No. 632,447. Patented Sept. 5, 1899.

T. C. DEXTER.

BACK STOP FOR PAPER FOLDING MACHINES.

(Application filed Aug. 12, 1898.)

(No Model.) 2 Sheets—Sheet 1.

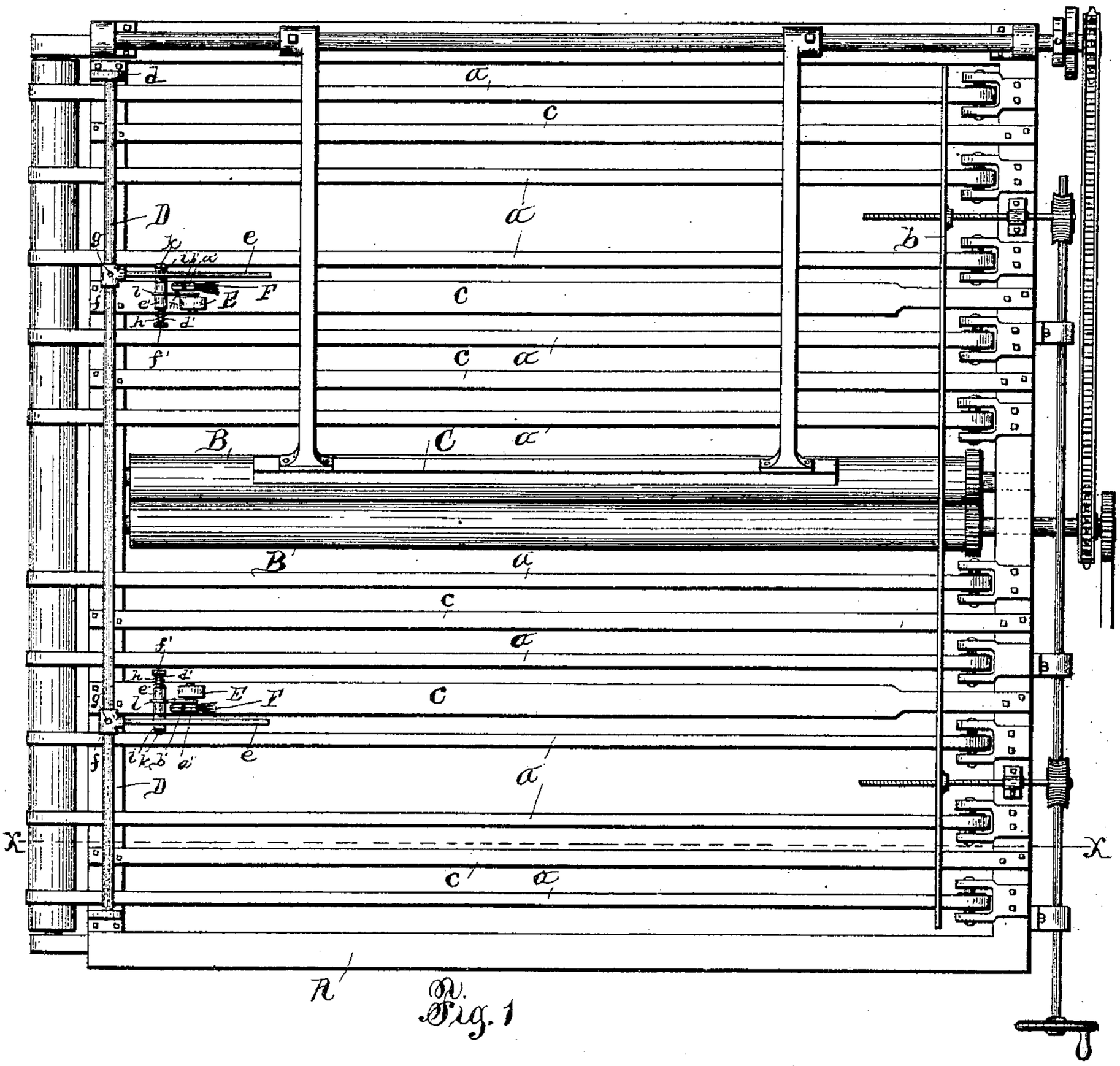

Fig. 1.

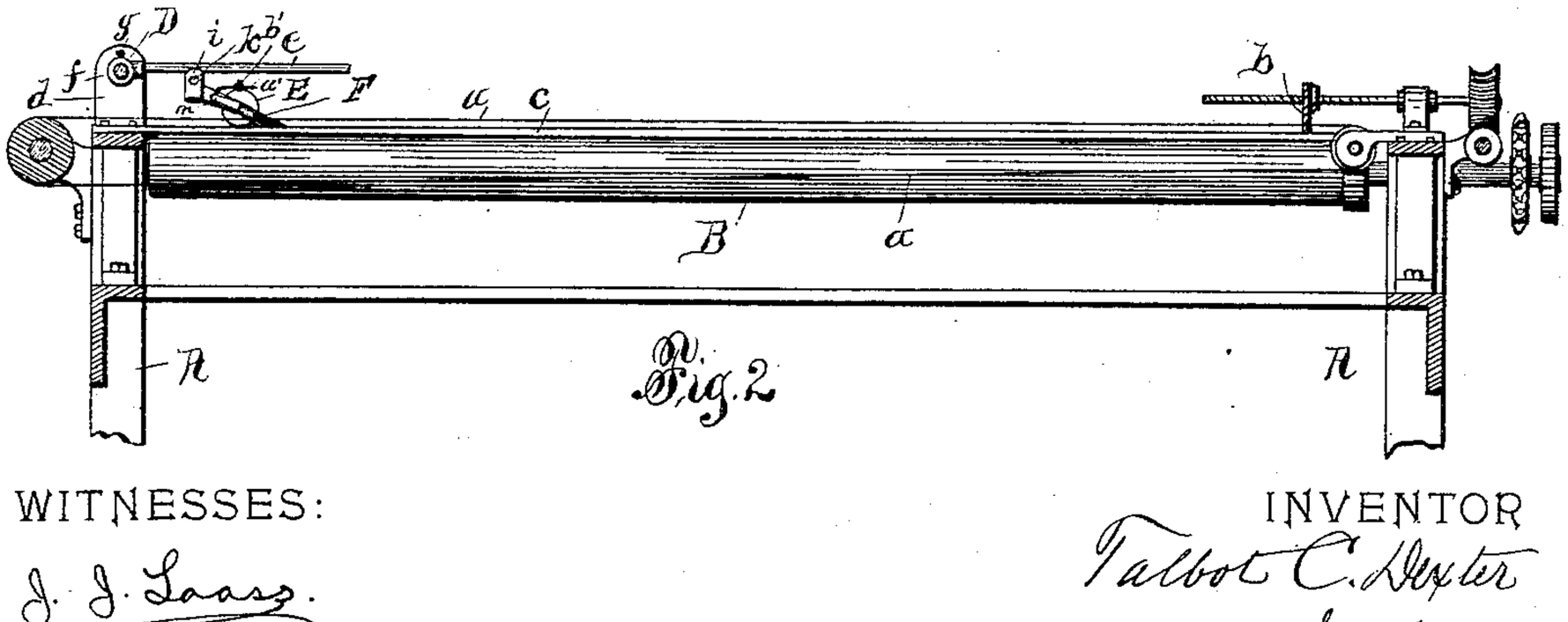

Fig. 2.

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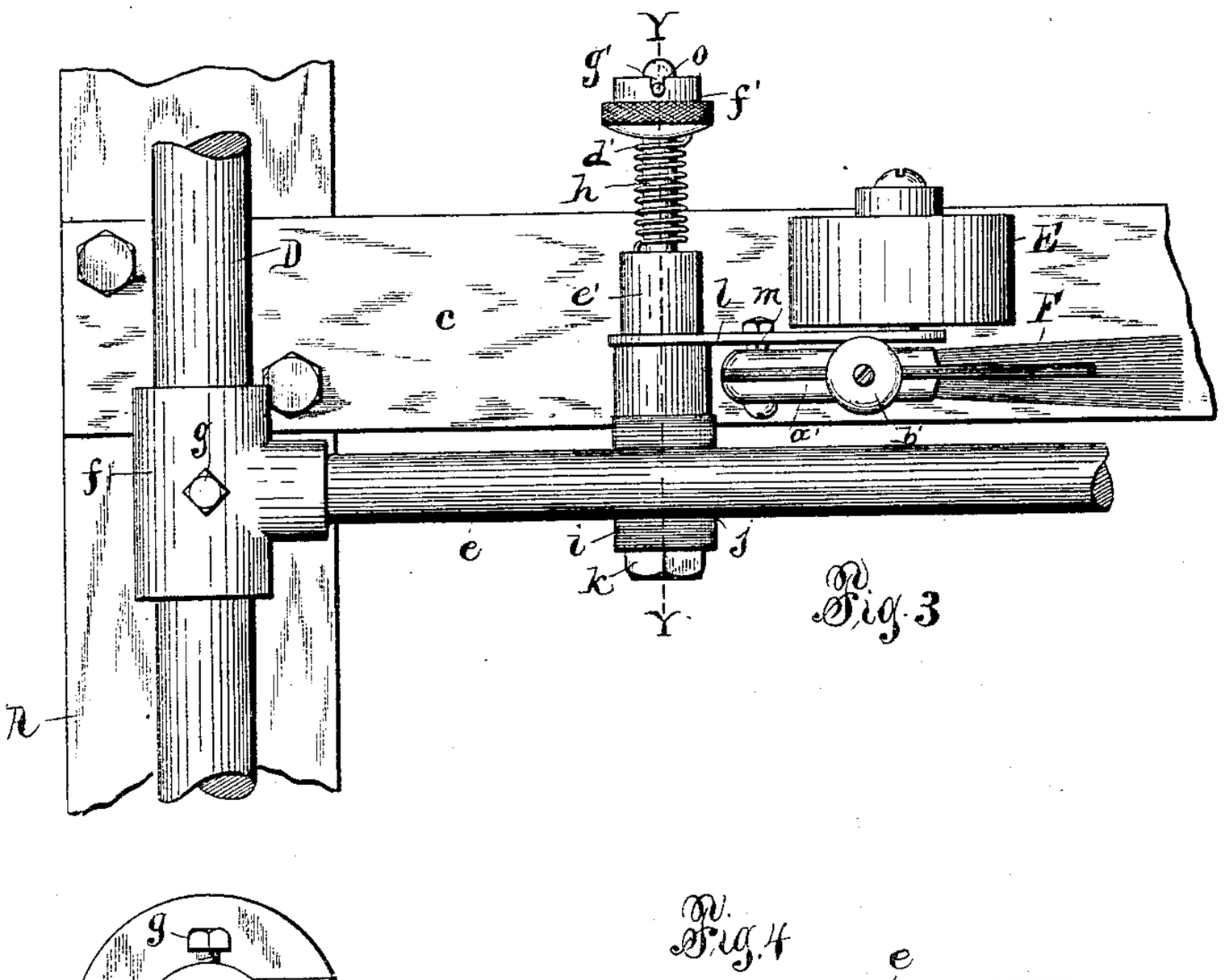

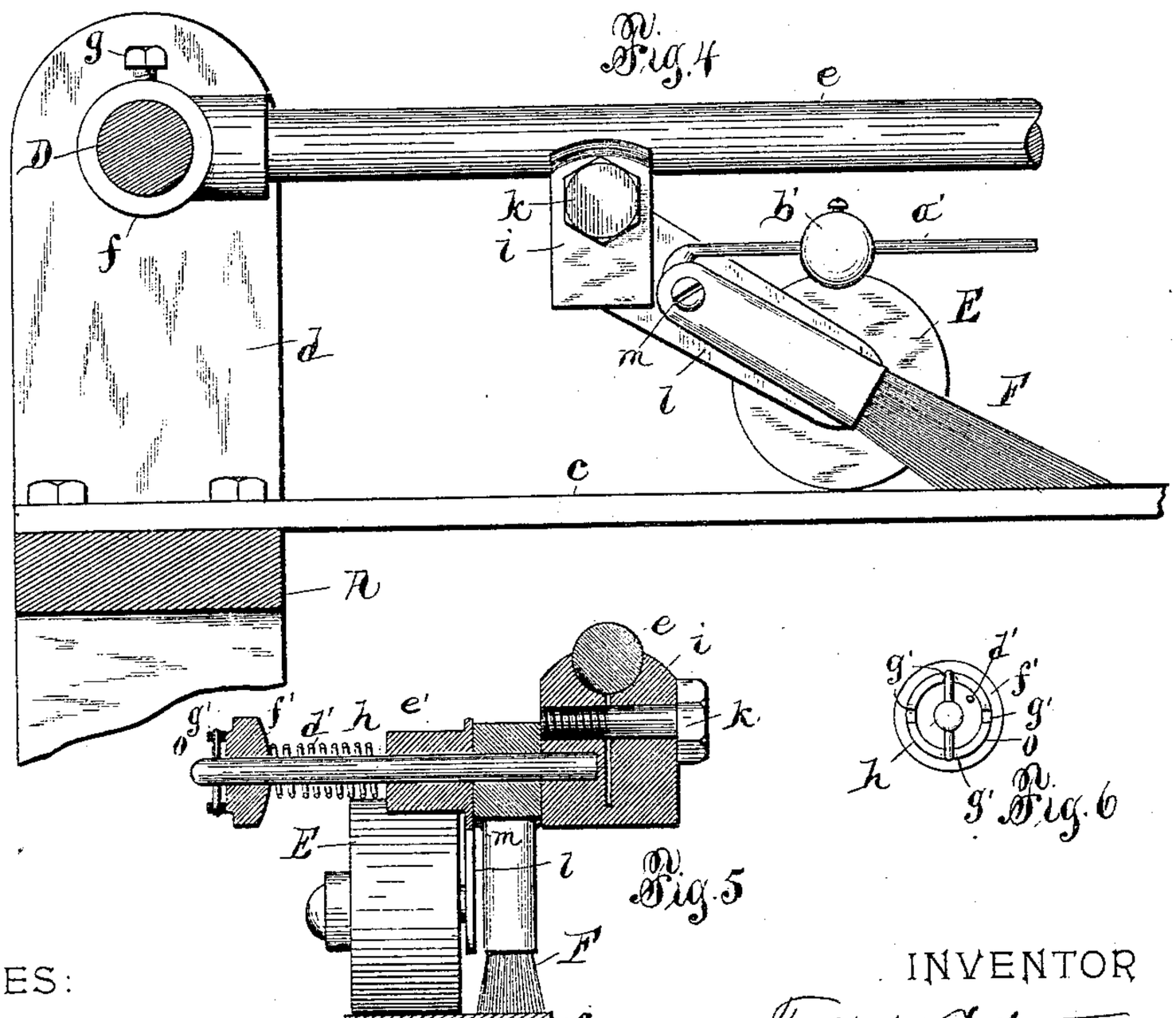

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UNITED STATES PATENT OFFICE.

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BACK STOP FOR PAPER-FOLDING MACHINES.

SPECIFICATION forming part of Letters Patent No. 632,447, dated September 5, 1899.

Application filed August 12, 1898. Serial No. 688,425. (No model.)

To all whom it may concern:

Be it known that I, TALBOT C. DEXTER, of Pearl River, in the county of Rockland, in the State of New York, have invented new and useful Improvements in Back Stops for Paper-Folding Machines, &c., of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of machines which are designed to either fold or rule or otherwise operate on sheets of paper carried into the machine by means of traveling tapes or analogous conveyers.

The object of the invention is to provide more efficient and reliable means for preventing the rebounding of the sheet incident to the impact of the advance edge of the sheet against the usual front stop, which arrests the advance movement of the sheet.

It has been found by experience that the sheets of paper fed into the machine often vary in width, and for that reason it has been very difficult to provide a back stop capable of engaging the rear edges of different-sized sheets to effectually prevent the rebounding thereof. This difficulty is overcome by my present invention, which consists in the following novel construction and arrangement of elements.

In the accompanying drawings, Figure 1 is a plan view of a paper-folding machine equipped with my improved back stop and presser-roller. Fig. 2 is a longitudinal section on line X X in Fig. 1. Fig. 3 is an enlarged detail plan view of the back stop and roller. Fig. 4 is a side view of the same. Fig. 5 is a longitudinal section on line Y Y in Fig. 3. Fig. 6 is a detail view showing the means for regulating the tension of the spring which presses the roller down upon the sheet.

Similar letters of reference indicate corresponding parts.

A represents the main supporting-frame of the paper-folding machine.

B B denote the folding-rollers, which impart the first fold to the sheets fed into the machine.

C denotes the folding-blade, which introduces the sheet between the folding-rollers.

a a are endless tapes which convey the sheet to its requisite position over the folding-rollers, which tapes are carried on the usual rollers and are operated by any suitable and well-known mechanism. (Not necessary to be shown.) *b* represents the front stop, which by contact with the advance edge of the sheet serves to arrest the advance movement of the sheet in time to be introduced between the folding-rollers by the folding-blade. Above the tapes are the usual drop-rollers, which latter rollers and their operating mechanism are not necessary to be shown. *c c* denote the usual longitudinal sheet-supporting bars, which are located between said conveying-tapes and parallel therewith in the well-known manner. The front stop *b* is supported adjustably in relation to its distance from the folding-rollers B B. The folding-rollers and folding-blade C are also operated by any suitable gearing and other mechanism, which are not necessary to be shown in detail.

It is to more effectually prevent the sheet from rebounding from the front stop incident to the impact of the advance edge of the sheet against said front stop for which my improved back stop is designed and which I will now proceed to describe, together with certain auxiliary devices employed in connection therewith.

D denotes a horizontal bar extending across the machine at or near the receiving end thereof and supported on suitable posts *d d* on the main frame A.

e e are two brackets extending forwardly from the bar D and secured longitudinally adjustably thereon, preferably by means of sleeves *f f*, fastened at right angles to said brackets and embracing the said bar on which they are adapted to be shifted longitudinally, and secured in their desired positions by means of set-screws *g*. From each of said brackets *e* extends horizontally at right angles a shaft *h*, which is secured longitudinally adjustable to said bracket by means of a clamp consisting, preferably, of a vertically-split block *i*, formed with a segmental recess *j* in its upper face, embracing the lower and main portion of the bracket *e* and clamped thereon by a bolt *k*, as clearly shown in Fig. 5 of the drawings. To the shaft *h* is pivoted a downwardly and forwardly extending arm *l*, on the lower

or free end of which is a laterally-projecting stud, on which is journaled the presser-roller E, and to the side of said arm is pivoted the brush F, as shown at *m*, said brush constituting a plurality of independently-operating back stops distributed along a path parallel with the line of travel of the sheet and having their sheet-engaging ends different distances from the front stop to abut against the rear edges of sheets varying in width or length. The roller and brush rest upon one of the supporting-bars *c*, and are thus made to bear upon the sheet during its transit to the front stop *b*. The roller is to be adjusted to a proper distance from the stop *b* by means of the aforesaid clamp *i*, according to the width of the sheets fed into the machine. The object is to allow the paper to pass completely from under the roller and deprive said roller of contact with the paper prior to the contact of the advance edge of the sheet with the front stop, and the brush F is to extend in advance of said roller, so as to engage the rear edge of the sheet when said sheet is released from the roller and immediately after the front edge of the sheet has come in contact with the stop *b*. Said engagement of the brush prevents the sheet from rebounding from the front stop and retains the sheet with its advance edge squarely against said stop and accurately aline the sheet before it is introduced between the folding-rollers B B by the folding-blade C.

By carrying the brush and adjacent roller on the same bracket, as aforesaid, said brush and roller are maintained in their relative positions during their aforesaid adjustment, and thus their designed respective actions on the paper are insured.

The brush F has its bristles inclined toward the front stop *b*, and thus placed in bracing position toward the sheet, and the bristles terminate in a horizontal plane, as clearly shown in Fig. 4 of the drawings, whereby the brush is caused to present a plurality of fingers distributed lengthwise over the path of the paper to abut against rear edges of sheets of varying lengths, and thus invariably prevent rebounding of such sheets from the front stop.

The brush bearing upon the sheet during its transit naturally offers a slight resistance to the movement of the sheet, especially if the sheet is flimsy and thin, and thus tends to retard the same in its movement. Therefore to compensate for this retardation of the sheet I employ the small roller E, hereinbefore referred to, which roller presses the sheet into more intimate contact with the conveying-tapes.

When it is required to operate on narrower or wider sheets of paper, the brushes and rollers can be adjusted toward or from the front stop *b* by shifting the clamps *i* on the brackets *e e*, as before described. In like manner when it is required to adjust the rollers and brushes to operate on sheets of a greater or less length the brackets *e e* can be shifted longitudinally on the bar D.

The pressure of the brush and roller upon the paper is rendered adjustable by means of an arm *a'*, extending forward from the pivoted end of the brush and having adjustably mounted upon it a weight *b'*, as clearly shown in Figs. 5 and 6 of the drawings. By placing the weight a greater or less distance from the fulcrum of the brush the pressure of the latter is regulated, as aforesaid.

The pressure of the roller E is effected by means of a spring *d'*, coiled around the shaft *h* and having one end fastened to the roller-supporting arm *l*, preferably to the hub *e'* of said arm, while the opposite end of said spring is fastened to a collar *f'*, mounted loosely on the outer or free end of the shaft *h*, which collar is adapted to be turned to increase or diminish the tension of the spring. The face of the collar *f'* is provided with recesses *g'*, and transversely to the shaft *h* is secured a pin *o*, adapted to engage said recesses, and thus lock the collar on the shaft and retain the collar in its adjusted position, as clearly shown in Figs. 3 and 6 of the drawings.

I do not wish to be limited specifically to the means for regulating the pressure of the brush and roller upon the sheet nor to the specific means for adjusting the same in their positions, and, furthermore, I do not wish to be confined to the specific detail construction of my improvements, as the same are subject to many modifications without departing from the spirit of my invention.

What I claim as my invention is—

1. In combination with the sheet-conveying tapes and front stop, a roller disposed to bear on the sheet in transit and to completely release said sheet in advance of its contact with said front stop and a suitable back stop disposed to engage the rear edge of the sheet when in contact with the front stop as set forth.

2. In combination with the paper-folding rollers, folding-blade, paper-conveying tapes and the front stop disposed to receive the impact of the front edge of the delivered paper and thereby arrest the paper preparatory to receiving the impact of the folding-blade, a plurality of back stops distributed along a path parallel with the aforesaid tapes and having their paper-engaging parts different distances from the front stop to abut against the rear edges of sheets of varying widths as set forth.

3. In combination with the sheet-conveying tapes and the front stop disposed to receive the impact of the advance edge of the sheet, a plurality of independently-operating back stops distributed along a path parallel with the line of travel of the sheet and having their sheet-engaging ends different distances from the front stop to abut against the rear edges of the sheets of varying widths, and a roller disposed to bear on the sheet back of said back stops while said sheet is in transit

and to lie remote from the sheet when in contact with the front stop.

4. In combination with the paper-conveying tapes and a front stop, a bracket sustained over said tapes adjacent to the paper-receiving end of the machine and adjustable longitudinally in relation to the tapes, a brush sustained on said bracket to abut against the rear edge of the sheet when arrested by the front stop, and a roller carried on the same bracket and disposed to bear on the incoming sheet and become deprived of contact therewith when said sheet is arrested by the front stop, the said adjustable joint support of the brush and roller serving to maintain said parts in their relative position and thereby insuring their designed actions on the paper.

5. The combination with the sheet-conveyers and the front stop arresting the advance movement of the sheet, of a bracket supported on the main frame, a roller supported on said bracket and bearing upon the sheet during its transit to said stop to facilitate the conveying of the sheet, a brush pivoted to the roller-support and arranged in advance of the roller and bearing upon the sheet to engage the rear edge of the sheet when released from said roller to prevent the sheet from rebounding from the front stop substantially as described and shown.

6. In the herein-described paper-folding machine, the combination with the main frame, sheet-conveyers, sheet-supporting bars, and the front stop arresting the advance movement of the sheet, of a forwardly-extending bracket supported transversely adjustable upon the main frame, a downwardly-extending roller-supporting arm pivoted to said bracket and adjustable longitudinally thereon, the roller journaled on the lower end of said arm and resting upon a paper-supporting bar so as to bear upon the sheet during its transit to the front stop, and a brush pivoted to said arm and extending in advance of said roller and also bearing upon the sheet to engage the rear edge of the sheet when released from said roller to prevent the sheet from rebounding from the front stop, said roller serving to compensate for the resistance incident to the pressure of the brush upon the sheet and to assist the conveyers in advancing the sheet to the front stop substantially as described and shown.

7. In the herein-described paper-folding machine, the combination with the main frame, sheet-conveyers, sheet-supporting bars, and the front stop arresting the advance movement of the sheet, of a transverse bar supported on the main frame, a forwardly-extending bracket secured longitudinally adjustable to said bar, a longitudinally-adjustable clamp on said bracket and having a transverse shaft extending therefrom, a downwardly and forwardly extending arm pivoted to said shaft, a roller journaled on the lower or free end of said arm and resting upon a sheet-supporting bar, a spring coiled around said shaft and having one end secured to said arm and its opposite end secured to an adjustable collar on the outer end of said shaft, a brush pivoted to said arm and extending in advance of said roller, and an adjustable weight secured to said brush for the purpose set forth.

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Witnesses:
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