

June 1, 1926.

1,587,244

J. H. SHIPLEY

PAPER FOLDING MACHINE

Filed August 13, 1923

2 Sheets-Sheet 1

Fig. 1.

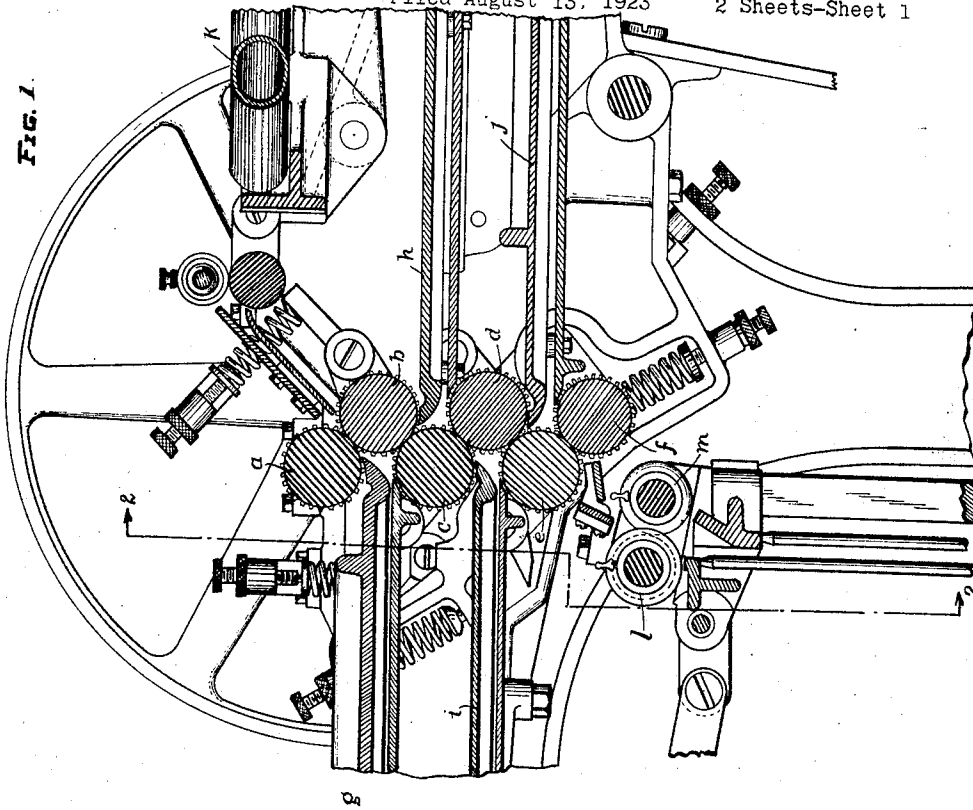
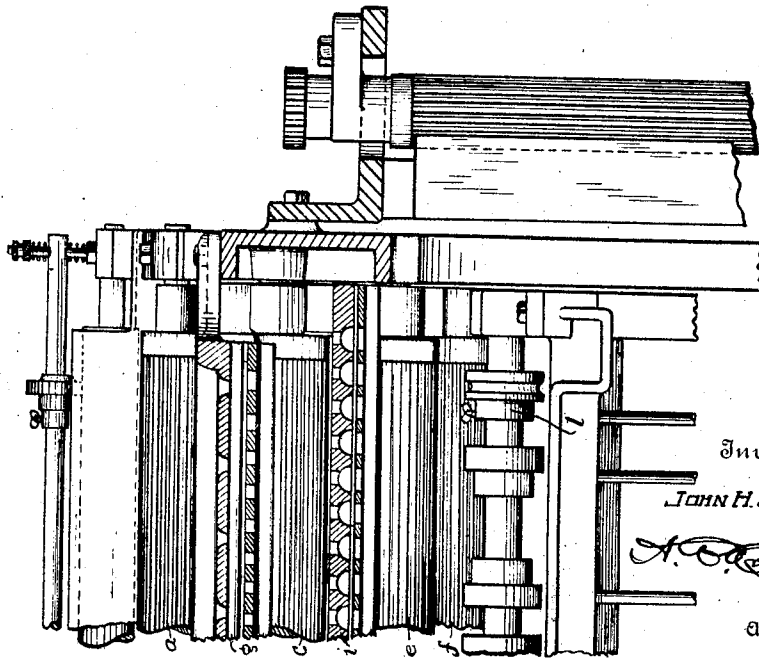


Fig. 2.



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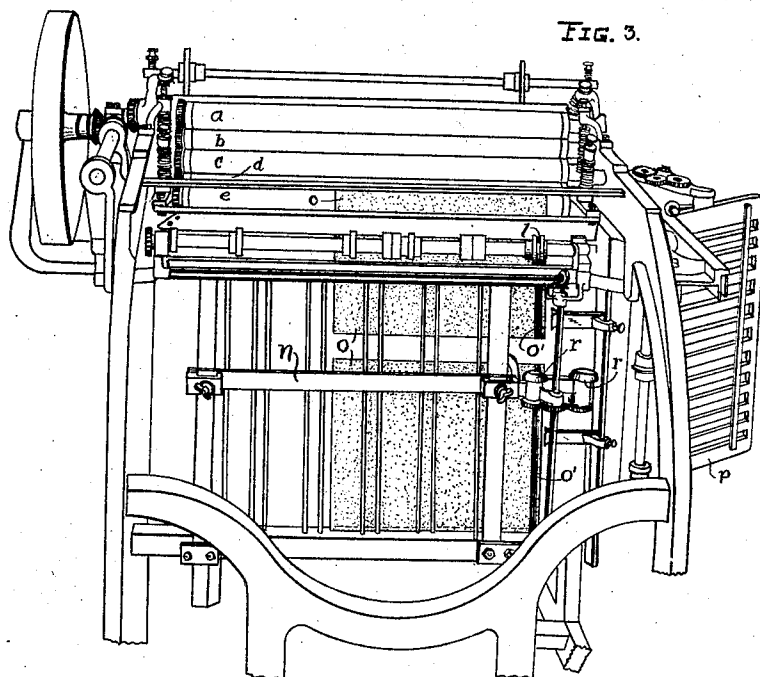


FIG. 5.

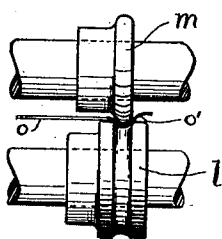
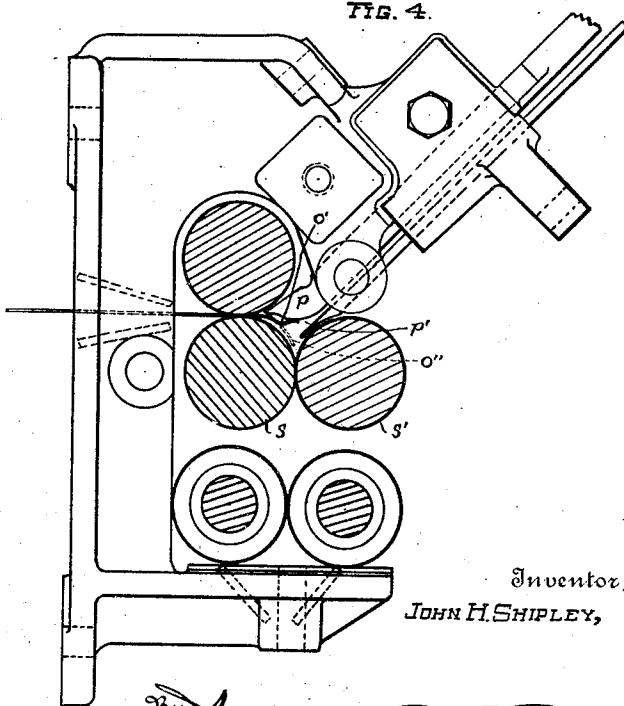


FIG. 4.



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UNITED STATES PATENT OFFICE.

JOHN H. SHIPLEY, OF CLEVELAND, OHIO, ASSIGNOR TO THE CLEVELAND FOLDING MACHINE COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

PAPER-FOLDING MACHINE.

Application filed August 13, 1923. Serial No. 657,159.

My invention relates to improvements in paper-folding machines and has for its object the provision of means for insuring the proper entry of the sheet of paper into the folding plate. More particularly, my present improvement contemplates the employment of suitable means for giving an initial set or crimp to the entering edge of the sheet of paper, whereby it is caused invariably to enter the throat of the folding plate for receiving the desired fold.

A difficulty encountered in the operation of folding machines hitherto, which this improvement specifically avoids or corrects, has resided in the folding of sheets of paper which are curled or cut adjacent to a fold, or have been otherwise slightly bent or set adjacent to their edges, thereby rendering the entry of the sheets within the folding plate uncertain or uneven. This tendency I have successfully avoided by positioning a pair of crimping rolls so that they will engage the edge of each sheet before it passes into the throat of the folding plate and give it the proper curvature or set adjacent to said edge.

The features and advantages of my improvement may best be explained by making reference to the accompanying drawings, wherein:

Figure 1 is a vertical sectional view of a paper-folding machine equipped with my improvement.

Fig. 2 is another vertical section on line 2—2, Fig. 1; both of said views illustrating in fragmentary form the upper portion of the folding machine.

Fig. 3 is a smaller view in elevation illustrating the general assemblage of the folding machine, the position of the sheets as they pass through the crimping rolls and the laterally positioned folding plate.

Fig. 4 is an enlarged sectional view illustrating the entry of the crimped edge within the throat of the folding plate, and

Fig. 5 is an enlarged fragmentary view of the crimping rolls.

Throughout the several figures of the drawings I have employed the same character of reference to indicate similar parts.

Figure 1 illustrates sectionally the six associated folding and buckling rolls *a*, *b*, *c*, *d*, *e* and *f* co-operating with the horizontal

folding plates *g*, *h*, *i* and *j*, respectively. These perform one or more folding operations upon the sheets as they come from the delivery table *k*, in the well known manner.

A pair of crimping rolls *l*, *m* is positioned to engage each sheet adjacent to its right hand edge, viewed in Fig. 3, as it comes from the last of the buckling rolls and enters the transverse feeding frame *n*. The sheets *o* are shown with the lateral crimp or set *o'* effected by these crimping rolls adjacent to the forward or entering edge.

Referring to Fig. 4, which shows the crimped sheet as it is about to be entered within the throat *p'* of the lateral folding plate *p* by means of the horizontal rolls *r*, *r'* (Fig. 3), it will be seen that the crimp *o'* serves to make the edges of the paper follow the curvature of the throat and permit the proper entry of the sheet or signature into the folding plate. If, for example, one of the edges should have an initial set, as indicated by the dotted line *o''*, it will tend to, and frequently will enter between the buckling rolls *s*, *s'*, thereby causing a misfold or even jamming the folding plate, unless this tendency is suitably corrected. When the entering edges are suitably crimped, however, the signature invariably and more readily enters the folding plate to effect a desired fold, as compared with the best current practice.

It will be appreciated that my invention is not necessarily restricted to the specific means for imparting the desired set to the signature nor the particular positioning of such means with respect to a lateral folding plate, except as defined in the appended claims.

Having now described apparatus embodying my invention and its preferred mode of operation and advantages, I claim as new and desire to secure by Letters Patent, together with such modifications as may be made by one skilled in the art, the following:

1. The herein described method of preparing a signature for mechanically folding the same, which consists in imparting a predetermined set to its entering edge, whereby it is caused properly to enter the throat of the folding plate, substantially as set forth.
2. The herein described method of preparing a signature for effecting a final fold

therein, which consists in imparting longitudinally of the entering edges thereof a predetermined set or crimp, whereby said edges may more readily be entered into the folding plate, substantially as set forth.

3. In a paper-folding machine, the combination with a folding plate and its coacting rolls, of means positioned within the machine in advance thereof for imparting a predetermined set longitudinally of the edge of the sheet, substantially as set forth.

4. In a paper-folding machine, the combination with a folding plate and its coacting rolls, of means for advancing the signature thereto, and crimping rolls associated therewith whereby to impart a set longitudinally of the edge of the signature, substantially as set forth.

5. In a paper-folding machine, the combination with a folding plate and its buckling and folding rolls, of paired crimping rolls positioned to engage the entering edge of the signature in advance of the buckling and folding rolls, adapted to impart a set

longitudinally of said edge, substantially as set forth.

6. In a paper-folding machine, the combination with a lateral folding plate and its coacting rolls, of means for advancing the signature thereto, and additional means engaging the entering edge of the signature in advance of the coacting rolls, whereby a set is imparted to said entering edge insuring its entry within the folding plate, substantially as set forth.

7. In a paper-folding machine of the class described, the combination with horizontal and lateral folding plates and their coacting rolls, of crimping rolls interposed between said horizontal and lateral folding plates and suitably positioned to engage and crimp the entering edge of the signature prior to its entry within the lateral folding plate, substantially as set forth.

In testimony whereof I do now affix my signature.

JOHN H. SHIPLEY.