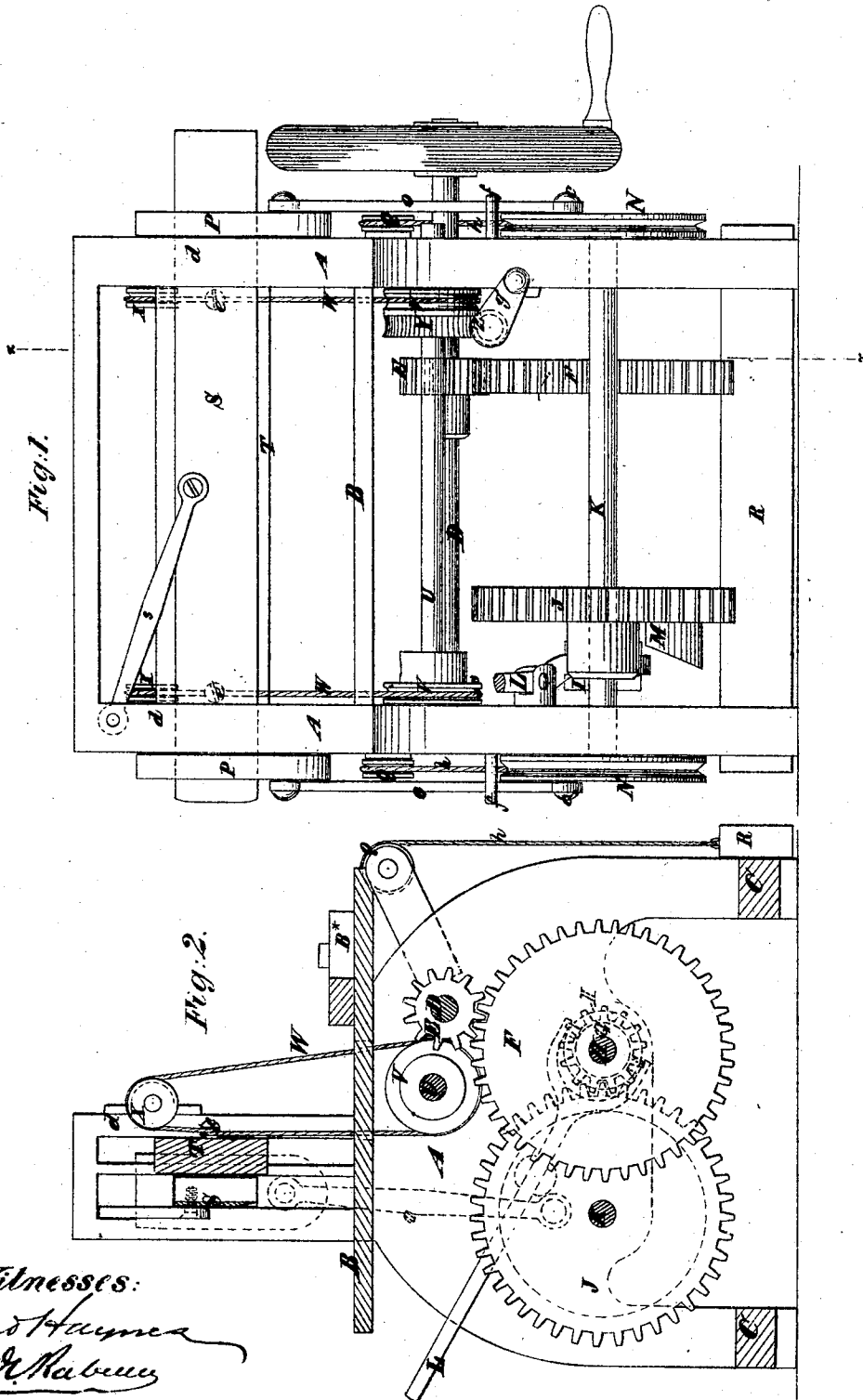


P. H. HOPKINS.  
Paper Cutting Machine.

No. 123,901.

Patented Feb. 20, 1872.



Witnesses:  
*Fred Haynes*  
*R. H. Mabury*

*Patrick H. Hopkins*

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Fig. 4.

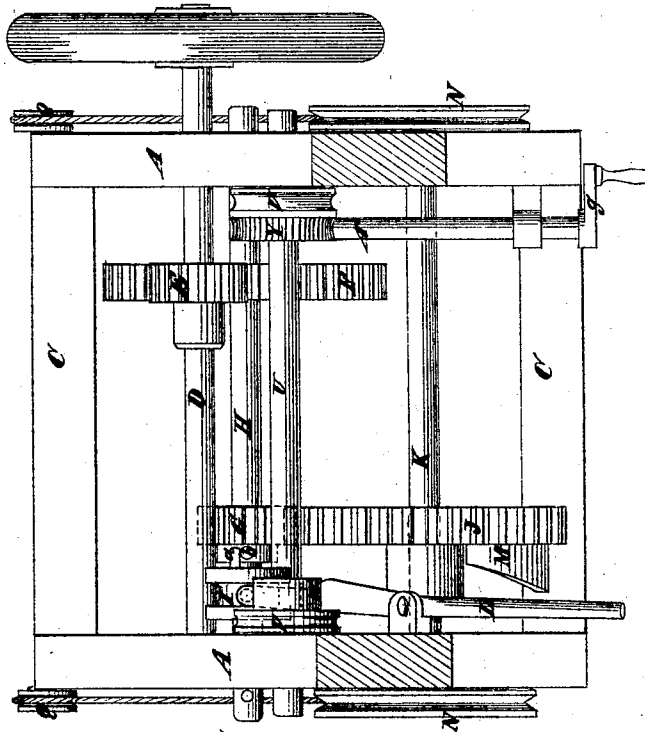
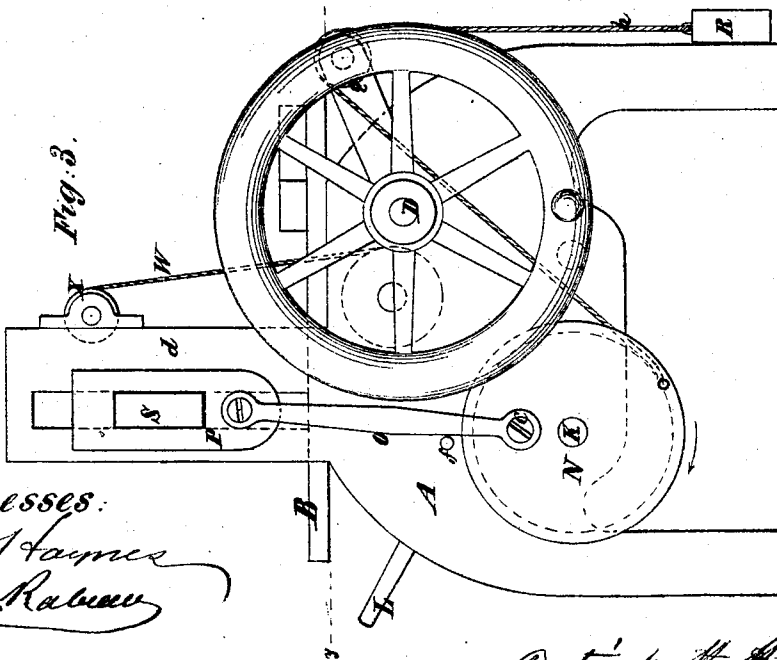


Fig. 3.



Witnesses:  
Fred James  
R. E. Rabau

Patrick H. Hopkins

## UNITED STATES PATENT OFFICE.

PATRICK H. HOPKINS, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN PAPER-CUTTING MACHINES.

Specification forming part of Letters Patent No. 123,901, dated February 20, 1872.

*To all whom it may concern:*

Be it known that I, PATRICK H. HOPKINS, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Paper-Cutting Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing forming a part of this specification.

This invention relates to machines for cutting paper in piles, for book-binders' use and other purposes; and consists in a novel and simple means of balancing and operating the knife, including devices for automatically tripping the knife after it has completed its cut, and whereby it may be automatically and rapidly raised ready for the next cut.

In the accompanying drawing, Figure 1 is a front view of the machine. Fig. 2 is a lateral section of the same taken at the line *xx*. Fig. 3 is a side view of the machine, and Fig. 4 is a sectional plan of the same taken at the line *yy* in Fig. 3.

Similar letters of reference indicate corresponding parts in all the figures.

The frame of the machine consists of two standards, A A, a bed-plate, B, and stretchers C C; or said frame may be otherwise suitably constructed. D is the driving-shaft, which is supported in suitable bearings in the standards A A, and has secured to it, near one end, a pinion, E, that gears with a toothed wheel, F, arranged on a shaft, H, supported in bearings lower down in the standards. Arranged on the shaft H, near its other end, are a loose pinion, G, and clutch I, the pinion being in gear with a toothed wheel, J, on a shaft, K, and being loose on its shaft, so that it may be rotated without turning the pinion. The clutch I consists of a loose collar, capable of sliding longitudinally on its shaft, but locked so as to turn therewith by a feather on the shaft projecting into a groove in its interior. Projecting from the side of the clutch next the pinion G are two pins, *a a*, which, when the clutch is shifted to the proper position, engage with two pins, *b b*, on the hub of the said pinion, and thereby lock it to its shaft. The periphery of the said clutch is grooved to receive the forked end of a lever, L, which is pivoted to a fulcrum secured to the adjacent standard A. The toothed wheel J has a cam, M, on the side next

the lever L, which acts against the inner arm of the lever, and, near the end of each stroke of the knife, disengages the clutch and pinion to allow a falling weight, R, to raise the knife for the next stroke. The shaft K projects beyond the standards A A, and has secured on each end a pulley, N, both of which have secured to their outer sides crank-pins *c c*, that are connected, by connecting-rods O O, with the knife-carriers P P. *ff* are pins arranged on the standards, to arrest the motion of the pulleys N N by the connecting-rods O O striking said pins, and so prevent the weight R operating the pulleys to lower the knife after it has been raised. The pulleys N N have grooved peripheries for the reception of cords *h h*, secured to and passed under them and over pulleys Q on the rear portion of the standards, and there secured at their other ends to the weight R, by which the knife S is raised. On the middle portion of the standards are projecting portions *d d*, in which are formed ways for the knife-carriers P P and also for the clamp T. The said knife-carriers P P slide vertically in the ways provided therefor in the standards, and the knife slides horizontally in them, the latter motion being effected during the vertical motion of the knife by a rod, *s*, pivoted to one of the standards and to the middle of the knife-stock, and, by its radial movement, sliding it, as described. The clamp simply has a vertical movement, and slides in the ways provided for it in the standards. U is a shaft, which is supported in bearings in the standards A A, and has secured on it, just inside them, pulleys V V, whose peripheries are grooved to receive wire cords or chains W W that are firmly secured thereto and to pins *e e* on the clamp, and which pass around other pulleys, X X, on the projecting portion of the standards. Secured on the said shaft, near one of the pulleys, is a worm-wheel, Y, that gears with a worm or screw, Z, on a shaft, A\*, which is supported in bearings projecting from the adjacent standard. At the forward end of this shaft is a crank, *g*, by which the shaft is rotated and the clamp thereby operated. B\* is the gauge, and is arranged on the bed-plate of the machine in the ordinary manner. This gauge may be of any suitable construction.

The paper to be cut is first adjusted by the gauge B\* on the bed-plate of the machine, and

the crank *g* on the shaft *A\** is manipulated to rotate the latter, and, by means of the worm or screw working the worm-wheel *Y* and the pulleys and wire cords *W W*, the clamp is brought down, both ends at once, and the paper securely clamped.

The reason why I use wire cords or chains is that ordinary cords would stretch and become too loose to operate. This manner of hanging and operating the clamp is not only simple and inexpensive, and, in case of the wire ropes breaking, admits of ready repair, but the clamp is uniformly operated throughout its whole length and simultaneously from opposite ends.

The machine is driven in the usual manner; and to operate the knife, the lever *L* is manipulated to throw the clutch *I* into gear with the loose pinion *G* and lock it to its shaft; and the shaft *K* is then rotated by said pinion, and the pulleys *N N* thereby made to wind up the cords *h h* and raise the weight *R*, and also, by their cranks *c c* and connecting-rods *o o*, to bring down the knife *S*, the drawing motion of which is effected as before described. At the end of the stroke of the knife the cam *M* on the wheel

*J* comes round and trips the lever *L*, and thereby disengages the clutch *I* and pinion *G*, and allows the weight *R* to fall till the connecting-rods *O O* come in contact with the pins *f f* and raise the knife. The lever is shifted again for the purpose before stated, and the operation is repeated.

By this means the knife is operated in a very certain and easy manner, and raised without stopping the machine.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the knife-carriers *P P*, of the weight *R*, the chains or cords *h h*, the pulleys *Q Q N N*, and connecting-rods *O O*, essentially as shown and described.

2. The combination of the loose pinion *G*, the clutch *I*, the lever *L*, the pulleys *N N*, the cam *M*, the rods *O O*, the knife-carriers *P P*, cords *h h*, pulleys *Q Q*, and weight *R*, substantially as and for the purpose herein set forth.

PATRICK H. HOPKINS.

Witnesses:

FRED. HAYNES,  
R. E. RABEAU.