2 Sheets--Sheet 1.

C. CHAMBERS, Jr.

Machine for Folding, Covering and Pasting Paper.

No. 164,904. Patented June 29, 1875.

Fig. 1.

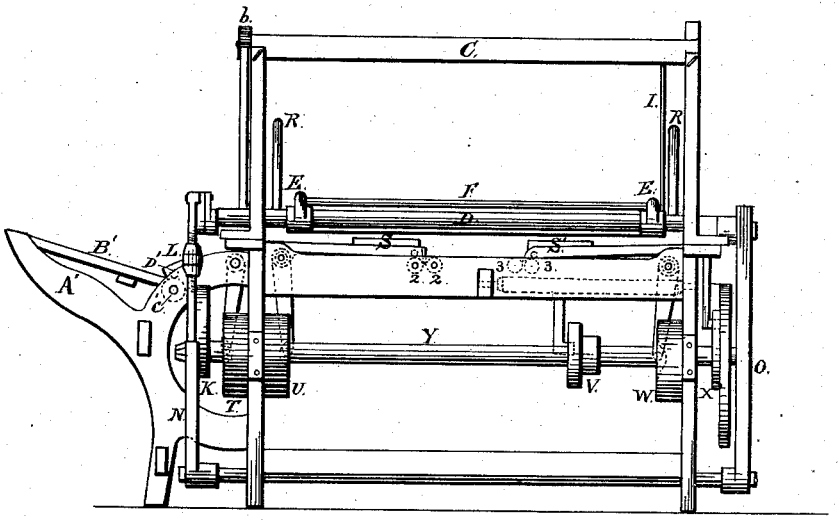
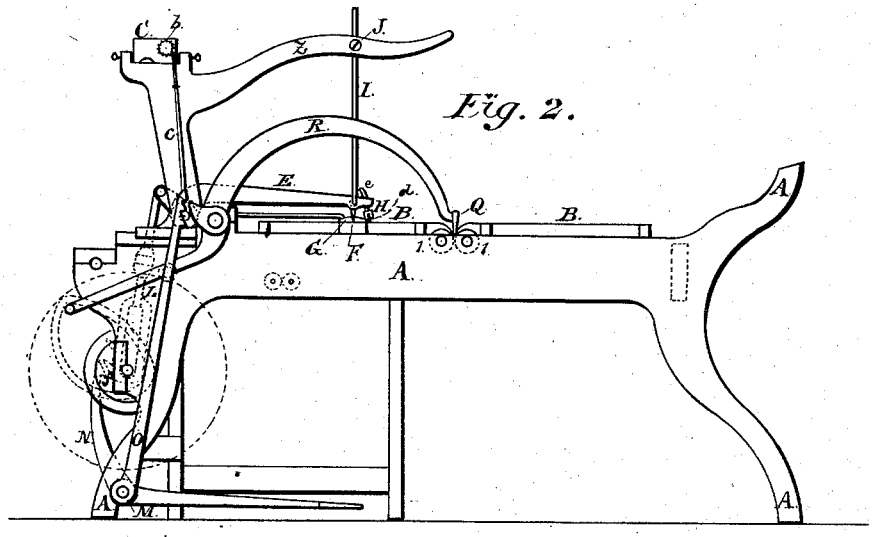


Fig. 2.



Attest;
William Anderson
Mairs Chambers

Inventor;
Cyrus Chambers Jr.

2 Sheets--Sheet 2.

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Fig. 3.

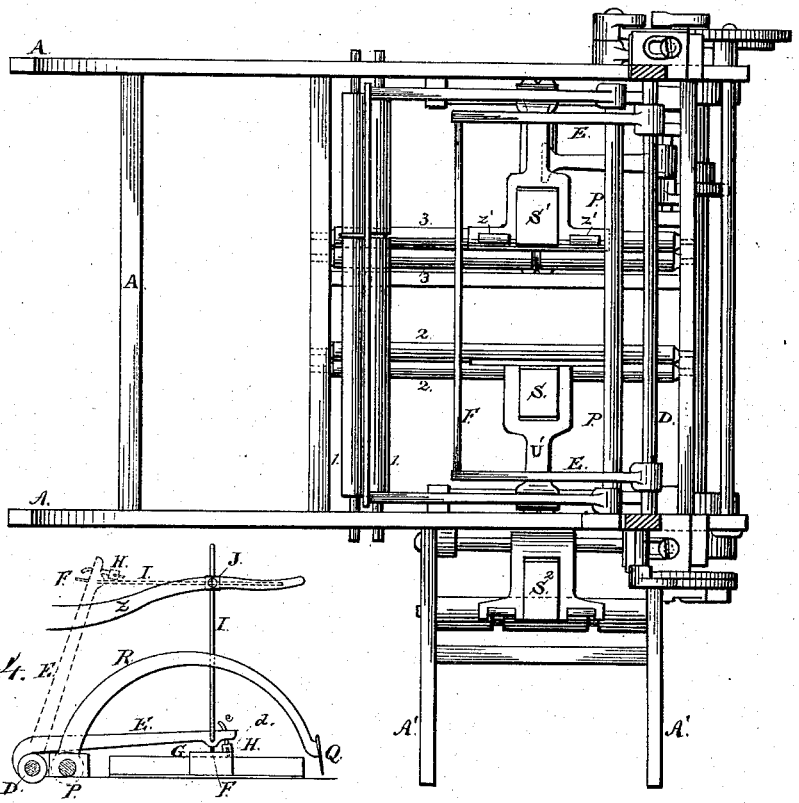


Fig. 4.

Fig. 5.

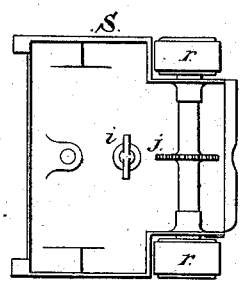
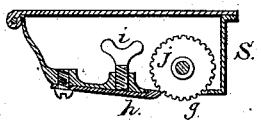


Fig. 6.



Attest;
William Wyndham
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UNITED STATES PATENT OFFICE.

CYRUS CHAMBERS, JR., OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR FOLDING, COVERING, AND PASTING PAPER.

Specification forming part of Letters Patent No. **164,904**, dated June 29, 1875; application filed June 11, 1873.

To all whom it may concern:

Be it known that I, CYRUS CHAMBERS, Jr., of the city and county of Philadelphia, Pennsylvania, have invented Improvements in Machinery for Folding, Pasting, and Covering Paper; and I do hereby declare the following to be a full and correct description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is an end elevation of the machine. Fig. 2 is a side elevation of the same. Fig. 3 is a plan or top view. Fig. 4 is a side elevation of the first folding-blade and pasting-blade, showing the latter in two positions. Fig. 5 is a plan of the paste-box, with its cover removed; and Fig. 6 is a vertical section of the paste-box.

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

These improvements consist in attaching a pasting device to an ordinary 12 mo., or 24-paged, folding-machine, so that the folds of the printed sheet coming together at the back of the signature or section, shall all be pasted together, and when trimmed, or the outer folds cut, the paper shall be held together at the back folds as it is when stitched. They further consist in attaching to said machine a covering device or mechanism, whereby an independent sheet of paper, of proper size to form a cover for the principal sheet, may be fed to the machine, folded, and pasted onto the twenty-four pages folded and pasted by the machine.

The machine to which these attachments and additions are to be made, is the ordinary and well-known book-folding machine, as patented by Cyrus Chambers, Jr., and William Mendham, and its construction is so familiar to persons acquainted with the art of folding paper, that it need not be described in detail. It has the common arrangement of feed-table, folding-blades, and folding-rollers, with tapes and rods for conveying and guiding the paper from one pair of rollers to another, and the usual combination of rollers, &c., for folding the inset inside of the outset, all substantially as represented in the drawings.

In the drawings, A marks the framing of the machine, and B the feed table on which the sheets are placed and registered under the first folding-blade Q. 1 1, 2 2, and 3 3 indicate respectively the three pairs of folding-rollers. To the frame A I attach upon suitable brackets a long paste-trough or fountain, C, for the purpose of holding the supply of paste for the service of the first pasting-blade. This fountain is adjustable in its brackets, by means of screws in the well-known manner. The rear side of this fountain is formed by a paste-roller having a ratchet-wheel, *b*, on its end, engaging with a pawl, *c*, operated by a crank on the end of the shaft D of the paste-blade F. The paste-blade F is hung in the ends of arms E E, so as to be capable of turning to any desired extent. The arms E E are attached to the shaft D. The blade F is a thin strip of metal finely serrated on its edge. It is attached at the back to a rod, I, which is turned at right angles to the line of the blade and passes through a rotating guide-nut, J, pivoted to an arm, Z, projecting from the upper part of the frame. When the arms E E are raised the rod I slides in the nut J, and turns the paste-blade to a horizontal position, in which position its serrated edge is brought into contact with the surface of the paste-roller *a*. As the arms E E descend the rod I turns the blade F to a vertical position, in which it comes in contact with the sheet of paper lying on the table B, on the line of the back-fold of both the "outset" and "inset." In order to prevent the paste-blade F from daubing the table, and to insure its perfect contact throughout the length of the paper, there is laid across the table at the line of its contact, a strip, G, with a long slot in it, over which the paper is laid, thus forming an elastic bridge of paper for the paste-blade F to strike against. The paper yielding when the edge of the blade strikes it, allows a perfect contact of the two and insures a continuous line of paste to the paper. This strip G is adjustable to correspond with the position of the paste-fountain C and blade F, so that they work in concert, no matter for what size of paper they are set.

Just in front of the paste-blade F is a stripper, H, of wood, with a thin piece of rubber, *d*, set in its edge, and which plays loosely up and down a short distance on curved pieces *e*, extending from it and working in holes in

the ends of the arms E carrying the paste-blade F. These pieces *e* are bent in the form of arcs, so that when the arms E E descend the rubber strip *d* strikes the paper and binds it to the strip G, and on the further descent of the paste-blade, the stripper remains stationary, and prevents the paper from moving. But on the ascent of the paste-blade F, the stripper does not begin to rise till the paste-blade is entirely detached from the sheet of paper, but continues to hold the paper down, and prevents its adhering to and rising with the paste-blade. After the paper is released from the paste-blade, the further ascent of the arms E lifts the stripper H, and the paper is released, ready for the operation of the first folding-blade, when the operations of folding and cutting take place in the usual manner, and the sheet, both the inset and outset, are pasted together throughout the line of their back folds.

Motion is communicated to the paste-blade by a cam, K, and link, L, at the outer end of main shaft Y. The length of the link L is regulated by a right and left nut and screws, and the precise position of the blade F, when down relatively to the paper, is regulated by the adjusting bolt and screws on the end of the paste-blade shaft D.

The link L has projections or rack-teeth upon it, which engage with a hook on an arm, N, Fig. 2, (which operates the first folding-blade,) extending from the treadle-shaft M, so that when the first folding-blade Q is arrested, the paste-blade F is also arrested, and prevented from applying paste to the sheet. The fountain-roller is rotated interruptedly by a ratchet-wheel, *b*, and pawl *c*, working a crank-pin from the paste-arm shaft.

The second folding-blade arm U′ carries a paste-box, S, which is clearly represented in Figs. 5 and 6. It has a thin disk of metal, *j*, running in a slit, *g*, in the bottom of the box at one end, and having its edge milled or serrated to saw out any lumps of paste that may come in contact with it. The quantity of paste is regulated by a spring, *h*, and thumb-screw *i*. The slit *g* is made largest on the return side to prevent paste from gathering. It is hung on pins in the blade arm U′, so that when the folding-blade forces the paper between the folding-rollers, (the cam being so shaped and timed as to allow the blade to remain down during nearly the whole time of the passage of the paper,) the gum-rollers of the paste-box are in contact with the moving paper, and receive motion therefrom and impart it to the paste disk. By this arrangement a thin or narrow line of paste is put on the paper in the line of the third or last fold. The cup S is held up when the blade rises by ledges on its sides or ends, so as to allow the sheets to enter under it when the blade is up. If the paste-cup S remained in contact with the paper during the passage of its whole length, it would continue the paste-line to the extreme end, and when a number of signatures were folded and packed together, they would be stuck together by the paste at the extreme ends. To prevent this, the cam U, operating the second blade U′, has an adjusting-piece, so that the time the blade shall remain down, or the paste-wheel continue in contact with the paper, can be regulated according to the size of the sheet, and the paste-cup be caused to rise just before the tail-end of the sheet passes under the paste-roller, so that paste will not be applied quite out to the end of the sheets. The rollers opposite to the line of the paste are grooved, so as not to press the paste and spread it, or to bruise the paste-wheel by striking. This grooving of the rollers also allows the paste-roller to be a little larger than the propelling-rollers, and to press the paper slightly into the grooves, thus insuring more perfect contact of the roller and paper, and a continuous line of paste. It further prevents the paste from getting upon the rollers when the machine happens to be running without paper on it.

In order to secure the inset within the outset a paste-box, S^1, similar in construction to box S, is attached to the frame of the drop-roller Z′ that starts the inset between the reversing-rollers, which roller Z′ is also allowed to remain down, or in contact with the paper during most of its passage, in order to apply paste to the outside of the inset in a line with the last fold, thus completing the pasting together of the twenty-four pages at the bolt or back fold, and obviating the necessity of stitching. To fold and paste a sixteen-page sheet, the machine may be constructed as a plain octavo machine without the cutter, reversing-rollers, and drop-roller, or the same machine may be used by removing the paste-cup from the drop-roller and the cutters from the first rollers.

The covering attachment or device is situated at one side of the machine in a supplemental frame, A′, and consists of a feed-board, B′, Fig. 1, with a roller, C′, at its front edge, whose upper surface is on a line with the top of the table B′, and whose surface runs at same velocity as that of the second folding-rollers 2 2, and of the reversing-rollers 3 3. Over this cover-roller C′ is a drop-roller, D′, operated similarly to the drop-roller of a 12-mo. folder, with guides to feed the covers to, and a paste-cup, S^2, to spread a line of paste in its center line, as the cover-sheet runs in, the drop-roller D′ remaining down during the time the sheet is running in. This cover-sheet is carried by tapes and bars in the usual manner under the second folding-rollers 2 2, and under the inset or reversing rollers 3 3 until its forward edge strikes the last stop. In consequence of the distance it has to travel, it arrives there a little before the inset and outset, or at about the same time, so that it lies on its own set of tapes under the outset, while the inset lies above; and upon the descent of the last folding-blade all (the inset, outset, and cover,) are folded together, thus making a complete pamphlet of twenty-four pages,

with a cover of four pages, of a different sheet, and, if desired, of a different color, the whole being pasted together at the back folds, forming a union stronger and better than that effected by stitching.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine for folding and pasting paper, the adjustable paste-fountain C, in combination with the paste-blade F, and the mechanism for operating the same, all so constructed and arranged that they may be adjusted together for the purpose of adapting the machine to paste the various sizes of pages it is designed to fold, all substantially in the manner described.

2. The adjustable slotted strip G applied to the feed-table in the line of the back fold of the sheet, as and for the purpose stated.

3. The paste-blade F, with its shaft D and arms E, all constructed and operating as specified, in combination with the rod I and turning-guide J, as and for the purpose specified.

4. In combination with paste-blade F, the stripper H for holding down the sheet during the operation of the paste-blade, as set forth.

5. The paste-box S, provided with the serrated paste-blade *j*, and rollers *r r* for operating the same, as described and represented.

6. The combination of a paste-box with the arm carrying the folding-blade of a folding-machine, in the manner described and shown.

7. In combination with a paper folding and pasting machine, the supplemental frame A′, with its table, drop-roller, paste-box, and guides, arranged as described, for the purpose of supporting, feeding, and pasting the covering-sheets, in the manner specified.

The above specification of my said invenvention signed and witnessed at Philadelphia this 3d day of June, A. D. 1873.

CYRUS CHAMBERS, JR.

Witnesses:
WILLIAM MELHORN,
MARIS CHAMBERS.