

No. 725,053.

PATENTED APR. 14, 1903.

J. DUFFY.

BRAKE SHOE FOR SPINNING, DOUBLING, AND TWISTING MACHINES.

APPLICATION FILED SEPT. 2, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

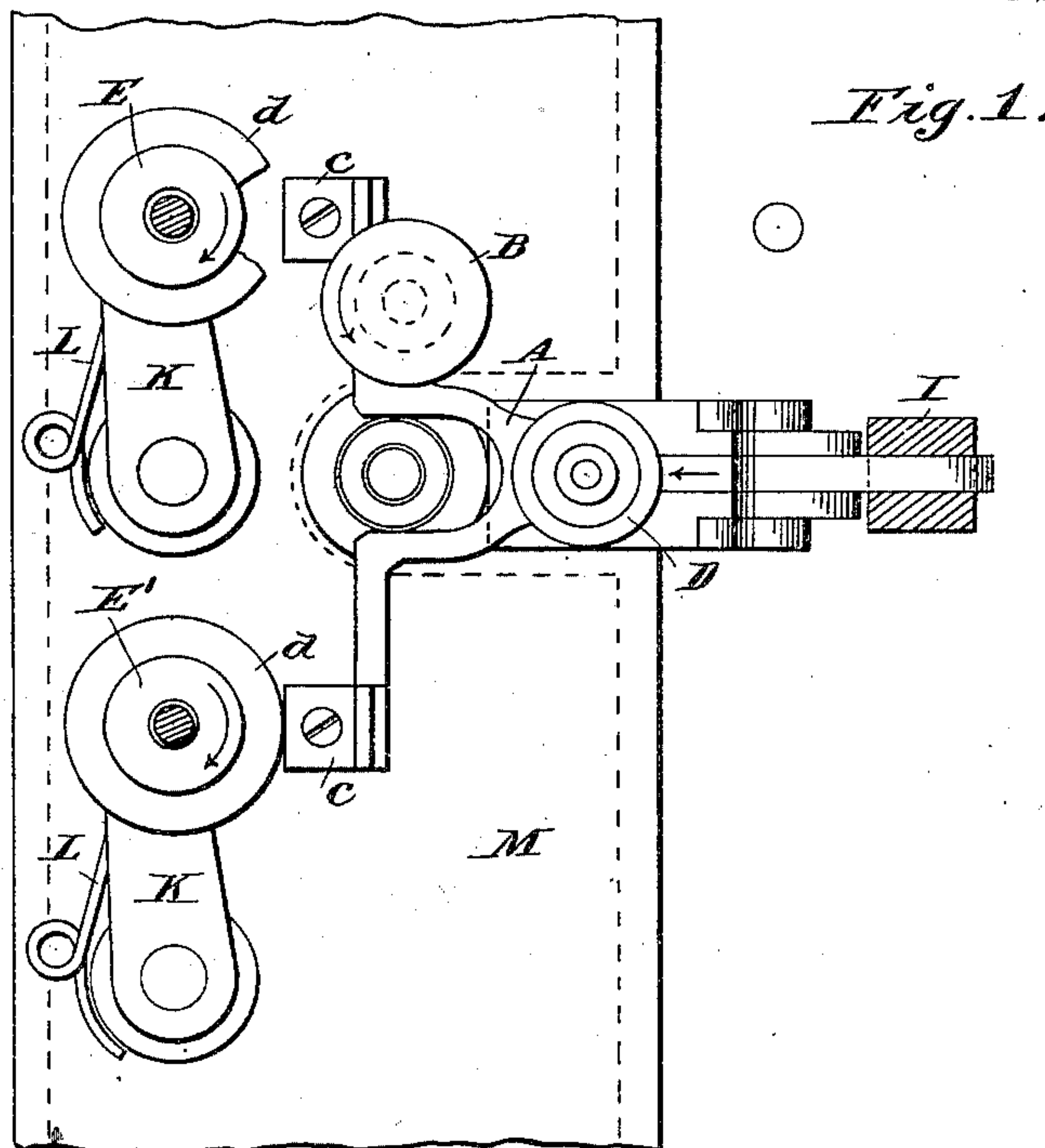


Fig. 1.

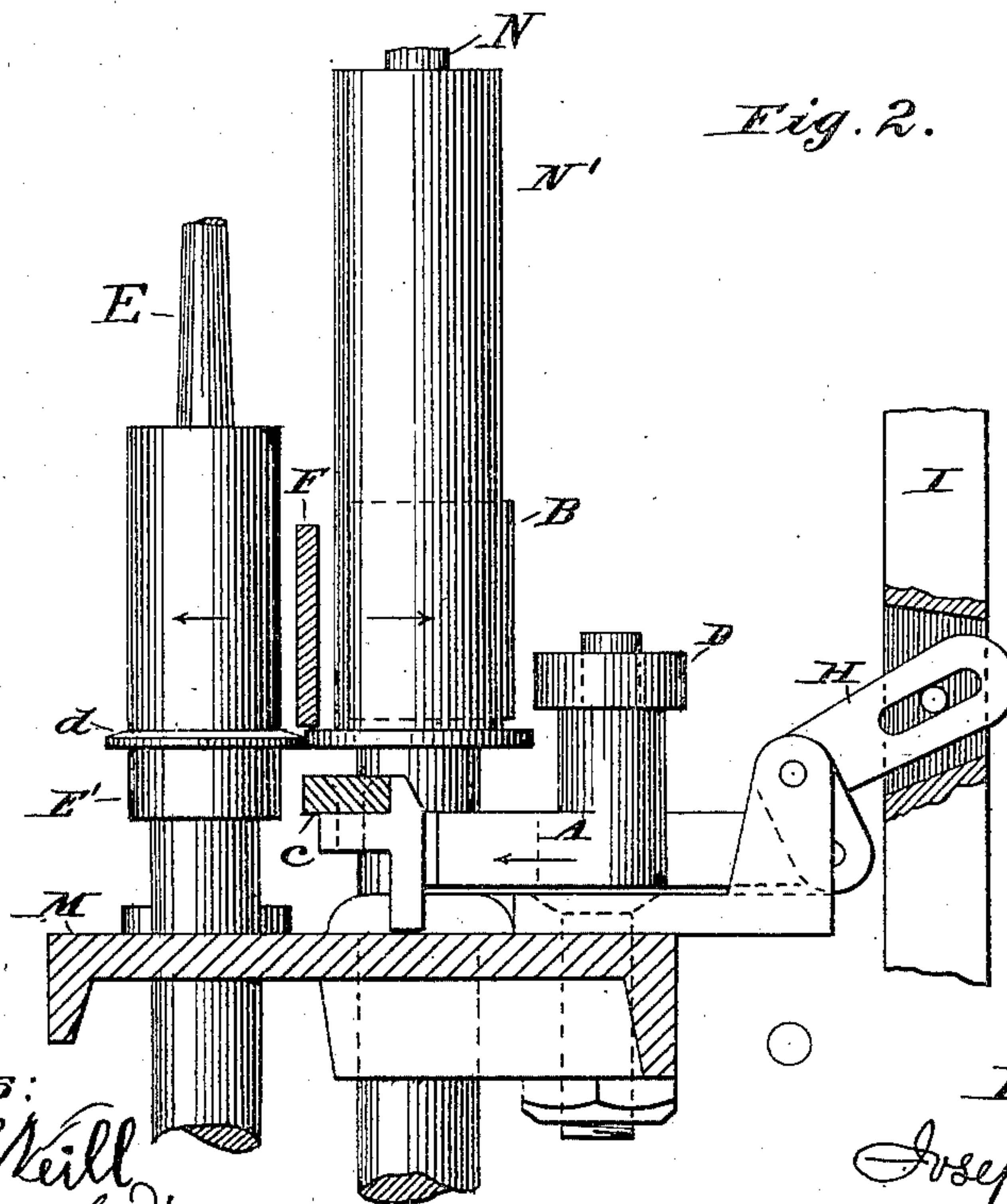


Fig. 2.

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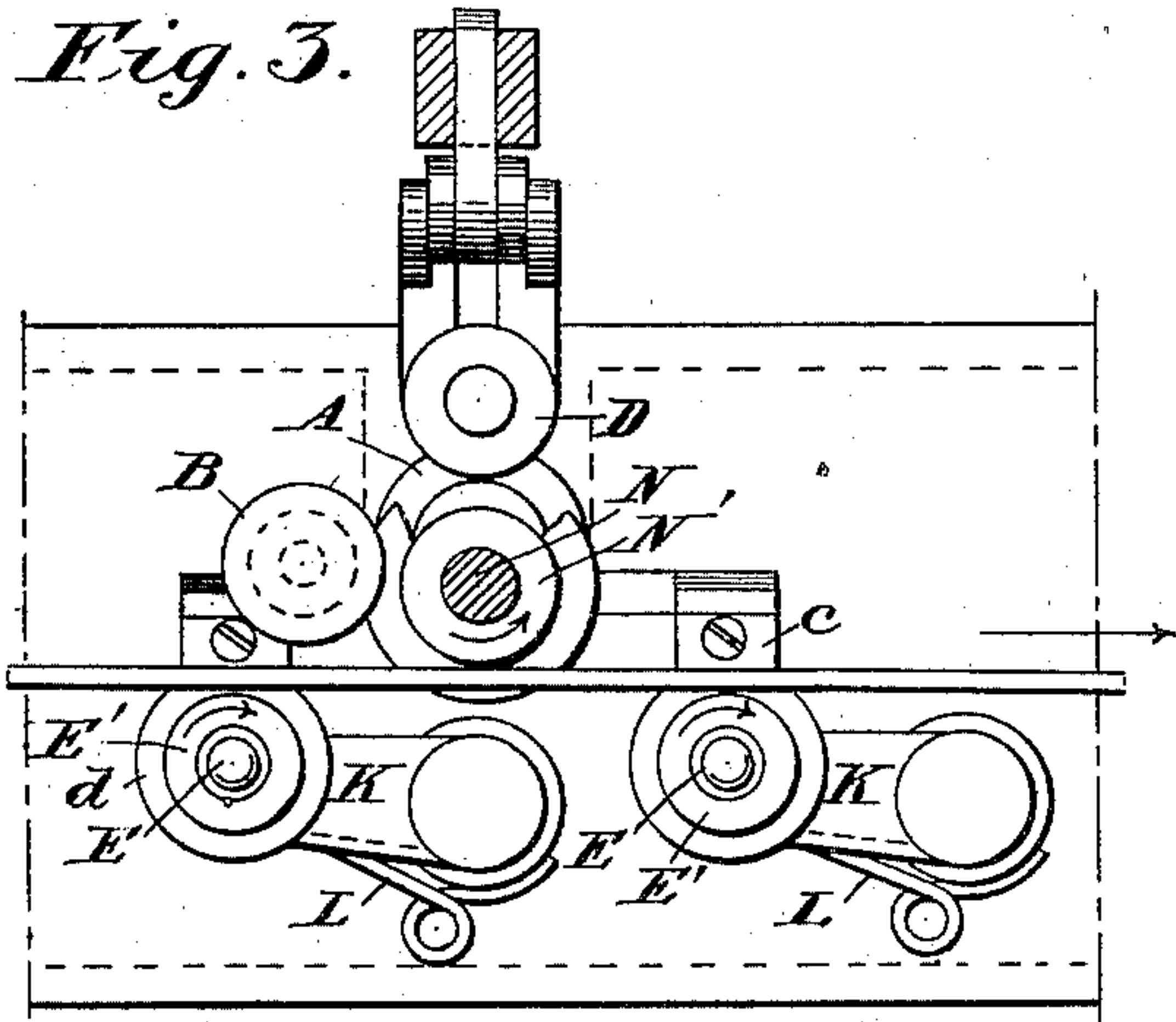
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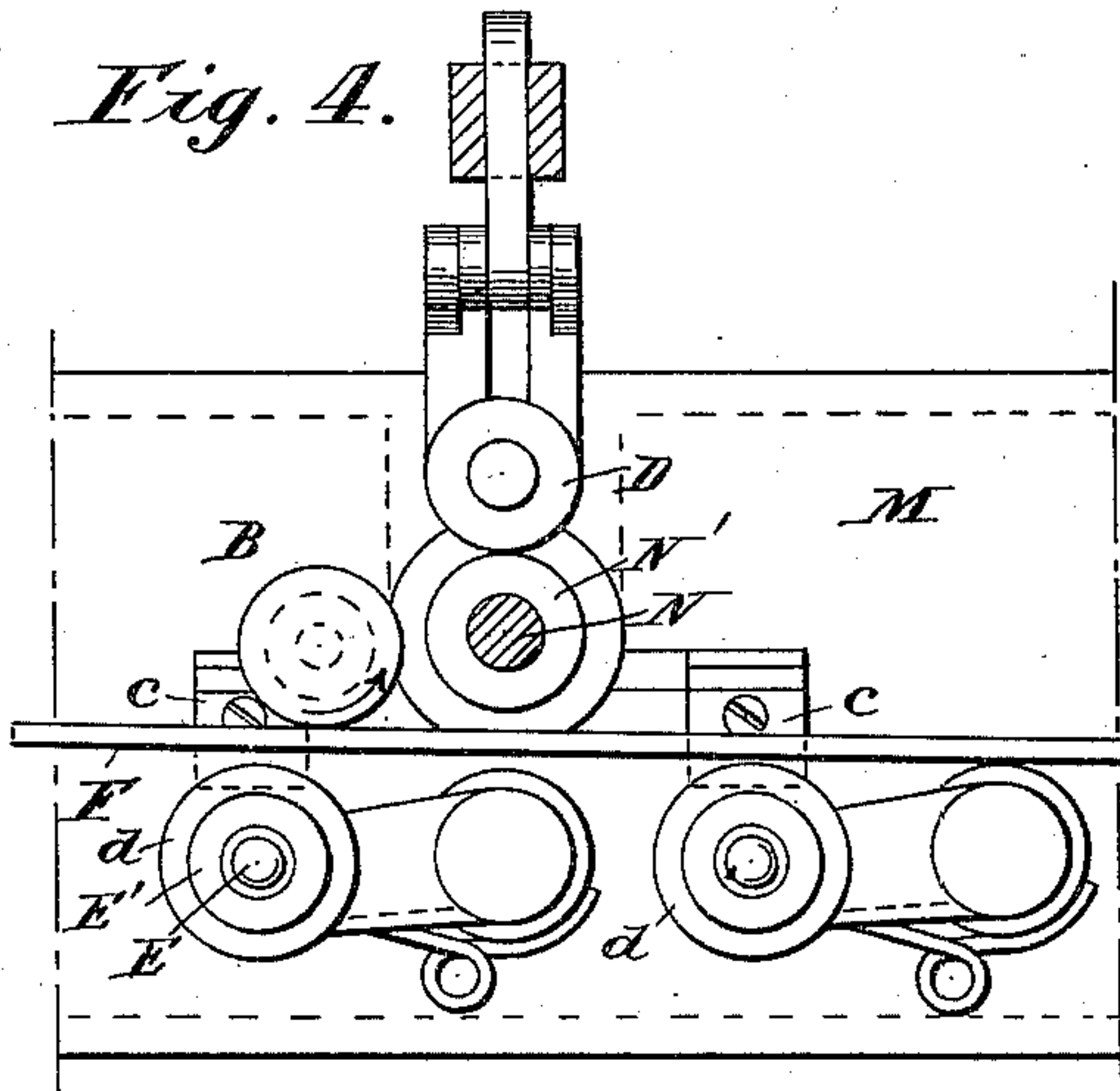
NO MODEL.

2 SHEETS—SHEET 2.

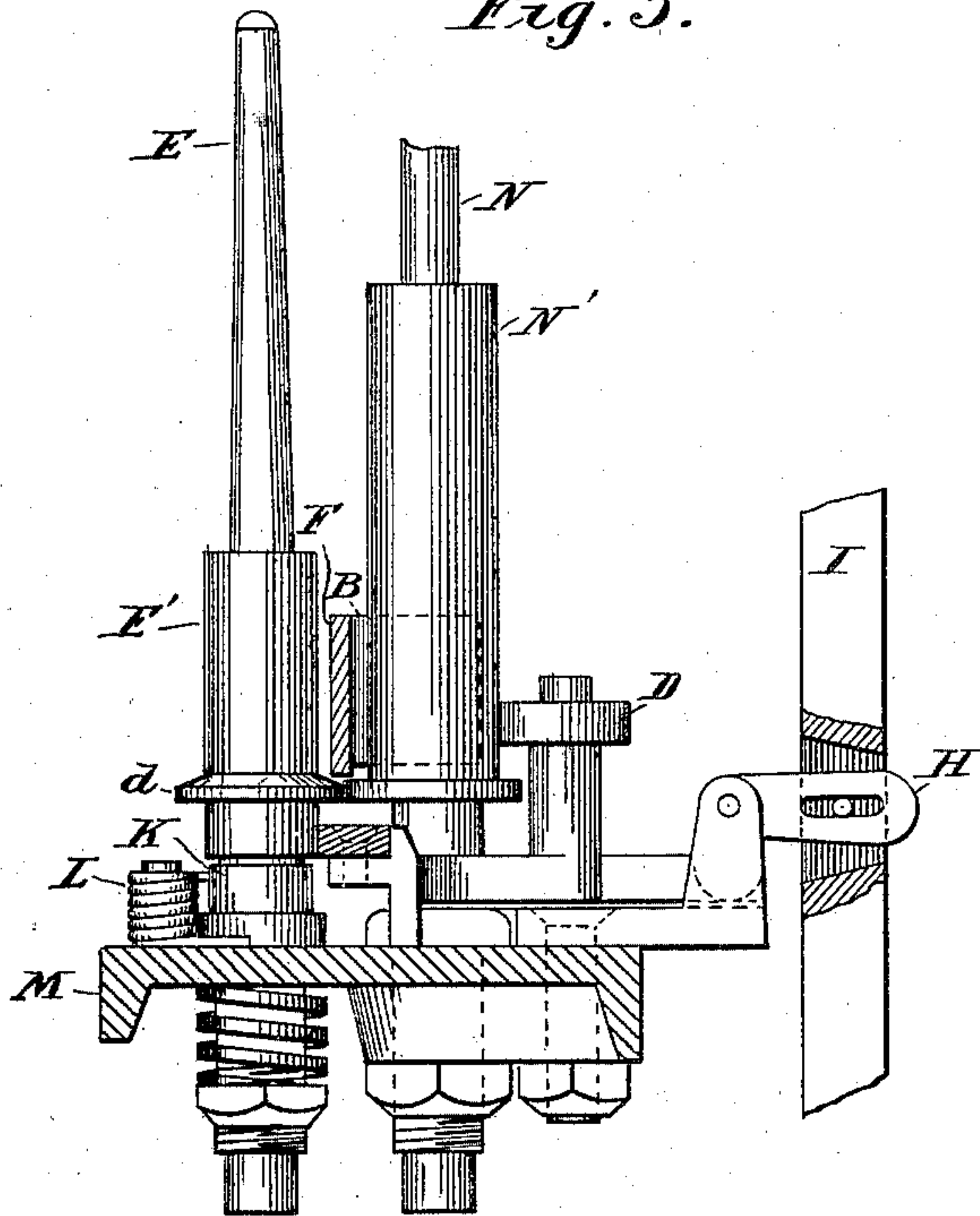
*Fig. 3.*



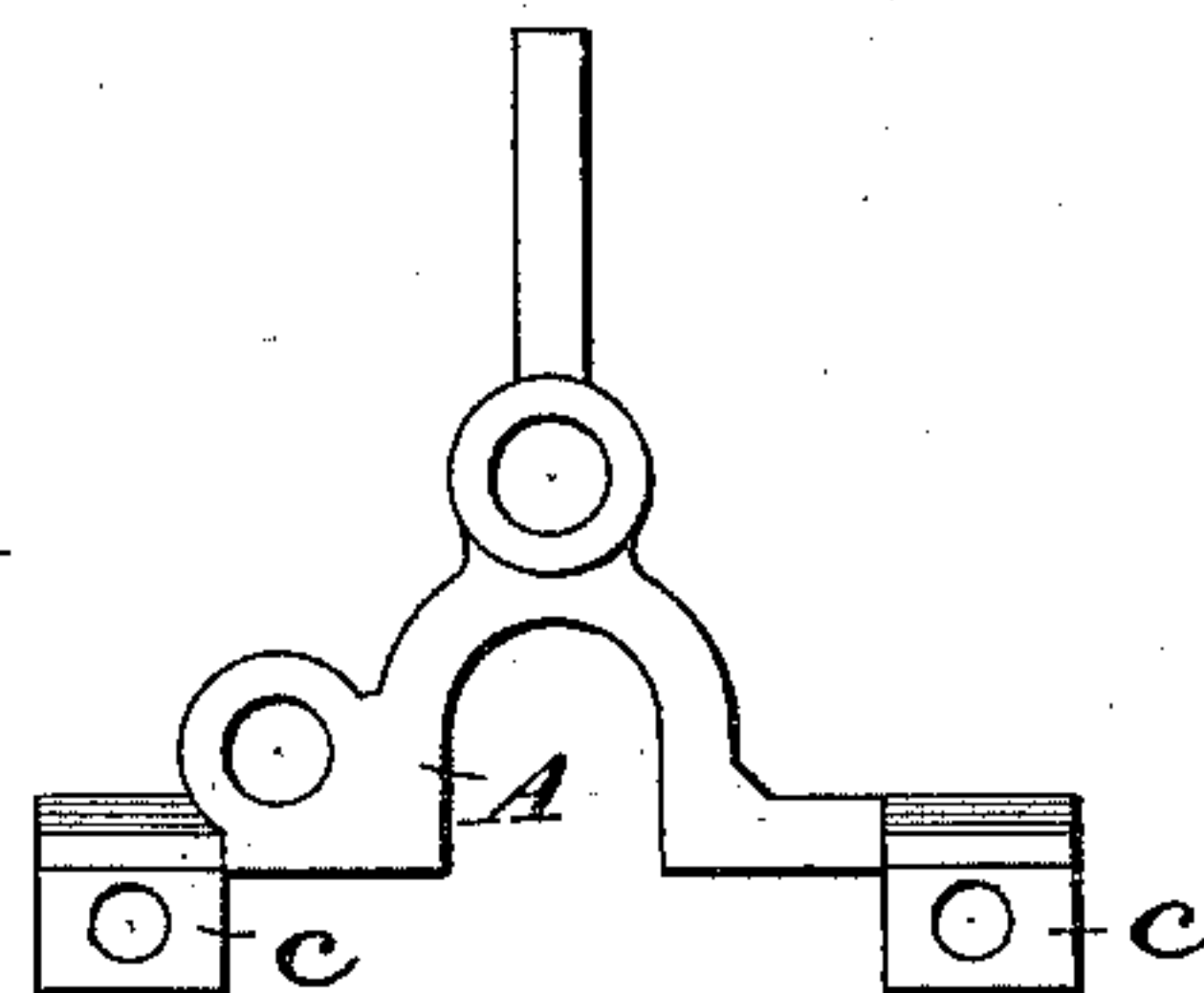
*Fig. 4.*



*Fig. 5.*



*Fig. 6.*



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# UNITED STATES PATENT OFFICE.

JOSEPH DUFFY, OF PATERSON, NEW JERSEY.

BRAKE-SHOE FOR SPINNING, DOUBLING, AND TWISTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 725,053, dated April 14, 1903.

Application filed September 2, 1902. Serial No. 121,918. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH DUFFY, a citizen of the United States, residing at Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Silk Spinning, Doubling, and Twisting Machines, of which the following is a specification, reference being had therein to the accompanying drawings, which form a part hereof, and in which similar letters of reference indicate like parts.

The invention relates to the art of silk-spinning for warp or organize, which is performed by a machine in one operation.

It relates particularly to that class of machines described in Letters Patent Nos. 525,192 and 631,563 heretofore issued to me, the former dated August 28, 1894, and the latter August 22, 1899.

The object of my invention is to produce a simple, durable, and efficient brake-shoe for the class of machines mentioned that will the instant a thread breaks act positively and simultaneously stop the revolution of both the delivery and the take-up spindles, and thereby insure a uniform twist in the fiber, as no one spindle of the twisting group is permitted to gain a turn over the others.

It is not deemed necessary for the purposes of this application to give a detailed description of the process of spinning, doubling, and twisting nor to show in the drawings a complete machine, it being thought that in the accompanying drawings this invention will be made sufficiently clear to those skilled in the art to which it pertains.

In the accompanying drawings, Figure 1 is a plan view of a portion of a spindle-rail, showing the construction of my brake-shoe and its relative arrangement or location with reference to the delivery and take-up spindles and the method of operating the same; and Fig. 2 is a vertical sectional view of the same, showing the method of its operation by means of the drop-bar and the bell-crank lever. Fig. 3 is a plan view showing the belt in operative relation to the spindles. Fig. 4 is a plan view showing the belt thrown off through the operation of the brake-shoe. Fig. 5 is a side elevation showing the belt thrown off through the operation of the brake-shoe and showing the brake in contact with

the sleeves of the spindles, and Fig. 6 is a naked plan view of the brake-shoe.

In the drawings, M represents the spindle-rail, to which is suitably secured the back or take-up spindle N, and E E are the front or delivery spindles, the bolsters of which are provided with the arms *k*, which are pivotally secured in a fixed bolster-support in the spindle-rail. Springs L, secured on top of the spindle-rail M, press against the arms *k* and keep the sleeves E' of the delivery-spindles E and the sleeves N' of the take-up spindles N normally in frictional contact with the belt F, which passes between the delivery-spindles E and the take-up spindles N in each set of spindles throughout the whole series of sets on the machine.

The essential feature of my invention is the brake-shoe A, which is operated by the drop-bar I through the medium of the bell-crank lever H, which oscillates and presses the brake-shoe A against both the back and front spindles at the same time, the rubber disk D being pressed against the sleeve N' of the spindle N simultaneously with the pressing of the friction-buffers *c c* against the base of the sleeves E' E' of the spindles E E, just beneath the sleeve-rim *d*, thereby causing all three spindles to cease rotating at once.

I am aware that there are other machines—as, for instance, those described in my former patents hereinbefore mentioned—that ultimately stop the whole three spindles; but the object of my invention is to stop them all at once, as stated, and to do this the whole set of spindles must be simultaneously withdrawn from the contact of the driving-belt until the broken thread is reunited, when they may be permitted to assume their normal position in contact with the driving-belt, when their operation is resumed. I accomplish this result by mounting an idler B spindle fashion on the upper surface of the brake-shoe A, so as to permit it to be inactive while there is no break in the thread. During that time the idler B does not consume any power. When, however, a thread breaks, the idler B advances with the brake-shoe A and contacts with the driving-belt F, thereby relieving the take-up spindle N from frictional contact therewith, and the friction-buffers *c c* going into action concurrently with



the idler B they press the delivery-spindles E E away from the driving-belt, so that the belt passes through and between without touching any one of the set of spindles which are at rest, owing to the breaking of the thread, and without interference with the operation of the other sets of spindles which are driven by said belt, as shown in Figs. 4 and 5 of the drawings. When the ends of the broken thread are reunited, the brake-shoe recedes and the idler retires with it, the spiral springs L force the delivery-spindles back into driving contact with the belt again, and the operation is resumed. By the employment of the idlers only when a thread breaks and by accomplishing the absolute and simultaneous stoppage of all three spindles the instant a thread breaks removes an annoying defect in silk spinning and twisting and improves the character of the manufacture.

With this description of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a silk spinning, doubling and twisting machine, the combination with the delivery-spindles, take-up spindle and an actuating-belt, of a brake-shoe provided with friction-buffers adapted to press the delivery-spindles out of contact with said belt, an idler mounted spindle fashion on said brake-shoe, coacting with said belt, and adapted to press it away from the take-up spindle, means for operating said brake-shoe upon the breaking of a thread, and means for automatically forcing the delivery-spindles to resume their normal position, in contact with the belt, upon the withdrawal of the brake-shoe to its normal position, substantially as set forth.

2. The combination with a spindle-rail, a line of front or delivery spindles, a line of take-up spindles and an actuating-belt, of a series of automatically-acting brake-shoes and idlers located thereon and coacting with said belt, substantially as set forth.

3. The combination with a spindle-rail, and delivery and take-up spindles, of an actuating-belt, a brake-shoe, and an idler mounted spindle fashion upon said shoe so as to coact

with said belt when required, substantially as set forth.

4. The combination with a spindle-rail and delivery and take-up spindles, and an actuating-belt, of a brake-shoe, provided with an idler mounted spindle fashion thereon and adapted to coact with said belt, and provided likewise with two friction-buffers, and means for operating the same, substantially as set forth.

5. A brake-shoe for spindles, provided with a central recess a friction-disk and two outwardly-extending arms, friction-buffers secured at the extremities of said arms and an idler mounted spindle fashion on one of said arms and adapted to coact with an actuating-belt, in combination with such a belt, substantially as set forth.

6. The combination with a spindle-rail, and delivery and take-up spindles, of an actuating-belt, a movable brake-shoe, an idler mounted on said brake-shoe to coact with said belt, and means for automatically operating said brake-shoe upon the breaking of the thread, substantially as set forth.

7. The combination with an actuating-belt of an automatically-acting brake-shoe, an idler located thereon, a drop-bar and a bell-crank operated thereby to move said brake-shoe and to cause said idler to coact with the belt to release the take-up and delivery spindles from the action of said belt, substantially as set forth.

8. The combination with the take-up and delivery spindles, and a belt for driving the same, of a movable brake provided with a friction-disk and friction-buffers, and an idler located on said brake and coacting with said belt, to release said spindles simultaneously from contact with the driving-belt, and means for operating said brake-shoe upon the breaking of a thread, substantially as set forth.

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

JOSEPH DUFFY.

Witnesses:

JOHN F. KERR,  
CECILE A. O'DEA.