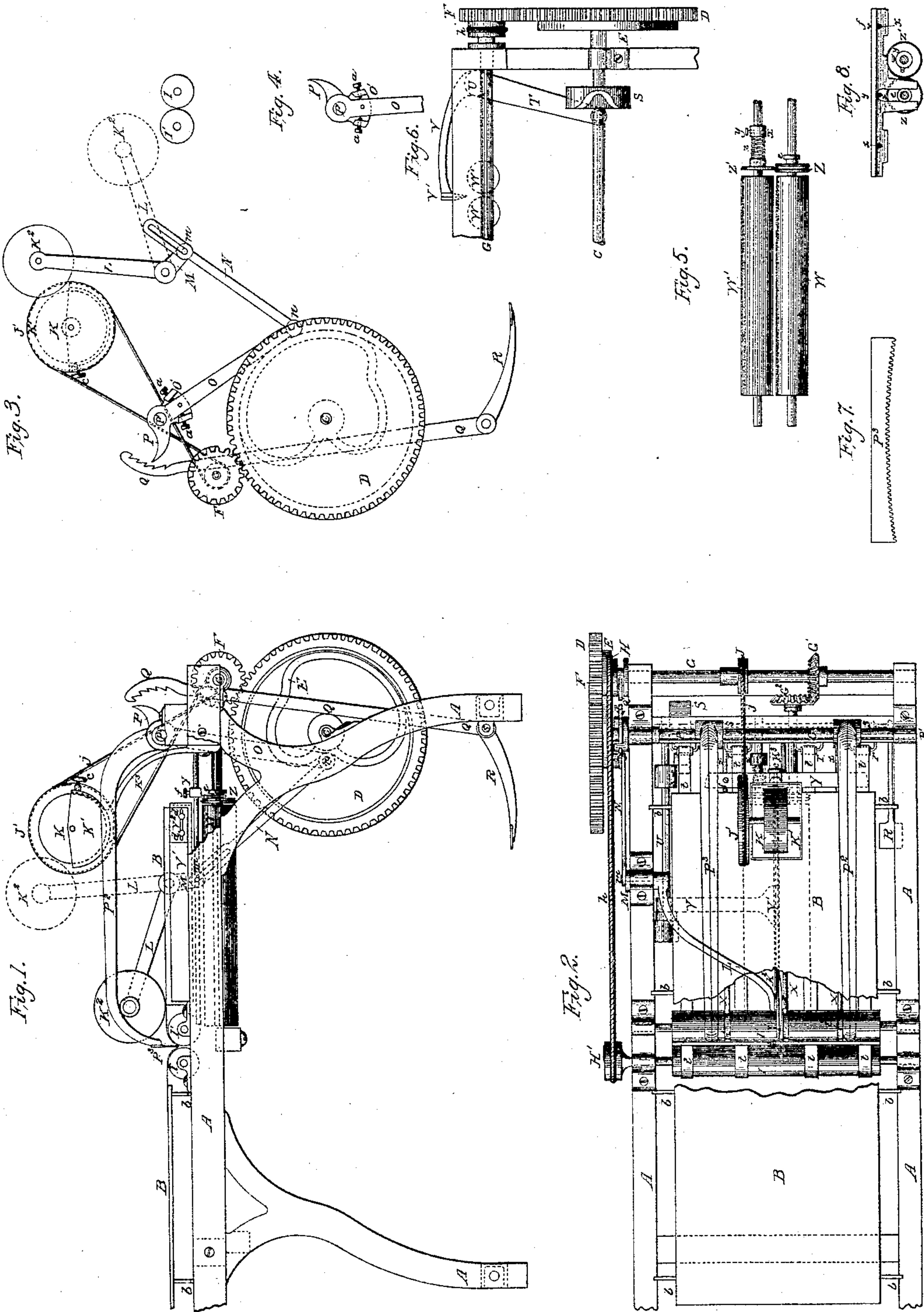


C. CHAMBERS, Jr.

Folding, Pasting, and Cutting Paper.

No. 31,588.

Patented March 5, 1861.



Witnesses:
Jm Wampler

Inventor:
Cyrus Chambers Jr.
By his Attorney
Chas. F. Sandbury

UNITED STATES PATENT OFFICE.

CYRUS CHAMBERS, JR., OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR FOLDING, PASTING, AND CUTTING PAPER.

Specification of Letters Patent No. 31,588, dated March 5, 1861.

To all whom it may concern:

Be it known that I, CYRUS CHAMBERS, JR., of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Machine for Folding, Pasting, and Cutting Paper; and I do hereby declare the following to be a correct description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of the machine; Fig. 2 is a plan of the same; and Figs. 3, 4, 5, 6, 7, and 8, details.

The same part is indicated by the same letter of reference, wherever it occurs.

The nature of my invention consists in the constructing of a machine for folding, pasting, and trimming the heads and edges of books, or pamphlets, at one continuous operation, substantially in the manner herein-after set forth, and, more specifically, in the devices, and combination of devices, described in the claims in the closing portion of this specification.

To enable others to make and use my machine, I will proceed to describe its construction and operation with reference to the drawings, wherein—

A marks a strong frame, of any suitable material, by which the other parts of the machine are supported. On top of this frame, are placed two tables or feed boards, B, so placed as to have an open space between them, through which the sheets are fed to the folding rollers.

C marks the main shaft of the machine, which may receive motion from any suitable prime mover, by means of a band and pulley, or cog gearing. On the end of this shaft is toothed wheel D, which has on its inner face a cam E. The wheel D gears into cogged pinion F, on the end of upper shaft G, which is supported, and turns in bearings attached to the main frame. On shaft G, just inside of pinion F, is a small pulley H, which, by means of band or cord h, drives pulley H', on the end of the shaft of roller I, of the first pair of folding rollers I, I'. Around roller I, and under roller I', pass the conveying tapes t, t, t, t, which are supported at their other ends, by the small tape rollers r, r, attached to the inside of a cross rail of the main frame. The rollers I, I', impart the first fold to the paper, and the tapes t, convey the folded sheet under the second knife to receive the second fold.

On shaft G, in the position shown in Fig.

2, is a pulley J, which, by means of band j, drives pulley J', on the end of the shaft of the paste roller K, which it rotates in the paste receptacle K'. An adjustable scraper, or plate, moved nearer to or farther from the face of roller K, by means of adjusting screw c, regulates the quantity of paste that adheres to the face of the paste roller. The paste receptacle is supported upon an arm K², attached to the main frame.

K² marks the paster wheel, which receives paste from the face of the paste roller K, and applies it, in a line at right angles to the direction of the first fold, to the sheet of paper. This wheel is pivoted to the end of a long bent arm L, which is supported in a bearing on top of the side rail of the main frame. On its outer end, it has a short arm M, which is attached to slotted arm N, by means of set screw m. The arm N, is hinged to the lower end of lever O, the upper end of which is attached to a plate O', on the end of the shaft P', to which the arms P², of the first folding knife P³, are attached. The plate O', is of fan shape, as shown, (see Fig. 4,) and has raised sides, or cheeks, through which pass the adjusting set screws a, a, which regulate the position of the lever O, with reference to the shaft P', on the end of which it is so attached as to be free to move except when held by the screws a, a. As the lever O, imparts motion to the knife shaft P', this adjustment regulates with precision, the distance which the knife P³ descends between the first pair of folding rollers I, I'. The lever O, has, at its upper end, a short arm in the shape of a hook or pawl, P, which is so placed that it can engage with the ratchet teeth on the upper end of arm Q. The knife P³, I make with a concave and serrated edge as shown in Fig. 7.

At the point where the slotted arm N, and lever O, are hinged together, a small roller n, is placed, which plays on the surface of the cam E, on the inner side of wheel D. By this arrangement, the cam E, is made to impart motion simultaneously to the first folding knife P³, and to the paster wheel K². The motion of both is controlled by arm Q, when the ratchet on its upper end is made to engage pawl P. Arm Q, is attached rigidly to the inner end of treadle shaft S. To the other end of said shaft, the treadle R, is attached, so that by applying the foot to the treadle, the arm Q, can be instantly thrown into engagement with pawl P.

In its passage from the first pair of rollers, the sheet is supported by the tapes t t , on which it rests above the second pair of folding rollers W , W' , and below the second folding knife V' . This knife is operated by means of cam S , on main shaft C , which drives arm T , attached to the end of shaft U , to which the arm, or handle, V , of knife V' , is attached. The second pair of folding rollers receive their motion from a bevel wheel G' , on shaft G , gearing into a similar wheel G^2 , on the end of the roller W . On the shafts of these rollers, (see Fig. 5), are attached the rotary cutters Z , Z' , adjustable longitudinally on the shafts by means of collar x , with its set screw y , and spring z . A button e is attached to cutter Z , for the purpose of receiving and holding the fork of the adjustable stop Y , as shown in Fig. 8, 1 and 8, so that the cutters and stop can be simultaneously adjusted. The stop is of the form shown in Fig. 8. It is supported, and slides on the rods X , to which it is fixed by the set screw f at any desired point. To correspond with the adjustment of the cutters and stop, it is necessary to make the second folding blade adjustable in length. This I do by attaching to it a slotted supplemental plate V^2 , controlled by set screws d , d , (see Fig. 1.)

The operation of the machine is as follows:—By the use of the register pins described in my patent of April 5 1859, the sheet to be folded is placed upon the table B , in such position that the line at which the first fold is to be made shall be directly over the line of contact of the rollers I , I' . The curved and serrated knife P^3 then descends and forces the paper in between those rollers, the outer edges of the sheet being in advance of the middle, as described in my patent of November 3 1857. The serration of the edge of the blade prevents the paper from slipping laterally. At the same time the paster K^2 comes down into contact with the sheet, and applies a line of paste at right angles to the line of the first fold, and along the inner margin of the pages. The sheet is carried from rollers I , I' , along the tapes t , t , and rods X until its folded edge is arrested by the stop Y . It is then forced by the second folding knife V' in between the second pair of folding rollers W , W' . But these rollers having on their ends the rotary cutters Z , Z' , which are inside of the stop Y , the sheet in passing between them has its folded edge trimmed off at any desired line, the stop, cutters and folding blade being all adjustable at will as before described.

If at any time it becomes desirable for any cause to arrest the action of the first knife and paster wheel, it can be instantly and simultaneously effected by placing the foot upon the treadle R , which brings the

notched portion of arm Q into contact and engagement with the pawl or hook P on the end of arm O . This causes the knife P^3 and paster K^2 to remain up out of contact with the sheet, while the motions of the other parts of the machine continue uninterrupted.

It is obvious that any number of rollers stops and cutters may be added that the nature of the work to be done by the machine may require, without affecting the principle of my invention.

The cutters may also be attached to machines which make the fold by blades working in slots, like that of G. K. Snow, patented October 5, 1850, by placing them in the path of the paper and causing the folded edge which is to be cut off, to project beyond the edge of the folding plate; or there may, if preferred, be a slot in a solid plate for the cutters to work in. The cutters may also be attached to machines which make the folds by nippers and straight edges, such as are described in the patent of John North dated Apr. 15, 1856, or that known as the Root machine, by placing them in the path of the paper and allowing the edge that is to be trimmed to project a proper distance beyond the end of the nipper.

The machine hereinbefore described is adapted to the folding of an eight page form or signature, and when the sheet emerges from the machine it is trimmed, and pasted at the back.

Having thus fully described my invention, I wish it understood that I do not claim the pasting device as new; neither do I claim a straight folding knife with a serrated edge; but

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

1. The combination of the arms L M , and N , lever O , pawl P arm Q and treadle R , or equivalent mechanism, for the purpose of arresting the motion of the paster wheel to prevent its coming in contact with the paper when this is not properly placed on the machine, as described.

2. So connecting the paster wheel with the first folding knife that both can be simultaneously arrested by the same mechanism substantially as specified.

3. Trimming off the heads or edges of pamphlets or signatures during the process of folding, substantially as set forth.

4. So regulating the position of the cutters by means of the stop that both may be simultaneously adjusted to sheets of different sizes, as specified.

5. Adjusting the end of the folding blade to correspond with the position of the stop and cutters as and for the purpose described.

6. Combining in one machine the mechanism for pasting, folding and trimming off the heads or edges of pamphlets or signatures, substantially as specified.

7. The combination in a folding blade of
a serrated and curved or angular concave
edge for the purpose of preventing the sheet
from slipping on the knife, and also to in-
5 troduce the edges of the paper between the
rollers slightly in advance of the middle, as
described.

In testimony whereof I have hereunto set
my hand this 26th day of November A. D.
1860.

CYRUS CHAMBERS, JR.

Witnesses:

W. R. ENTWISTLE,
D. S. VAUGHAN.