

(No Model.)

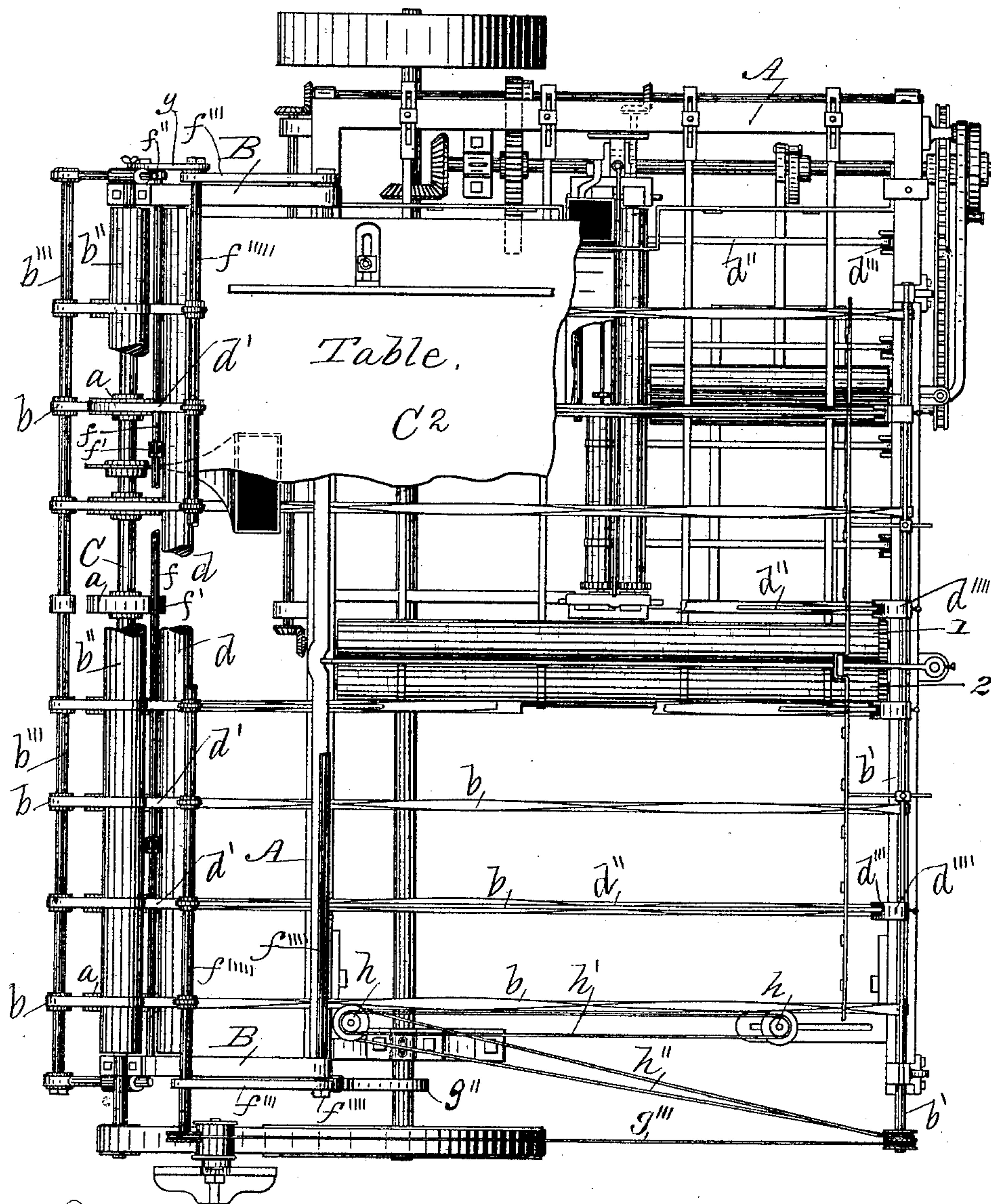
3 Sheets—Sheet 1.

T. C. DEXTER.  
PAPER FOLDING MACHINE.

No. 324,926.

Patented Aug. 25, 1885.

*Fig. 1*



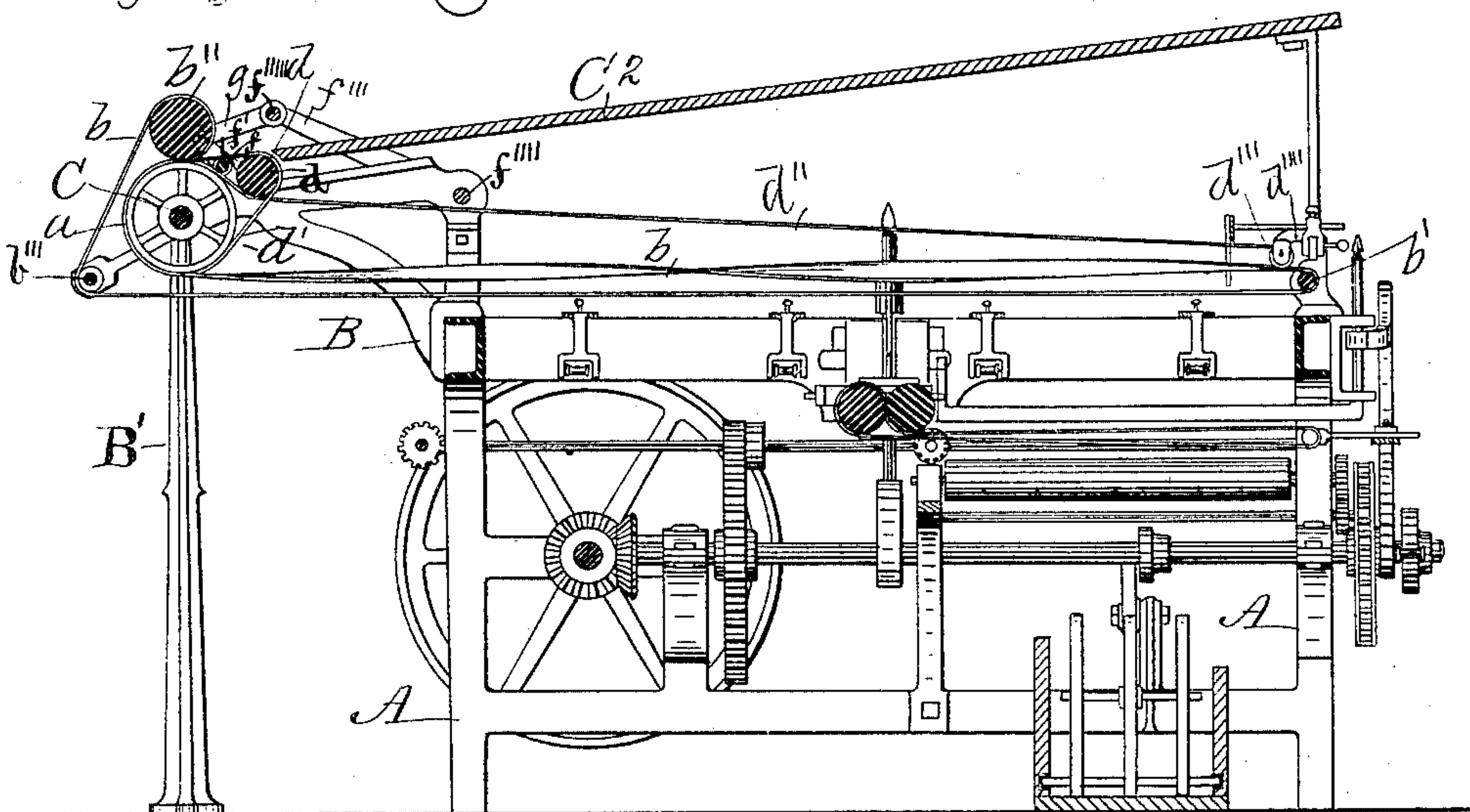
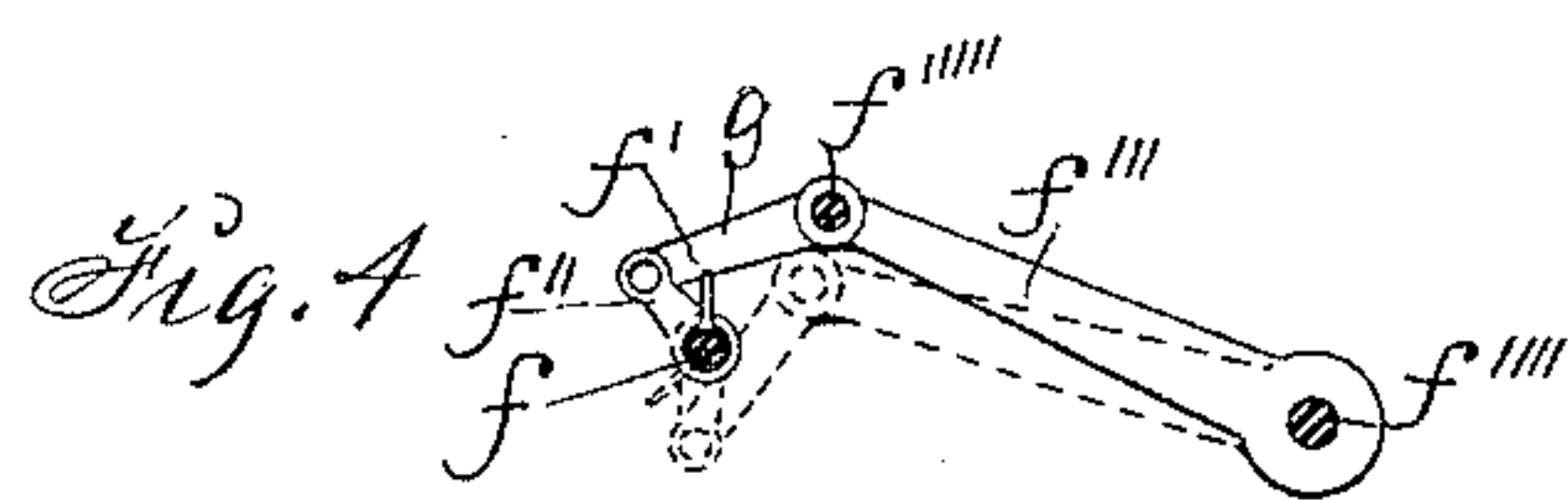
Witnesses:  
C. E. Blodgett  
Winfield Tilden

Inventor:  
T. C. Dexter,  
By Thomas C. Orwig, atty.

3 Sheets—Sheet 2.

No. 324,926.

Patented Aug. 25, 1885.



Witnesses:  
 Geo Blodgett  
 Winfield Tilden

Inventor:  
Salbot C. Dexter,  
By Thomas C. Orwig, att'y.



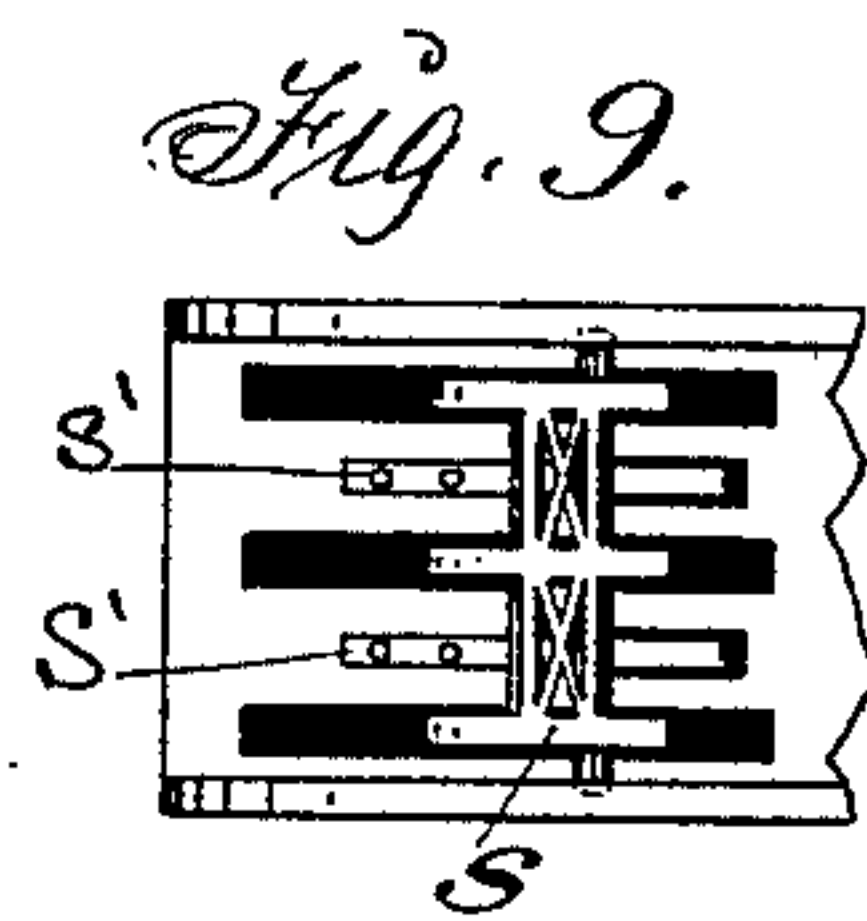
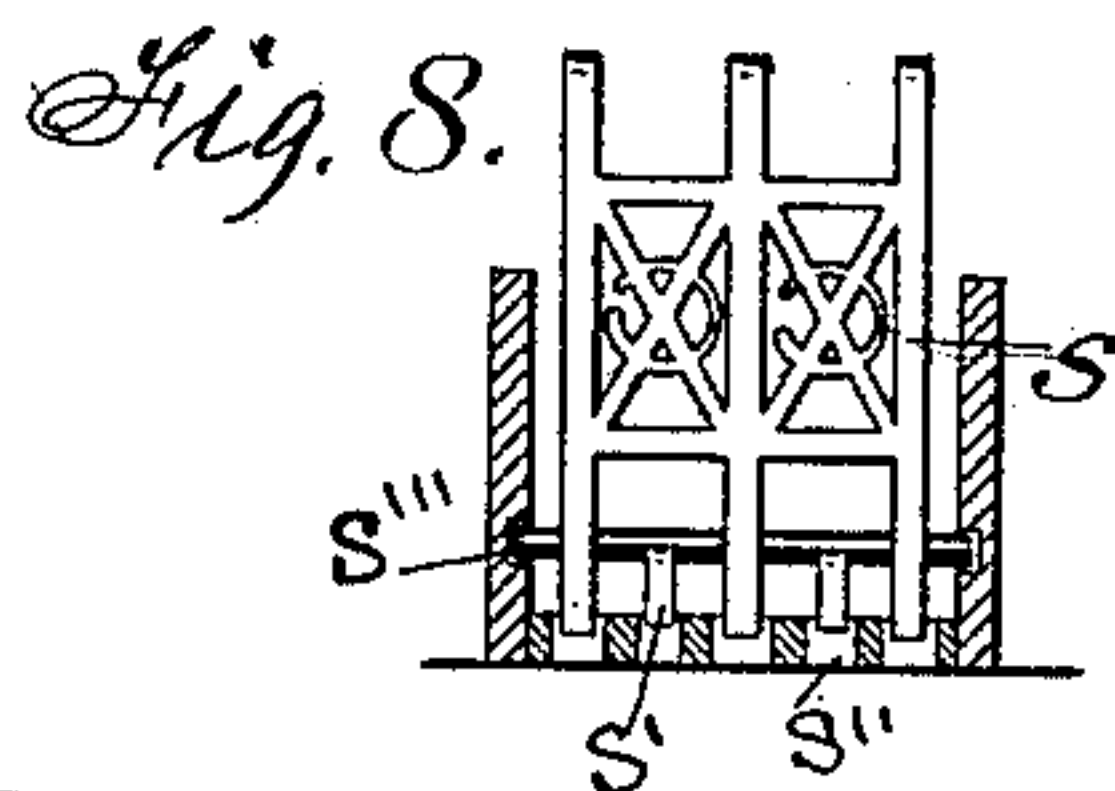
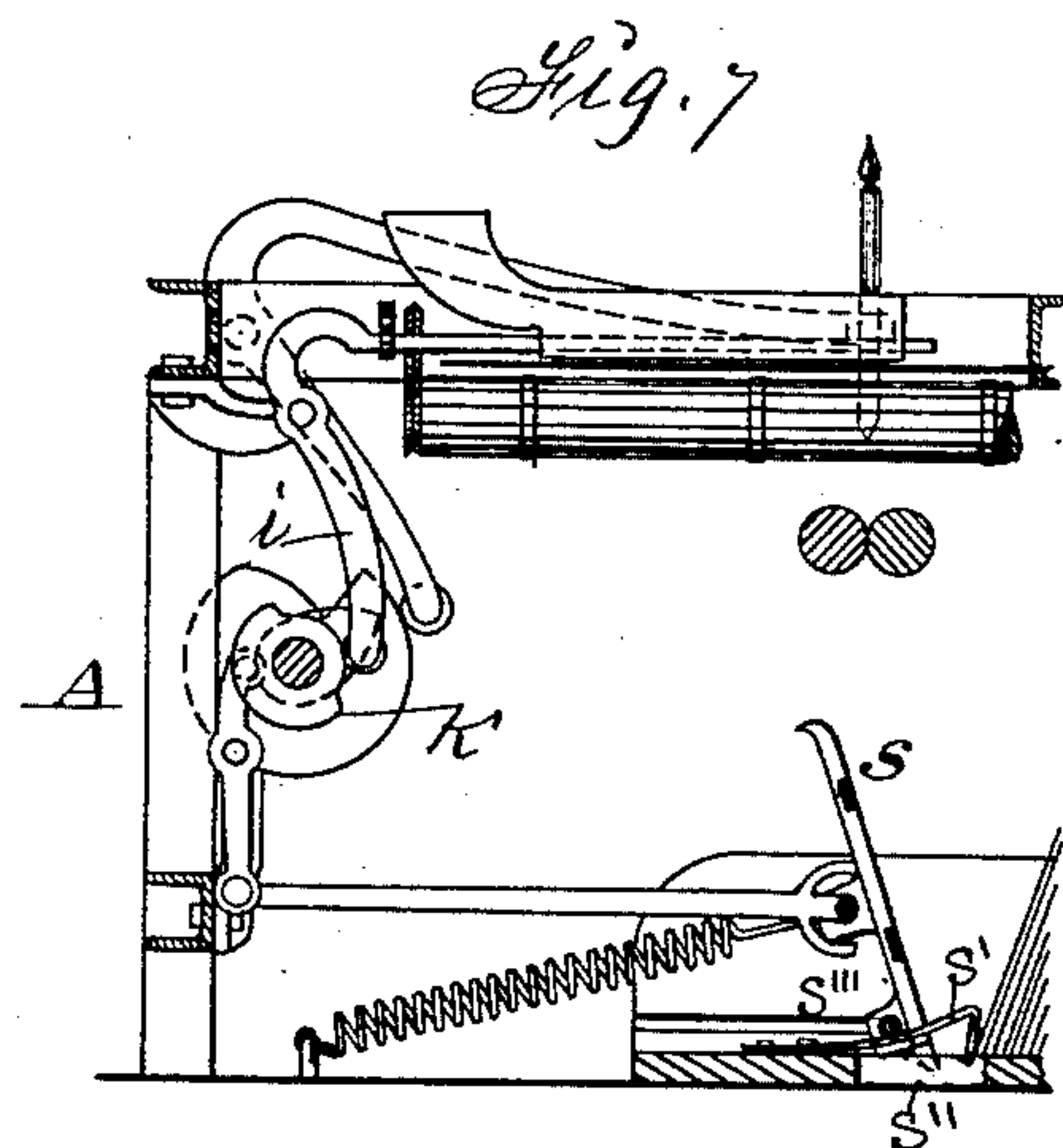
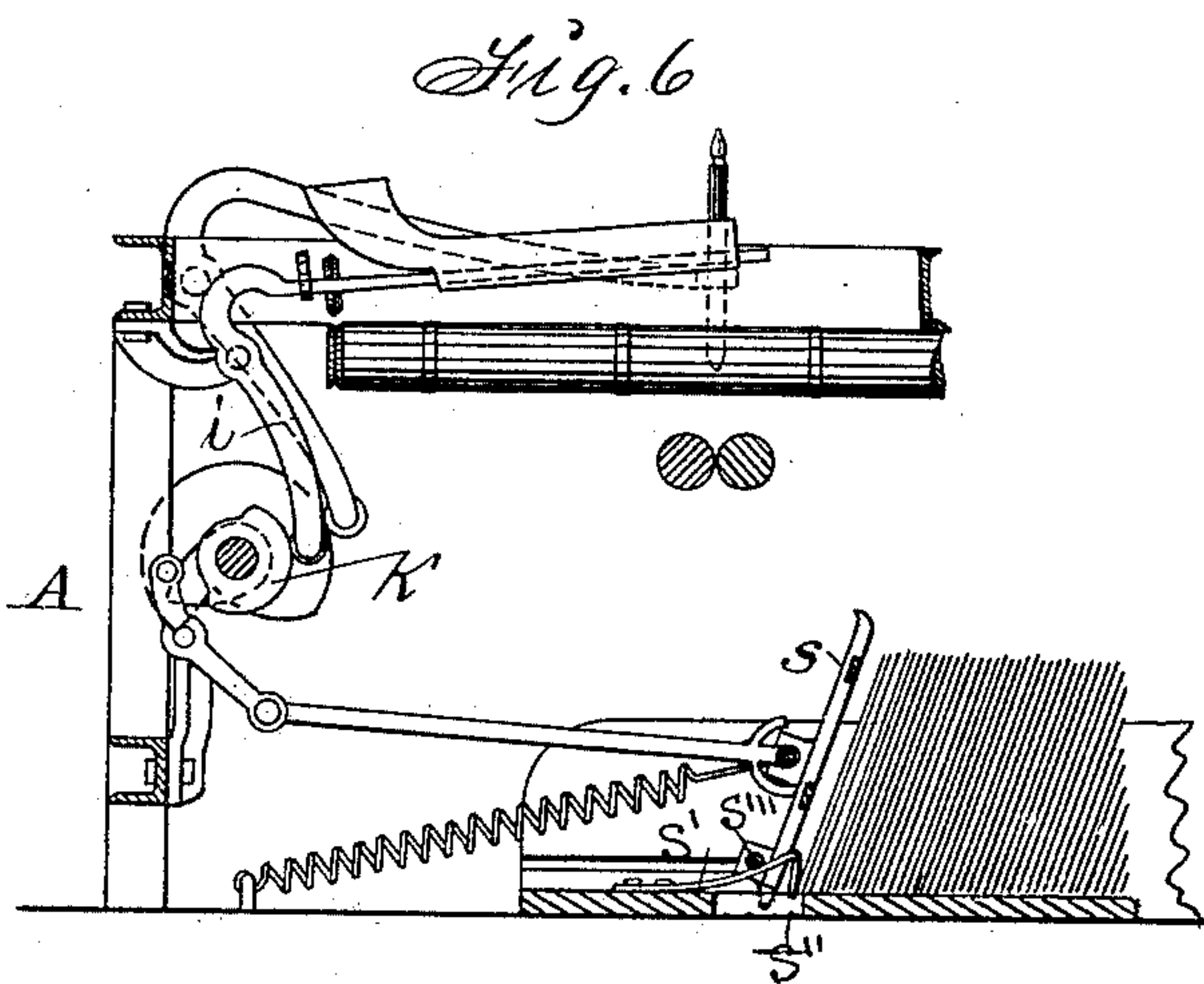
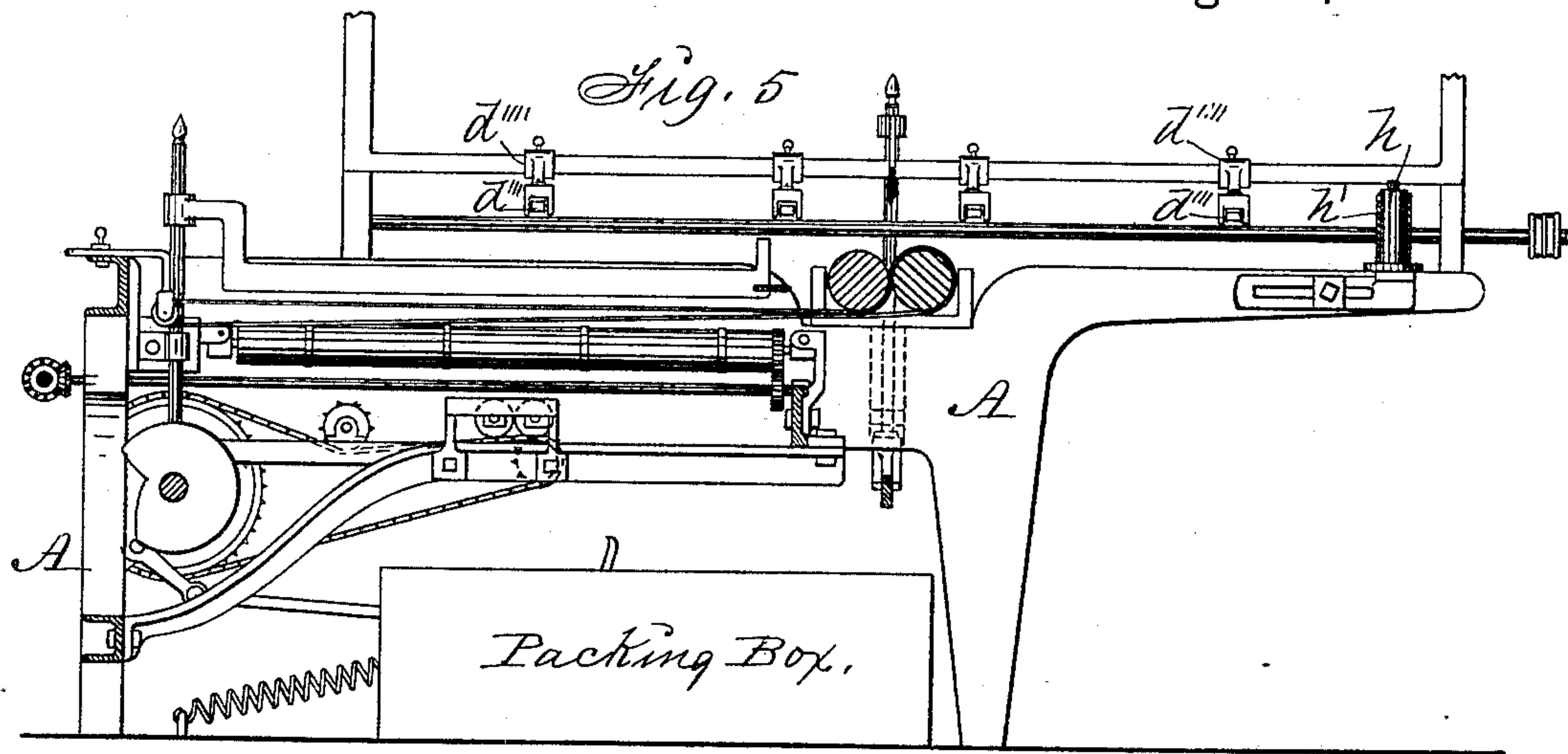
(No Model.)

3 Sheets—Sheet 3.

T. C. DEXTER.  
PAPER FOLDING MACHINE.

No. 324,926.

Patented Aug. 25, 1885.



Witnesses:  
Ed. Hodge,  
Winfield Tilden

Inventor:  
Talbot C. Dexter,  
By Thomas G. Drwig, atty.



# UNITED STATES PATENT OFFICE.

TALBOT C. DEXTER, OF DES MOINES, IOWA.

## PAPER-FOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 324,926, dated August 25, 1885.

Application filed September 5, 1883. (No model.)

*To all whom it may concern :*

Be it known that I, TALBOT C. DEXTER, of Des Moines, in the county of Polk and State of Iowa, have invented an Improved Paper-Folding Machine, of which the following is a specification.

My invention consists in the combination of an endless belt and twisted sheet-carrying tapes for the purpose of straightening and adjusting sheets successively relative to a pair of folding-rollers as required to bring the folds in the centers of the sheets and the corners and edges of the leaves of each folio square, and in the combination of elastic self-adjusting supports, with a packing-box and a vibrating and sliding follower in the box, as hereinafter fully set forth.

Figure 1 of my accompanying drawings is a top view, in which the feed table is partially broken away, and Fig. 2 a side view of my improved machine. Figs. 3 and 5 are transverse sectional views; and Figs. 4, 6, 7, 8, 9 are detail views of various parts of the machine.

Jointly considered, these figures clearly illustrate the construction and operation of my complete invention.

A represents the frame to which the operating mechanism is attached.

B B are brackets fixed to the top and rear end of the frame A to support my sheet-feeding mechanism.

B' are posts fixed under the free ends of the brackets to aid in supporting them.

C is a rotating shaft mounted on the ends of the brackets B. A series of pulleys, *a*, are fixed to the shaft C. A series of endless twisted tapes, *b*, are passed partially around the pulleys *a*, to extend across the machine and around a roller, *b'*, as required, to carry sheets and place them over the first pair of folding-rollers, Nos. 1 and 2.

*b''* is a roller, mounted immediately over the shaft C, around which roller the twisted tapes are extended.

*b'''* is an adjustable tape-tightening roller connected with the brackets B, over which roller the tapes *b* are also passed.

*d* is a roller above and in front and parallel with the shaft C and the lower edge of the in-

clined table C<sup>2</sup>. A series of short endless tapes, *d*, extend around this roller *d* and the pulleys *a* on the shaft C.

*d''* are endless tapes passed around the pulleys *a* on the shaft C, under the roller *d*, across the machine, and around pulleys *d'''*, connected with the front end of the frame by means of bearings *d''''*.

*f* is a rock-shaft mounted in bearings formed in or attached to the brackets B, to extend between and parallel with the rollers *b''* and *d*. It is provided with a series of stops, *f'*, that extend at right angles therefrom, to arrest the descent of a sheet as it is pushed down from the table C<sup>2</sup>.

*f''* are cranks at the ends of the shaft *f*.

*f'''* are arms pivoted to the brackets B by means of a rock-shaft, *f''''*.

*f'''''* is a feed-roller at the free ends of the arms *f'''*.

*g* are links connecting the roller *f'''''* and the cranks *f''*.

*g'* is an arm formed integral with one of the arms *f'''* to extend to a cam, *g''*, as clearly shown in Fig. 2—that is fixed to the driving-shaft. At each revolution of the driving-shaft the arm *g'* is moved by the cam *g''*, as required to rock the shaft *f''''* and elevate the feed-roller *f'''''* and to retain it elevated until a sheet is passed under it to engage the short endless tapes *d'* and the stops *f'*, projecting vertically from the rock-shaft *f*. A reverse motion of the arms *f'''* allows the roller *f'''''* to descend to engage the sheet, and by its rotary motion aid in advancing the sheet. The same motion, by means of the links *g*, turns the cranks *f''*, and thereby rocks the shaft *f*, as required, to move the stops *f'* away from the edge of the detained sheet, to let it pass in between the endless tapes *b* and *d'*, to be carried by said tapes into the machine and placed over the folding-rollers Nos. 1 and 2.

*g'''*, clearly shown in Figs. 1 and 2, is an endless belt that extends from a pulley on the end of the feed-roller *f'''''* to a pulley on the end of the roller *b'*, to transmit rotary motion to the feed-roller.

*h h* are belt-pulleys attached to the side of the frame A in a vertical position by means of suitable bearings.



$h'$  is a wide endless belt placed around the pulleys  $h$  and in a parallel position with the twisted tapes  $b$ .

$h''$  is a driving-belt that extends from one of the pulleys  $h$  to a driver-pulley, that is fixed to the end of the shaft  $b'$  in such a manner that motion will be thereby transmitted to the wide endless belt  $h'$ , that extends upward and at right angles from the horizontal plane in which the sheet is advanced by the twisted tapes  $b$ . The twists in the said tapes perform the functions of worms and move a sheet laterally while it is advancing, and thereby bring the edge of the sheet against the moving belt  $h'$  in such a manner that the joint action of the twisted carrying-tapes  $b$  and the wide belt  $h'$  will straighten and square the sheet relative to the folding-rollers Nos. 1 and 2 underneath it, as required to bring the center of the sheet immediately under the folding-blade and insure its being folded perfectly square as it is passed down between the folding-rollers.

$s$ , clearly shown in Figs. 6, 7, 8, and 9, is a follower in the packing-box, pivoted to a reciprocating rod in such a manner that it will vibrate as it is moved back and forth in the box by means of the reciprocating rod.

$s'$  are elastic supports fixed on the top surface of the bottom of the box. Their free ends incline upward and terminate in right-angled downward bends.

$s''$  are slots formed in the bottom of the box in such positions relative to the supports  $s'$  that they will admit their free ends when they are depressed.

$s'''$  is a shaft fixed to the follower. Its ends extend into guiding-grooves formed in the sides of the box, and its central portion slides upon the elastic supports  $s'$ . As it approaches the ends of the supports friction is increased, and the lower end of the follower will not move as fast as the upper, and consequently the pivoted follower will become inclined forward, to press the folded papers into an inclined position at every stroke and delivery of a paper; and as the follower recedes its inclination will again be reversed, and the free and downwardly-bent ends of the elastic supports will rise against the packed papers to prevent them from moving toward the follower, and also to support the paper that next

drops into the box in an elevated position to prevent its lower edges from coming in contact with the bottom of the box before it is free from the action of the follower, for the purpose of preventing the printed surface at the folds from being rubbed and worn on the bottom of the box as they are being placed in position and packed in the box.

I claim as my invention—

1. The sheet-feeding device composed of the stationary table or board, a rotating shaft,  $C$ , having tape-pulleys  $a$ , a roller,  $d$ , a series of endless tapes,  $b$ , a rock-shaft,  $f$ , having stops  $f'$  and cranks  $f''$ , an vibrating arms carrying a sheet-gripping roller,  $f'''$ , and connected with the cranks  $f''$  by means of links  $g$ , in combination with a series of endless sheet-carrying tapes, for the purposes specified.

2. In a paper-folding machine, a series of endless twisted sheet-carrying tapes, in combination with a pair of folding-rollers and a side gage extending parallel with the folding-rollers, for the purpose of adjusting a moving sheet laterally relative to the folding-rollers, for the purposes specified.

3. The combination of a series of twisted sheet-carrying tapes, an endless moving belt, and a pair of folding-rollers, substantially as shown and described, for the purposes specified.

4. The rotating shaft  $C$ , having tape-pulleys  $a$ , the series of endless tapes  $b$ , the rollers  $b'$ ,  $b''$ , and  $d$ , the endless tapes  $d'$  and  $d''$ , the rock shaft  $f$ , having stops  $f'$  and cranks  $f''$ , the vibrating arms  $f'''$ , carrying a roller,  $f''''$ , the connecting links  $g$ , the endless belt  $g''$ , and a pair of folding-rollers, arranged and combined substantially as shown and described, to advance, feed, and adjust a sheet in the manner set forth, for the purposes specified.

5. The combination of elastic supports  $s'$  with a packing-box having slots  $s''$  and a follower pivoted to a reciprocating arm, and carrying a shaft,  $s'''$ , that slides upon the elastic supports, in the manner set forth, for the purposes stated.

TALBOT C. DEXTER.

Witnesses:

THOMAS G. ORWIG,  
A. R. FULTON.