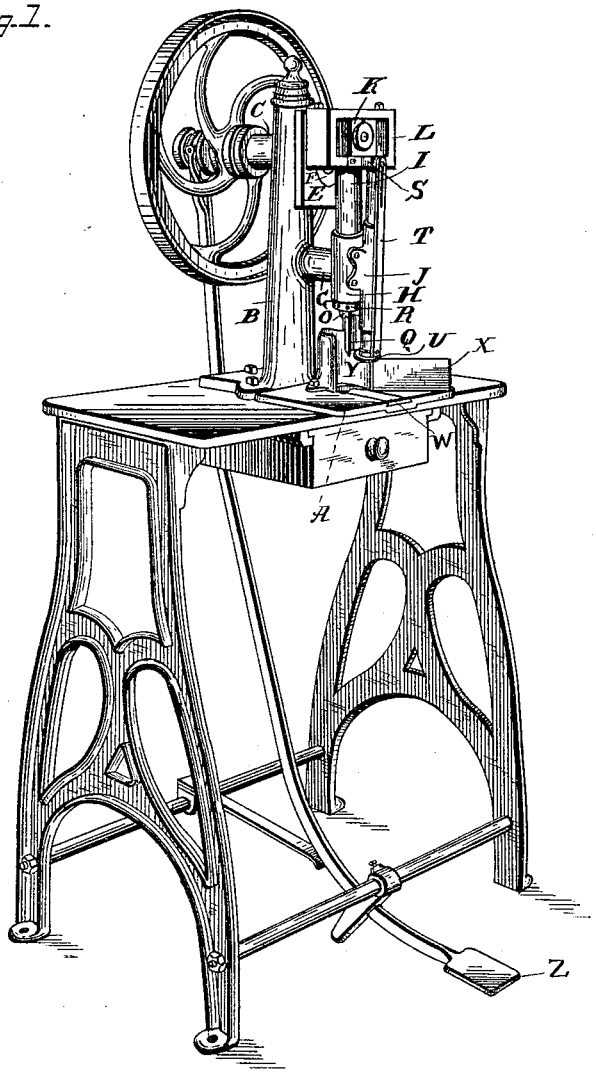
(No Model.) 3 Sheets—Sheet 1.

M. L. METZGER & A. COOPER.

BOOK TRIMMING MACHINE.

No. 346,412. Patented July 27, 1886.

Fig. 1.



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(No Model.) 3 Sheets—Sheet 2.

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Fig. 2.

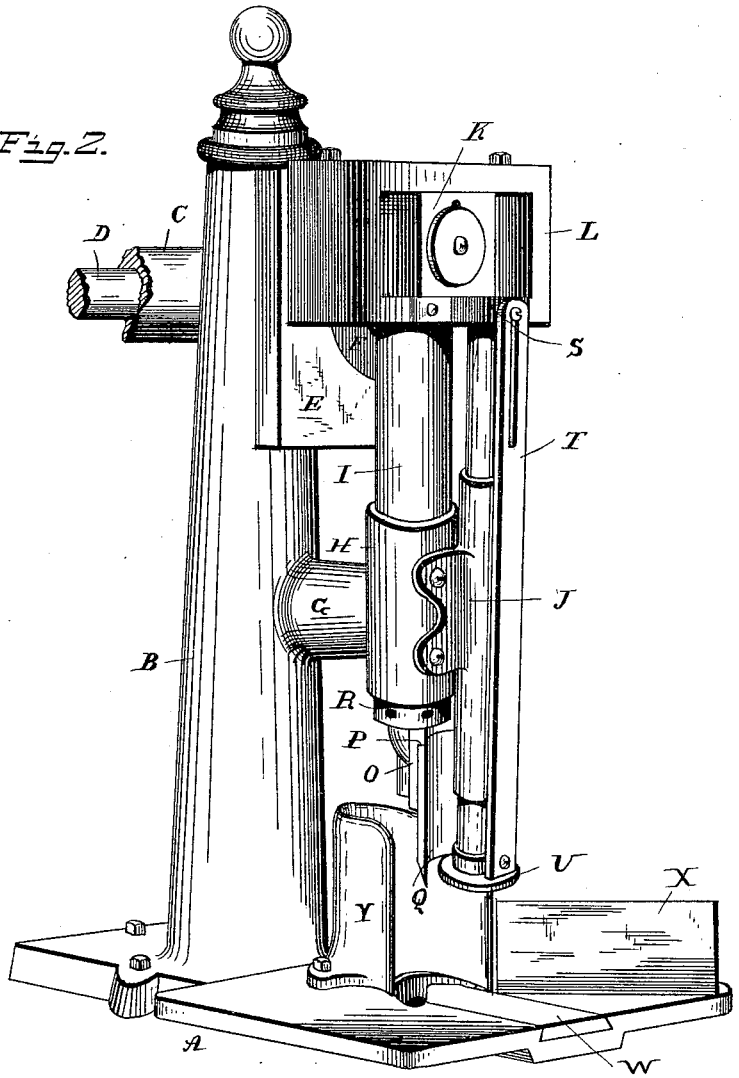

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Fig. 3.

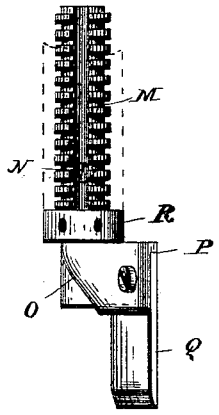


Fig. 5.

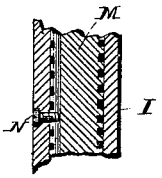


Fig. 6.

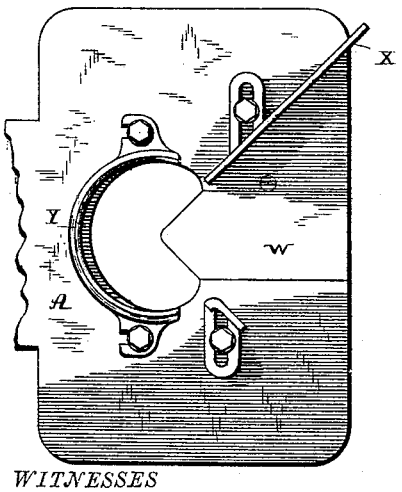
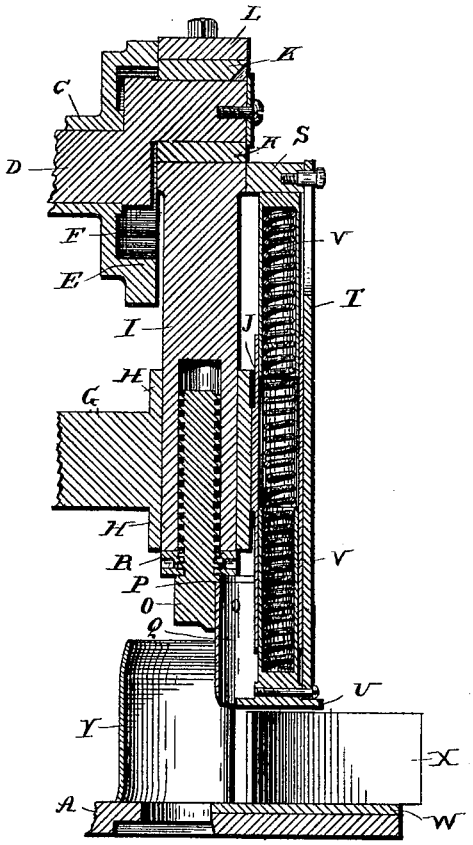


Fig. 4.



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UNITED STATES PATENT OFFICE.

MARTIN L. METZGER AND ALBERT COOPER, OF HARRISBURG, PENNSYLVANIA, ASSIGNORS TO W. O. HICKOK, OF SAME PLACE.

BOOK-TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 346,412, dated July 27, 1886.

Application filed October 26, 1885. Serial No. 181,000. (No model.)

To all whom it may concern:

Be it known that we, MARTIN L. METZGER and ALBERT COOPER, citizens of the United States, residing at Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Book-Trimming Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in machines for trimming the corners of books; and it has for its objects, first, to provide an automatic clamp which will firmly hold the paper, so that the knife will accurately do its work; second, to provide a shield for the blade which will prevent the scrap paper, as it is cut, from flying in all directions, and at the same time conduct it into a suitable receptacle, and, third, to regulate the working of the blade so that it will not stop save when at its farthest upward stroke, and when it is entirely removed from the material just acted on, and thus admit of its ready withdrawal and the immediate insertion of other work.

In the accompanying drawings, forming a part of this specification, and on which similar letters of reference indicate the same or corresponding features, Figure 1 represents a perspective view of our machine as it stands upon the table ready for work, with one of its guiding-plates removed. Fig. 2 is an enlarged perspective view of the machine with the table and the pulley removed; Fig. 3, a detail view of the screw-threaded rod which holds the blade, showing a key-seat formed in one side and a shoulder-nut. Fig. 4 is a vertical sectional view taken through the plunger and automatic clamp, and showing their internal construction; Fig. 5, a vertical sectional view of a portion of the plunger and threaded rod, showing the set-screw extending into the groove in the rod; and Fig. 6, a plan view of a portion of the bed, showing the provision for adjusting the guiding-plates.

The clutch mechanism shown in Fig. 1 forms the subject-matter of another application filed by us of even date herewith, and we shall therefore refer to it only sufficiently to make the operation of the present invention understood, as it is fully described in the application above referred to.

The letter A designates a platform, upon which rests the standard B, through the journal-box C of which passes the shaft D. The standard is provided on the opposite side with another journal-box similar to the one just described, and having one end terminated in a square face, E, the central portion of which is provided with a circular recess, F, to admit of the play of the wrist-pin. This standard is also provided with an arm, G, having a cylindrical extension, H, through which the plunger I is adapted to play, and to which is fastened the guide of the clamp J, to be presently described. The upper end of the plunger is provided with a block, K, in which the wrist-pin rotates, and to which wrist-pin the block is held by a screw and washer, as shown in Fig. 2, and this block K reciprocates in the slotted head L, the latter having a vertical movement against the face E of the journal-box. The lower portion of the plunger is hollow to admit of the screw-threaded rod M, which holds the cutting-blade, and is secured to the plunger by means of a set-screw, N, which fits in the key-seat seen in Fig. 4, the key seat or groove being formed in the face of the rod M, and the screw N being fitted in a threaded aperture in the plunger I, as seen in Fig. 5. This rod is provided at its lower end with an approximately-V-shaped extension, O, the upper side of which terminates in a shoulder, P, against which the knife Q abuts. A nut, R, is mounted upon the rod N immediately beneath the plunger, and serves as a shoulder to prevent the rod from receding into the bore of the plunger when the blade is resisted by the paper in the act of cutting. This nut is capable of an up-and-down adjustment on the rod N, so as to be always in contact with the lower end of the plunger, no matter whether the rod is adjusted more or less into the bore of the plunger. Small apertures in the face of the nut admit of the application of a suitable wrench. We have adopted this mode of attaching the knife to the plunger, so that whenever the knife becomes

worn the rod may be let down, and in this way the blade used until it becomes entirely worn out.

To the head L is firmly secured a lug, S, and to this lug is attached, by means of a screw, the rod T, the upper portion of which is slotted, so as to admit of the play of the screw, and the lower end of which is secured to the circular plate U.

The clamp J consists of three sections of tubing. The central portion is firmly bolted to H, as seen in Fig. 2, and the other portions slide within it, being normally kept apart by reason of the spiral spring V, as seen in Fig. 3. We have constructed the clamp in this manner, so that it may vary its length according to the thickness of the material against which it presses, and its length may be shortened until the screw in the lower edge of the head L reaches the lower end of the slot, when it will refuse to be further compressed. The more important function of the rod T, however, is to retain or keep the clamp in proper position, for the casing of the clamp, being composed of three pieces of tubing inclosing a spiral spring, would, while undergoing expansion or compression without this rod, fly out of position.

The clamp is constructed to reach the material under operation slightly in advance of the knife, and the paper being firmly held, when the knife arrives it makes a clean, even cut.

W designates the cutting-block, and it is so fitted in the bed of the machine that it can readily be removed. With care, however, in adjusting the knife it will never touch the cutting-block; but should the latter ever become ragged by reason of the knife's coming in contact with it, the block, being adjustable, may be moved up a little, and thus present a clean surface, so that the last sheet of paper will be neatly and evenly cut.

The letter X refers to the guiding-plates, both adjustably attached to the bed-plate, so as to be adjusted according to the material to be cut by the blade, which latter is surrounded by a circular shield, Y, the purpose of which is to prevent the scrap paper from flying in every direction as the knife acts upon the material, and also to conduct such scrap paper into the drawer beneath, as seen in Fig. 1. The shield is attached to the plate A by means of bolts, so that it can be easily removed whenever the operator desires to get access to the knife.

The operation of our machine is as follows: The operator presses his foot on the lever Z, as shown in Fig. 1, which unites the members of the clutch, the shaft D turns, and the plunger and clamp being attached to the head in which the block K of the wrist-pin slides, the clamp and plunger descend upon the material to be operated upon, the former holding it firm while the latter does the cutting.

It is obvious that our invention can be used for other purposes than for cutting books, and we do not therefore confine ourselves to the exact construction herein shown and described, for it may be varied without departing from the spirit of our invention.

It is to be observed that the contour of the cutting-blade is quarter-circular, or approximately so; but it is evident that it may be varied to suit circumstances without departing from the spirit of our invention.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a book-trimming machine, the combination, with the bed thereof, the adjustable guiding-plates to guide the paper to the plunger, the plunger having a cutting-blade, and the compressible clamp, of the shield partially surrounding the cutting-blade, to prevent the scrap from flying on the withdrawal of the blade.

2. In a book-trimming machine, the combination, with the plunger provided with a cutting-blade, of a shield partially surrounding said blade, to prevent the scrap from flying on the withdrawal of the blade.

3. In a book-trimming machine, the combination, with the frame thereof and an automatic compressible clamp consisting of tubular sections inclosing a spring, of a plunger provided with a cutting-blade and means to actuate the same.

4. In a book-trimming machine, the combination, with the frame thereof and an automatic compressible clamp consisting of tubular sections inclosing a spring, of a plunger provided with a slotted head and a wrist-pin having a block adapted to slide within the head and a cutting-blade.

5. In a book-trimming machine, the combination, with the automatic compressible clamp consisting of tubular sections inclosing a spring, of the rod attached to one of said sections, to support the clamp in position.

6. In a book-trimming machine, the combination, with the automatic compressible clamp consisting of tubular sections inclosing a spring, of the rod attached to one of said sections at one end and to the plunger-head at the other, to support the clamp in position.

In testimony whereof we affix our signatures in presence of two witnesses.

MARTIN L. METZGER.
ALBERT COOPER.

Witnesses:
D. C. MAURER,
H. S. REINHOLD.