

C. CHAMBERS, Jr.  
Paper-Folding Machine.

No. 216,601.

Patented June 17, 1879.

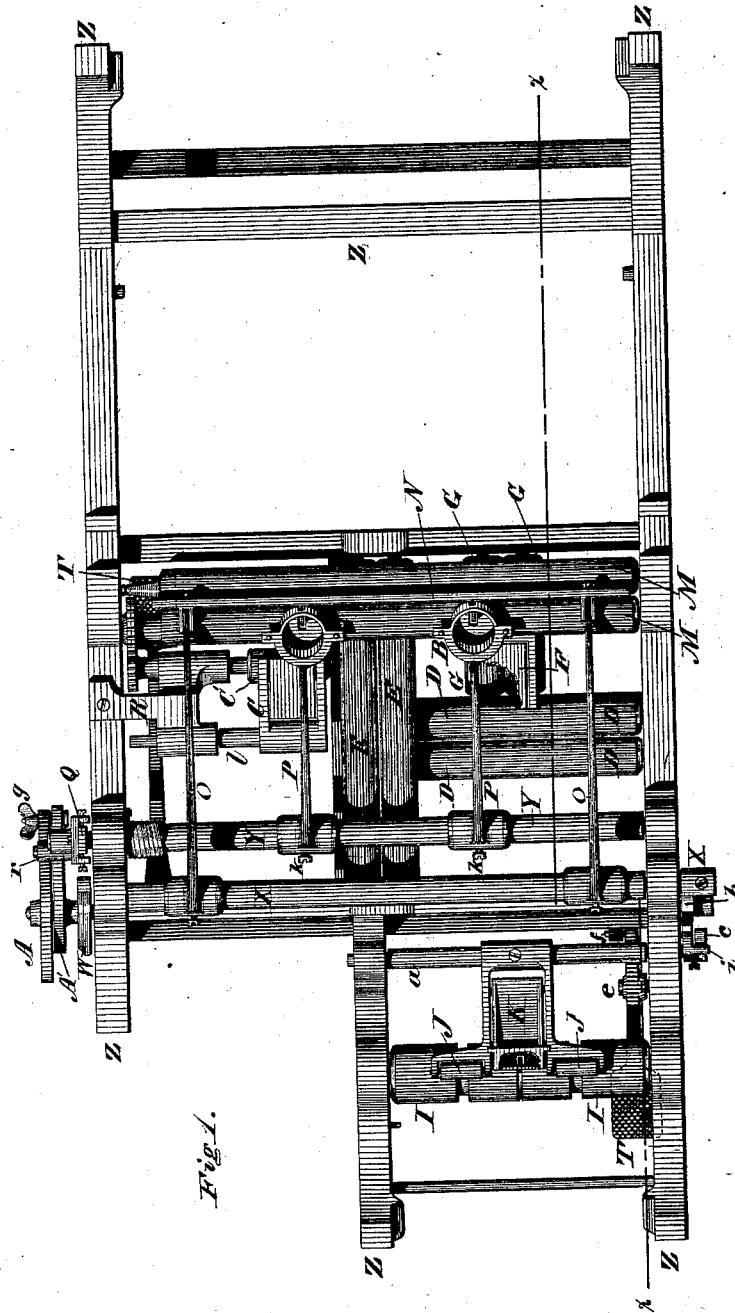


Fig. 1.

WITNESSES

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INVENTOR

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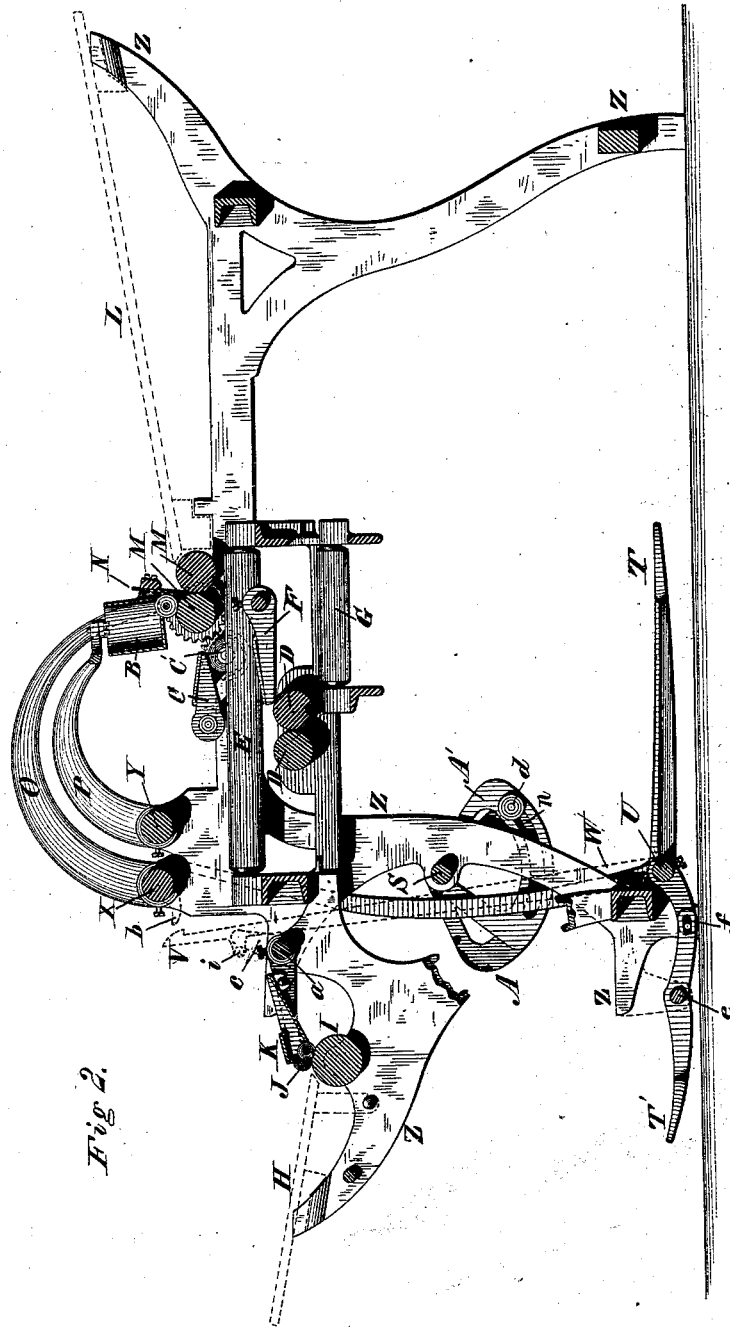


Fig. 2.

WITNESSES

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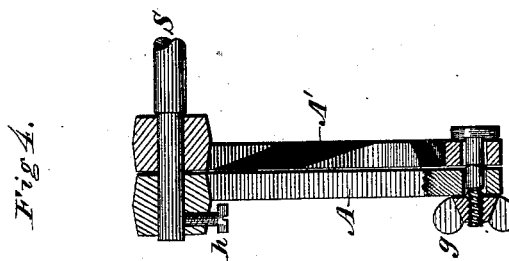
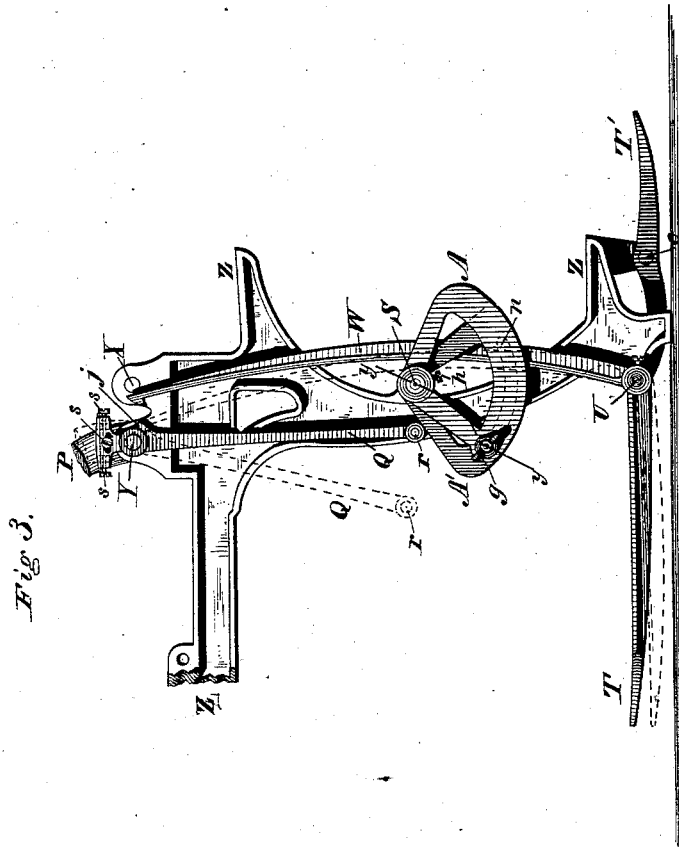
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# UNITED STATES PATENT OFFICE.

CYRUS CHAMBERS, JR., OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN PAPER-FOLDING MACHINES.

Specification forming part of Letters Patent No. **216,601**, dated June 17, 1879; application filed March 24, 1876.

*To all whom it may concern:*

Be it known that I, CYRUS CHAMBERS, JR., of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Paper-Folding Machines; 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 a plan or top view of the improved machine. Fig. 2 is a longitudinal vertical section on line *x x* of Fig. 1. Fig. 3 is a detail view, on an enlarged scale, of the adjustable paster-cam and arresting devices. Fig. 4 is a section on line *y y* of Fig. 3.

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

My invention consists of modifications and improvements of the machine for folding, covering, and pasting paper for which Letters Patent were granted to me June 29, 1875, numbered 164,904, the object being to adapt that machine to the pasting and covering of pamphlets of thirty-two pages and of various sizes.

The improvements consist in the changes of construction, form, arrangement, and adjustment hereinafter particularly set forth.

The general principles of construction which characterize the numerous paper-folding machines hitherto patented by me are not departed from in the present machine, and no minute description, therefore, is required.

The sheets are introduced by blades between folding-rollers, severed by cutters, carried from one pair of rollers to another by tapes and bars, and finally packed in a trough in the usual and well-known mode, these movements being produced, timed, regulated, and arrested by mechanism of the same character as that which I have heretofore employed.

The bank of paper to be operated upon is placed upon a feed-table, *L*, whence it is fed by the operator over the first pair of folding-rollers, *M M*, between which it is introduced by the first folding-blade, *N*; thence it passes upon proper tapes and bars, receiving successive folds and lines of paste, between rollers *E E*, *D D*, and *G G*, and finally drops into a packing-box suitably placed to receive the finished work.

Above the first pair of rollers I place the

paste-cups *B B*, provided with the usual paste-wheels. These cups are attached to the ends of arms *P*, which are fixed to rock-shaft *Y* by sleeves sliding on feathers, and held by set-screws *k k*, so that the position of the cups can be laterally adjusted indefinitely on shaft *Y* at pleasure. The throw of the cups *B B* is produced by cam *A* on the end of shaft *S*, operating arm *Q*, adjustably attached to the end of shaft *Y*. (See Fig. 3.) The arm *Q* is provided with a roller, *r*, which runs over the face of cam *A*. The upper end of the arm is adjusted in its relation to shaft *Y* by set-screws *s s s*.

Cam *A* is fixed to the end of shaft *S* by screw *h*, (see Figs. 3 and 4,) and inside of said cam, on the same shaft, is a leaf, *A'*, which turns loosely on the shaft. It is provided with a curved slot, *n*, through which passes a pin or bolt, the outer end of which receives a thumb-nut, *g*, by which the leaf *A'* can be clamped to the cam *A* in any desired position, so as to time the throw of the cam and the arm *Q*, as may be required.

A spur, *j*, on the upper end of arm *Q* is adapted to engage with a hook on the upper end of the hook-arm *W*, Fig. 3, which is fixed to the end of shaft *U*, and operated by the treadle *T*, under the control of the operator who feeds the printed sheets to the machine. The office of this hook is to arrest the descent of the paste-cups *B B* at the pleasure of the operator.

The first folding-blade, *N*, is attached to arms *O O*, which are adjustably fixed to shaft *X* by sleeves and set-screws, so that the throw of the blade can be regulated at pleasure. On the end of shaft *X* is a spur, *b*, adapted to engage with a hook on the upper end of hook-arm *V*, Fig. 2, fixed to one end of shaft *U*, and operated by the treadle *T'*, under the control of the operator who feeds the pamphlet-covers to the machine from the supplemental feed-table *H*. The office of this hook-arm is to arrest the descent of the blade *N* at the pleasure of the operator.

It will be observed that both the hook-arms *V* and *W* are attached to the same rock-shaft *U*, and both treadles *T* and *T'* operate this shaft and simultaneously control both the folding-blade *N* and the paste-cups *B B*, so that either of the operators of the machine can ar-

rest the descent of both cups and blade at will. The object of this arrangement will be explained hereinafter.

In a bracket, R, attached to the side framing, rocks the shaft of paste-cup C, which runs in contact with roller C', driven by being geared to one of the first folding-rollers, as clearly shown in Fig. 1. This paste-cup applies a line of paste to the sheet as it issues from between the first pair of folding-rollers and passes between the rollers on the paste-cup and the driven roller C'. Both the cup C and roller C' are made adjustable in the ordinary way on their shafts, so that the paste-line can be applied in the centers of the margins of various sized paper, and the cup C is made to rise and fall to correspond with the movements of the sheet by a cam and lever applied in the usual manner.

A paste-cup, F, is hung in a bracket attached to the cross-framing in a position, as shown in Figs. 1 and 2, to apply a line of paste opposite to the line of the last fold, and in line with the line of contact of the last pair of folding-rollers, G G, thus completing all the paste-lines required for a thirty-two-page pamphlet.

A supplemental feed-table, H, is placed at the end of the machine opposite to the last pair of folding-rollers, G G, for the reception of the covers intended to be pasted on the outside of the folded and pasted pamphlet.

The cover, while being fed in between the carrying-roller I and the drop-rollers J J, receives a line of paste from the paste-cup K, and is then carried by suitable tapes and rods over the rollers G G and under the folded sheet about to receive its last fold. The cup K and rollers J J are attached to a rock-shaft, *a*, the outer end of which is provided with a short arm, *c*, adapted to engage with a pin, *i*, on arm V, so that the cup and roller can be raised and lowered and held up at will by the operation of treadle T'. The treadle T' is pivoted to the frame at *e*, and is connected by a pin-and-slot joint, *f*, to the rock-shaft U, which it operates.

The speed of roller I is so regulated that it will carry the cover-sheet into the machine and against the last stop at the same time that the thrice-folded sheet, which started from the feed-table L at the same time with itself, arrives there, so that the two can pass between the rollers G G and receive the last fold together.

The operation is as follows: Two operators are required to operate the machine, one to feed the printed sheets from the feed-table L, and another to feed the covers from the table H. The first controls the treadle T, and the second the treadle T', by means of either of which treadles either operator is enabled to arrest simultaneously the descent of the first

folding-blade, the first paste-cups, B B, and the last paste-cup, K, and drop-rollers J J. The movements of the machine are thus placed completely under the control of both operators, either of whom can prevent a cover from passing in without a folded sheet to which it is to be attached, or a folded sheet from entering without a cover to complete it. Each operator controls the other, and thus there is a double security for accuracy of work.

The first paste-cups, B, spread two lines of paste along the first back margin as the sheet is passing in between the first pair of rollers and receiving the first fold. The next back margins receive their line of paste from cup C, which applies the paste to the sheet as it is issuing from the first pair of rollers, the paper passing between cup C and roller C'. The second fold being given by rollers E E, the twice-folded sheet, with its three paste-lines, passes between the third pair of rollers, D D, and receives another paste-line from the paste-cup F, which spreads it opposite to the line of the last fold, and in line with the line of contact of the last pair of folding-rollers, G G, thus completing the paste-lines required for a thirty-two-page pamphlet.

The cover is fed from table H simultaneously with the sheet from table L; but the movement of that part of the mechanism is so timed that sheet and cover shall both reach the last stop at the same instant. A single line of paste is applied by cup K to the inside of the cover, which is carried by tapes and rods into the machine and brought directly under the thrice folded and pasted sheet, and passes with it between rollers G G, which cause the cover to adhere in its proper position to the completed pamphlet, which falls into a packing-box placed beneath the machine to receive it.

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

1. The combination, with the rock-shaft U, of the treadles T and T', arms V and W, spurs *b* and *j*, and shafts X and Y, blade N, and paste-cups B B, all arranged and operating as and for the purpose set forth.

2. In combination with the shaft U, arms V and W, spurs *b* and *j*, shafts X Y, blade N, and cups B B, all as described, the drop-roller J, shaft *a*, arm *c*, and pin *i*, all arranged and operating in the manner and for the purpose specified.

The above specification of my said invention signed and witnessed at Philadelphia this 22d day of March, A. D. 1876.

CYRUS CHAMBERS, JR.

Witnesses:

J. HOWARD CHAMBERS,  
J. HOWARD JOHN.