

# A. Hardy, Paper Cutter.

No. 101,873.

Patented April 12, 1870.

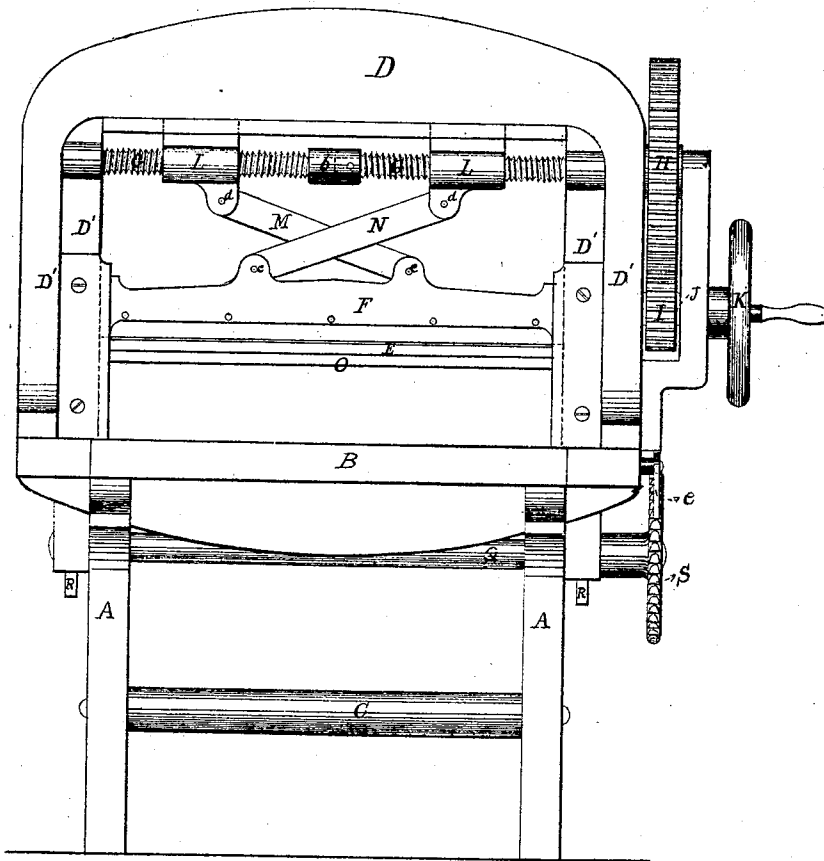


Fig. 1.

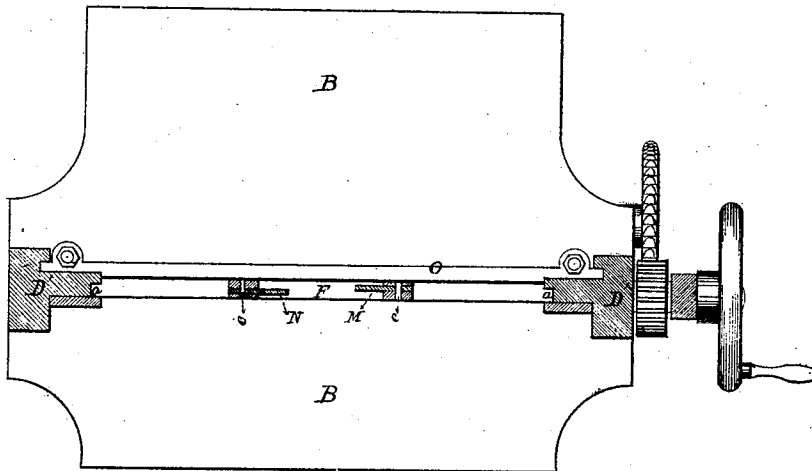


Fig. 2.

Witnesses.

*N. C. Lombard*  
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Inventor.

*Anson Hardy*

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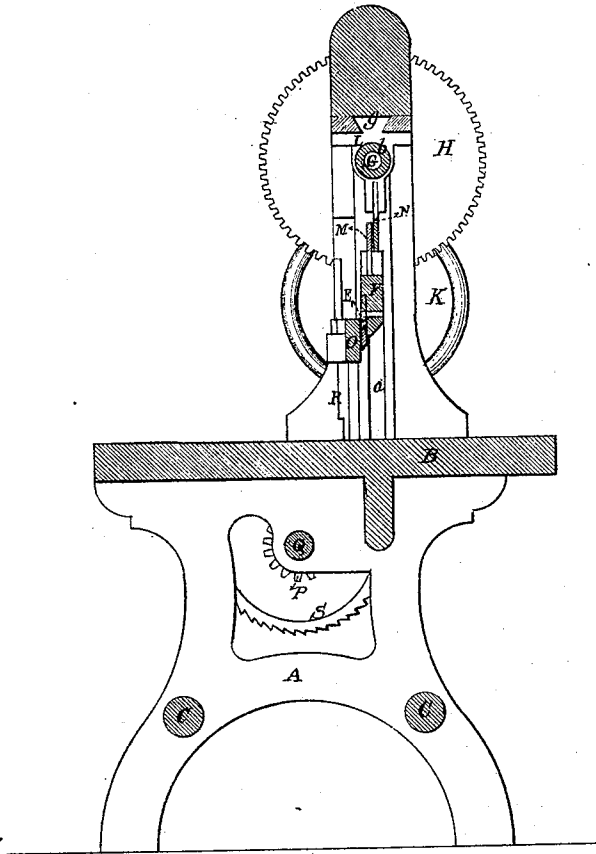


Fig. 3.

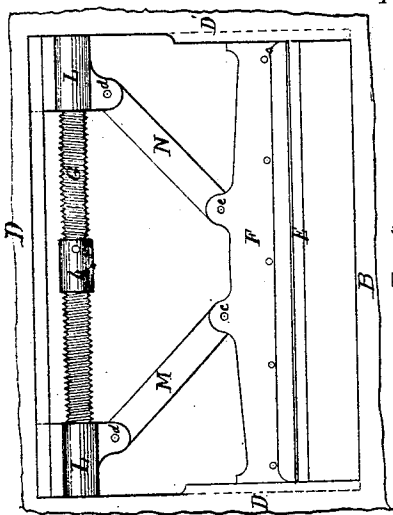


Fig. 4.

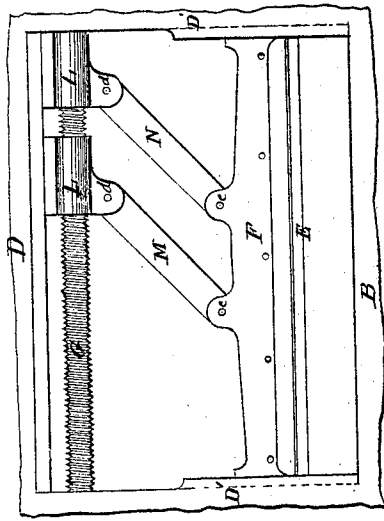


Fig. 5.

Witnesses.

*N. C. Lombard*  
*Amos Hardy Jr.*

Inventor.

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# United States Patent Office.

ANSON HARDY, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 101,873, dated April 12, 1870.

## IMPROVEMENT IN PAPER-CUTTING MACHINES.

The Schedule referred to in these Letters Patent and making part of the same

I, ANSON HARDY, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in "Paper-Cutting Machines," of which the following is a specification.

### *Nature and Objects of the Invention.*

My invention relates, in the first place, to the means employed for operating the knife, and

It consists in the employment of a screw-shaft and suitable nuts moving thereon, in combination with a pair of radius arms, the lower ends of which are connected to the knife-bar, and the upper ends to the nuts operated by the screw-shaft, in such a manner that, by the revolution in one direction of the screw-shaft, the knife will be forced down through the paper in a vertical direction, the knife being guided in grooves formed for the purpose in the upright portions of the arch.

It also consists in fitting the nuts operated by said screw-shaft to guide-bearings, on the under side of the cross-beam of the arch, in such a manner that the whole strain of the resistance to the movement of the knife may be transmitted to said cross-beam without springing the screw-shaft.

When the knife has completed its cut, it is raised again to the starting point, by reversing the motion of the screw-shaft, the machine being arranged to be operated by hand only; but the same mechanism may be used to operate the knife in a power cutter by the addition of a reversing-gear; therefore I do not wish to confine myself to the use of this device in a hand machine alone.

This device is also capable of various modifications; as, for instance, the radius arms may be crossed, as shown in fig. 1 of the drawings, or they may be arranged as shown in fig. 4, and be operated by a right-and-left thread on the screw-shaft, so that the tops of said radius arms will gradually approach nearer to each other as the screw is revolved; or, only one thread may be used on the screw-shaft, and the radius arms be arranged parallel to each other, as shown in fig. 5; therefore I do not wish to confine myself to the particular arrangement of the radius arms which I have selected to illustrate the principle of my invention.

My invention relates, in the second place, to the construction of the upper portion of the frame, and

It consists in casting the whole arch, consisting of the two uprights and the upper cross-beam, in one piece, and securing the whole to the table and lower portion of the frame by suitable bolts, so as to make the strongest possible arch, to receive the strain occasioned by resistance to the passage of the knife through the paper, with the least amount of metal.

### *Description of the Accompanying Drawings.*

Figure 1 is a front elevation of a machine embodying my invention, and representing one of the modes of applying the radius arms to move the knife.

Figure 2 is a sectional plan of the same, the section being taken on line  $x x$ , on fig. 1.

Figure 3 is a vertical section on line  $z z$ , on fig. 1.

Figures 4 and 5 show other modifications of the application of the radius arms to the knife and screw-shaft.

### *General Description.*

A is the lower frame of the machine, and

B is the table, on which the paper is to be placed to be cut, and is bolted firmly to the frames A.

The frames A are secured together at the bottom by the girts C.

D is the arch, or upper portion of the frame, cast in one piece, and bolted firmly to the table B.

E is the knife, secured by bolts to the knife-bar F, which is fitted to slide up and down in grooves  $a$ , formed for the purpose in the upright portions D' of the arch D.

G is a shaft, having bearings at either end in the upright portions of the arch D, and having the spur gear-wheel H mounted thereon, which meshes into the pinion I on the short shaft J, on the outer end of which is mounted the hand or fly-wheel K.

The shaft G is made in two pieces, and connected together by the coupling  $b$ , so as to form one shaft.

The shaft G has screw-threads formed upon it, that portion on one side of the coupling  $b$  being a right-hand thread, and that portion on the other side of the coupling  $b$  being a left-hand thread; and each portion of said shaft has mounted upon it a nut, L, fitted to its thread, and also to a dovetailed slide,  $g$ , in the under side of the cross-beam of the arch D.

The nuts L are placed upon the screw-shaft, equidistant from the center of the coupling, one being on the right-hand thread, and the other on the left-hand thread, so that, when the screw-shaft is revolved in one direction, they shall gradually approach each other until they both come in contact with the ends of the coupling  $b$ , when the motion in that direction ceases.

M and N are two radius arms or links, the lower ends of which are secured, by the pins  $c c$ , to the knife-bar F, and the upper ends are secured to the nuts L by the pins  $d d$ , said radius arms or links crossing each other, as shown in fig. 1, or arranged as shown in fig. 4, without crossing each other; or, they may be arranged, as shown in fig. 5, parallel to each other, and the nuts attached to their upper ends be both moved in the same direction by a right-hand

thread upon the screw-shaft, and, by the vibration of the upper ends of said arms or links, force the knife down through the paper in a perfectly obvious manner.

O is a clamp-bar, to hold the paper while it is being cut, and is operated by the action of the pinions P P, on the shaft Q, upon the vertical racks R R, and is held in position by the double pawl e, acting upon the ratchet-teeth cut in the rim of the hand-wheel S.

The coupling b, on the shaft G, serves the purpose of a stop, to limit the extent of the downward movement of the knife, and thereby prevent injury to the knife or table.

The operation of my machine is so fully explained that I think it needs no further description here.

*Claims.*

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

1. The knife E, in combination with the screw-shaft G, nuts L, and links M and N, arranged and operating substantially as described, for the purpose specified.

2. In combination with the elements named in the first clause of claim, the stop b, for limiting the motion of the knife in a downward direction, substantially as described.

Executed at Boston, this 13th day of December, 1869.

Witnesses:

ANSON HARDY.

N. C. LOMBARD,  
ANSON HARDY, Jr.