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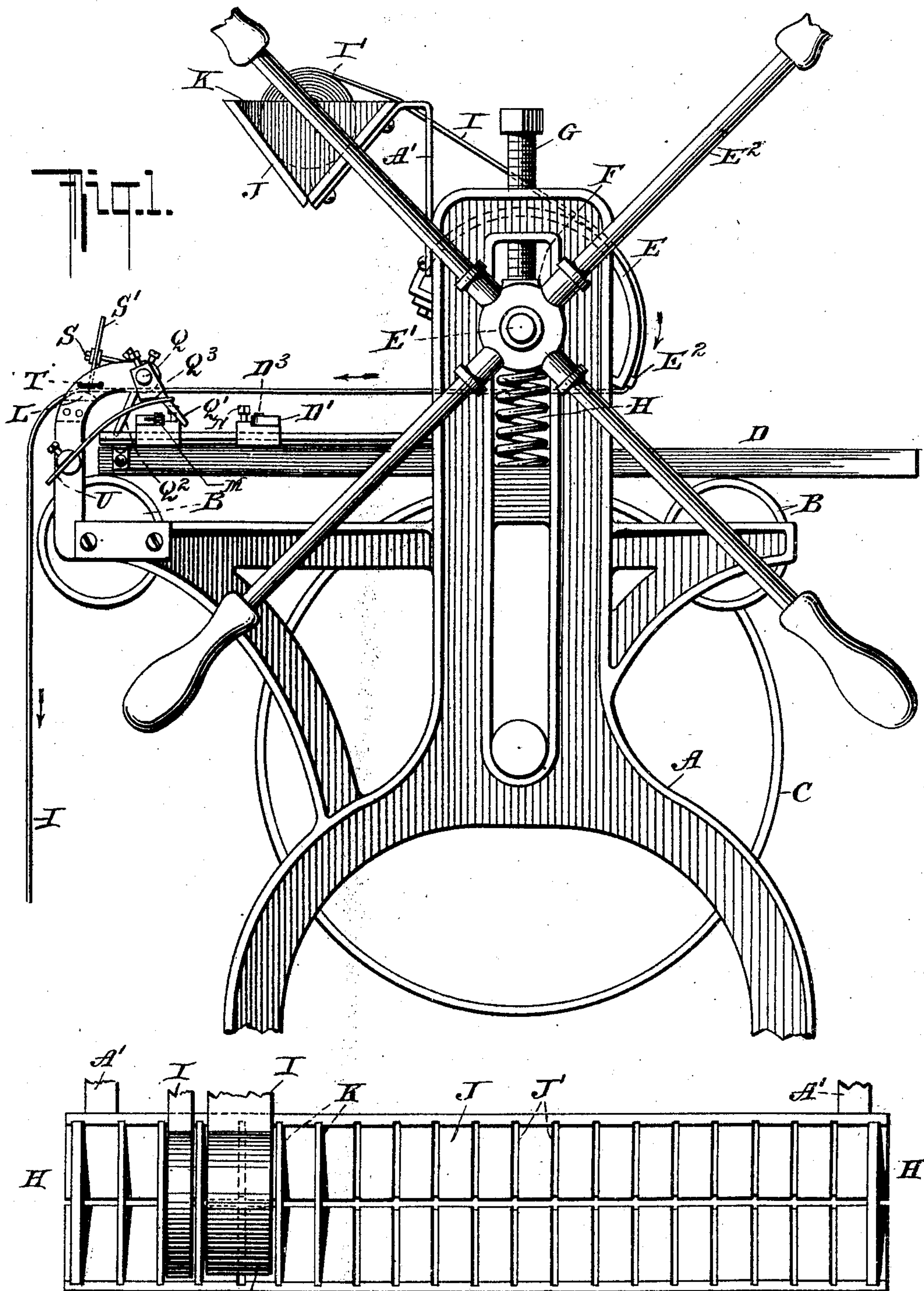
PATENTED AUG. 8, 1905.

A. A. DU BOIS.

WEB FEEDING MECHANISM FOR PRINTING AND OTHER MACHINES.

APPLICATION FILED JAN. 14, 1905.

3 SHEETS—SHEET 1.



Witnesses
Julius B. Lutz
John L. Lutz

Fig. 7.

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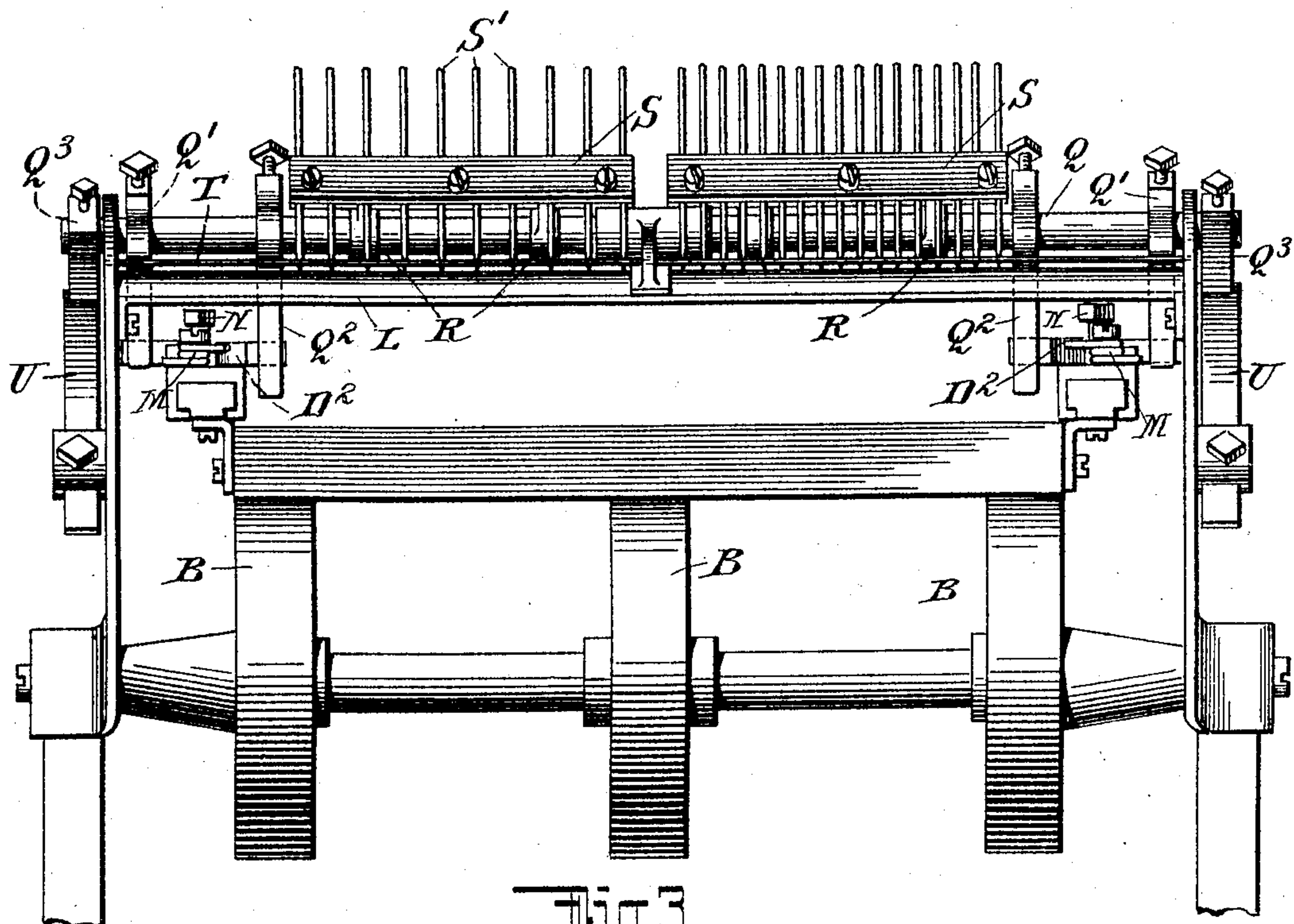
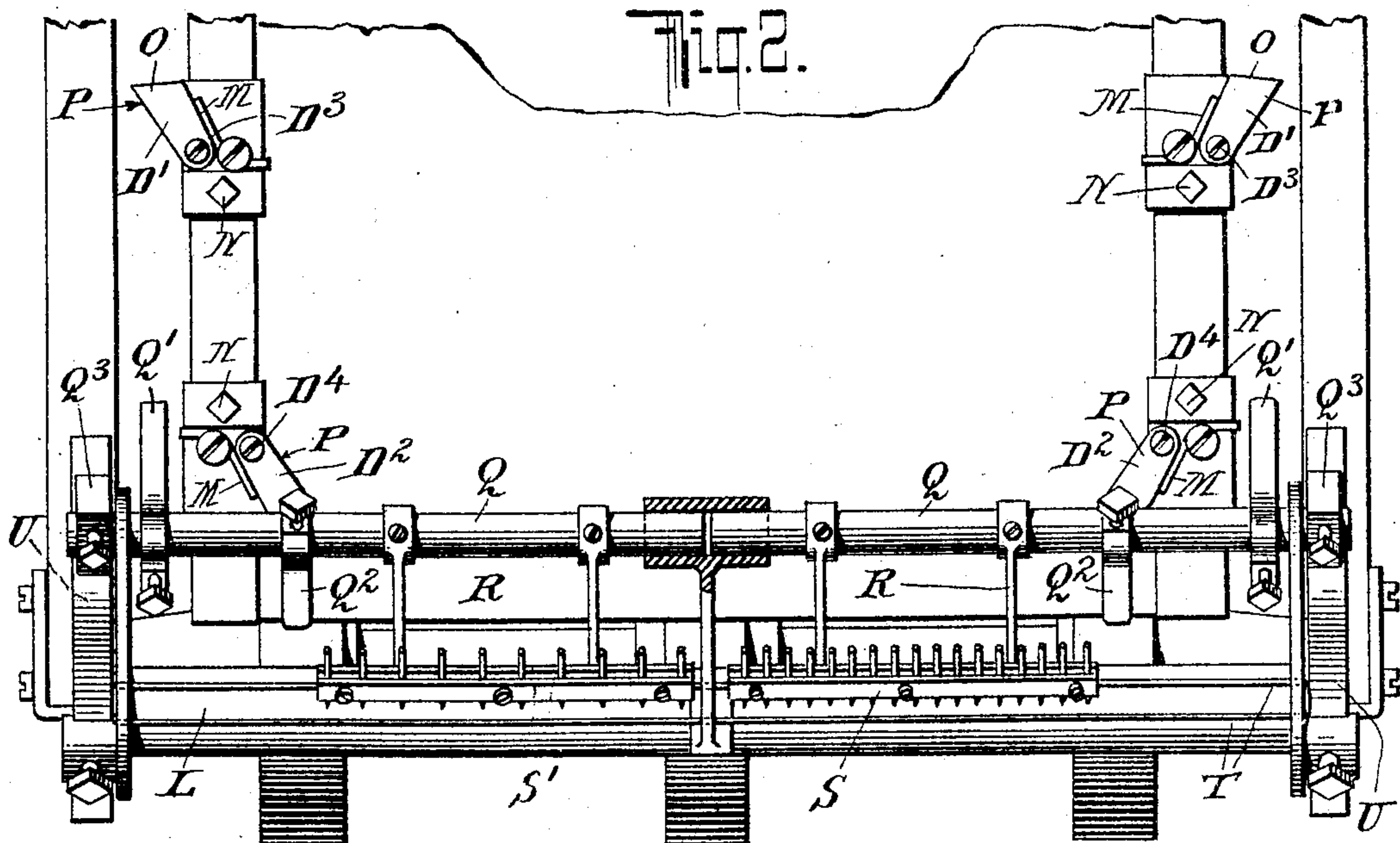
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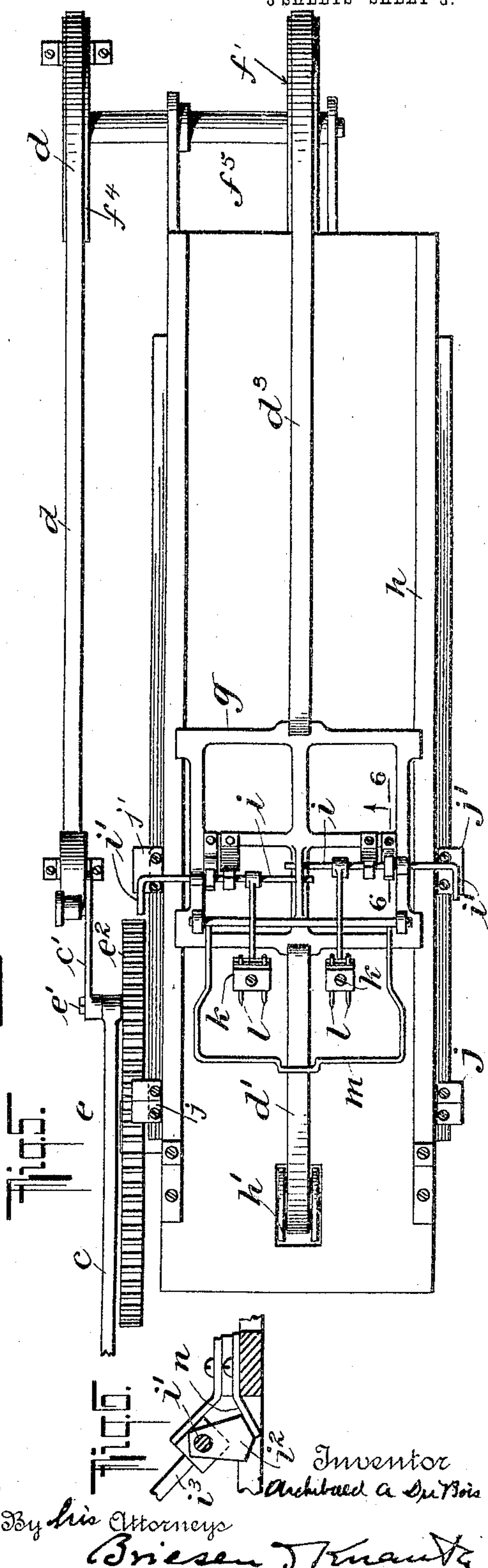
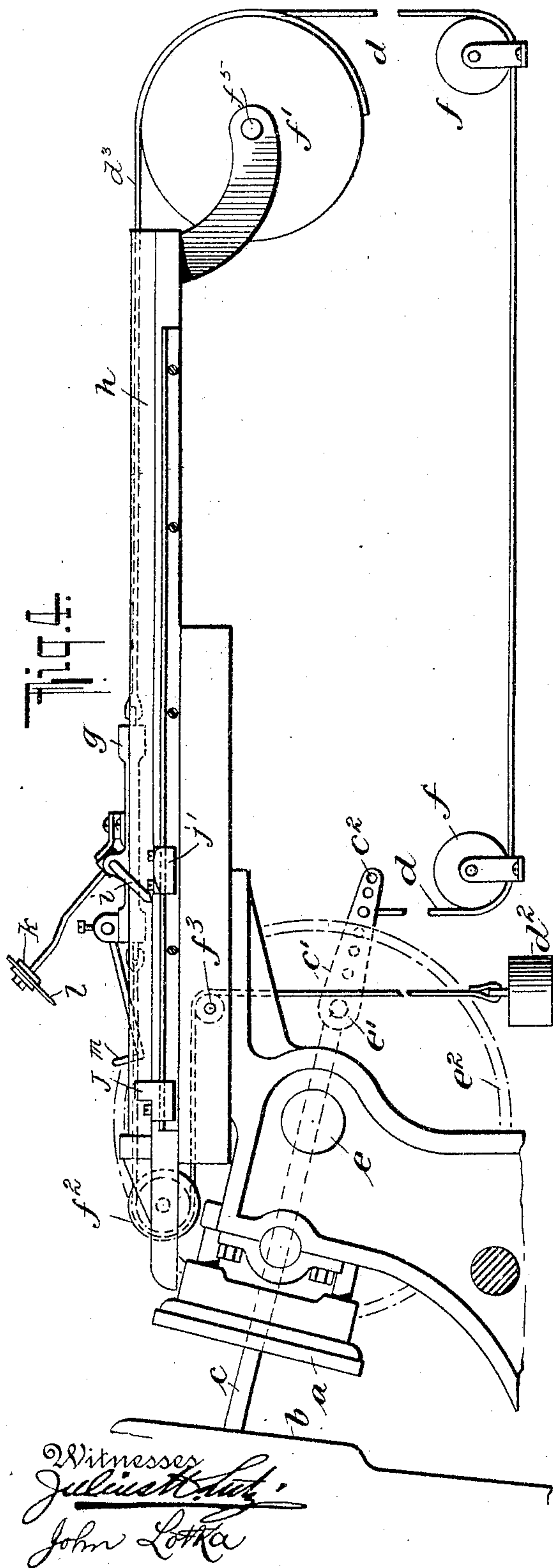
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

ARCHIBALD A. DU BOIS, OF NEW YORK, N. Y., ASSIGNOR TO G. REIS & BRO., A FIRM, OF NEW YORK, N. Y.

WEB-FEEDING MECHANISM FOR PRINTING AND OTHER MACHINES.

No. 796,502.

Specification of Letters Patent.

Patented Aug. 8, 1905.

Application filed January 14, 1905. Serial No. 240,978.

To all whom it may concern:

Be it known that I, ARCHIBALD A. DU BOIS, a citizen of the United States, and a resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Web-Feeding Mechanism for Printing and other Machines, of which the following is a specification.

My invention relates to means for controlling the web-feeding operations of printing and analogous machines, having reference more especially to that class of printing-machines in which the impression is produced upon a continuous web which is fed intermittently.

The object of my present invention is to render the operation of such a machine more reliable, to provide improved means for adjusting the feed of the web, and to enable a plurality of webs of different widths or requiring feed movements of different extent to be acted upon by the same machine, only one operating device being provided for producing the unequal feed movements.

The invention will be fully described hereinafter and the features of novelty pointed out in the appended claims.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a side elevation of a portion of a printing-machine embodying one form of my invention. Fig. 2 is a plan of the front portion of said machine with parts in section. Fig. 3 is a partial front elevation of the machine. Fig. 4 is a partial side elevation of a portion of a machine embodying another form of my invention. Fig. 5 is a top view thereof. Fig. 6 is a sectional detail on line 6 6 of Fig. 5, and Fig. 7 is a top view of a partitioned receptacle for holding webs of different widths.

As illustrated by Figs. 1, 2, 3, and 7, the frame A of the machine carries a series of supporting-rollers B, three in front, as shown in Fig. 3, and generally only two at the rear, the central roller being omitted. These rollers, together with a large roller C, likewise journaled in the frame A, are adapted to support a horizontally-reciprocating bed D, which carries the printing plate or type. With this bed is adapted to cooperate a pressure-roller or platen E, generally of semicylindrical shape, the shaft of which, E', is journaled in bearings F, capable of adjustment toward and from the bed D by means of screws G,

working in opposition to springs H. Handles E² are provided for imparting an oscillating motion to the roller E. The bed D may be reciprocated in any suitable manner, and in practice the pressure of the roller E against the bed is sufficient to carry the bed first in one direction and then in the other as the roller is rocked back and forth.

I indicates the ribbons or tapes which are to be printed upon. These ribbons are generally unrolled from spools I', contained in a V-shaped receptacle J, provided with grooves J', adapted to receive partitions K. Preferably the partitions are removable, so that webs or ribbons of different widths may be accommodated. Thus Fig. 7 shows two ribbons, one of which is about twice as wide as the other, this wider ribbon extending over one of the grooves J', from which the partition K has been removed. The receptacle J is carried by brackets A'.

The ribbons or webs I pass from the spools I' over the convex surface of the roller E and through guides E² at the edge of said roller. Then the ribbons extend approximately parallel with the bed D and over a stationary guide L, from which they extend downward to the floor or suitable receptacles. The weight of the hanging portions of the ribbons is sufficient to cause them to be fed toward the guide L when the platen-roller E is rocked in the direction indicated by the arrow. This movement also effects the impression from the plate carried by the bed D. It will be observed that the guide L is located above the level of the bed D, so that the portions of the ribbons between said guide and the roller E will remain out of contact with the bed, thus preventing smudging of the printed matter.

While I have described the bed D as the carrier of the plate or type and the roller E as a platen, the functions of these two parts might be reversed without departing from the nature of my invention.

In order to prevent the ribbons from following the roller E in its return movement, or at least during the entire return movement of the roller, and to regulate the feed of the ribbons, I provide the following mechanism operated by the reciprocation of the bed D: Said bed carries at each side two operating-fingers D' D², pivoted at D³ D⁴, respectively, and under the influence of springs M. Preferably the said fingers are adjustable along the

side edges of the bed D, being held in position after adjustment by set-screws N. The fingers D' extend outward and rearward and the fingers D² inward and forward from their pivots. Each finger is provided at its projecting portion with a transverse face O and a beveled longitudinal face P.

The fingers D' D² are adapted for engagement, respectively, with arms Q' Q², projected from shafts Q, which are journaled in stationary bearings. There are two shafts Q in the machine illustrated by the drawings, said shafts alining with each other, but being movable independently. Each shaft has two or more carrying-arms R, to which is secured a clamp or needle-carrier S, provided with needles S'. As shown in Figs. 2 and 3, the distance between the needles of one carrier is greater than the distance between the needles of the other carrier. This is done for the purpose of accommodating the machine to feed narrow ribbons at one side and wider ribbons at the other side. The clamp formed by the needles S' is adapted at the proper time to swing down so as to engage the ribbons or webs I and hold them against longitudinal movement. In order to prevent the ribbon from following the movement of the needles when they swing up, I prefer to provide a suitable retainer above the ribbons, as indicated at T, where I have shown a retainer consisting of a string or band stretched over the guide L. When during the forward movement of the bed D the finger D², with its transverse face O, comes against the arm Q², the shaft Q will be swung so as to move the clamp or needles S' away from the ribbons, thus releasing them. This will occur about at the beginning of the forward movement of the bed D. As this forward movement continues the finger D' will with its inclined face P come in contact with the arm Q'. However, this engagement will be ineffective, since the finger D' will simply yield against the tension of its spring. As soon as the arm Q' is cleared by the finger D' the latter will jump back to its normal position. (Shown in Fig. 2.) During the return movement of the bed D the transverse face O of the finger D' will come in contact with the arm Q', and thus swing the needles S' down to hold the ribbons I and prevent or arrest their return movement. As the return movement of the bed continues the inclined face P of the finger D² will engage the arm Q²; but this will again have no effect, except to cause the finger D² to swing on its pivot against the action of its spring. The ribbon will therefore be held stationary until the clamp or needles S' are again swung up during the forward movement of the bed D. It will be obvious that the time during which the ribbon is held stationary, and therefore the length of feed, may be varied by the adjustment of the fingers D' D² lengthwise of the bed D. Furthermore, since the fingers

on one side of the machine may be adjusted independently of those on the other side it follows that the rate of feed may be different for the ribbons on one side of the machine from those on the other side, although one and the same reciprocating bed controls the feed of both. In order to prevent any accidental movement of the clamp formed by the needles S', I provide a head Q³, with angular portions on each shaft Q, and with such head I engage a spring U to hold the clamp in either its upper or its lower position.

In the form of my invention illustrated by Figs. 4, 5, and 6 I employ any suitable printing-press, of which I have indicated the stationary platen *a* and an oscillating plate *b*, operated by means of a rod *c*, which is worked from an eccentric-pin *e'*, a wheel *e''* attached to the shaft *e*. Inasmuch as printing-presses of this type are well known, I have not deemed it necessary to illustrate further details. The arm *c* has an extension *c'*, with which is connected one end of a strap *d*. I prefer to provide for an adjustable connection by making the extension *c'* with a series of holes *c''*, any one of which is adapted to be connected with the end of the strap *d*. The strap *d* passes over guide-pulleys *f* and has its second end secured to a wheel *f''* on a shaft *f'*, to which is also secured another wheel or pulley *f'*. To this wheel is fastened one end of a strap *d'*, the other end of which is attached to a slide or reciprocating member *g*, adapted to travel on stationary guideways *h*. At the other side of this slide is secured a second strap *d''*, which extends over guide-pulleys *f'''* *f''''* and has a weight *d'''* secured at its free end. It will be understood that as the shaft *e* revolves the slide *g* will be reciprocated on the guideways *h*. On the slide *g* are journaled two independent shafts *i*, each provided with an arm *j*, carrying a clamp *k*, provided with needles *l*. On one side of the machine the needles *l* are set closer together than on the other. This is done for the same purpose as described with reference to Figs. 1, 2, and 3—that is, in order that ribbons of different widths may be used in the same machine. Each of the shafts *i* is also provided with an actuating-arm *i'*, adapted to engage cams or studs *j' j''*, respectively. The forward cam *j'* is arranged to throw the clamp for needles *l* down when engaged by the arm *i'*, while during the return movement of the slide *g* the arm *i'* engages the cam *j''* and is swung up. As long as the clamp is in its lower position it compels the ribbon to share the movement of the slide, and thus feeds the ribbon. The extent of feed may be varied by adjusting the position of the cams *j' j''* lengthwise of the guideways *h*, and, as in the form of the machine first described, it is possible to produce feed movements of different extent on the two sides of the machine. In order to prevent the ribbon from following the needles *l* dur-

ing their upward movement, I may provide a retainer *m*, secured to the slide above the table or guide surface *h'*, which may be integral with the guides *h*. In order to hold the clamps in either their raised or lowered position, I may provide angular portions *i*² *i*³ on the shafts *i*, said angular portions being engaged by spring members *n*.

The second form of my machine has the same advantages as the one first described as regards the possibility of feeding wide and narrow ribbons, varying the extent of feed, giving one ribbon a different extent of feed from another, although such feed movement of both ribbons is controlled by a single reciprocating member, preventing the ribbons from following the needle-clamp in its upward movement, and providing against accidental movement of the needle-clamps.

I claim as my invention—

1. In means of the character described, a reciprocating member, a plurality of feed-controlling clamps movable independently in a direction transverse to the path of said reciprocating member, operating members connected with said clamps to move therewith, and controlling members arranged to engage said operating members during the movement of said reciprocating member, the controlling members which belong to different clamps being adjustable independently.

2. In means of the character described, a reciprocating member, a plurality of feed-controlling clamps movable in a direction transverse to the path of said reciprocating member each of said clamps comprising needles arranged to engage the material, the needles of different clamps being differently spaced, and means, controlled by the movement of the reciprocating member, for causing said clamps to move into and out of active position.

3. In means of the character described, a reciprocating member, a plurality of feed-controlling clamps movable into and out of active position in a direction transverse to the path of said reciprocating member, and means, controlled by the movement of the reciprocating member, for causing said clamps to move into and out of active position, said means being adjustable independently for each of the clamps, so that the extent of feed controlled by one clamp, may be varied independently of the feed movement controlled by the other clamp.

4. In means of the character described, the combination with a guide for the material, of a feed-controlling clamp movable up and down to release and engage the material, means for operating the clamp, and a retainer arranged above the path of the material adjacent to the point where it is engaged by the clamp.

5. In a means of the character described, the combination of a reciprocating member,

a feed-controlling clamp movable in a direction transverse to the path of said member, means, controlled by the movement of said reciprocating member, for moving the feed-clamp toward and from the path of the reciprocating member, and a retainer arranged to engage the material on the side toward which the feed-clamp moves when it releases the material.

6. In a means of the character described, the combination with means for guiding the material, of a feed-controlling clamp pivoted to rock toward and from the material, an angular portion on the shaft of said clamp, a spring to engage said angular portion to prevent accidental movement of the clamp, and means for actuating said clamp.

7. The combination with a moving member, of a plurality of feed-controlling clamps, devices for rendering said clamps idle and active during the operation of said member, and means for adjusting the said devices independently of each other whereby corresponding or different feed operations may be effected by the plural clamps.

8. The combination with a moving member, of a plurality of feed-controlling clamps, including needles to engage the material to be fed, the needles of different clamps being differently spaced, and devices for rendering said clamps idle and active during the operation of said member.

9. The combination with a moving member, of a plurality of feed-controlling clamps, including needles to engage the material to be fed, the needles of different clamps being differently spaced; devices for rendering said clamps idle and active during the operation of said member, and means for adjusting said devices independently of each other whereby corresponding or different feeding operations by the plural clamps may be effected.

10. The combination with a reciprocating bed, of a rock-shaft mounted adjacent to the path of said bed, a clamp member carried by said shaft, tappet-arms on said shaft, and a pair of stops for said arms arranged at different points along the length of the bed.

11. The combination with a reciprocating bed, of a plurality of rock-shafts mounted adjacent to the path of said bed, clamp members carried by said shafts, tappet-arms on each of said shafts, stops for the arms of each shaft arranged at different points in the length of said bed, and means for independently adjusting said stops whereby corresponding or different movements may be imparted to the rock-shafts.

12. The combination with a reciprocating member, of a rock-shaft mounted adjacent to the path of said member, a clamp member carried by said shaft, tappet-arms on said shaft, a pair of stops for said arms arranged at different points in the length of the bed, and means for adjusting said stops along the bed.

13. The combination with a reciprocating bed, of a rock-shaft mounted adjacent to the path of said bed, a clamp member carried by said shaft, tappet-arms on said shaft, and a pair of oppositely-disposed spring-controlled fingers arranged on said bed in positions to engage and operate the said arms.

14. The combination with a reciprocating bed, of a rock-shaft mounted adjacent to the path of said bed, a clamp member carried by said shaft, tappet-arms on said shaft, a pair of oppositely-disposed spring-controlled fingers arranged on said bed in positions to engage and operate the said arms, and means for adjusting said fingers along the bed.

15. The combination with a reciprocating bed, of a plurality of rock-shafts mounted adjacent to the path of said bed, clamp members carried by said shafts, tappet-arms on

each of said shafts, spring-controlled operating-fingers for the arms of each shaft, and means whereby the said fingers are adjustably secured to the reciprocating bed.

16. The combination with an oscillatory clamp, and means for operating the same to render it active and idle at predetermined intervals, of a cam member connected with said clamp, and a spring constantly engaging said member to retain the clamp in either position to which it may be set.

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

ARCHIBALD A. DU BOIS.

Witnesses:

ADELAIDE DU BOIS,
E. ANNA DU BOIS.