

C. G. BIEDINGER.  
Rotary Paper-Cutter.

No. 162,607.

Patented April 27, 1875.

Fig. 1

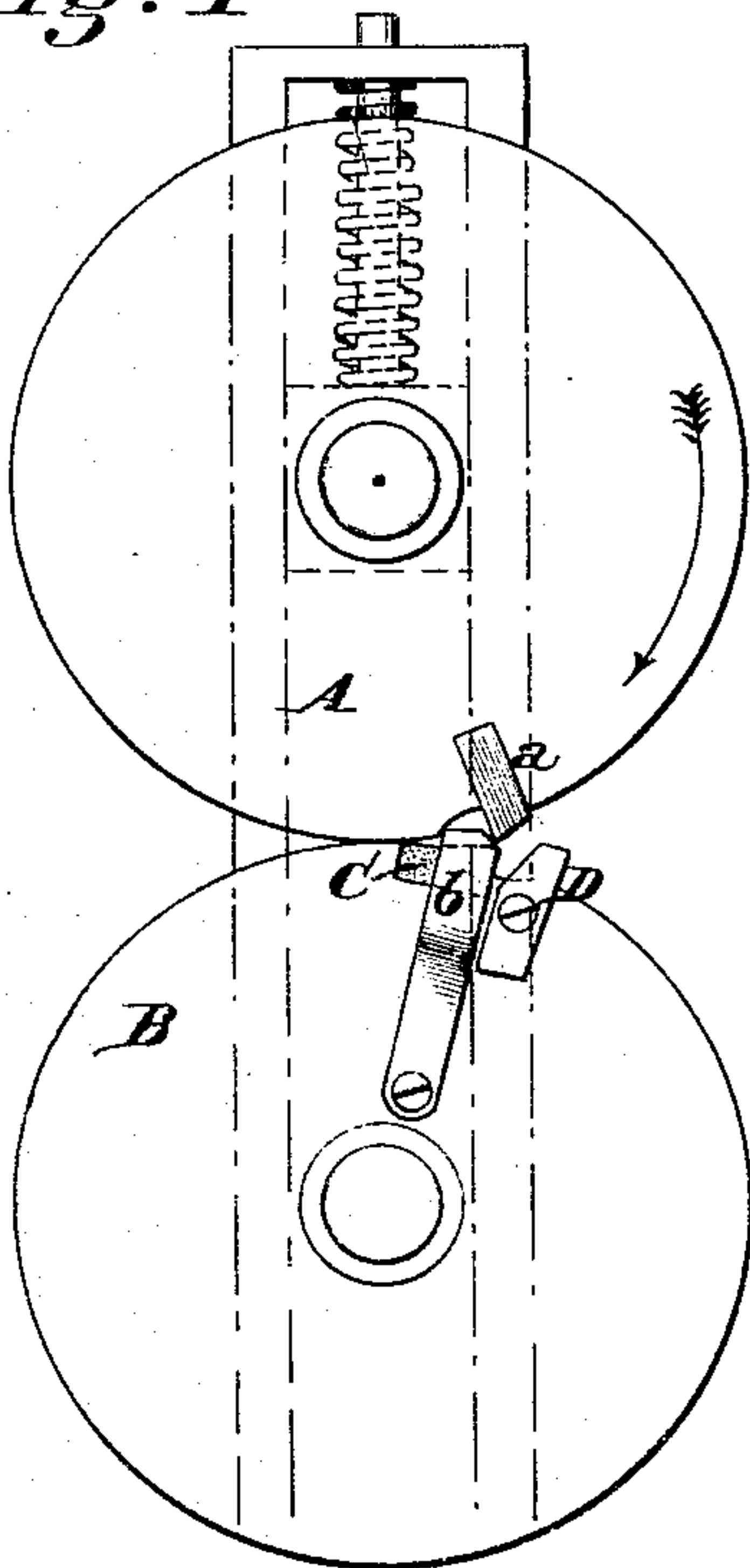


Fig. 2

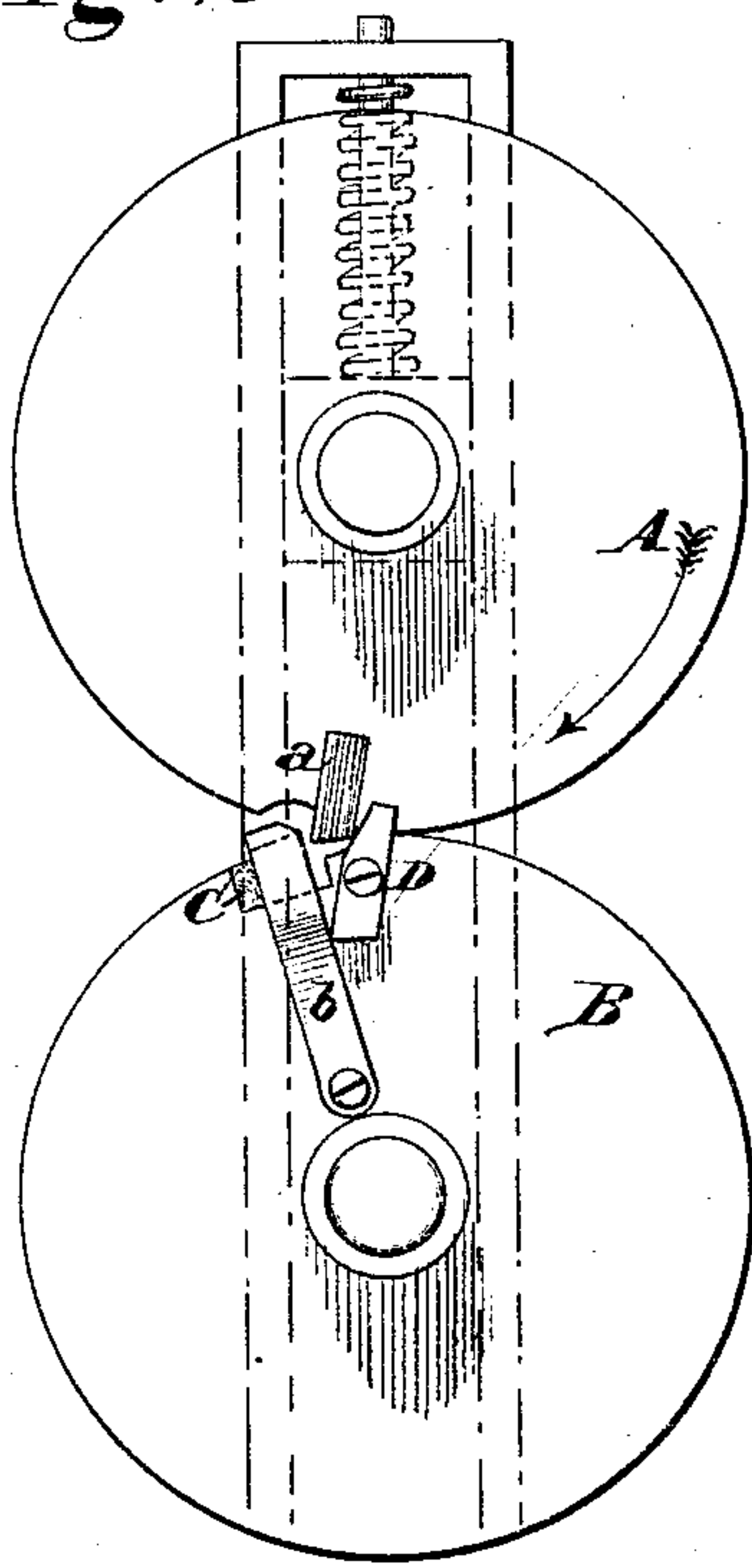
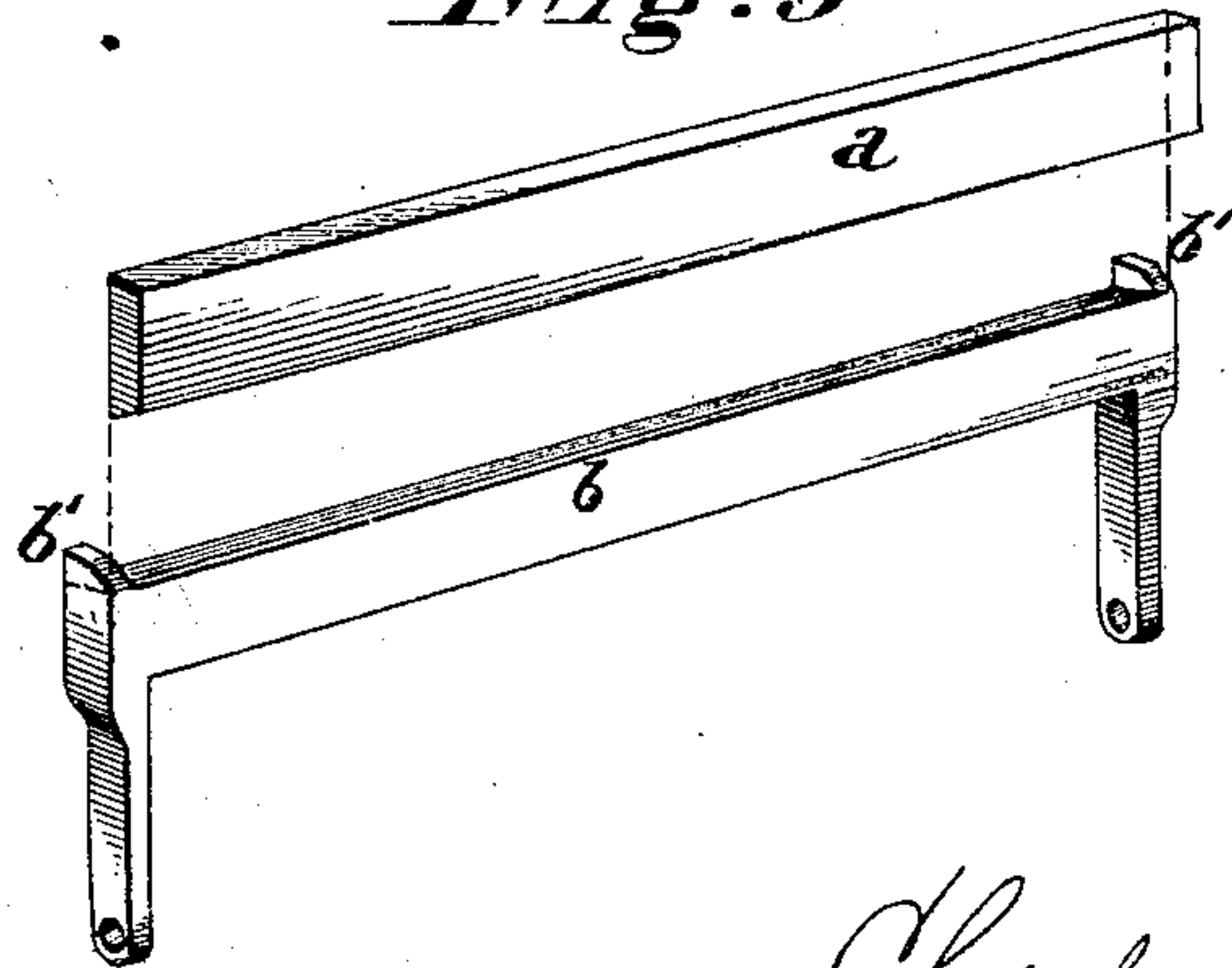


Fig. 3



Attest

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## IMPROVEMENT IN ROTARY PAPER-CUTTERS.

Specification forming part of Letters Patent No. **162,607**, dated April 27, 1875; application filed March 29, 1875.

*To all whom it may concern:*

Be it known that I, CHARLES G. BIEDINGER, of Cincinnati, Hamilton county, State of Ohio, have invented an Improvement in Rotary Paper-Cutters, of which the following is a specification:

My invention is particularly applicable to the cutting of paper transversely in the operation of feeding the same from a roll to a machine for folding or printing paper, or making paper bags; but it is applicable to the cutting of any material which can be fed to it in sheets or lengths.

My invention consists of a pair of rolls or shafts, each armed with a projecting knife-blade, arranged to lap each other, shear-fashion, preferably leading at one end, also shear-fashion, the blade in one of the rollers being of such construction, and so attached to the roller, that it will be guided accurately to preserve the close contact of the cutting-edges of the knives without permitting the conflict of the same, and will give way at the proper time against the action of a spring, to permit the edges of the knives to retreat from each other without scraping—the object of my invention being, essentially, to preserve a sharp cutting-edge on both the knives; to prevent injurious conflict in passing; to provide for a considerable amount of lap and shear-cut to the knives; to prevent the contact of the knives on the retreat after the act of cutting, and, as a whole, to increase the rapidity of operation and general efficiency of machines of this class.

Figure 1 is a side view of my cutting apparatus with the knives in the act of cutting. Fig. 2 is a similar side view after the act of cutting. Fig. 3 is a perspective view of the knives detached.

A B represent two rollers, to which the knives are attached.

The object of using rollers for the knives is for the purpose of performing the double function of feeding and cutting at the same time; but it is obvious that my improved knives may be attached to common shafts not adapted to act as feeding-rollers, the novel part of the device illustrated being in the cutting apparatus.

The knife *a* is firmly secured to the upper

roll or shaft A, and its ends, as seen in Fig. 3, project so far over its cutting-edge as to enable them to operate upon the guides of the lower knife. The lower knife *b* is so attached to the lower roll as to be adapted, when operated upon by the upper knife or the compressing-lever, to retreat, and this may be attained by fitting the knife to its roll so that it may slide backward or forward; but for simplicity I prefer to pivot it to the roller or shaft B, so that it may swing backward and forward. The knife *b* is provided with guiding projections *b'*, upon which the ends of the knife *a* impinge. These guiding projections are designed and act to insure the accurate coming together of the knife-edges, it being impossible, by reason of the presence of the projections *b'*, for the knives to clash, and by reason of the provision of these safety-guides the edges of the knives can be so set that the knife *b* will have to retreat while passing, thus insuring close edge contact.

I prefer that one end of the knives may overlap before the other, so as to effect a shearing cut. Behind the knife *b* I provide one or more springs, C, of rubber or metal, for the purpose of bringing the edges of the knives in contact after the knife *b* has been forced back by the knife *a* or the compressing-lever. D is the compressing-lever, pivoted to the roll or shaft B, and projecting above the roll, so as to be in position to be acted upon by the end of knife *a*. Its heel presses against the knife *b* when the rolls are in the position shown in Fig. 2, its upper end being forced out of its normal position by the knife *a*, as seen in that figure, so that the heel, in pressing against the knife, may force the knife *b* away from contact with knife *a*, and thus allow the edges of the knives, after the act of cutting, to retreat from each other without remaining in contact.

By this device the edges of the knives are prevented from becoming abraded or in any way injured by contact in the retreat.

It is obvious that, so far as the operation of the guides *b b'* is concerned, the lever D is unnecessary, and that, so far as the operation of the lever is concerned, the guides *b b'* are unnecessary, the guides *b b'* being devised for governing the knives in approaching each



other, and the lever D to govern the knives on retreating from each other. It is also obvious that the lever D may be entirely dispensed with, in case the rolls are rotated in a direction opposite to that indicated in Figs. 1 and 2, for in that event the guides *b'* will perform the twofold function of first guiding the knives to pass each other in close contact during the shearing action, and then immediately separating them laterally, and keeping them thus separated until their edges have become parted by the advance in the rotation of the rolls or shafts to which they are attached. That the guides will perform this function may be seen by contemplating the position of the knives shown in Fig. 1.

The rolls or shafts A B may be geared together in the ordinary way, so as to revolve in proper relation to each other.

I claim—

1. The roll A, carrying the fixed radially-

disposed blade *a*, in combination with the roll B, provided with the radially-disposed blade *b*, which has side guides *b'*, and rests against springs C, permitting it to move laterally, substantially as and for the purpose specified.

2. The combination of roll A, provided with blade *a*, roll B, carrying laterally-moving blade *b*, spring C, and compressing-lever D, substantially as and for the purpose specified.

3. The combination of roll A, provided with blade *a*, roll B, carrying laterally-moving blade *b*, guides *b'*, spring C, and compressing-lever D, substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

CHARLES G. BIEDINGER.

Witnesses:

JOHN E. JONES,

EDGAR J. GROSS.