

No. 781,083.

PATENTED JAN. 31, 1905.

W. M. L. McADAMS.

MACHINE FOR CREASING LEDGER SHEETS OR THE LIKE.

APPLICATION FILED MAY 5, 1904.

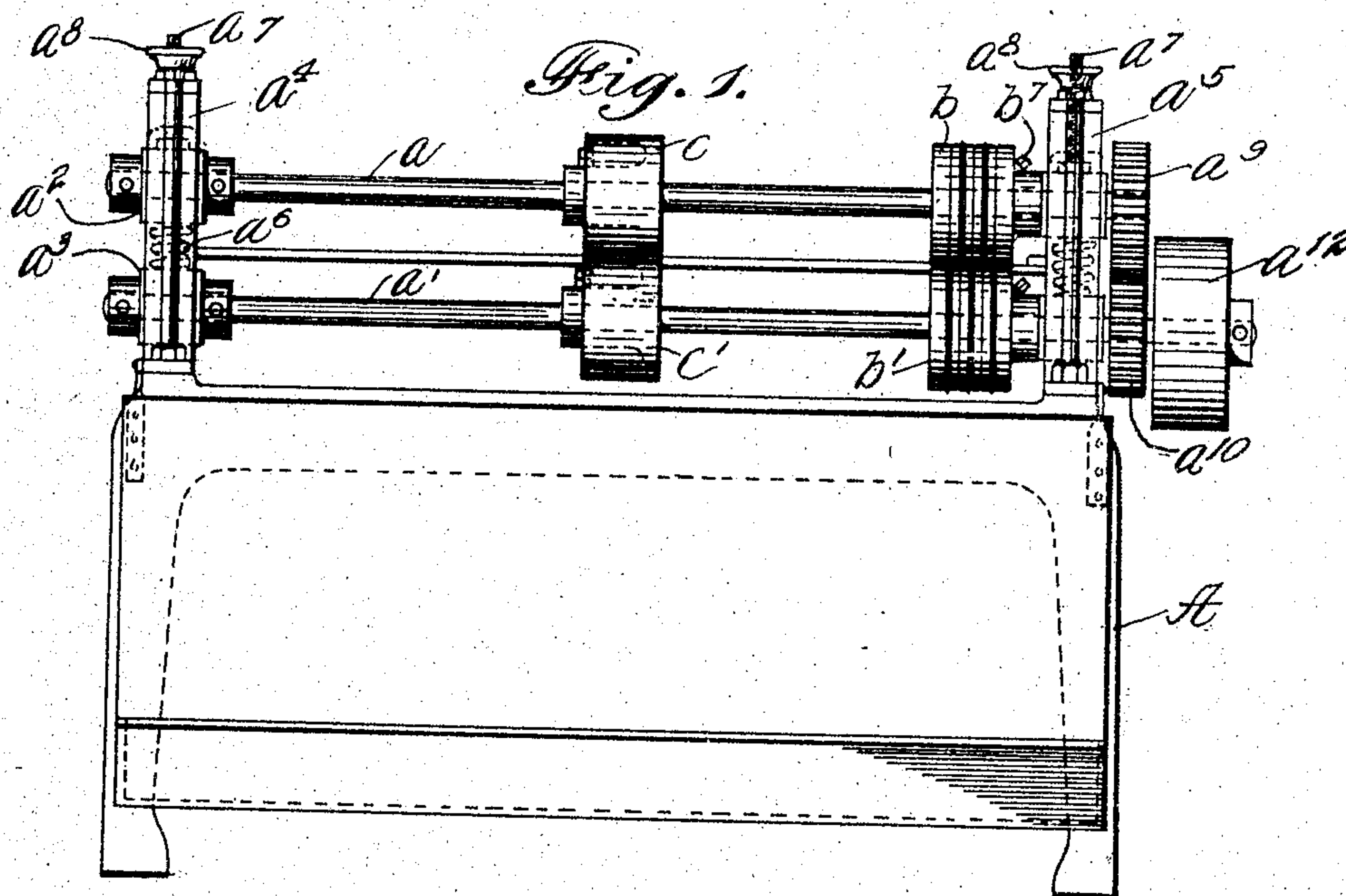


Fig. 2.

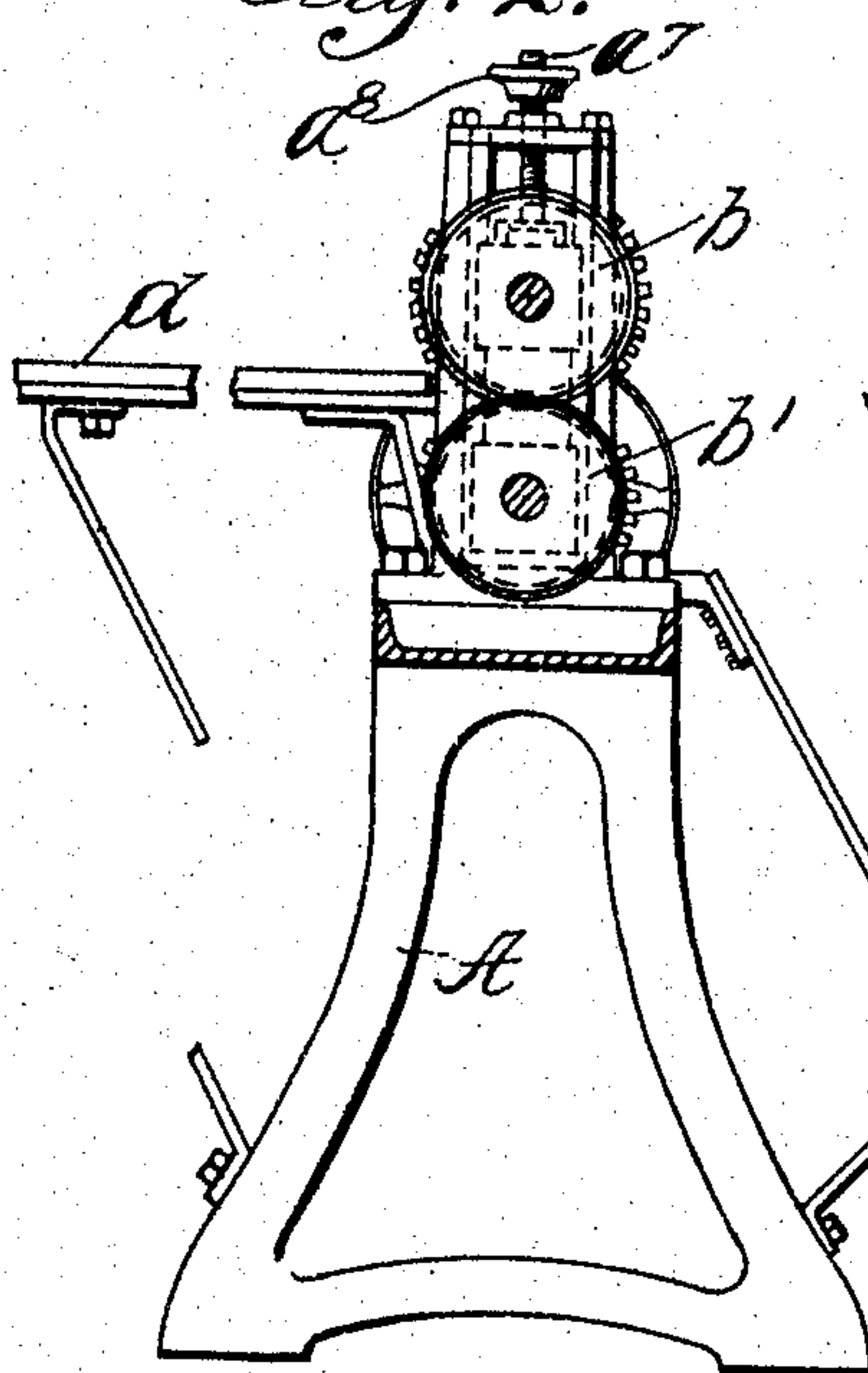


Fig. 4.

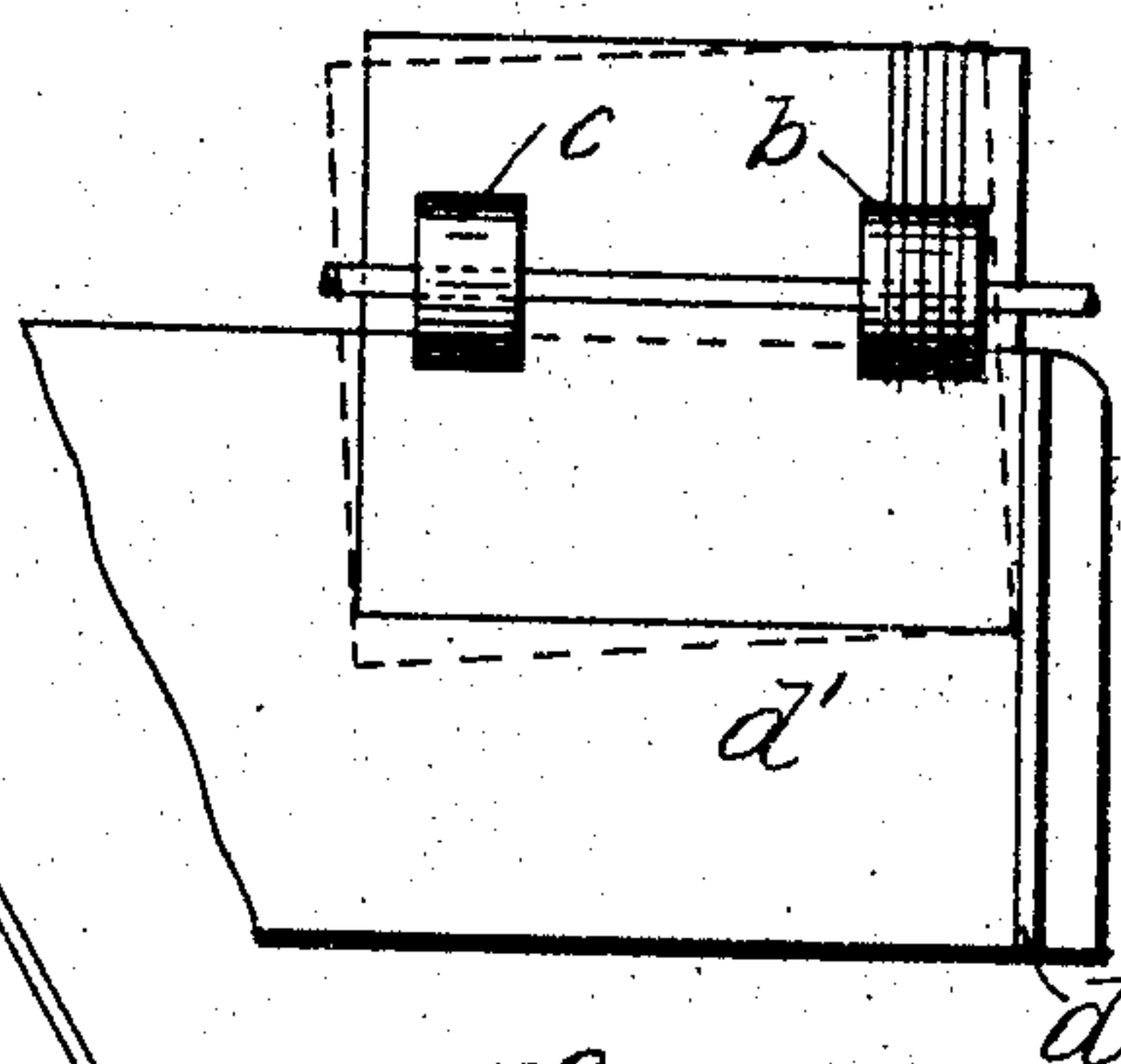


Fig. 3.

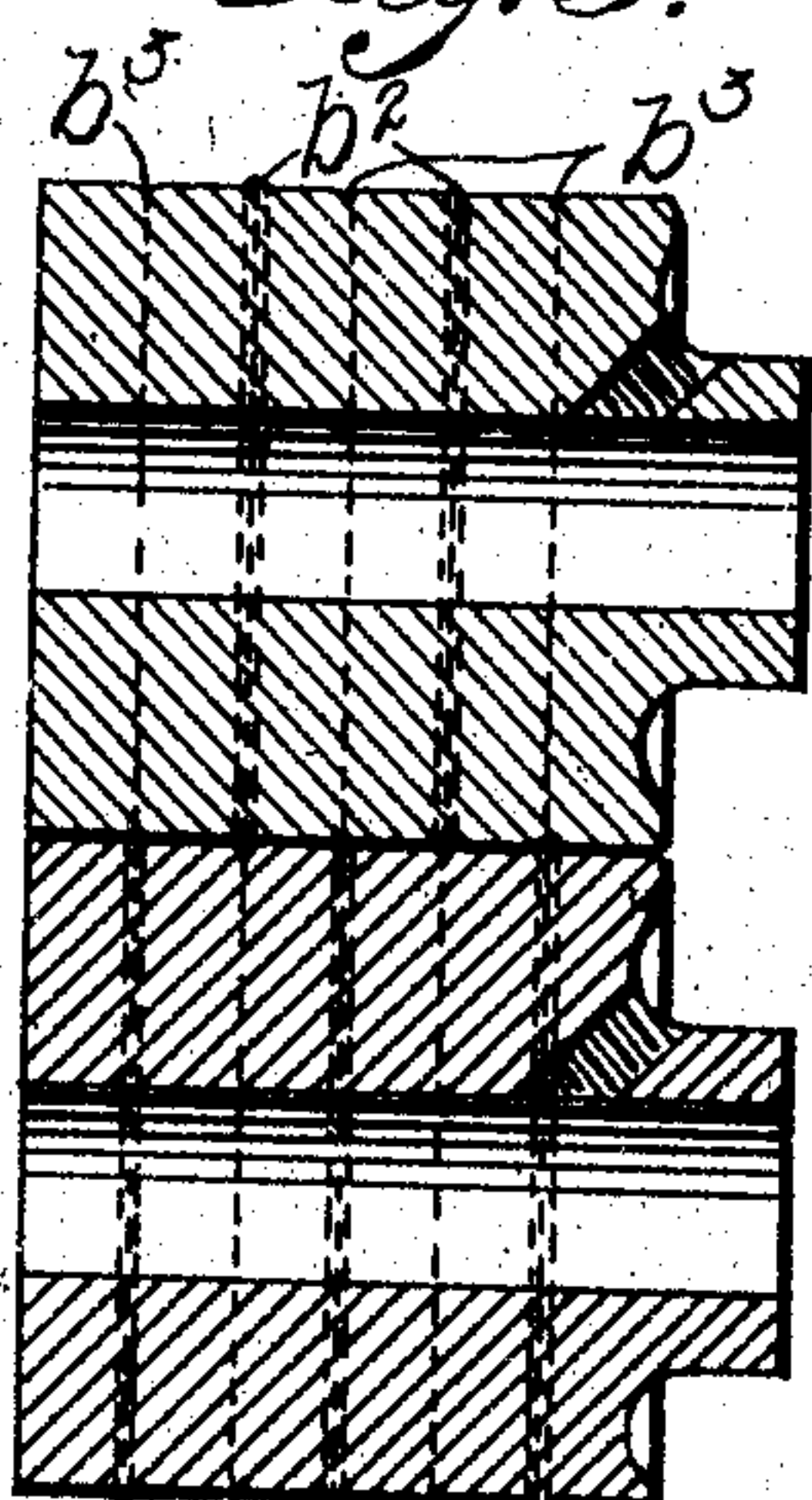


Fig. 5.

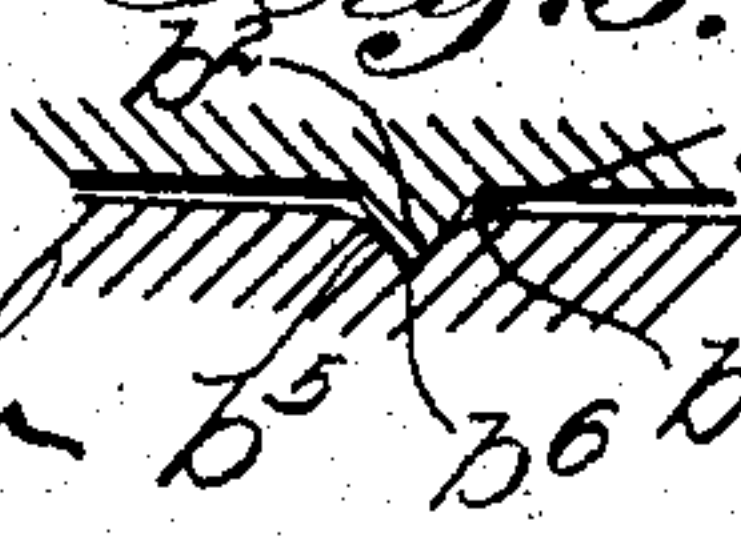
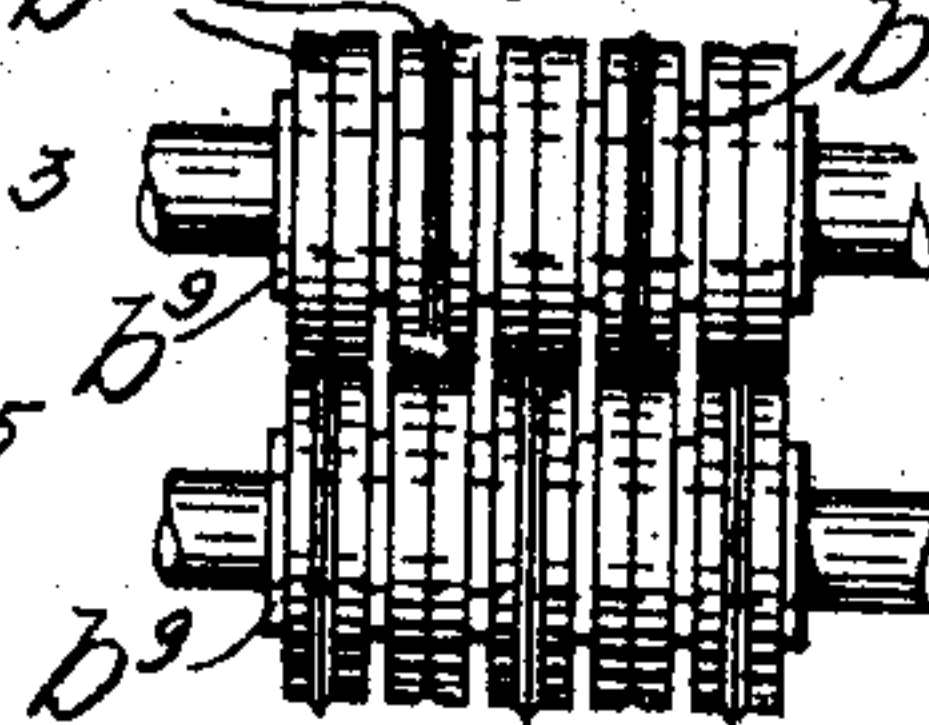


Fig. 6.



Witnesses:
John C. Forter
Alexander Lincoln

Inventor,
William M. L. McAdams
by
Geo. S. Maxwell
Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM M. L. McADAMS, OF NEWTON, MASSACHUSETTS.

MACHINE FOR CREASING LEDGER-SHEETS OR THE LIKE.

SPECIFICATION forming part of Letters Patent No. 781,083, dated January 31, 1905.

Application filed May 5, 1904. Serial No. 206,462.

To all whom it may concern:

Be it known that I, WILLIAM M. L. McADAMS, a citizen of the United States, and a resident of Newton, in the Commonwealth of Massachusetts, have invented an Improvement in Machines for Creasing Ledger-Sheets or the Like, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

In making blank books for commercial purposes, such as ledgers, &c., having removable leaves it is desirable to render the paper specially flexible near its back edge, and one way of accomplishing this is by longitudinally creasing the paper; and my invention has for its object the provision of a machine for effecting the creasing expeditiously and neatly and at the same time specially manipulating the sheet so as to produce permanent and superior flexibility.

Stated in general terms, my invention comprises creasing-rolls so constructed and mounted that they stretch or depress and raise fine clean-cut grooves or creases in the paper, without, however, tending to disrupt or injure the latter, and in connection with said groove-stretching means I provide means for maintaining the alinement and rapid forward movement of the paper.

Further advantages and the operation and construction of my machine will appear in the course of the following detailed description, reference being had to the accompanying drawings, illustrative of a preferred embodiment of my invention, and in which—

Figure 1 is a view in rear elevation thereof. Fig. 2 is an end view thereof. Fig. 3 shows the creasing-rolls in longitudinal section. Fig. 4 is a top plan view illustrating one of the advantages secured. Fig. 5 is an enlarged sectional detail of the creasing members, and Fig. 6 shows a modified form of creasing-roll.

In properly preparing the kind of sheets herein concerned several essential requisites tend to render the problem difficult. For instance, the bulk or size of the creases must not be great, as otherwise the book would bulge at its back. The creases must be sharp and permanent and not vague and indefinite,

lest the constant pressure of the closed book destroy their value. The creases must be parallel and straight, so that the leaves may maintain correct alinement, and the creases must be even and uniform, so that all the leaves may have the same length.

In accomplishing the desired result I mount in a suitable frame A upper and lower shafts a a' , journaled, respectively, in blocks a^2 a^3 , carried in stands a^4 a^5 at the opposite ends of the machine, the blocks a^2 resting on springs a^6 and held in unyielding adjustment by screws a^7 and hand-nuts a^8 . Gears a^9 a^{10} , driven by a belt-pulley a^{12} , serve to rotate the shafts. Mounted on said shafts adjacent the right-hand end of the machine, as shown in Fig. 1, are creasing-rolls b b' . These rolls are solid and heavy and are provided peripherally with alternate male and female ridges and grooves b^2 b^3 in coöperating pairs, so that a ridge b^2 of the upper roll b fits into a groove b^3 of the under roll b' and adjacent thereto a ridge b^2 of the under roll b' fits into a groove b^3 of the upper roll b , as clearly shown in Figs. 1, 3, and 6. The rolls are preferably normally held out of pressing engagement with the paper, so that the weight of the upper roll is transmitted directly to its ridges and grooves for rendering the creases uniform.

In Figs. 3 and 5 the construction of the rolls, &c., is shown enlarged, these figures showing the solid heavy character of the rolls (this being the means I prefer to employ for getting unvarying accuracy and steadiness of creasing under high-speed operation) and the special shape of the groove, which has its opposite edges rounded, as indicated at b^5 , and the depression b^6 , formed to coöperate with the opposite ridge in grasping and biting into the paper without cutting. The rolls of course engage the paper simultaneously at all parts, and therefore the end ridges maintain their hold on the paper at the same time that the intervening ridges are required to deflect and push down the paper, the result being that a gentle and yet compelling strain and stretch is brought on the paper that lies between the outermost ridges, and because of the construction thus far described this

stretching is permanent and the creasing uniform and minute, providing the requisite flexibility without being cumbersome.

Used alone, the rolls *b b'* cause the paper to feed unevenly, so that it tends to slue around, as indicated in dotted lines, Fig. 4, and I prevent this by means of a pair of feed-rolls *c c'*, very slightly larger than the rolls *b b'*, which coöperate with an edge-guide *d* at one end of the feed-table *d'* to maintain the paper in proper longitudinal movement. As the sheets are creased they fall into an angularly-shaped hopper *d''*.

The construction of the machine is such that the rolls *b b'* can be readily changed simply by loosening the bolts or screws *b''* and sliding off the old rolls and sliding on others. In Fig. 6 I have shown the roll as composed of sections *b''*, spaced apart by washers *b'''*, so that the same sections may be used for creasing different widths by simply spacing them as required.

In operation the sheets are fed successively from the table *d'* to the creasing-rolls *b b'*, being maintained in alinement by the rolls *c c'*, and are permanently bent in alternate directions by the rolls *b b'*, which leave fine sharply-defined creases, even throughout their length, parallel, uniform with each other, and slightly stretched in their forming.

I am aware that various changes and modifications in form, arrangement, and combination of parts may be resorted to without departing from the spirit and scope of my invention, and accordingly I do not intend to restrict myself to all the particulars described.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine of the kind described, a pair of creasing-rolls having coöperating peripheral grooves and ridges for making a narrow series of fine stretched creases, the edges of the grooves being beveled or rounded.

2. In a machine of the kind described, a pair of creasing-rolls having coöperating peripheral grooves and ridges for making a narrow series of fine creases, the edges of the grooves

being beveled or rounded, and the body of the rolls between said grooves and ridges being out of contact when said grooves and ridges are in contact, and means for adjusting the rolls toward and from each other.

3. In a machine of the kind described, a pair of creasing-rolls having coöperating peripheral grooves and ridges for making a narrow series of fine creases at one edge of the sheet, the edges of the grooves being beveled or rounded, shafts supporting said rolls and a pair of alining rolls mounted on said shafts a short distance from said creasing-rolls, the sheet being engaged solely by said pair of creasing-rolls and said pair of remote alining rolls and elsewhere unrestrained.

4. In a machine of the kind described, a pair of creasing-rolls having coöperating peripheral grooves and ridges projecting from the rolls, and separated in pairs by intervening flat surfaces of the rolls proper for making a narrow series of fine separated creases, the edges of the grooves being beveled or rounded, shafts supporting said rolls, and a pair of alining rolls mounted on said shafts a short distance from said creasing-rolls, said alining rolls being slightly larger in circumference than said creasing-rolls.

5. In a machine of the kind described, a pair of creasing-rolls having coöperating peripheral grooves and ridges for making a narrow series of fine creases, said rolls being solid, the weight thereof constituting means for making the creasing uniform, said rolls being cut away between successive pairs of grooves and ridges for keeping the body of the rolls out of pressing engagement with the paper, whereby the said weight operates directly on the creasing-grooves and ridges, and leaves flat surfaces of paper between the creases.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM M. L. McADAMS.

Witnesses:

WILLIAM F. ALLAN,
JOHN E. PORTER.