(No Model.)

# W. H. LATUS.

## PAPER CUTTING MACHINE.

No. 306,626. Patented Oct. 14, 1884.

Fig. 1.

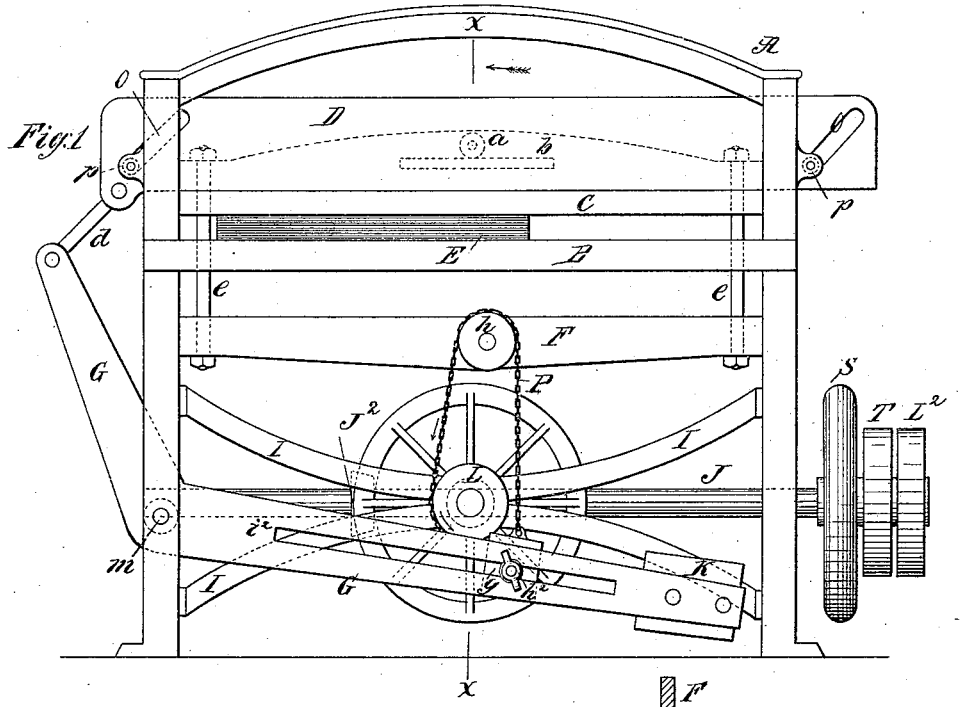



Fig. 2.

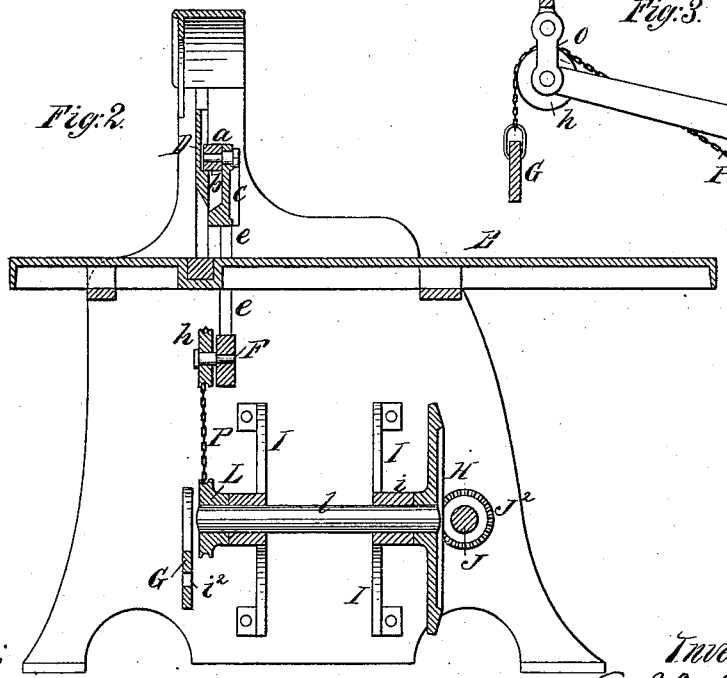
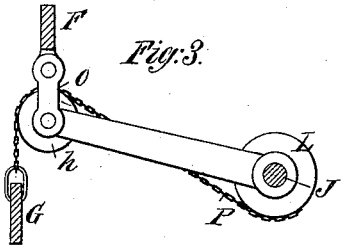



Fig. 3.

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# UNITED STATES PATENT OFFICE.

WILLIAM H. LATUS, OF BROOKLYN, NEW YORK.

## PAPER-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 306,626, dated October 14, 1884.

Application filed November 29, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. LATUS, 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 and exact description thereof, reference being had to the accompanying drawings, making part of this application.

My invention relates to that kind of machines in which the clamping-bar, which is first forced down onto the paper to be cut and which firmly holds the paper in place on the table during the cutting operation, serves to resist the force employed to move the cutting-knife, so that the pressure of the clamping-bar upon the paper to be cut is increased in proportion to any increased force necessary to be applied to the knife or shearing-blade; and my invention consists in certain novel combinations of devices, to be hereinafter more particularly described and claimed, by means of which machines of the kind just above alluded to shall be rendered more efficient in operation and capable of producing better results.

To enable those skilled in the art to which my invention relates to make and use machines embracing the same, I will now proceed to more fully explain my said invention, referring by letters to the accompanying drawings, in which—

Figure 1 is a front view or elevation of a paper-cutting machine made according to my invention. Fig. 2 is a vertical section of the same, taken at the line *x x* of Fig. 1, and looking in the direction indicated by the arrow at the last-named figure. Fig. 3 is a detail partial sectional view at the same plane of section as Fig. 2, but showing a modification in the construction of certain parts of the machine.

In the several figures the same part will be found designated by the same letter of reference.

A is the main frame, which supports the work-table B and the moving parts of the machine.

I I are two X-shaped brace-frames, which are arranged between the opposite vertical sides of the main frame A, as shown, are bolted thereto, and afford bearings *i i* for the counter-shaft *l*, that carries at one end the chain-wheel L and at the other end the bevel-gear H.

Running transversely to the counter-shaft *l* is the main driving-shaft J, mounted to turn in suitable bearings in the main frame A, and provided with a fast and a loose pulley, (seen, respectively, at T and $L^2$,) on which pulleys runs the main driving-belt, adapted, as usual, to be shipped to one or the other, as occasion may require.

On the main shaft J is keyed a bevel-pinion, $J^2$, that engages with and drives the gear H of the counter-shaft, and from the wheel L of said counter-shaft passes upward and over the sheave-wheel *h* a chain, P. (See Fig. 1.) This chain is made fast at or near one end to the chain-wheel L, and, after passing partially around the wheel *h*, is fastened at its other end to an adjustable dog, *g*, which is secured to the lever G by means of a thumb-screw, $h^2$, that passes through said dog and a slot, $i^2$, in lever G, and is adapted to clamp the dog to said lever at any desired point. The said sheave-wheel *h* is journaled on the cross-bar F, and the said lever G is pivoted at *m* to one side of the main frame A, all as clearly shown. The lever G is a bent lever, by preference, and to its lower longer arm is attached a weight, K, while its upper shorter arm is coupled by a connecting-rod, *d*, to one end of the knife-bar or shearing-blade D, which latter is formed with oblique guide-slots *o o*, in which work the rollered pins *p*, that force the knife to descend (and return to its normal position) with an oblique movement, in the usual manner.

C is the clamping-bar, which, like bar F, is arranged to be capable of the usual vertical movements up and down, and which is connected by vertical tie-rods *e e* to the said bar F, so that any enforced downward movement of bar F will cause a like movement of the knife-bar D, and any upward movement of bar D will cause a like movement of bar F.

From the front surface of the clamping-bar C, near its middle, projects an anti-friction roller, *a*, which, at certain times, rests on a shoulder, at *b*, of the knife-bar D, (see Fig. 2 and dotted lines at Fig. 1,) so that whenever the said knife-bar may be pulled down by the descent of the clamping-bar C (through the medium of roller *a*, acting on the shoulder or

shelf *b*) the knife-bar D may descend obliquely, while the bar C descends vertically, without causing any undue friction between the impinging devices *a* and *b*.

The main driving-shaft J may be provided with a fly-wheel, as seen at S; and, in lieu of the arrangement of fast and loose pulleys T and $L^2$, it may be found preferable to have only one pulley T, (for instance,) arranged to clutch to and unclutch from the shaft J, in which case the shipper-bar, instead of operating to ship the belt, will of course be adapted to ship the clutch.

I have not shown the shipper mechanism, as it may be similar to such as now used on other machines, and will be operated from the cutter-bar in a manner well known.

In the operation of the machine, the pile to be cut having been placed on the table, as seen at E, and the driving-shaft J having been thrown into gear, the wheel H is driven by pinion $J^2$, and the counter-shaft *l* thus caused to rotate in the direction indicated by arrow at Fig. 1. This causes the chain-wheel L on shaft *l* to wind up the chain P, and the resistance to the take-up of the chain occurring first at the sheave *h*, the effect is to pull down the latter, (as it is rotated on its axis,) and consequently to draw the bar F and the bar C down into the position seen—*i. e.*, until the bar C comes hard onto the pile of paper E; but as the roller *a* of the bar C overhangs and rides on the shoulder *b* of the knife-bar D, the latter is, of course, to also move down with bar C, as shown. The bars C and F and the sheave *h* being now unable to further descend, the pile E resisting the further downward motion of the bar C, the continued winding up of chain P on wheel L necessarily effects the lifting of the lower weighted end of lever G, and thereby the pitman *d* is caused to pull down the knife D (while the bar C remains stationary) and effect the cutting of the pile of paper. When the knife shall have gone clean through the pile and onto the cutting-board or wooden surface of table B, the shipping mechanism will instantly throw the shaft J out of gear, as usual, when the weight K will cause the lower end of lever G to return to its original position, in the course of which movement of said lever the knife-bar D will first be elevated until its shoulder-like device *b* comes into contact with the roller *a* of the bar C, and then the latter will also be lifted until the lever G shall have assumed its normal or original position, and all the parts be set for the next operation or use of the machine.

It will be seen that in a machine made as shown and described, when the clamping-bar C shall have been brought down onto the pile, the subsequent movements of the working parts will cause a pressure of bar C on the pile proportionate to the leverage and weight of the weight K plus the leverage exercised by the block-and-tackle arrangement of the chain P and wheels L *h*, and that, therefore, the paper will be clamped very securely and in proportion to the force applied to the cutting device.

By the arrangement of devices shown, the leverage of the pull on either the clamping-bar or the knife-bar, or both, may be varied, while the machine is in use, by simply shifting the adjustable dog *g* farther from or nearer to the fulcrum *m* of arm G.

The organism as a whole is, it will be observed, simple, durable, and effective, and of compact form.

In lieu of the form so far explained, the machine may be varied as to the arrangement of the pulling-chain, &c., by hanging the sheave *h* to the bar F by a link, *o*, in the manner shown at Fig. 3, (in a plane at right angles to that of the said bar,) and carrying the chain P backward, as there shown, and locating the chain-wheel L on the main driving-shaft J.

Of course other variations in the details of construction may be made without changing the novel plan of construction peculiar to my improved machine.

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

1. In a paper-cutting machine, the combination, with the frame, of a knife-lever pivoted thereto, and operating to actuate the knife-bar or cutter, a reciprocating clamp provided with a pulley or chain wheel, an actuating-chain, and a winch, the whole organized substantially as described, whereby the said chain may be caused by direct action to draw the said clamp and knife-lever toward each other, as set forth.

2. In combination with the clamping-frame and knife-bar and the weighted lever G, the chain-wheel L, provided with a driving or power shaft, the sheave *h*, mounted on the clamp-frame, and a chain, P, having one end fast to wheel L and the other to lever G, and running over the sheave *h*, all substantially as set forth.

3. In combination with the clamp-frame provided with a sheave, *h*, the driving chain-wheel L, lever G, and chain P, an adjustable dog, *g*, mounted on the lever G, and having one end of the chain attached to it, all substantially as set forth.

In witness whereof I have hereunto set my hand this 23d day of November, 1881.

WM. H. LATUS.

In presence of—
JOHN B. SUYDAM,
G. W. DU PUY.