No. 664,578.

Patented Dec. 25, 1900.

G. E. PANCOAST.

PRINTING PRESS.

(Application filed Feb. 10, 1899.

(No Model.)

2 Sheets—Sheet 1.

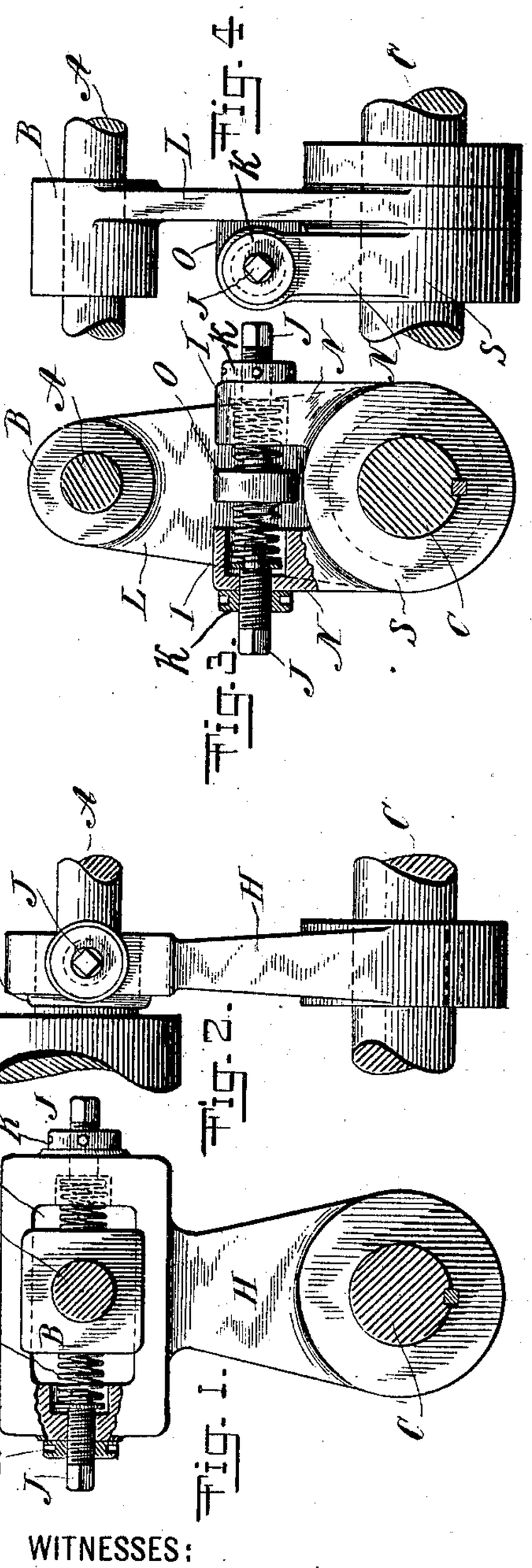

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

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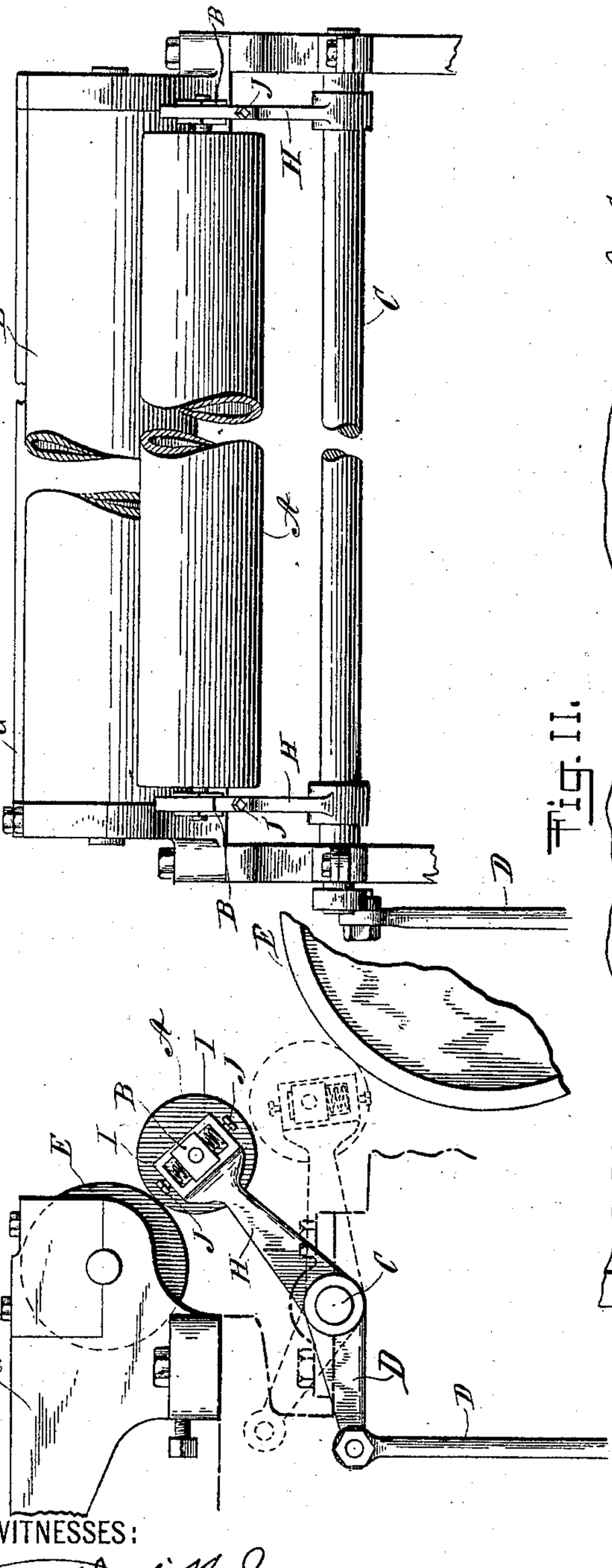

FIG. 10.

FIG. 8.

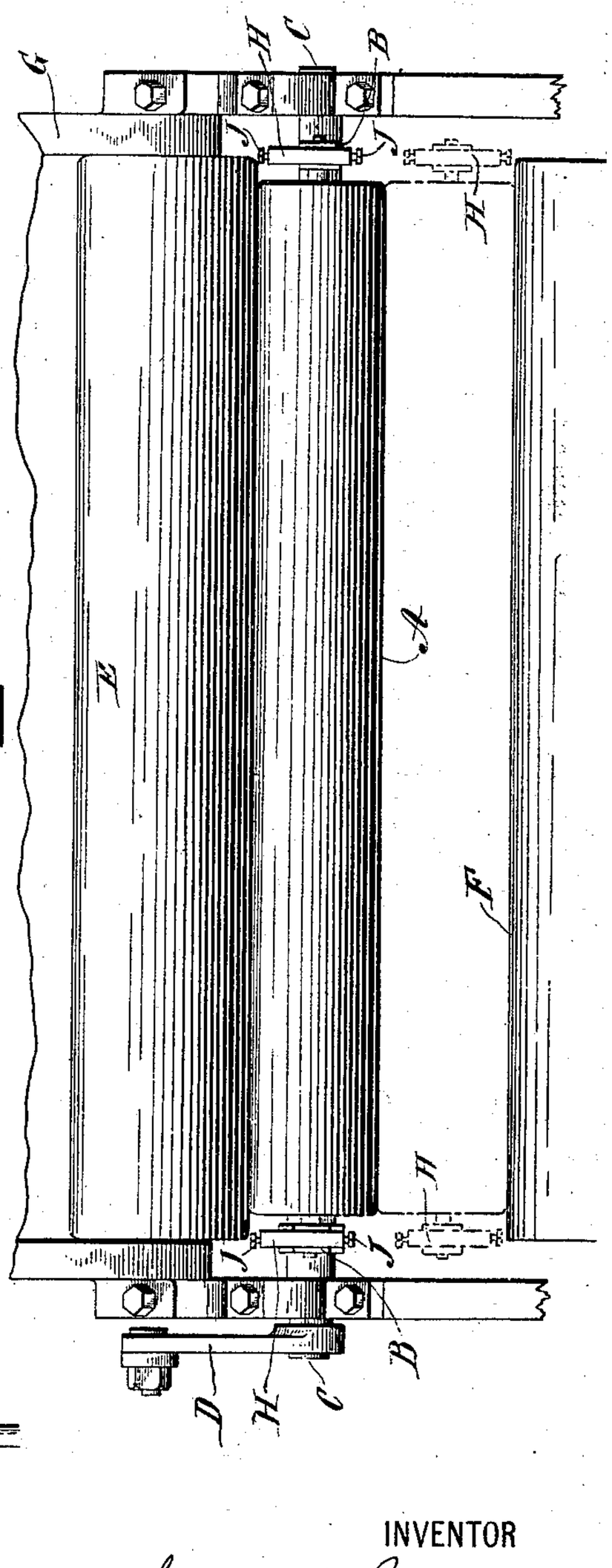

FIG. 11.

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UNITED STATES PATENT OFFICE.

GEORGE E. PANCOAST, OF NEW YORK, N. Y., ASSIGNOR TO THE AMERICAN LITHOGRAPHIC COMPANY, OF NEW YORK.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 664,578, dated December 25, 1900.

Application filed February 10, 1899. Serial No. 705,155. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. PANCOAST, a citizen of the United States, and a resident of New York, (Brooklyn,) in the county of Kings and State of New York, have invented certain new and useful Improvements in Printing-Presses, of which the following is a specification.

My invention relates to printing-presses.

It has for an object to improve the operation of a roller or other elongated device which makes contact throughout its length, or a substantial part thereof, with another surface or surfaces and operates in such contact or contacts.

More especially, it has for an object to improve the operation of such a roller when it is brought intermittently into contact with a coöperating surface or alternately into contact with two or more coöperating surfaces by a rocking motion—as, for instance, an ink-ductor roller which moves between a fountain-roller and an ink-distributing roller in the inking mechanism of a printing-press.

In the accompanying drawings, which form a part hereof, I have represented the application of my invention in its preferred forms to the case of an ink-ductor roller serving to convey the ink from an ink-fountain roller to an ink-distributing roller by rocking between the two; but my invention is not limited to this particular application thereof.

Figures 1 and 2 are respectively sectional and side views in detail of the ductor-roller or its shaft and immediately-connected parts. Figs. 3 and 4 are similar views showing a modified form of certain of the parts. Figs. 5 and 6 are similar views of another modification. Figs. 7 and 8 are similar views of still another modification. Figs. 9, 10, and 11 are side, end, and top views, respectively, of the general apparatus of the press involving the invention in the form shown in Figs. 1 and 2.

Like letters in the several figures indicate like parts.

A is the ductor-roller or its shaft.

B is the support of the roller or shaft A, by which the shaft is supported and in which it turns. In the construction shown in Figs. 1, 2, 9, 10, and 11, B is a sliding box carrying the shaft A at each end of the shaft. In the construction of Figs. 3 to 8, inclusive, B is in the form of a hub carrying the ends of the shaft A.

C is the rock-shaft, which carries the supports B, one at each end of the rock-shaft, and which rocks them and through them the shaft or roller A, which they support.

D is the means for rocking the rock-shaft C. It may be operated in any desired way, the details of which form no part of the present invention. The rock-shaft C is of course properly journaled in some suitable supporting part of the press.

E is the fountain-roller, which rotates in the mouth of the ink-fountain G.

F is the main ink-distributing cylinder, to which the ink is conveyed by the ductor-roller A from the fountain-roller E.

In the construction shown in Figs. 1 and 2 and 9, 10, and 11 the rock-shaft C supports and rocks the roller-supports B by the following intervening mechanism: H is an arm having at one end a collar encircling the rocking shaft C, which is keyed fast to that rock-shaft, and at the other end a slideway for the sliding box B. Between the sliding box and the ends of the slideway on each side is a spring I, which is made adjustable by means of the screw-threaded bolt J. K is a jam-nut for locking the threaded bolt J in any desired position of adjustment. By screwing the threaded bolt J in against the spring the spring is compressed, and thereby made more resistant to further compression. There is one of these arms H at each end of the rock-shaft C, with its springs I, adjusting-bolts J, and locking-nuts K. It will be noted that, as is ordinarily the case, the means D for rocking the rock-shaft operate upon one end only of that shaft in the form of construction shown in the drawings. In the absence of the springs I from the train of mechanism between rock-shaft C and the supports B of the roller A the effect of any torsion or twist in the rock-shaft C between the points of securement of the two arms H H on that shaft in the operation of rocking the roller A or of any torsional weakness in that shaft between those points would be to gradually vary the character of the contact of the roller A with its contacting

devices E and F from one end of the roller to the other, thereby varying the amount of contact pressure at different points of the length of the roller and so varying the quantity of ink or other liquid carried over by the operation of the roller E to the roller F at different points along the lengths of the same. The presence of the springs I in the train of mechanism between the rock-shaft C and the support B brings about the result that the rocking motion of the rock-shaft C may continue after the roller A has made positive contact with the contacting device. Thus in the construction shown in Figs. 1, 2, 9, 10, and 11, where there are four springs I, the operation specifically is as follows: When the ductor-roller A is being rocked toward the fountain-roller E and contacts with that roller, the motion of the rock-shaft C may be continued a little farther in the same direction, the arm H on that end of the rock-shaft moving positively with the rock-shaft and the support B sliding in the slideway in the end of the arm H and compressing the spring that is on the side of the sliding box away from the contacting device E. This further or additional permissive motion of the rock-shaft C will serve at the other end of that rock-shaft to produce the required pressure between the roller A and the roller E, and this whether there is a spring I at that far end of the roller or not. When there is no spring at the far end of the roller, the torsional spring of the rock-shaft itself takes its place. Thus certainty of contact from end to end of the elongated contacting device is assured in spite of torsional twist or weakness in the rock-shaft C and in spite of possible imperfections in the parts of the mechanical movement. The presence, however, of a similar spring I at the far end of the rock-shaft C, between it and the support B at that far end of the roller A, and the adjustability of the two springs I make possible a further additional result, as follows: If that spring I at the far end of the rock-shaft and roller is made more resistant either by adjustment or by original construction or in any other way than the corresponding spring I at the near end of the rock-shaft and the roller—to wit, far and near with respect to the location of the single driving means D, arranged at one end of the rock-shaft C—it will result that not only is certainty of the fact of contact from end to end of the contacting devices secured in spite of torsion in the rock-shaft, but the ultimate pressure of contact—that is to say, the character of the contact—also can be equalized from end to end of the contacting devices, and thus the effect of any possible torsion in the rock-shaft C be wholly counteracted. When the ductor-roller A is rocked in the other direction and comes into contact with the main ink-distributing cylinder F, the opposite springs I at the other side of the sliding boxes operate in the same way respectively and with the same result.

When a roller makes contact at one side or in one direction only, the effect of torsion in the rock-shaft may be overcome by the use of a less resistant spring in the support at the far end of the shaft. This result is attained by so setting the supports of the roller on the rock-shaft that when the roller is brought into contact by rocking the shaft the far end of the roller will first make contact with the coöperating surface. The spring in the support at the far end of the rock-shaft will then be put under tension before the nearer end of the roller makes contact and will thus apply pressure to the far end of the roller, which pressure by proper adjustment of the spring may be made to equal the pressure applied to the nearer end of the roller.

In Figs. 3 to 8, inclusive, are shown three possible modifications in the character of spring or the method of interposing it between the rock-shaft C and the support or supports B of the roller or device to be oscillated. Many other modifications in the position and arrangement and form of such spring might be made without departing from my invention.

In Figs. 3 and 4 the arm L is fast to the roller-support B, and at its lower end has a collar encircling the rock-shaft C, but rotating freely on that shaft. S is a collar or hub on the shaft C, made fast to that shaft and carrying two upwardly-projecting lugs or arms N. O is a lug projecting laterally from the arm L and between the lugs N N of the hub S. On each side of this lug O are arranged the springs I, compressed against the sides of the lug and adjustably compressed by means of screw-bolts J, tapped in the side walls of the arms or lugs N and locked in position by the jam-nuts K. In this construction whenever the rock-shaft C is rocked in one direction or the other the motion is communicated to the support B through hub S, one of the arms N, one of the springs I, lug O, and arm L, and any resistance to the motion of the support B results in a compression of said spring I, as in the case of the construction of Figs. 1 and 2.

In the construction of Figs. 5 and 6, L is, as before, an arm which is fast to the support B and has a collar which loosely encircles the shaft C. That collar has at the bottom a depending and laterally-projecting lug T. The hub S, which is fast on the rock-shaft C, has two depending lugs or arms M M, between which the lug T extends. The springs I are mounted in the arms M and bear against the lug T and are adjustable by the screw-bolts J, which are tapped in the side walls of the arms M and are locked by the jam-nuts K. The operation is evident from the construction.

In the modification of Figs. 7 and 8, P is the spring. It is a long flat spring solidly mounted at its lower end in the hub S, which is keyed fast to the shaft C, and at its upper end loosely held in a vertical groove of the hub or support B. That support B is itself

supported, as in the previous construction, by an arm L, having a collar loosely encircling the shaft C. The motion of the shaft C is imparted to the support B through the spring P. Adjustment of that spring is attained by means of a collar Q, which encircles and closely fits the spring and is made adjustable up and down the length of the spring by being carried by the lower of two nuts R, which screws up and down on a rigid screw-threaded post V, solidly mounted in the hub S. The collar Q also closely fits this post V, and when adjusted in vertical position by the lower of the two nuts R it is locked in place by the upper of the two nuts R. Adjustment of this collar Q upward results in less operative length of the spring and so less flexibility, and vice versa.

I prefer to arrange a spring at each end of the rock-shaft, and I prefer to make the spring or springs adjustable and to arrange the driving means at one end only of the rock-shaft and to construct or adjust a spring at the near end which shall be less resistant and a spring at the far end which shall be more resistant, and I prefer to associate the rocking roller or device with two contacting surfaces, one placed at each end of its path of rocking motion, and in such case to have a double-acting spring or double set of springs; but these are not essentials of the invention in its broadest expression.

I have described the invention as specifically applied to the ductor-roller in an inking mechanism; but it may be manifestly equally well applied to the ductor-roller in a dampening mechanism and to other devices, rollers or otherwise, that are elongated and that operate by contact produced by rocking and that are so rocked by a shaft supporting the device at both ends.

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

1. In combination with a ductor or other roller or elongated device to operate by contact, and the contacting device itself with which it is to so operate, and a suitable support for the roller at each end thereof and a rock-shaft carrying the said supports one at each end of the shaft, and means to rock the rock-shaft applied at or near one end thereof, of a spring interposed between the rock-shaft and the roller-support at at least one end of the shaft, whereby the motion is there conveyed from the rock-shaft to the support through the spring and the effect of torsion in the rock-shaft upon the fact or character of contact from end to end of the roller may be counteracted, substantially as described.

2. In combination with a ductor or other roller or elongated device to operate by contact, and the contacting device itself with which it is to so operate, and a suitable support for the roller at each end thereof and a rock-shaft carrying the said supports one at each end of the shaft, and means to rock the rock-shaft, of a spring at each end of the rock-shaft applied at or near one end thereof interposed between the rock-shaft and the roller-support, whereby the motion is there conveyed from the rock-shaft to the supports through the springs and the effect of torsion in the rock-shaft upon the fact or character of contact from end to end of the roller may be counteracted, substantially as described.

3. In combination with a ductor or other roller or elongated device to operate by contact, and the contacting device itself with which it is to so operate, and a suitable support for the roller at each end thereof and a rock-shaft carrying the said supports one at each end of the shaft, and means to rock the rock-shaft applied at or near one end thereof, of an adjustable spring interposed between the rock-shaft and the roller-support at at least one end of the shaft, whereby the motion is there conveyed from the rock-shaft to the support through the spring and the effect of torsion in the rock-shaft upon the fact or character of contact from end to end of the roller may be counteracted, substantially as described.

4. In combination with a ductor or other roller or elongated device to operate by contact, and the contacting device itself with which it is to so operate, and a suitable support for the roller at each end thereof and a rock-shaft carrying the said supports one at each end of the shaft, and means to rock the rock-shaft applied at or near one end thereof, of an adjustable spring at each end of the rock-shaft interposed between the rock-shaft and the roller-support, whereby the motion is there conveyed from the rock-shaft to the supports through the springs and the effect of torsion in the rock-shaft upon the fact or character of contact from end to end of the roller may be counteracted, substantially as described.

5. In combination with a ductor or other roller or elongated device to be rocked and to operate by contact, and the contacting device itself with which it is to so operate, and a suitable support for the roller at each end thereof and a rock-shaft carrying the said supports one at each end of the shaft and rocking them, and means to rock the rock-shaft arranged at one end thereof, of a spring interposed between the rock-shaft and the roller-support at the end of the rock-shaft near its rocking means and a more resistant spring interposed between the rock-shaft and the roller-support at the end of the rock-shaft farther from its rocking means, whereby the motion is there conveyed from the rock-shaft to the supports through the springs, and the effect of torsion in the rock-shaft upon the fact or character of contact from end to end of the roller is counteracted, substantially as described.

6. In combination with a ductor or other roller or elongated device to be rocked and to operate by contact, and the contacting device itself with which it is to so operate, and a suitable support for the roller at each end

thereof and a rock-shaft carrying the said supports one at each end of the shaft and rocking them, and means to rock the rock-shaft arranged at one end thereof, of an adjustable spring interposed between the rock-shaft and the roller-support at the end of the rock-shaft near its rocking means and an adjustable spring interposed between the rock-shaft and the roller-support at the end of the rock-shaft farther from its rocking means, whereby the motion is there conveyed from the rock-shaft to the supports through the springs, and the effect of torsion in the rock-shaft upon the fact or character of contact from end to end of the roller may be counteracted, substantially as described.

7. In combination with a ductor or other roller or elongated device to be rocked and to operate by contact, and two contacting devices between which it is to so oscillate and so operate, and a suitable support for the roller at each end thereof and a rock-shaft carrying the said supports one at each end of the shaft and rocking them, and means to rock the rock-shaft arranged at one end thereof, of an adjustable double-acting spring or set of springs interposed between the rock-shaft and the roller-support at the end of the rock-shaft near its rocking means and an adjustable double-acting spring or set of springs interposed between the rock-shaft and the roller-support at the end of the rock-shaft farther from its rocking means, whereby the motion in both directions is there conveyed from the rock-shaft to the supports through the springs, and the effect of torsion in the rock-shaft upon the fact or character of contact from end to end of the roller with either of the two contacting devices may be counteracted, substantially as described.

8. The combination, substantially as described, of the rock-shaft C, the rocking mechanism D applied at or near one end of the shaft, arms H H, adjustable springs I I I I, sliding boxes B B, the ductor-roller A, and the contacting rollers E and F.

9. In combination with a ductor or other roller or elongated device to be rocked, and a suitable support for the roller at each end, and two contacting devices between which it is to so rock and so operate and a rock-shaft carrying the said supports one at each end of the shaft and rocking them, and means to rock the rock-shaft, applied at or near one end thereof, of a double-acting spring device interposed between the rock-shaft and the roller-support at at least one end of the shaft, whereby the motion is conveyed from the rock-shaft to the support through the spring device and the effect of torsion in the rock-shaft or any imperfection in other parts of the mechanical movement upon the fact or character of contact from end to end of the roller may be counteracted, substantially as described.

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

GEORGE E. PANCOAST.

Witnesses:
GEO. H. BARNES,
EDWIN SEGER.