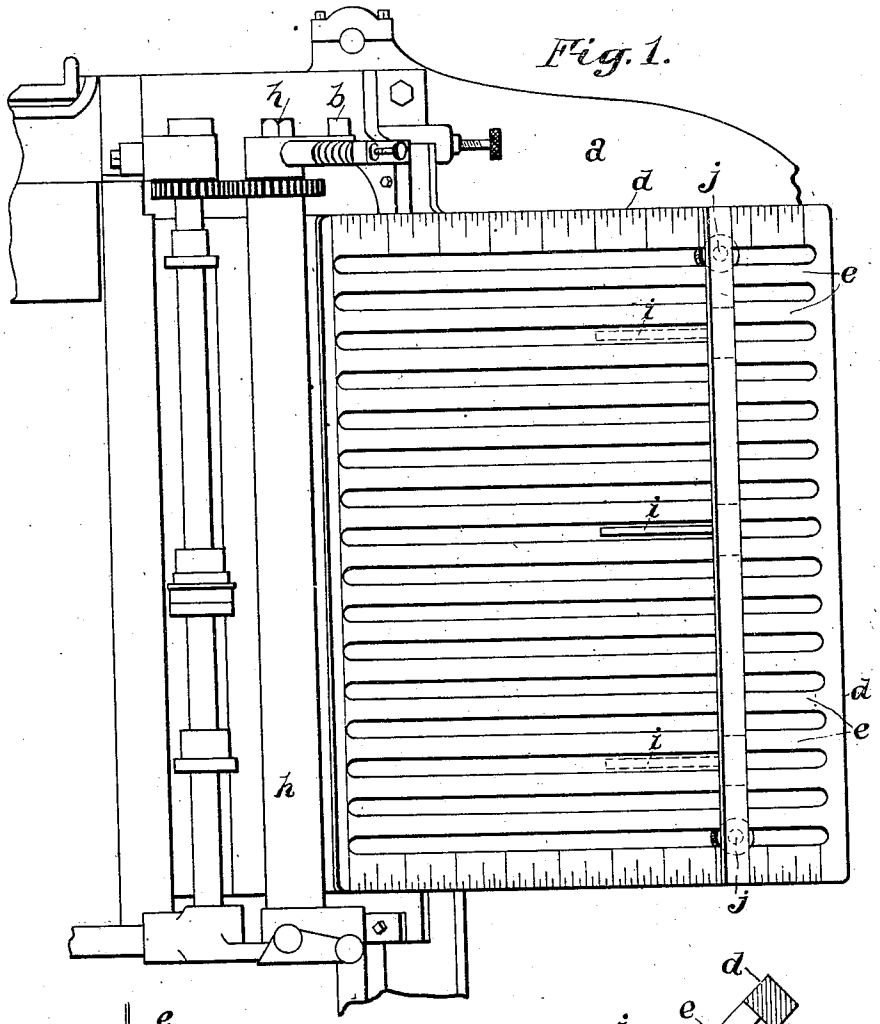
R. HITCHCOCK.

FOLDING MACHINE.

APPLICATION FILED APR. 15, 1914.

1,275,425. Patented Aug. 13, 1918.

Fig. 1.



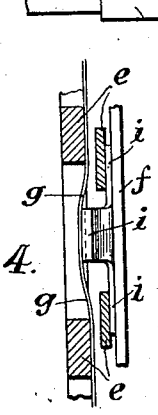


Fig. 4.

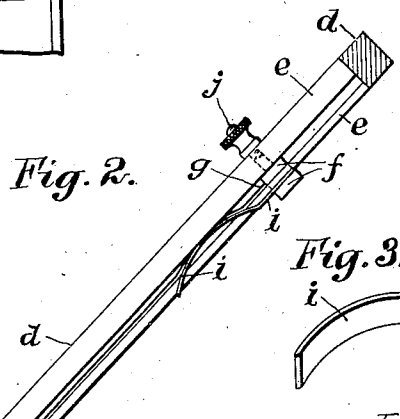
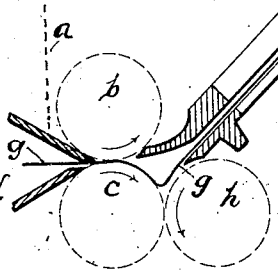


Fig. 2.

Fig. 3.



Witnesses:-

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UNITED STATES PATENT OFFICE.

REUBEN HITCHCOCK, OF CLEVELAND, OHIO, ASSIGNOR TO THE CLEVELAND FOLDING MACHINE COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

FOLDING-MACHINE.

1,275,425. Specification of Letters Patent. Patented Aug. 13, 1918.

Application filed April 15, 1914. Serial No. 831,957.

To all whom it may concern:

Be it known that I, REUBEN HITCHCOCK, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Folding-Machines, of which the following is a specification.

My invention relates to improvements in folding machines, and more particularly to certain improvements pertaining to the folding plates or guides of said folding machines, whereby accuracy in forming the folds is insured.

It has been found in practice with certain types of folding machines, especially when heavier weights of paper stock are operated upon, that the extended end of such paper stock within the folding plate is liable to sag or become deflected, so that its edges are out of alinement, and the creasing rolls, in consequence, will form a fold that is not exactly at right angles with the edges. This results in the production of imperfect signatures or folded matter. Inasmuch as the sheets are rapidly passed into and out of the folding plate, any corrective means must not appreciably impede the movement of the folded sheet therein, nor mar its appearance in any way.

Accordingly, I have provided the folding frame or plate with suitable means adapted to sustain or support the folded sheet while passing into and out of said frame or plate, here present in one or more bowed springs adapted to be engaged sufficiently to retain the position of the sheet, even in a vertical folding frame, support or side plate.

My improvements may be more readily explained in connection with the accompanying sheet of drawings, wherein:—

Figure 1 is a partial view in side elevation of a folding machine and its vertical folding plate, to which my improvement has been applied,

Fig. 2 is a transverse section thereof, partially diagrammatic in character, illustrating the folded sheet or signature within said folding plate,

Fig. 3 is a perspective view of one of the bowed springs preferably employed therein, and Fig. 4 is an enlarged fragmentary cross-section showing the deflection of the paper.

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

Although my invention is applicable to the folding plates of different types of folding machines, I have illustrated it in its preferred and most useful adaptation to the vertically positioned folding plate, designed to receive the sheet or signature from the buckling rolls. Sufficient portions of the folding machine frame and apparatus only are shown to indicate the purpose and advantages of my improvement.

The folding machine frame *a* is provided with three vertically positioned rolls, of which *b*, *c*, are the buckling rolls, designed to pass the paper into the folding plate *d*. This folding plate extends at an angle of 45 degrees from the machine, and is of the form comprising spaced grids *e e* between which the paper readily passes.

The adjustable stop *f* is adapted to be positioned at any desired distance along the folding plate, which may be accurately gaged by the scale shown thereon. Two set-screws *j*, permit its adjustment at any desired distance from the co-acting rolls. The buckling rolls *b*, *c*, are adapted to force the folded sheet of paper *g* against said stop, whereupon it will be passed between the creasing rolls *c*, *h*, as indicated in Fig. 2.

In order to prevent the sagging of the sheet, while it is within the folding frame, I preferably provide one or more bowed springs *i*, which extend between the bars of the grid and into the path of the paper previous to its engagement with the stop. Accordingly, the spring or springs will be engaged, and thereby hold the paper from sagging, so that its extended portion within the frame is retained with its edges in alinement with the remainder of the folded sheet which has not passed between the rolls. These resilient members or deflectors also serve partly to overcome any natural spring in the paper, and thereby retain the plies of the sheet or signature closely together. In consequence, the fold between the rolls *c*, *h*, invariably will be formed at right angles with the edges of the paper, and this simple provision permits the very rapid operation of the machine. It will be understood that the length and tension of the bowed spring or springs *i* may be varied to cause the lateral deflection of the paper, shown in Figs. 2 and 4, suited to the conditions under which the machine is operating and the character of paper operated upon. Also, other suit-

able deflecting members or resilient means, permitting the ready passage of the paper, while retaining it in proper position within the folding frame or plate, may be substituted for the simple spring or springs herewith shown and described.

Having now set forth the preferred embodiment of my invention, I claim as new and desire to secure by Letters Patent, the following:—

1. In a folding machine, the combination with co-acting buckling and folding rolls, of a vertically positioned side-plate associated therewith, comprising opposing grids spaced apart to permit the passage of the paper, an adjustable paper stop with which the sheets are adapted to engage, and an adjustable bowed spring extending through registering openings in the grids, adapted to engage and deflect the sheets for maintaining their edges in alinement while traveling in the side-plate, substantially as set forth.

2. In a folding machine, the combination with the vertically positioned side plate thereof and its co-acting folding and buckling rolls, of a paper-stop within said side plate and a bowed spring positioned to bear against the folded sheet to deflect it and maintain its edges in alinement while in said side plate, substantially as set forth.

3. In a folding machine, the combination with a folding plate thereof and its co-acting vertically positioned side- and buckling rolls, of an adjustable paper-stop and an adjustable deflector associated therewith and positioned to bear against the folded sheet and temporarily maintain said sheet in its relative position while traveling therein, substantially as set forth.

4. In a folding machine, the combination with its right-angle folding mechanism, comprising folding and buckling rolls, a side plate vertically positioned adjacent thereto, a paper stop therein, and an adjustable deflecting spring associated with said side plate and adapted to bear upon the folded sheet and maintain its edges in alinement while said sheet is traveling therein, substantially as set forth.

5. In a folding machine, the combination with co-acting buckling and folding rolls, of a side-plate associated therewith, comprising spaced opposing grids between which the paper is adapted to pass, an adjustable paper stop therein and a bowed spring extending through one of the grid openings into the path of the paper adapted to be engaged by the paper and maintain its linear position while moving within the frame, substantially as set forth.

6. In a folding machine, the combination with co-acting rolls, of an associated side-plate comprising separated grids between which the paper is adapted to pass, an adjustable paper stop therein, and an adjustable deflecting-member extending between the grids into the path of the paper, adapted laterally to displace and support the same while moving within the frame, substantially as set forth.

7. In a paper folding machine, the combination with co-acting folding and buckling rolls, of an associated side-plate comprising vertically positioned spaced grids, an adjustable paper stop, and a resilient deflector-member extending between the grids into the path of the paper and adapted to engage the signature to retain its vertical alinement and hold the plies together while traveling within the side-plate.

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

REUBEN HITCHCOCK.

Witnesses:

W. B. ALFORD,

ALBERT LYNN LAWRENCE.