April 23, 1929. B. F. BERRY 1,710,084

CUTTING MACHINE

Filed April 3, 1925 4 Sheets-Sheet 1

Fig. I

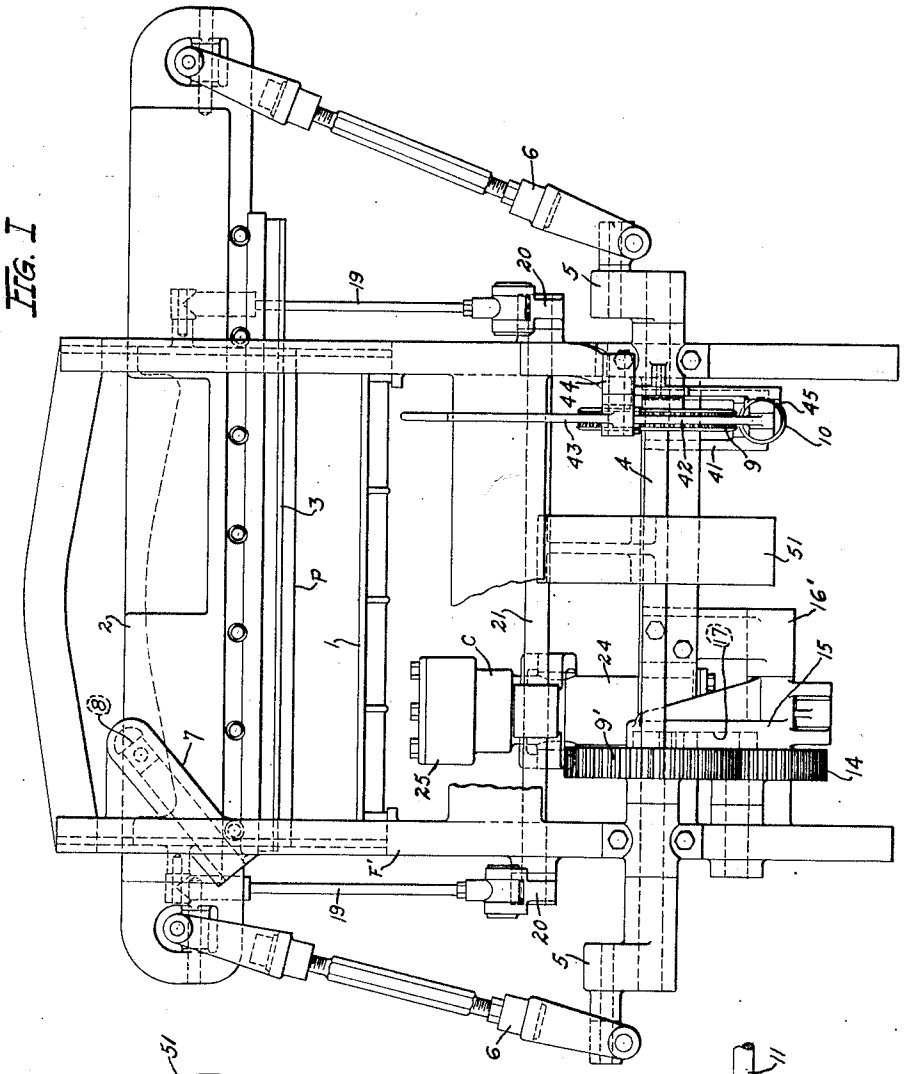


Fig. IV

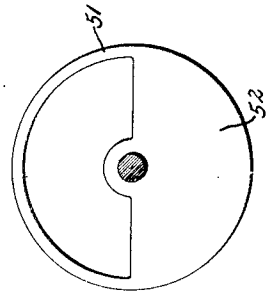
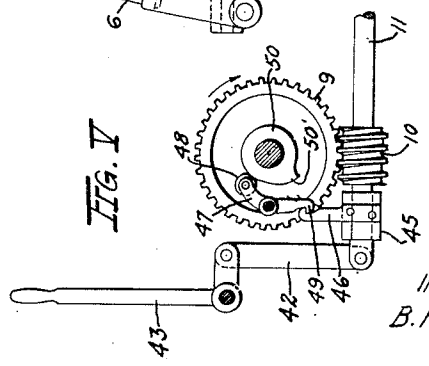


Fig. V



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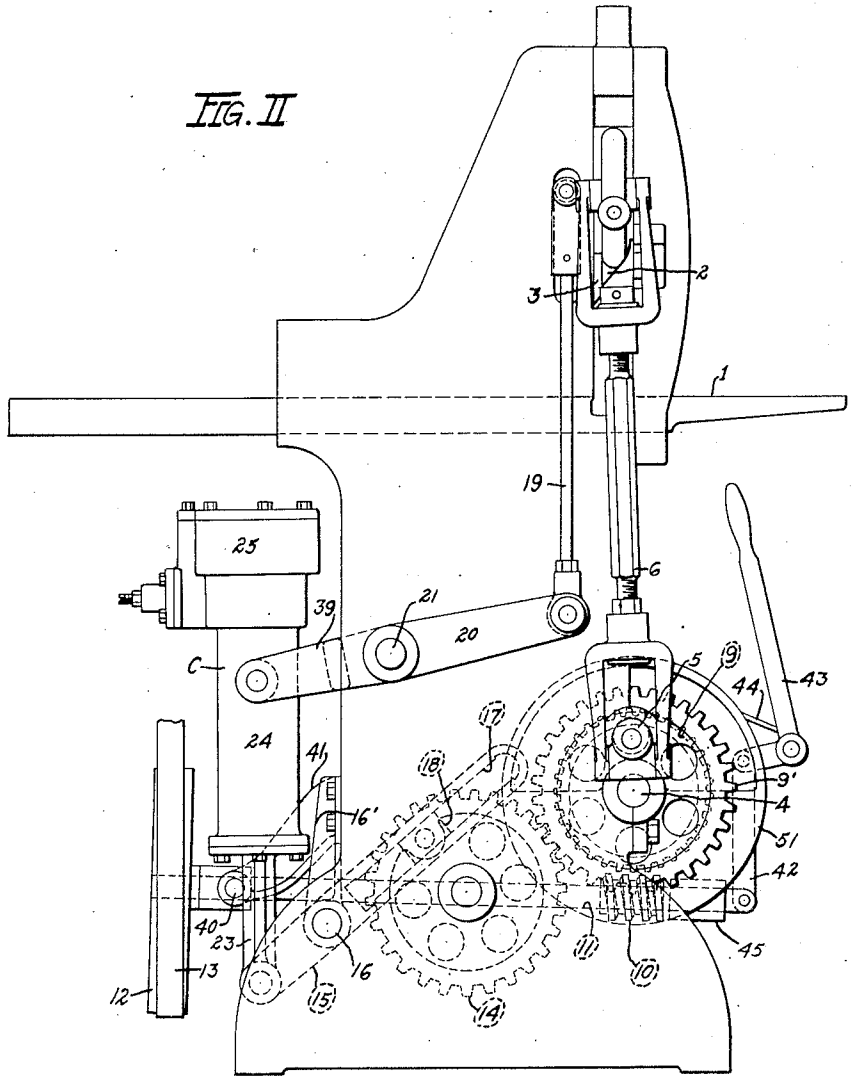
By Cook & McCauley
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CUTTING MACHINE

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FIG. II



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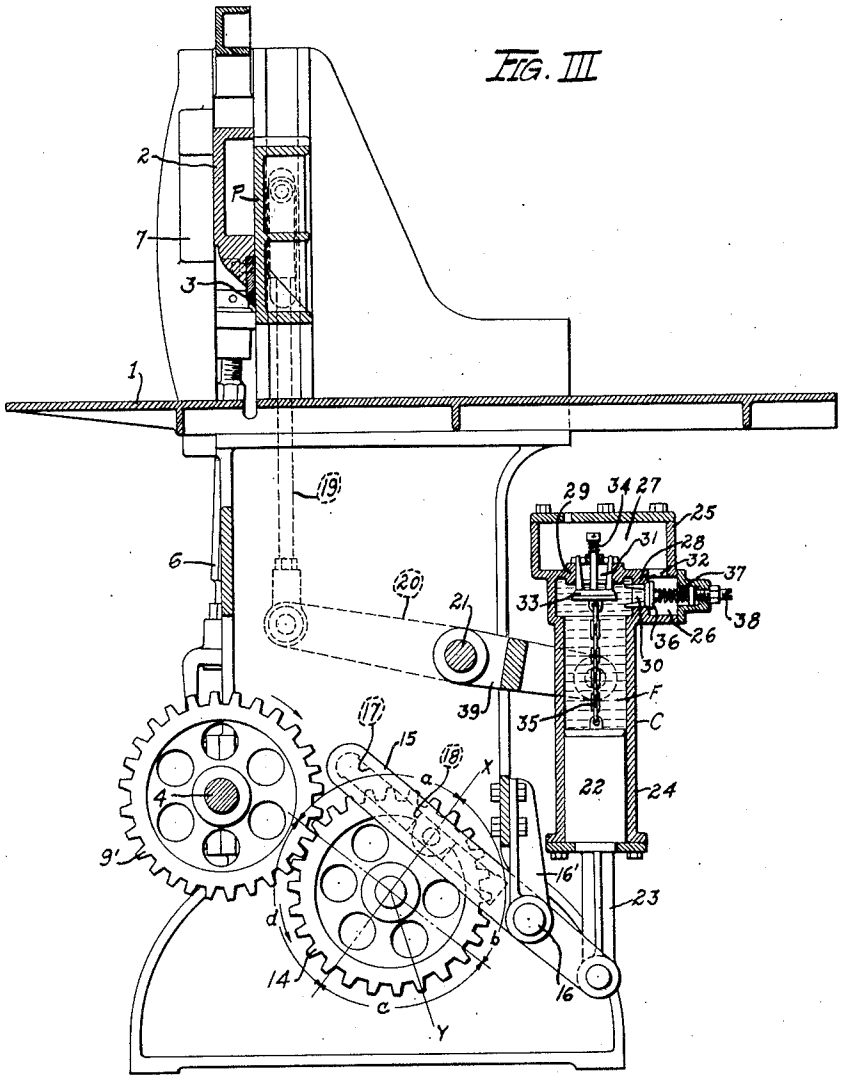
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CUTTING MACHINE

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FIG. III



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CUTTING MACHINE

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FIG. VI

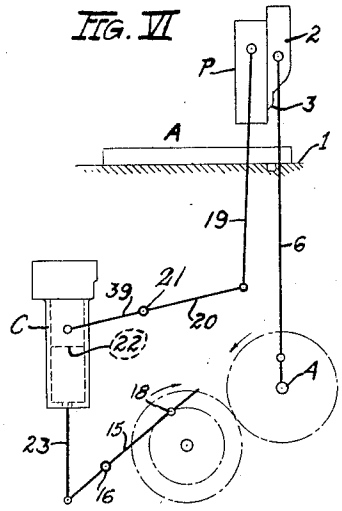


FIG. VII

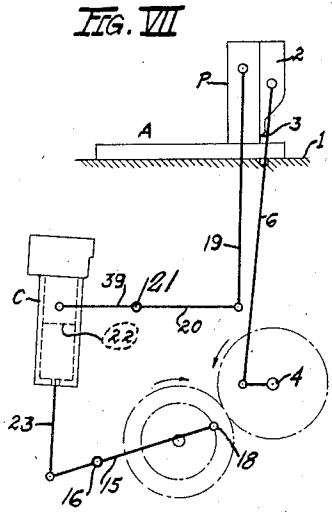


FIG. VIII

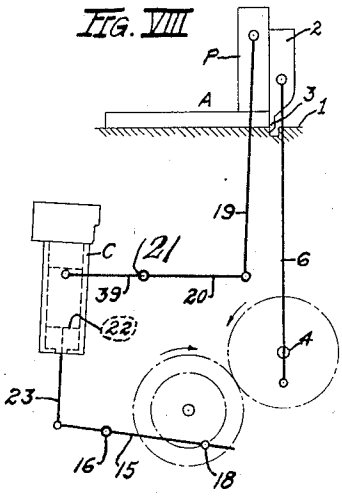
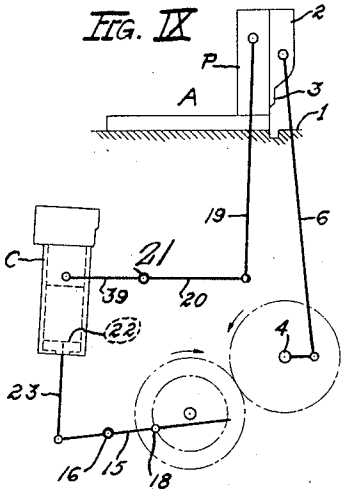


FIG. IX



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Patented Apr. 23, 1929. 1,710,084

UNITED STATES PATENT OFFICE.

BENJAMIN F. BERRY, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE BERRY MACHINE COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

CUTTING MACHINE.

Application filed April 3, 1925. Serial No. 20,371.

This invention relates to cutting machines, and particularly to a device which may be associated with a paper-cutting or the like machine for the purpose of transmitting motion and pressure to a means for clamping sheets of paper or other material while they are being acted upon by the cutting blade of said machine.

Briefly stated, the preferred form of the invention comprises a presser member adapted to move into engagement with the material to be operated upon and also adapted to exert a constant and uniform predetermined degree of pressure on said material. When the device is applied to a paper-cutting machine the sheets of paper to be cut are so arranged with relation to the clamping device that the presser member thereof will move downwardly to engage and clamp said paper during the cutting operation. The travel of the presser member varies to compensate for variations in the thickness of the body of paper to be acted upon, and when the presser member stops in its operative position it is held there under a predetermined degree of pressure. To accomplish these results in a simple and practical manner, my apparatus preferably includes a driver which travels a fixed distance during each operation and a yieldable transmission device for transmitting power from said driver to the presser member. Movement is transmitted to the presser member until the latter reaches its operative position, after which the driver moves independently of the presser member. During the last mentioned part of the operation the presser member is stationary and the continued movement of the driver will result in the transmission of a constant and uniform degree of pressure to said presser member.

The yieldable transmission device preferably includes fluid circulating elements through which the power is transmitted and a regulating valve adapted to open in response to a predetermined degree of fluid pressure. When the resistance offered to the movement of the transmission device rises to a predetermined degree, the regulating valve opens to permit the circulating elements to move without transmitting movement to the presser member, and during this part of the operation a uniform degree of power is transmitted from the driver to the presser member.

The invention disclosed in the present application is an improvement on the device covered by United States Patent No. 1,279,-972, issued to me on September 24, 1918. In the use of the device disclosed in the patent mentioned it was found that the pressure of the presser member was not uniform during the time that the blade of the cutting machine was passing through the paper. This variance in pressure was caused by the fact that the piston rod was operated by a simple crank arm mounted on a rotatable drive shaft, and because of this arrangement the movement of the piston within the cylinder would be comparatively slow at the beginning of the stroke with a gradual increase in speed until the halfway point of the stroke was reached, after which the speed of said piston would be gradually diminished until the stroke had been completed. This variance in the speed of the piston resulted in a variance in the degree of pressure exerted by the presser member on the material being cut, whereby a change was effected in said material during the cutting operation. In the use of the device disclosed herein the degree of pressure exerted by the presser member on the material being cut is approximately uniform during the cutting operation.

Another important advantage of the present invention over the device disclosed in the patent mentioned results from the fact that the driving elements associated with the presser member of the present device exert positive pressure during a longer period of the time required to perform a complete operation of the cutting machine than did the driving elements associated with the presser member of the device disclosed in the patent. This means that positive pressure is exerted against the material being operated upon during approximately the entire time that the cutting blade is in contact with said material, and as a consequence of this prolonged pressure the material is very firmly held at a time when there is a tendency for its condition to be disturbed by the cutting blade.

With the foregoing and other objects in view, the invention comprises the novel construction, combination and arrangement of parts hereinafter more specifically described and illustrated in the accompanying drawings, wherein is shown the preferred embodi-

ment of the invention. However, it is to be understood that the invention comprehends changes, variations and modifications which come within the scope of the claims hereunto appended.

Fig. I is a front elevation of a paper-cutting machine provided with my improved transmission device, a portion of the frame of said machine being broken away to reveal an element of the transmission device located therebehind.

Fig. II is a side elevation of the machine shown in Fig. I.

Fig. III is a view partly in vertical section and partly in elevation of the machine shown in Figs. I and II.

Fig. IV illustrates the counterweight forming an element of the machine disclosed herein.

Fig. V illustrates the mechanism used for disengaging the cutting machine from the power shaft when said machine has completed an operation.

Figs. VI, VII, VIII and IX are diagrammatical views showing the manner of operation of my improved power transmission device with relation to the operation of the cutting blade of the machine.

To illustrate the preferred form of the invention I have shown a paper-cutting machine provided with a table 1 adapted to receive sheets of paper A (Figs. VI, VII, VIII and IX). 2 designates a vertically movable blade holder supporting a cutting blade 3. Arranged some distance below the cutting blade is a shaft 4 which is extended transversely of the cutting machine and is provided with crank arms 5 at its opposite ends, as shown clearly in Fig. I. Extended from the ends of the blade holder 2 to the oppositely disposed crank arms 5 on the shaft 4 are pull rods 6 which are each in the form of a turn buckle whereby the length of said pull rods may be increased or diminished. The lower ends of the pull rods 6 are pivotally attached to the crank arms 5 and the upper ends of said pull rods are pivotally attached to the ends of the blade holder 2, and in view of this arrangement it is plain that rotation of the shaft 4 will impart movement to the blade holder 2 and the associated blade 3.

7 indicates a guiding member which is secured to a convenient portion of the frame F′ of the machine. The guiding member 7 is arranged at an angle with respect to the perpendicular and said guiding member is adapted to receive a member 8 fixed to the blade holder 2 (Fig. I), said member 8 being of such size and shape that it will slide freely longitudinally within the guiding member 7. At the side of the cutting machine opposite to the side provided with the angular guideway 7 the blade holder 2 merely extends through a vertical guideway in the frame of the machine. Because of the presence of the angular guiding member 7 on the cutting machine disclosed herein the cutting blade 3 is caused to pass through the paper at an angle to a true vertical line, and therefore instead of said blade being pushed through the body of paper a shearing stroke is obtained. The rotation of the shaft 4 and the consequent vertical movement of the blade holder and blade are obtained through a worm wheel 9 mounted on said shaft 4, said worm wheel being adapted to be rotated by a worm 10 mounted on the drive shaft 11. The shaft 11 is provided with a pulley 12 over which a belt 13 operates, whereby rotary motion may be transmitted to said shaft 11 from a suitable source of energy (not shown).

P designates a presser member arranged immediately adjacent to the blade holder 2 and adapted to engage the sheets of paper during the cutting operations. This presser member is moved downwardly, as will be hereinafter described, so as to clamp the paper on the table during the cutting operations, and when the presser member occupies its operative position it exerts a uniform predetermined degree of pressure on said paper. The object is to clamp the paper very firmly during the cutting operation without varying the pressure of the clamp so that the action of the blade will not be impaired by a change in the condition of the paper during the cutting operation.

The means for operating the presser member P comprises a gear wheel 14 arranged in mesh with a gear wheel 9′ on the shaft 4 so that said gear wheel 14 will be rotated by said gear wheel 9′ when the shaft 4 is in motion. 15 designates an arm in the form of a lever pivoted at 16 to a bracket 16′ bolted to the frame of the paper-cutting machine and provided with an elongated slot 17 which extends longitudinally of said arm adjacent to one of its ends. The slotted end of the arm 15 is arranged immediately adjacent to the gear wheel 14, said gear wheel being provided with a pivotally mounted block 18 which is located in and adapted to move longitudinally of the slot 17 in the arm 15. From the construction shown in the drawings and just described, it is plain that as the gear wheel 14 is rotated the sliding connection between said gear wheel and the slotted end of the arm 15 imparts movement to said arm 15, and said slotted end of said arm will be caused to oscillate with a consequent upward and downward movement of the opposite end of said arm. 19 designates pull rods which are pivotally connected at their upper ends to the opposite ends of the presser member P. The lower ends of the pull rods are pivotally connected to arms 20 fixed at the opposite ends of a rockable shaft 21 arranged transversely of the paper-cutting machine.

The means for transmitting motion from the oscillatory arm 15 to the presser member

P comprises a cylinder C within the piston chamber of which is arranged a reciprocatory piston 22. Extended downwardly from the piston 22 is a rigid arm 23, an end of which is fixed to said piston and the opposite end of which is pivotally connected to the end of the arm 15 opposite to the slotted end thereof. The cylinder C comprises a body portion 24 and a head portion 25, said head portion including a chamber 26 and a chamber 27. Located between the chamber 26 of the head portion of the cylinder C and the piston chamber of said cylinder is a vertical wall 28 and interposed between the chamber 27 and the piston chamber of the cylinder is a horizontal wall 29. The wall 28 is provided with a passageway 30 formed therethrough and the wall 29 is provided with a similar passageway 31. The passageways 30 and 31 provide means of communication between the piston chamber of the cylinder C and the chambers 26 and 27, respectively. The chambers 27 and 26 are in communication with each other through the agency of the passageway 32 (Fig. III).

33 designates a check valve which is arranged in the opening 31 between the chamber 27 and the piston chamber of the cylinder C, said check valve being adapted to be drawn to a position where it closes said opening by the comparatively light spring 34. The valve 33 is connected to the piston 22 by a flexible connection 35 whereby said valve is drawn away from its seat when said piston is in its lowermost position. Located in the opening 30 between the chamber 26 and the piston chamber of the cylinder C is a check valve 36. The check valve 36 is adapted to close the opening 30 so as to prevent the passage of fluid therethrough, and said valve has associated with it a spring 37 of considerable strength, which tends to force said valve against its seat. 38 designates an adjusting device in the form of a screw which may be screwed inwardly or outwardly to increase or reduce the pressure exerted by the spring 37 against the valve 36. Located within the piston chamber of the cylinder C is a body of fluid, preferably oil, which I have designated by the reference character F in the drawings. Fixed to the transversely arranged shaft 21, is an arm 39 provided with a bifurcated end portion which embraces the body portion of the cylinder C. As will be seen by referring to Figs. II and III, the outer ends of the legs of the bifurcated portion of the arm 39 are pivotally attached to said cylinder C.

The paper-cutting machine illustrated in the drawings is a one operation machine. In other words, each time said machine is actuated it completes one operation and then stops. To provide for the intermittent starting and stopping of the machine I pivot the shaft 11 at the point indicated by the reference character 40 to a bracket 41 secured to the frame of the machine. Arranged at the end of the shaft 11 adjacent to the worm 10 is a link 42, the upper end of which is connected to a bell crank lever 43 pivoted to a suitable stationary bracket 44. One leg of the bell crank lever 43 extends upwardly and is provided with a grip at its upper end which may be grasped by the operator to shift the position of said bell crank lever. The lower end of the link 42 is pivotally attached to a pair of ears on a block 45, which block is provided with a central opening into which the end of the shaft 11 extends, said shaft being capable of rotating within the opening in said block without imparting rotary motion to the block. The block 45 is provided with an upwardly extended hook 46 (Fig. V). 47 designates a pivotally arranged arm which is provided at one of its ends with an antifriction roller 48 and at its other end with a hook-shaped portion 49. The antifriction roller 48 associated with the arm 47 is arranged in contact with a cam 50 mounted on the shaft 11 and rotatable therewith.

When it is desired to place the cutting machine in operation the bell crank lever 43 is shifted from the position in which it is shown in Fig. II to the position in which it is shown in Fig. V. This will cause the worm 10 to be moved into mesh with the worm wheel 9. When the worm 10 is moved into mesh with the worm wheel 9 the upwardly extended hook 46 will engage the hooked portion of the arm 47, as shown in Fig. V, whereby said worm will be retained in mesh with the worm wheel. The shaft 11 is continuously rotated, and when the worm and worm wheel are in mesh movement will be imparted to said worm wheel, whereby the machine will be operated. The cam 50 is mounted on the shaft 4, and when the high portion 50′ of said cam moves against the antifriction roller 48 the lower hooked end of the arm 47 will be disengaged from the hook 46, whereby the worm will be permitted to drop downwardly out of engagement with the worm wheel 9. It is therefore plain that the operator draws the worm into engagement with the worm wheel by operating the bell crank lever 43 and that said worm and worm wheel remain in engagement with each other until the high portion 50′ of the cam 50 releases the hook 46 from the hooked portion 49 of the arm 47, and permits said worm and worm wheel to be disengaged from each other, thus stopping the machine.

Arranged on and fixed to the shaft 4 is a counterbalance 51 in the form of a fly wheel having a relatively heavy portion 52. The counterbalance 51 is intended to compel the location of the blade 3 and the presser member P in their uppermost positions when the worm and worm wheel are disengaged from each other, as the heavier portion of said counterbalance 51 will swing to the bottom in which position the elements associated with

the blade will be so positioned that said blade will be in its uppermost position. This arrangement will prevent injury to the hands of the operator of the machine in the event of a slippage or breaking of parts of said driving mechanism of the machine, as the counterbalance will cause the blade and the presser member to be retained in or moved to their uppermost positions instead of being permitted to drop downwardly.

It will be assumed that the parts of the herein described paper-cutting machine including the power transmission device are in the positions illustrated in Figs. II and III. When the bell crank 43 is shifted to bring the worm 10 into mesh with the worm wheel 9, as already explained, and rotary motion is thereby imparted to the shaft 4, rotary motion will be transmitted through the gear wheel 9′ to the gear wheel 14. It has been explained that there is a sliding connection between the gear wheel 14 and the arm 15, and this connection will cause the end of said arm 15, which is connected to the rigid arm associated with the piston 22, to be moved upwardly with the consequent upward movement of said arm 23 and piston 22. At the very beginning of the upward movement of the piston 22 the flexible connection 35 will be slackened, and this condition of said connection will permit the relatively light spring 34 associated with the check valve 33 to seat said valve and thus close the opening 31. In the initial operation the degree of resistance is insufficient to unseat the regulating valve 36, and the piston 22 and cylinder C are moved upwardly together from the position indicated in Fig. VI to the position indicated in Fig. VII. This movement will result in a pull being exerted on the pull rods 19 through the agency of the arms 20 and 39 and the shaft 21, whereby the presser member P will be caused to move downwardly against the top face of body of paper A, as shown in Fig. VII. After the presser member has reached the position last mentioned the arm 15, because of the sliding connection between said arm and the gear wheel 14, will continue to move the piston 22 upwardly. Because of this continued upward movement of the piston 22 and due to the fact that the cylinder C is held stationary by the presser member being in contact with the paper A, the fluid F within the piston chamber of the cylinder C will be placed under a sufficient degree of pressure to overcome the pressure of the spring 37 and open the regulating valve 36. Therefore during the continued movement of the arm 15 after the presser member contacts with the paper A the piston 22 is moved upwardly, and as the cylinder C is held stationary the fluid is necessarily forced through the opening 30 with a sufficient degree of force to maintain the valve 36 in an open position, so that a portion of said fluid will pass into the chamber 26 and from said chamber 26 into the chamber 27. While this operation is taking place the check valve 33 is held closed by fluid pressure within the piston chamber of the cylinder C.

Eventually in a complete rotation thereof the gear wheel 14 will move the arm 15 to a position where the upward movement of the piston ceases. When this point is reached the piston will immediately start downwardly but the position of the cylinder and consequently the position of the presser member P will remain undisturbed, said presser member remaining in contact with the paper A. The downward movement of the piston will continue without imparting any motion to the cylinder C until the bottom face of said piston contacts with the top face of the lower wall of said cylinder. When contact is made between the lower face of the piston and the bottom wall of the cylinder the piston still has a comparatively slight distance to move to complete its downward travel, and during this slight distance the piston and cylinder move downwardly as a unit. The cylinder C and the presser member P are connected together by elements which have already been described, and it is plain that when said cylinder is moved downwardly by the piston said presser member will be returned quickly to its uppermost position.

From the foregoing it will be understood that the degree of movement imparted to the presser member P will depend upon the thickness of the material A, and the travel of said presser member will therefore vary in different operations. However, the travel of the arm 15 is the same during each operation, and the transmission device will yield when the presser member reaches its operative position, thus transmitting a uniform degree of power from the arm 15 to the presser member P when the latter occupies its operative position.

A distinct improvement of the present device over the device on which Letters Patent have already been granted to me results from the fact that the speed of movement of the end of the arm 15 which operates the piston in the present device is approximately uniform, whereby movement of an approximately uniform speed is imparted to said piston. In connection with the device covered by the patent mentioned above the means for imparting movement to the piston was a simple crank arm, and because the speed of the piston was not uniform the pressure of the presser member on the material being operated upon by the machine was not uniform.

Attention is called to Fig. III of the drawing. In this view for clearness I have divided the gear wheel 14 into four sectors and have designated these sectors by the reference characters *a*, *b*, *c* and *d*, respectively. It

is apparent, of course, that as the block 18 is passing through the sectors *a* and *c* very little downward movement is imparted to the block 18 in the slotted end of the arm 15, due to the fact that the angle between the path of travel of said block and the longitudinal walls of the slot 17 is not very great. However, when the block 18 is passing through the sector *d* the greatest amount of downward movement of the block 18 is obtained, because at this time the path of travel of the block is downwardly and approximately at a right angle to the longitudinal faces of the slot 17. It may seem from this that when the block is passing through the sectors *a* and *c* the speed of travel of the end of the arm 15, which is attached to the arm 23 associated with the piston, would be relatively slow, and that when said block is passing through the sector *d* the speed of travel of said end of said arm would be comparatively high. This is not the case, however, due to the fact that when the block 18 is passing through the sectors *a* and *c* said block is closer to the fulcrum point 16 of the arm 15, and as a consequence a shorter downward motion of the block is required to move the outer end of said arm a predetermined distance than would be required if said block were farther away from the fulcrum point 16, as is the case when it is passing through the sector *d*. It is plain, therefore, that the block 18 passes through a plurality of sectors of exactly equal width, and that during the passage of the block 18 through certain sectors the block is moved a greater distance vertically than when said block passes through another sector; but when the block is passing through the sector in which it gets its lesser vertical movement, said block is closer to the fulcrum point of the arm 15, and when said block passes through the sector wherein it receives its greater vertical movement said block is further away from the fulcrum point of the arm 15.

The block 18 thus travels in a circular path with the crank pin on which it is mounted, but said block moves towards and away from the fulcrum of the lever arm, so as to vary the leverage in accordance with the variations due to the crank motion, and the speed of the piston is therefore substantially uniform during the clamping operation.

It is apparent that because of the approximately uniform speed of travel of the piston 22 the pressure exerted by the piston against the fluid within the cylinder will be approximately uniform, and this approximately uniform pressure will be transmitted to the presser member.

In the device disclosed in my former patent wherein a simple crank arm was used to reciprocate the piston within the cylinder, pressure was imparted to the presser member by the power transmission device during only one-half of a complete revolution of said crank arm. With the slot and pin connection between the gear wheel 14 and the arm 15 as used herein, upward motion is imparted to the piston 22 from the time the block 18 leaves the point indicated by the reference character X in Fig. III until it reaches the point indicated by the reference character Y, which is considerably more than half a revolution of the gear wheel 14. In this way positive pressure is transmitted to the presser member during approximately the entire time the blade of the machine is in contact with the material being cut, and the mere weight of the presser member is not relied upon to retain said material in its proper position. This point is clearly illustrated in the diagrammatical views (Figs. VI, VII, VIII and IX) which views show the presser member in contact with the paper A during the entire time the blade and paper are in contact with each other.

I claim:

1. A cutting machine comprising a movable cutting blade, a pivotally mounted drive shaft, a driven shaft, means whereby movement may be transmitted from said driven shaft to said movable cutting blade, said drive shaft being provided with a worm movable into and out of engagement with a worm wheel on said driven shaft whereby movement may be transmitted from said drive shaft to said driven shaft, means comprising members adapted to cooperate with each other to retain said worm on said drive shaft in mesh with said worm wheel on said driven shaft, and means comprising a cam whereby the last mentioned cooperating members may be automatically disconnected to permit said worm and said worm wheel to be disengaged from each other.

2. In a cutting machine, a presser member adapted to clamp the material to be cut, a knife adapted to cut the material held by said presser member, and operating means including a rotary member, a lever driven by said rotary member, and a yieldable device including a liquid through which motion is transmitted from said lever to said presser member, said rotary member being movable along said lever toward and away from the fulcrum thereof, to impart a substantially uniform motion to said lever during the clamping operation.

3. In a cutting machine, a presser member adapted to clamp the material to be cut, a knife adapted to cut the material held by said presser member, and operating means including a rotary member, a lever driven by said rotary member, and a yieldable device through which motion is transmitted from said lever to said presser member, said yieldable device comprising a liquid-displacing member adapted to transmit pressure through the liquid during the clamping operation,

and said rotary member being movable along said lever toward and away from the fulcrum thereof, to impart a substantially uniform motion to said lever during the clamping operation.

4. In a paper cutting machine, a presser member adapted to clamp the paper, a knife adapted to cut the paper held by said presser member, and operating means including a rotary crank, a lever driven by said crank, and a yieldable device including a liquid through which motion is transmitted from said lever to said presser member, said crank being movable toward and away from the fulcrum of said lever to impart a substantially uniform motion to said lever during the clamping operation.

5. In a paper cutting machine, a presser member adapted to clamp the paper, a knife adapted to cut the paper held by said presser member, and operating means including a rotary crank, a lever driven by said crank, and a yieldable device through which motion is transmitted from said lever to said presser member, said yieldable device comprising a liquid containing chamber and a piston arranged therein to provide for displacement of the liquid during the clamping operation, and said crank being movable toward and away from the fulcrum of said lever to impart a substantially uniform motion to said lever during the clamping operation.

6. A paper cutting machine comprising a presser member adapted to clamp the paper, a knife adapted to cut the paper held by said presser member, and operating means whereby said presser member is firmly forced onto the paper before, during and after the cutting operation, said operating means including a crank connected to said knife, a rotary member, a lever driven by said rotary member, and a yieldable device through which motion is transmitted from said lever to said presser member, said yieldable device including a liquid, a displacing member adapted to transmit pressure through the liquid during the clamping operation, and said rotary member being movable along said lever toward and away from the fulcrum thereof, to impart a substantially uniform motion to said lever during the clamping operation.

7. In a cutting machine, a presser member adapted to clamp the material to be cut, a knife adapted to cut the material held by said presser member, and operating means whereby said presser member is forced onto the material during the cutting operation, said operating means comprising a liquid and a liquid-displacing device through which pressure is transmitted to said presser member, said liquid-displacing device including a piston member and a cylinder member one of which is provided with a discharge port through which the liquid is discharged during the cutting operation, and means for moving one of the fluid-displacing members at a substantially uniform speed during the cutting operation.

8. In a cutting machine, a presser member adapted to clamp the material to be cut, a knife adapted to cut the material held by said presser member, and operating means whereby said presser member is forced onto the material during the cutting operation, said operating means comprising a liquid and a liquid-displacing device through which pressure is transmitted to said presser member, said liquid-displacing device including a piston member and a cylinder member one of which is provided with a discharge port and means cooperating with said piston and cylinder members to discharge the liquid through said port at a substantially uniform velocity during the cutting operation, the last mentioned means including a lever whereby one of the members of said liquid-displacing device is moved relative to the other and a rotary driver whereby said lever is moved at a substantially uniform speed during the cutting operation.

9. In a cutting machine, a presser member adapted to clamp the material to be cut, a knife adapted to cut the material held by said presser member, and operating means whereby said presser member is forced onto the material before, during and after the cutting operation, said operating means including a rotary member, a lever driven by said rotary member and a yieldable device through which motion and pressure are transmitted from said lever to said presser member, said yieldable device comprising a liquid and a liquid-displacing member movable in one direction to transmit pressure through the liquid during the cutting operation and movable in the opposite direction to restore the liquid and presser member, said liquid-displacing member being driven in the first mentioned direction during more than one-half of a revolution of said rotary member so as to prolong the pressure of said presser member, and said lever and liquid-displacing member being returned during less than one-half of a revolution of said rotary member.

10. In a cutting machine, a presser member having a variable travel during the operation of the machine and adapted to clamp material, varying in thickness, to be cut, a member adapted to cut the material held by said presser member, and means for causing said presser member to exert a substantially uniform pressure on the material as the latter is being cut, said means including a liquid through which the pressure is transmitted, and a device whereby the liquid is displaced at a substantially uniform velocity.

In testimony that I claim the foregoing I hereunto affix my signature.

BENJAMIN F. BERRY.