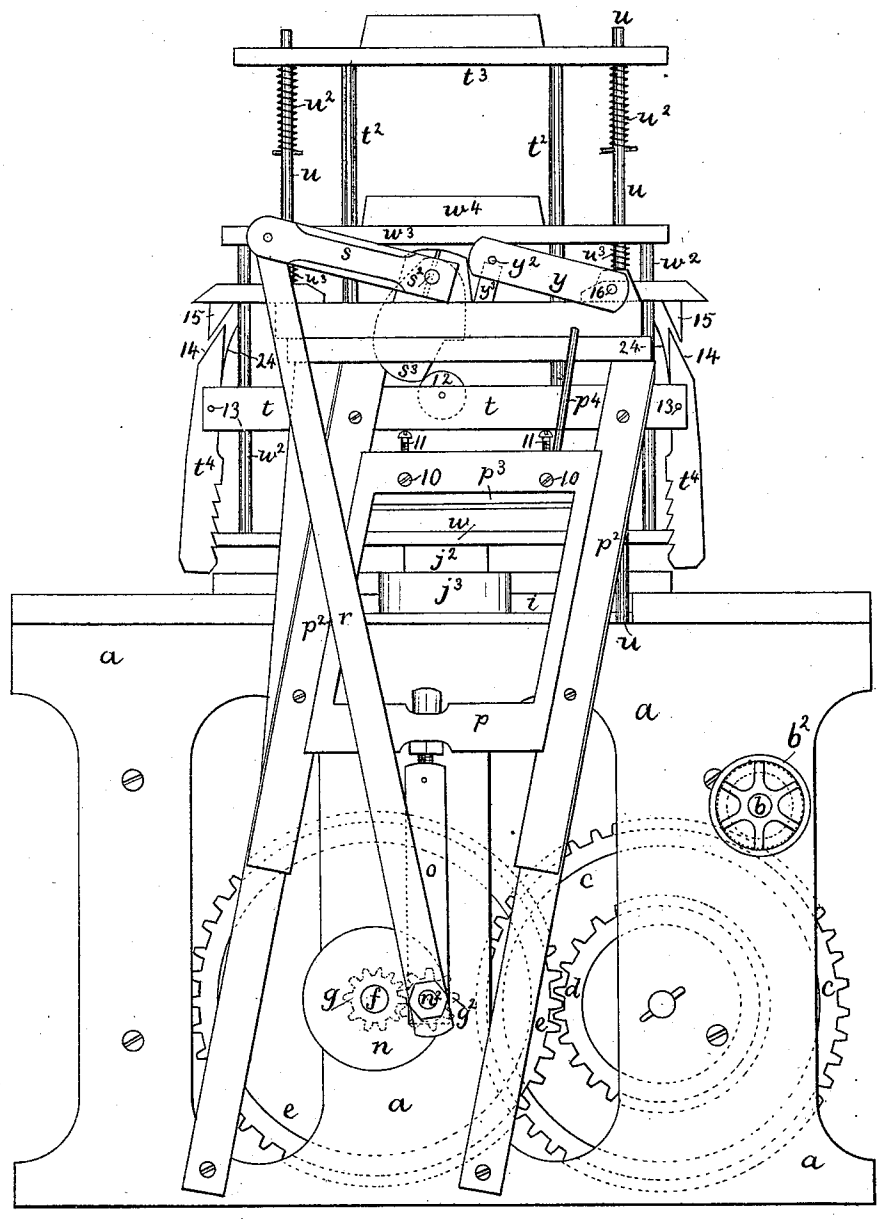
2 Sheets—Sheet 1

J. F. WITHEY.

Pamphlet-Trimmer.

No. 228,795. **Patented June 15, 1880.**

Fig. 1.



Witnesses.

L. F. Connor.

Jos. P. Livermore

Inventor.

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2 Sheets—Sheet 2.

J. F. WITHEY.

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Fig. 3.

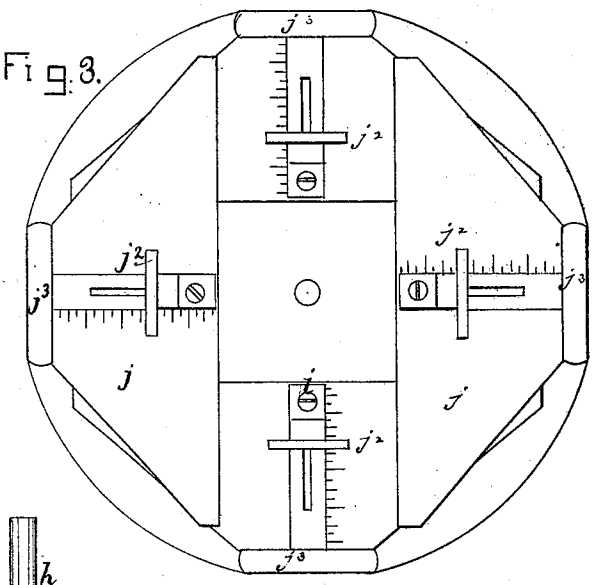
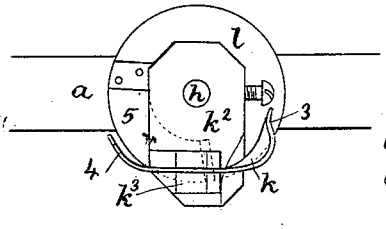


Fig. 2.

Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN F. WITHEY, OF LYNN, MASSACHUSETTS.

PAMPHLET-TRIMMER.

SPECIFICATION forming part of Letters Patent No. 228,795, dated June 15, 1880.

Application filed January 19, 1880.

To all whom it may concern:

Be it known that I, JOHN F. WITHEY, of Lynn, county of Essex, State of Massachusetts, have invented an Improvement in Pamphlet-Trimmers, of which the following description, in connection with the accompanying drawings, is a specification.

My invention relates to a machine for cutting or trimming paper, and has for its object to produce an organized machine for rapidly trimming large quantities of paper to a uniform size, as is desired in the case of an edition of a magazine or other pamphlet.

My invention consists, partly, in the combination, with the paper-cutting mechanism, of a rotatable table provided with suitable paper-holders, upon which to hold the paper in gaged position, and means to automatically intermittingly rotate the table at the proper time to bring the paper-holders, supplied with a pile of paper to be trimmed, under the action of the cutting device, shown as a knife guided in ways inclined to the surface of the pile of paper, to give a drawing cut, the said knife cutting down through the pile of paper upon a cutting-bed attached to the paper-holder.

The invention also consists in a presser to press and hold firmly the pile of paper just behind the line where the knife cuts it, the said presser being adapted to apply a positive pressure of about the same amount to piles of different thickness; also, in the combination, with a uniformly-rotating shaft and the rotatable table, of intermediate devices, as hereinafter described, to impart an intermittent motion to the said table; and in the combination, with the knife, of the presser and devices to actuate it properly at the desired time in relation to the movement of the other devices.

Figure 1 is a side elevation of a paper-trimming machine embodying my invention; Fig. 2, an end view thereof; Fig. 3, a top view of the rotatable table, and Fig. 4 a detail showing the device for intermittingly rotating the table.

The frame-work *a*, of suitable form to sustain the working parts, supports in suitable bearings the driving-shaft *b*, rotated in any usual manner, as by the pulley b^2, and carrying the pinion b^3, from which the movement is transmitted by the train of gears *c d e*, which reduces the speed and increases the power to the shaft *f*, which at each rotation actuates the cutting and pressing mechanism to trim a pile of paper.

A pinion, *g*, on the shaft *f* engages a pinion, g^2, on a shaft parallel with it, provided with a bevel-gear, g^3, (see Fig. 2,) that engages a bevel-gear, *h'*, on a vertical shaft, *h*, passing through the center of the table *i*, the latter carrying the paper-holders *j*, one only of which is shown, and which is provided with a gage, j^2, of usual construction, to govern the width of paper when cut. At the front of each holder is a cutting-bed, j^3.

The table *i* is shown as adapted to carry four of the holders *j;* but it is obvious that any other convenient number can be used. It is necessary that the table *i* should be rotated to bring a new holder and cutting-bed, with its pile of paper, into position to be acted upon by the knife during the time that the knife and presser are elevated, and then be held there while the said devices descend and are again elevated, which operation occupies about three-fourths of the time of revolution of the shaft *f*.

The intermittent rotation and holding in fixed position of the table *i* is accomplished in the following manner: The intermediate gearing is such as to cause the shafts *f* and *h* to revolve with the same speed. A rocking pawl, *k*, is pivoted at 2 on an arm, k^2, carried by the shaft *h*, and its lower extremity, 3, rests on a motionless cam-disk, *l*, secured to the frame-work of the machine, and recessed for about one-fourth its circumference, as shown at 5.

The lower end, 3, of the pawl *k* is heavier than the upper end, 4, or is otherwise pressed down upon the cam-disk *l*, so that when it reaches the recess 5 therein it drops, and the end 4 is raised to engage one of the lugs i^2 on the table *i*, and rotate the said table for a quarter of a revolution, after which the end 3 arrives at the end of the recess 5, and the pawl is tripped.

It is unnecessary for the pawl *k* to engage the lug i^2 during the whole quarter-revolution, as the momentum of the table is sufficient to comple' its movement, and it is obvious that

the number of holders j could be varied by using the same number of lugs i^2 as of said holders, and making the proper variation in the form of the cam-disk l.

When in the rotation of the table a holder, j, and cutting-bed arrive in correct position for the paper to be cut by the knife, the table is held motionless by the holding device, shown as a bolt, m, pressed upward by a spring, 6, to engage a recess in the under side of the table i, thus holding the table securely from rotation until just before the pawl k engages a lug, i^2. The bolt m is pushed down by the releasing-cam k^3, carried by the arm k^2 on shaft h, engaging the end 7 of the lever m^2, pivoted at 8, the opposite end of which acts on a pin, 9, in the bolt m.

The table is rotated just after the presser which holds the edge of the pile of paper is released from the paper which has been trimmed, as hereinafter described. The pressing and cutting mechanism receive their motion from a disk, n, and wrist-pin n^2, carried by the shaft f. A pitman, o, connected at one end with the wrist-pin n, is attached at its other end to the knife-frame p, guided in inclined ways p^2 upon the frame a of the machine, and provided with the knife p^3, suitably held therein by the screws 10, and adjusted by the screws 11.

A link, r, connected with the wrist-pin n^2, is pivoted to the end of an arm, s, on the rock-shaft s^2, which carries the cam s^3, adapted to act on the roller 12 in the cross-bar t, connected by rods t^2 with a top bar, t^3, the whole forming what may be denominated the "presser-frame," which is guided by the rods u, connected with the frame-work a, and is moved upward by the springs u^2 when not positively depressed by the cam s^3.

At the ends of the cross-bar t are two toothed arms, t^4, pivoted at 13, and provided with springs 24, to cause their lower ends to press inward to engage the ends of the presser w, connected by rods w^2 with a cross-bar, w^3, weighted at w^4, and guided by the rods u. If desired, the weight w^4 may be partly balanced by the springs w^3.

The presser-bar u, which is raised, as will be described, when the pile of paper in the holder j is brought into position to be acted upon by the knife p^3, is at the beginning of the downward motion of the knife allowed to move downward and rest on the pile of paper, and then, before the knife in its further downward movement has reached the paper, the toothed arms t^4 engage with the tooth which happens to be opposite the end of said presser-bar, and by the positive downward movement of the presser-frame, derived from the cam s^3, cause it to firmly hold the pile of paper down upon the cutter-bed while the knife trims its edge.

It will be seen that the degree of pressure is independent of the thickness of the pile of paper, the only difference being that for a thick pile of paper one of the upper teeth of the arm t^4 is engaged, and for a thinner pile a lower tooth. This enables the paper to be rapidly fed from a large stack by an operator, who need not be especially careful to always take the same amount. After the knife has passed down to the cutting-bed the further rotation of the shaft f raises the said knife, and at the same time causes the cam s^3 to swing aside and allow the springs w^2 to raise the presser-frame, thereby removing the pressure from the presser-bar w. At the end of the upward movement of the presser-frame the upper ends of the toothed arms t^4, which are inclined, as shown at 14, are engaged by the inclined projections 15, fixed to the frame-work of the machine, thereby causing the lower ends of the said arms to be thrown out, so that their teeth will not engage the ends of the presser-bar, which is raised as follows:

On the upper portion of the knife-frame p is a pin, p^4, which, nearly at the end of its upward movement, strikes the lever y, pivoted at 16 to the frame, and provided at its other end with a pin, y^2, which normally rests on the block y^3, but, when the lever is raised by the pin p^4, acts on the under side of the cross-bar w^3 and raises it, and with it the connected presser-bar w.

It will be observed that the pin p^4 acts on the lever y near its fulcrum 16, so that the presser-bar receives a rapid movement from the slow movement of the knife-frame p, and that this takes place while the wrist-pin n^2 is passing its upper dead-center, so that ample time is allowed for the rotation of the table i, as before described, which takes place at this moment, to bring a paper-holder with its paper in position to be acted upon by the knife. When in this position the further rotation of the shaft f lowers the knife, and with it the lever y, thereby allowing the presser-bar to rest on the paper, when the presser-frame presses and holds it, and the knife trims it, as before described.

I have described the frame $w\,w^2\,w^3$ as weighted at w^4, and also partly counterbalanced by the springs w^3; but in practice the weight and springs will not generally be used in the same machine. The weight of the frame by itself will usually be great enough without the weight w^4, and if very great the spring w^3 will be employed to reduce the work of the lever y in raising the said frame.

I claim—

1. In a paper-trimming machine, a rotatable table provided with a series of independent paper-holders, each adapted to receive and hold a pile of paper with one edge in gaged position to be trimmed, and mechanism to intermittingly rotate the said table to bring the paper-holders successively in position to have the paper therein properly acted upon and trimmed by a knife, substantially as described.

2. The combination, with a rotatable table provided with a series of independent paper-holders and cutting-beds, of a knife and intermediate mechanism, whereby the table is intermittingly rotated to bring a paper-holder

and cutting-bed in position under the knife, and then held there while the knife descends to the cutting-bed, substantially as described.

3. In an intermittingly-rotatable table provided with a paper-trimming machine, the paper-holder to receive a pile of paper in gaged position, the cutter-bed, the knife, and the pressing device and mechanism, substantially as described, to automatically present a paper-holder in proper position and then operate the pressing device to press and hold a pile of paper while the knife is operated to cut the said paper, substantially as described.

4. The combination, with a rotating shaft and pawl carried with it, of a table provided with lugs and a cam to govern the said pawl and cause it to engage one of the said lugs during a portion and be disengaged during the rest of its rotation, to thereby impart an intermittent movement to the table, substantially as described.

5. A rotatable shaft and table and intermediate mechanism to cause the shaft to engage and carry the table with it during a portion of its rotation, combined with a holding device to hold the table when not carried by the shaft, and means connected with said shaft to release said holding device before the table is engaged by the shaft, substantially as and for the purpose set forth.

6. A paper-holder and cutting bed and knife, combined with a pressing device consisting of a presser-bar adapted to rest by its own weight upon a pile of paper to be pressed, and a presser-frame provided with toothed arms to engage the ends of the presser-bar upon a pile of paper of any height, and mechanism, substantially as described, to positively depress the presser frame and bar upon the paper a certain distance independent of the height of the paper, substantially as and for the purpose set forth.

7. The presser bar and frame provided with pivoted toothed arms, combined with the inclined projections 15, to throw the arms out of reach of the presser-bar, substantially as described.

8. In a paper-cutting machine, a reciprocatory knife-frame and presser-bar, combined with a lever, *y*, to engage and move the presser-bar, the said lever being acted upon near its fulcrum and moved by the knife-frame, whereby a short slow movement of the knife-frame imparts a rapid long movement to the presser-bar, substantially as and for the purpose set forth.

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

JOHN F. WITHEY.

Witnesses:
A. B. FLONDERS,
WM. C. FABENS.