

No. 856,121.

PATENTED JUNE 4, 1907.

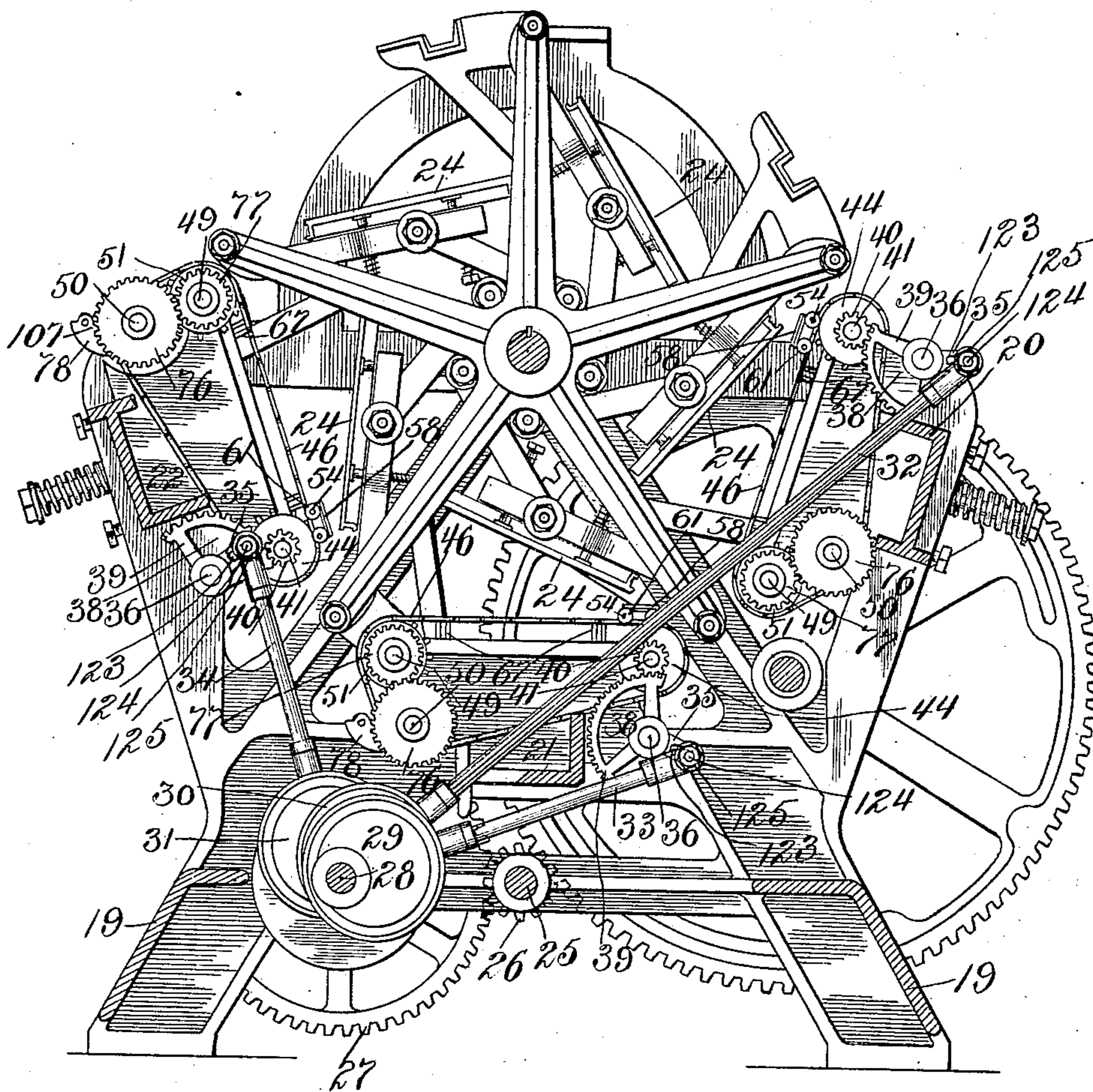
C. WILLIAMS.

INK FEEDING MECHANISM.

APPLICATION FILED JUNE 27, 1904. RENEWED APR. 15, 1907.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

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4 SHEETS—SHEET 2.

Fig. 2

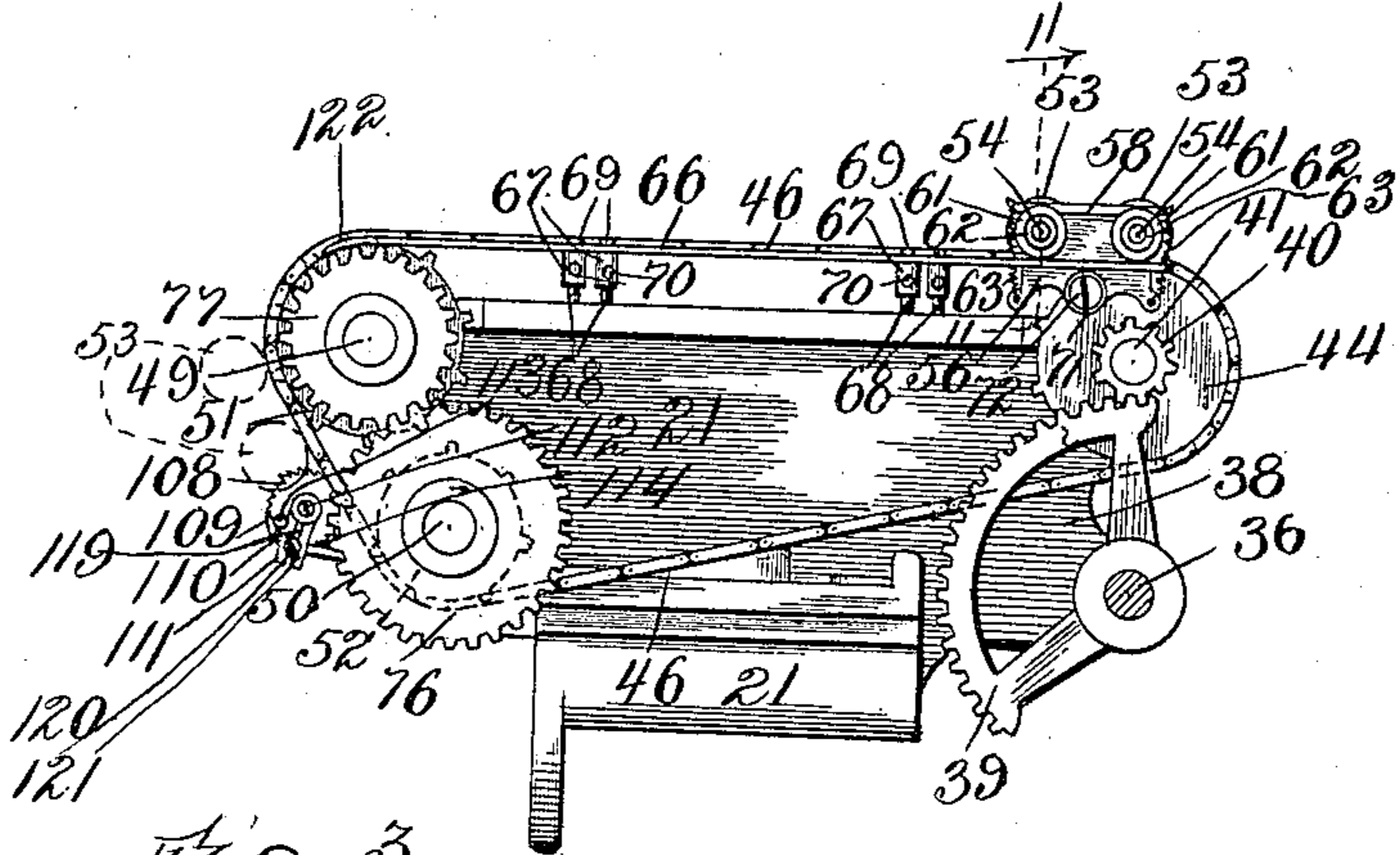
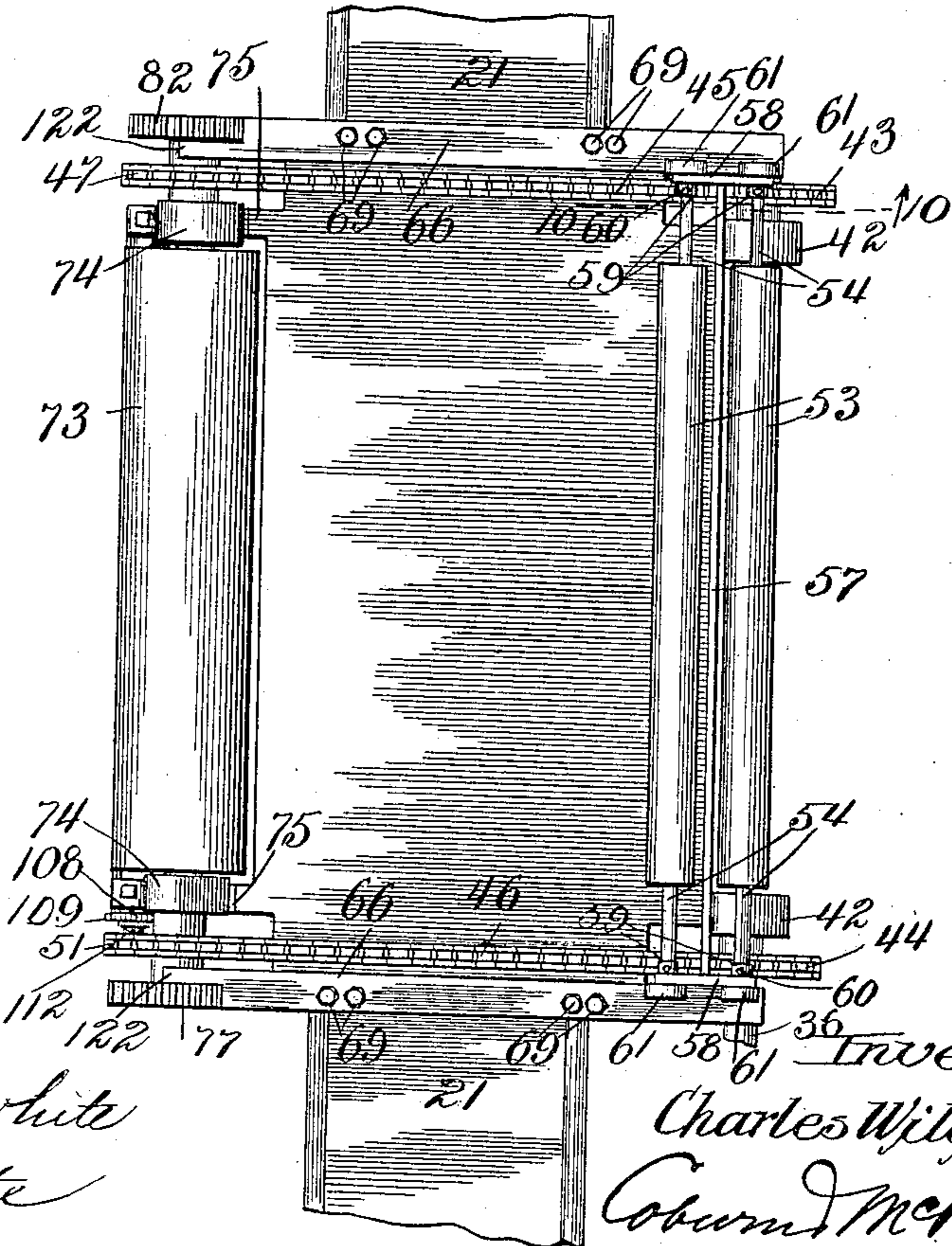


Fig. 3



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4 SHEETS—SHEET 3.

Fig. 4.

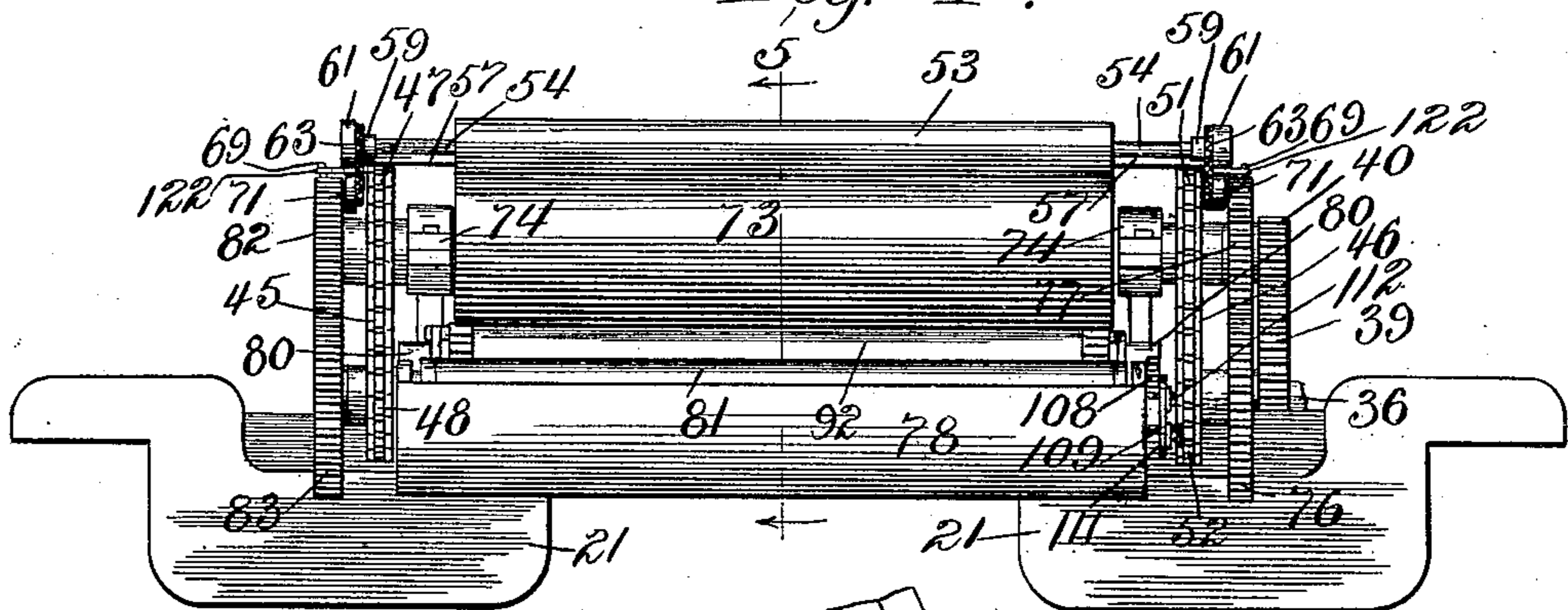
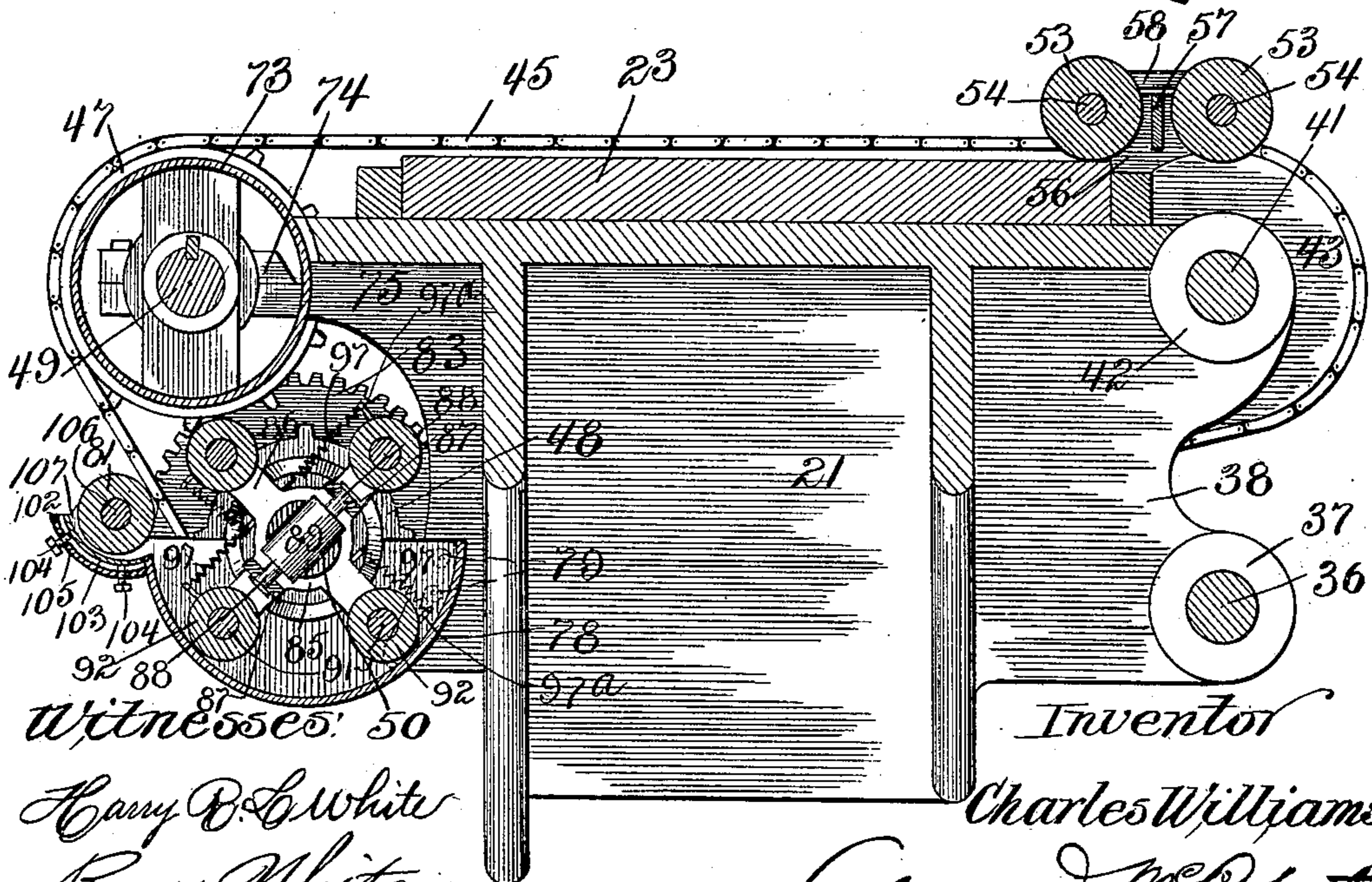
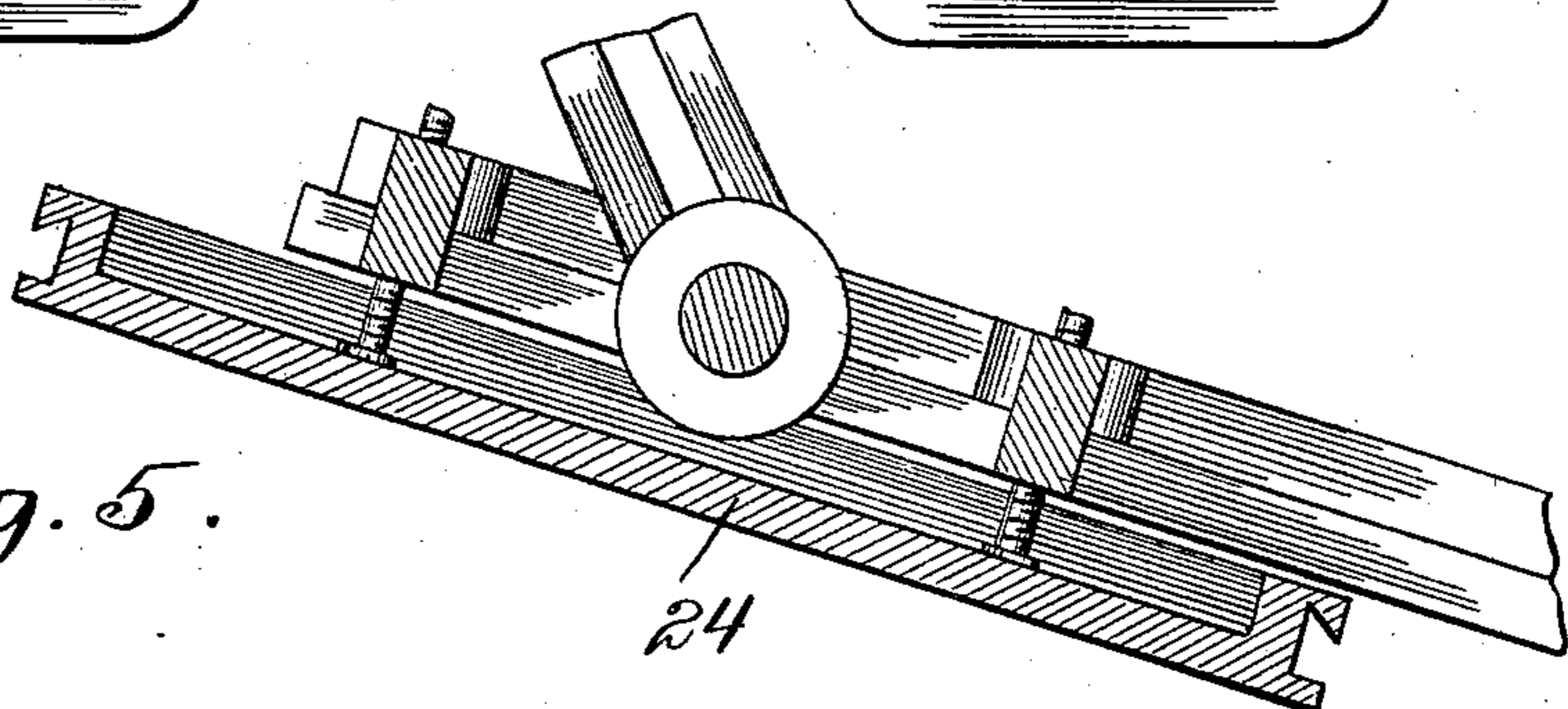


Fig. 5.



Witnesses: 50

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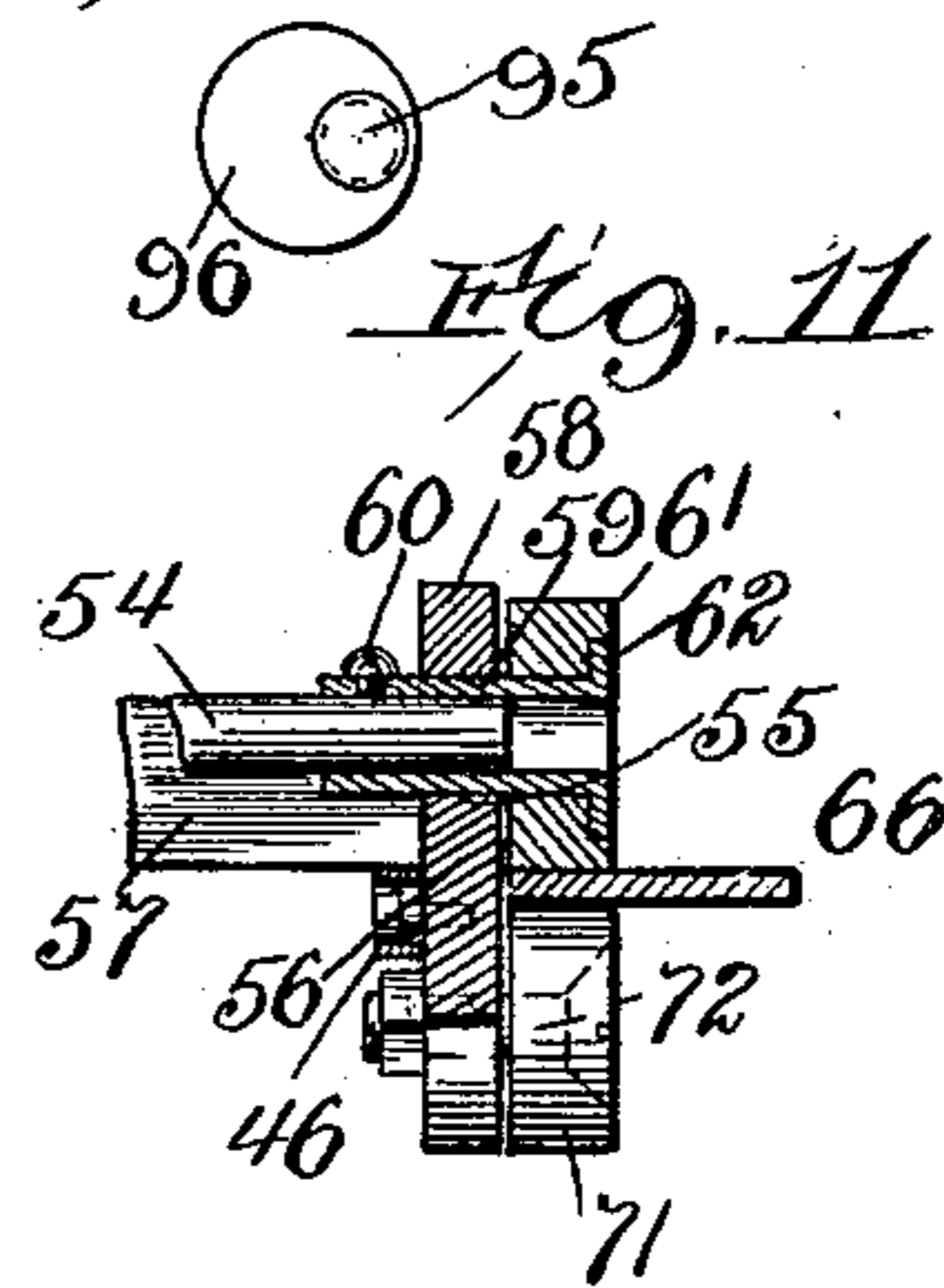
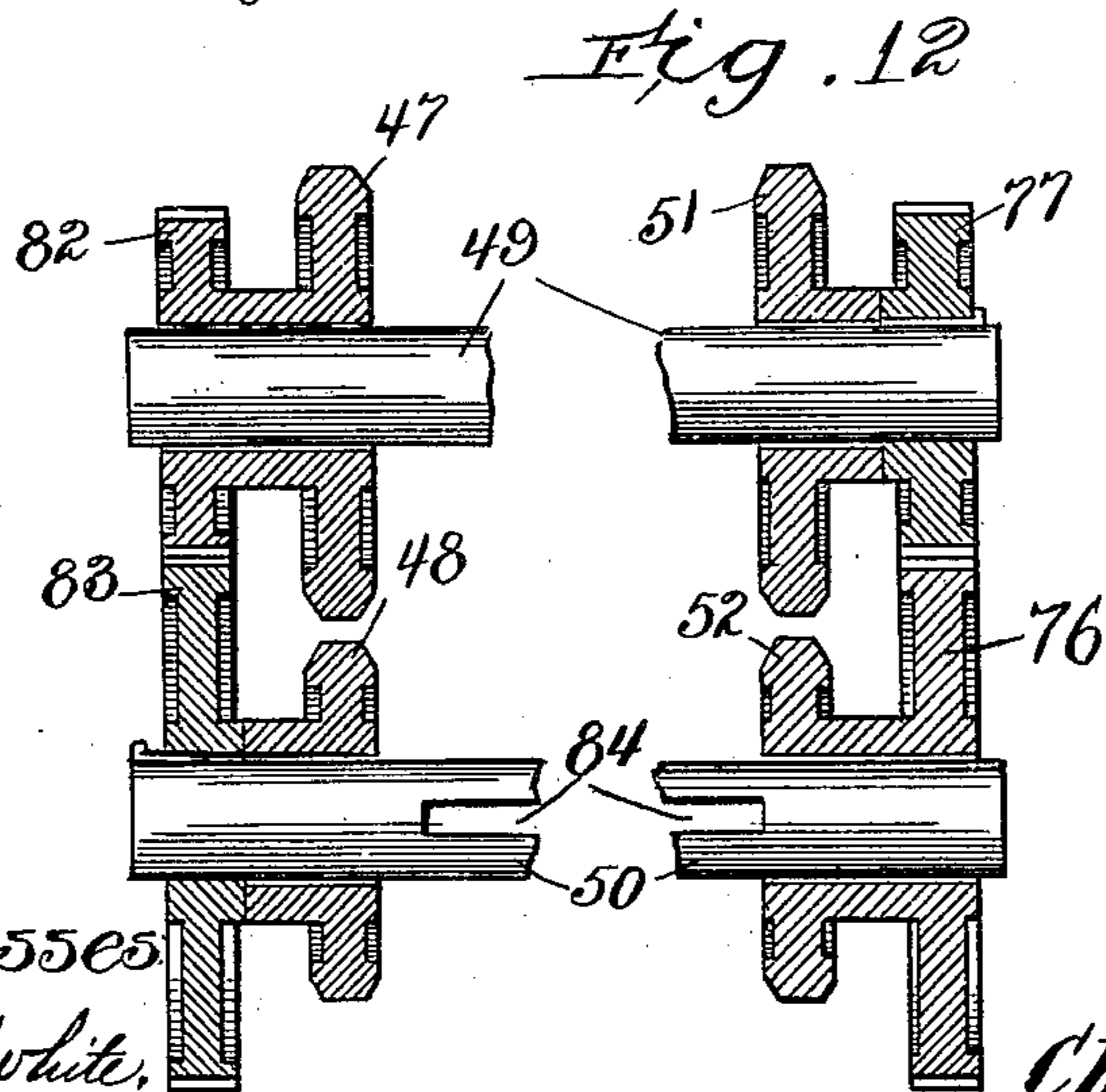
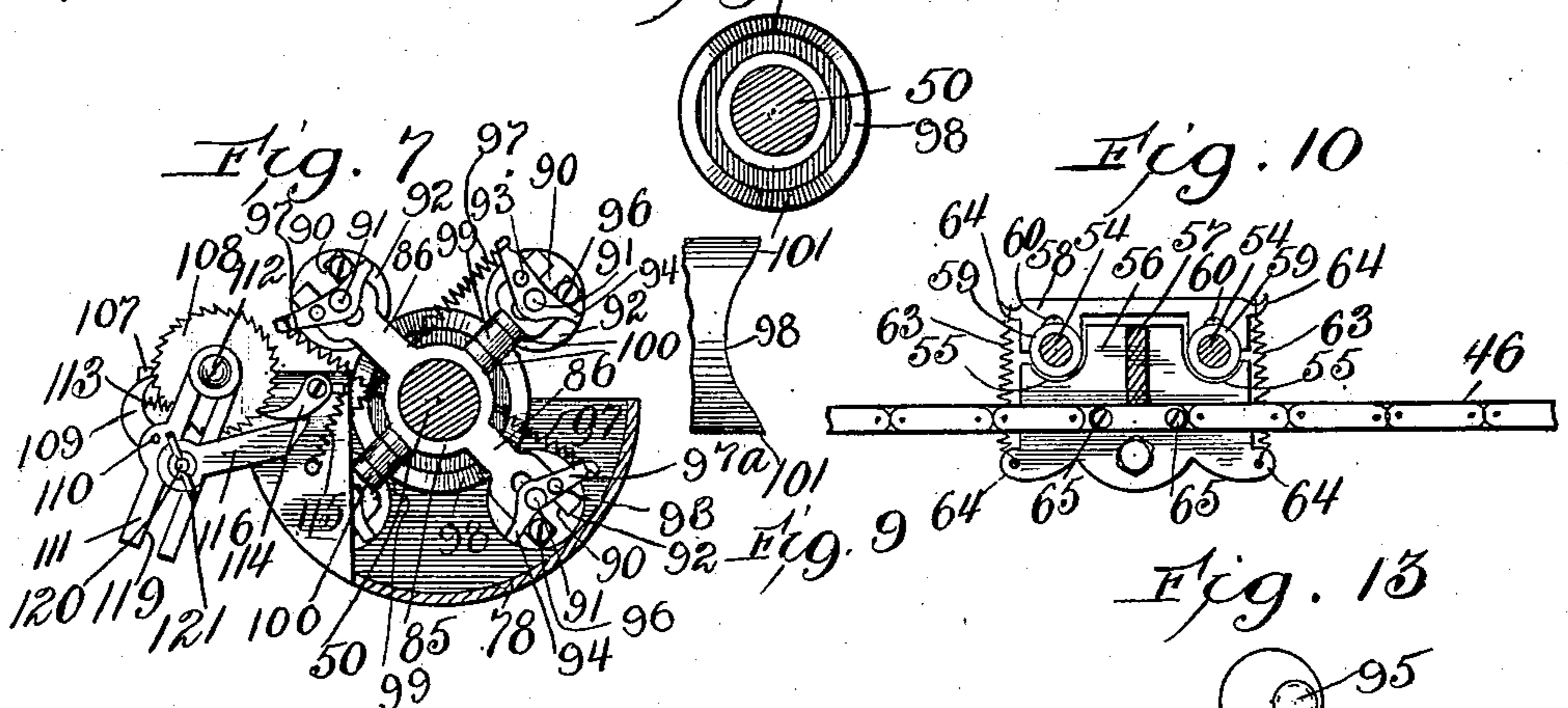
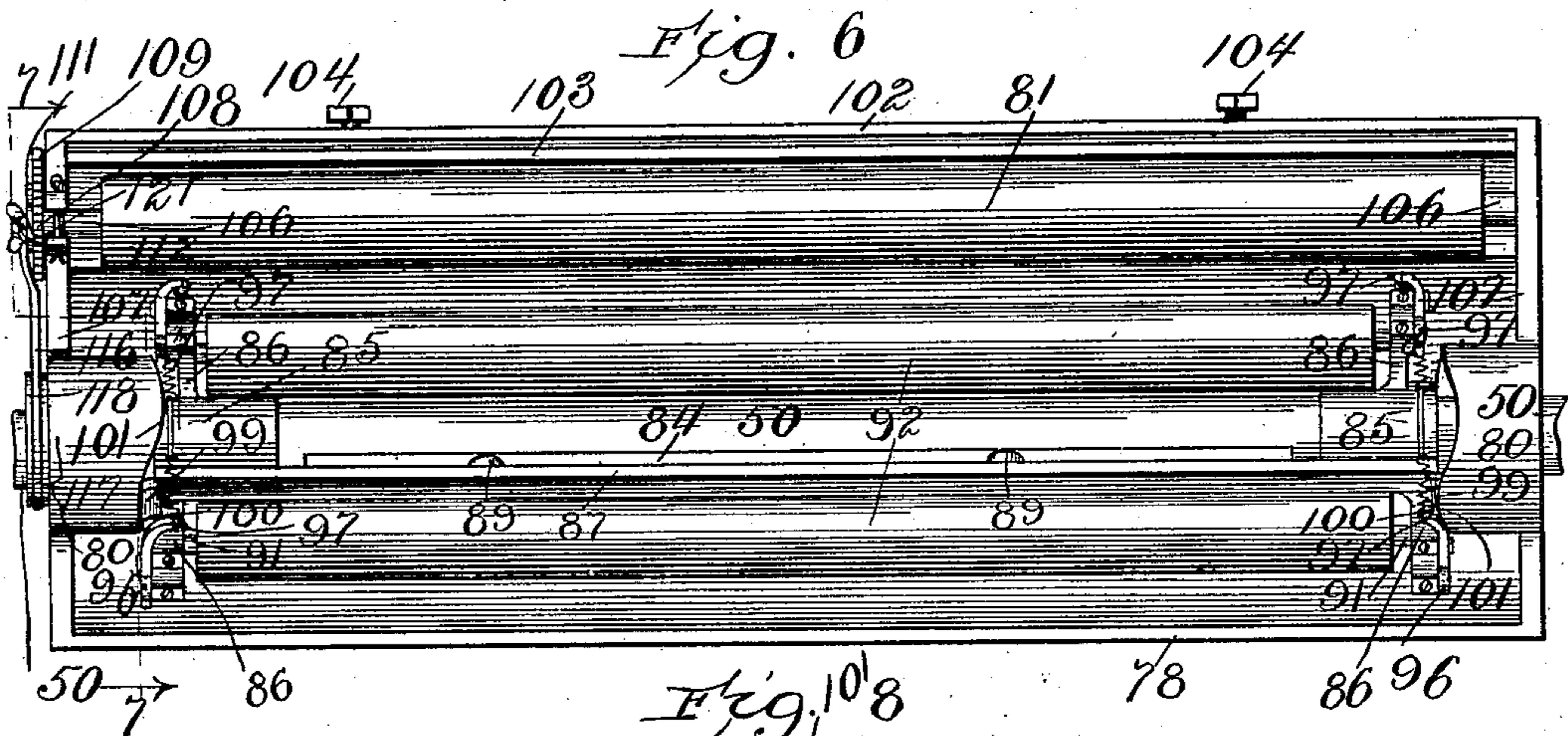
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C. WILLIAMS.
INK FEEDING MECHANISM.

APPLICATION FILED JUNE 27, 1904. RENEWED APR. 15, 1907.

4 SHEETS—SHEET 4.



Witnesses
Harry B. White,
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UNITED STATES PATENT OFFICE.

CHARLES WILLIAMS, OF CHICAGO, ILLINOIS, ASSIGNOR OF THREE-FOURTHS
TO WILLIAM H. COWLES AND ONE-EIGHTH TO JOHN F. YOUNG, OF
SPOKANE, WASHINGTON.

INK-FEEDING MECHANISM.

No. 856,121.

Specification of Letters Patent.

Patented June 4, 1907.

Application filed June 27, 1904. Renewed April 15, 1907. Serial No. 368,241.

To all whom it may concern:

Be it known that I, CHARLES WILLIAMS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Ink-Feeding Mechanism, of which the following is a specification.

My present invention relates to inking mechanisms for printing presses and is especially concerned with certain new and useful improvements in the inking mechanism described and claimed in an application for Letters Patent of the United States, Serial No. 150,566, filed by me April 1, 1903.

The invention consists of the combinations and arrangements of parts hereinafter particularly described and then pointed out in the appended claims.

To illustrate my invention I annex hereto four sheets of drawings in which,—

Figure 1 is a side elevation of a printing press showing my improved inking mechanism adapted thereto; Fig. 2 is a side elevation of one of the inking mechanisms shown in Fig. 1; Fig. 3 is a top plan view of the same; Fig. 4 is a rear end elevation of the inking mechanism; Fig. 5 is a longitudinal section on an enlarged scale on the line 5—5 of Fig. 4, together with the platen associated with such inking mechanism; Fig. 6 is a top plan view of the inking mechanism with the inking cylinder and driving connections removed; Fig. 7 is a section substantially on the line 7—7 of Fig. 6; Fig. 8 is a detail face view of one of the cams for controlling the longitudinal movement of the distributing rollers; Fig. 9 is a detail side view of the cam; Fig. 10 is a section on the line 10—10 of Fig. 3; Fig. 11 is a section on the line 11—11 of Fig. 2; Fig. 12 is a fragmentary view, in section, showing the arrangement of the driving connections for rotating the inking cylinder and the carriage of the distributing rollers; and Fig. 13 relates to a detail of one of the eccentric screws for varying the range of movement of the distributing rollers.

In illustrating the present embodiment of my inking mechanism I have shown the same in connection with a multi-color press to which my invention is particularly, though not necessarily adapted.

Referring to Fig. 1, 19 indicates a standard at one side of the printing press, the frame of such press also including a corre-

sponding standard, similar to 19, and located at the opposite side of the press, but not shown in the drawings herein. Between the standards are secured three transverse type bed plates 20, 21 and 22, which carry the customary type forms 23, Fig. 5, from which impressions are taken in order by a series of intermittently rotating platens 24, one of which is shown in section in Fig. 5, as fully shown and described in an application for Letters Patent of the United States filed by me April 1, 1903, and numbered Serially No. 150,563. Associated with each of these type beds and forms is employed an inking mechanism shown in detail in Figs. 2 to 13, inclusive, and which embodies the improvements particularly covered herein.

Journaled on the frame of the press is a drive shaft 25, to which motion may be communicated in any suitable manner, and which, through the mechanism hereinafter described, communicates motion to the inking mechanisms of the press. This drive shaft 25 is provided with a pinion 26 which communicates motion to a gear 27 fixed upon a shaft 28 parallel with the shaft 25 and suitably journaled in the standards of the frame. The shaft 28 is provided with eccentrics 29, 30 and 31 for actuating pitmans 32, 33 and 34, each of which rocks an arm 35, secured upon a shaft 36 to impart motion to the inking mechanism controlled by such pitman, the connections being so arranged that all of the inking mechanisms are operated simultaneously and in frequency corresponding to the presentation of the succeeding platens 24 to the type forms.

Referring now to the details shown in Figs. 2 to 13, inclusive, each shaft 36, as shown particularly in Figs. 2 and 5, is journaled in suitable bearings 37 formed in brackets 38 projecting from one side of each of the type bedplates, as 21. This shaft 36 has rigidly secured thereon a segmental gear 39 which meshes with a gear pinion 40 secured on a shaft 41 journaled at its ends in bearings 42 formed in the bracket 38 and located above and parallel to the shaft 36. The shaft 41 has at its ends sprocket wheels 43 and 44 with which coöperate sprocket chains 45 and 46, the sprocket chain 45 passing around a pair of associated sprocket wheels 47 and 48 mounted on shafts 49 and 50 located at the opposite end of the type bed plate from the

shafts 36 and 41, as shown in Fig. 5 and supported or journaled in the manner hereinafter to be described. The sprocket chain 46 also meshes with an associated pair of sprocket wheels 51 and 52 also mounted on the shafts 49 and 50. The chains 45 and 46 serve to carry the inking rollers 53 designed to apply the ink to the type, and these rollers are mounted on a suitable carriage attached to the chains. These inking rollers are secured on shafts 54, the ends of which are mounted in bearing recesses 55, formed in plates 56, which plates are rigidly connected by a cross rod 57 secured to each plate, to form the carriage for the rollers 53. The ends of the rollers are retained in the bearings of the plates 56 by means of cooperating plates 58, one of such latter plates being associated with each plate 56, and provided with bearing surfaces cooperating with the bearing recesses 55 to receive the ends of the shafts 54 as shown in Fig. 10. Preferably the ends of the shafts 54 have fixed thereto sleeves 59, removably secured on the shafts by set screws 60, and the sleeves 59 are seated between the plates 56 and 58, and project beyond the said plates to receive rollers 61 which are held against displacement by shoulders 62 on the projecting ends of the sleeves as shown in Fig. 11. By this arrangement the inking rollers, when worn out may be readily removed from the carriage, by removing the retaining plates 58 and then releasing the set screws so that the inking roller shafts may be slipped out of the sleeves. To hold the ends of the rollers down with a yielding tension, each retaining plate 58 is connected at each end to the associated plate 56 by a coiled contractile spring 63 attached to ears 64 formed on the said plates. This insures a constant and steady downward pressure on the inking rollers and serves to bring them in proper yielding contact with the type forms over the surface of which they are reciprocated by the chains 45 and 46. The lower plates 56, as shown in Fig. 10, are connected to the chains, as by means of screws 65. Suitable guide plates 66 are provided to support the rollers 61 and prevent the sagging of the sprocket chains. In order to properly adjust these guides they are mounted upon screw bolts 67 the threaded ends 68 of which enter suitable threaded apertures in the top of the bed plate, and these bolts are attached to the guides by means of nuts 69 which, while they prevent vertical movement of the guides independently of the bolts, permit the bolts being turned freely. By turning the bolts with a suitable tool, adapted to suitable openings 70 in the screws, the guides may be raised or lowered to properly position them.

During the movement of the inking rollers 53 the rollers 61 travel upon the guides 66, and to prevent the carriage at each end from being raised out of engagement with the guides

the lower plates 56 of the carriage are provided with guide rollers 71, pivoted on pins 72 projecting outwardly from the said plates, and which travel against the under side of the guides.

The inking rollers 53 receive ink from the inking cylinder 73 which is fixed upon the shaft 49 between the sprocket wheels 47 and 51. This shaft is journaled in bearings 74 carried by brackets 75 extending from the bed plate at the opposite side of the form from the brackets 38. Motion is communicated to this cylinder through the medium of the chain 46 in the manner now to be described. The sprocket wheel 51 which is loose upon the shaft 49 is merely an idler. The sprocket wheel 52 associated therewith is loosely mounted on the shaft 50 and has rigid therewith a gear 76 which meshes with and drives a pinion 77 fixed upon the shaft 49 at the side of the sprocket wheel 51. It will be apparent from the foregoing that when the chains are driven, motion will be communicated to the fixed pinion 77 and consequently to the shaft 49 upon which the inking cylinder is fixed. It will also be apparent that through the medium of the gearing described the movement of the cylinder will be in a direction reverse to that of the driving chains.

The ratio of the gears is such that the inking cylinder is driven at a considerably higher rate of speed than the chains, and as this inking roller travels in a direction reverse to that of the chains and consequently of the inking rollers, the surface area of the cylinder traversed or engaged by the inking rollers is greatly increased, thus insuring an ample distribution of ink from the inking cylinder upon the inking rollers. It will be understood that the rocking of the shaft 36 through a considerable angle, due to the segmental gear, will cause the chains to be reciprocated a considerable distance at each operation of the machine, and this is sufficient to carry the inking rollers over the type form and the inking cylinder, so that at each operation the form is inked and an additional supply of ink is secured by the traveling inking roller.

The distributing concave in which the ink fed from the ink chest is worked out or thinned, consists of a concave trough 78 which is secured in position by suitable tap screws 79 as shown in dotted lines in Fig. 5, which pass through each bracket 75 and engage the end walls of the trough.

Mounted upon the shaft 50, which is parallel to the shaft 49 and journaled in bearings 80 formed in the end walls of the distributing concave 78, is a suitable carriage upon which is mounted a series of rollers adapted to receive ink from the feed roller 81, work it out in the concave 78, and then deliver it to the inking cylinder 73. The shaft 50 upon

which the carriage is mounted has motion communicated thereto through the medium of the chain 45 traveling over the sprocket wheels 47 and 48. The sprocket wheel 47 is loose upon the shaft 49 and has rigidly fixed thereto a gear pinion 82 which meshes with a gear 83 fixed upon the shaft 50, the sprocket wheel 48 being merely an idler. By this means when the chain 45 travels back and forth motion will be communicated to the shaft 50 to impart a rotary oscillating movement thereto, and this movement will be in the same direction as that of the inking cylinder. The shaft 50 is provided with a longitudinal way or slot 84. Loosely mounted upon the shaft 50 is the longitudinally movable distributing roller carriage heretofore referred to which in the present construction comprises a pair of end members 85, each member having four radial arms 86 arranged in opposite pairs. The end members are connected by cross bars 87 disposed at opposite sides of the shaft 50. Attached at their ends to the cross bars are pins 88 which are so located as to extend through the longitudinal slot in the shaft, and are provided with anti-friction rollers 89 which move in the slot or way when the carriage is reciprocated.

The radial arms 86 are provided with seats or bearings, consisting, in the present instance, of radial slots 90 to receive the ends of the shafts 91 upon which the distributing rollers 92 are mounted. Pivoted as at 93 to each arm 86, at one side of the slot 90, is a finger 94. The end of the shaft 91 associated with such arm extends into a bearing aperture provided in the finger 94. Located on the arm 86, in the present construction at the side of the slot 90 opposite the pivot 93, is a stop which may take the form of a screw 95 having an eccentric head 96. This stop serves to limit the outward movement of the roller under the tension of a spring 97, one end of which is anchored to the end member 85 while the other end is attached to an extension 97^a of the finger 94. The tendency of these springs is to thrust the fingers 94 outwardly so that the rollers are held in firm though yielding contact with the bottom of the distributing concave against which the ink received by the roller from the feed roller 81 is thoroughly worked out and thinned before being delivered to the inking cylinder. By turning the adjusting screws and by reason of the eccentric heads thereof the outward movement of the rollers under the tension of the springs may be so limited that the rollers will enter the concave freely and yet be under the necessary tension to press with the requisite firmness against the concave. Any suitable means may be employed for imparting the longitudinal movement to the distributing rollers during the rotation of the roller carriage and in the present construction I have shown a pair of cooperating cams

for accomplishing this result. These cams in the construction illustrated are mounted on or formed integral with the ends of the concave 78 and consist of a pair of inwardly facing cam tracks 98 formed upon annular flanges concentric with the shaft 50. Mounted upon two of the radial arms at each end of the longitudinal movable carriage carrying the rollers 92 are anti-friction rollers 99 which are designed to cooperate with the cams to effect the longitudinal movement of the carriage. The construction is best understood by reference to Fig. 7, where it will be observed that of the four radial arms shown, two of them, diametrically opposite, are provided with the anti-friction rollers 99 pivoted between ears 100, on the said two arms, and the corresponding arms at the opposite end of the carriage are constructed in a similar manner. The cam tracks 98 in the construction now being described, are provided with two curved elevations or rises 101 disposed 180 degrees apart, and the cam tracks cooperating with the opposite ends of the carriage are disposed at an angle of 90 degrees from each other, that is to say so that each rise of one track coincides with a depression of the other track. By this construction the diametrically disposed anti-friction rollers cooperate at the same time with corresponding parts of the cam tracks and while each roller is riding up upon a rise of the track at one end of the carriage each roller at the opposite end of the carriage is moving into the depressions of the associated cam track. The distributing rollers in the operation of the machine move along in contact with the bottom of the concave and by means of the springs 97 are held in yielding contact with the concave, and while these rollers are caused to rotate by reason of their frictional engagement with the concave they are at the same time moved longitudinally by the cams. By locating the highest points of the cams 180 degrees apart and employing four distributing rollers spaced 90 degrees apart, each succeeding roller as it comes into engagement with the feed roller, inking concave and inking cylinder is reciprocated in a direction reverse to that of the preceding roller. By this means the ink is thoroughly worked out and thinned before being delivered to the inking cylinder.

Located at and projecting from the rear side of the concave 78, is the ink chest 102, as shown in Fig. 5. This chest preferably consists of a removable concave plate 103 which in the present instance is held in position by and rests upon set screws 104 which pass through a rearwardly extending plate or flange 105 attached or fixed to the inking concave, the forward end of the ink chest 103 abutting against the rear wall or edge of the distributing concave, as shown in Fig. 5 to maintain it in position. This construction

provides an ink chest which may be readily removed for cleaning, and also one which may be adjusted into proper relation with the feed roll when only a small supply of ink is necessary for printing a particular job.

Mounted on a shaft 106 journaled in bearings formed in end walls 107 of the flange 105 is the feed roller 81 which is designed to take the ink from the ink chest and deliver it to the distributing rollers 92 to be then worked out and thinned by the latter. This roller is preferably rotated intermittently to advance its inked surface to the distributing rollers. Motion may be communicated to this roller in any suitable manner. In the present construction one end of the shaft 106 has fixed thereto a ratchet wheel 108 which is engaged by a pawl 109 pivoted as at 110 to an arm 111, which is in turn pivoted on the end of the shaft 106 and held thereon by a screw 112. A spring 113 attached at its ends to the pawl and the arm serves to hold the pawl in engagement with the ratchet wheel, while a dog 114 pivoted to the end of the concave 78 engages the ratchet wheel to prevent backward movement of the latter, a spring 115 anchored to the end of the concave 78 and reacting against the dog holding the latter in engagement with the ratchet wheel. Connected to the arm 111 is a link 116 which is provided with a sleeve or collar 117 cooperating with an eccentric 118 on the shaft 50. As the shaft 50 is rotated a step by step movement is imparted to the feed roll whereby to constantly maintain a freshly inked surface of the feed roll in position to be engaged by the distributing rollers at each operation of the machine. In order to vary the degree of rotary movement of the feed roll, the arm 111 is provided with a slot 119 in which is adjustably secured a pin 120, a thumb-nut 121 being employed to secure the pin in its adjusted position in the slot, and the link 116 is pivoted on this pin. By adjusting the position of the pin in the slot toward or away from the center of the feed roller, the throw of the arm may be varied so as to effect the desired rotation of the roller necessary to advance a greater or lesser area of freshly inked surface to the distributing rollers. If it is desirable at any time to stop the feeding of the ink from the chest, this may be accomplished by adjusting the pin in the slot 119 to such a distance away from the feed roller that the oscillating movement of the arm 111 will be so slight as not to move the pawl far enough to turn the ratchet wheel 108.

In the operation of the device, the inking rollers 53 have a reciprocatory range of movement between full lines and dotted lines positions shown in Fig. 2. The feed roller 81 being turned intermittently at each operation of the machine to advance a fresh supply of ink, the rollers 92 on the reciprocating carriage move in succession into contact with the feed roller and the ink taken up by them is, as they come into contact with the surface of the distributing concave thoroughly inked out and thinned owing to the rotary and longitudinal movement of these rollers. As the carriage rotates the rollers thereon move into engagement with the inking cylinder 73 which takes up the ink and delivers it to the inking rollers 53 as the latter pass over its surface. The inking rollers are in contact with the inking cylinder through an angle of about 90 degrees, but as the chains upon which the rollers are mounted move in an opposite direction from the inking cylinder and as the latter travels at a higher rate of speed than the chains, the effect is that the inking rollers are rotated, by frictional engagement with the cylinder, a sufficient number of times to insure their taking up an ample supply of ink to spread over the type while moving over the frame.

The ends of the guides 66 adjacent the sprocket wheels 47 and 51 are curved at 122, Fig. 2, to conform to the curvature of such sprocket wheels and are tapered, as shown, in order to permit the upper and lower rollers on the carriage to readily move onto the guides when the carriage is advancing from its dotted lines position Fig. 2, back of the inking cylinder.

In order to vary the travel of the inking rollers in accordance with variations in size of the forms, each of the arms 35 to which the pitman 34 are connected may be provided with a slot 123 in which a pin 124 is adjustably secured by a nut 125 the adjacent end of the pitman being pivoted on such pin.

By loosening the nut and moving the pin along the slot 123 toward or away from the center of the shaft 36, the travel of the inking rollers may be regulated to just move over the form employed, it being understood that when the travel of the inking rollers is changed by such adjustment, the segmental gear 39 will also be adjusted in its engagement with the pinion 40 to cause the inking rollers to move into contact with the inking cylinder as before.

1. In an inking mechanism, the combination with the inking cylinder and the inking rollers receiving ink from the said cylinder, of a rotating longitudinally reciprocating carriage provided with a plurality of rollers moving successively into contact with the cylinder for delivering ink thereto.

2. In an inking mechanism, the combination with the inking cylinder and the inking rollers receiving ink from the said cylinder, of a trough, and a rotating longitudinally reciprocating carriage provided with a plurality of rollers for working out the ink in the trough and delivering it to the cylinder.

3. In an inking mechanism, the combination with the inking cylinder and the inking

rollers receiving ink from the cylinder, of a distributing concave, and a rotating longitudinally reciprocating carriage provided with a plurality of spring pressed rollers for working out the ink in the concave and delivering it to the cylinder.

4. In an inking mechanism, the combination with the inking cylinder, and the inking rollers receiving ink from the cylinder and delivering it to the type, of a distributing concave, a shaft mounted on the concave, a carriage rotatable with and slidable longitudinally on the shaft and provided with a plurality of rollers for working out ink in the concave and delivering it to the cylinder, means for rotating the shaft, and means for reciprocating the carriage during the rotation of the same.

5. In an inking mechanism, the combination with the inking cylinder and the inking rollers associated therewith to receive ink from the cylinder and deliver it to the type, of a distributing concave, a shaft mounted on the concave, a carriage rotatable with and slidable longitudinally on the shaft and provided with a plurality of rollers for working out ink in the concave and delivering it to the cylinder, means for rotating the shaft, and cams for reciprocating the carriage during its rotation with the shaft.

6. In an inking mechanism, the combination with the inking cylinder and the inking rollers receiving ink from the cylinder and delivering it to the type, an ink chest, a feed roller mounted on the chest, a distributing concave and a rotating longitudinally reciprocating carriage provided with a plurality of rollers for receiving ink from the feed roller, working it out in the concave and then delivering it to the cylinder.

7. In an inking mechanism, the combination with a type bed, of an inking cylinder located adjacent one end thereof, inking rollers adapted to reciprocate over said type bed and around said inking cylinder, of an ink chest, a feed roller mounted in the chest, a distributing concave, a shaft extending longitudinally of the concave, a carriage rotating with but movable longitudinally of the shaft and provided with a plurality of rollers movable into engagement with the feed roller and the cylinder, means for reciprocating the carriage during the rotation of the same, and a connection between the shaft and the feed roller for imparting intermittent rotary motion to the latter roller.

8. In an inking mechanism, the combination with a type bed, of an inking cylinder located adjacent one end thereof, inking rollers adapted to reciprocate over said type bed and around the inking cylinder, of an ink chest, a feed roller mounted in the chest, a distributing concave, a shaft extending longitudinally of the concave, a carriage mounted on and rotating with and movable

longitudinally of the shaft, a plurality of rollers mounted on the carriage and movable into engagement with the feed roller, the concave and the cylinder, cams for moving the carriage longitudinally during the rotation of the same, and a connection for imparting intermittent rotary motion to the feed roller.

9. In an inking mechanism, the combination with a type bed, of an inking cylinder located adjacent one end thereof, inking rollers adapted to reciprocate over said type bed and around the inking cylinder, of an ink chest, a feed roller mounted in the chest, a distributing concave, a shaft extending longitudinally of the concave, a carriage mounted on and rotating with the shaft and movable longitudinally of the shaft, a plurality of rollers carried by the carriage and movable into contact with the feed roller, the concave and the cylinder, cams for moving the carriage longitudinally during the rotation of the same, a ratchet wheel fixed on the feed roller, a pivoted arm provided with a spring controlled pawl engaging the ratchet wheel, a dog for holding the ratchet wheel against backward movement, and a link operated by the shaft and adjustably connected to the arm.

10. In an inking mechanism, the combination with a type bed, of sprocket wheels mounted at the sides and ends thereof, a pair of sprocket chains cooperating with said wheels and moving parallel to the type bed, a carriage attached at its ends to the chain and provided with inking rollers, guides located at opposite sides of the chains, and rollers on the carriage engaging opposite faces of the guides.

11. In an inking mechanism, the combination with a type bed, of sprocket wheels mounted at the sides and ends thereof, a pair of sprocket chains cooperating with said wheels and moving parallel to the type bed, adjustable guides parallel to the type bed, a carriage attached at its ends to the chains and comprising a pair of end plates connected by a cross bar, a roller on each plate cooperating with the one surface of the guide, a retaining plate associated with each bottom plate, inking rollers having rollers adapted to the other surface of the guide and journaled between each pair of end and retaining plates, and means for yieldingly holding the retaining plates to the end plates.

12. In an inking mechanism, the combination with a type bed, of sprocket wheels mounted at the sides and ends thereof, a pair of sprocket chains cooperating with said wheels and moving parallel to the type bed and around said cylinder during a portion of their course, guides parallel to the type bed and curved at their ends to correspond to the deflection of the chains while moving around the cylinder, a carriage attached at its ends

to the chain and provided at each end with a pair of bearing plates, springs for holding the plates yieldingly together, inking rollers journaled at the ends thereof between the
 5 plates and having rollers on the ends thereof adapted to one surface of the guides, and a roller on one of the plates cooperating with the opposite surface of the guides.

13. In an inking mechanism, the combination with the ink chest and a feed roller associated therewith, of a pair of parallel shafts, an inking cylinder fixed on one of said shafts, a carriage on the other shaft rotating therewith but capable of longitudinal movement
 15 thereon, a sprocket wheel loose on the cylinder shaft, a sprocket wheel on the other shaft and associated with the former sprocket wheel and having fixed thereto a gear, a gear fixed on the cylinder shaft and with which
 20 the other gear meshes, a sprocket wheel located at the opposite end of the bed, a sprocket chain at one side of the bed meshing with the said sprockets, a second sprocket chain located at the opposite side of the bed,
 25 sprocket wheels carrying the second chain, and a carriage attached to the chains and provided with inking rollers to receive ink from the cylinder and deliver it to the type.

14. In an inking mechanism, the combination with the ink chest and feed roller associated therewith, of a pair of parallel shafts, an inking cylinder fixed on one of said shafts, a carriage on the other shaft rotating therewith but capable of movement longitudinally
 35 thereon, a pair of associated sprocket wheels at opposite ends of the shafts, one of the sprocket wheels on each shaft having fixed thereto a gear, a gear fixed on the other shaft with which said former gear meshes, sprocket
 40 wheels at the opposite ends of the bed, a sprocket chain meshing with each of said sprocket wheels and also meshing with the associated sprocket wheels as the corresponding side of the other end of the bed, and a
 45 carriage attached to the chains and provided with inking rollers to receive ink from the cylinder and deliver it to the type.

15. In an inking mechanism, the combination with an ink chest and feed roller associated therewith, of a pair of parallel shafts, an inking cylinder fixed on one of said shafts, a carriage on the other shaft rotating therewith but capable of movement longitudinally
 50 thereon, a pair of associated sprocket wheels at opposite sides of the shafts, one of the sprocket wheels on each shaft having fixed thereto a gear, a gear fixed on the other shaft with which said former gear meshes, sprocket
 55 wheels at the opposite ends of the bed, a sprocket chain meshing with each of said sprocket wheels and also meshing with the associated sprocket wheel at the corresponding side at the other end of the bed, and a
 60 carriage attached to the chains and provided with inking rollers to receive ink from the

cylinder and deliver it to the type, the gearing being so related as to move the cylinder in the opposite direction from and at a faster rate of speed than the sprocket chains.

16. In an inking mechanism, the combination with the inking cylinder, and the traveling inking rollers receiving ink from the said cylinder, of a distributing concave, a shaft journaled on the concave, a carriage mounted on and rotatable with the shaft, rollers journaled on the carriage, and means for pressing the rollers yieldingly into engagement with the surface of the concave.
 75

17. In an inking mechanism, the combination with the inking cylinder, and the inking roller receiving ink from the said cylinder, of a distributing concave, a shaft journaled on the concave, a carriage mounted on and rotatable with the shaft, a pair of radial arms at opposite ends of the carriage and provided with slots, a roller having its ends extending into the slots of the arms, a finger pivoted on each arm and having an aperture through which the adjacent end of the roller extends, a stop for limiting the outward movement of the finger, and a spring engaging the finger and normally tending to hold the finger in engagement with the stop.
 85 90

18. In an inking mechanism, the combination with the inking cylinder and the inking rollers associated therewith, of a distributing concave, a shaft journaled on the concave, a carriage on the shaft having radial arms arranged in pairs at the opposite ends of the carriage, each of said arms being provided with a slot, a roller associated with each opposite pair of arms and having a shaft the ends of which project through the slots of such arms, fingers pivoted to the arms and having apertures at which the ends of the shaft are journaled, springs reacting against the fingers to press the rollers outwardly, and adjustable stops on the arms for limiting the outward movement of the rollers.
 95 100 105

19. In an inking mechanism, the combination with the inking cylinder and inking roller associated therewith, of a distributing concave, a shaft journaled on the concave, a carriage rotatable with and slidable longitudinally of the shaft and having a plurality of pairs of radial arms at opposite ends of the carriage, each of said arms having a radial slot, a roller provided with a shaft having its ends extending through the slots of each associated end pair of arms, a finger pivoted on each arm and having an aperture into which the adjacent end of the roller shaft extends, a spring reacting against the finger normally tending to move the roller outwardly, and an adjustable stop limiting the movement of the finger.
 110 115 120 125

20. In an inking mechanism, the combination with the inking cylinder and the inking roller to receive ink from the cylinder and deliver it to the type, of a distributing con-
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cave, a shaft, a frame rotatable with and
slidable longitudinally on the shaft, and pro-
vided with a plurality of rollers for working
out the ink in the concave and delivering it
5 to the cylinder, means for rotating the shaft,
and cam tracks located at opposite ends of
the frame for reciprocating the frame during
the rotation thereof.

21. In an inking mechanism, the combina-
10 tion with the inking cylinder and the inking
rollers associated therewith, of a distributing
concave, a shaft journaled on the concave
and having a longitudinal slot, means for ro-
tating the shaft, a carriage consisting of a
15 pair of end members connected by a pair of
cross bars, pins connecting the cross bars
and extending through the slot in the shaft,
rollers mounted on the end members, a pair
of cam tracks located at the ends of the
20 frame, and rollers on the end members en-
gaging the tracks, whereby the carriage is
reciprocated during the rotation of the shaft.

22. In combination with the distributing
concave and associated distributing devices
25 of an inking mechanism, of a supporting

plate, a concave plate mounted on the sup-
porting plate, adjusting screws passing
through the supporting plate and on which
the concave plate rests, and a roller mounted
over the concave plate for delivering ink from 30
the latter to the distributing devices.

23. In an inking mechanism, the combina-
tion with an inking cylinder, of a feed roller,
and a plurality of longitudinally reciprocating
rollers moving successively into contact 35
with the feed roller and the cylinder.

24. In an inking mechanism, the combina-
tion with an inking cylinder, a feed roller and
a distributing concave, of a plurality of lon-
gitudinally reciprocating rollers moving in 40
succession into contact with the feed roller,
the distributing concave and the inking cyl-
inder.

In testimony whereof I affix my signature
in presence of two witnesses.

CHARLES WILLIAMS.

Witnesses:

ARTHUR B. SEIBOLD,
ELIZABETH MOLITOR.