

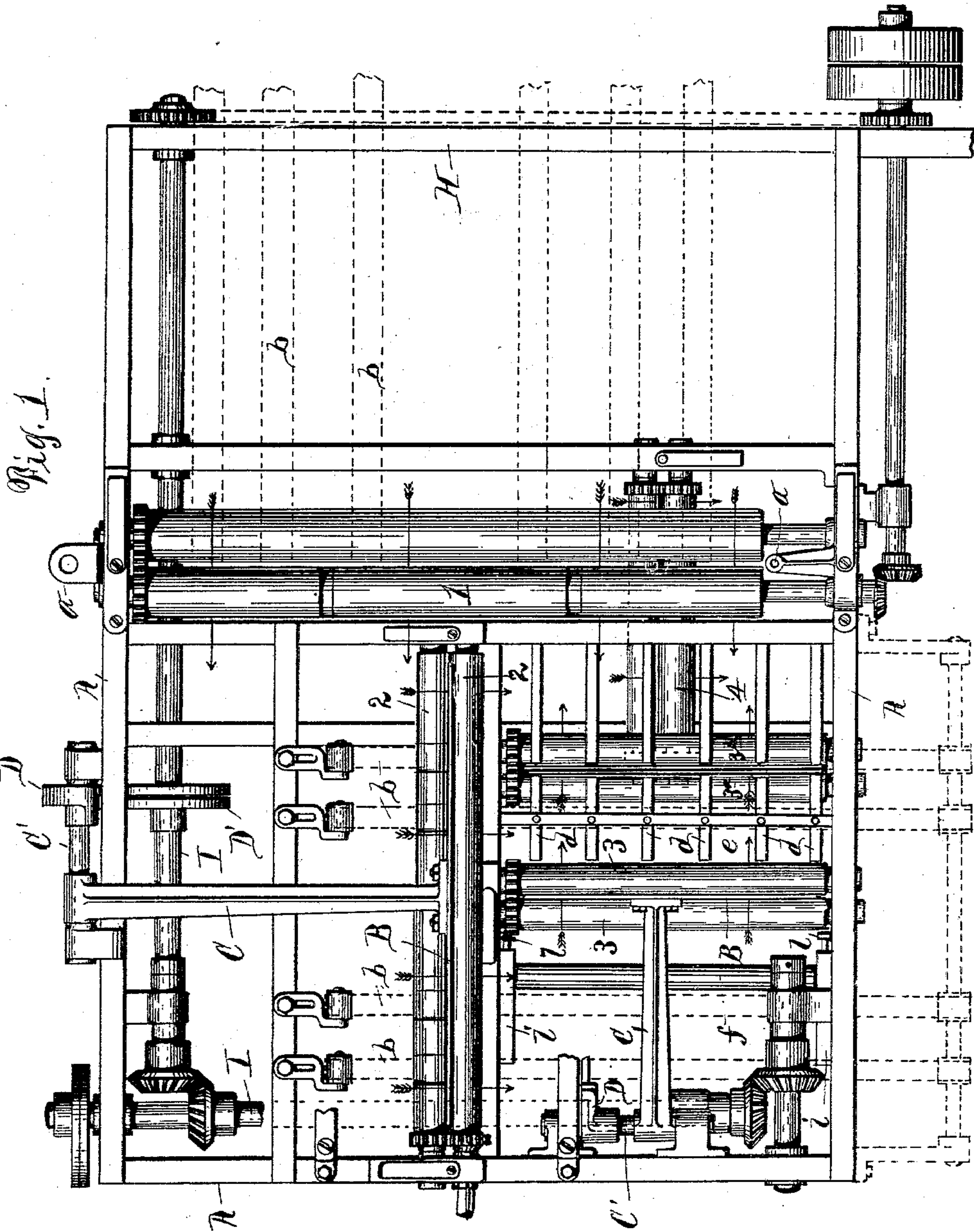
(No Model.)

4 Sheets—Sheet 1.

T. C. DEXTER.
PAPER FOLDING MACHINE.

No. 596,807.

Patented Jan. 4, 1898.



WITNESSES:

E. C. Tomlinson
C. L. Bendison

INVENTOR

T. C. Dexter
By *E. Laess*
his ATTORNEY

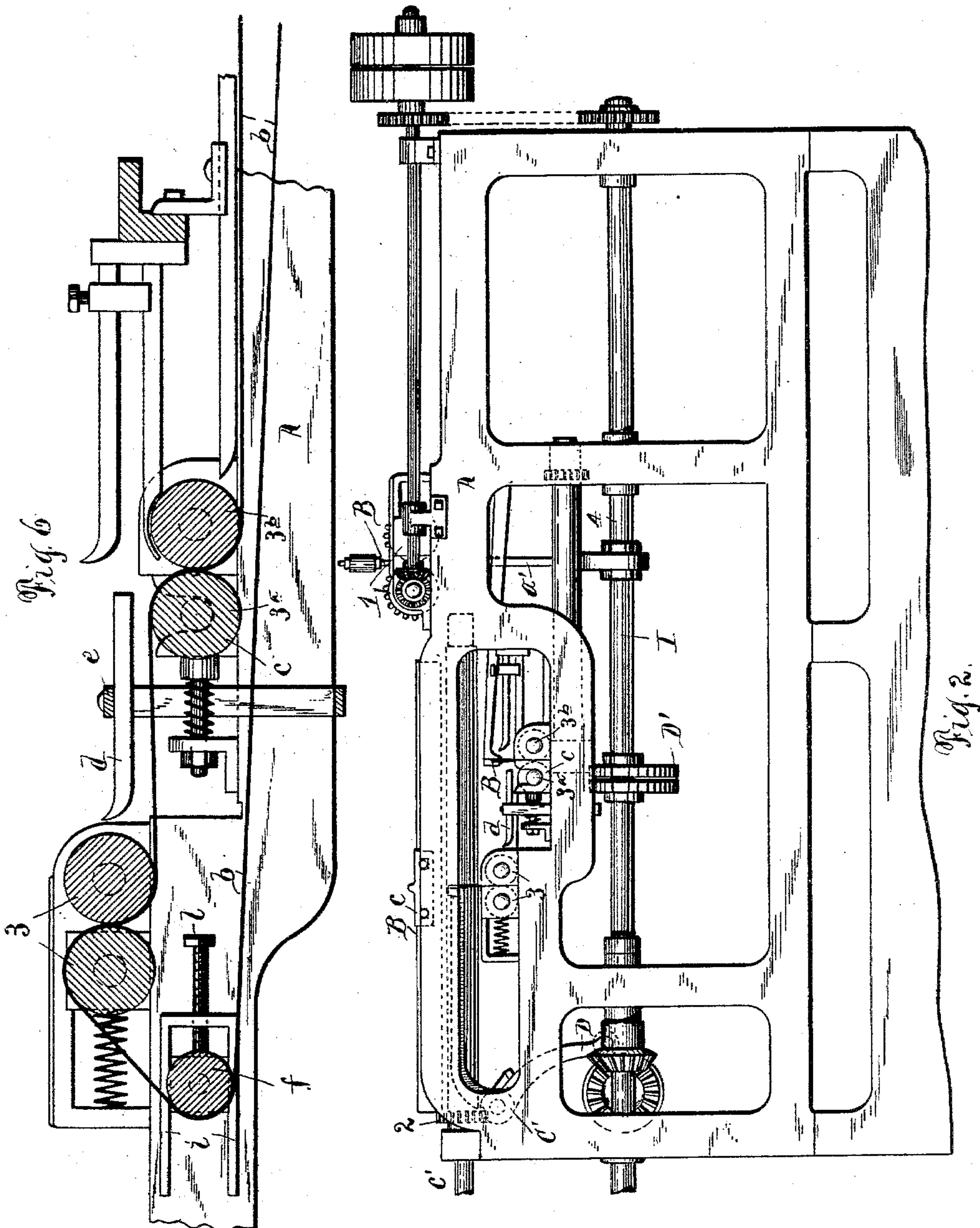
(No Model.)

4 Sheets—Sheet 2.

T. C. DEXTER.
PAPER FOLDING MACHINE.

No. 596,807.

Patented Jan. 4, 1898.



WITNESSES:

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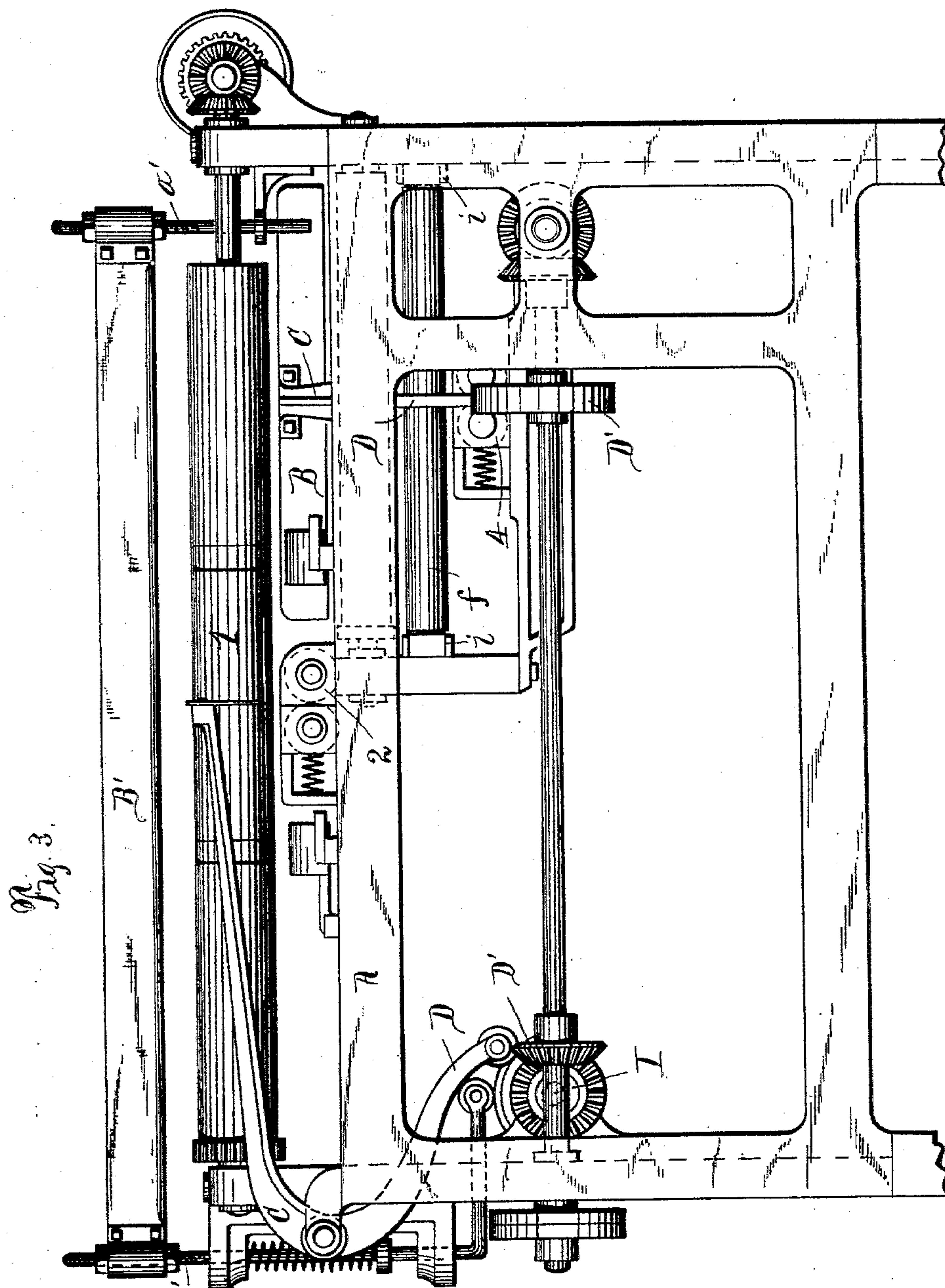
(No Model.)

4 Sheets—Sheet 3.

T. C. DEXTER.
PAPER FOLDING MACHINE.

No. 596,807.

Patented Jan. 4, 1898.



WITNESSES:

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J. J. Gaas

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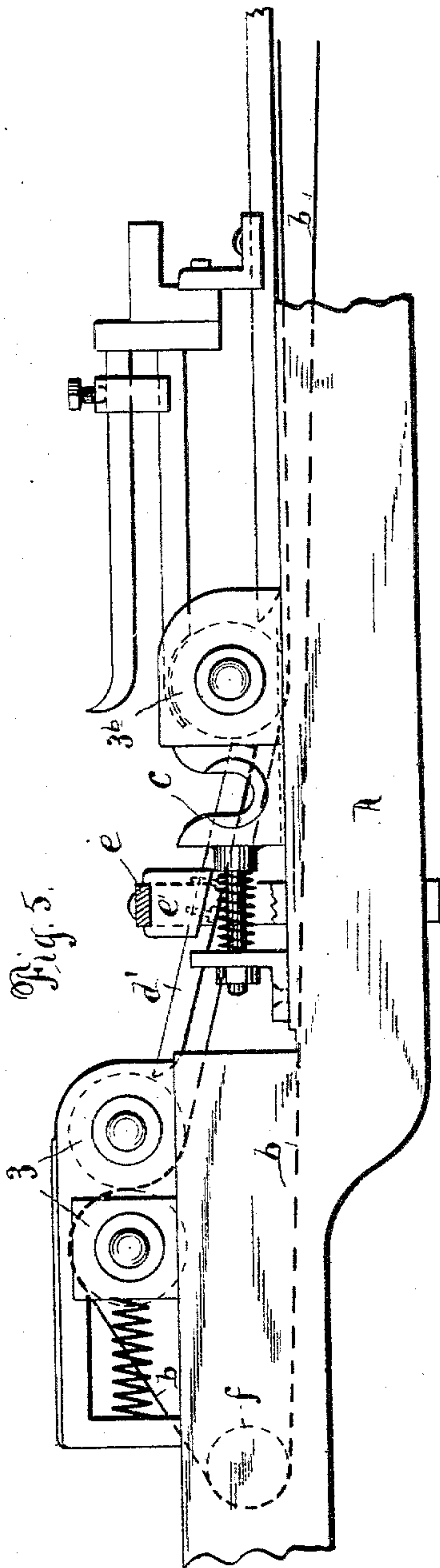
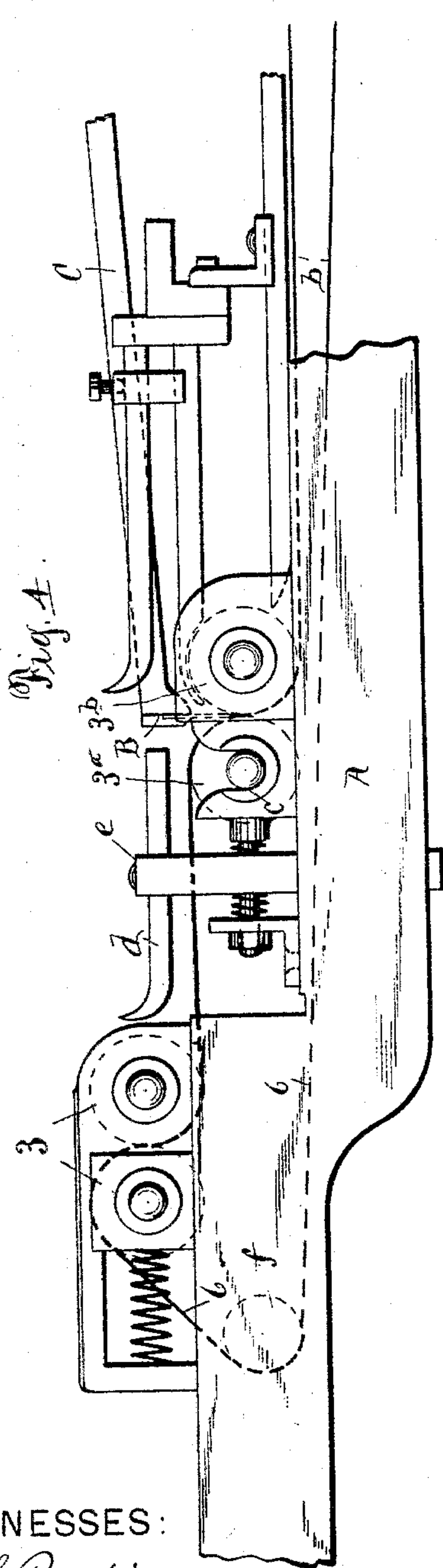
(No Model.)

4 Sheets—Sheet 4.

T. C. DEXTER.
PAPER FOLDING MACHINE.

No. 596,807.

Patented Jan. 4, 1898.



WITNESSES:

C. L. Burdison

J. J. Laass

INVENTOR:

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By E. Laass

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UNITED STATES PATENT OFFICE.

TALBOT C. DEXTER, OF PEARL RIVER, NEW YORK, ASSIGNOR TO THE
DEXTER FOLDER COMPANY, OF NEW YORK, N. Y.

PAPER-FOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 596,807, dated January 4, 1898.

Application filed March 18, 1895. Serial No. 542,152. (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
5 useful Improvements in Paper-Folding Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

The object of this invention is to provide
10 a paper-folding machine which shall be more readily adjustable to impart a variety of foldings to the sheet passing through the machine and to effect said foldings without subjecting the paper to undue deflection in the plane of
15 its travel, which is liable to disturb the alinement of the sheet in transit and thereby cause the same to be improperly folded.

The invention has more particular reference to the folding of the so-called "double
20 thirty-two-page sheets." This special folding is only occasionally required, and it is therefore desirable to provide a paper-folding machine with an extra pair of folding-rollers arranged to impart the additional fold to the
25 paper and adapted to be skipped or shunted, so as to avoid said additional fold. The most common way of accomplishing this is to provide some form of switch, usually consisting of adjustable fingers or tapes carrying the
30 sheet endwise between the aforesaid rollers, so as to prevent the same from folding the sheet. This, however, causes considerable twisting and often disarrangement of the sheet in transit, and on some classes of paper
35 it is liable to damage the printed work thereon. An attempt has also been made to skip one or two foldings of the paper in transit through the folding-machine by removing one of the folding-rollers of the set to be skipped; but
40 in this case the sheet-conveying tapes were left undisturbed from their planes and a special paper-guiding device was placed in the position previously occupied by the removed folding-roller and the actuating mechanism
45 of the folding-blade had to be disconnected to hold the said blade at rest. Such devices are not only inconvenient, but are also liable to interfere to some extent with the travel of the sheet and disturb it from its requisite
50 alinement owing to the sudden change of direction imparted to it by the extra guide

which is substituted for the folding-roller and turns the sheet from one plane at right angles to the succeeding plane.

All of the aforesaid defects are obviated by
55 my present invention, which consists in the combination, with two sets of folding-rollers and an intermediate set of folding-rollers parallel with the first of the aforesaid set, of paper-conveying tapes passing from said first set of
60 rollers over and down between the intermediate set of rollers and thence to the next set of rollers, the intermediate folding-roller carrying the paper-conveying tapes being removable from the path of said tapes and thereby
65 depriving said tapes of their intermediate supports, a tape-tightening roller extending across the machine beneath the folding-rollers and sustained adjustably in its distance
70 from the folding-rollers to take up the slack of the tapes incident to the removal of the intermediate roller, a bar extending across the machine above the intermediate folding-rollers, and guides detachably secured to said
75 bar and inclined to conform to the change in the direction of the tapes incident to the removal of the aforesaid intermediate roller, as hereinafter more fully described.

In the annexed drawings, Figure 1 is a plan view of a paper-folding machine embodying
80 my invention, the usual paper-carrying tapes and folding-blades and driving-gears being to some extent omitted to bring out more prominently the essential features of my invention. Fig. 2 is a side elevation of the same. Fig.
85 3 is an enlarged end elevation. Figs. 4 and 5 are enlarged side views of that portion of the machine to which my invention pertains and showing the same in its different operative positions, and Fig. 6 is a further enlarged
90 sectional view of my invention.

Similar letters and figures of reference indicate corresponding parts.

A denotes the main supporting-frame of the machine, which frame may be of any suitable
95 form to accommodate the requisite mechanisms for operating the machine.

1, 2, 3, and 4 represent the successive pairs of folding-rollers, by means of which the paper is folded successively on lines at right
100 angles to each other in the usual manner.

B B represent the knives or blades, which

tuck the sheet into the bites of the aforesaid rollers. Only two of said blades are shown in Fig. 1 of the drawings, which blades are attached to arms C C, extending from rock-shafts C' C', which receive motion by means of levers D D, extending from said shafts and riding with their free ends on cams D' D', attached to rotary shafts I, as clearly illustrated in Fig. 3 of the drawings.

a a represent guides, in which reciprocate the vertical rods *a' a'*, which carry the first fold-blade B', as shown in Fig. 3 of the drawings.

The directions of the travel of the paper through the successive pairs of folding-rollers is indicated by arrows in Fig. 1 of the drawings. The paper is conveyed in said directions by means of the usual endless tapes *b b*, which are only partly shown in the drawings.

In order to render the machine adjustable to impart to the paper an additional fold parallel to the preceding fold, usually the third fold, when required for folding a so-called "double thirty-two-page sheet," I employ the additional folding-rollers 3^a and 3^b between the third-fold rollers 3 and fourth-fold rollers 4 and parallel with said third-fold rollers. The upper runs of the paper-carrying tapes *b b* pass from the bottoms of the rollers 3 to the top of the first additional roller 3^a, thence down between said roller and its companion roller 3^b, as shown in Figs. 4 and 6 of the drawings, and thence over the rollers 4. The paper thus receives from the rollers 3^a and 3^b the additional fold parallel with the third fold. When this additional fold of paper is not required, it is necessary to shunt the bite of the rollers 3^a and 3^b. To effect this in a simple, convenient, and expeditious manner and without danger of disturbing the alignment of the paper in transit, I mount the journals of the first roller 3^a in the boxes *c*, which are open at the top, as shown in Fig. 4 of the drawings, to allow said roller to be lifted out of said boxes and removed from its operative position, as represented in Fig. 5 of the drawings. The tapes *b b* then carry the paper from the bottom of the third-fold rollers direct to the bottom of the roller 3^b and on over the next set of rollers 4 without serious deflection in the plane of the travel of the paper. To properly guide the paper in its travel from the third-fold rollers 3 either to the bite of the next rollers 3^a and 3^b to impart the aforesaid additional fold or direct to the bottom of the roller 3^b to shunt said bite of the rollers, as may be desired, I employ over the tapes *b b* interchangeable guide-bars *d* and *d'*, detachably secured at right angles to the bar *e*, which is secured to the frame A and disposed between the two pairs of third and additional rollers 3 and 3^a and parallel therewith.

The guide-bars *d* are secured in horizontal positions to guide the paper over the bite of

the extra rollers 3^a and 3^b and permit the sheet to be tucked into said bite by the usual folding-blade and thus impart the additional fold to the paper. For shunting said bite and guiding the paper direct to the rollers 4 the intermediate folding-roller 3^a, which supports the tapes in position to carry the paper into the aforesaid additional folding position, is removed, and in place of the aforesaid horizontal guide-bars I employ the inclined guide-bars *d'*, which are attached to blocks or brackets *e'*, detachably secured in any suitable manner to the bar *e*, as shown in Fig. 5 of the drawings. By means of said blocks or brackets the guide-bars *d'* are sustained in inclined positions parallel to the slight inclination imparted to the tapes *b b* by the removal of the intermediate roller 3^a, as shown in Fig. 5 of the drawings.

Under the third-fold rollers 3 and parallel therewith is a roller *f*, extending across the machine and bearing down upon the lower runs of the tapes *b b* to impart the requisite tension to said tapes. To permit the slack of these tapes to be taken up when the roller 3^a is removed, I mount the journal-boxes of the roller *f* in horizontal ways *i* of sufficient length to allow said journal-boxes to be shifted lengthwise on said ways and thus adjust the roller *f* in its distance from the rollers 3, so as to tighten the tapes.

For adjustably sustaining the journal-boxes in their positions I prefer to employ set-screws *l*, passing through screw-threaded eyes in the end walls of the ways and engaging the journal-boxes, as shown in Fig. 6 of the drawings.

What I claim as my invention is—

The combination with two sets of folding-rollers and an intermediate set of folding-rollers parallel with the first of the aforesaid sets, of paper-conveying tapes passing from said first set of rollers over and down between the intermediate set of rollers and thence to the next set of rollers, the intermediate folding-roller carrying the paper-conveying tapes being removable and thereby depriving said tapes of their intermediate supports, a tape-tightening roller extending across the machine beneath the folding-rollers and sustained adjustably in its distance from the folding-rollers to take up the slack of the tapes incident to the removal of the intermediate roller, a bar extending across the machine above the intermediate folding-rollers, and guides detachably secured to said bar and inclined to conform to the change in the direction of the tapes incident to the removal of the aforesaid intermediate roller, substantially as set forth and shown.

In testimony whereof I have hereunto signed my name this 4th day of March, 1895.

TALBOT C. DEXTER. [L. S.]

Witnesses:

JAS. A. WHITLOCK,
DE WITT C. WELD, Jr.