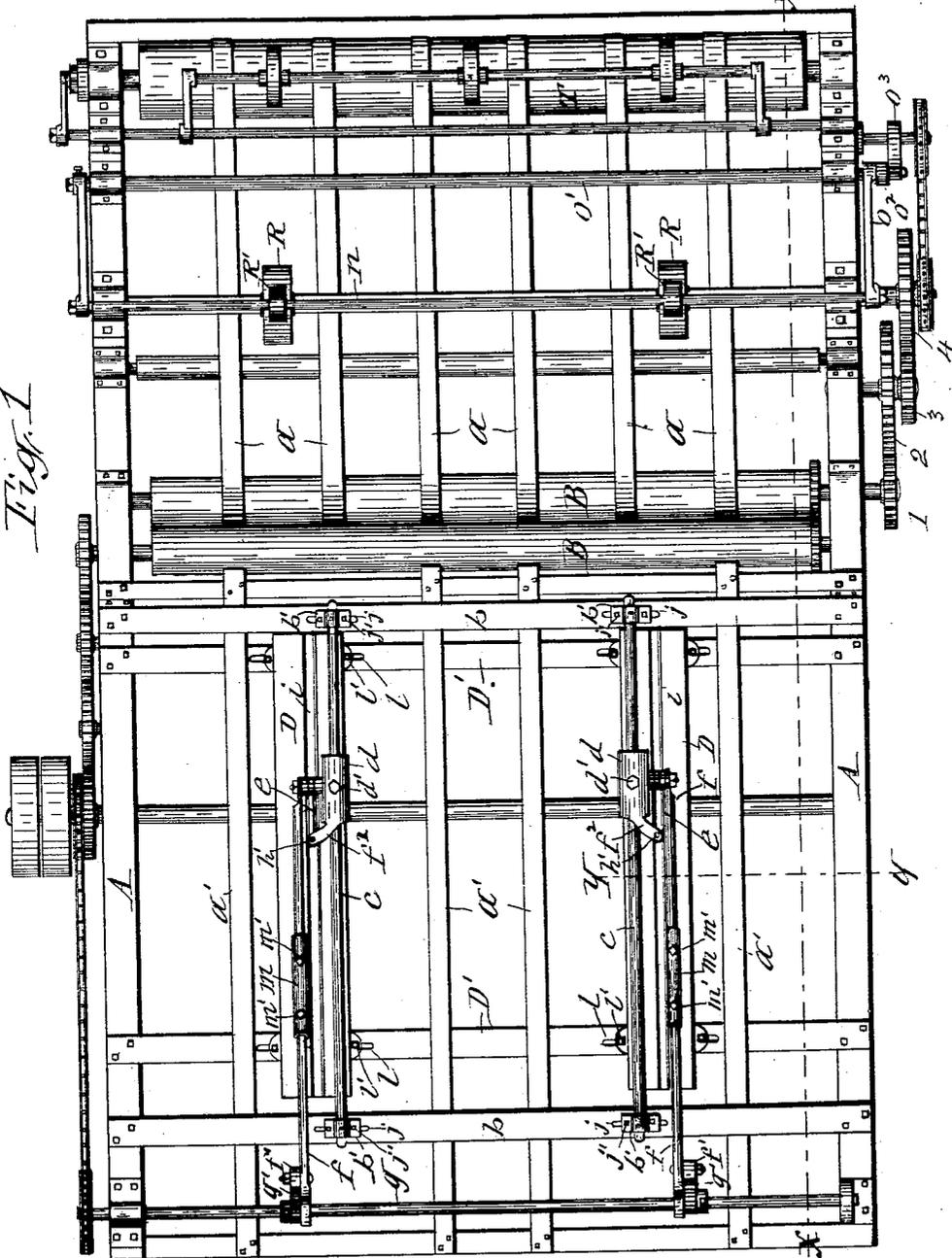


T. C. DEXTER.
PAPER REGISTERING MECHANISM.

No. 590,476.

Patented Sept. 21, 1897.

Fig. 1



WITNESSES:

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H. B. Smith.

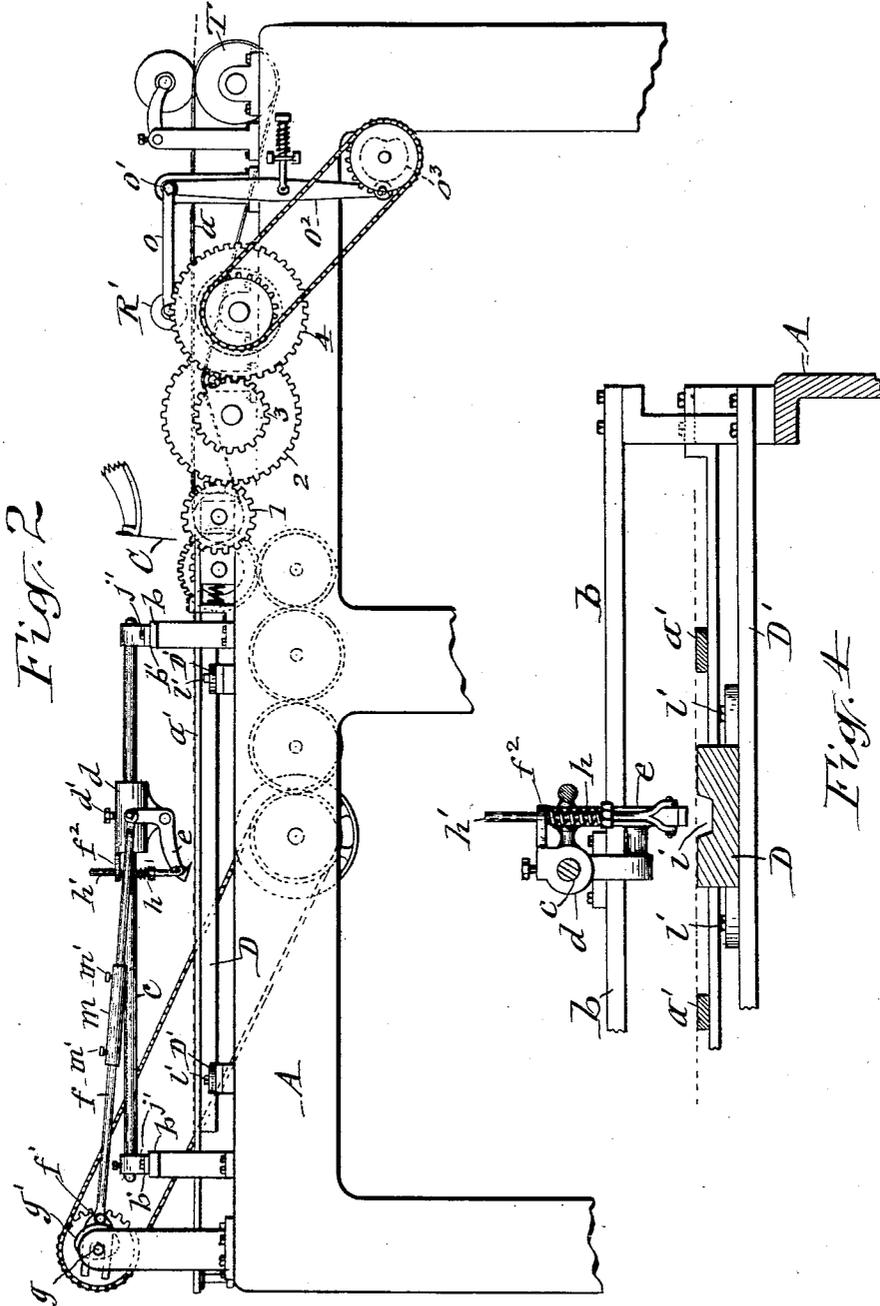
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Talbot C. Dexter
By E. Laess
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UNITED STATES PATENT OFFICE.

TALBOT C. DEXTER, OF PEARL RIVER, NEW YORK, ASSIGNOR TO THE
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PAPER-REGISTERING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 590,476, dated September 21, 1897.

Application filed September 2, 1896. Serial No. 604,625. (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 Paper-Registering Mechanisms, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention is designed for use on paper-folding machines or other machines receiving paper provided with slits for the purpose of registering the paper by means of attenuated instruments on said machines entering the slits.

The object of the invention is to provide simple and efficient means for utilizing the slitted portions of the paper for arresting the movement of the paper carried into the machine and at the same time registering or alining the same; and to that end the invention consists principally in the combination, with the sheet-conveying tapes, of a combined sheet stopping and registering-gage moving vertically to and from the passage of the sheet to bear on the sheet while moving under the influence of the tapes and arresting the motion of said sheet by the abutment of said gage against the edge of the slit made in the sheet for that purpose.

The invention also consists in the combination, with said combined sheet stopping and registering gages, of longitudinal paper-supporting bars directly under said gages and provided with longitudinal grooves in their top surfaces, which grooves allow the gages to depress the paper therein and thereby facilitate the abutment of said gages against the edges of the slits made in the sheet for that purpose.

The invention also consists in the combination, with the aforesaid combined sheet stopping and registering devices, of slow-down mechanism checking the longitudinal movement of the sheet at a proper time to guard against the tearing of the sheet by violent contact of the slitted portions of the paper with said stopping devices; and the invention furthermore consists in certain novel features of the details of the machine, as hereinafter described.

In the accompanying drawings, Figure 1

is a plan view of a paper-folding machine equipped with my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a longitudinal section on line X X in Fig. 1. Fig. 4 is an enlarged vertical transverse section on line Y Y in Fig. 1. Fig. 5 is an enlarged side view of the combined sheet stopping and registering instrument, and Fig. 6 is a transverse section of a modification of the paper-supporting bars employed under the gages.

Similar letters of reference indicate corresponding parts.

A represents the main frame of a paper-folding machine; B B, the paper-folding rollers. C denotes the blade which tucks the paper into the bite of said rollers.

a a are the usual tapes which convey the paper to its position for being folded, and *a' a'* are the usual bars which support the portion of the paper which lies beyond the folding-rollers.

Preparatory to introducing the paper between the folding-rollers it is necessary to arrest the movement of the paper conveyed on the machine by the aforesaid tapes *a a* and to register or properly arrange the paper in its position in relation to the bite of the folding-rollers. My present invention accomplishes both of said requirements by the same instrument.

In lieu of the usual end gage, which consists of a straight-edge or plate placed vertically edgewise across the top of the machine, I in this present case use two sheet-arresting instruments disposed at opposite sides of the longitudinal central line of the passage of the paper and movable vertically to and from said passage to intercept the sheet by engaging the slitted portions thereof and simultaneously squaring or registering said sheet in its position. Said instruments I prefer to construct as follows: Upon opposite sides of the main frame A, I firmly support the ends of two cross-bars *b b*, to each of which I attach suitable brackets *b' b'*, disposed at opposite sides of the longitudinal central line of the passage of the paper. The brackets of the two cross-bars are in pairs arranged in lines parallel with said passage, and to each of said pairs I attach the ends of one of the longitudinal bars *c c*. On each of the latter bars

is mounted a sleeve *d*, which is adjustable longitudinally on the bar to accommodate the combined gage and registering instrument to the location of the slits in the paper to be registered. Said sleeve is provided with a set-screw *d'* for retaining the sleeve in its adjusted position.

The combined sheet stopping and registering instrument proper consists of a rock-arm *e*, pivoted to the sleeve *d*, so as to allow said arm to swing in a vertical plane. To the free end of this rock-arm is attached a tongue *e'* of suitable shape and dimensions to allow it to enter into the slit of the paper without tearing the paper, said tongue pointing toward the paper-receiving end of the machine, as shown in Figs. 2 and 3 of the drawings. The arm *e* receives intermittent rocking motion from a pitman *f*, connected at one end to said arm and having its opposite end bifurcated and straddling a shaft *g*, which extends across the machine and is journaled in suitable bearings on the sides of the main frame A. Said shaft receives rotary motion by means of suitable mechanism actuated by the driving-gears of the folding-machine. To said shaft are fastened two cams *g'*, and to the bifurcated ends of the two pitmen *f* are pivoted rollers *f'*, by which the pitmen bear on the cams. Said rollers are maintained in contact with the cams by means of suitable springs, which may consist of spiral springs *h*, surrounding rods *h'*, which are attached to the free end portions of the rock-arms *e* and slide in eyes formed in bars *f*², extending from the sleeves. Said springs are interposed between the under sides of the said bars and collars *f*³ on the rods *h'* and exert downward pressure on the arms *e* and end pressures on the pitmen *f* toward the cams *g'*.

Under each of the aforesaid rock-arms *e* is located a longitudinal bar D, supported on cross-bars D' D', secured to the sides of the frame A. The top of each of said longitudinal bars is provided with a longitudinal groove *i*, as more clearly shown in Fig. 4 of the drawings. The tops of the bars D are even with the tops of the paper-supporting bars *a'*, and thus the paper conveyed by the tapes *a a* slides upon the bars D.

The movements of the cams *g'* are so timed as to cause them to lift the arms *e e* while the advance portion of the paper passes under said arms and then depress said arms in time to cause the tongues *e'* to bear on the paper sufficiently to press the paper into the grooves *i* of the bars D and thereby strain the paper sufficiently to open the slits therein, and in the further advancing of the paper the tongues *e' e'* are caused to enter said slits and finally arrest the movement of the paper by the edges of the slitted portions thereof coming in contact with the arms *e e*. In case the paper happens to be out of line, so as to cause one of the slits thereof to come in contact with its arresting-arm *e* before the other slit arrives at the same position in relation to its arrest-

ing-arm, then the portion of the paper containing the latter slit is caused to continue its forward movement by the force of the paper-conveying tapes until both slitted portions are in contact with the two arresting-arms *e e*, and when this is effected the paper is properly alined or registered. Then the cams *g' g'* by means of the pitmen *f f* lift the two arms *e e* to relieve the paper from the pressure of the tongues *e'*, and by that time the folding-blade C tucks the paper into the bite of the folding-rollers B B, which draw the paper down between them and thereby fold it. The pressure of the tongues *e'* upon the paper during the forward movement thereof tends to retard said movement and thereby guard to some degree against the tearing of the paper by the engagement of said tongues with the slitted portions of the paper. The movement of the folding-blade C is so timed as to come in contact with the paper and prevent its being moved by the tapes while the arms *e e* are being lifted to release the paper.

In order to allow the described registering mechanisms to be adjusted for operating on sheets of different widths, I mount the brackets *b' b'* adjustably in a lateral direction on the cross-bars *b b* in any suitable and readily-suggested manner, which may consist in providing the cross-bars *b b* with prolonged longitudinal slots *j* for the reception of the attaching-bolts *j'*. The cams *g' g'* are also adjustably connected to the shaft *g* to conform to the aforesaid adjustment of the bars *c c*. To allow the bars D D to be adjusted correspondingly, the cross-bars D' D' are provided with prolonged slots *l l*, extending lengthwise thereof and receiving through them the attaching-bolts *l' l'*.

The pitmen *f* are made extensible to conform to the adjustment of the sleeves *d d* on the longitudinal bars *c c*. For this purpose each of said pitmen may be composed of two end sections having their adjacent ends embraced by a sleeve *m* and adjustably clamped therein by set-screws *m' m'*. I do not wish to be limited to the specific construction of the bar D, formed with the groove *i*, inasmuch as two bars placed parallel side by side with a space *i'* of the width of the groove *i* between them, as shown in Fig. 6 of the drawings, will in many instances serve the same purpose. This latter construction allows the space *i'* to be adjusted in width.

To more effectually guard against tearing and buckling of the paper by excessive force of contact of the slitted portions of the paper with the paper-arresting arms or gages *e e*, I employ sheet-retarding mechanisms brought momentarily into action immediately before the aforesaid contact. This retarding mechanism is represented of the form of rollers R R, mounted on a transverse shaft *n*, which receives rotary motion by means of suitable gears—such as shown, for instance, at 1 2 3 4 in Figs. 1 and 2 of the drawings—which gears cause the rollers to revolve in the

same direction as the tape-roller T, but at a greatly-reduced speed. Over each of the said retarding-rollers is a drop-roller R', mounted on a transverse shaft, which is supported on the ends of arms *o o*, extending from a rock-shaft *o'*, actuated by a lever *o²*, attached to the end of said shaft and oscillated by a rotary cam *o³*. This cam is so shaped or timed as to cause the drop-rollers R' to drop onto the sheet-retarding rollers R R just before the slitted portions of the paper reach the gages *e e*, and thereby nearly stop the paper in its progress, and then immediately lift said rollers to release the paper to allow it to gently proceed to the gages, where the tongues *e' e'* enter into the slits and cause the advance edges thereof to come in contact with the arms *e e*, which completely stop the motion of the paper, as hereinbefore described.

20 What I claim as my invention is—

1. In combination with the sheet-conveying tapes, longitudinal sheet-supporting bars provided with longitudinal grooves in their tops, combined sheet stopping and registering gages over said bars and moving vertically to and from the grooves thereof to depress the sheet therein and arrest the movement of the sheet by contact of said gages with the edges of the slits made in the sheet for that purpose.

30 2. In combination with the sheet-conveying tapes, sheet-supporting bars provided with grooves in their tops, combined sheet stopping and registering gages over said bars and moving vertically to and from the same, and tongues on said gages depressing the sheet in the grooves of said bars and thereby entering slits made in the sheet for that purpose and causing the motion of the sheet to be arrested by contact of the edges of the slits with the said gages, as set forth.

3. In combination with the sheet-conveying tapes, sheet-supporting bars provided with grooves in their tops, oscillatory arms moving in vertical planes to and from said bars and by depressing into the grooves thereof the sheet in transit opening the slits made in the paper for that purpose and by contact

with the edges of the slit arresting the motion of the sheet, as set forth.

4. In combination with the sheet-conveying tapes, sheet-supporting bars provided with grooves in their tops, oscillatory arms pivoted to swing in vertical planes to and from said bars, tongues on said arms depressing the sheet into the grooves of the aforesaid bars and entering into the slits made in the sheet for that purpose, said tongues opening the slits and guiding the rear edges of the slits to contact with the arms and thereby arresting the motion of the sheet and registering the same.

5. In combination with the sheet-conveying tapes, sheet-supporting bars provided with longitudinal grooves in their tops, bars disposed parallel over said supporting-bars, arms supported longitudinally adjustable on said upper bars to operate on sheets of different lengths, said arms moving to and from the grooves of the sheet-supporting bars and by contact with the edges of the slits in the sheet arresting the movement of said sheet, as set forth.

6. In combination with the sheet-conveying tapes, sheet-supporting bars disposed laterally adjustable at opposite sides of the longitudinal central line of the paper-passage and provided with longitudinal grooves in their tops, stationary parallel bars extending horizontally across the machine, longitudinal bars secured at their ends laterally adjustable on the aforesaid cross-bars, sleeves mounted longitudinally adjustable on said longitudinal bars, arms pivoted to said sleeves to swing to and from the grooves of the aforesaid sheet-supporting bars, and reciprocating pitmen actuating said arms and adjustable in their lengths to conform to the adjustment of the aforesaid sleeves, as set forth.

In testimony whereof I have hereunto signed my name this 23d day of July, 1896.

TALBOT C. DEXTER. [L. s.]

Witnesses:

E. P. STOUGHTON,
V. E. MARSH.