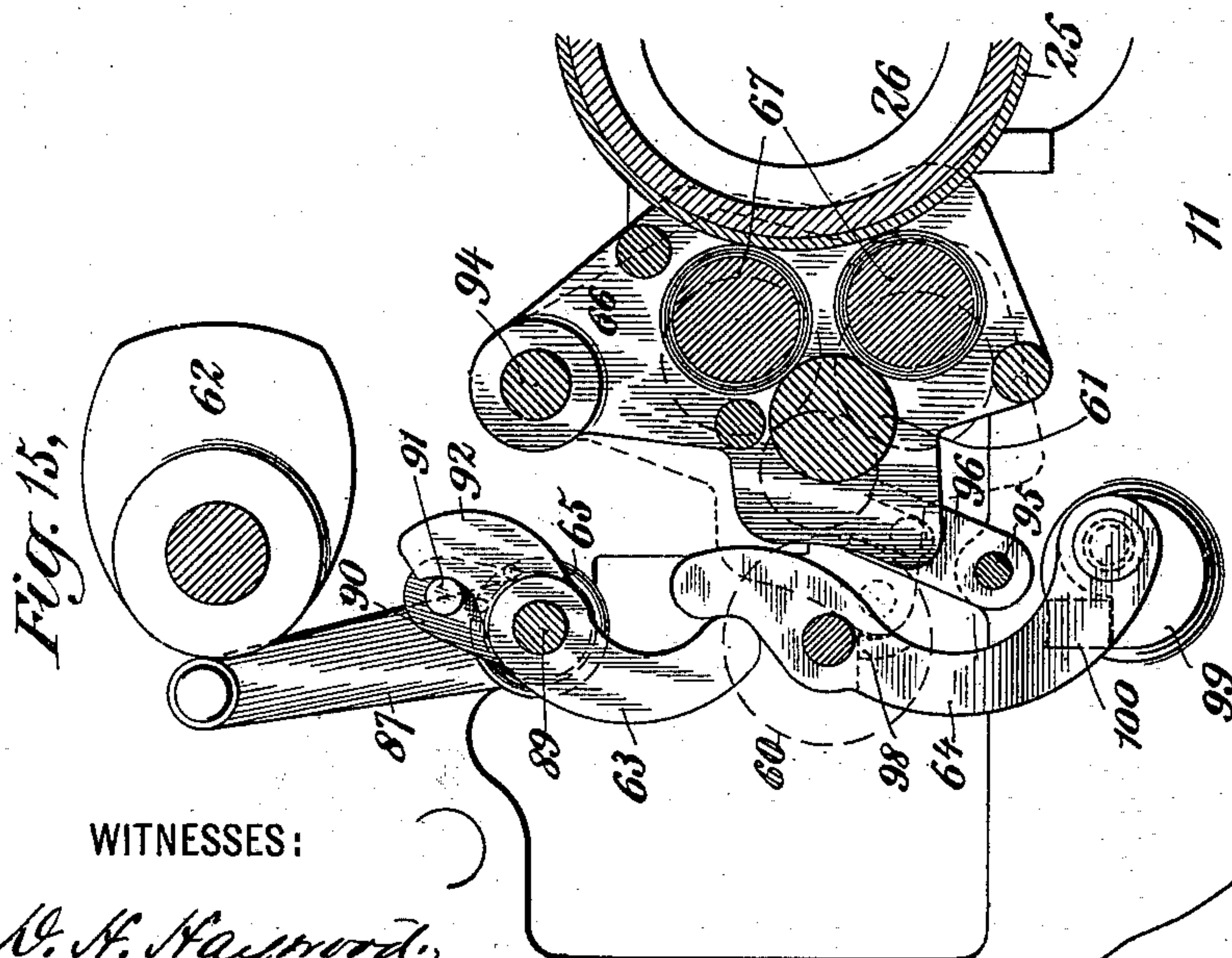
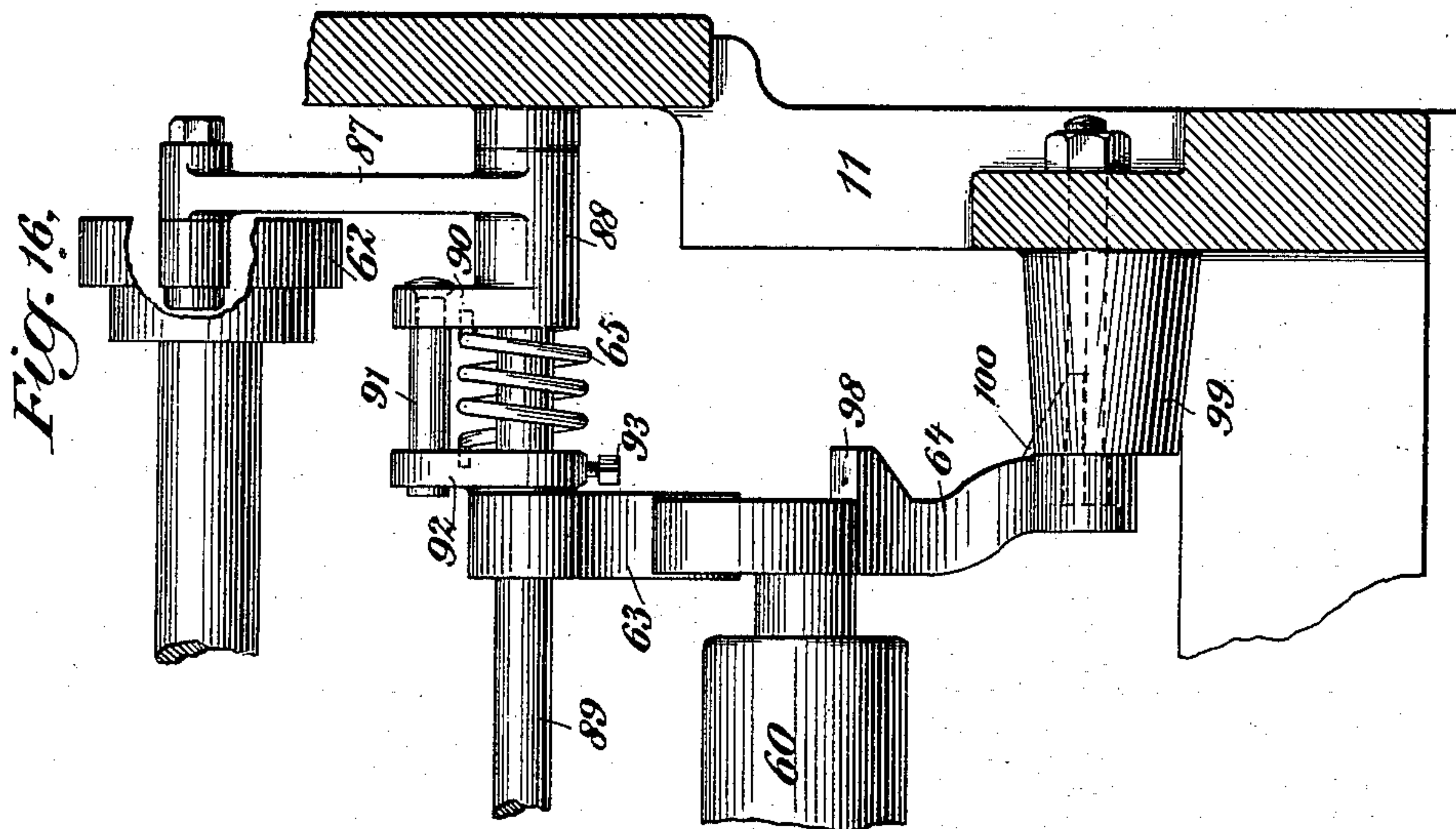
E. HETT.

TRANSFER PRESS.

(Application filed Nov. 13, 1895.)

(No Model.)

10 Sheets—Sheet 9.



WITNESSES:

*W. H. Raymond*  
*Edwin Seger*

INVENTOR

*Edward Hett*

BY

*Nitter & Kenyon*  
his ATTORNEYS

No. 637,567.

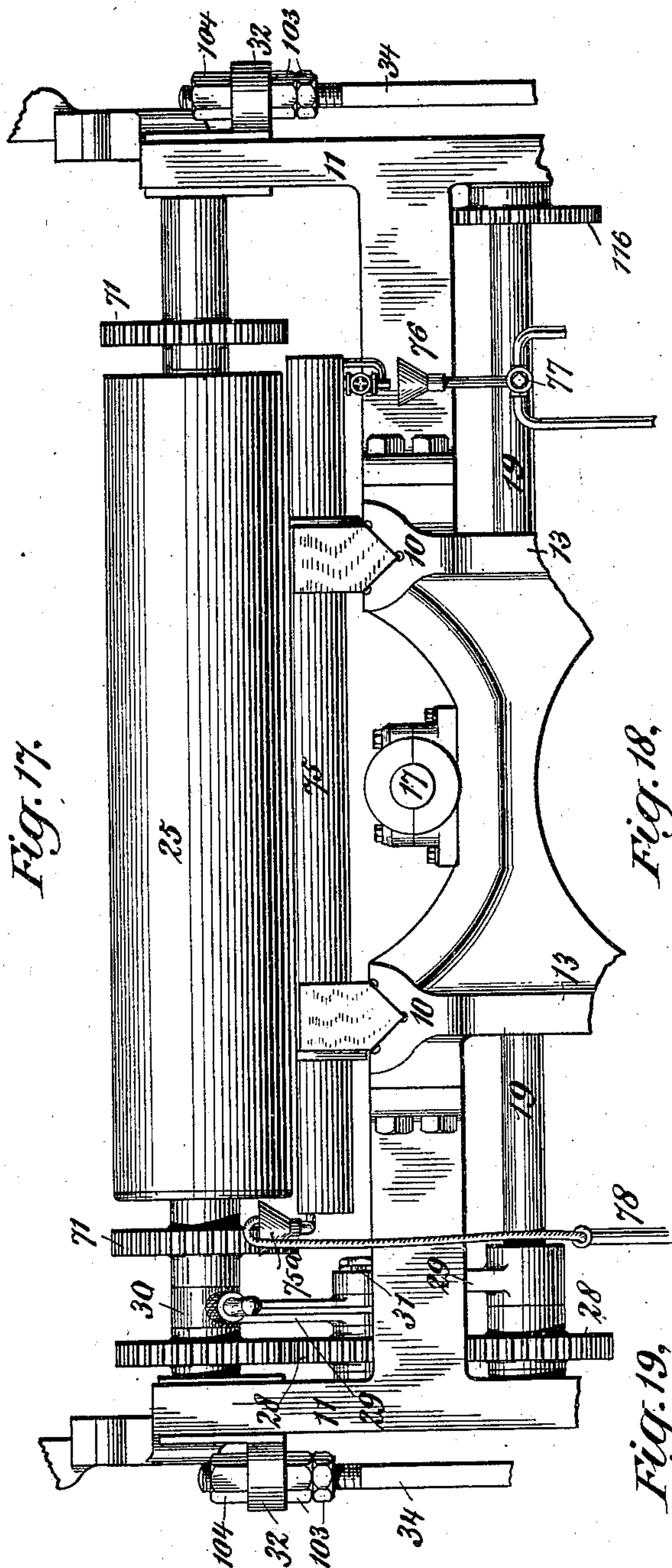
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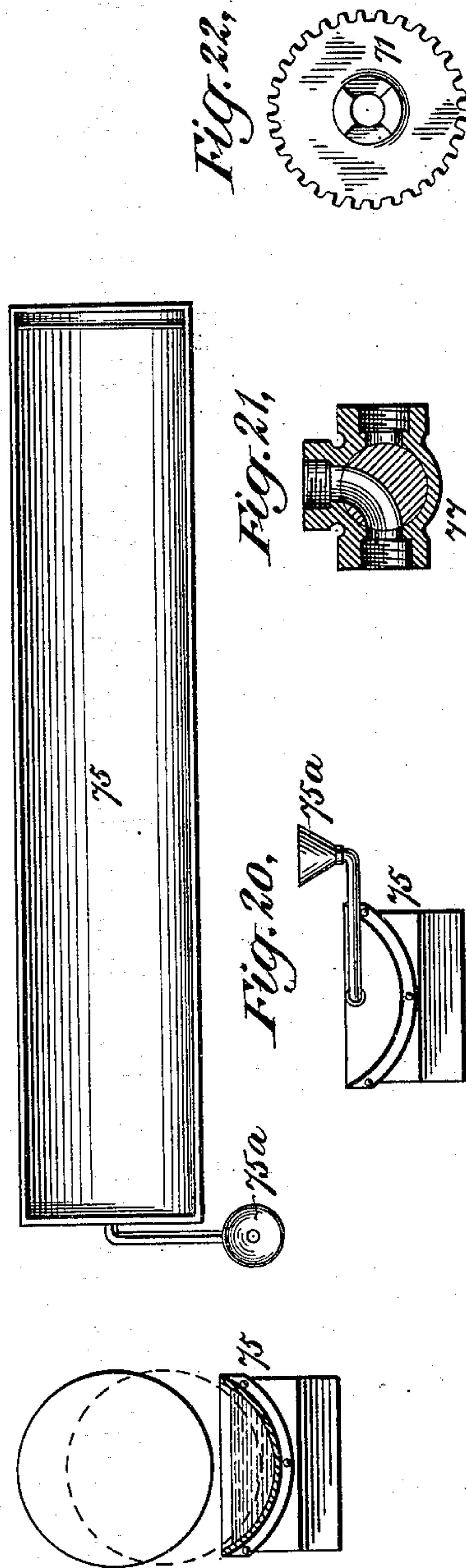
(No Model.)

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WITNESSES:

*D. H. Haywood*  
*Edwin Seger*



INVENTOR

*Edward Hett*

BY

*Mitter & Kerrigan*

his ATTORNEYS



# UNITED STATES PATENT OFFICE.

EDWARD HETT, OF NEW YORK, N. Y.

## TRANSFER-PRESS.

SPECIFICATION forming part of Letters Patent No. 637,567, dated November 21, 1899.

Application filed November 13, 1895. Serial No. 568,795. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD HETT, a citizen of the United States, and a resident of New York, (New Dorp, Staten Island,) in the county of Richmond, State of New York, have invented new and useful Improvements in Transfer-Presses, of which the following is a specification.

My improvements relate primarily (although not exclusively) to transfer and printing presses such as are adapted to do lithographic work, and especially such as involve the use of rounded or cylindrical printing-surfaces—such, for instance, as are shown in my applications for patents serially numbered 718,570, filed May 27, 1899, and 537,582, filed February 7, 1895, and such as are well adapted to carry out the methods of my applications serially numbered 703,082, filed January 23, 1899, and serially numbered 695,281, filed November 2, 1898.

The object of my improvements is to perfect the operations and mechanisms involved and to better adapt the apparatus to practical use.

The accompanying drawings, which form a part hereof, represent a lithographic transfer-press which embodies my improvements.

Figure 1 is a side elevation of the machine. Fig. 2 is a longitudinal section taken on the plane of the line 2 2 of Fig. 5. Fig. 3 is a rear elevation of the machine. Fig. 4 is a top view with the rear portion broken away to enable the other parts to be shown on a larger scale. Fig. 5 is a horizontal section taken on the plane of the line 5 5 of Figs. 1 and 3. Fig. 6 is an opposite side elevation of a portion of the machine and drawn on a larger scale. Fig. 7 is a detail sectional view of other parts of the machine looking in the same direction as Fig. 6, but with the frame removed and parts broken away. Fig. 8 is a view in detail of the gear connection between the shaft and the printing-surface and its attachments. Fig. 9 is a horizontal section of a portion of the machine, the line of section being through the axis of the distributing-cylinder, showing the bracket-support for the swinging frame and other details. Fig. 10 is a detail front elevation of a portion of the machine, showing the adjustable stop for the swinging frame. Fig. 11 is a top view of

the reciprocating bed and its connections. Fig. 12 is a sectional view on the line 12 12 of Fig. 11. Fig. 13 is a sectional view on the line 13 13 of Fig. 11. Fig. 14 is a sectional view on the line 14 14 of Fig. 11. Fig. 15 is a sectional view through the machine, showing the swinging frame carrying the dampening-rollers and its connections and the means for impositively vibrating the water-roller. Fig. 16 is a front elevation of certain of these parts—namely, the means for impositively vibrating the water-roller. Fig. 17 is a front elevation of a portion of the machine, showing the removable bath in position on the slideways and its connections. Fig. 18 is a top view of the removable bath. Fig. 19 is a central cross-section through the removable bath, showing the relative positions of the printing-surface therewith. Fig. 20 is an end view of the same. Fig. 21 is a detail section view of a three-way cock used in connection with same. Fig. 22 is a detail end view of one of the gears of the printing-surface, showing its clutch connection with same. Fig. 23 is a detail view of a stop carried by the pressure-bars for maintaining the position of the printing-surface, and Fig. 24 is a section of the portable ink-reservoir.

The machine of the drawings is a so-called "transfer-press" used in lithographic work and is in its general features and purposes and operations similar to the transfer-press shown in my pending application filed January 23, 1899, and serially numbered 703,082. A reciprocating bed is adapted to carry the setting-up plates. A cylindrical lithographic surface is adapted to be driven positively with the reciprocating bed while the latter is reciprocating under it, to be moved toward and from the path of the reciprocating bed whenever desired and to be driven positively whether it is moved into the one position or the other. Suitable inking and dampening mechanisms are also present.

The special features of novelty are as follows: The swinging frame carrying the inking-rollers has an adjustable stop limiting its motion in the direction toward the printing-surface. The swinging frame carrying the dampening-rollers has an adjustable stop limiting its motion in the direction toward the printing-surface. This swinging frame car-



rying the dampening-rollers is swung by a chain of mechanism including a worm and a worm-wheel. The printing-surface has an adjustable stop limiting its motion in the direction toward the inking and dampening rollers. The water-supply roller is vibrated toward the water-distributing rollers by an impositive driving mechanism—that is to say, one working through a spring connection—whereby the contact between the rollers is at all times a spring-pressure contact and whereby also when the supply-roller meets with any positive obstruction to its vibration toward the distributing-rollers the further motion of the driving mechanism is expended in straining the spring. The frame has two slideways for the bed, side frames for the driving mechanisms, the printing-surface, the dampening devices, and the main ink-distributing roller, a back frame for the swinging ink-frame, the ink-fountain and the vibrating ink-roller and the back ink-rollers, and braced supporting-legs. The brass water-rider is positively driven and through a chain of gear-wheels carried on a chain of links, whereby it is positively driven whatever the position of the swinging frame carrying the water-roller. The chain of links carrying the chain of gear-wheels driving the printing-surface have holding-arms to secure them in place when uncoupled from the printing-surface, and there are other detail features of novelty, as shown.

A description in detail of the machine of the drawings is as follows:

The frame of the machine consists of two slideways 10, two side frames 11, a back frame 12, and braced supporting-legs 13. The main driving-shaft of the machine 14 is by proper reversing mechanism (not shown) adapted to be driven in either direction. It carries a double friction-clutch 15, adapting it to drive either the intermeshing beveled gear-wheels 16 (and so through suitable gear connections the bed-reciprocating screw 17 and the printing-surface when it is lowered) or the intermeshing worm and worm-wheel 18, (and so through suitable gear connections the driving-shaft 19 and the printing-surface when it is raised and the main ink-distributing roller and through the latter the inking and dampening mechanisms generally.) The movable part of this double friction-clutch is moved by a screw hand-wheel 20, acting through a lever, as shown. This gives power and reliably locks the frictional surfaces of the clutch in reliably-holding contact in either direction without other locking mechanism.

The reciprocating bed 21 is adapted to slide in the slideways 10 and has a depending nut adapting it to be driven by the screw 17. It has on each side a rack 22, which is made vertically adjustable, as indicated in Fig. 12, the bolt-holes in the racks being vertically elongated for that purpose, enabling the bed to be used with setting-up plates or with impression-surfaces of different thicknesses. These

racks take into pinions 71 on the shaft of the printing-surface when the latter is lowered into contact with the setting-up plate or impression-surface on the bed, whereby the bed and printing-surface are driven relatedly and positively together whenever the bed is under the printing-surface and the printing-surface is lowered to the bed. In practice the racks 22 and pinions 71 will be marked and the pinions always so lowered that a given tooth of the pinion will take into the same recess of the rack, whereby with the arrangements immediately to be described a whole series of accurate and related transfers or prints may be made. The bed 21 has a steel angle-piece 23, forming one end and one side of its recess for the reception of the setting-up plate or impression-surface, and on the other side and end of that recess it has adjusting and fastening devices 24, adapted to take against the side and end of the setting-up plate or impression-surface and to adjust and secure the same snugly and reliably in place in the corner formed by the steel angle-piece, as shown in Figs. 11, 13, and 14. Two forms of adjusting and fastening devices are shown in Figs. 11, 13, and 14. Either or both may be used or still other forms. In practice the setting-up plates and impression-surfaces will be accurately cornered to correspond to the corner formed by the steel angle-piece 23. Thus a whole series of accurate and related transfers or prints may be made. Under the ordinary zinc setting-up plate used in transferring work in lithography it will be found useful to employ a rubber blanket or sheet one-quarter of an inch thick or thereabout. Both prints and transfers are the better for it.

The printing-surface or surface onto which the transfers are to be made and from which prints are subsequently to be made is a tube or cylindrical form 25, carried on a form-cylinder 26 and readily removable therefrom and replaceable thereon. The shaft 27 of the form-cylinder may be driven either from the beveled gear-wheels 16 through the reciprocating bed, as already explained, or it may be driven from the worm and worm-wheel 18 through the shaft 19 and the chain of gear-wheels 28 on the chain of links 29, as shown. (See Fig. 8.) The upper link of the chain of links has at its upper end a split and hinged collar 30, which is adapted to embrace the shaft 27 of the form-cylinder and be locked thereon and carried thereby. This collar may be readily unlocked by unscrewing the nut from the split part of the collar, when the upper part can be thrown up and back and the upper gear-wheels 28 thereby unmeshed. This unmeshing should always be done when it is desired to lower the printing-surface and drive it from the beveled gear-wheels 16 through the reciprocating bed or when it is desired to lift it out of the machine, as hereinafter described. To hold the chain of links 29 in place when they are uncoupled from the shaft 27, they carry on their center pivot a



holding-arm 31, which has a hook that is adapted, as shown in Fig. 8, to take over some part 107 of the frame. The upper link 29 also carries loosely pivoted on it a holding-arm 122, which when to be used is intended to be swung by hand until its foot rests upon the adjacent upper edge of the frame-piece 121, where when the holding-arm 31 is sprung down into its holding and locking position the arm 122 will hold the upper link 29 so that its seat for the shaft 27 is exactly lined with the slideways at the sides of the machine, whereby the shaft 27, with the sliding boxes and all that it carries, may readily be lifted out and replaced.

The shaft 27 of the form-cylinder is carried in sliding boxes 32, which slide vertically in suitable slideways 33 in the side frames of the machine. These sliding boxes are adjustably and removably mounted on the heads of pressure bars or rods 34, as shown, two nuts 103 on the pressure-bars below the sliding boxes being the means of adjustment and of locking or fixing the adjustment and one nut 104 on the pressure-bars above the sliding boxes being the means of securing the sliding boxes in the thus-adjusted position on the pressure-bars. The pressure-bars are raised and lowered by an eccentric 35, worked by a lever 36. This gives great power both in the raising and in the lowering. When the pressure-bars 34 are raised, an eccentric 105, loosely pivoted on the bars just above a projection of the frame, revolves by its own weight, and thereby locks the bars in their upper position, as shown in Fig. 23. To lower the bars, the eccentric 105 must first be revolved back. An adjustable stop 106 limits the upward motion of the pressure-bars and so limits the motion of the printing-surface toward the inking and dampening rollers. The sliding boxes 32 have an internal brass lining 37, (shown in Fig. 9,) the inner vertical face of which regulates the lengthwise position of the revolving form-cylinder, taking the wear incident to such regulation. To render it adjustable to take up for this wear, this internal brass lining 37 is externally screw-threaded and its seat in the sliding box is correspondingly internally screw-threaded. To adjust the brass lining inward or outward toward or from the end of the form-cylinder, it is therefore necessary only to screw or unscrew it in its seat and then to lock it in its adjusted position, as by the pin 38.

The main ink-distributing roller 39 is carried by the side frames of the machine and is driven from the worm and worm-wheel 18 through the shaft 19 and shaft 40 and gear connections. The shaft of this main ink-distributing roller has at one side of the machine a gear-wheel 41, which positively drives with that main ink-distributing roller the first leather roller 42 and the two iron riders 43 and 44, an intermediate gear-wheel connecting the two iron riders, as shown in Fig. 7. The shaft of the main ink-distributing roller has at the

other side of the machine a wheel 45, having a spiral peripheral groove in which works a pin on the end of a lever-arm, as shown, the other end of the lever being connected to the two iron riders 43 and 44, so that the revolving of the main ink-distributing roller also oscillates the two iron riders axially. The shaft of the main ink-distributing roller also has a cam 46, which vibrates one arm of a bell-crank lever 113, the other arm of which carries the bearings of the vibrating or ductor roller 47, whereby that roller is with little friction and positively vibrated between the ink-feeding roller 48 (in the mouth of the ink-fountain 49) and the main ink-distributing roller 39. The ink-feeding roller 48 has its bearings in the ink-fountain and is rotated by hand by a handle 50, which through a pawl works a ratchet-wheel on the ink-feeding-roller shaft. The back frame carries the ink-fountain on two brackets. The back frame also carries the back ink-spreading roller 51. The swinging frame 52 is centered with the main ink-distributing roller, but has its bearings in and is carried by two brackets 79 from the back frame of the machine, as shown in Figs. 4 and 9. The shaft of the main ink-distributing roller passes loosely through the brackets 79. Thus weight is removed from the shaft of the main ink-distributing roller and wear is reduced. The swinging frame 52 has one of its strengthening cross-bars 53 lengthened at both ends, so as to rest upon adjustable stops 54 in the side frames of the machine when the swinging frame is in its lowest position, (see Figs. 10 and 4,) whereby the swinging of the inking-rollers 55, which are intended to contact with the printing-surface, is adjustably limited as a whole in the direction toward the printing-surface. The inking-rollers 55, which are adapted to contact with the printing-surface, are each of them adjustably mounted in the swinging frame, being mounted in sliding boxes 56, which permit an adjustment—namely, by screwing them toward or from the printing-surface. The two iron riders 43 and 44 and the first leather ink-roller 42 are also mounted in sliding boxes, as shown in the drawings, and are adapted to be adjusted by hand screw-wheels, both to adjust them to the adjustment of the inking-rollers 55 and also to permit of their being screwed up wholly out of contact with the rollers 55, as when the press is not in operation. The swinging frame 52 is swung up and down by a hand screw-wheel 57, Fig. 1, through suitable connections, as shown in Figs. 2, 3, 4, and 6, including a worm 58 and, driven by the worm, a worm-wheel 59. Thus power is attained and self-locking in any position. The entire train of mechanism is hand-wheel 57, gears 80, shaft 81, beveled gears 82, shaft 83, worm 58, worm-wheel 59, shaft 84, pinions 85, and rack 86 on the swinging frame 52.

The water-supply fountain is of any suitable construction. It is suitably supplied with



water. It is shown in the drawings as a roller 60, in which case it is rotated by a series of belts 114 114 115. (Shown in Figs. 2 and 7.) The last of the series, 115, may have springs in it or be a rubber hose or an endless chain with sprocket-wheels to permit the vibration of the water-supply roller. The water-supply roller is vibrated toward and from the brass water-rider 61 in the following manner:

10 The shaft of the main ink-distributing roller 39 has a cam 62, which through suitable connections rocks the arm 63, (see Figs. 2, 7, 15, and 16,) which takes against and rocks the arm 64 (on which the bearings of the water-

15 supply roller 60 are carried) toward the brass water-rider 61. Between the cam 62 and the arm 63 is a spring 65. In its working adjustment it is strong enough and strained enough to ordinarily resist further strain, whereby

20 the arm 63 is forced over by the spring whenever the crest of the cam 62 operates, and this forces over the water-supply roller 60 against the brass water-rider 61 with a spring-pressure contact and water is suitably transferred

25 to the brass rider; but if by any chance or design the brass rider has been swung over toward the water-supply roller, or if other positive obstruction is met with to the full vibration of the water-supply roller with the

30 rise of the cam 62, then the further positive motion of the rise of the cam 62 is merely taken up by the spring, the spring being thereby much further strained. The water-supply roller falls back by gravity away from

35 the brass rider when permitted by cam 62 and spring 65, a stop 99 on the frame being taken against by a projection 100 on the arm 64, this limiting the backward movement. The train of mechanism from cam 62 to water-

40 roller 60 is: cam 62, roller-arm 87, rocking hub 88, loosely mounted on shaft 89, arm 90, solid with rocking hub and carrying pin 91, spring 65, arm 92, adjustably fixed on shaft 89 by set-screw 93 to properly strain spring 65 between

45 arms 90 and 92, the spring tending to keep the arm 92 and pin 91 in contact, arm 63, fixed with arm 92 on shaft 89, and, finally, arm 64, carrying roller 60. The swinging frame 66 (see Figs. 2, 7, and 15) is pivoted in the side

50 frames of the machine at 94 and carries the bearings of the brass water-rider 61 and of the dampening-rollers 67; that contact with the printing-surface. It is swung by a hand screw-wheel 68, (see Fig. 1,) the connection includ-

55 ing a worm 69, a worm-wheel 70, shaft 95, forked arms 96, and pin 97 on swinging frame 66, whereby power and self-locking are secured. The swinging frame 66 strikes against a stop 98 on the arm 64 (which carries the

60 water-supply roller) when that swinging frame 66 is swung backwardly toward that roller, the two rollers 61 and 60 at such time being just clear of each other, as indicated in dotted lines in Fig. 15, whereby the two rollers

65 are prevented from striking against or resting on each other at such time. On the other

hand, when the arms 64 swing toward the swinging frame 66 it is the two rollers 61 and 60 that contact and not the frame 66 and the stop 98, all as clearly shown in the drawings.

70 The worm-wheel 70 in the train of mechanism which swings the frame 66 has on it an adjustable stop 72, which takes against the side frame, as shown in Fig. 1, and thus adjustably limits the motion of the swinging

75 frame 66 in the direction toward the printing-surface. The brass water-rider 61 and the two dampening-rollers 67, that are adapted to contact with the printing-surface, are each of them adjustably mounted in the swinging

80 frame 66 by having their bearings in sliding boxes 73, capable of screw adjustment toward or from the printing-surface. The brass water-rider 61 is positively driven by a

85 chain of gears carried on a chain of links 74, as shown in Figs. 6 and 7, so as always to be in positive driving connection with the driving-shaft 19, whatever the position of the swinging frame 66, for this swinging frame

90 66, like the swinging frame 52, is often to be swung while the parts are running. To describe it in detail, this end is accomplished in the following manner: Gear-wheel 116, fast on driving-shaft 19, meshes with gear-

95 wheel 117, the latter with gear-wheel 118, the latter with 119, and the latter with 120. Gear-wheel 120 is fast on the shaft of the brass water-rider 61. Gear-wheel 119 is carried on the center or connecting pin or pivot of a chain

100 of two links 74 74, the outer end of one of which is carried loosely on the shaft of the brass water-rider 61 and the outer end of the other on the same shaft as gear-wheel 118. The shaft of gear-wheels 117 and 118 are, like

105 that of 116, not capable of reciprocating motion.

The bath 75 is made of suitable material to resist the action of the acids used in etching, and it is adapted to be mounted in the slide-

110 ways 10 of the main frame and under the printing-surface, as shown in Figs. 17 and 18, so that the printing-surface can be lowered into it, as indicated in dotted lines in Fig. 19, and revolved in it. This bath 75 has a suitable inlet, such as the funnel 75<sup>a</sup>, whereby

115 water or gum and water or acid and water may be introduced as desired, and a suitable drain 76 for draining off whatever may be in the bath. This drain is shown with a two-

120 way cock 77, whereby the liquor drained off may be saved or may be allowed to run to waste. 78 is the water-supply pipe. It may have a branch 102 to the water-supply roller

125 60, reaching the same through a bushing, the branch including a filter 101, as shown in Fig. 1. Heretofore lithographic surfaces have been ordinarily washed and etched and otherwise prepared for printing by the use of

130 brushes, sponges, &c. My improved means of accomplishing such operations, whereby a rounded or cylindrical lithographic surface is revolved in or moved through a body of



liquor held in a bath, (either washing liquor or etching liquor, or otherwise,) produces more perfect and delicate work.

One of the pinions 71 on the shaft 27 that carries the form-cylinder is loosely and removably keyed on that shaft, as shown in Figs. 17 and 22, so that the printing-tube 25 may be readily removed from and replaced on the form-cylinder 26. To accomplish this removal, it is only necessary to unscrew the securing-nuts 104 at each end of the shaft, unlock and throw up and back the hinged collar 30, raise the shaft 27 and sliding boxes 32 out of the slideways 33 by any suitable hoisting apparatus (as by that shown in my application serially numbered 685,764, filed July 12, 1898,) slip off the loosely-mounted pinion-wheel 71 at one end of the shaft, and then slip off the printing-tube 25 from the form-cylinder 26 or slip both printing-tube and form-cylinder off from the shaft, as desired. Any suitable means may be resorted to to accurately place the printing-tube 25 on the form-cylinder 26, when replacing it, and to hold or fix it in such place, as a groove or slot in one and a lug in the other to fix and hold circumferentially and a stop and lock or catch to fix and hold longitudinally. These details are not shown in the drawings.

The ink-fountain 49 is preferably an air-tight ink-fountain, as shown. Figs. 3 and 24 show a portable ink-reservoir of suitable size to hold a considerable quantity of ink. It has an outlet 107, adapted to be securely attached to the inlet 108 of the air-tight ink-fountain and to be readily detached therefrom, as by the screw-collar 109, and it also has a containing-cylinder 110 and a pressure device 111, adapted to force the ink out through the outlet of the reservoir into the ink-fountain—as, for example, the piston-head, screw, and hand-wheel shown. This entire pressure device can be readily screwed on or unscrewed from the reservoir. The portable pressure ink-reservoir has especial importance in connection with the use of air-tight ink-fountains, because the supply-inlets to such ink-fountains are small, and it also has importance in connection with multicolor-printing and especially with multicolor lithographic printing, for the mixing and manipulation of the colors may be done away from the press and conveniently and in a cleanly way and without rendering the press uncleanly or getting the ink dirty, and quick-drying inks may be handled in this way and kept from the air.

The operation of the machine will be clear from the above description to one skilled in lithographic transferring.

Many features of the invention are capable of use in machines whose general form and construction are very different from that of the drawings, and many of them are capable of use in presses other than transferring-presses and in work other than lithographic work, although they find their best use in

such work. For example, it is manifestly immaterial how or in what way the printing tube or cylinder, after receiving the transfer, as described, is subsequently developed into a printing-surface or into what character of printing-surface it is subsequently developed, whether into a lithographic-printing surface or otherwise.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, substantially as described, of the swinging frame 66 and roller carried thereon and means for swinging the same, and the vibrating arms or frame 64 and roller carried thereon and means for vibrating the same, the frames being constructed to take against each other without the rollers contacting when the swinging frame is swung toward the vibrating frame, and the rollers to take against each other without the frames contacting when the vibrating frame is vibrated toward the swinging frame.

2. In a press, the combination, substantially as described, with suitable inking and dampening mechanisms, of a suitable printing-surface movable toward and from the inking and dampening mechanisms and means for so moving the printing-surface, and an adjustable stop limiting the motion in the direction toward the inking and dampening mechanisms.

3. In a press, the combination, substantially as described, with a suitable printing-surface and suitable inking and dampening mechanisms, of a mechanism for carrying the printing-surface and moving it toward and from the inking and dampening mechanisms and an adjustable stop to limit such motion in the direction toward the inking and dampening mechanisms, and a swinging frame carrying the inking-rollers that contact with the printing-surface and an adjustable stop limiting its swinging motion in the direction toward the printing-surface, and a swinging frame carrying the dampening-rollers that contact with the printing-surface and an adjustable stop limiting its swinging motion in the direction toward the printing-surface.

4. In a press, the combination, substantially as described, with a suitable printing-surface and suitable inking and dampening mechanisms, of a mechanism for carrying the printing-surface and moving it toward and from the inking and dampening mechanisms and an adjustable stop to limit such motion in the direction toward the inking and dampening mechanisms, and a swinging frame carrying the inking-rollers that contact with the printing-surface and an adjustable stop limiting its swinging motion in the direction toward the printing-surface, and a swinging frame carrying the dampening-rollers that contact with the printing-surface and an adjustable stop limiting its swinging motion in the direction toward the printing-surface, said printing-surface and said inking-rollers and said water-distributing rollers being each



separately adjustably mounted in its carrying device or support.

5. In a press, the combination, substantially as described, with a suitable printing-surface, of a dampening mechanism including a vibrating water-supply roller or fountain and means for vibrating the same, said means including a positive driving mechanism and a spring between such positive driving mechanism and the supply roller or fountain, whereby when the supply roller or fountain meets with any positive obstruction to its vibration toward the distributing-rollers the further motion of the positive driving mechanism is taken up by the spring and whereby also the contact of the supply roller or fountain is in all cases a spring-pressure contact.

6. In a press, the combination, substantially as described, with a suitable printing-surface, of a dampening mechanism including a vibrating water-supply roller or fountain and means for vibrating the same, said means including a positive driving mechanism and a spring between such positive driving mechanism and the supply roller or fountain and means for adjusting the spring, whereby when the supply roller or fountain meets with any positive obstruction to its vibration toward the distributing-rollers the further motion of the positive driving mechanism is taken up by the spring and whereby also the contact of the supply roller or fountain is in all cases an adjustable spring-pressure contact.

7. The combination, substantially as described, with a water-supply roller or fountain and rocking arms 64 carrying the same, of a driving-cam 62 and means for driving the same, a rocking hub 88 and connected arms, a rocking shaft 89 and connected arms, and a spring 65.

8. The combination, substantially as described, with a water-supply roller or fountain and rocking arms 64 carrying the same, of a driving-cam 62 and means for driving the same, a rocking hub 88 and connected arms, a rocking shaft 89 and connected arms, one of which is adjustable circumferentially on the shaft, and a spring 65.

9. In a press, the combination, substantially as described, with a suitable printing-surface, of an inking mechanism including an ink-fountain with ink-feeding roller carried by the main frame of the machine, a vibrating or ductor roller mounted on one arm of a bell-crank lever carried by the main frame of the machine, a main ink-distributing roller carried in the main frame of the machine and driving the bell-crank lever, a group of secondary ink-distributing rollers, and a swinging frame carrying the secondary ink-distributing rollers, the swinging frame being centered with the main ink-distributing roller but independently carried by the main frame of the machine.

10. A frame consisting of two longitudinal slideways 10 for the reciprocating bed, side frames 11 for supporting the driving mechanism

isms and the printing-surface, the dampening devices and the main ink-distributing roller, a back frame 12 for supporting the ink-fountain and ductor ink-roller mountings and the swinging ink-frames and braced supporting-legs 13 in combination with said recited supported parts, substantially as set forth.

11. In a press, the combination, substantially as described, with a suitable printing-surface and suitable inking mechanism, of a dampening mechanism including dampening-rollers and a water-distributing rider, a swinging frame carrying the same, and suitable driving mechanism for driving the rider having a chain of links carrying a chain of gear-wheels.

12. In a transfer-press, the combination, substantially as described, with a suitable reciprocable bed for the setting-up plate and slideways for same, of a rounded or cylindrical lithographic surface arranged over the slideways and suitable driving mechanism and a removable bath arranged upon the slideways and under the lithographic surface.

13. In a transfer-press, the combination, substantially as described, with a suitable reciprocable bed for the setting-up plate and slideways for same and suitable driving mechanism, of a rounded or cylindrical lithographic surface arranged over the slideways, means for moving the surface toward or from the slideways, means for rotating the surface whatever its position with respect to the slideways, and a removable bath arranged upon the slideways and under the lithographic surface.

14. In a press, the combination, substantially as described, with a suitable printing-surface and means for moving it toward and from the impression-surface, of a chain of links carrying a chain of gear-wheels driving the printing-surface, and a holding-arm carried on the middle pivot of the chain of links and adapted to hook onto the frame of the machine and hold the chain of links.

15. In a press, the combination, substantially as described, with a cylindrical printing-surface and means for moving it toward and from a suitable impression-surface, of a chain of links carrying a chain of gear-wheels driving the printing-surface, the shaft of the printing-surface carrying said chain of links but being removable therefrom, and a holding-arm carried on the middle pivot of the chain of links and adapted to hook onto the frame of the machine and a holding and centering arm carried on the last link of the chain of links and adapted to take against the frame of the machine, whereby the chain of links is held and the last link centered for the removal or insertion of the printing-surface.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD HETT.

Witnesses:

EDWIN SEGER,

GEORGE W. MILLS, Jr.