

No. 771,448.

PATENTED OCT. 4, 1904.

D. T. WADHAMS.  
PAPER CUTTING MACHINE.  
APPLICATION FILED NOV. 20, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

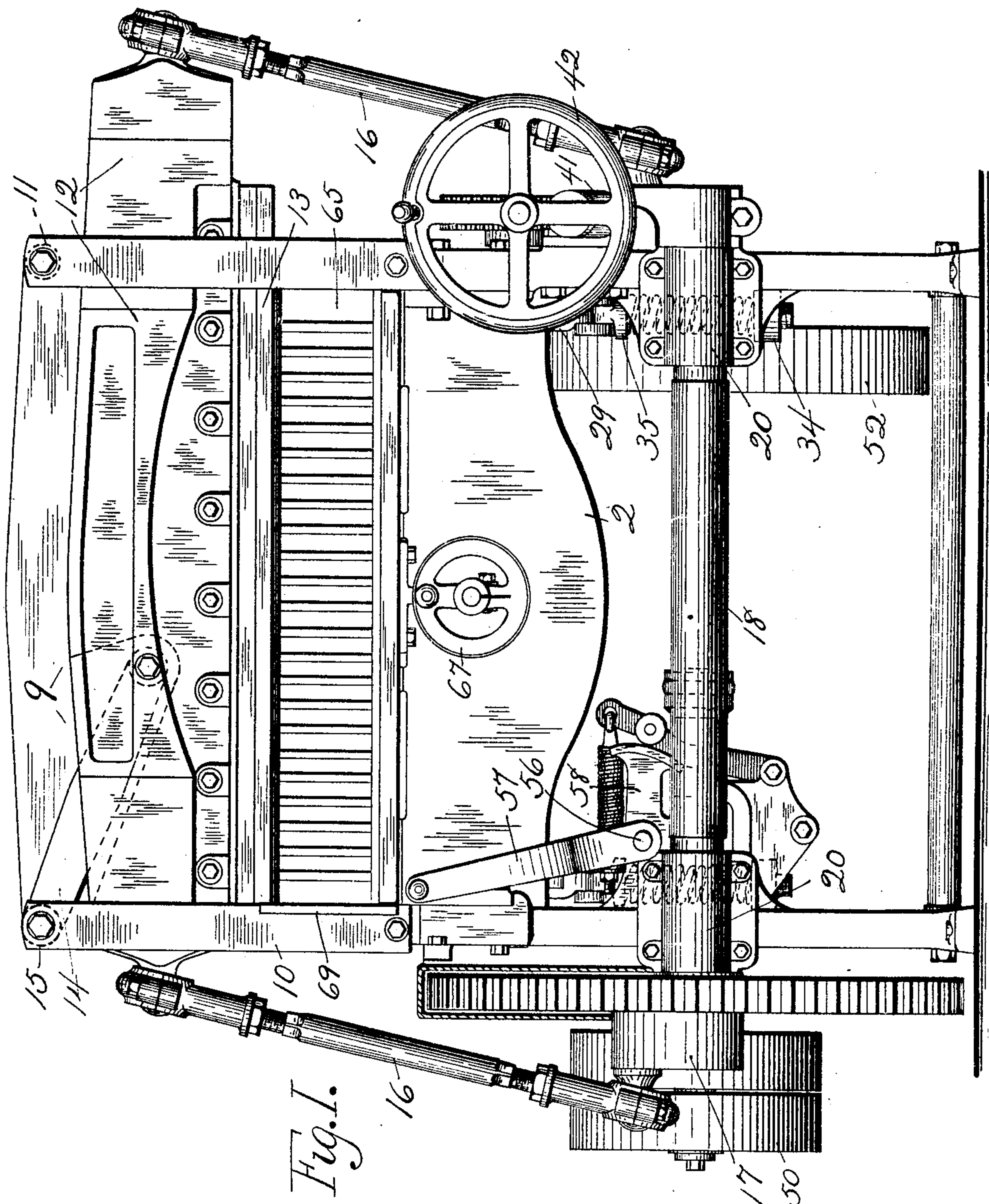


Fig. 1.

WITNESSES:

*O. Schornack*  
*M. E. Lagon*

INVENTOR

*Darius T. Wadhams*  
BY  
*Alfred Wilkinson*  
ATTORNEY.





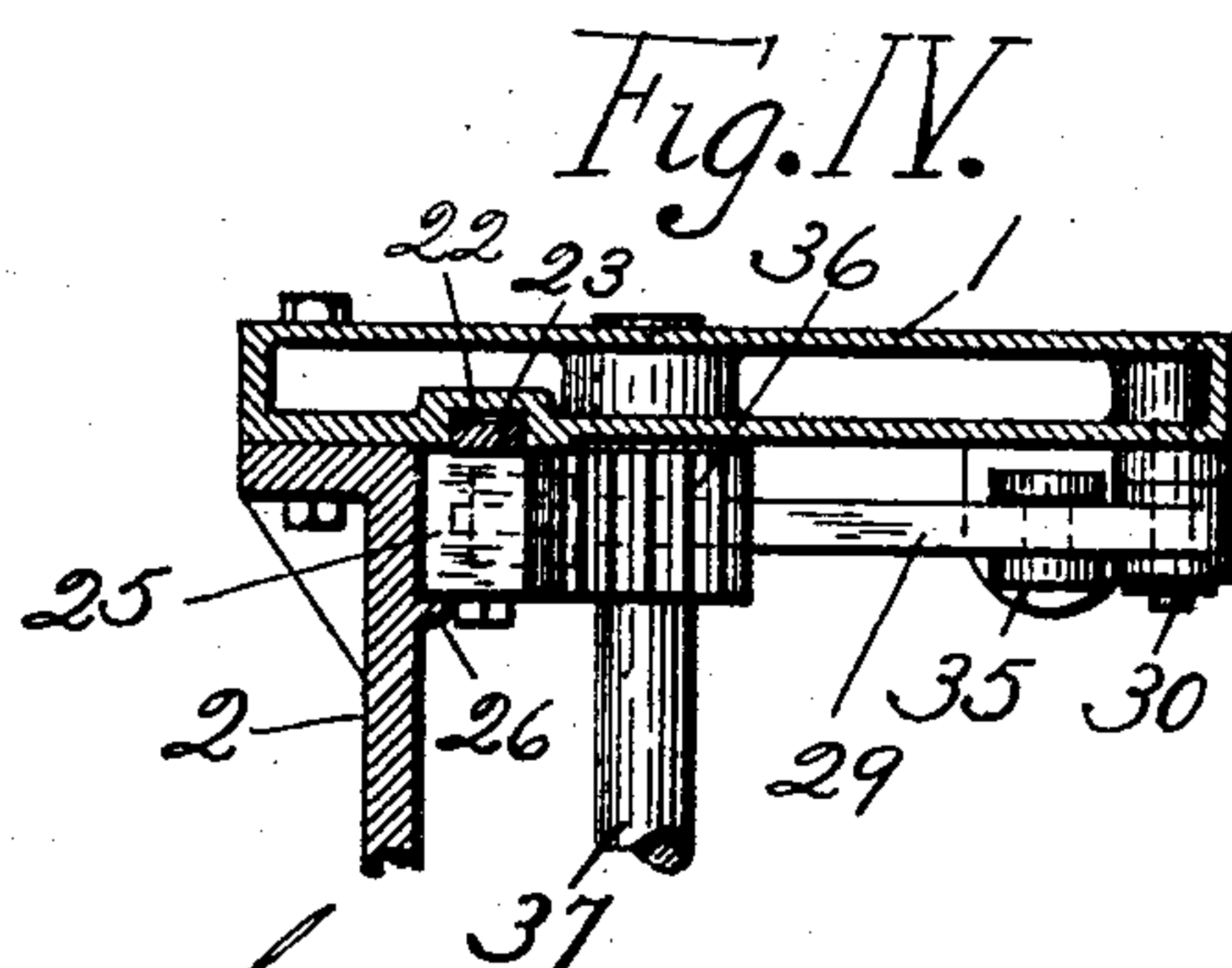
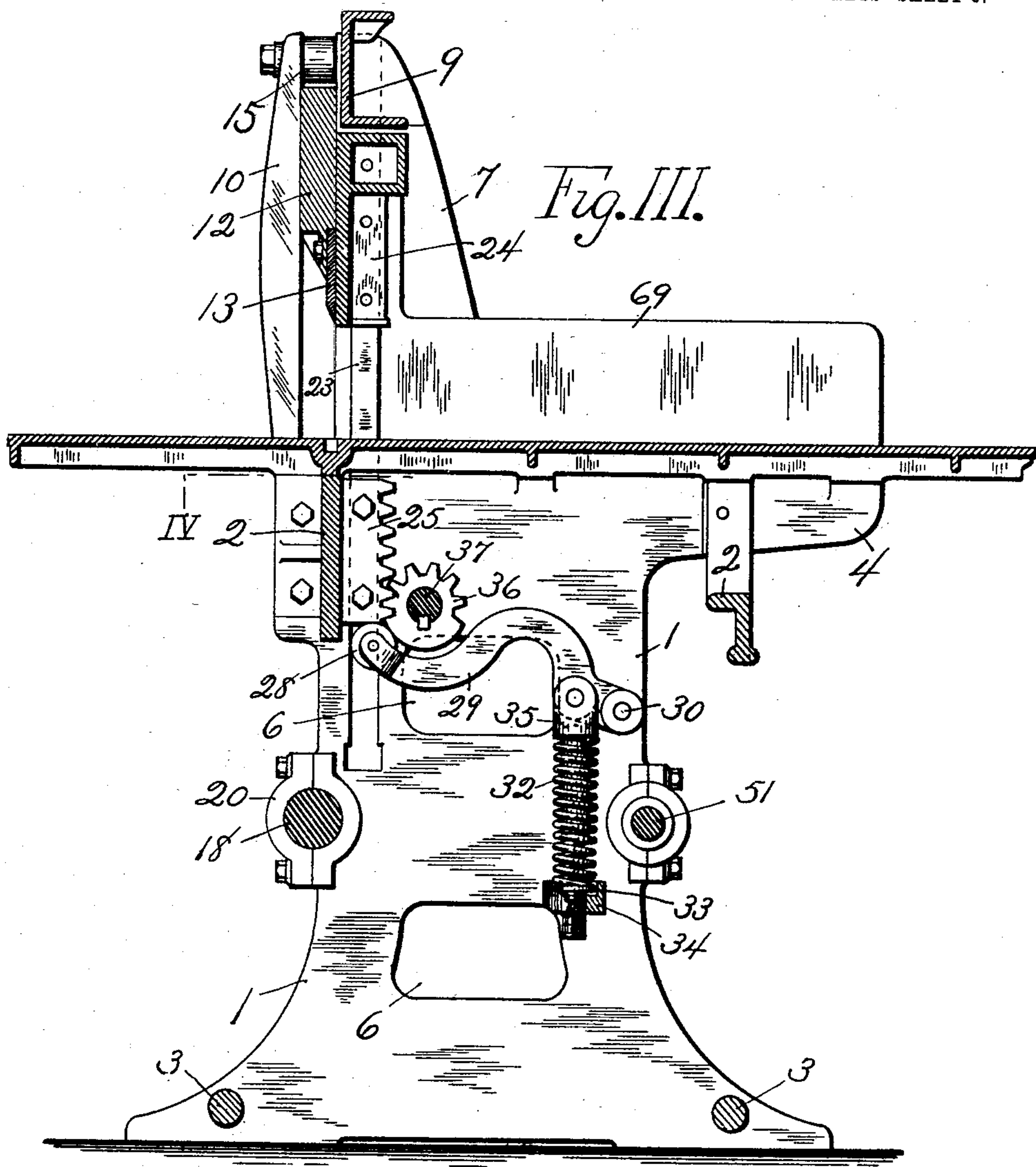
No. 771,448.

PATENTED OCT. 4, 1904.

D. T. WADHAMS.  
PAPER CUTTING MACHINE.  
APPLICATION FILED NOV. 20, 1903.

NO MODEL:

3 SHEETS—SHEET 3.



**WITNESSES:**

Ob Schornack.  
M E Sagou

***INVENTOR***

Sarino & Wadhvani

**BY**

Alfred Wilkison  
ATTORNEY.



# UNITED STATES PATENT OFFICE.

DARIUS T. WADHAMS, OF OSWEGO, NEW YORK, ASSIGNOR TO OSWEGO MACHINE WORKS, OF OSWEGO, NEW YORK, A CORPORATION OF NEW YORK.

## PAPER-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 771,448, dated October 4, 1904.

Application filed November 20, 1903. Serial No. 181,901. (No model.)

*To all whom it may concern:*

Be it known that I, DARIUS T. WADHAMS, a citizen of the United States, residing at Oswego, in the county of Oswego and State of New York, have invented certain new and useful Improvements in Paper-Cutting Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to paper-cutting machines; and it consists in a new construction and arrangement of parts by which the strength, simplicity, and durability of the machine are increased and its operation made better and easier.

Important features of my invention are a new means for supporting the clamp so that it rests securely on a counterbalancing resilient cushion and may easily be elevated and depressed, also certain details in the construction of the frame and means for supporting the knife.

My invention will be understood by reference to the drawings herewith, in which the reference-numerals of the specification indicate the corresponding parts in all the figures.

Figure I is a front elevation of a paper-cutting machine constructed according to my invention. Fig. II is a side elevation. Fig. III is a vertical section parallel to Fig. II. Fig. IV is a horizontal section showing certain details taken on section-line IV of Fig. III.

In the figures, 1 1 indicate the side pieces of the frame connected by front and back go-betweens 2 2, stay-rods 3 3 at their lower portions, and provided with rear extensions 4 for the usual table 5, resting firmly thereon and on the go-betweens. The side pieces are provided with openings 6 6 to diminish the weight and improve the appearance and with integral upper extensions 7 7 of graceful form and having their rear edges formed in parabolic curves, so as to be of substantially uniform strength throughout their whole extent. These side pieces are of a new construction, being hollow, and therefore lighter in proportion to their strength, having substantially

plain outer surfaces and forming a self-contained frame without outer supports or extensions. Between the tops of the side pieces is arranged the frame-cap 9, and to their fronts are bolted the guide-bars 10 10, retained in position at their upper ends by distance-blocks 11 11, thus forming knife-slots for the knife-stock 12 and knife 13, supported and swinging with a shearing movement on the single link 14, whose upper bearing 15 fits one of the distance-blocks, but is a trifle shorter than said block to avoid friction and binding. The knife is operated by adjustable pitmen 16, connected by universal joints to the knife-stock and to eccentric cranks 17 on the main driving-shaft 18, carried on the front edges of the side pieces in journal-bearings 20.

In vertical pockets or grooves 22 on the inner faces of the side pieces fit, one on each side, the clamp-straps 23, secured to the extreme ends of the clamp 24, which is the only connection between them, and carrying on their lower ends racks 25, retained in position by vertical flanges 26 on the rear face of the front go-between. These racks rest at their lower ends on antifriction balance-rollers 28, journaled in the free front ends of balance-levers 29, pivotally secured at their rear ends at 30 to the inner faces of the side pieces and near said fulcrums supported on cushions or resilient elements of any suitable construction to counterbalance the weight of the clamp. A suitable form of this arrangement is here shown—namely, spiral balance-springs 32, resting on the heads of studs 33, threaded to engage with steps or shelves 34 on the inner faces of the side pieces, so as to be vertically adjustable therein to regulate the tension of the springs to a considerable extent. Guide-pieces 35 are pivotally secured to the levers near the lever-fulcrums to fit within the coil, if desired, and afford a guide and a good bearing for the springs. With these racks engage the pinions 36 on the cross-shaft 37, suitably journaled in the side pieces and having on its right-hand outer end the gear 38, engaging with worm 39 on worm-shaft 40, supported in bracket 41 and provided with hand-wheel 42 convenient to



the hand of the operator. One spring or other cushion and one balance-lever on one side only can be used; but I prefer two, as here shown. By this construction and arrangement of parts the clamp is well supported at its extreme ends without the use of the rack-bar and strain and danger of breaking the racks and of course danger of breaking the rack-bar, formerly common, is avoided.

The clamp being supported at each end on one of the balance-levers and spring, which can be adjusted so that each spring carries half the weight of the clamp, there is no tendency for the clamp and straps to tilt and bind in the slots in the frame as there is when the clamp is cobalanced by the usual weight or other means which supports the clamp at a single point and in the center. The levers and springs afford a strong resilient support on which the racks and clamp float, so to speak, so that they may be depressed and run up easily and delicately by a single whirl of the hand-wheel. The spring by its position is compressed only to a limited extent in proportion to the movement of the clamp, and therefore its tension is substantially uniform in every position of the lever.

It will be understood that the form and arrangement of the parts of my machine may be varied without departing from the spirit of my invention and that it may be used with paper-cutting machines operated by electricity, steam, or other suitable power, as herein indicated, or by hand-power.

The other parts of the machine here shown are of usual and suitable construction to be used with my invention, and it is not necessary to describe them in detail. The power is applied through pulley 50 and shaft 51, carrying balance-wheel 52, and connected by suitable gears or connections (not shown) to the main gear 53 (desirably protected by gear-case 54) on driving-shaft 18. A suitable clutch, such as a friction-clutch, is interposed between the two parts of the shaft 51, operated by starting-lever 56, having crank-handle 57 to throw on and off the power, said power-lever being also connected at rear end by gear 58 and other gears to the band-brake 59 to be tightened on hub 60 on shaft 51 at the same time that the power-lever is operated to release the clutch and throw off the power, positively braking and stopping the knife when it has risen substantially to its highest point.

The usual back gage 65 is arranged on the table, adjusted by worm 66 and hand-wheel 67.

69 is the usual side gage, preferably bolted to the table, but may be cast on the frame, if desired.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a paper-cutting machine, the combination with a suitable frame, of a table, a

clamp, clamp-straps supporting the clamp, means to elevate and depress the clamp and straps, a balance-lever pivotally supported at one end and having its free end engaging with one of said straps, a cushion element arranged to engage with said lever, and means to elevate and depress the clamp.

2. In a paper-cutting machine, the combination with a suitable frame, of the paper-supporting table, the clamp, clamp-straps secured to the clamp at its ends and fitted to grooves in the side pieces of the frame, means to elevate and depress the clamp-straps and clamp, a balance-lever pivotally supported on the frame and having its free end engaging with a strap and a cushion element arranged under said lever and adjacent to the lever-fulcrum to counterbalance the weight of the clamp with substantially the same tension in all positions of the lever.

3. In a paper-cutting machine, the combination with a suitable frame and paper-supporting table, of the clamp, clamp-straps secured to the clamp at its ends and fitting suitable guides in the frame, racks on the clamp-straps, balance-levers pivotally supported on the frame and having their free ends engaging with the respective straps, cushion-springs suitably supported and engaging with the respective levers near their points of support to counterbalance the weight of the clamp, and means engaging with the racks for elevating and depressing the clamp.

4. In a paper-cutting machine, the combination with a suitable frame, and paper-supporting table, of the clamp arranged above the table, clamp-straps connected to the clamp at its extreme ends and connected to each other only by the clamp, said clamp-straps being fitted to reciprocate in suitable guides in the frame, racks on the lower ends of the straps, balance-levers pivotally supported on the frame and having their free ends arranged to engage with the lower ends of the racks, cushion-springs suitably supported and arranged to engage with the levers to counterbalance the weight of the clamp, a shaft, pinions on the shaft engaging with the racks, and an operating-handle connected to the shaft.

5. In a paper-cutting machine, the combination with a suitable frame and paper-supporting table, of the clamp, clamp-straps connected to the clamp at its extreme ends and connected to each other only by the clamp, said clamps extending downwardly to rest on the free ends of balance-levers, said balance-levers pivotally supported on the frame, balance-rollers on the free ends of the levers engaging with the lower ends of the straps, balance-springs arranged under the levers and engaging therewith adjacent to the lever-fulcrums to counterbalance the weight of the clamp, and means to elevate and depress the clamp.



6. In a paper-cutting machine, the combination with a suitable frame and paper-supporting table, of the clamp, clamp-straps connected to the clamp and extending downwardly in suitable guides in the frame to rest on the free ends of balance-levers, said levers pivotally supported at their rear ends on the frame, antifriction balance-rollers on the forward free ends of the levers to engage with the straps, spiral springs arranged beneath the levers adjacent to the lever-fulcrums, to engage with the levers and counterbalance the clamp, and means to elevate and depress the clamp-straps and clamp.

7. In a paper-cutting machine, the combination with a suitable frame and table, of the clamp, clamp-straps connected to the clamp and extending downwardly in suitable guides in the frame to rest on the free, front ends of balance-levers, said levers pivotally supported at their rear ends on the frame, spiral springs arranged beneath the levers, shelves on the inner faces of the frame side pieces, studs threaded to be vertically adjustable in the shelves, and supporting the springs on their upper heads, guide-pieces pivoted to the levers and downwardly extending into the spirals and means to elevate and depress the clamp.

8. In a paper-cutting machine, the combination of frame side pieces having vertical grooves, go-between connecting the side pieces, vertical flanges parallel to the side pieces on the rear face of the front go-between, the clamp, clamp-straps connected to the ends of the clamp and fitting the grooves, racks on the lower ends of the straps fitting between the flanges and the side pieces, balance-levers pivotally supported on the frame and having their free ends extending under and engaging with the straps, spiral springs suitably supported adjacent to the lever-fulcrums to support the levers, a cross-shaft journaled in the side pieces, pinions on the cross-shaft engaging with the racks, and an operating-wheel connected to the shaft.

9. In a paper-cutting machine, a frame composed of two corresponding side pieces provided with rearward extensions and having vertical grooves on their inner faces at the rear of the front go-between and extending from near the tops of the side pieces to below the table position thereon, a cap-block, front and rear go-betweens and lower stay-rods connecting the side pieces, the front go-between being provided on its rear face at each end with a vertical flange adjacent to the side pieces and in combination therewith, a paper-table supported on the go-betweens, a clamp arranged above the table, clamp-straps connected to the clamp at its extreme ends and connected to each other only by the clamps, said straps being arranged in the grooves, racks bolted to the lower ends of said clamp-straps having teeth on their rear edges and

fitting between the flanges and the side pieces, balance-levers pivotally secured to the inner faces of the side pieces and having their free ends forwardly extending to and under the lower ends of the racks, antifriction balance-rollers journaled in the free ends of the levers to engage with the racks, spiral springs suitably supported on the side pieces and engaging with the balance-levers near their pivotal bearings or fulcrum, so as to counterbalance the weight of the clamp with a substantially uniform tension at all points, and means to raise and lower the clamp.

10. In a paper-cutting machine, a frame composed of two corresponding side pieces provided with rearward extensions and having vertical grooves on the inner faces at the rear of the front go-between and extending from near the tops of the side pieces to below the table position thereon, a cap-block and front and rear go-betweens connecting the side pieces, the front go-between being provided on its rear face at each end with a vertical flange adjacent to the side pieces, and in combination therewith a paper-table supported on the go-betweens, a clamp arranged above the table, clamp-straps connected to the clamp at its extreme ends and connected to each other only by the clamps, said straps being arranged in the grooves, racks bolted to the lower ends of said clamp-straps having teeth on their rear edges and fitting between the flanges and the side pieces, balance-levers pivotally secured to the inner faces of the side pieces and having their free ends forwardly extending to and under the lower ends of the racks, antifriction balance-rollers journaled in the free ends of said levers to engage with the racks, spiral springs suitably supported on the side pieces and engaging with the balance-levers near their pivotal bearings or fulcrums so as to counterbalance the weight of the clamp with a substantially uniform tension at all points, means to lower and raise the clamp, vertical guide-bars bolted to the fronts of the side pieces above the table forming knife-slots, distance-blocks arranged between the upper ends of said guide-bars and the side pieces, a knife-stock and knife arranged in the knife-slots, a single supporting-link pivotally connected to the knife-stock and journaled on one of said distance-blocks, and means to apply power to the knife to lower it with a shearing movement and to raise it.

11. In a paper-cutting machine, a frame composed of two corresponding hollow side pieces provided with rearward extensions and having vertical grooves on their inner faces at the rear of the front go-between and extending from near the tops of the side pieces to below the table position thereon, of a cap-block, front and rear go-betweens and lower stay-rods connecting the side pieces, said front go-between being provided on its rear face at each end with a vertical flange parallel to and



adjacent to the side pieces, and the combination therewith of a paper-table arranged and supported on the go-betweens, a side gage bolted to the table; an adjustable rear gage supported on the table, a handle and worm engaging with said rear gage to adjust the same; a clamp arranged above the table, clamp-straps connected to the clamp at its extreme ends and connected to each other only by the clamps, said straps being arranged in the grooves, racks bolted to the lower ends of said straps, having teeth on their rear edges and fitting between the said flanges and the side pieces, curved balance-levers pivotally secured to the inner faces of the side pieces and having their free ends forwardly extending to and under the lower ends of the racks, antifric-tion balance-rollers journaled in the free ends of said levers to engage with the racks, integral shelves on the inner faces of the side pieces, studs having upwardly - extending heads and lower shanks threaded to fit said shelves and vertically adjustable therein so as to regulate the tension of the springs supported thereon, spiral springs supported on said studs and engaging with the balance-levers, near the lever-fulcrums so as to be compressed only slightly and to counterbalance the weight of the clamp with a substantially uniform tension at all points, guide-pieces pivotally secured on said levers adjacent to their fulcrums and downwardly extending into the coils; a cross-shaft journaled in the side pieces to the rear of and adjacent to the racks, pinions on said cross-lever meshing with said racks, a clamp-gear on the right-hand outer end of said shaft, a worm engaging with said clamp-gear, a worm-shaft carrying said worm and journaled in an integral bracket on the side piece, a hand-wheel on the front end of said worm-shaft, vertical guide-bars bolted to the fronts of the side pieces above the table, distance-blocks arranged between the upper ends of said guide-bars and the side pieces, a knife-stock arranged in the guide-slots formed between said guide-bars and the side pieces, a knife bolted to the lower portion of the guide-block, a single supporting-link pivotally connected to the knife-stock and journaled on one of said distance-blocks; front and rear journal-bearings respectively on the front and rear edges of the side pieces below the table, a driving-shaft supported in the forward journal-bearing, ec-

centric cranks on the ends of said driving-shaft, pitmen of adjustable length connecting said cranks by universal joints to the corresponding ends of the knife-stock, a main shaft journaled in the bearings on the rear ends of the side pieces, suitable connections between the main shaft and the driving-shaft to communicate power to the latter and to the knife, and a suitable handle arranged at the front of the machine and provided with connections to throw on and off the power.

12. In a paper-cutting machine, the combination with a self-contained frame composed of two corresponding hollow side pieces, having enlarged bases, integral rearward extensions at the table height and integral upward extensions near their fronts, the rear edges of the upward extensions being parabolic curves, of front and rear go-betweens between the middle portions of the side pieces and a frame-cap secured between the upper ends of the upward extensions, vertical guide-bars secured to the front edges of the upward extensions forming knife-slots, distance-blocks arranged between the upper ends of the upward extensions and the upper ends of the respective guide-bars, one of said blocks being cylindrical, a knife-stock and knife fitted to the knife-slots, a single link pivotally connected at one end to the knife-stock and having a collar at its opposite or upper end fitting the distance-block and journaled thereon, said collar being slightly shorter than the distance-block, a driving-shaft journaled in the frame, cranks on the driving-shaft, pitmen secured by universal joints to the ends of the knife-stock and the respective cranks, means to apply power at will to the driving-shaft, and a paper-table supported on the go-betweens.

13. In a paper-cutting machine, the combination with a suitable frame, of a table, a clamp, clamp-straps supporting the clamp, a balance-lever pivotally supported on the frame and engaging with one of said straps, a cushion element arranged to engage with said lever to counterbalance the weight of the clamp, and means to elevate and depress the clamp.

In testimony whereof I affix my signature in presence of two witnesses.

DARIUS T. WADHAMS.

Witnesses:

T. S. HOMANS,  
F. K. BARNHART.