

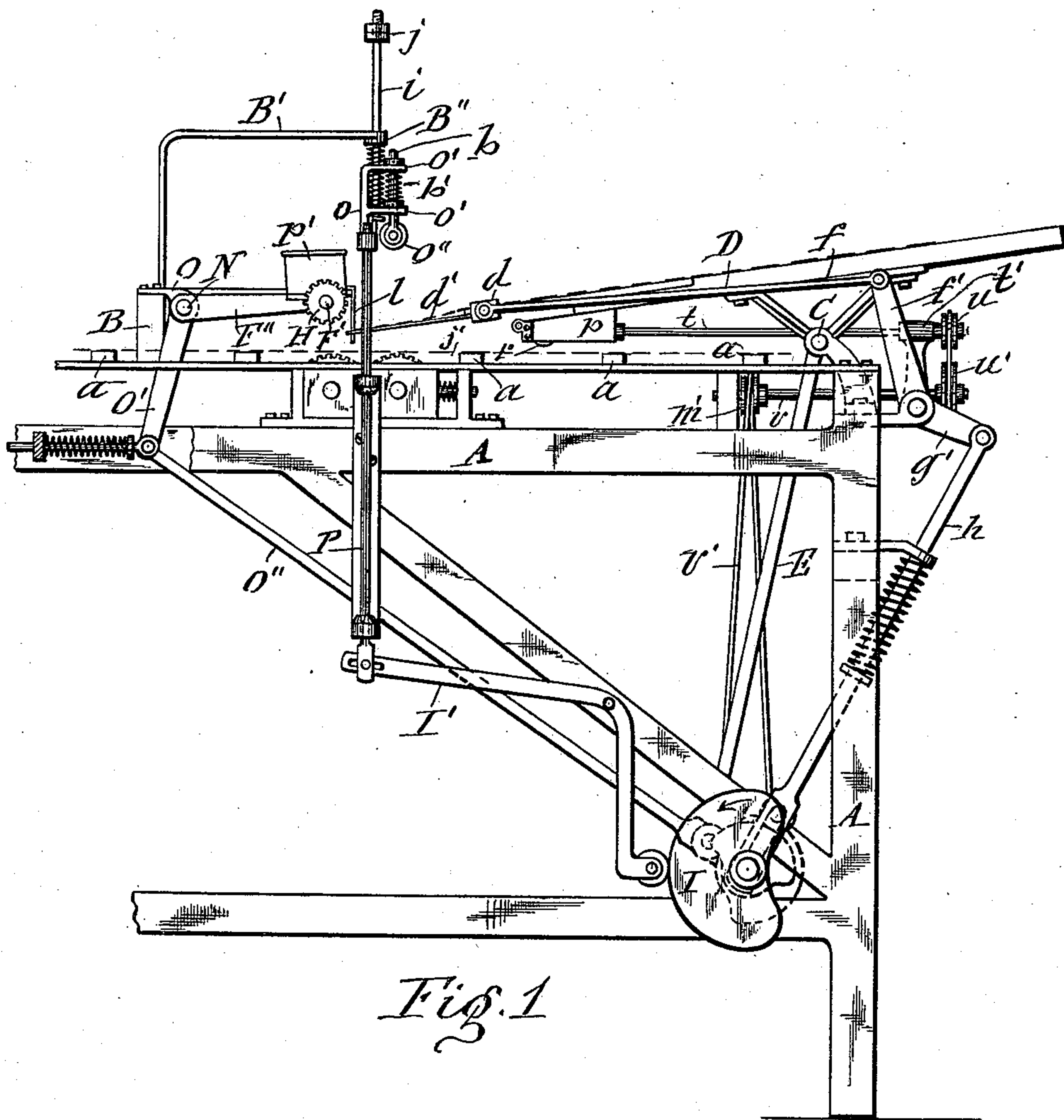
(No Model.)

3 Sheets—Sheet 1.

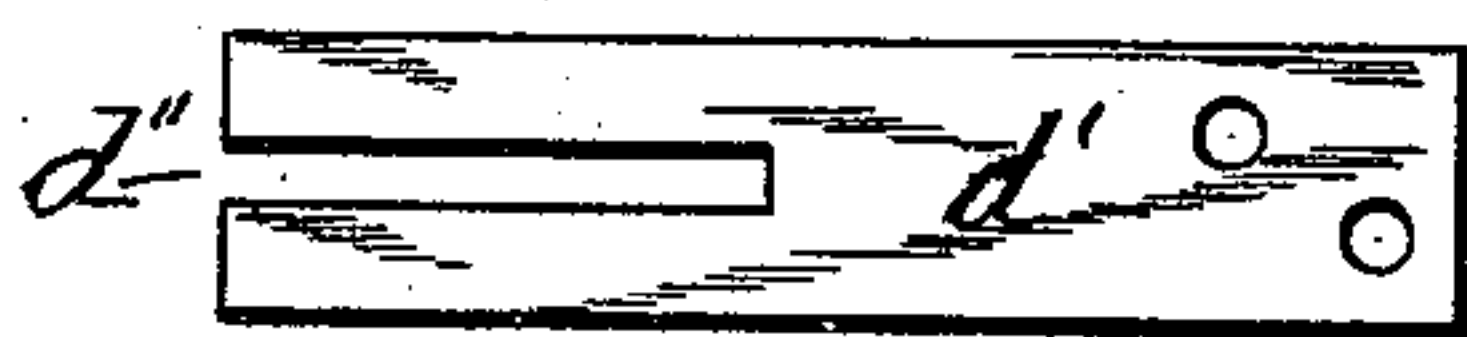
T. C. DEXTER.  
PAPER FOLDING AND PASTING MACHINE.

No. 538,609.

Patented Apr. 30, 1895.



*Fig. 1*



*Fig. 7*

WITNESSES:

*C. L. Bendixon*  
*C. J. Tomlinson*

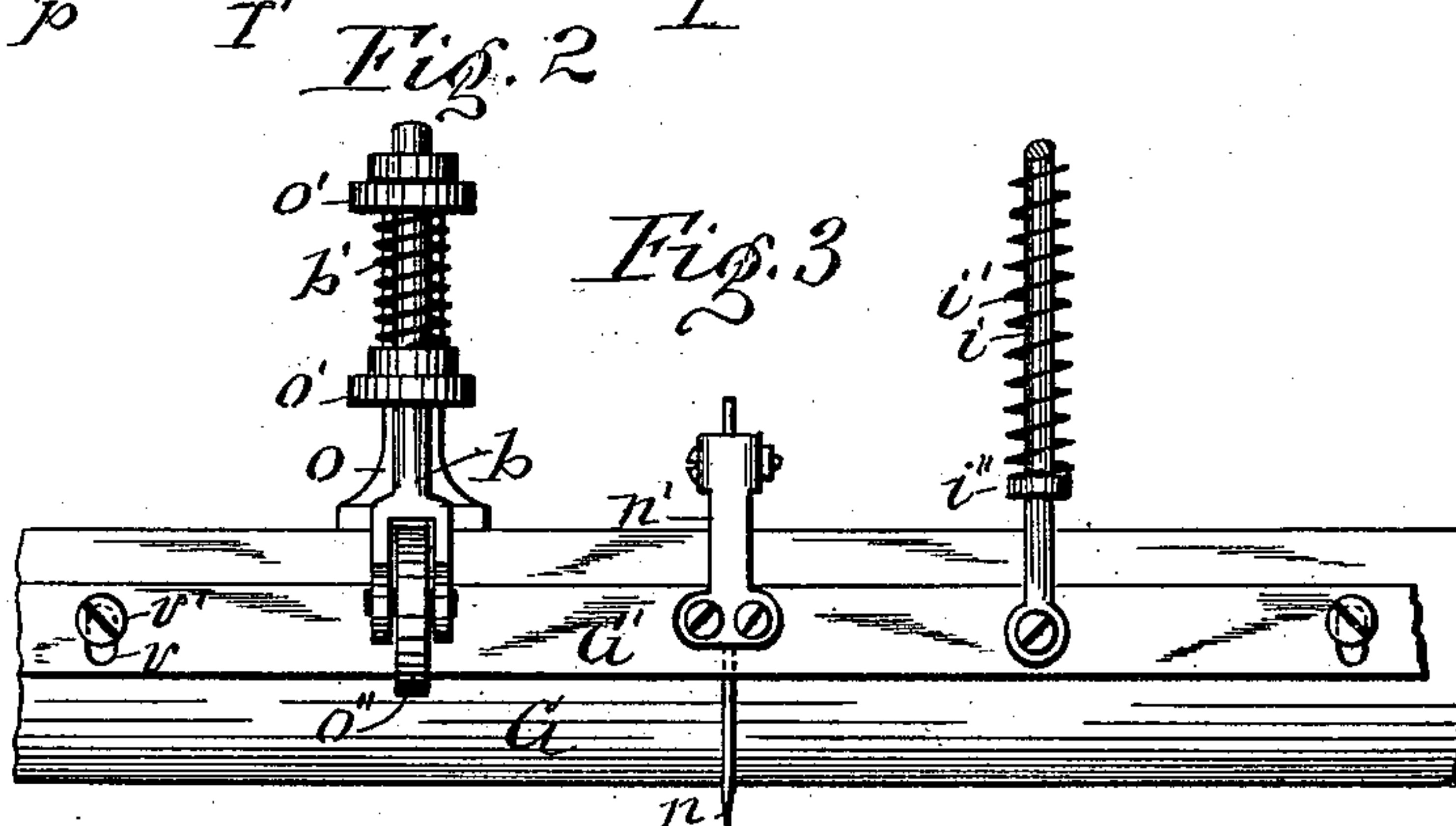
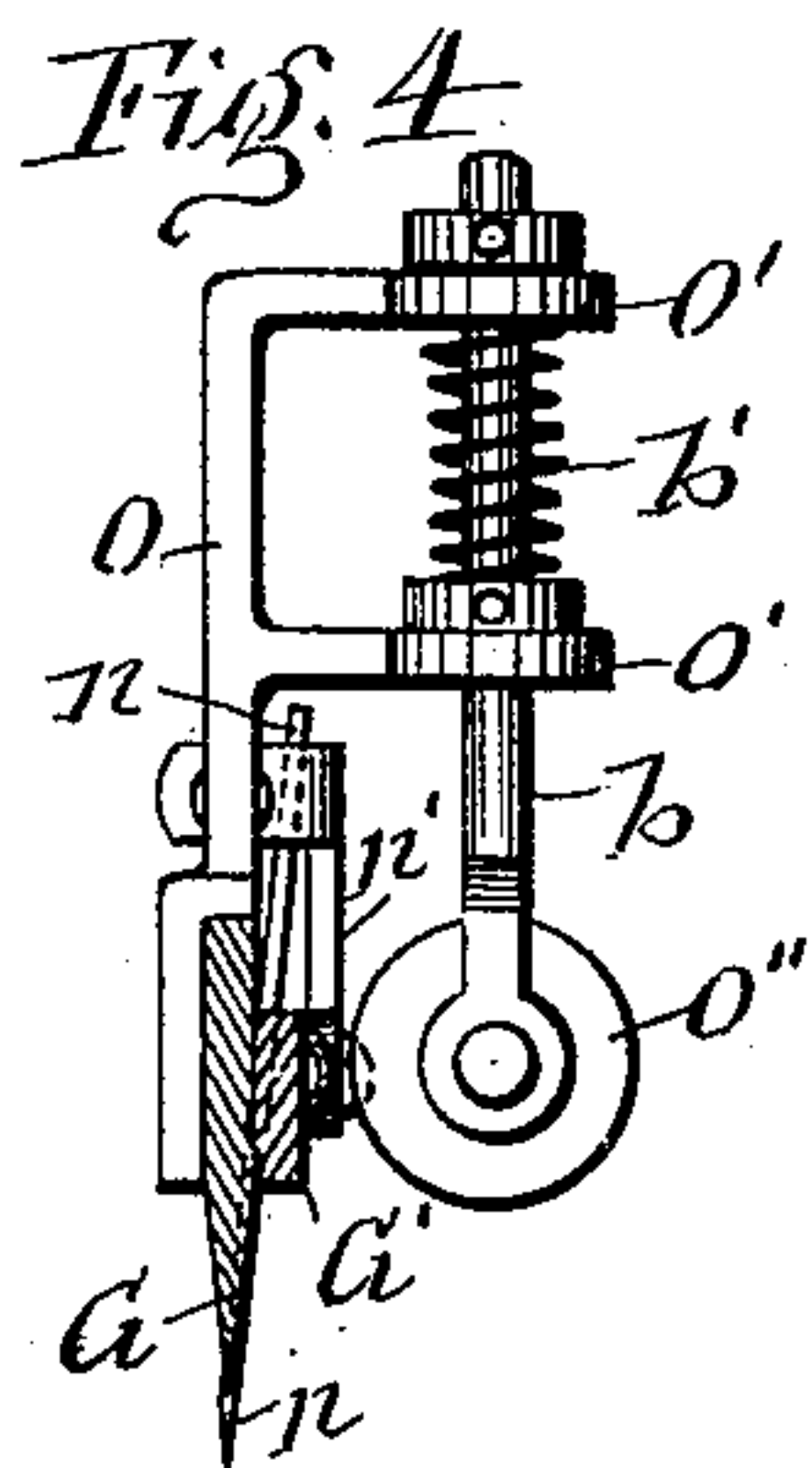
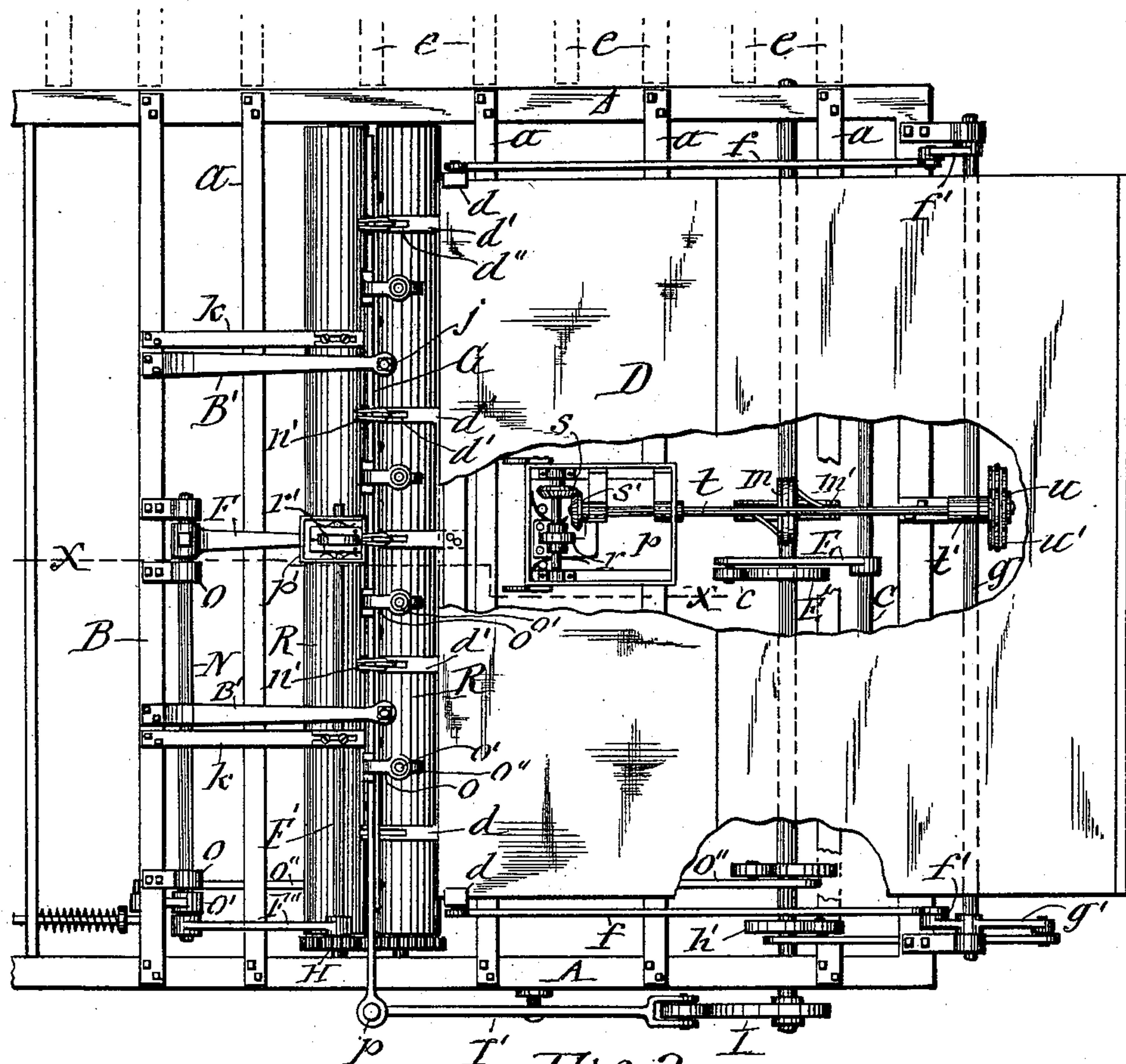
INVENTOR:

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

3 Sheets—Sheet 2.

No. 538,609.

Patented Apr. 30, 1895.



C. L. Bendixon  
C. E. Tomlinson.

INVENTOR:  
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(No Model.)

3 Sheets—Sheet 3.

T. C. DEXTER.  
PAPER FOLDING AND PASTING MACHINE.

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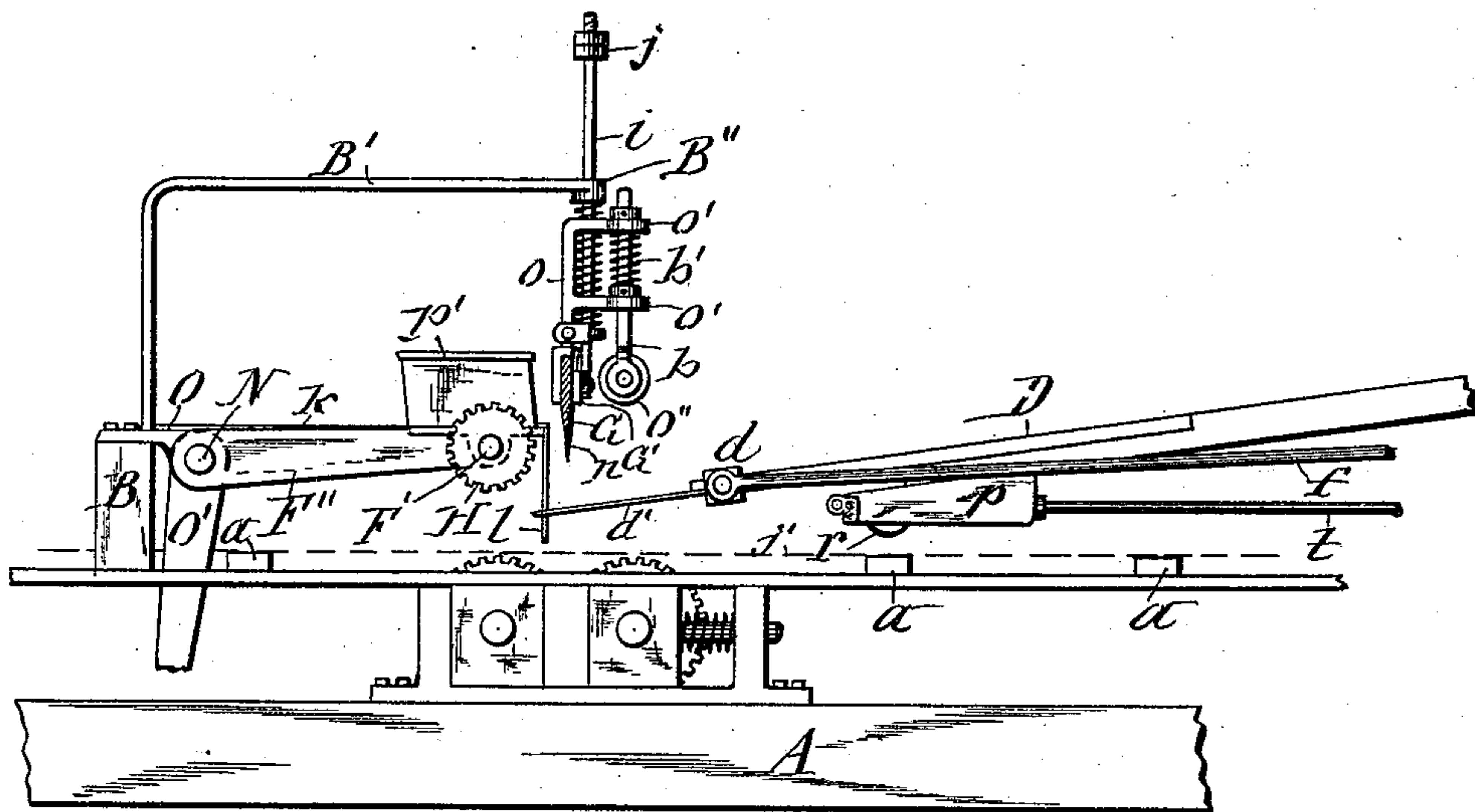


Fig. 5

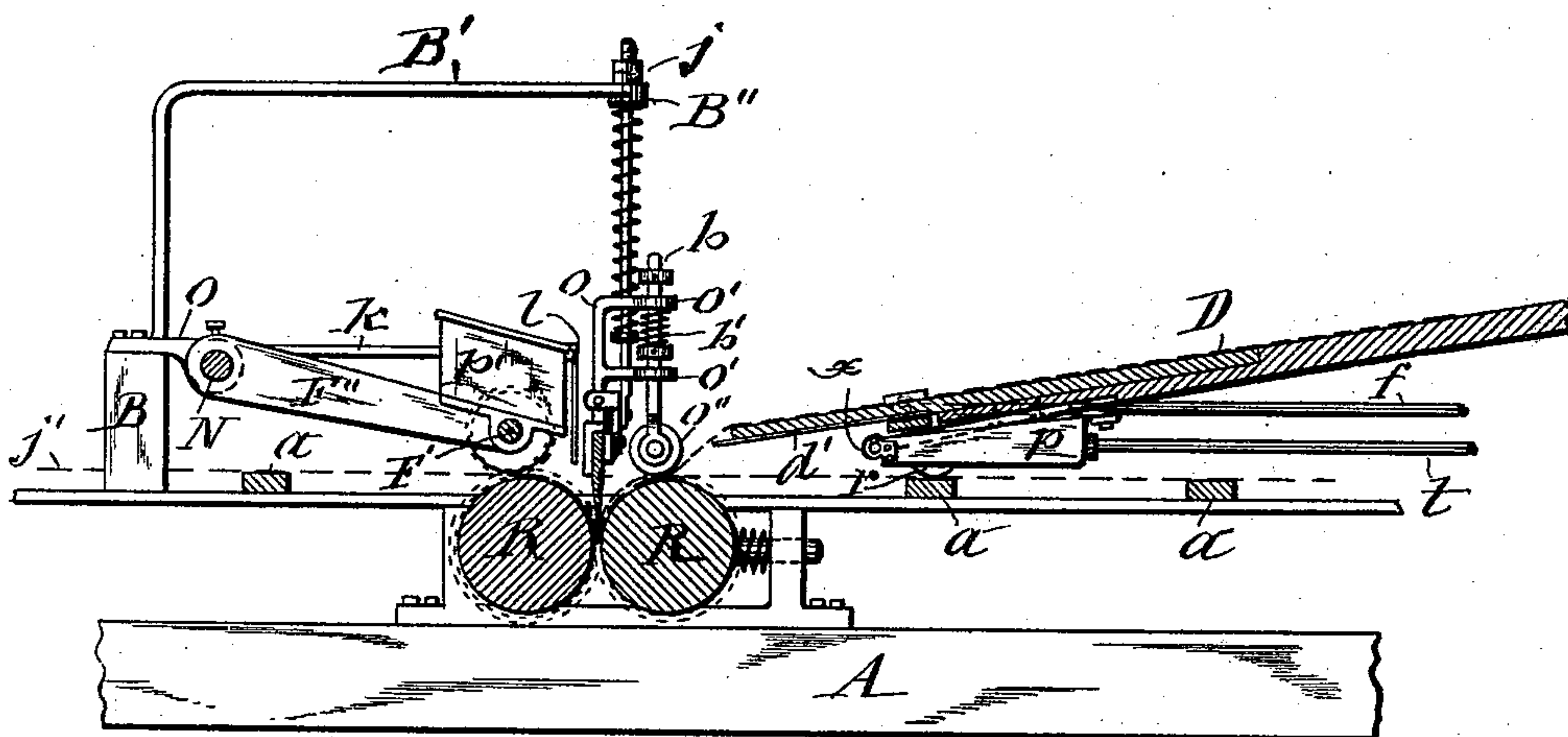


Fig. 6

WITNESSES:

C. L. Bendixon  
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INVENTOR:

Talbot C. Dexter  
By C. Laas  
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# UNITED STATES PATENT OFFICE.

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

## PAPER FOLDING AND PASTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 538,609, dated April 30, 1895.

Application filed April 13, 1894. Serial No. 507,360. (No model.)

*To all whom it may concern:*

Be it known that I, TALBOT C. DEXTER, of Fulton, in the county of Oswego, in the State of New York, have invented new and useful  
5 Improvements in Paper Folding and Pasting Machines, 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 fold a sheet of paper by passing it between revolving parallel rollers, and simultaneously insert another sheet between the folds of the aforesaid sheet and paste it thereto; and the invention has more particularly reference to the machine for which I have obtained United States Letters Patent No. 488,271, dated December 20, 1892. In the machines shown in said patent, I attempted to cause the folding blade to obtain the requisite hold on the sheet to be inserted by pressing the front marginal portion of said sheet tightly between a flexible bar and the folding blade so as to double said portion of the sheet over the edge of the blade. I found however  
25 by subsequent practical use of said machine that said treatment of the sheet could not be depended upon for producing the desired effect, even with needles permanently attached to the folding blade. I found that there was a tendency of the needles preventing the insert sheet from being readily discharged by the folding blade, resulting in its not being properly tucked into the main sheet. I also found some difficulty in feeding the insert sheet to  
35 its requisite position over the folding-rollers, owing to the excessive space between the edge of the feed-board carrying said insert sheet and the cushion or yielding plate which was designed to temporarily support the advance edge of the insert sheet.

The purpose of my present invention is to obviate all of the aforesaid defects, and to that end the invention consists in the improved construction and combination of parts as hereinafter fully described and set forth in the  
45 claims.

In the accompanying drawings, Figure 1 is a side elevation of a paper folding and pasting machine embodying my improvements.  
50 Fig. 2 is a top plan view of the same, a portion

of the insert feed-table being broken away to illustrate subjacent mechanisms. Fig. 3 is a side view of a portion of the paper-folding blade. Fig. 4 is a transverse section of the same. Fig. 5 is an enlarged side view of that  
55 portion of the machine where the folding of the paper is effected. Fig. 6 is an enlarged vertical section on line X X in Fig. 2, showing the parts in position for introducing the sheets between the folding-rolls; and Fig. 7 is an enlarged detached plan view of one of the paper-supporting fingers.

Similar letters of reference indicate corresponding parts.

—R—R— represent the rollers which receive the paper and fold the same in its passage between said rollers. These folding rollers are journaled in boxes mounted on the frame —A— and are geared together to rotate with the upper portions toward each other in  
70 the usual and well known manner.

—a—a—a— are bars, the tops of which are in a plane slightly above the tops of the folding-rollers. Upon these bars is carried the main sheet to be folded, said sheet being fed  
75 onto the aforesaid bars by tapes —e—e—e— in the same manner as shown in my Patent No. 488,271 hereinbefore referred to or by any other suitable and well known paper-conveying devices, and when the sheet is delivered  
80 to its requisite position for being folded, it lies with the center of its width over the bite of the aforesaid folding-rollers as indicated by dotted line *j'*.

—G— denotes the folding blade which receives a vertically reciprocating motion to introduce the paper between the folding-rollers. Said motion may be derived by any suitable mechanism, it being in this case represented of the same form as in my patent aforesaid,  
90 viz: A lever —I'— pivoted to the frame —A— has one end in contact with and is oscillated by a revolving cam —I—. The opposite end of said lever is connected with the blade —G— by a pitman —P—. 95

To one side of the blade —G— is connected a plate —G'— which has a limited vertical movement and has secured to it a plurality of clamps —n'— in which are secured vertically adjustable needles or pins —n— which  
100



normally project with their points beneath the bottom edge of the folding blade —G—. To the folding blade —G— are also attached a plurality of brackets —o—o— each of which is formed with vertically perforated ears —o'—o'— in which slides a stem —b—, to the lower end of which is pivoted a roller —o''—. Said stem is suspended by means of a collar fixed to the upper end thereof and resting upon the upper ear —o'—. Immediately above the lower ear —o'— is another collar fastened to the stem —b— and between this latter collar and upper ear is a spiral spring —b'— surrounding the stem and imparting a downward pressure thereto for the purpose hereinafter explained.

—D— represents the feed-table from which to pass the supplemental sheet to its position under the folding blade —G—. This table is mounted on a rock-shaft —C— which receives its rocking motion by a lever —E— fixed at one end to said shaft and has pivoted to its opposite end, a roller —c— by which it bears on a rotary cam —E'— as more clearly shown in Fig. 2 of the drawings. The table is thus caused to rock longitudinally and carry its delivering end to a limited degree toward and from the folding rollers —R—R—. Across the under side of said end of the rocking table —D— extends a bar —X— as shown in Fig. 6 of the drawings, which bar is supported on the table movably lengthwise thereof by means of shoes —d—d— loosely embracing the edges of the table. To this bar are attached thin flat metallic fingers —d'—d'— respectively opposite the needles —n—n— and extending toward the same. Said fingers are provided with slots —d''— extending through the free ends thereof and adapted to receive through them the aforesaid needles during the operation of the machine. These fingers receive intermittent longitudinal movement toward and from under the folding blade by means of pitmen —f—f— connecting the ends of the finger-carrying bar to the free ends of arms —f'—f'— fixed to a rock-shaft —g— which is actuated by another arm —g'— fastened to said shaft and connected at its free end to a pitman —h— having on its opposite end a roller by which it bears on a rotary cam —h'—.

To cause the needles to pierce the supplemental sheet and draw it down to the main sheet and then automatically withdraw the needles from the paper as the folding blade introduces the paper between the folding-rollers, I connect to the plate —G'— upwardly extending stems —i— which pass through eyes —B''— on the free ends of arms —B'— supported on the cross-bar —B—, which is fastened to the frame A. By means of spiral springs —i'— surrounding the stems and bearing with their upper ends against the under sides of the eyes —B''— and with their lower ends on collars —i''— attached to the stems a downward pressure is imparted to the plate —G'—, the vertical movement of which is limited by the lengths of the verti-

cal slots —v— through which the attaching screws —v'— of the plate —G'— pass as shown in Fig. 3 of the drawings. The needles are thus held normally projecting beneath the folding blade —G— to pierce the paper as hereinafter described.

To cause the needles to automatically withdraw from the paper after the supplemental sheet is brought into position to enter with the main sheet between the folding rollers, I provide the stems —i— with vertically adjustable nuts or other suitable stops —j— which strike the tops of the eyes —B''— at the proper time to cause the stems to arrest the downward movement of the needle-supporting plate —G'— while the folding blade tucks the paper between the folding-rollers in which operation the paper is pushed down from the ends of the needles.

The nuts or stops —j— can be secured at the desired elevation above the eyes —B''— to allow the needles to retain their hold on the paper for a longer or shorter period as may be desired.

To the cross-bar —B— are also attached the bars —k—k— which have their free ends over the adjacent folding roller —R— and have attached to them downwardly projecting gage-plates —l—l— for receiving the advance edge of the supplemental sheet of paper as it is fed from the table —D—.

—p—p—p represent a paste-trough which is hinged to the under side of the table —D— and has the pasting roller —r— protruding through the bottom of the trough to apply a strip of paste to the top of the main sheet when the said table is tilted down and the said sheet is being drawn through between the folding-rollers. Said pasting-roller may be rotated by any suitable mechanism, which in this instance is represented of the form of a miter-pinion —s— on the shaft of the roller —r— which pinion meshes with a similar pinion —s'— attached to a shaft —t— which extends through the rear end of the paste-trough and is supported on an arm —t'— mounted on the rock-shaft —g—. To the rear end of said shaft is secured a pulley —u— which is connected by a driving belt with a pulley —u'— fastened to a counter-shaft —v— which is driven by a belt —v'— running on a pulley —m— attached to said counter-shaft and on a pulley —m'— attached to the shaft of the cam —I—.

The portion of the main sheet at the opposite side of the folding blade —G— receives a strip of paste by a pasting device which is constructed and operated in the following manner: A shaft —N— parallel with the pasting blade is mounted in suitable bearings —O—O— attached to the cross-bar —B— and receives a rocking motion by a crank —O'— attached to said shaft and connected to the end of a pitman —O''— which receives intermittent reciprocating motion from a cam —L— attached to the shaft of the cam —I—. Opposite the center of the length of the fold-



ing blade is an arm —F— fastened to the shaft —N— and extending toward the folding blade. On the free end of said arm is mounted the paste-trough —p'— the bottom of which is provided with a slot through which the pasting-roller —r'— protrudes. This roller is secured to a shaft —F'— mounted in bearings on the arm —F— and on the arm —F''— secured to the end of the rock-shaft —N—. To the corresponding end of the shaft —F'— is fastened a pinion —H— which meshes with the gear of one of the folding-rollers —R— when the arms —F— and —F''— are depressed by the motion of the rock-shaft —N— as represented in Fig. 6 of the drawings.

The operation of the described machine is as follows: When the machine is in position for receiving the paper to be folded, the folding blade —G—, arms —F— and —F''— and adjacent end of the table —D— are raised and the fingers —d'—d'— are pushed forward under the folding blade as shown in Fig. 1 of the drawings, the main sheet being then fed to its requisite position under the folding blade and the supplemental sheet pushed forward on the table —D— until the advance edge of the sheet strikes the gages —l—l— and in this position the fingers —d'—d'— support said portion of the sheet. The folding blade then descends and causes the needles —n—n— to pierce the supplemental sheet directly over the slots of the aforesaid fingers, which slots permit the needles to effectually penetrate the paper. Then the fingers —d'—d'— are retracted to allow the blade —G— with its needles and rollers —o''— to further descend. At the same time the table —D— is tilted to increase its inclination and carry its delivery end closer to the folding rollers and thus facilitate the withdrawal of the supplemental sheet from the table —D—. The needles having a secure hold on the supplemental sheet, compel the same to follow the movement of the folding blade, which introduces the same with the main sheet into the bite of the folding-rollers —R—R—. In this operation the needles are prevented from following the folding blade by the stops —j— on the stems —i— coming in contact with the stationary eyes —B''— as represented in Fig. 6 of the drawings. Said arresting of the movement of the needles causes the same to be withdrawn from the paper while the folding blade tucks the paper between the folding-rollers. At the same time the rollers —o''— bear on top of the supplemental sheet and hold said sheet down while the needles are being withdrawn from the paper. Said bearing of the rollers —o''— upon the supplemental sheet directly over one of the folding-rollers, also insures the entering of said sheet between the folding rollers simultaneously with the main sheet. As the paper is drawn down between the folding-rollers, the tilted table —D— and depressed arm —F— hold the pasting-rollers —r— and —r'— in contact with the main sheet and apply thereto strips

of paste by which the supplemental sheet is fastened to the main sheet in the process of folding the same.

What I claim as my invention is—

1. In combination with the folding rollers, main sheet-supports, folding-blade and supplemental sheet gage, a supplemental feed-table rocking longitudinally and carrying its delivery edge toward and from the folding rollers, a bar extending across said table and movable lengthwise thereof, fingers projecting from said bar and supporting the edge of the supplemental sheet, intermittently reciprocating pitmen imparting movement to said bar, and needles carried on the folding blade and piercing the advance edge of the supplemental sheet to draw it down to the main sheet substantially as set forth.

2. In combination with the folding-rollers, main sheet support, supplementary feed-table and folding blade, brackets attached to said blade, vertically movable stems suspended from said brackets springs imparting downward pressure to said stems and rollers pivoted to the lower ends of the stems and in position to bear on the paper in the process of entering between the folding-rollers, as shown.

3. In combination with the folding-rollers, main sheet support, supplementary feed-table, folding blade and supplemental sheet gage, intermittent reciprocating fingers on the delivery edge of the supplementary feed-table temporarily supporting the advance edge of the supplemental sheet, needles on the folding blade piercing the said sheet while thus supported, brackets attached to the folding blade, vertically movable stems suspended from said brackets, springs pressing said stems downward, and rollers pivoted to the lower ends of said stems to bear on the supplemental sheet as set forth.

4. In combination with the folding-rollers and folding blade, a supplemental feed-table having its delivery end over one of the folding-rollers and parallel therewith, gages over the other of said folding-rollers, fingers on said feed-table movable toward and from the gages, a plate extending lengthwise of the folding-blade and connected thereto movable vertically independent thereof, needles secured to said plate and projecting normally beneath the folding blade, springs imparting downward pressure to the needle-carrying plate, stationary arms provided with vertical eyes over said plate, stems attached to the plate and passing through said eyes, and stops on the upper ends of the stems and by contact with the said eyes arresting the downward movement of the needle-carrying plate while the folding blade tucks the supplemental sheet and main sheet between the folding-rollers as set forth.

5. In combination with the folding-rollers and folding blade, the supplemental feed-table —D— rocking with its delivery edge toward and from said rollers, the fingers —d'—



connected to said table movable longitudinally and provided with the slots —*d'*—, the gage —*l*— in front of said fingers, pasters respectively under the table —*D*— and back of  
5 the aforesaid gage and movable vertically to and from the plane of the main sheet conveyers, the plate —*G'*— carried on the folding blade movable vertically independent thereof, the stationary arms —*B'*— provided with  
10 eyes —*B''*— over said plate, the stems —*i*— connected to said plate, and passing through said eyes, collars —*i''*— attached to said stems beneath said eyes, springs —*i'*— interposed between the eyes and collars, stops —*j*— at-

tached to the upper ends of the stems, brackets —*o*— attached to the folding blade, vertically movable stems —*b*— supported on said brackets, springs —*b'*— imparting downward pressure to said stems and rollers —*o''*— pivoted to the lower ends of the stems —*b*— all  
20 combined to operate substantially as set forth.

In testimony whereof I have hereunto signed my name this 19th day of March, 1894.

TALBOT C. DEXTER. [L. S.]

Witnesses:

C. F. ANDERSON,  
F. E. CHUBB.