(No Model.) 2 Sheets—Sheet 1.

F. D. WITHERELL.

PAPER CUTTING MACHINE.

No. 353,045. Patented Nov. 23, 1886.

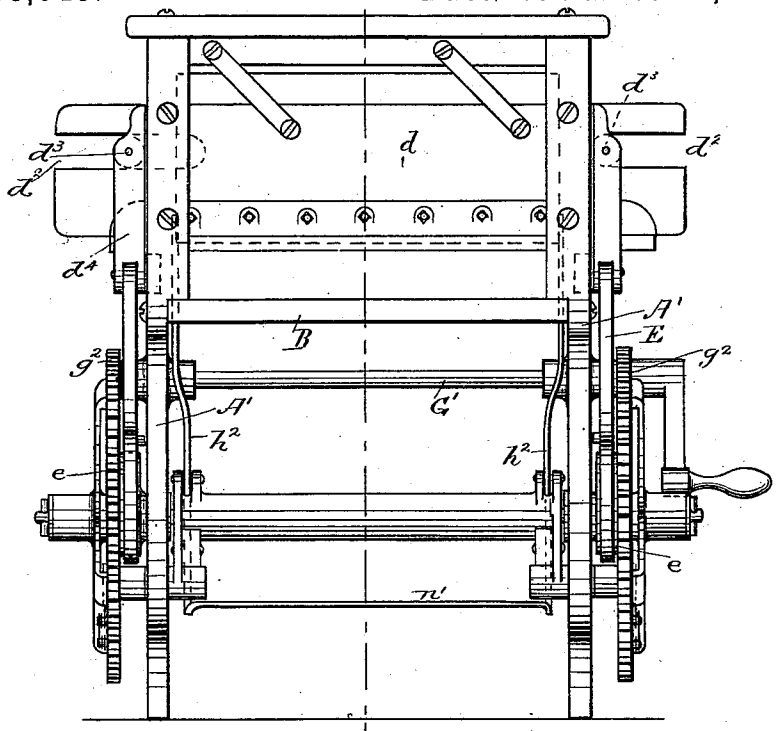


Fig. 1.

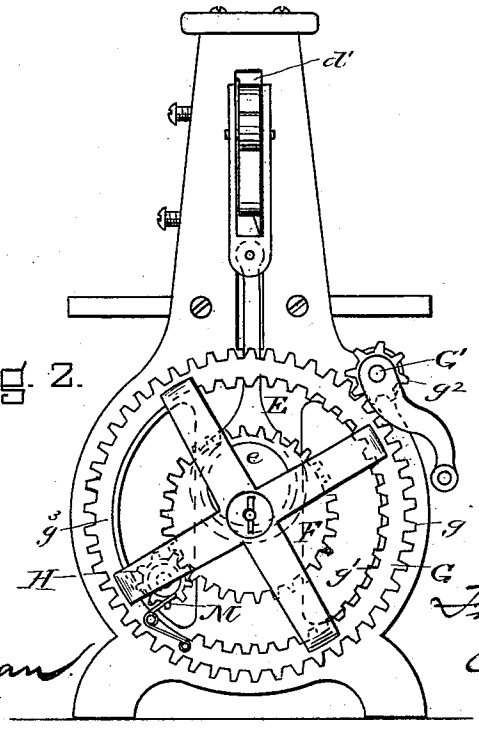


Fig. 2.

WITNESSES.

J. M. Dolan.

Fred. B. Dolan.

INVENTOR.

Frank D. Witherell
by his attys
Clarke & Raymond.

N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

F. D. WITHERELL.

PAPER CUTTING MACHINE.

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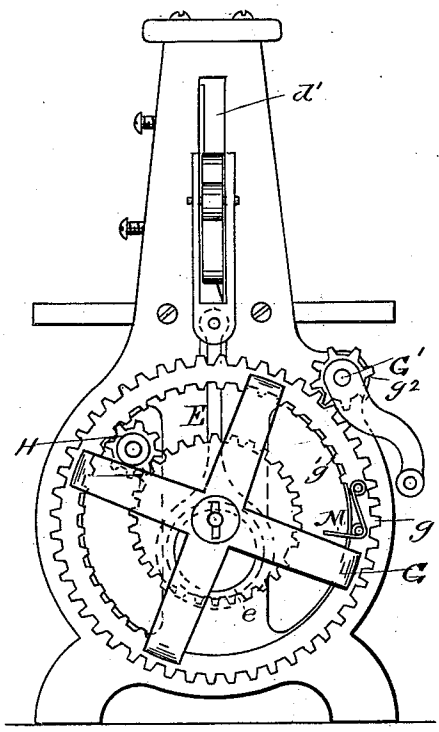


Fig. 3.

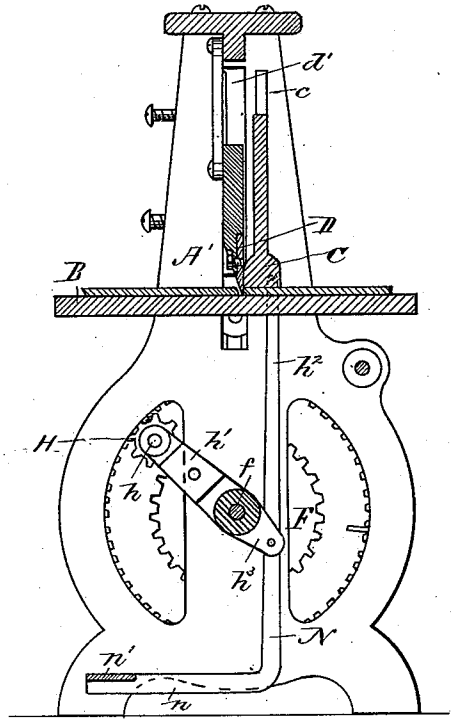


Fig. 4.

WITNESSES.

J. McDolan

Fred. B. Dolan

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UNITED STATES PATENT OFFICE.

FRANK D. WITHERELL, OF CAMBRIDGE, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO BENJ. F. DE COSTA, OF SAME PLACE.

PAPER-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 353,045, dated November 23, 1886.

Application filed May 24, 1886. Serial No. 203,092. (No model.)

To all whom it may concern:

Be it known that I, FRANK D. WITHERELL, of Cambridge, in the county of Middlesex and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in Paper-Cutting Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The object of the invention is to provide a paper-cutting machine with a pressure bar or block automatically moved upon the paper to clamp it to the bed to hold it thereon while the cutter is operated, and to the mechanism whereby this result is accomplished.

In the drawings, Figure 1 is a view of the machine in front elevation. Fig. 2 is a right side elevation thereof. Fig. 3 is a side elevation showing the parts in a different position from that shown in Fig. 2. Fig. 4 is a vertical central section of the machine.

A A′ are the side frames of the machine.

B is the bed.

C is a presser-bar, arranged to be moved vertically in relation to the bed, as hereinafter described, in suitable guides, *c*, on or in the frames A A′.

D is a cutter, which is provided with a reciprocating movement after the pressure block or bar has been moved upon the paper, as hereinafter specified. It is supported by a swinging block, *d*, the ends of which extend through guides *d′* in the said frames A A′ of the machine, and each end has a recess, d^2, which receives a cross-stud, d^3, attached to a yoke, d^4. Each of these yokes has attached at its lower end the pitman E, which connects it with the eccentric *e* on the inner side of the gear-wheel F. This gear-wheel has a bearing upon the shaft or spindle *f*, being free to revolve thereon or fixed to revolve therewith; and there is also attached to the same spindle or shaft *f* the gear-wheel G, having the external teeth, *g*, and the internal teeth, *g′*. The external teeth mesh with a pinion, g^2, on the main shaft G′. The internal teeth, *g′*, do not extend entirely around the gear G, a portion of the ring g^3, from which they project, being without teeth, for the purpose hereinafter indicated. Between the internal teeth, *g′*, and the gear G is a pinion, H, mounted on a pin or stud, *h*, extending from the front end of the lever *h′*. The rear end of each lever *h′* is connected by means of the bar or rod h^2 with the pressure-block. This pinion is adapted to be moved or turned with the gear G until the pressure-block comes to rest upon the paper, when its motion is arrested, and the continued movement of the gear causes it to be revolved, and in turn to revolve the gear F, and this of course causes the eccentric to be revolved and the cutter to be reciprocated. At the end of the movement of the cutter the pinion H, becoming disengaged from the teeth *g′* by the continued movement of the gear G, falls by gravity sufficiently far to lift the pressure-block. A spring or yielding arm, M, attached to the gear G, and arranged to bear against the pin or stud supporting the pinion, may be used for the purpose of lifting it until the pressure-block shall bear upon the paper to be cut, and for holding it there until the internal gear, *g′*, begins to mesh therewith. It will be seen that by this construction the pressure-block is placed upon the paper automatically, and in advance of the cutter, and is held thereon during the movement of the cutter, and is then automatically moved upward after the completion of the operation of the cutter, to release the paper, and that this action takes place regardless of the thickness of the stack of paper to be cut.

In order to quicken the falling action of the pinion after the internal gear, *g′*, becomes disengaged therefrom, the end of the lever bearing it may be provided with a weight sufficient to cause it to drop more quickly than it otherwise would; and for lifting the spring or yielding arm into position to bring the pressure-block upon the paper before the operation of the cutter I may use, in addition to the yielding or spring arm, if desired, or without it, if preferred, an arm or rod, N, extending downward from each of the arms h^3 of the lever *h′*, and which may be extensions of side rods, h^2, and to the lower end of which is attached a horizontal extension or arm, *n*, carrying a foot-rest, *n′*; and it will be seen that by a downward movement of this foot-rest the pressure-

block is brought into contact with the paper, and the pinion H into proper position to be engaged by the teeth of the internal gear.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The combination, in a paper-cutting machine, of a pressure-block, the levers connected therewith, each bearing a pinion, H, mounted upon one arm thereof, the gears G, having internal teeth, g', arranged to mesh with the pinion, the gears F, adapted to be revolved by the pinions H, and having the eccentrics e connected with the block or head carrying a cutter, substantially as described.

2. The combination of the main shaft of the machine, the pinion g^2, carried thereby, the gear G, having external teeth, g, internal teeth, g', the gear F, having the eccentric e connected with the cross-head carrying the cutter-knife, the pinion H, arranged between the internal gear, g', and the gear G upon the end of the lever h', and the lever h', connected with the pressure-bar by the rod h^2, all substantially as described.

3. The combination of the pinion H, carried upon the end of the lever h', connected with the pressure-block C, with the gear G, having a spring or yielding arm, M, for lifting it to a position to bring the pressure-block in contact with the paper to be cut before the internal gear, g', is caused to mesh with the pinion, substantially as described.

FRANK D. WITHERELL.

Witnesses:
F. F. RAYMOND, 2d,
J. M. DOLAN.