

D. T. WADHAMS.
PAPER CUTTING MACHINE.
APPLICATION FILED JAN. 7, 1907.

921,757.

Patented May 18, 1909.

3 SHEETS—SHEET 1.

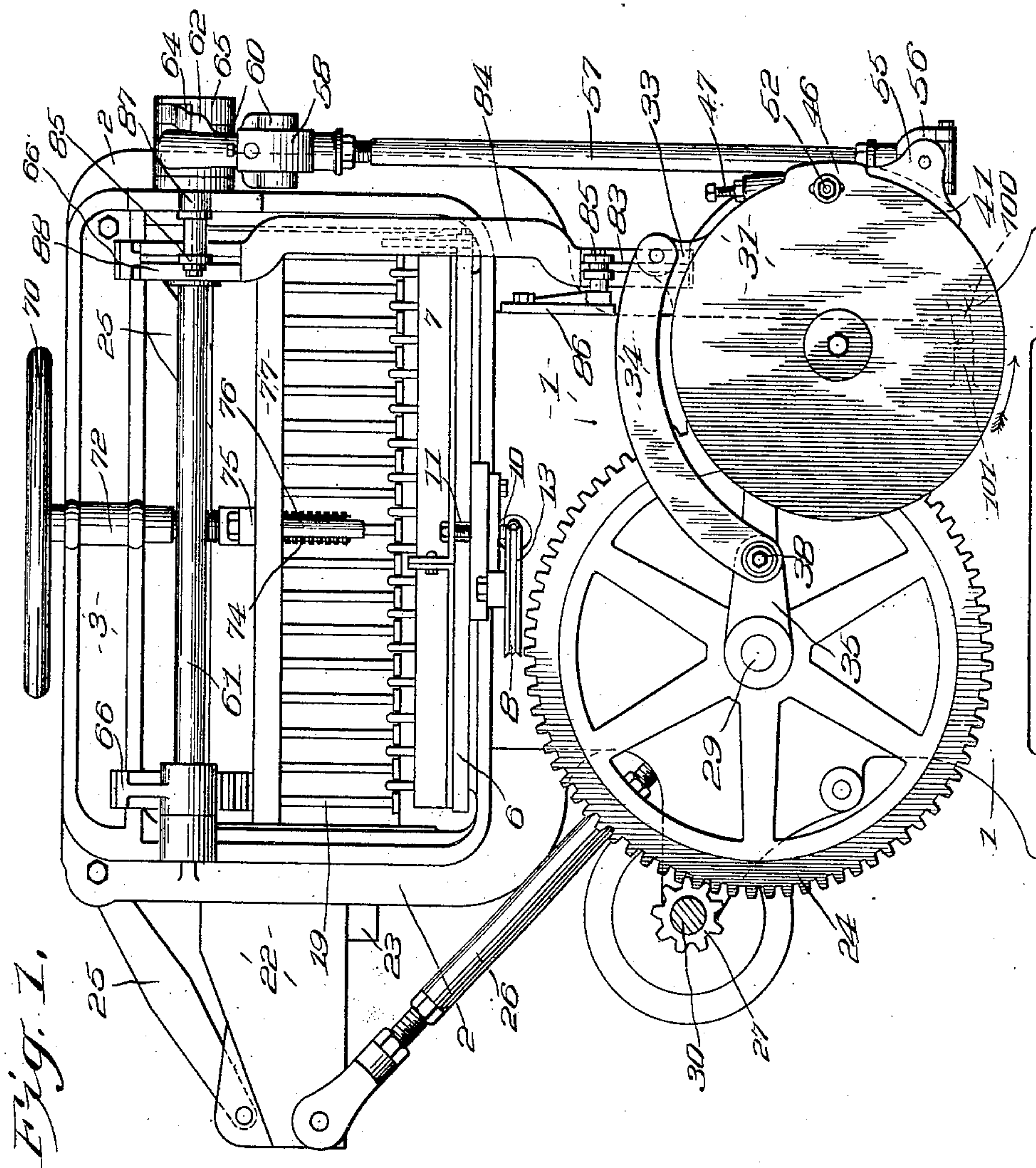


Fig. 1.

Witnesses
J. P. Millward.
M. B. Smith

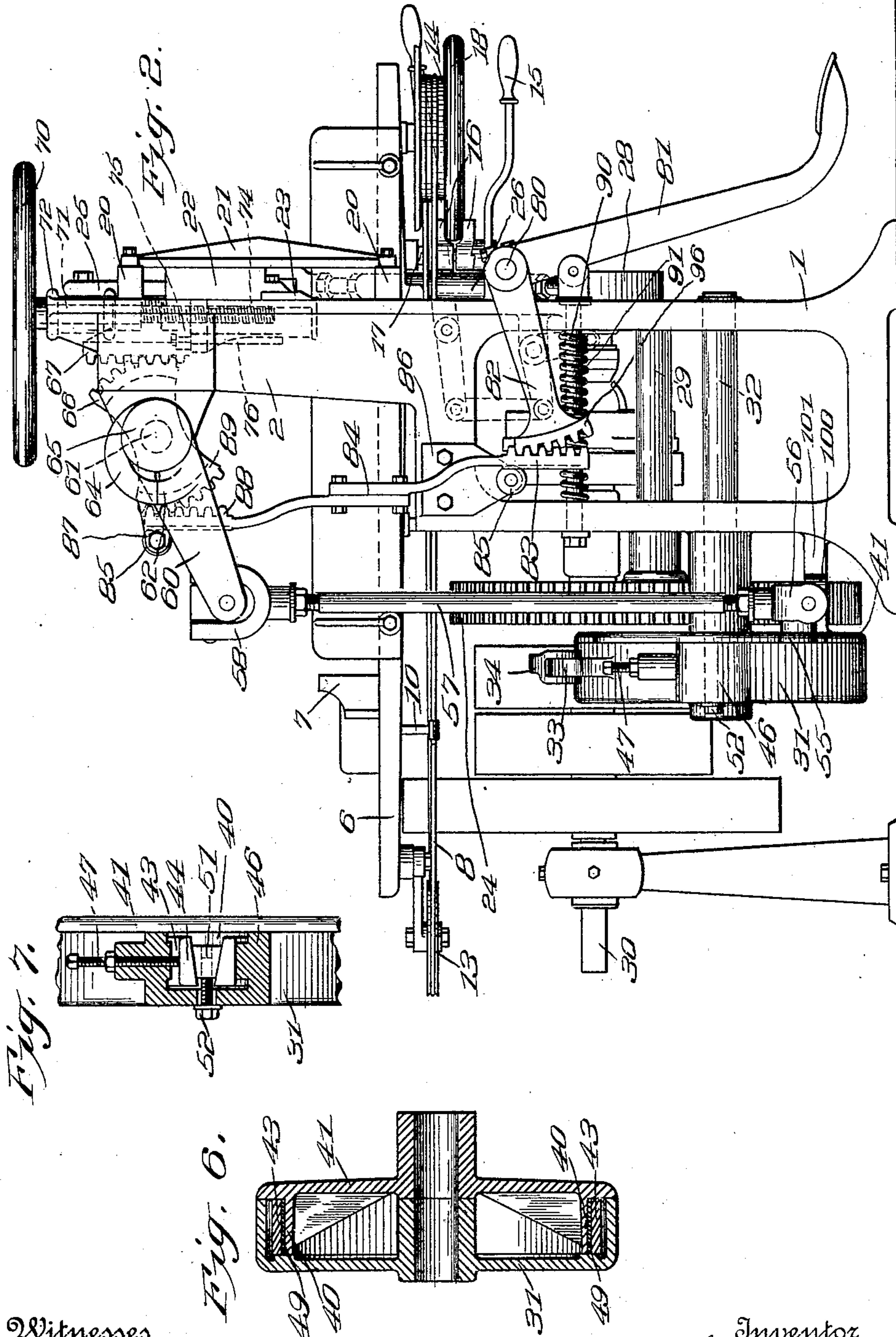
Inventor
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By His Attorney
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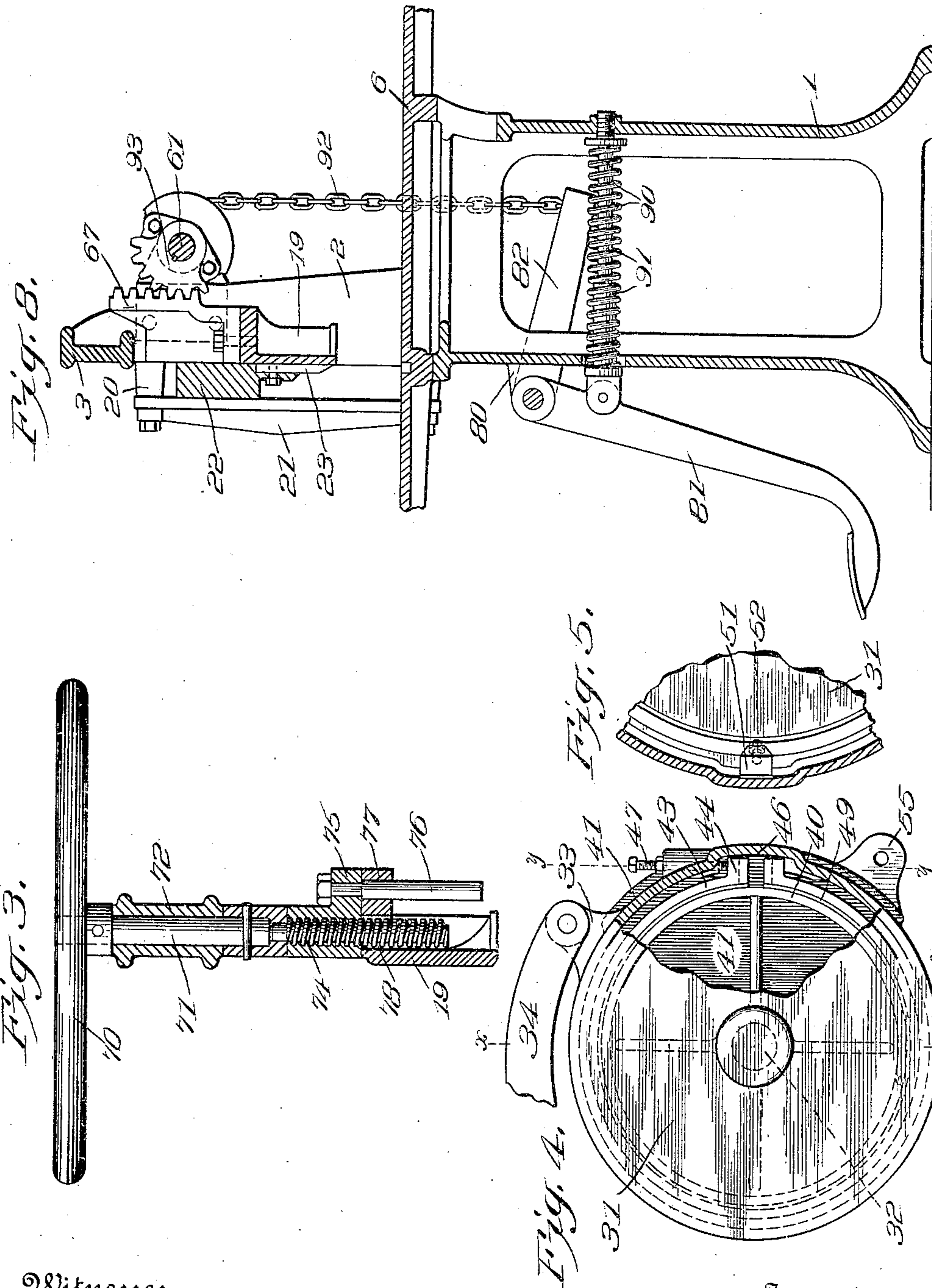
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Witnesses
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UNITED STATES PATENT OFFICE.

DARIUS T. WADHAMS, OF OSWEGO, NEW YORK, ASSIGNOR TO NIEL GRAY, JR., OF OSWEGO
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PAPER-CUTTING MACHINE.

No. 921,757.

Specification of Letters Patent.

Patented May 18, 1909.

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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 new and useful Paper-Cutting Machines, of which the following is a specification.

My invention relates to a paper cutting machine, and consists in certain new features of construction and mode of operation, relating particularly to the operation of the clamp. By this new construction three independent means are afforded for setting the clamp which are adapted to be used for different purposes. Ordinarily the clamp is automatically depressed by automatic friction means, which is desirable for most purposes. But in addition thereto, the clamp may be tightened by hand operated mechanism, after having been depressed by this automatic means, or it may be set independently by the treadle or the hand-wheel.

A desirable embodiment of my invention and improvement is shown in the drawing herewith, in which the reference numerals of the specification indicate the corresponding parts in all the figures.

Figure 1 is a rear elevation of the cutting machine provided with my improvements. Fig. 2 is a side elevation taken on the right of Fig. 1. Fig. 3 is a vertical section showing the connection between the hand-wheel and the clamp which is a part of my invention. Figs. 4 to 7 inclusive illustrate the automatic friction means for operating the clamp. Fig. 4 is a partial section parallel to Fig. 1 through the friction case, showing the means by which the friction is applied. Fig. 5 is a partial reverse section of a portion of Fig. 4. Figs. 6 and 7 are vertical cross sections respectively on section lines *x* and *y* of Fig. 4. Fig. 8 illustrates a modification in the connection between the treadle and the clamp and is a partial vertical section taken from the left side of Fig. 1.

In the figures, 1 indicates the main frame, or standard, of the machine, which may be made as a single casting, having upper extensions 2 2 and an arch 3.

6 is the usual table for the paper pile and 7 the paper gage connected to cable 8 by arm 10 depending through a slot 11. The cable is carried at the rear on pulley 13, and in front on the cable-drum 14, having wheel 18 by which it is operated.

15 is a hand-lever to wedge together the jaws 16 strung on the bolt 17 to grip the wheel and hold the parts in position.

To lugs 20, on the front faces of the extensions, are bolted the guide-bars 21 forming guide-slots for the knife-stock 22 and the knife 23, supported and operated on links 25 with a shearing movement by means of the pitman 26 of adjustable length connected to the crank 28 on the countershaft 29 by the various other usual operative parts. On shaft 29 is the main gear 24, meshing with pinion 27 on main shaft 30, operated from any suitable source of power.

The clamp 19 is normally and automatically operated by a friction means, which consists of the friction case 31, journaled on the fixed pin or shaft 32, and connected by ear 33 and link 34 to a crank 35 on the countershaft 29, whereby the friction case is oscillated back and forth by the rotation of the shaft through an arc of sufficient length to effect the operation of the clamp now to be described. 38 is a securing nut. Concentrically within the said case is arranged a flange 40 on the friction-disk 41, which flange is gripped, with an adjustable pressure, by friction-ring 43 having ears 44 arranged in a recess 46 of the case. This ring is connected to oscillate with the case by means of the screw-bolt 47, whereby also the friction tension of the ring on the flange may be adjusted. 49 is a fiber ring of leather or other softer material, which is interposed between the friction ring and the flange, and may be attached to one or the other.

As best shown in Fig. 7, the inner faces of the ears 44 are inclined and there is arranged between them a wedge 51 adjustable in and out by means of screw 52 projecting through a slot to the outer surface of the friction case, whereby the distance between the ears and the tension of the friction-ring on the disk may be positively regulated and variation avoided. This wedge operates in a sense as a spacer, or lock, for the purpose referred to, after the tension of the friction ring on the disk flange has been regulated by the screw-bolt 47. To an ear 55 on the disk 41 is connected, by the universal connection 56, the connecting rod 57, connected at its upper end also by a universal connection 58 to the clamp lever 60, journaled loosely on the clamp-shaft 61 and provided with a shoulder 62 to engage with a projection 64 on the

clamp-arm 65, fast on said clamp shaft. This clamp-shaft carries, near each end, a segmental rack 66, engaging with the racks 67 on the clamp. By said mechanism just
 5 described, it will be understood, that at each rotation of the countershaft 29, the friction case will be oscillated in the direction of the arrow shown in Fig. 1 and the clamp depressed onto the paper pile. It will be un-
 10 derstood that the tension of the friction ring on the disk flange is so adjusted as to depress the clamp with sufficient force onto the paper pile, but when this has been effected the ring and friction case will slip on the flange
 15 to avoid injury to the parts.

When the clamp strikes the pile, the flanged friction disk stops, and the case and connected friction-ring slip thereon until the full movement of the crank is reached. Af-
 20 ter the crank passes the center, the case is oscillated back again (raising the clamp), until a lug 100 on the disk engages a lug 101 on the frame, which causes a return slip of the case and the ring on the disk, returning the
 25 parts to their initial position, ready to repeat the operation.

The hand-wheel 70, on its vertical shaft 71 with suitable bearings 72 in the arch at the center of the machine, carries a screw 74 en-
 30 gaging with a clamp-nut 75 having a guide-pin 76 engaging with a hole in a shoulder 77 on the rear of the clamp 19, whereby the relation of the nut and the clamp are maintained. Said screw 74 depends through an
 35 opening 78 in the clamp but does not engage therewith so that the clamp may be depressed or tightened by means of the wheel, but is not elevated thereby. It will be un-
 40 derstood that the clamp may be depressed independently, either by the aforesaid automatic means or by the hand-wheel and connections just described, or by the treadle and connections, now to be described.

At one side of the machine, preferably the
 45 left, is journaled on bearing 80, a bell-crank, or treadle, 81, carrying on the rear end of its upper arm 82 a segmental rack 86 meshing with the rack 83 on the lower end of a rack-bar 84, held in position by rollers, or studs,
 50 85 85 on brackets 86 87, and carrying on its upper end an upper rack 88, meshing with a segmental rack 89 on the clamp-shaft 61, or, as here shown, made integral with the seg-
 55 mental ring 66. It will be understood that, as aforesaid, the clamp may initially be depressed by the treadle and the aforesaid connections independently of the hand-wheel or automatic mechanism.

Connected to the treadle lever, at any con-
 60 venient point, is an extension spring 90 fitting to guiding studs 91, whereby the clamp is balanced. By this means when the foot is removed, the spring returns the clamp to its upper position through the treadle and
 65 its connections. It will be understood that

this is one of the purposes of the spring, whether the clamp is depressed by the hand-wheel or the friction means.

In Fig. 8 is shown a simple variation in the connection between the bell crank, or
 70 treadle lever, and the clamp shaft. Here instead of a connecting bar, a connecting chain 92, is substituted connected to the bell-crank lever and to a segmental rack 93 which corresponds to segmental rack 66, 75
 and, like it, is in engagement with the clamp rack. It will be understood that when the treadle is depressed, the loosening of the chain leaves the clamp free to drop by grav-
 ity but when the foot is removed the pedal 80 and the clamp are again returned to initial position by the spring. I have here com-
 bined in one machine, three separate means for operating the single clamp, which are
 85 adapted to be used for different purposes, and are always ready to use, without any change of adjustment or setting any part. The pile is usually clamped by the automatic friction means, but where it is desired to
 90 tighten the clamp, this can conveniently be done by the hand-wheel. The hand-wheel has another use. In case of delicate material, freshly printed stock, etc., that must be
 handled delicately and carefully, the hand-wheel clamping mechanism is provided to 95
 be used independently and in place of the friction mechanism. The treadle and connections are also important for special purposes—initially to mark where the cut is to
 be made, and to clamp the pile before the 100
 cut and to hold it after the cut. The latter use is important for steadying an unsteady pile, such as tickets or other small stock.

I am aware that machines have been made having a separate part for marking, but 105
 those machines are complicated requiring separate guide-ways, connections, etc.

My machine is a simple, strong and durable machine, having in combination the three
 separate, but coöperating, means to operate 110
 the single clamp for the various purposes described, by which the machine is adapted to be used conveniently for practically all varieties of work.

Having thus described my invention, what 115
 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 paper table thereon, a clamp fitted to the frame, an oper- 120
 ating shaft, a case suitably journaled on the frame, a connection between the case and the shaft whereby the case is oscillated, a margin-
 part on the case, a disk journaled on the frame, a flange-part on the disk arranged 125
 concentrically with reference to the case margin, a split friction ring arranged between said margin-part and said flange-part and in
 frictional engagement with one of said two
 parts, means to regulate the frictional ten- 130

sion of the ring on said part, means positively to connect the friction ring to the other of said two parts, and connections between the disk and the clamp.

2. In a paper cutting machine, the combination with a suitable frame, of a paper table thereon, a clamp fitted to the frame, operating means, a case journaled on the frame, connections between the case and the operating means to oscillate the case, a peripheral margin on the case, a disk journaled on the frame, a flange on the disk arranged within said margin and concentrically thereto, a friction ring arranged between the margin and the flange, means to connect said ring to the case and to regulate its frictional engagement with the disk flange and connections between the disk and the clamp.

3. In a paper cutting machine, the combination with a suitable frame, of a paper table thereon, a knife and a clamp fitted to the frame, an operating shaft, a crank on said shaft, a case suitably journaled on the frame and having a peripheral margin provided with a recess, a link connecting said case to said crank, a disk journaled on the frame concentrically with said case, a flange on the disk arranged within the case margin, a split friction ring arranged within said margin and surrounding said flange, ears on the ends of said ring arranged in said recess, screw bolts connected to said ring ears and projecting outwardly through the case to connect the ring to the case and adjust the friction tension of the ring on the flange, connections between the disk and the clamp, and connections between the operating shaft and the knife.

4. In a paper cutting machine, the combination with a suitable frame, of a paper table thereon, a knife and a clamp fitted to the frame, an operating shaft, a case suitably journaled on the frame and having a peripheral margin, a link connecting the case to the shaft, a disk journaled on the frame concentrically with said case, a flange on the disk arranged within the case margin, a split friction ring arranged within said margin to surround said flange, ears on the ends of said ring having their adjacent surfaces inclined, a wedge arranged between said inclined surfaces, a screw connected to said wedge and projecting forwardly and outwardly through a slot in the case, means to connect the ring to the case and to adjust the friction tension of the ring on the flange, connections between the disk and the clamp, and connections between the shaft and the knife.

5. In a paper cutting machine, the combination with a suitable frame, of a paper table thereon, a knife and a clamp fitted to the frame, of racks on the clamp, an operating shaft suitably journaled on the frame, a fixed pin on the frame, a case journaled on said pin and having a peripheral margin provided

with a recess, an ear on said case, a link connecting said ear to said crank, a disk journaled on said pin concentrically with said case, a flange on the disk arranged within the case margin, a split friction ring arranged within said margin to surround said flange, ears on the ends of said ring arranged in said recess and having their adjacent surfaces inclined, a wedge arranged between said inclined surfaces, a screw connected to said wedge and projecting forwardly and outwardly through a slot in the case, bolts connected to said ring ears and projecting outwardly through the case to connect the ring to the case and to adjust the friction tension of the ring on the flange, a ring of softer material arranged between said friction ring and the disk flange, an ear on the disk, a clamp shaft journaled in the frame behind the clamp and parallel thereto, segmental racks fixed on the clamp shaft and engaging with said clamp racks, connections between the disk and the clamp shaft and connections between the knife and the operating shaft.

6. In a paper cutting machine, the combination with a suitable frame, of a paper table thereon, a knife and a clamp fitted to the frame, of racks on the rear surface of the clamp, a main shaft, a pinion thereon, a counter-shaft, a gear on the counter-shaft in engagement with said pinion, a crank on the counter-shaft, a fixed pin on the frame, a case journaled on said pin and having a peripheral forwardly extending margin provided with a recess, an ear on said case, a link connecting said ear to said crank, whereby the case is oscillated forward and back, a disk journaled on said pin concentrically with said case and forwardly thereof, a flange on the disk arranged within the case margin, a split friction ring arranged within said margin to surround said flange, ears on the ends of said ring arranged in said recess and having their adjacent surfaces inclined, a wedge arranged between said inclined surfaces, a screw connected to said wedge and projecting forwardly and outwardly through a slot in the case, bolts connected to said ring ears and projecting outwardly through the case to connect the ring to the case and adjust the friction tension of the ring on the flange, a fiber ring arranged between said friction ring and the disk flange, a lug on the frame, a lug on the disk adapted to engage with the frame lug on the backward movement of the case and disk to restore the parts to initial position, an ear on the disk, a clamp shaft journaled in the frame behind the clamp and parallel thereto, segmental racks fixed on the clamp shaft and engaging with said clamp racks, a clamp arm fixed on one end of the clamp shaft and having a projection, a clamp lever journaled loosely on the clamp shaft and having a shoulder engaging with said projection, a connecting rod of adjustable

length connected to said disk ear and to said clamp lever by universal connections, and connections between the counter-shaft and the knife, substantially as described and shown.

7. In a paper cutting machine, the combination with a suitable frame, of a vertical bearing on the upper portion of the frame above the clamp, a shaft fitted to said bearing, a hand-wheel on said shaft, a screw on the lower portion of said shaft, a clamp-nut engaging with said screw, a depending guide-pin secured on said nut, and the clamp fitted to the frame and arranged below said nut, said clamp having an opening freely to receive the lower end of said shank and screw and a hole to receive said guide-pin.

8. In a paper cutting machine, the combination with a suitable frame having upper side extensions and an arch, of a paper table on the frame, a vertical journal bearing in the center of the arch, a hand-wheel, a depending-shaft on the hand-wheel fitted to said bearing, a screw on the lower end of said shaft, a clamp fitted to guide-ways in the frame, said clamp having a central opening freely to receive the lower end of said screw and a rear shoulder provided with a hole behind said opening to receive a guide-pin, a clamp-nut arranged immediately above the clamp and fitted to engage with said screw, and the guide-pin secured on the rear of the clamp-nut and depending through the rear hole in the clamp, substantially as described and shown.

9. In a paper cutting machine, the combination with a suitable frame and paper table, of a paper-clamp fitted to slide between the upper extensions of the frame, a rack on the rear of the clamp, a clamp-shaft suitably journaled on the frame, a segmental rack on said shaft engaging with said clamp rack, a bell-crank lever hung on the frame, a treadle on the lower arm of said lever, a flexible connection between the upper arm of the lever and the segmental rack, and a spring to restore the lever to initial position after being rocked by the foot.

10. In a paper cutting machine the combination with a suitable frame and a table thereon, of a clamp fitted to the frame, members independently journaled on the frame and in frictional engagement, connections between one member and the clamp to depress the clamp and operating only on the forward movement of said member, means connected to its opposing member to oscillate the members forwardly for the purpose described and rearwardly to return the members and connections to their initial positions.

11. In a paper cutting machine the combination with a suitable frame and a table

thereon, of a clamp fitted to the frame, members independently journaled on the frame, said members being in frictional engagement, connections between one member and the clamp to depress the clamp when said member is rotated in one direction and to release the clamp when rotated in the opposite direction, means to oscillate the second member, adjustable means to regulate the friction between said members, whereby they will be rotated together on forward oscillation to depress the clamp and slip the friction when the clamp engages, and returned together on the return oscillation, means to elevate the clamp and means to stop the first member when it has been returned to its initial position.

12. In a paper cutting machine, the combination with a suitable frame and a table thereon, of a clamp fitted to the frame, a clamp shaft, connections between the clamp and clamp shaft, two members journaled on the frame, connections between one member and the clamp shaft, means to oscillate the second member, said second member being adapted through frictional engagement with the first member to depress the clamp and produce pressure on the work during its forward oscillation and on its return movement to restore the friction members and their connections to their initial positions, means to engage the first member on its return movement and stop said first member when in its initial rear position, and means to elevate the clamp.

13. In a paper cutting machine the combination with a suitable frame and a table thereon, of a clamp and knife fitted to the frame, an operating shaft for the clamp and the knife, a case suitably journaled, a disk journaled concentrically with the case, a flange on the disk in frictional engagement with the case, connections between the disk and the clamp to depress the clamp on its forward movement, connections between the case and the shaft to oscillate the case and disk forwardly to depress the clamp and produce a clamping pressure through their frictional engagement, and rearwardly to return the case and disk to their initial positions, a projection on the frame, a lug on the disk to engage the frame lug to stop the disk in its initial position, and connections between the knife and the shaft.

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

DARIUS T. WADHAMS.

Witnesses:

F. K. BARNHART,
P. J. CLANCY.