2 Sheets. Sheet 1.

S. Brown,

Paper Cutter.

No. 112,414. Patented. Mar. 7. 1871.

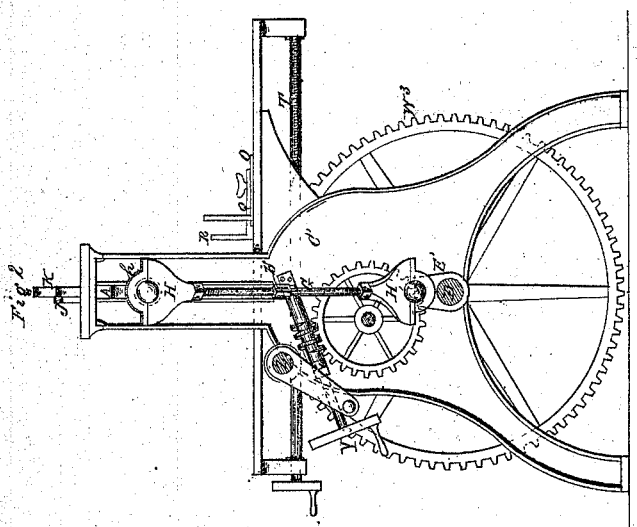


Fig 2

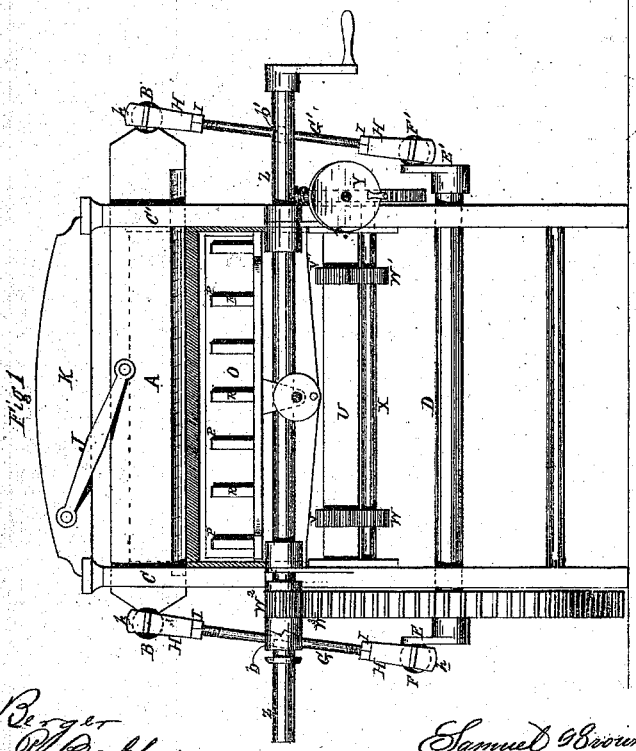


Fig 1

Witnesses. { G. Berger
Isaac W. Oakford.

Samuel Brown
By his attorney
Charles A. Evans
} Inventor.

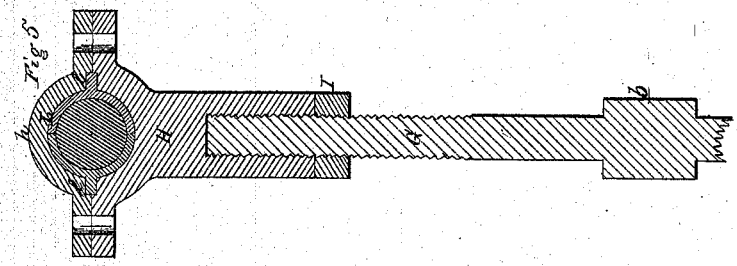
2 Sheets, Sheet 2.

S. Brown,

Paper Cutter.

No. 112,114. Patented. Mar. 7. 1871.

Fig. 5.



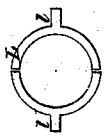


Fig. 4.

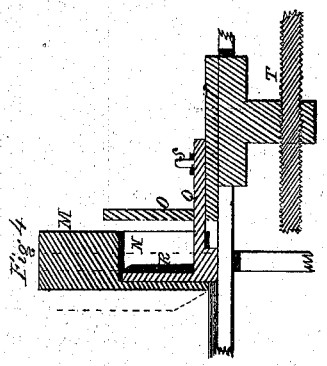
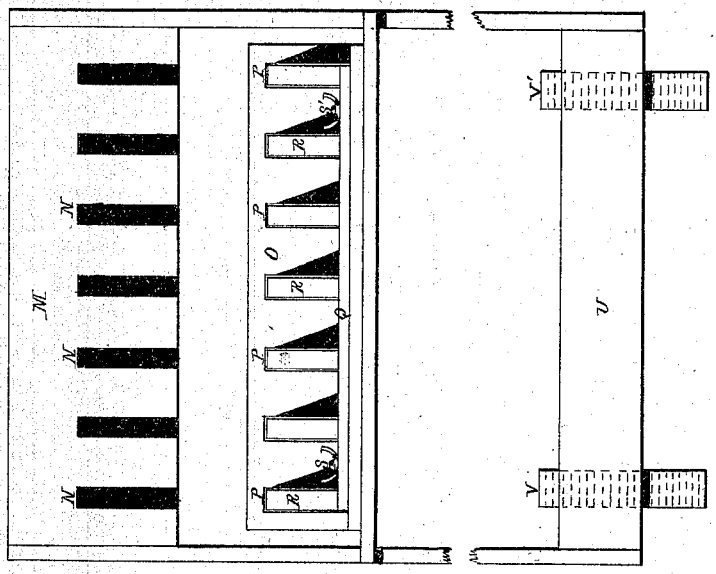


Fig. 3.



Witnesses. { C. Berger, Isaac R. Oakford.

Samuel Brown, By his attorney Charles H. Evans } Inventor.

United States Patent Office.

SAMUEL BROWN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND CEPHAS R. CARVER, OF SAME PLACE.

Letters Patent No. 112,414, dated March 7, 1871.

IMPROVEMENT IN PAPER-CUTTING MACHINES.

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

To all whom it may concern:

Be it known that I, SAMUEL BROWN, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Paper-cutting Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

My invention appertains to that style of paper-cutting machines in which a straight knife is arranged to slide up and down in suitable slots in the framing, and which acts on the paper with a draw or oblique cut, in connection with which is used a clamping frame, so arranged that it can be readily depressed and caused to bear on the paper placed on the table of the machine and hold it firmly in position while being cut. A gauge is also arranged so as to move the paper any desired distance under the knife, which at each down stroke cuts it smooth and even.

The first part of my improvements relate to the manner of arranging and operating the knife, the ends of which are brought down simultaneously, and at the same time the blade operates with a draw or oblique cut. In order to accomplish this I connect the ends of the knife by means of two rods to a horizontal shaft placed at a short distance below it, the attachment being made by means of ball-joints, in the sockets of which are inserted yokes, in order to allow a vibrating movement of the rods. The said rods are also provided with right-and-left-handed screw-threads, so that the knife can be adjusted and both the ends brought down on a perfectly parallel line at the same instant.

The second part of my improvements relate to the manner of constructing the clamp for holding the paper and of the gauge for feeding it to the knife. The difficulty heretofore experienced with this portion of the machine has been that the upper bar of the clamping frame, which is made broad in order to hold the paper firmly, would not permit the gauge to move all the paper required to be cut sufficiently close to the knife, hence a strip of paper equal in width to the clamping-bar always remains intact. To overcome this I arrange the gauge so that a part of it will pass into recesses formed in the bar, so that any quantity of paper narrower than the bar can be moved under it and cut by the knife.

Figure 1, plate 1, is a front elevation of my improvement in paper-cutting machines.

Figure 2, plate 1, is an end elevation of same.

Figure 3, plate 2, is a view of the back part of the gauge and clamping frame of the machine.

Figure 4, plate 2, is a sectional view of a portion of the clamping-frame and gauge, showing the position of the clamp while holding the paper, and of the gauge when moved up close to the knife.

Figure 5, plate 2, is a sectional view through the center of a portion of one of the connecting-rods.

To enable those skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

The knife A, fig. 1, is made of any required length and width, and has formed or secured on each end two spheres or balls, B and B′, and the lower portion is made bevel and is ground to a cutting-edge.

The knife-blade thus constructed is passed through and works in two vertical slots formed in the framing-pieces C and C′ of the machine.

At the proper distance below the said knife, and working in suitable bearings formed in the frames C and C′, is a horizontal shaft, D, the ends of which project a short distance out on each side, and have secured on them two cranks, E and E′, the pins of which are made in the form of spheres F and F, similar to those on the knife A.

The knife A and the shaft D are connected by means of rods G and G′, the ends of which are provided with right-and-left-hand screw-threads for securing them into the stub-ends H H. The said stubs and their caps *h h* pass over and partially inclose the spheres formed on the cranks and those on the end of the knife-blade in the same manner as the ordinary ball-and-socket joint.

The connecting-rods G and G′ are provided with bosses *b* and *b′*, which are made square, or of any suitable shape to suit a wrench, which is applied when it is desired to turn the rods to the right or left for the purpose of lengthening or shortening them, and they are also provided with jam-nuts I and I′ for holding them in proper position when once adjusted.

The rods G and G′ are adjusted so that when the shaft D is rotated both ends of the knife will be brought down simultaneously, and at the same time it is caused to operate with a draw or oblique cut by means of an oscillating arm, J, one end of which is pivoted to the center and near the upper edge of the knife, and the opposite end is pivoted at a short distance from the end of a cross-piece, K, secured across the frames C and C′.

The spheres or balls B and B′ and F and F′ have each inserted in grooves passing over them, at the central part, a yoke, L, (as shown in fig. 5, plate 2,) which is made in two parts, and fitted by means of cylindrical projections or pivots *l* and *l′* on their sides, into recesses in the sockets and caps of the stub-ends H or H′. The yokes thus fitted over the balls permit of a vibrating movement of the rods while they are being carried around by the cranks, and at the same time the knife is caused to move obliquely in a perfectly

horizontal position. By thus keeping the knife horizontal while it is moving downward the edge of it will effectually cut the paper, no matter how uneven it may be ground.

The upper bar M of the clamping-frame, shown at figs. 3 and 4, plate 2, has made on its back part a series of rectangular-shaped recesses, N N N, which extend in to within a short distance of the front side of the bar, and are open at their lower ends.

The angle-plate O of the gauge is made of the same length as the clamp, and is provided with a series of openings, P P P, which are made in that portion of the plate which stands vertical, and are directly opposite to the recesses formed in the bar M; and on the flat part of the plate, or that portion which rests on the table of the machine, is placed a plate, Q, the front edge of which is provided with a series of projecting arms, R R R, which are turned up at right angles and pass through the openings P P P, and are so adjusted and held in position by the set-screws S and S′ that they extend beyond the front edge of the plate O, and when the gauge is moved toward the clamp they pass into the recesses N N N and force any paper that may be placed on the table directly under the knife. By thus reducing the thickness of the clamping-bar the knife will cut the paper close to the gauge.

The gauge is operated from the front end of the machine by means of a screw-shaft, T, which passes through an arm secured on the lower side of the plate O, and in which is cut a female screw-thread.

The lower bar U of the clamping-frame has secured on it two toothed racks, V and V′, into which are geared two pinions, W and W′.

The said pinions are secured on a shaft, X, which receives a rotary motion through a worm and pinion-wheel placed at one end of the machine, so that by turning the crank Y the clamping-frame is raised or depressed, as required.

On the front part of the machine, and running across it, is a shaft, Z, on which is placed a loose pinion, W^2, which gears with a spur-wheel, W^3, secured on the shaft D, so that, when the shaft is rotated, motion is communicated to the knife. A clutch is also feathered on this shaft in order to throw it in and out of gear with the pinion, and to arrest the motion of the knife when desired.

I do not wish to claim broadly a paper-cutting machine, as I am aware that a machine constructed somewhat similar to mine is now in use; neither do I wish to broadly claim the knife, clamping-frame, or gauge; but

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

1. The construction and arrangement of the rods G G, stub-ends H H, spheres B B and F F, yokes L, shaft D, and cranks E E, as and for the purpose herein specified.

2. The bar M of the clamping-frame, having a series of rectangular-shaped recesses, N N N, in combination with the screw-shaft T, plate Q, arms R R R, plate O having openings P P P, and set-screws S S, substantially as set forth.

3. The yoke L, constructed as herein shown, and applied in the socket of a ball-joint, substantially as set forth.

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

Witnesses: SAMUEL BROWN.

CHARLES H. EVANS,

ISAAC R. OAKFORD.