

A. DOUGHERTY.  
PAPER-CUTTING MACHINES.

No. 178,609.

Patented June 13, 1876.

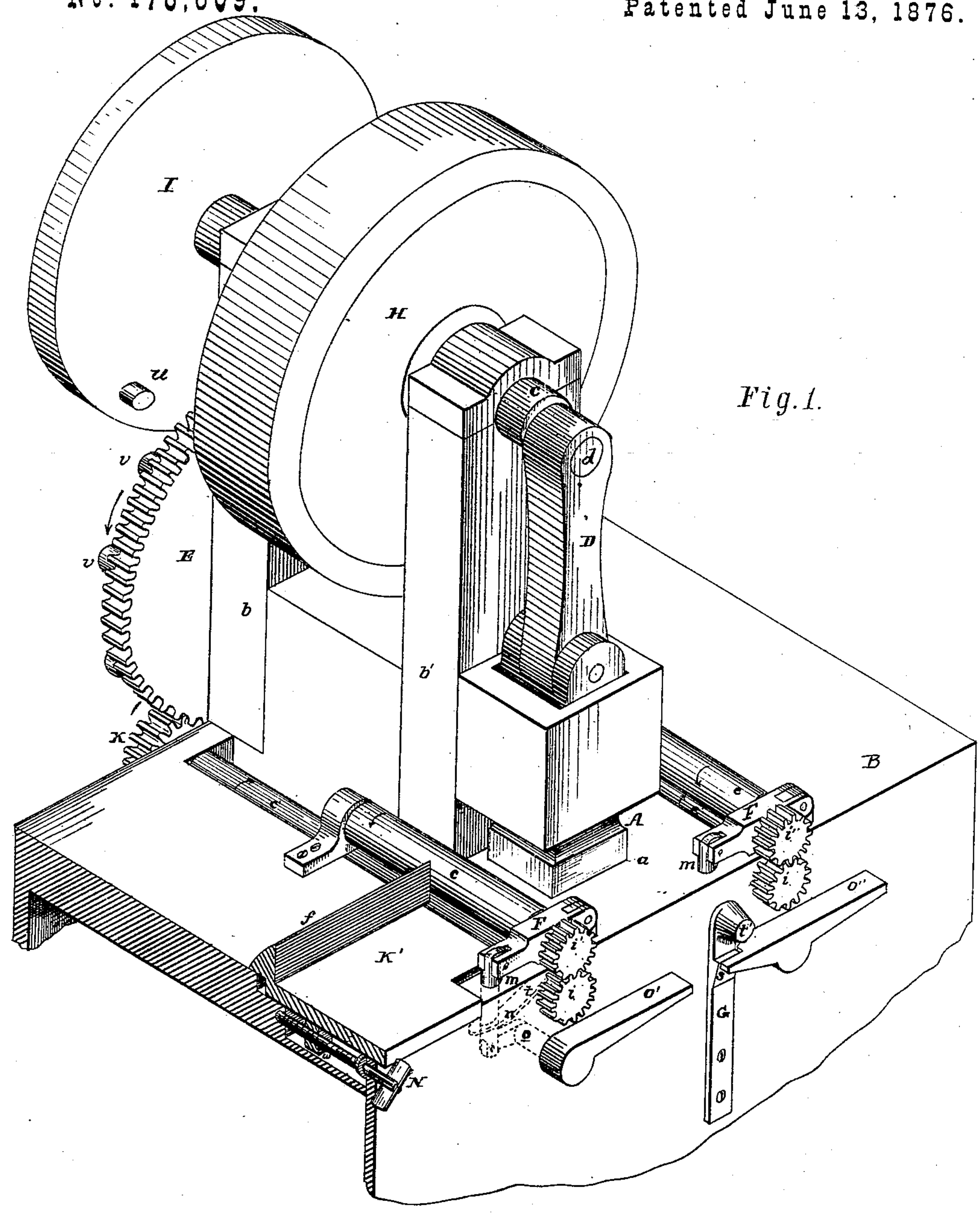
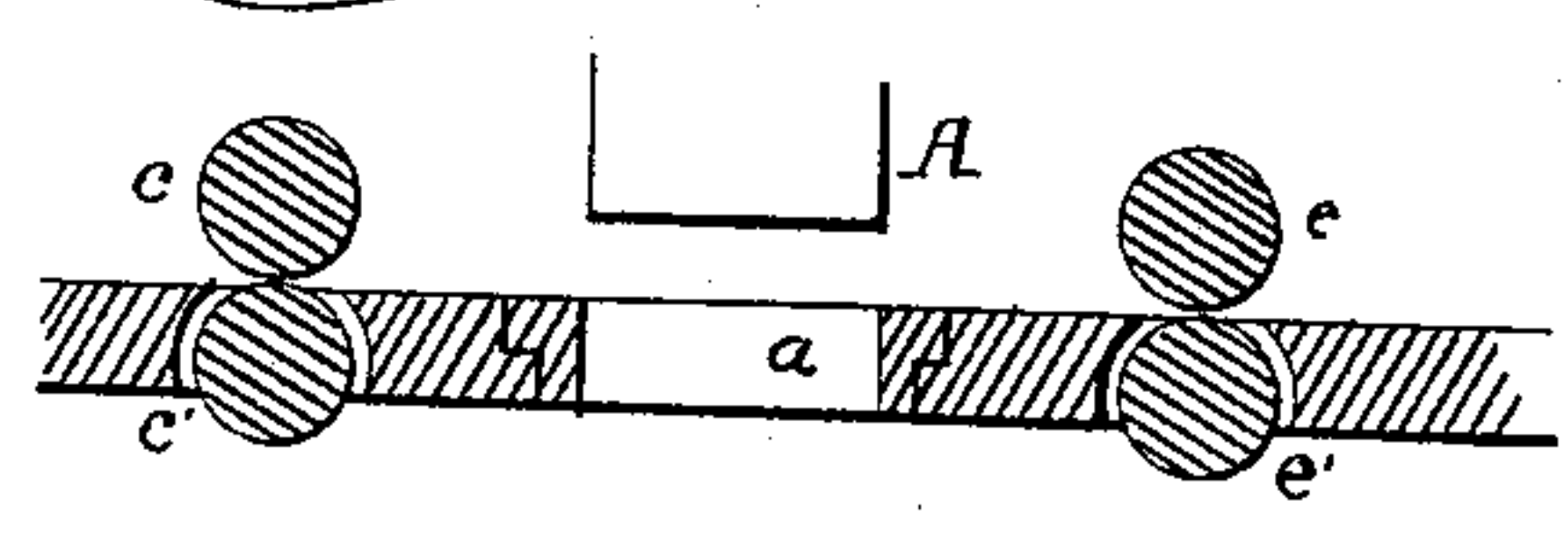


Fig. 1.

Fig. 2.



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# UNITED STATES PATENT OFFICE.

ANDREW DOUGHERTY, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN PAPER-CUTTING MACHINES.

Specification forming part of Letters Patent No. 178,609, dated June 13, 1876; application filed April 6, 1876.

*To all whom it may concern:*

Be it known that I, ANDREW DOUGHERTY, of Brooklyn, Kings county, New York, have invented Improvements in Paper-Cutting Machines, of which the following is the specification:

The object of my invention is to cut with accuracy printed, embossed, or other forms or figures from the sheets of fabric containing them; and this object I effect by the mechanism shown in the accompanying drawing, in which—

Figure 1 is a perspective view, partly in section, of my improved cutter; and Fig. 2, a detached sectional view.

The essential features of the machine are a punch, A, die *a*, table B, supporting the die, and feed-rolls *c c' e e'*. The table B is a part of the base of the machine, which supports standards *b b'* carrying the bearings of a shaft, C, and a guide for the vertically-reciprocating punch A, which is connected to an eccentric pin, *d*, of the shaft by a rod, D. The rolls *c' e'* turn in bearings on the base, and have at their front ends cog-wheels *i*, which gear with toothed wheels *i'* of the roll *c*, as shown, and with toothed wheels K, at the rear ends of the rolls *c'*, gears a cog-wheel, E, hung to a stud upon the standard *b*. The rear journals of the rolls *c e* turn in fixed bearings—the front journals in bearings carried by levers F, hung to studs on the base, and jointed at the opposite ends to rods *m*, connected to arms *n* of shafts *o*, extending through the base-plate, and carrying horizontal arms *o' o''* outside the same, as shown by dotted lines, Fig. 1.

A spring, *t*, bearing on each arm *n*, tends to maintain the upper roll in contact with that beneath, and a spring-bar, G, having a shoulder, *s*, and knob *t*, is so arranged that the shoulder will catch beneath and retain the arm *o''* when elevated to raise the roll *e*. The shaft C carries a fly-wheel, H, and a driving-wheel, I, and at the inner side of the latter is a stud, *u*, adapted to engage a series of studs, *v*, on the toothed wheel E, so that each revolution of the driving-shaft turns the wheel E part of a revolution, imparting an intermittent rotation to all the feed-rolls. A portion of the table B is cut away to receive a plate, K', hav-

ing a rib, *f*, at the rear edge, and through a nut, *w*, at the under side of the plate passes a threaded spindle, N, turning in fixed bearings, and extending to the outside of the base.

By turning the spindle N the plate K' is adjusted so that the rib *f* will insure a proper presentation to the punch of the strip to be cut, which is placed upon the table with its edge against said rib, a rotary motion in the direction of its arrow being then imparted to the driving-shaft.

The attendant, pressing upon the levers *o' o''*, elevates the upper rolls, passes the strip freely between the rolls, and adjusts it beneath the cutter. The arms *o' o''* are then released, and the strip clamped between the rolls, while the punch descends, cutting the figured portion from the strip. As the punch rises the rolls are set in motion, and feed forward the strip such a distance as to bring the next figure below the punch, which then descends and removes the figured portion, as before.

By properly adjusting the studs *u v* the extent of feed may be regulated; but as it is not always possible to print or emboss the figures at precisely equal distances from each other on the strips, it is necessary, to insure accurate cutting, that the strips be capable of adjustment during the operation of the machine. This is secured by the use of adjustable rolls. If, for instance, the attendant discovers that the figure is not central with the punch, she depresses the arms *o' o''*, raising the upper rolls, adjusts the strips, and then, releasing the arms, again clamps the strip, the spring-catch G retaining the arm *o'*, after adjustment, so that one hand can be employed to move the strip, while the other depresses the lever *o'*. By pressure upon the knob *t* the lever *o''* is instantly released.

One set of feed-rolls will answer, providing the margin on the strip of paper or card-board is of sufficient length from the printed matter to remain between the rolls while the last card is being cut, thereby insuring accuracy. But as it often occurs that the margins are not of sufficient length, owing to irregularity in printing, I use a second set of rolls, which hold the skeleton of the strip of fabric after it



leaves the first set of rolls, and retain the same until the last figure is cut, and then remove the waste.

By the arrangement of studs on the wheels I E a positive and very uniform movement of the rolls is insured. Other devices, however, may be employed for adjusting and operating the feed-rolls, the rib *f*, and the punch without departing from the main features of my invention.

While the machine may be effectually employed for cutting out any printed or embossed figures or matter from strips or sheets, it has proved especially serviceable for cutting out playing-cards of the better qualities, where the cards have round corners, and extreme accuracy is required to prevent uneven margins.

I claim—

1. The combination, with the punch and table, of a pair of feed-rolls, *c c'*, arranged at one side of the punch, controlling the movement of the paper below the latter, operating intermittingly, and provided with appliances, substantially as described, whereby the upper roll may be elevated or maintained with a yielding pressure against the lower roll, as set forth.

2. The combination of the punch A, table

B, rolls *c c' e e'*, and appliances substantially as described, for elevating the upper rolls, leaving the sheet unconfined beneath the punch, for the purpose specified.

3. The combination of the punch A, table B, rolls *c' e'*, turning in fixed bearings, levers F F carrying the rolls *e c*, and arms *o' o''*, for operating said levers, substantially as described.

4. The combination of the lower rolls *c' e'*, upper rolls *c e*, carried by levers F F, and the appliances, substantially as described, for raising and retaining said levers independently, and releasing them by a single movement of the hand, as set forth.

5. The combination of the punch, table, feed-rolls, driving-shaft, connected to and operating the punch, stud *u*, carried by a disk on said shaft, and wheel E, gearing with the rolls, and carrying studs *v*, substantially as specified.

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

A. DOUGHERTY.

Witnesses:

WILLIAM H. DOUGHERTY,  
EDWARD E. COOPER.