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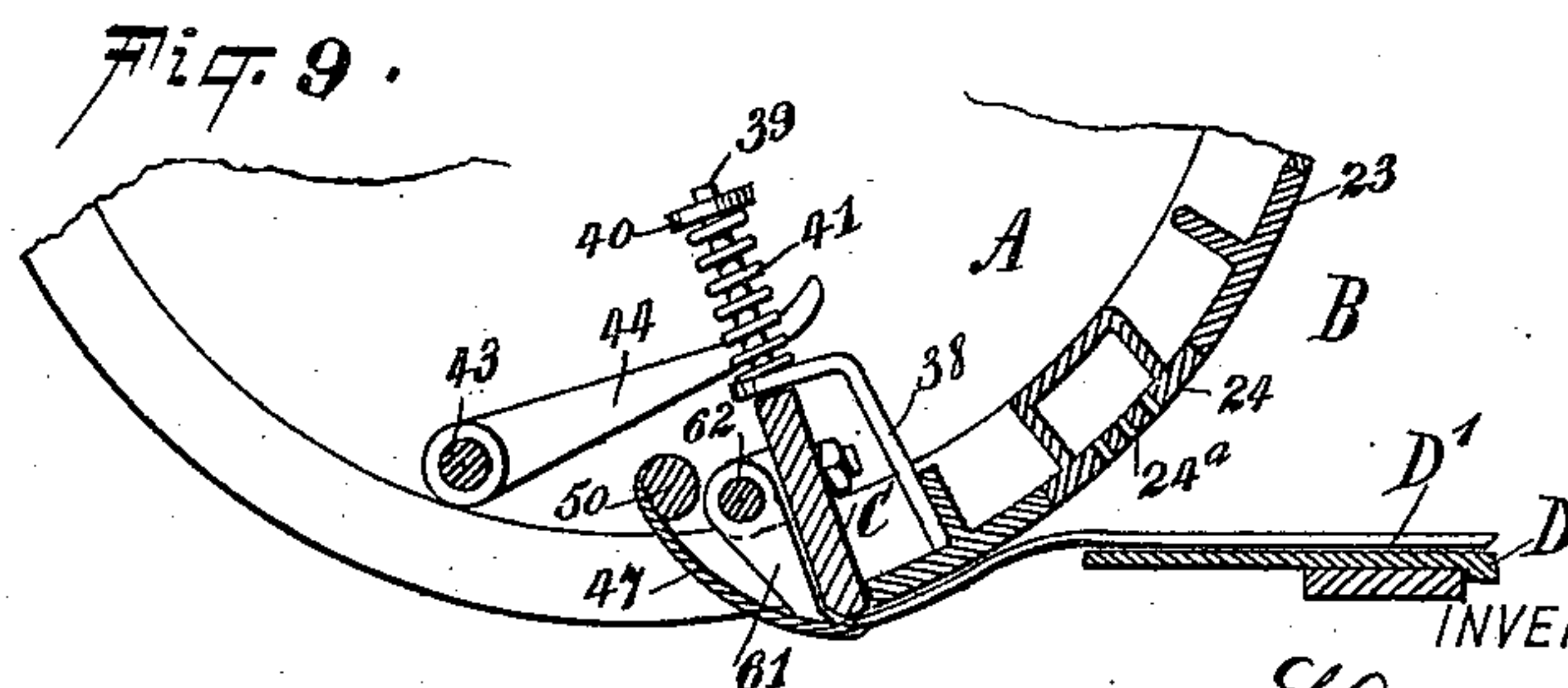
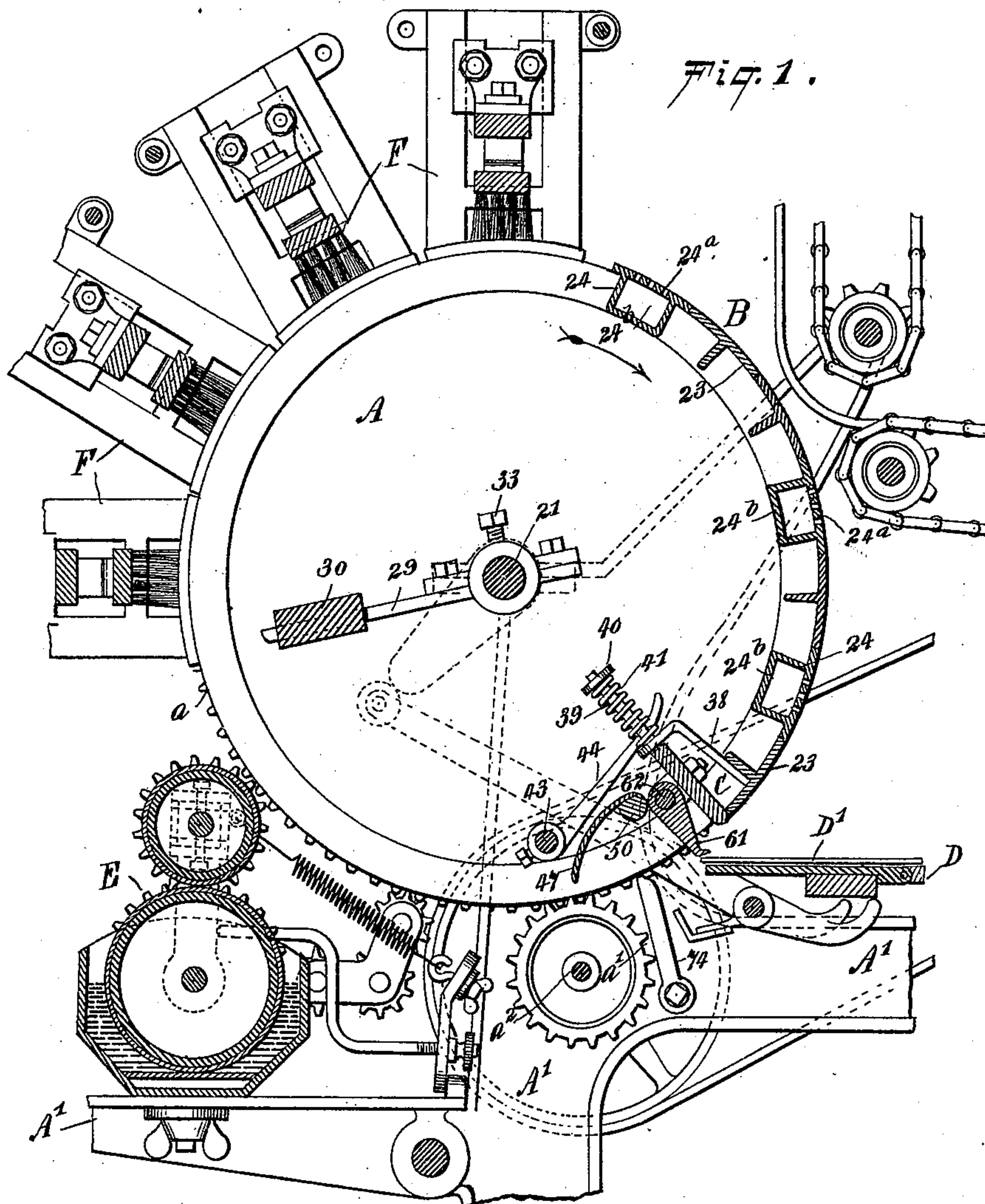
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L. DEJONGE, Jr.

MACHINE FOR COLORING OR COATING PAPER OR LIKE MATERIAL.

No. 557,056.

Patented Mar. 24, 1896.



WITNESSES:

William P. Gabel.
J. A. Aker.

INVENTOR

L. Dejonge Jr.

BY

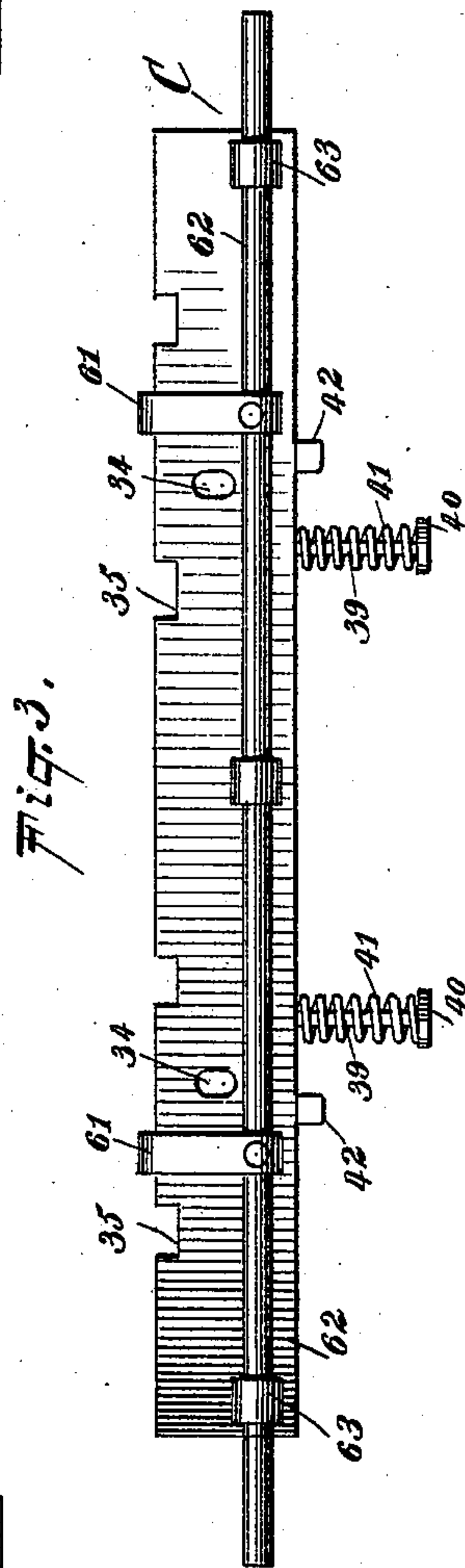
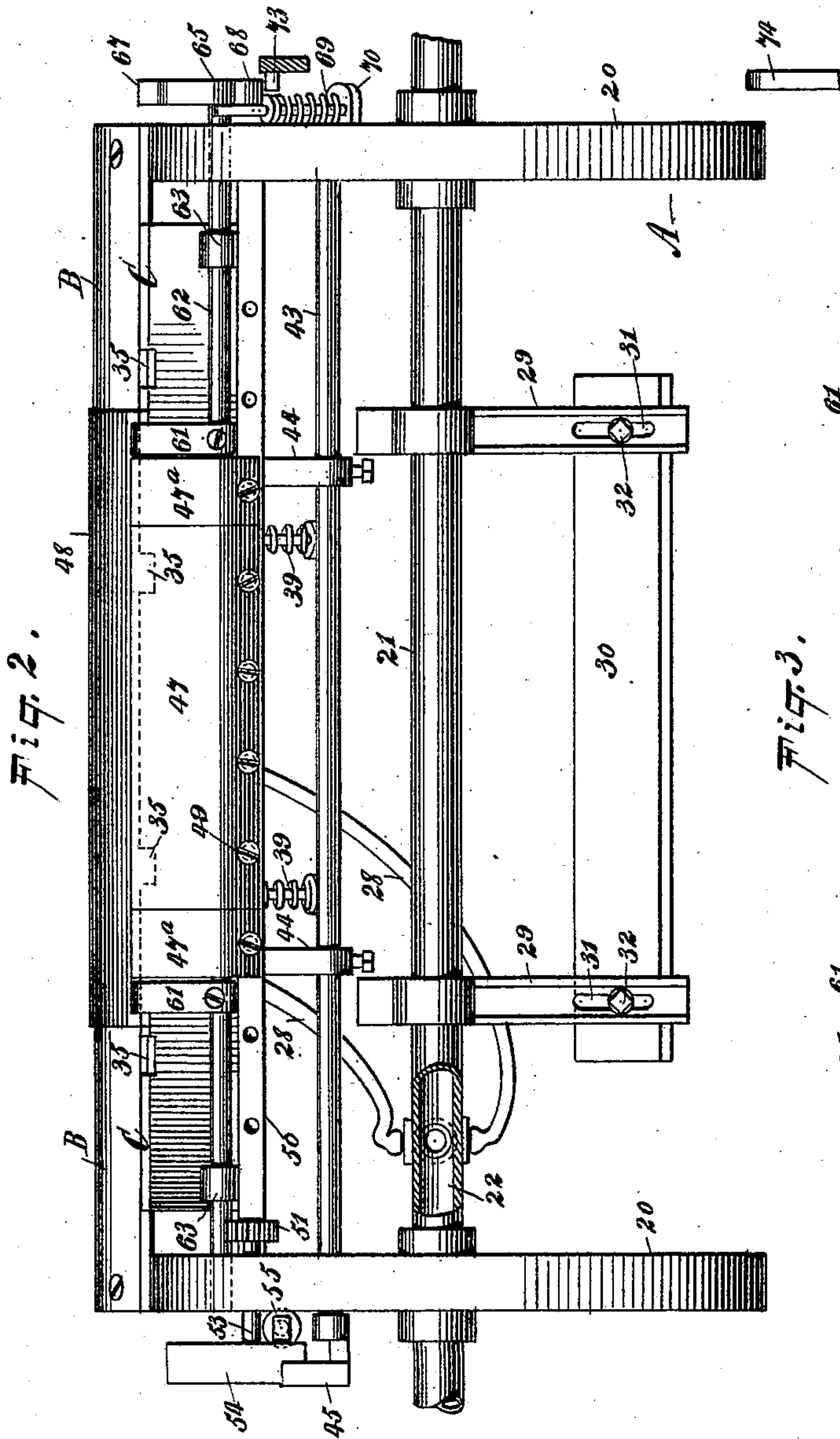
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(No Model.)

6 Sheets—Sheet 2.

L. DEJONGE, Jr.
MACHINE FOR COLORING OR COATING PAPER OR LIKE MATERIAL.
No. 557,056. Patented Mar. 24, 1896.



WITNESSES:

William P. Laebel.
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(No Model.)

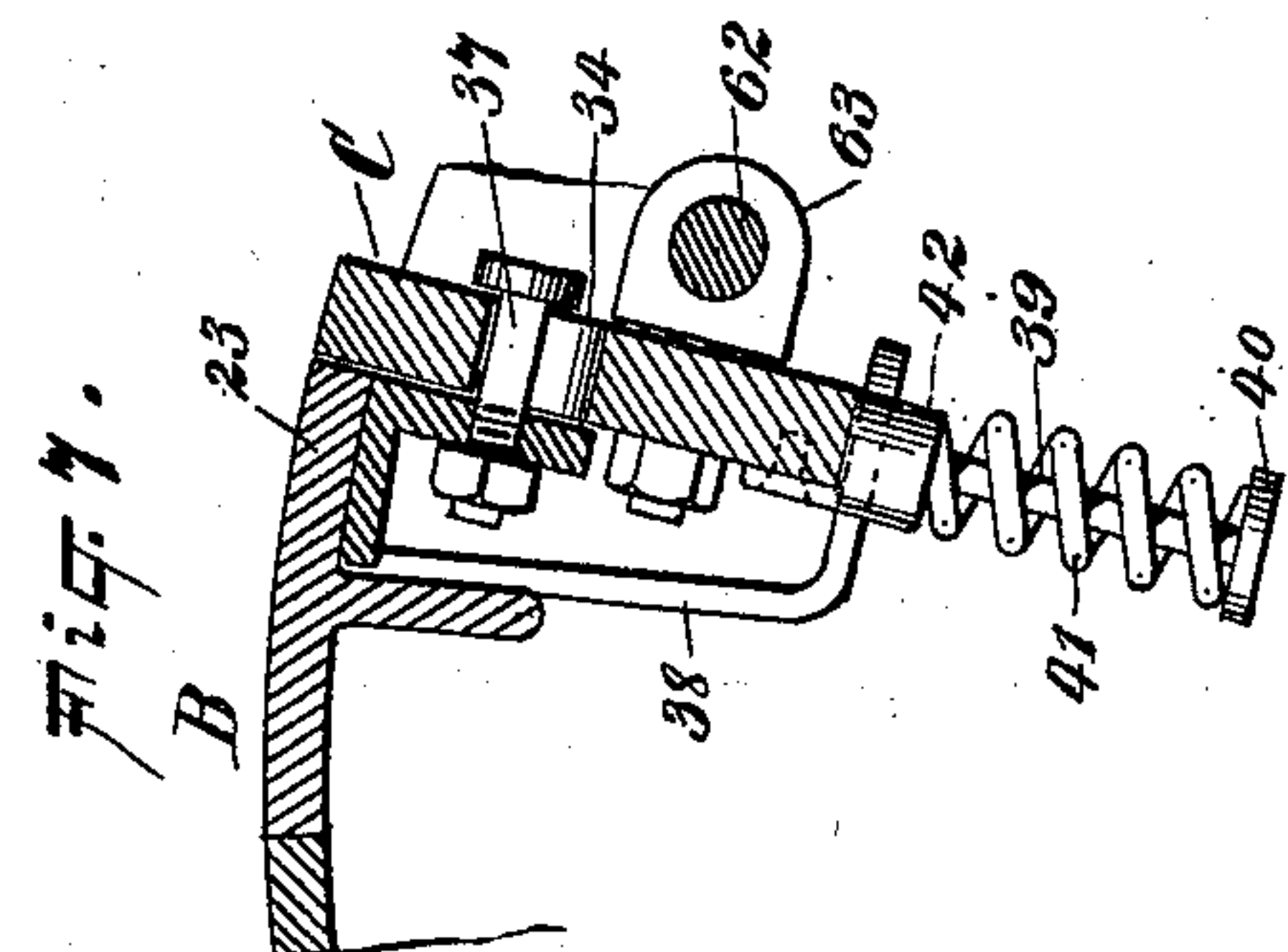
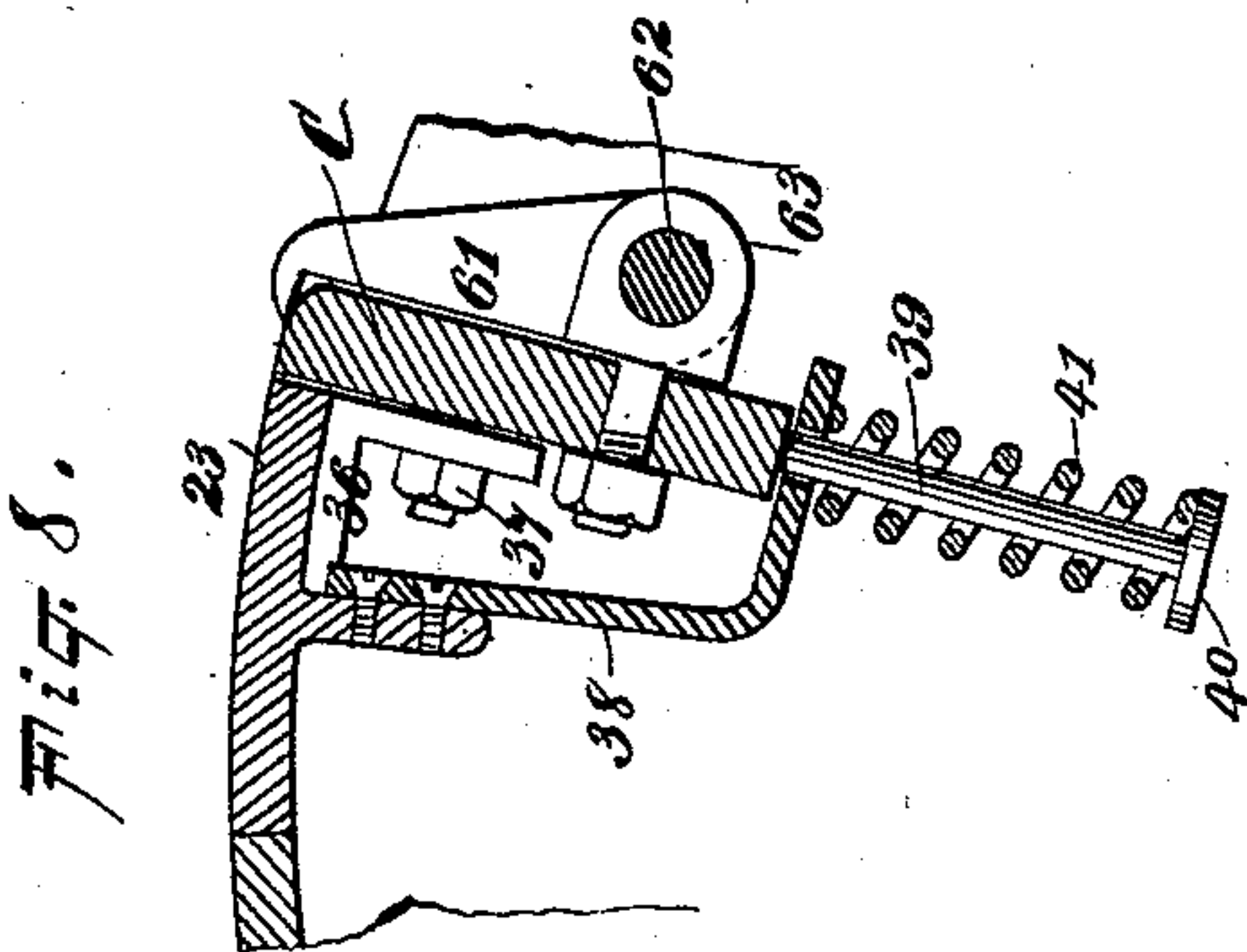
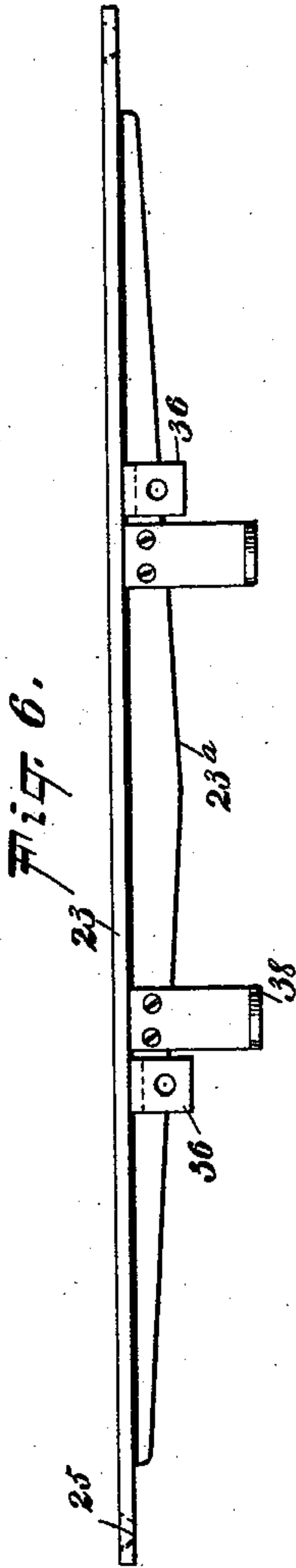
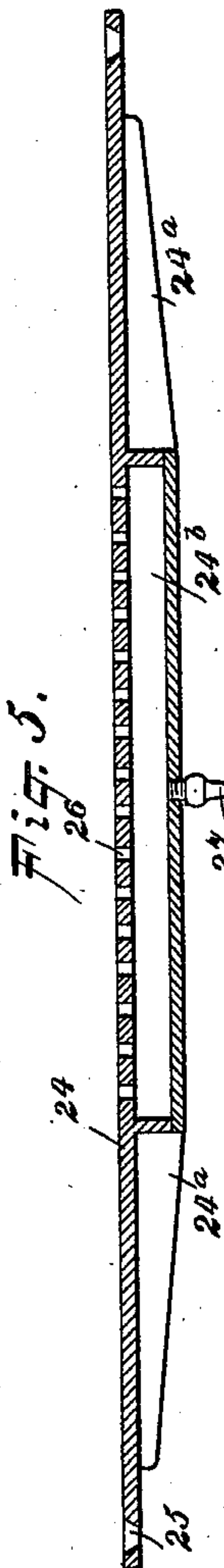
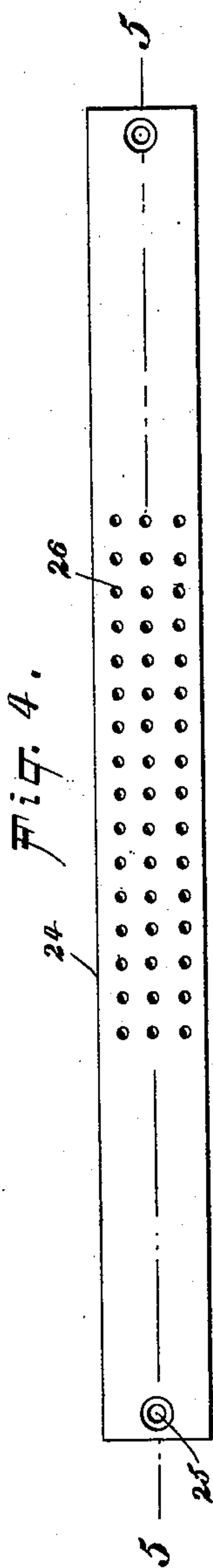
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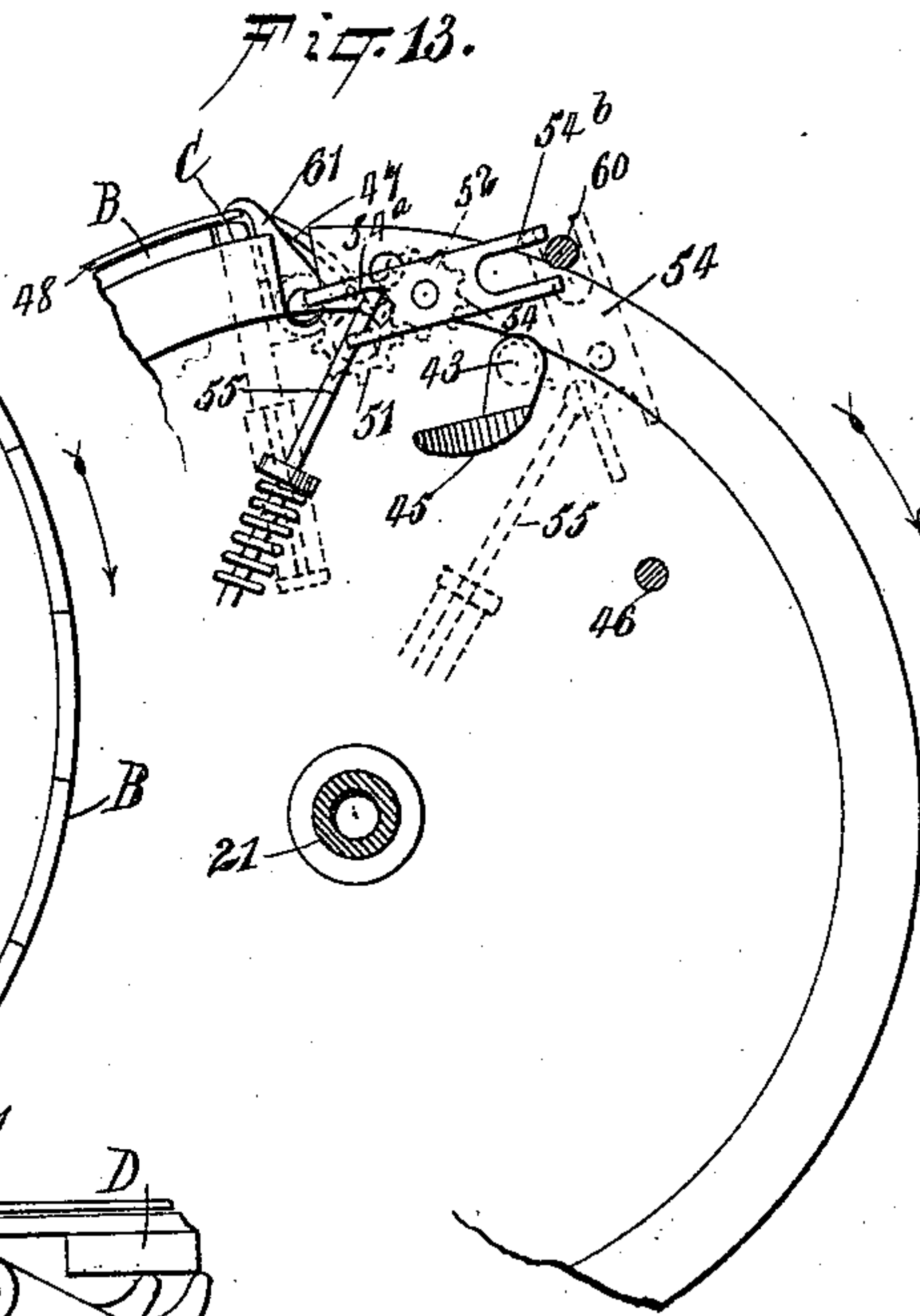
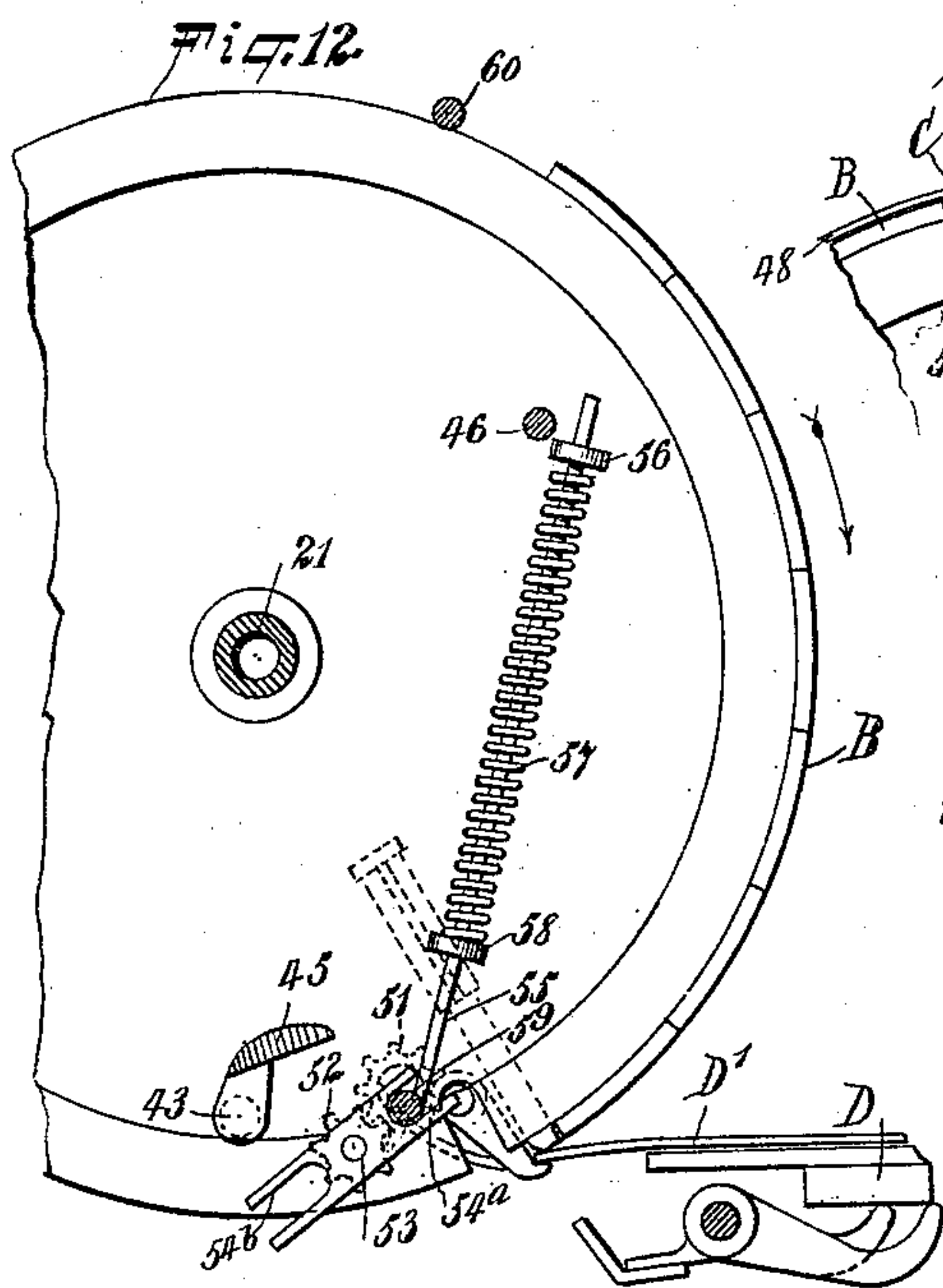
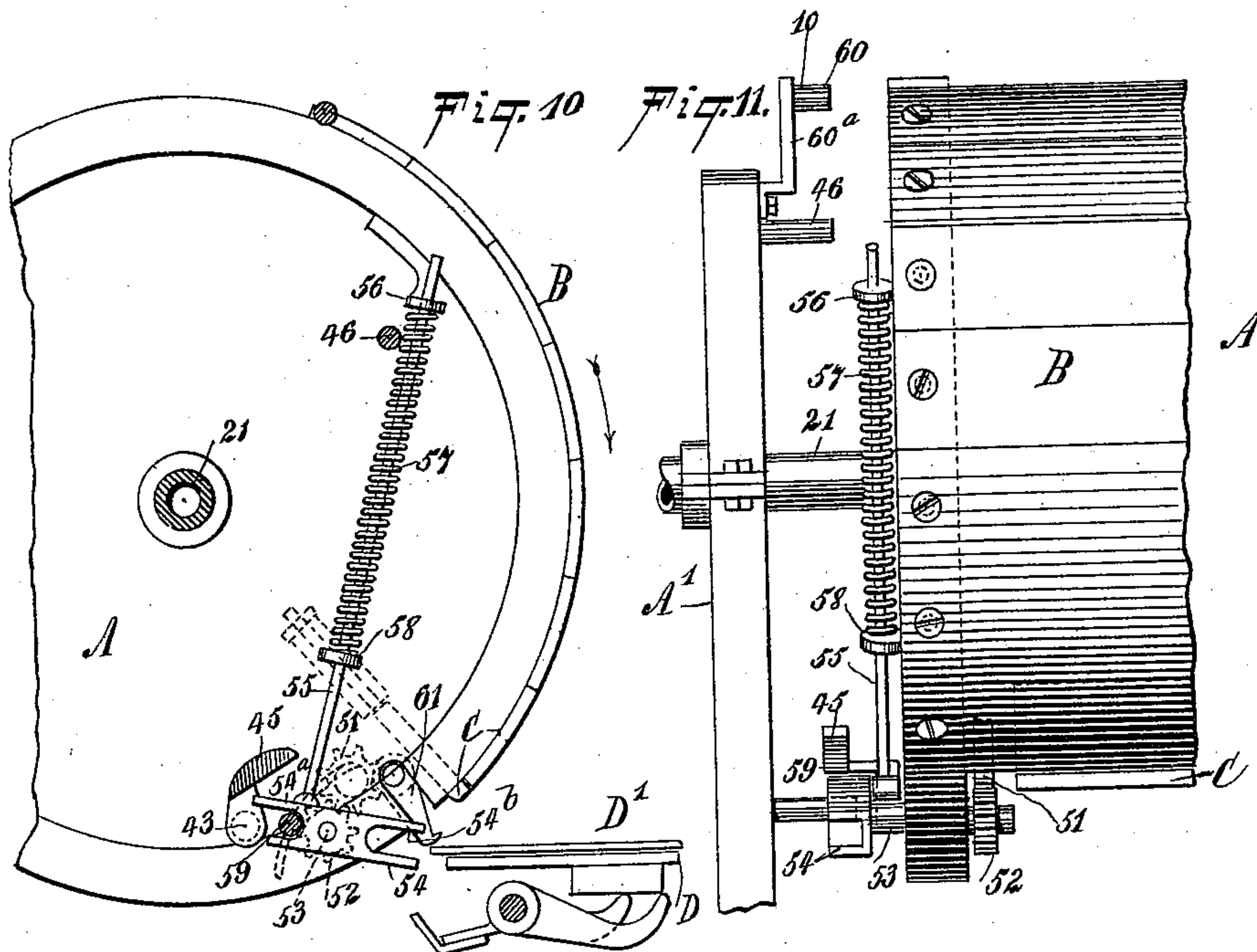
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L. DEJONGE, Jr.

MACHINE FOR COLORING OR COATING PAPER OR LIKE MATERIAL.

No. 557,056.

Patented Mar. 24, 1896.



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(No Model.)

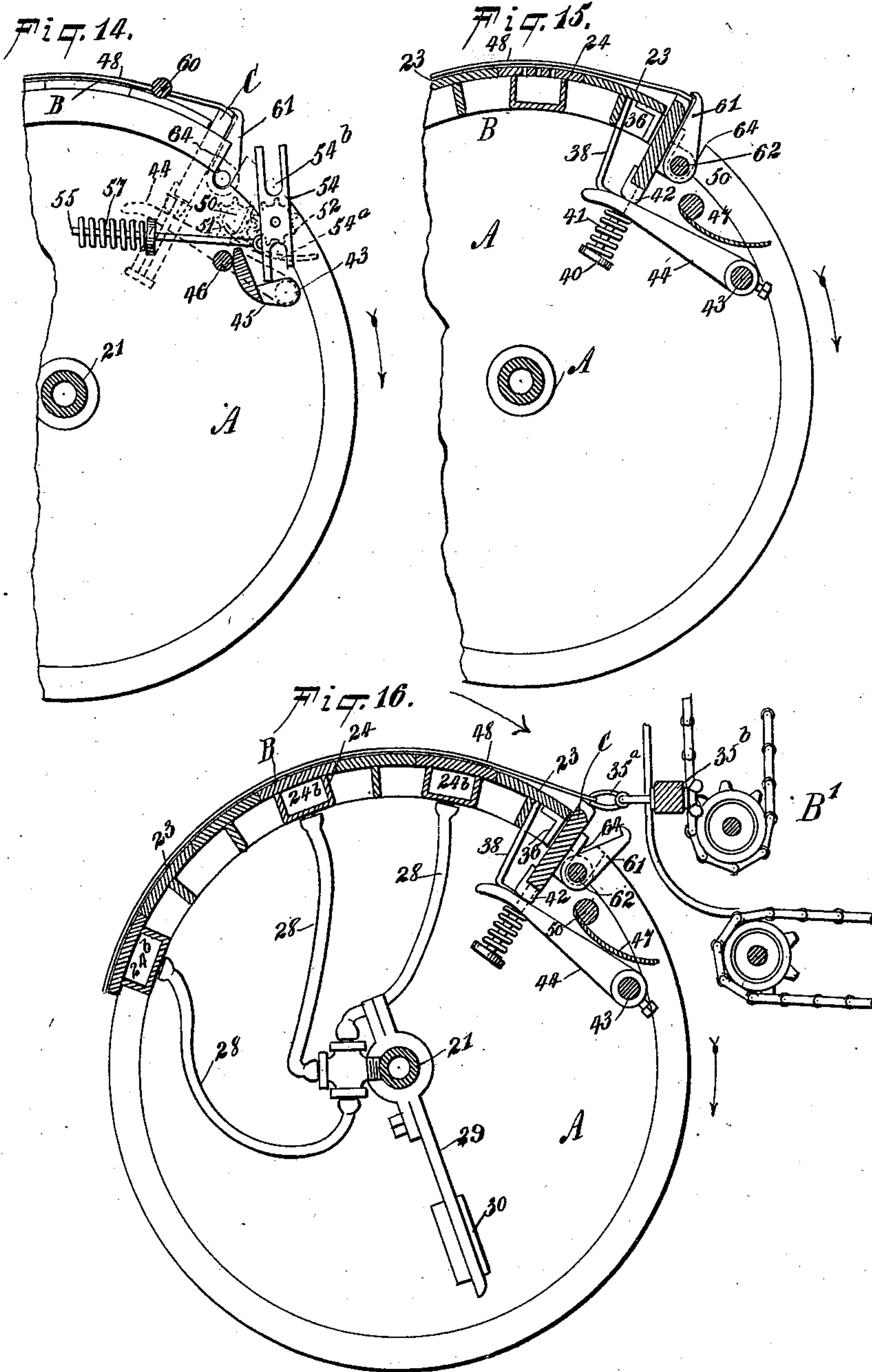
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L. DEJONGE, Jr.

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No. 557,056.

Patented Mar. 24, 1896.



WITNESSES:

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(No Model.)

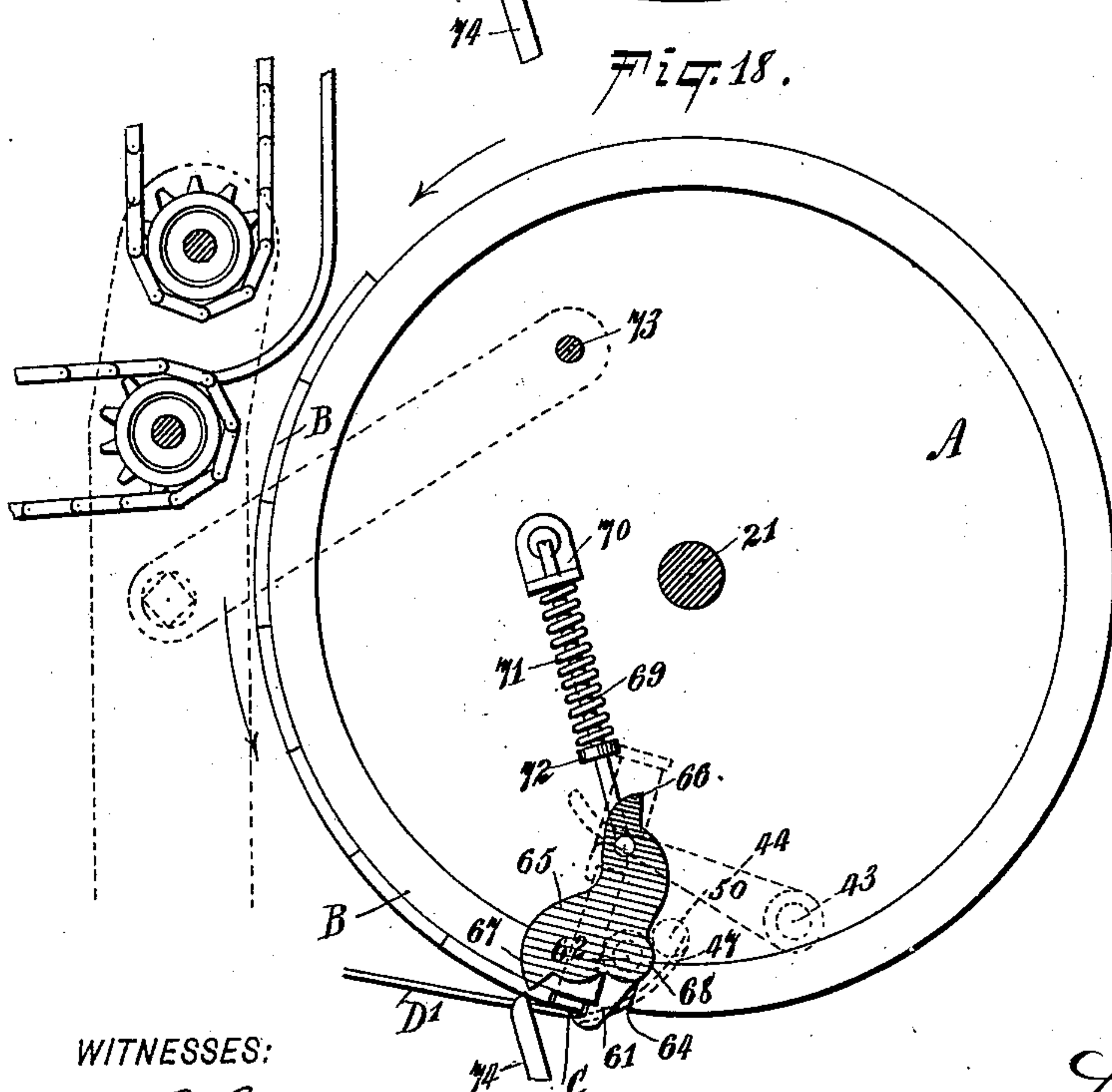
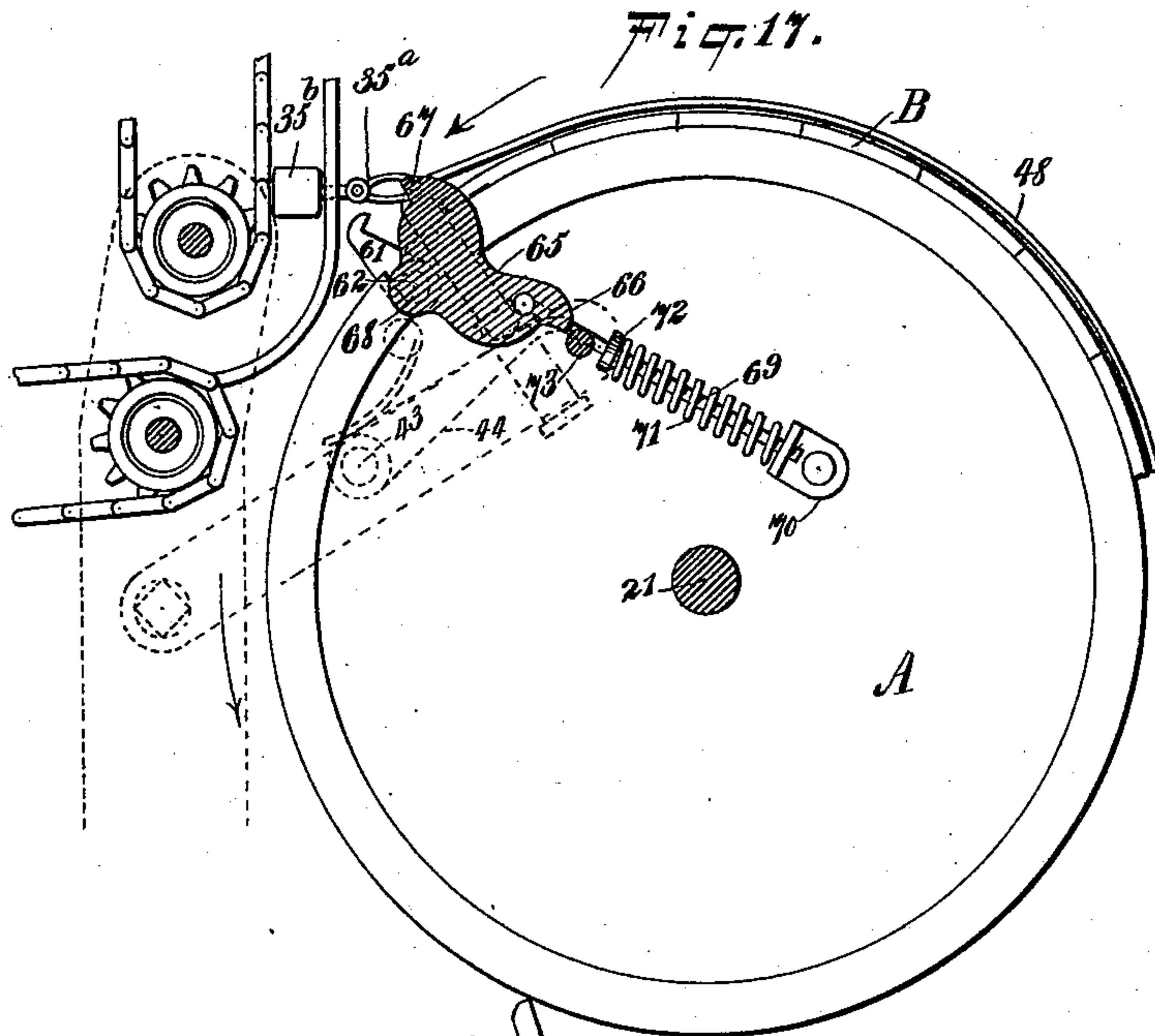
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L. DEJONGE, Jr.

MACHINE FOR COLORING OR COATING PAPER OR LIKE MATERIAL.

No. 557,056.

Patented Mar. 24, 1896.



WITNESSES:

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UNITED STATES PATENT OFFICE.

LOUIS DEJONGE, JR., OF STAPLETON, NEW YORK.

MACHINE FOR COLORING OR COATING PAPER OR LIKE MATERIAL.

SPECIFICATION forming part of Letters Patent No. 557,056, dated March 24, 1896.

Application filed June 29, 1895. Serial No. 554,428. (No model.)

To all whom it may concern:

Be it known that I, LOUIS DEJONGE, Jr., of Stapleton, in the county of Richmond and State of New York, have invented certain new and Improved Machines for Coloring or Coating Paper or Like Material, of which the following is a full, clear, and exact description.

My invention relates to a machine for coloring or coating paper and like material, and the prime object of the invention is to improve upon the construction of the machine for which Letters Patent were granted to me February 5, 1895, No. 533,443, and afford a means whereby provision may be made on the cylinder of the machine for sheets of any size, the adjustment of the bed receiving the sheets being expeditiously and conveniently made.

Another object of the invention is to perfect the construction of the grippers of the machine adapted to hold the paper on the bed.

A further object of this invention is to simplify the devices for elevating the paper and holding the same in position until caught by the clips carried by the drying-machine usually used in connection with the coloring and coating machine, and otherwise to simplify the construction of the patented machine.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional view through the cylinder adapted to carry the paper. Fig. 2 is a front elevation of the said cylinder, illustrating its construction in detail. Fig. 3 is a front elevation of the lifting bar or plate carried by the cylinder. Fig. 4 is a plan view of a section of the bed adapted to receive the paper and adapted to have suction applied thereto. Fig. 5 is a longitudinal section taken substantially on the line 5 5 of Fig. 4. Fig. 6 is a side elevation of what may be termed the "lower" section of the paper-receiving bed. Fig. 7 is a vertical section of a portion of the bed and a lifting plate or bar. Fig. 8 is a similar view taken at another point through

the lifting plate or bar. Fig. 9 is a detail sectional view of a portion of the cylinder, illustrating the position of the gripping devices and lifting-bar at the time of receiving the paper from the feed-table of the machine. Fig. 10 is an end view of the cylinder, illustrating the position of the grippers just preparatory to receiving the paper from the feed-table, the trip devices being in section, the said section being taken practically on the line 10 10 of Fig. 11. Fig. 11 is a side elevation of that end of the cylinder shown in Fig. 10. Fig. 12 is an end view of the cylinder, illustrating the position of the parts connected therewith at the time of taking the paper from the feed-table. Fig. 13 is a view similar to Fig. 12, illustrating the position of the parts at the time when the grippers are about to release the paper. Fig. 14 is an end view of the cylinder, as shown in Figs. 12 and 13, illustrating the main gripping device as released from the paper and the lifting-plate elevated to permit the clips upon the drying-machine to grasp the paper. Fig. 15 is a sectional view through the cylinder with the parts in position as shown in Fig. 14. Fig. 16 is a sectional view through the cylinder, illustrating the manner in which suction is applied to the bed receiving the paper and also illustrating the release of both the main and auxiliary grippers and one in which the clips from the drying-machine may grasp the paper. Fig. 17 is a view of the opposite end of the cylinder to that shown in the other figures and illustrates the manner in which the auxiliary grippers are released and carried to the position shown in Fig. 16; and Fig. 18 is a view similar to Fig. 17, in which the actuating device for the auxiliary grippers is shown in a position to apply the auxiliary grippers in clamping position on the paper.

In carrying out the invention the cylinder A of the machine, which in the form shown forms the support for the bed adapted to carry the paper, consists principally of two heads 20, which are secured to a connecting-shaft 21, the said shaft being provided with an interior chamber 22 for a portion of its length. The cylinder may be revolved in any suitable or approved manner, and ordinarily one of

its heads is provided with a gear a , which meshes with a smaller gear a' on a driving-shaft a^2 , mounted in a suitable frame A' .

The cylinder is adapted to carry a bed B, upon which the sheets to be colored or coated are placed and held. This bed may be shortened or lengthened according to the size of the sheet to be operated upon, and the said bed preferably consists of a series of plates of two constructions, one construction of the plate being designated as 23 and the other as 24. The plate 23 is provided with a central rib 23^a upon its under face, extending nearly to the ends, whereby it is substantially T-shaped in cross-section, and the ends, which are carried over the heads 20 of the cylinder, are provided with openings 25, through which screws or other fastening devices may be passed. The plate-sections 24 of the said bed (shown in Figs. 4 and 5) are provided with ribs 24^a on their under faces, starting from a point near their ends and terminating at each side of the center, connecting with a box or a chamber 24^b formed upon the bottom of the plate, the upper surface of the plate having apertures 26 made therein over the aforesaid chamber, and each chamber 24^b of the bed is fitted with a nipple 27, by means of which these chambers may be connected by tubes 28 with the tubular portion 22 of the cylinder-shaft 21, the said tubular section of the shaft being connected with an exhaust-fan or its equivalent. These plate-sections of the bed are placed with their sides in contact with each other, as shown in Fig. 1, and the box-sections are placed near the ends of the bed and at a central point, so that when suction is applied to the box-sections the paper will be drawn down upon the bed and held at its ends and at its center, and it is obvious that by adding or taking away sections of this bed it may be lengthened or shortened, as occasion may demand.

It is necessary that the cylinder should be balanced, and therefore arms 29 are placed upon the cylinder-shaft 21, usually one at each side of the center, and these arms carry a weight 30 at their free ends, the said ends being provided with slots 31 to receive adjusting-screws 32 passed through said slots and into the weight, Fig. 2, and adjusting-screws 33 are used to secure the arms 29 on the cylinder-shaft, Fig. 1. Under this construction it will be observed that the arms may be adjusted on the shaft and the weight adjusted on the arms in a manner to counterbalance the bed formed on the cylinder. In any event, however, the weighted arms must center the bed, as shown in Fig. 1.

In connection with the bed a lifting bar or plate C is provided, and this lifting bar or plate may be shorter than the space between the heads of the cylinder or of substantially equal length, and the plate, as shown in Fig. 3, is provided at each side of its center with elongated transverse openings 34 and with recesses 35 in its upper edge, the said recesses

being adapted to permit the passage of the clips 35^a carried by the sockets 35^b of the machine B', Fig. 16, adapted for drying the paper after the said paper has been coated or colored on the machine forming the subject-matter of this specification.

The lifting-plate C is attached to what may be termed the "lower" section of the cylinder-bed B, which is a T-shaped section 23, and is shown in Fig. 6. In making the attachment angle-irons 36 are bolted or otherwise secured to the under face of the said bed-section in advance of its flange 23^a, as shown in Figs. 7 and 8, and bolts 37 are passed through the slots 34 in the lifting-plate and into the said angle irons or brackets 36, as is particularly shown in Fig. 7, so that the lifting-plate is capable of vertical movement or movement outwardly and inwardly from the cylinder.

The flange 23^a of the aforesaid lower bed-section 23 is also provided with angle-brackets 38, the lower members whereof extend outwardly from the cylinder, as shown in Figs. 6, 7 and 8, and these brackets are preferably placed between the angle irons or brackets 36, which are preferably attached to the plate proper. The angle-brackets 38 extend downward well below the angled irons 36 and below the lower edge of the lifting-plate C when the latter is in its lowermost position. Rods 39 are secured to the lower edge of the lifting-plate and extend downward through openings in the angle-brackets 38, terminating at their lower ends in heads 40, and a spring 41 is coiled around each of the rods 39, having bearing against the head of the rod and the bracket, while studs 42 are formed upon the lower end of the lifting-bar outside of the spring-controlled rods, as illustrated in Figs. 3 and 7.

A shaft 43 is journaled in the cylinder A below the receiving end of the bed B, as shown in Figs. 1 and 2. The shaft 43 is provided with fingers 44 contained within the cylinder and preferably adjustably located on the shaft, and these fingers are adapted for engagement with the lugs 42 on the lifting-plate C, being especially adapted to elevate the said plate in order to permit the clips 35^a of the drying-machine to grasp the paper at the recesses 35 in the said lifting-plate. The shaft 43 extends beyond the left-hand head of the cylinder and carries at said end an angle arm or cam 45, as shown in Figs. 2, 10 and 11.

Just before the receiving end of the bed arrives at the point at which the sheet is to be discharged and just before the sheet is released from the clamping mechanism used the angle arm or cam is brought in contact with the stud 46 projected inwardly from the extension of the frame A', located at the left-hand end of the cylinder, as shown in Fig. 11. As the cylinder revolves, the angle arm or cam in passing the stud will rock the finger-shaft 43 in a manner to force the fingers against the lugs 42 of the lifting-bar C and

will carry the said bar up to the position shown in Figs. 14, 15, and 16, thereby elevating the sheet, and, as heretofore stated, permitting the clips of the drying-machine to readily grasp the edge of the paper, as illustrated in Fig. 16, and just after this gripping action has taken place the cam will be released from the stud 46, as is particularly shown in Fig. 14, whereupon the fingers 44 will drop downward and the lifting-plate will be restored to its normal position through the medium of the springs 41 connected with the plate and placed under tension when the plate is lifted.

A main gripper or clamp is employed to hold the advance end of the paper on the bed B, and in addition auxiliary grippers or clamps are also used. The main gripper or clamp (shown best in Figs. 1 and 2) consists of a plate 47, curved in cross-section and made to extend over the lifting plate or bar to an engagement transversely with a sheet of paper 48. This plate contacts throughout its length with a sheet of paper, as is shown in Fig. 2, and is located at the central portion of the receiving end of the bed, and in addition to this plate extensions or side plates 47^a are used, located at each end of the main plate 47, in order that this main gripper or clamp may be given any desired length. The clamps or grippers are removably and adjustably attached to a shaft 50, which is journaled in the heads of a cylinder A at a point between the lifting-bar and the finger-shaft 43, and a pinion 51 is secured preferably to the left-hand end of the shaft, as is likewise shown in Fig. 2.

The pinion 51 meshes with a second pinion 52 secured on the inner or right-hand end of a short shaft 53, journaled in bearings located at the left-hand cylinder-head, as illustrated in Figs. 10, 11, 12, and 13. The left-hand end of the shaft 53 extends some distance beyond the cylinder-head, as shown in Fig. 11, being securely fastened to the central portion of the cross-head 54, having forked or bifurcated extremities, designated respectively as 54^a and 54^b. The cross-head may be termed a "shifting-head," as it is employed to effect a change in the position of the main clamping plate or plates.

One end of a rod 55 is eccentrically and pivotally connected with the shifting cross-head, the attachment being made near one side edge between the connection of the head with its shaft 53 and one of the forks—the fork 54^a, for example. At the opposite end of the rod 55 and intermediate of its ends the rod is held to slide in bearings 56, located upon the left-hand head of the cylinder, and a spring 57 encircles the rod between its upper bearing and a collar 58 contained upon the rod, the spring being so attached to the rod as to cause the latter to exert constant pressure upon the shifting cross-head in an outward direction.

The shifting cross-head assumes two posi-

tions, both tangential to the cylinder. In one position the fork 54^b is the outer one and in the second position the fork 54^a assumes that place. In the first-named position of the shifting cross-head the clamp is opened, as shown in Figs. 10, 14 and 15, and held away from the sheet-receiving bed B, allowing the sheet to be removed or another sheet placed in position to be clamped, and in the second position of the shifting cross-head the clamp will hold the sheet upon the said bed firmly and securely. The tension-rod 55 acts to hold the shifting cross-head in either position.

The shifting cross-head 54 is acted upon by two studs 59 and 60, secured to extensions formed at the left-hand end of the frame A', one of the studs—the upper one, 60—being located at the upper portion of the said frame extension upon a bracket 60^a, projected upward therefrom, and the other stud is placed near the lower end of the extension, as is best shown in Fig. 11. The lower stud, 59, is in the vicinity of a feed-table D, as shown in Figs. 10 and 12, the upper stud, 60, being located adjacent to that point at which the sheets after being colored are to be caught by the clips of the drying-machine, or where the said sheets are to be otherwise removed from the cylinder. Both studs extend horizontally from the aforesaid frame extensions in direction of the left-hand head of the cylinder.

In the operation of the clamp 47, supposing the clamp to be in the open position shown in Figs. 1 and 10, which figures represent the cylinder nearly ready to receive the sheet D' of material to be coated, the stud 59 will at that time have entered the fork 54^a of the shifting cross-head. As the cylinder revolves in the direction of the arrow, Fig. 10, the inner fork, 54^a, or that engaged by the fixed stud 59, will be carried forward, and the shifting-pinion 52 will be turned in a direction to so move the clamping-pinion 51 that the clamping-plate 47 will be forced upon the sheet D' if the latter is fed to the receiving end of the bed B, as shown in Fig. 12. The closing of the clamp takes place when the fork 54^a of the shifting-head is the outer one, taking the position formerly occupied by the fork 54^b, the cross-head having been turned practically end for end, and in this movement of the shifting cross-head the tension-rod will be thrown to the opposite side of the center of the said shifting-head, and will therefore hold the head in its changed position.

The shifting cross-head will remain in the position shown in Fig. 12, causing the clamping-plate to hold the sheet until the sheet has received its coloring compound or coating, and also until the point is reached where the sheet is to be removed from the cylinder. At this time the sheet is released from the clamp by the upper stud, 60, entering the fork 54^b, which in the revolution of the cylinder will be the forward one, as shown in Fig. 13. As the stud 60 acts upon the fork 54^b by the revolution of the cylinder, the

shifting-head is rocked or rotated until the fork 54^b is brought to the upper position and the fork 54^a to the lower position, (shown in Fig. 14,) and the clamping-shaft 50 is there-
 5 fore rocked in a direction to remove the clamp from the sheet, this position of the shifting-head corresponding practically to its position at starting, as shown in Fig. 10.

As the cylinder continues to revolve it carries the bed B downward to receive another sheet, the said bed facing the front of the machine, and when the receiving end of the bed approaches the feed-table D the sheet will be fed out to the bed in any approved
 15 manner, or as shown and described in the patent heretofore alluded to, and about the time that the contact is made between the receiving end of the bed and the sheet to be colored the lower stud, 59, will have acted
 20 upon the shifting cross-head in such a manner as to reverse the same and close the clamp against the sheet. Thus another sheet is in position to be acted upon or coated and to be released at the upper portion of the machine
 25 or wherever the releasing trip-stud 60 may be located.

As heretofore stated, auxiliary grippers or clamps are employed in connection with the main clamp 47. These auxiliary clamps consist of hook-shaped bars 61, adjustably located on a shaft 62, journaled in suitable bearings 63 secured upon the outer face of the lifting plate or bar C, as shown in Fig. 3. The auxiliary clamps are placed one at each
 30 end of the main clamp, as shown in Fig. 2, and are adapted to extend over the upper edge of the lifting-plate to engage with the advanced edge of the paper while on the bed B.

It is obvious that the auxiliary clamps move
 40 with the lifting-plate, and therefore recesses 64 are made in the heads of the cylinder to permit vertical movement of the clamp-shaft. These auxiliary clamps are adapted to hold the paper on the bed of the cylinder after the
 45 main clamp has been removed from the bed and while the lifting-bar is in its outer position, the auxiliary clamps being so placed as not to interfere with the movement of the withdrawing clips 35^a when employed, and
 50 these auxiliary clamps release the sheet of paper simultaneously with its being engaged by the aforesaid clips. This is accomplished preferably by securing upon the right-hand end of the shaft 62 a cam 65, (shown in Figs.
 55 17 and 18,) being at the right-hand end of the cylinder. This cam is of elongated shape and is provided with a head 67 at its outer end, which extends beyond the upper face of the bed B, and a smaller head 66 at its inner end; and at the forward side of the cam, nearer its outer than its inner end, a lug 68 is formed, the said lug serving as a means for attachment to the clamp-shaft 62.

A rod 69 is pivotally attached to the cam
 65 near its inner head and at the rear of and out of alignment with the point of the attachment

of the cam to its shaft. The rod 69 has play at its inner end in a bracket 70, secured upon the outer face of the right-hand cylinder-head, and a spring 71 is coiled around the rod, 70 having bearing upon this bracket and likewise against a collar 72, formed on the rod.

The inner head of the cam is adapted to be engaged by a trip-pin 73, extending horizontally inward from the extension of the frame 75 A' at the right-hand side of the cylinder, and this pin is located nearly opposite the point where the paper sheet is to be withdrawn from the bed; and a second trip, 74, preferably in the nature of an arm, is secured to the main 80 frame A', as shown best in Fig. 1, slightly in advance of the feed-table near the point where the paper sheet is to be received upon and clamped to the cylinder-bed.

In the operation of the machine the main 85 and auxiliary clamps are opened out from the bed and the lifting-bar is in its inner position when the bed of the cylinder approaches the feed-table. At the time that the sheet D' to be coated is fed to the receiving end of the 90 bed B the main clamp 47 is closed upon the sheet through the medium of the lower trip-pin, 59, operating the shifting-head 54 in the manner heretofore described, and at practically the same moment that the clamping of 95 the main clamp is effected the outer head of the cam 65 will have struck the trip-arm 74, and the said head will be drawn back within the peripheral line of the cylinder-head, as shown in Fig. 18, and the spring-controlled 100 rod 69 will have been carried over the center of the cam, holding it in this its inner position, and the cam in assuming this position will so rock the shaft 62 as to carry the auxiliary clamps to a bearing on the paper also. 105

The paper is now carried in contact with the distributing-roller of any approved form of color-applying device E, and the color is distributed on the paper by means of brushes F, arranged around the rear of the cylinder, 110 or other approved means. When the advanced end of the bed B approaches the point where the paper is to be removed, the upper trip, 60, at the left-hand side of the cylinder will operate upon the shifting-head in a man- 115 ner to release the paper from the main clamp 47, and as soon as this release is effected the finger-shaft 43 will be operated from the left-hand trip-stud, 46, through the medium of its cam 45, and the fingers 44 will force the lifting-bar C outward, raising the sheet at the advanced end of the bed, the auxiliary clamps meanwhile holding the sheet in place on the bar, and at the time the sheet is to be removed either by machinery or by hand the inner 125 head, 66, of the cam 65 will be acted upon by the upper right-hand trip, 73, and thrown to the position shown in Fig. 17, substantially the reverse of that shown in Fig. 18, and the auxiliary clamps are then removed from contact 130 with the paper and the spring-controlled rod 69 will hold the cam 65 in this its outer or

open position until it is again brought to the vicinity of the feed-table to clamp another sheet.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a machine for coloring or coating paper and like material, a cylinder, a bed secured on one side thereof and constructed in adjustable sections, whereby the length of the bed may be varied, and a radially-adjustable balancing-weight secured to the opposite side of the cylinder to that carrying the bed, substantially as described.

2. The combination of the movable support, the bed thereon, the lifting-bar at one end of the bed, clamps carried by the lifting-bar and adapted for engagement with the bed, a clamp carried by the support and likewise adapted for engagement with the bed, and means for operating said clamps, as and for the purpose specified.

3. In a machine for coating or coloring paper and like material, a cylinder, a bed formed upon the said cylinder, a spring-controlled lifting-bar located at the advanced end of the bed, being capable of outward movement, a clamp independent of the lifting-bar and adapted for engagement with the advanced end of the bed, and auxiliary clamps likewise adapted for engagement with the bed and carried by the said lifting-bar, as and for the purpose specified.

4. In a machine for coloring or coating paper or other material, a cylinder, means for rotating the same, an extensible bed formed upon a portion of the cylinder, a counterbalance for the said bed, and clamping devices located at and adapted for engagement with the advanced end of the said bed, as and for the purpose specified.

5. In a machine for coating or coloring paper or other material, a cylinder, means for revolving the same, a bed formed upon the said cylinder and adapted to receive the sheets, a lifting-bar located at the advanced end of the bed, clamps adapted for engagement with the bed and carried by the said lifting-bar, and an extensible clamp operating between the clamps carried by the lifting-bar and likewise adapted for engagement with the bed, and trip devices in the path of rotation of the cylinder, operating the main clamp in advance of the side clamps, as and for the purpose specified.

6. In a machine for coating or coloring paper or other material, a cylinder, means for revolving the same, a bed formed upon the said cylinder and adapted to receive the sheets, a lifting-bar located at the advanced end of the bed, clamps adapted for engagement with the bed and carried by the said lifting-bar, an extensible clamp operating between the clamps carried by the lifting-bar and likewise adapted for engagement with the bed, trip devices in the path of rotation of the cylinder, operating the main clamp in

advance of the side clamps, a rock-shaft, fingers carried by the rock-shaft, operating to force the lifting-bar outward beyond the bed, cams carried by the said shaft, and trip devices operating the said cams prior to the operation of the side clamps, as and for the purpose specified.

7. In a machine for coloring or coating paper or other material, the combination, with a movable support and a bed carried thereby and adapted to receive the sheets to be colored, of a rock-shaft, clamps carried by the said shaft and adapted for engagement with the bed to hold the paper thereon, a lifting-bar located between the said clamps and the bed, substantially forming a portion of the latter, and auxiliary clamps independent of the main clamp, and carried by the said lifting-bar, as and for the purpose specified.

8. In a machine for coloring or coating paper or other material, a movable support, a bed carried thereby, a lifting-bar adapted to elevate the paper, constituting substantially a portion of the bed and having recesses in its upper edge, a shaft carried by the said bar, clamps carried by the said shaft, and a mechanism, substantially as described, for rocking the shaft, as and for the purpose specified.

9. In a machine for coloring or coating paper or like material, a movable support, and a bed carried thereby and adapted to receive the paper, said bed being constructed in sections, each section comprising a plate and a rib on the under face of the plate, sundry of the said sections having chambers formed upon their under faces and having outlets in the outer face of the plate, the said chambers being adapted to have the air exhausted therefrom, as and for the purpose specified.

10. In a machine for coloring or coating paper, or like material, the combination, with a cylinder, of a bed formed partially around the cylinder, the said bed being provided with chambers at intervals in its length, the chambers having outlets at the outer face of the bed and adapted to have air exhausted therefrom, a lifting-bar having guided and spring-controlled movement at the receiving end of the bed, a rock-shaft carried by the said lifting-bar, clamps located on the said rock-shaft and adapted to extend over the upper edge of the said lifting-bar, and auxiliary clamps located between the clamps of the lifting-bar and independent thereof, a time-operated rock-shaft, fingers carried by the rock-shaft, engaging with and adapted to force the lifting-bar outward beyond the bed, and independent locking and releasing devices for the side and main clamps, substantially as described.

LOUIS DEJONGE, JR.

Witnesses:

J. FRED. ACKER,
C. SEDGWICK.