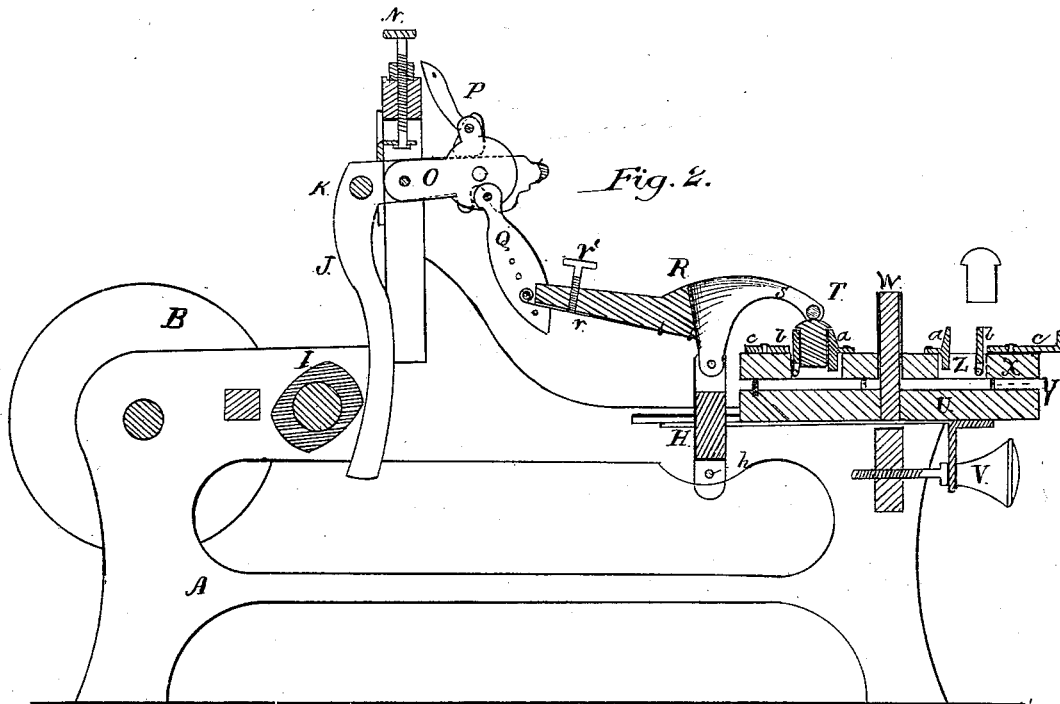
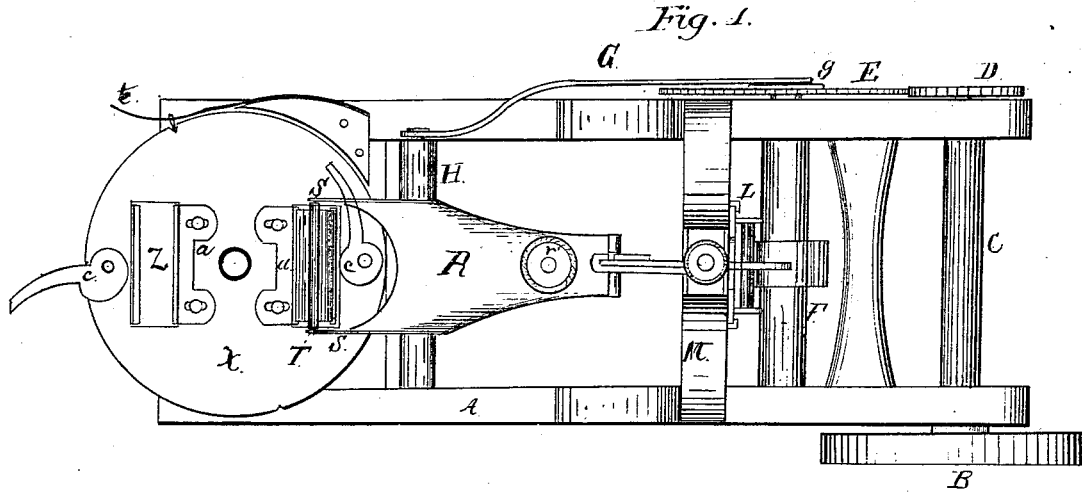


**J. ARMSTRONG.**  
**Book-Backing Machine.**

No. 166,328.

Patented Aug. 3, 1875.



Witnesses:

*Wm. A. Ames.*  
*Benj. Richardson.*

Inventor:

*James Armstrong.*

# UNITED STATES PATENT OFFICE.

JAMES ARMSTRONG, OF CAMBRIDGE, MASSACHUSETTS.

## IMPROVEMENT IN BOOK-BACKING MACHINES.

Specification forming part of Letters Patent No. **166,328**, dated August 3, 1875; application filed May 21, 1875.

### *To all whom it may concern:*

Be it known that I, JAMES ARMSTRONG, of the city of Cambridge, Middlesex county, Massachusetts, have invented a new and Improved Book-Backing Machine, of which the following is a specification:

The invention relates to that class of machines used in the process of binding books where the several signatures which go to make up the book are placed in their regular order and sewed together. The required curvature, if any is desired, is given to the front edges when the rear edges are rolled and compressed, so as to form the back with projecting edges to furnish a support for the boards which form the covers, and to strengthen the back by making it solid; and it consists in certain improved means for holding the book or signature while being operated upon, and in an oscillating lever carrying the backing-roll, sustained by a swinging fulcrum, together with the mechanism for operating the same, which will be more fully described hereafter, reference being made to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan or top view of the machine, and Fig. 2 is a longitudinal section of the same.

Like letters of reference refer to the same parts.

A is the frame supporting the mechanism, and it may be made of any substantial material. B is the drive-wheel on the shaft C, to which power may be applied in any convenient manner, as by hand or belts. On the other end of this shaft is a cog-wheel, D, which gears with the wheel E on the shaft F. The bent arm G is attached to the wheel E by an adjustable sliding plate, *g*, so that the motion thereof may be controlled, the other end being connected with the rocking plate H, which is pivoted to the main frame at *h*, and forms a swinging fulcrum for the oscillating lever carrying the backing-roll. On the shaft F is the double cam I, which bears against the right-angled lever J, hinged at its angle to the rod K, attached to the upright frame L, sliding on and sustained by the arch M, and made adjustable by the thumb-screw N. To the short arm of the lever J is attached a latch, O, to

the top of which, and resting upon the top of the lever J, is a cam-lever, P, by means of which the said latch is raised or depressed. To the lower part of latch O is attached the pendant Q, the lower part of which is provided with a series of holes, by means of which it may be adjustably connected to the oscillating lever R, which is pivoted to the rocking fulcrum H, and carries in its bifurcated arms S the backing-roll T. To the under side of the oscillating lever is attached the spring-plate *r*, made adjustable by the thumb-screw *r'*, so that the backing-roll may "give" a little, to overcome any inequality in the book. U is a table, sliding in grooves in the main frame, and made adjustable by the screw V. To this table is attached the gudgeon W, around which rotates the circular plate X, which may be supported on the friction-bearings Y. The plate X has, at regular intervals, open spaces Z, (two being shown in this instance.) In these, and attached to the plate, are movable jaws, between which the books are confined. The inner ones *a* are made adjustable by the slots and screws. The outer ones *b*, being hinged at their lower parts, are operated to clamp the book by the cam-levers *c*. At regular intervals, agreeing with the number of open spaces, the plate X is provided with notches, into which the spring locking-pin *t*, or some equivalent device, enters to hold the plate in the proper position for the operation of the backing-roller.

The operation of my machine is as follows: The book is placed between the jaws *a b*, and securely clamped by the cam-lever *c*, the jaw *a* being adjusted to fit the size of the book. The frame X is then rotated on the gudgeon to bring the book under the backing-roller T, when the locking-pin *t* enters the notch, as before described. The sliding frame U is then adjusted by means of the screws V, so as to bring the center of the book under the backing-roll when in the center of the arc through which it moves. The machine being set in motion, the bent arm G is adjusted, by means of the sliding plate *g*, to give the rocking fulcrum H a motion corresponding to the width of the book, producing a back-and-forth movement of the backing-roll T. At the same time, by means of the double cam I and the right-

angled lever J and connections, a double oscillatory movement is given to the lever R, carrying the roll T. Thus it will be seen that the backing-roll has two movements up and down to one back and forth, the result being that the roll moves back and forth over the edge of the book in an arc of the circle, and thus pressing the book from the circle to the sides, respectively, insures the bending of the leaves in the proper direction.

The shape of the cam I is such that the pressure of the roll will be the least when over the center of the book, and increase as it moves toward the sides.

The arm Q is provided with holes, so that the oscillating lever may be adjusted for varying-sized books, and the arm J, being hung in the sliding frame L, admits of very nice adjustment of the same by means of the screw.

By means of the cam-lever P, which may be operated by hand, or otherwise, the backing-roll may be raised out of contact with the book, so that the plate X may be rotated to bring the book into position without stopping the machine.

I do not wish to confine myself to the precise mechanism shown and described, for many equivalents could be easily suggested whereby the book-clamping table might be rotated, and the double oscillating and vibrating motion given to the backing-roll, which are the essential features of my invention, and which I have

found to constitute a very simple and effective machine for backing books.

Having now fully described my machine, and set forth its mode of operation, what I desire to claim, and secure by Letters Patent in the United States, is—

1. The combination, with a book-backing roller, of a rotating book-holding plate, substantially as described.

2. The combination, with a book-backing roller, of a rotating book-holding plate, having adjustable book-holding jaws and the adjustable sliding frame, substantially as described.

3. The book-backing roll T, having a double oscillatory and vibratory movement, by means of mechanism substantially as described.

4. The combination of the oscillatory lever R, carrying the backing-roll T and the rocking fulcrum H, substantially as described.

5. The combination of the cam I, right-angled lever J, pendant Q, and lever R, for producing a double oscillatory movement of the backing-roll, substantially as described.

6. The combination of the lever J, latch O, cam-lever P, pendant Q, with the lever R, for raising the backing-roller, as and for the purpose described.

JAMES ARMSTRONG.

Witnesses:

WM. A. AMEE,

BENJ. H. RICHARDSON.