

No. 678,094.

Patented July 9, 1901.

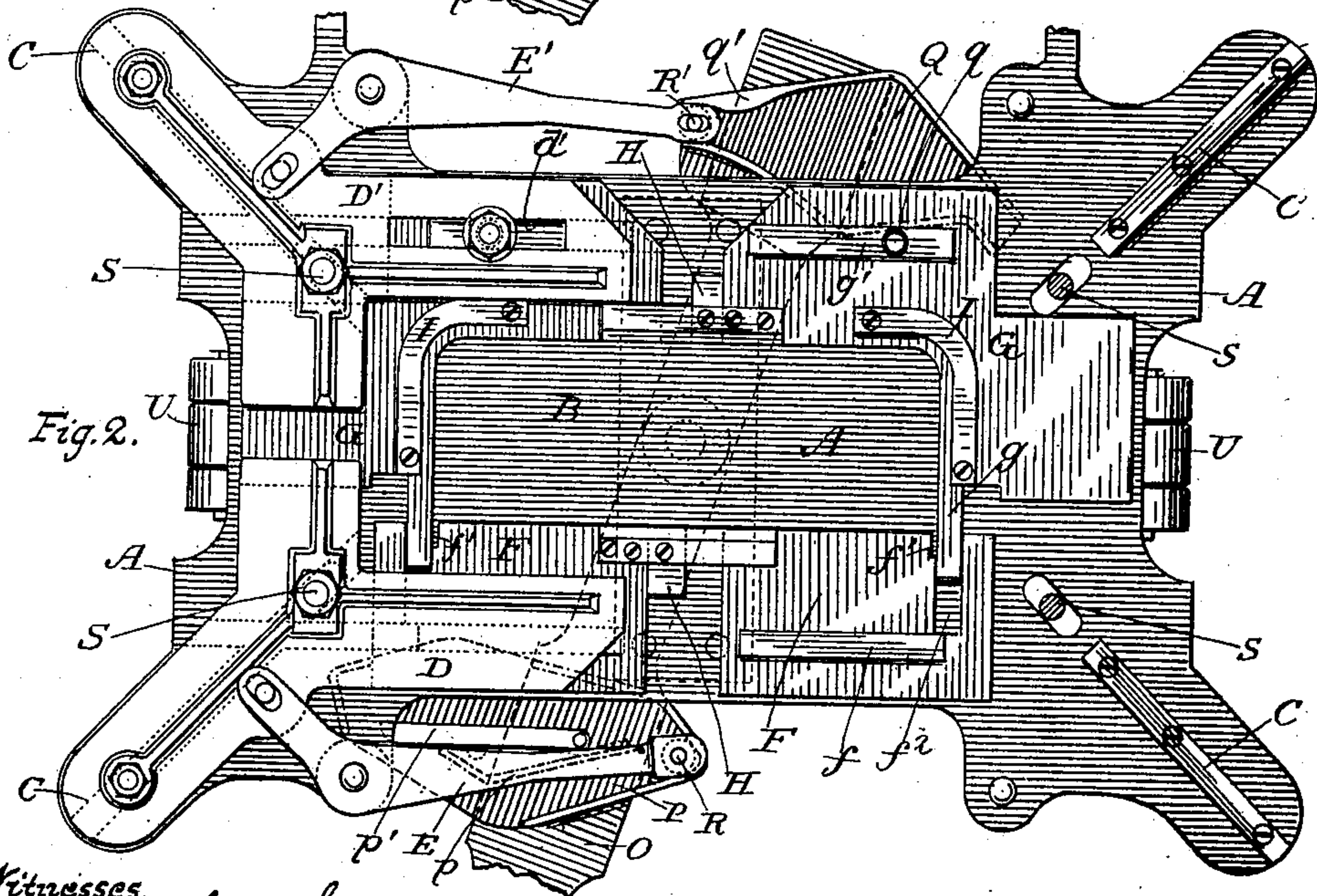
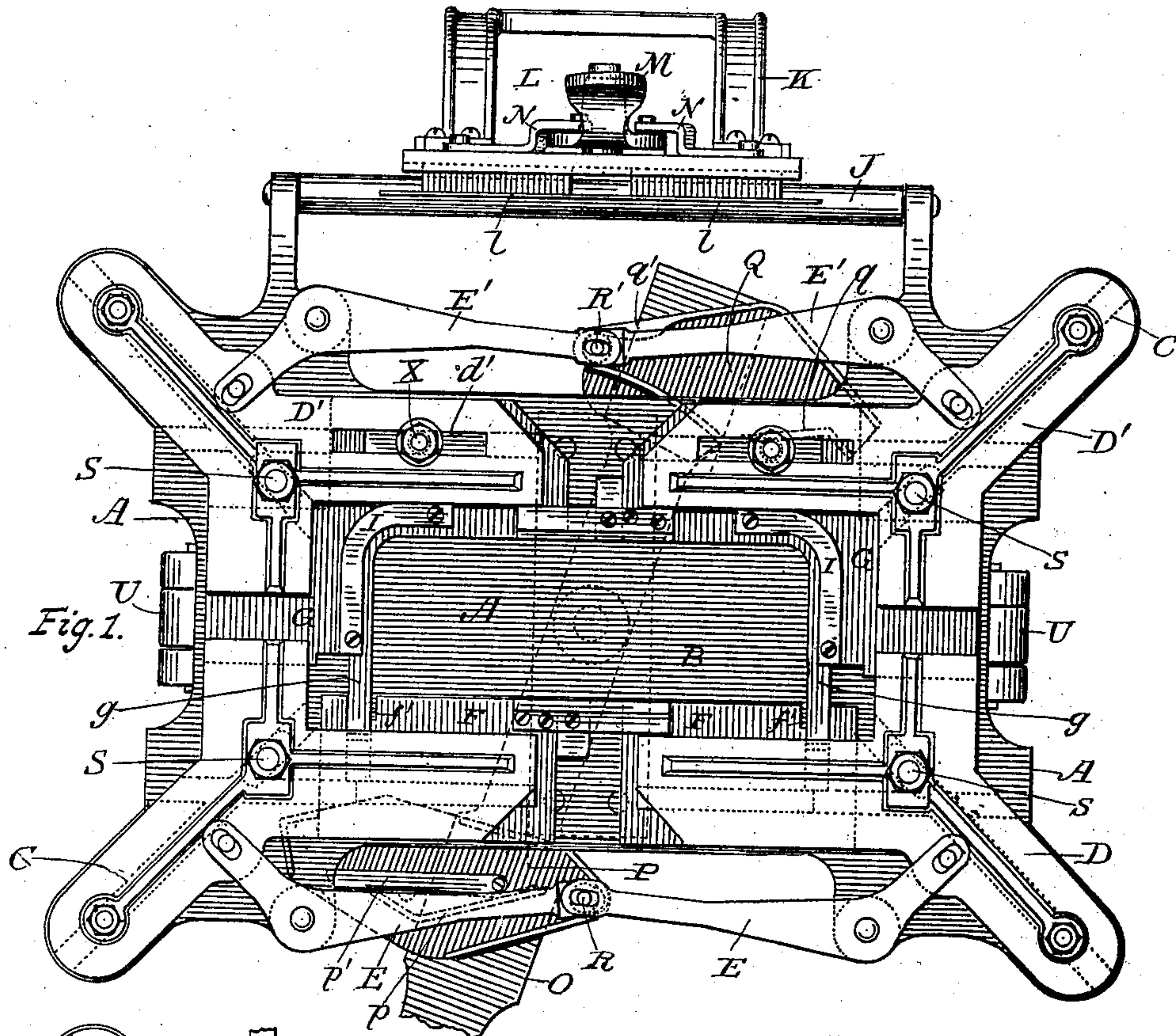
E. H. BROWN.

FOLDING MACHINE FOR COLLAR BLANKS, &c.

(Application filed Sept. 10, 1900.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses.  
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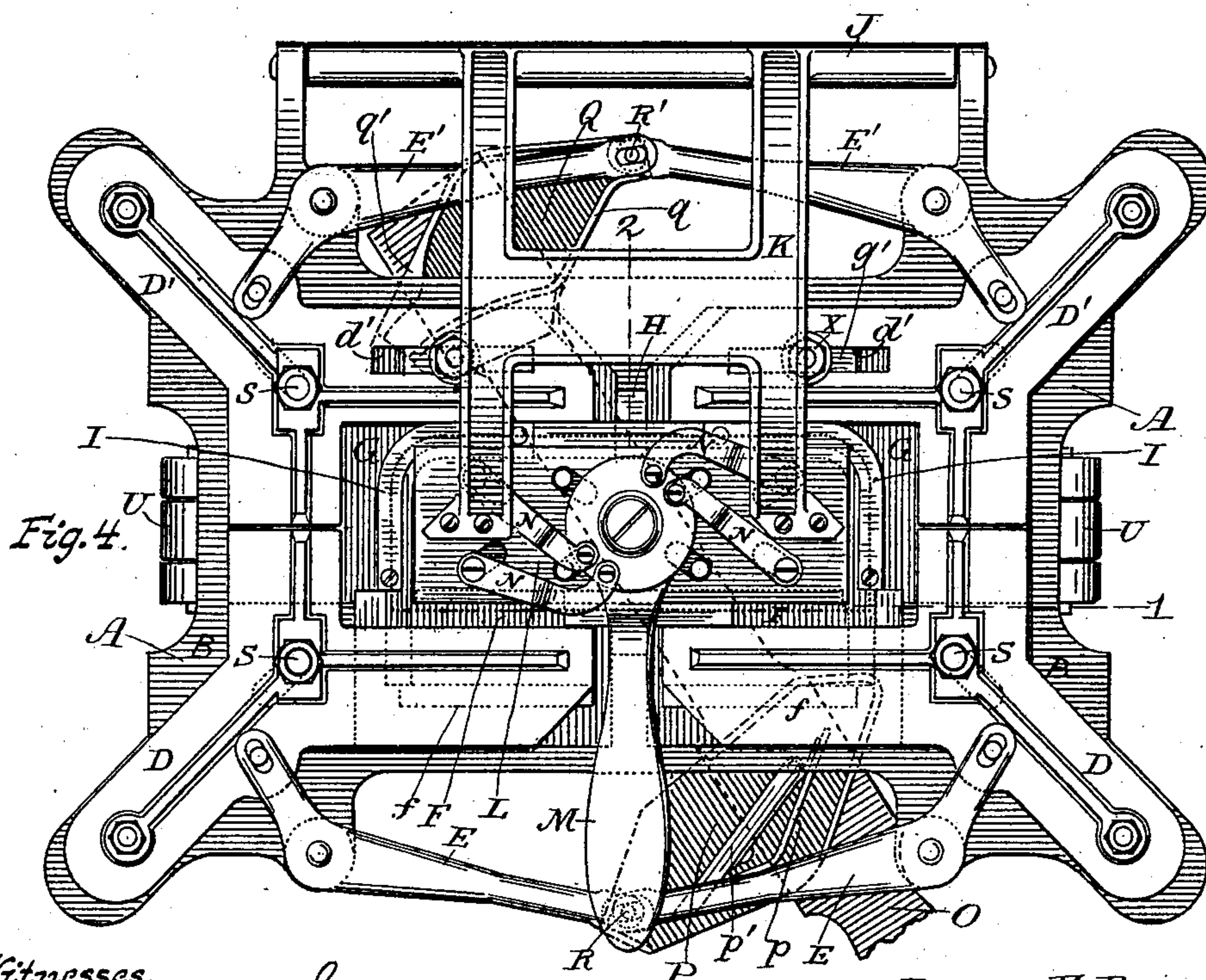
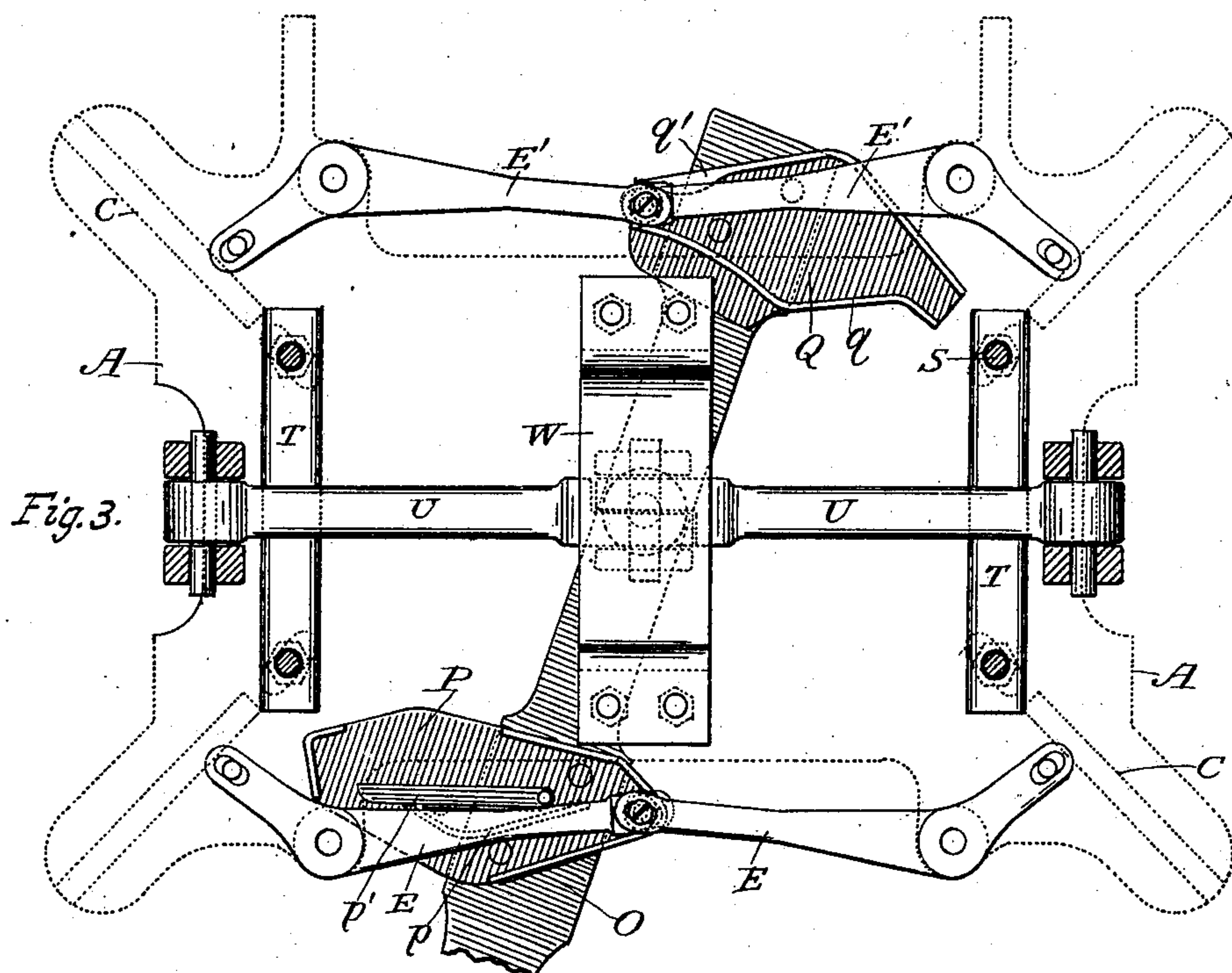
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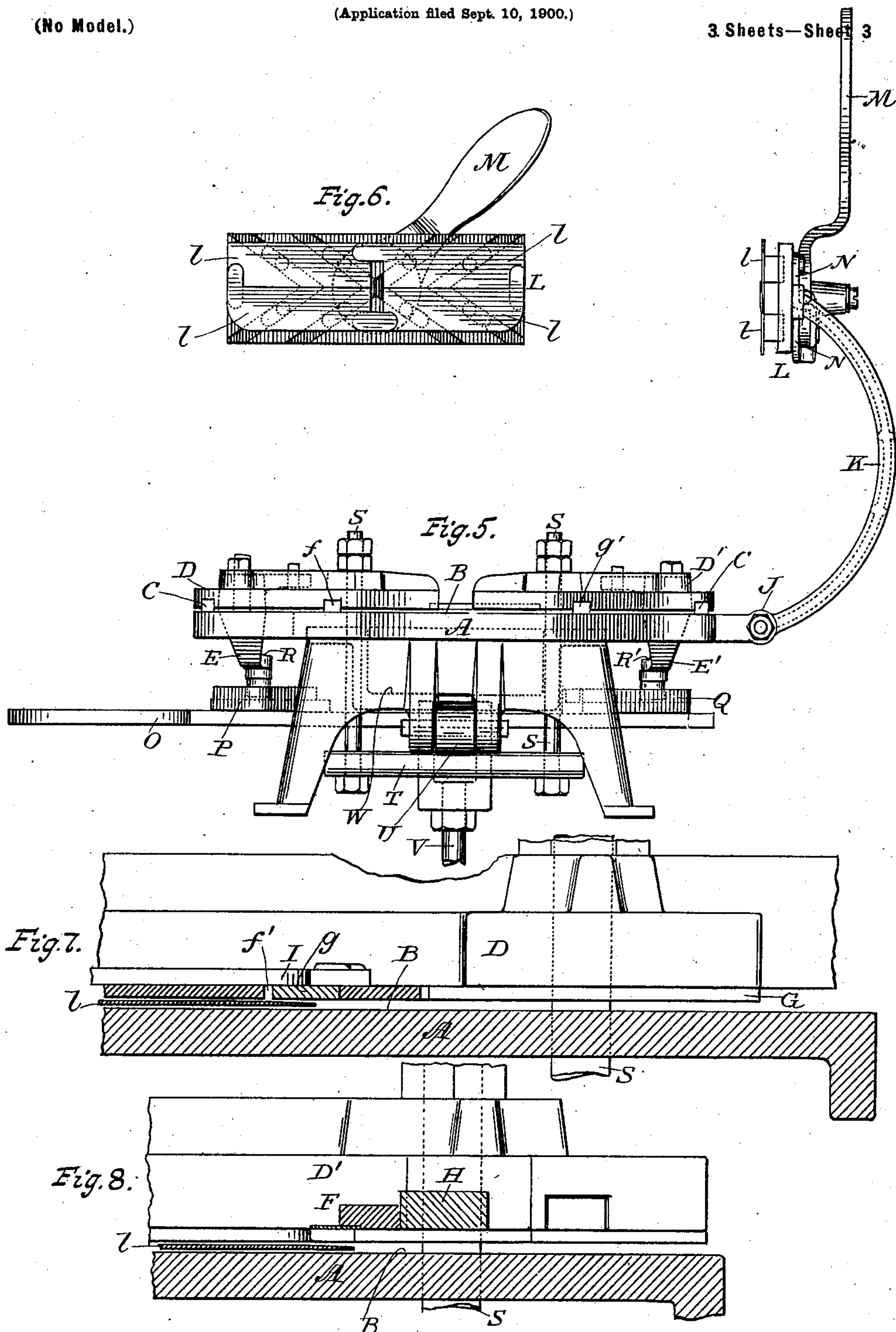
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3 Sheets—Sheet 3



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# UNITED STATES PATENT OFFICE.

EUGENE H. BROWN, OF TROY, NEW YORK.

## FOLDING-MACHINE FOR COLLAR-BLANKS, &c.

SPECIFICATION forming part of Letters Patent No. 678,094, dated July 9, 1901.

Application filed September 10, 1900. Serial No. 29,612. (No model.)

*To all whom it may concern:*

Be it known that I, EUGENE H. BROWN, a citizen of the United States, residing at Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Folding-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to folding-machines, and has for its object to provide means for turning over the edges of collar and cuff blanks preparatory to stitching them together, and particularly to form a square corner where adjacent edges lap over each other. This object I accomplish by the means illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a folding-machine embodying my invention. Fig. 2 is a plan view of the device shown in Fig. 1 with the templet and two of the folder-brackets removed. Fig. 3 is a plan view of the operating-lever and cams, connecting-arms, and parts of a pressing device. Fig. 4 is a plan view of the parts shown in Fig. 1 with the templet bearing against the base-plate and the folders drawn inward. Fig. 5 is an end view of the parts constructed and arranged as shown in Fig. 1. Fig. 6 is a view of the under side of the templet with its plates closed together. Fig. 7 is a vertical longitudinal section taken on line 1 of Fig. 4. Fig. 8 is a vertical transverse section taken on line 2 of Fig. 4.

As illustrated in the drawings, A represents the body of a folding-machine arranged in the form of a platform or base, which may be provided with heating appliances of any suitable construction. Such base is also provided with a base-plate or surface B. (Indicated in outline by the dotted lines of Fig. 3 and shown in full lines of Figs. 1, 2, and 4.) The corners of the base-plate B are provided with ribs or ways C, extending diagonally across said corners. Folder-brackets D, provided with grooves corresponding with the ways C, have an inward sliding movement diagonally on said base-plate by means of said grooves and corresponding ways C. Arms E, hinged or pivoted to the base A in any suitable man-

ner and hinged together at their inner ends by means of the stud R, are loosely connected at their outer ends with said folder-brackets D, preferably by means of a slot and engaging pin, as shown in the drawings. The inner hinged ends of the arms E are operated by means of a lever O, provided on its forward end with a cam P, having a bearing-surface *p*. This cam is also provided with a trip-arm *p'*, pivoted to said cam. The lever O is provided on its rear end with a cam Q, having bearing-surfaces *q q'*. Side-folders F are provided with ribs or ways *f*, which engage corresponding grooves formed in the folder-brackets D. Such side-folders F are also provided with recesses *f'*, which engage arms or projections *g*, formed on the combined side and end folders G. The combined side and end folders G are provided with ribs or ways *g'*, which engage corresponding slots in the folder-brackets D', by means of which the folder-brackets D' may be adjusted relatively to said combined side and end folders G.

L represents a templet secured to the bracket K, which is supported on the bar J, hinged to the base A of the machine. This templet is of well-known construction, in which the plates *l* are controlled by means of a handle M.

In operation the parts of my device are first arranged as shown in Fig. 1, and the blanks to form the collar or cuff are arranged on the base-plate B, between the gages I. The templet L is then drawn down so that the plates *l* bear against all of said blanks except that portion of the edge which is designed to be turned over. When the folders are opened for the cloth to be laid in place on the base-plate B, the stud R, joining the inner ends of the arms E, is located relatively to the cam P, as shown in Figs. 1 and 2. The stud R' and the rear arms E' are located relatively to the cam Q, as shown in Figs. 1 and 2. The lever O is then turned to the right, and the stud R is brought over against the rib *p* of the cam P. A continuation of such movement of the lever O to the right moves the stud R along the rib *p* until it reaches the angle of said rib *p*. This movement of the lever O carries outward the hinged inner ends of the arms E and forces the outer ends of such arms inward, at the same time moving



inward the folder-brackets D in a diagonal line corresponding to the ways C. This diagonal inward movement of the brackets D carries inward the folders F; but the diagonal movement of the brackets D is transformed into a direct transverse movement of the folders F by means of the ways  $f$  of the folders engaging a corresponding groove in the under side of the folder-bracket D, while the extension  $g$  of the folder G by engaging the recess  $f^2$ , formed in the folders F, controls the transverse line of movement of said folders F. During this movement the stud R' on the rear arms E' is moving free from contact with the bearing edges of the cam Q and the folders G are at rest. A continuation of the movement of the lever O to the right throws the stud R' of the rear arms E' against the rib  $q$  of the cam Q until the said stud bears against the angled part of said rib  $q$ , as shown in Fig. 4. During this movement the stud R of the front arms E is free from the bearing-surface of the cam P and the folders F are at rest. After the forward side-folders F have been moved inward by the partial movement of the lever O they remain stationary during the continuation of such movement of the lever in the same direction, and such continuation of the movement of the lever O by means of the rear cam Q operating the ends of the pivoted arms E' forces the rear brackets D' and the combined end and side folders G inward diagonally. This inward movement of such end and side folders G draws the sections of the side-folders F longitudinally by means of the arms  $g$ , which connect or engage with the recesses  $f^2$ , formed in the front folders F. The inward transverse movement of the folders F and the diagonal inward movement of the combined end and side folders G not only turn the edges of the collar or cuff blanks over onto the plates  $l$  of the templet L, but in so doing they have a sliding movement which irons and presses such overturned edges, thereby keeping them in the desired position even after they have been removed from the machine, and the sectional side-folder F has a double sliding or ironing movement on the edge of said blank—first when said folder is moved transversely of the surface-plate B and again when the sections of such folder are moved longitudinally by the inward movement of the combined end and side folders G. The ends of the side-folders F are provided with recesses or slots  $f'$ , one side of which is formed by the projections  $g$  of the combined side and end folders G, and the depth of such recesses is so regulated or adjusted that the portion of the folder F at the inner end of the recess  $f'$  comes in contact with the edge of the blanks before such folders F have completed their inward movement, and such recessed portions of the folders thereby carry such ends of the overturned edge inward slightly, so that when the combined side and end folders G move inward they turn over the edges of the ends of

the blanks squarely onto the edges of the sides, so as to form a square corner. When the combined end and side folders G have been forced inward after the inward movement of the side-folders F and the edges of the blanks have been turned over onto the extended edge of the templet L, the handle M of the templet is then reversed, so as to draw in the plates  $l$ , forming such templet, to the smallest dimensions or outline, as is shown in Fig. 6, and the templet can then be raised out of engagement with the folders even when the folders are pressed inward to the greatest extent. After such templet has been raised the turned edges of the blanks are located directly under the edge of the folders. There is a slight vertical play between the folder-brackets D and D' and the base-plate B, so that when the edges of the blanks have been turned over and the templet removed pressure may be applied by means of the foot through the vertical bar V and the connecting-arms U, which arms cross the stirrup-bars T, which are in turn connected by bolts S with the folder-brackets D and D'. Such pressure, with the aid of heat applied to the blanks through the heat-chamber connected with the base B in any suitable manner, sets the overturned edges of the blanks firmly in position. The movement of the lever O to the left brings the stud R of the front arms E against the inner side of the trip-lever  $p'$ , as shown in Fig. 4. As this movement is continued it draws inward the inner ends of the arms E and throws the outer ends of such arms outward, carrying outward and backward with them the brackets D and the folders F, which engage said brackets. During this movement the stud R' of the rear arms E' is free from engagement with the bearing-surface of the rear cam Q, and the combined side and end folders G are at rest. The folders F are brought back contracted together, whereas they were pressed inward separated from each other. An adjustable gage-block H is secured to one of the sections of the side-folders F and determines the extent to which such sections may be brought together or separated from each other to adjust such folders to blanks of different dimensions. When the stud R of the forward arms E reaches the pivoted end of the lever  $p'$ , the stud R' of the rear cam Q is turned against the rib  $q'$  of the cam Q, and the continuation of that movement forces the stud R' and the inner ends of the arms E' inward and their outer ends outward, which carry with them the folder-brackets D' backward and away from each other and separate the sections of the folders F by means of the projections  $g$ , which engage the recesses  $f^2$  of the folders F. This movement is continued until the stud R of the forward cam is brought in its original position, as shown in Fig. 1, when the blanks can be readily removed. I do not desire to limit myself to such diagonally-movable brackets D for the side-folders F, and in some instances I prefer to dispense with such con-



struction and provide brackets having a movement transversely of the base-plate B; nor do I desire to be limited to the construction shown herein, in which the end-folders are shown formed integral with the rear side-folders, and in some instances I propose to construct both the side-folders independently of the end-folders, so that the side-folders may be operated together independently of the end-folders and alternately with such end-folders, and I desire to cover broadly side-folders operated in advance of and alternately with end-folders, whether such end-folders be formed integral with side-folders or independently thereof.

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

1. In a folding-machine, the combination with a base-plate, of a templet, a sectional side-folder, combined side and end folders movable alternately with said side-folder, pivoted arms adapted to move said folders, and a lever provided with a cam, having a bearing-surface controlling the arms which move the side-folder; while the arms controlling the side and end folders are idle, and a cam having a bearing-surface adapted to control the arms which move the side and end folders, while the opposite arms are idle, substantially as shown and described.

2. In a folding-machine, the combination with a base-plate, of a templet, a sectional side-folder, side and end folders movable alternately with said side-folder, a lever provided on its rear end with a cam adapted to operate said side and end folders and on its forward end with a cam and a trip-arm projecting at one end beyond the bearing edge of said cam, and pivoted arms connecting said lever and sliding brackets controlling said folders, substantially as shown and described.

3. In a folding-machine, the combination with a base-plate, of a templet, side-folders adjustable in sections, and combined side and end folders having a sliding engagement with said side-folders whereby an inward movement of such combined end and side folders will produce a longitudinal movement of the sections of the opposite side-folder, toward each other, substantially as shown and described.

4. In a folding-machine, the combination with a base-plate, of a templet, a sectional side-folder engaging with opposite end-folders, sliding brackets secured to said side and end folders, a lever provided with cams, and pivoted arms connecting said cams and brackets, substantially as shown and described.

5. In a folding-machine, the combination with a base-plate, of a templet combined end and side folders, a sectional side-folder movable in a direct transverse line by means of engagement with arms of the end-folders, diagonally-movable brackets, a sliding connection between said brackets and folder, whereby a diagonal movement of said brackets pro-

duces a direct transverse movement of the sections of said side-folder, substantially as shown and described.

6. In a folding-machine, the combination with a base-plate, of a templet, side and end folders, a side-folder in sections each section having a direct transverse movement by means of sliding connections with the adjacent side and end folder, and means for operating the same, substantially as shown and described.

7. In a folding-machine, the combination with a base-plate, of a templet, a sectional side-folder provided with a recess at its outer ends, side and end folders provided with arms extending adjacent to and forming one side of said recess, and means for operating said side-folder in advance of said side and end folders, substantially as shown and described.

8. In a folding-machine, the combination with a base-plate, of a templet, folder-brackets movable inwardly on said base-plate, a side-folder in sections carried by said brackets, said sections being movable toward and from each other independently of said brackets, substantially as shown and described.

9. In a folding-machine, the combination with a base-plate, of a templet, folder-brackets movable in diagonal lines inwardly of said base-plate, a side-folder in sections carried by said brackets said sections being movable toward and from each other independently of said brackets, substantially as shown and described.

10. In a folding-machine, the combination with a base-plate, of a templet, folder-brackets movable inwardly on said base-plate, a sectional side-folder carried by said brackets, and an adjusting-block arranged between the sections of said side-folder, substantially as shown and described.

11. In a folding-machine, the combination with a base-plate, of a templet, folder-brackets movable inwardly of said base-plate, a side-folder in sections carried by said bracket, combined side and end folders engaging the sections of said side-folder and adapted to move said sections toward and from each other independently of said brackets, substantially as shown and described.

12. In a folding-machine, the combination with a base-plate, of a templet, a side-folder in sections, said sections being movable transversely of said base-plate and toward and from each other, combined side and end folders engaging said sections and movable diagonally on said base-plate, and means for operating said folders, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

EUGENE H. BROWN.

Witnesses:

ROBERT W. HARDEL,  
MARY P. ADAMS.