No. 839,351. PATENTED DEC. 25, 1906.

S. K. WHITE.

PAPER CUTTING MACHINE.

APPLICATION FILED NOV. 4, 1902.

5 SHEETS—SHEET 1.

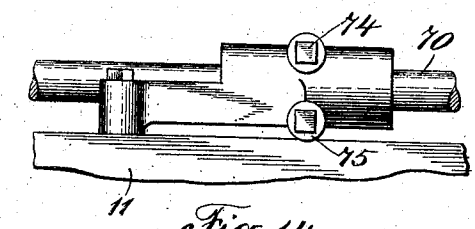


Fig. 14

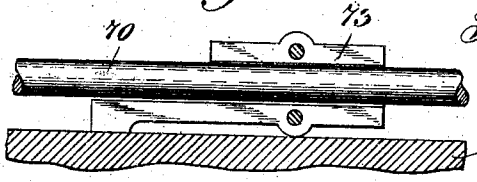


Fig. 15.

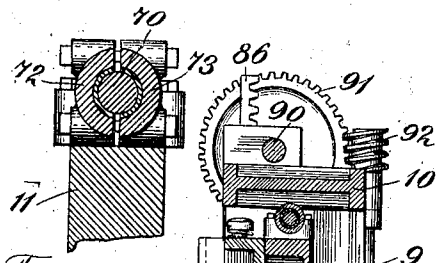


Fig. 16.

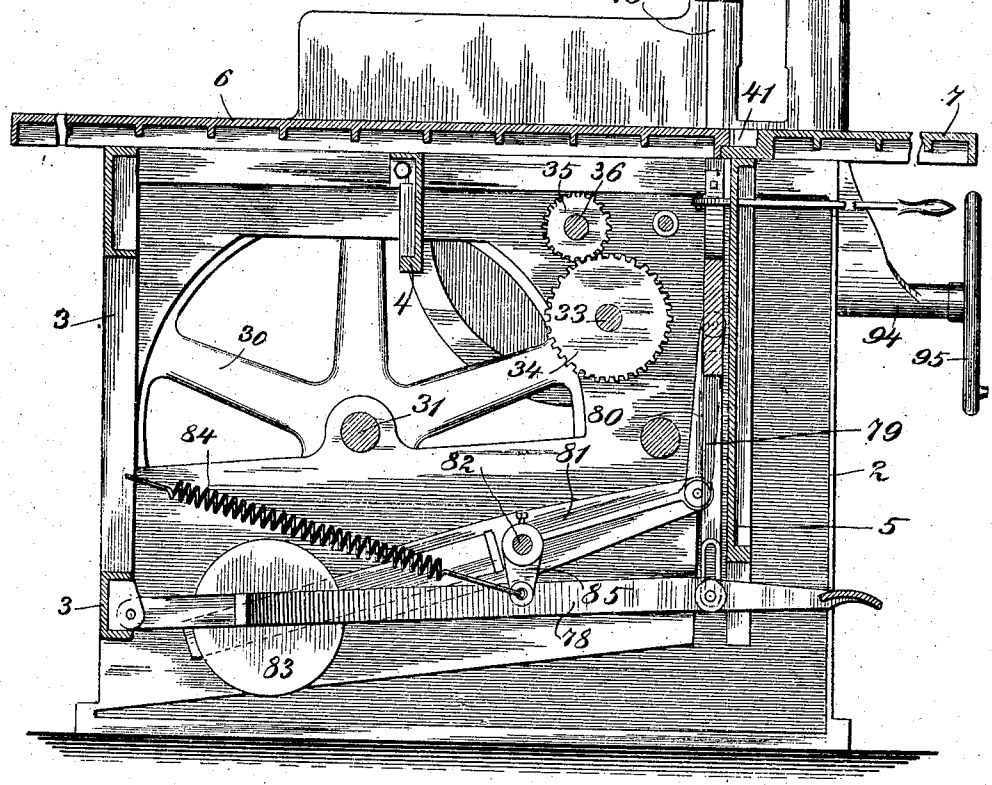


Fig. 1.

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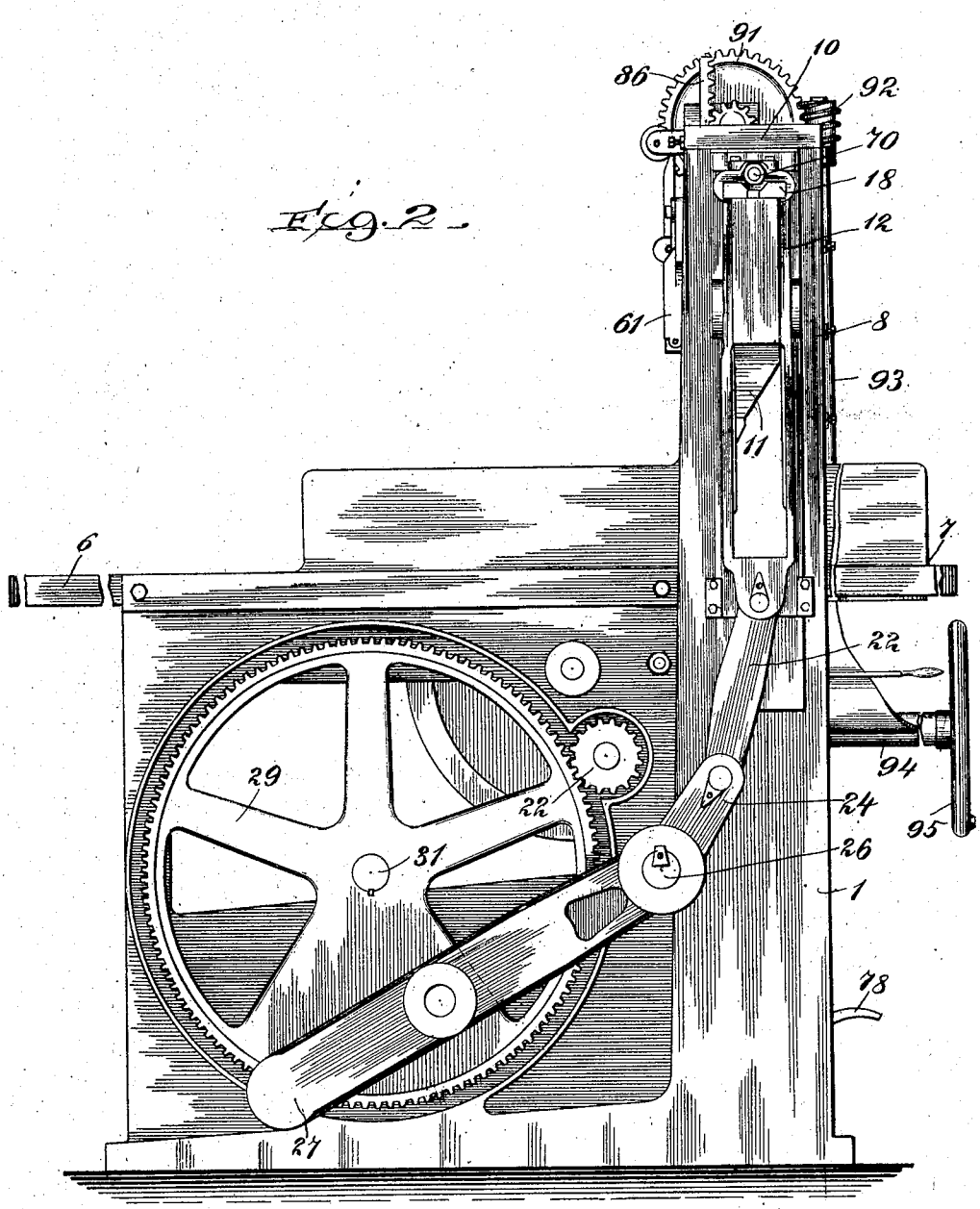
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5 SHEETS—SHEET 2.

Fig. 2.



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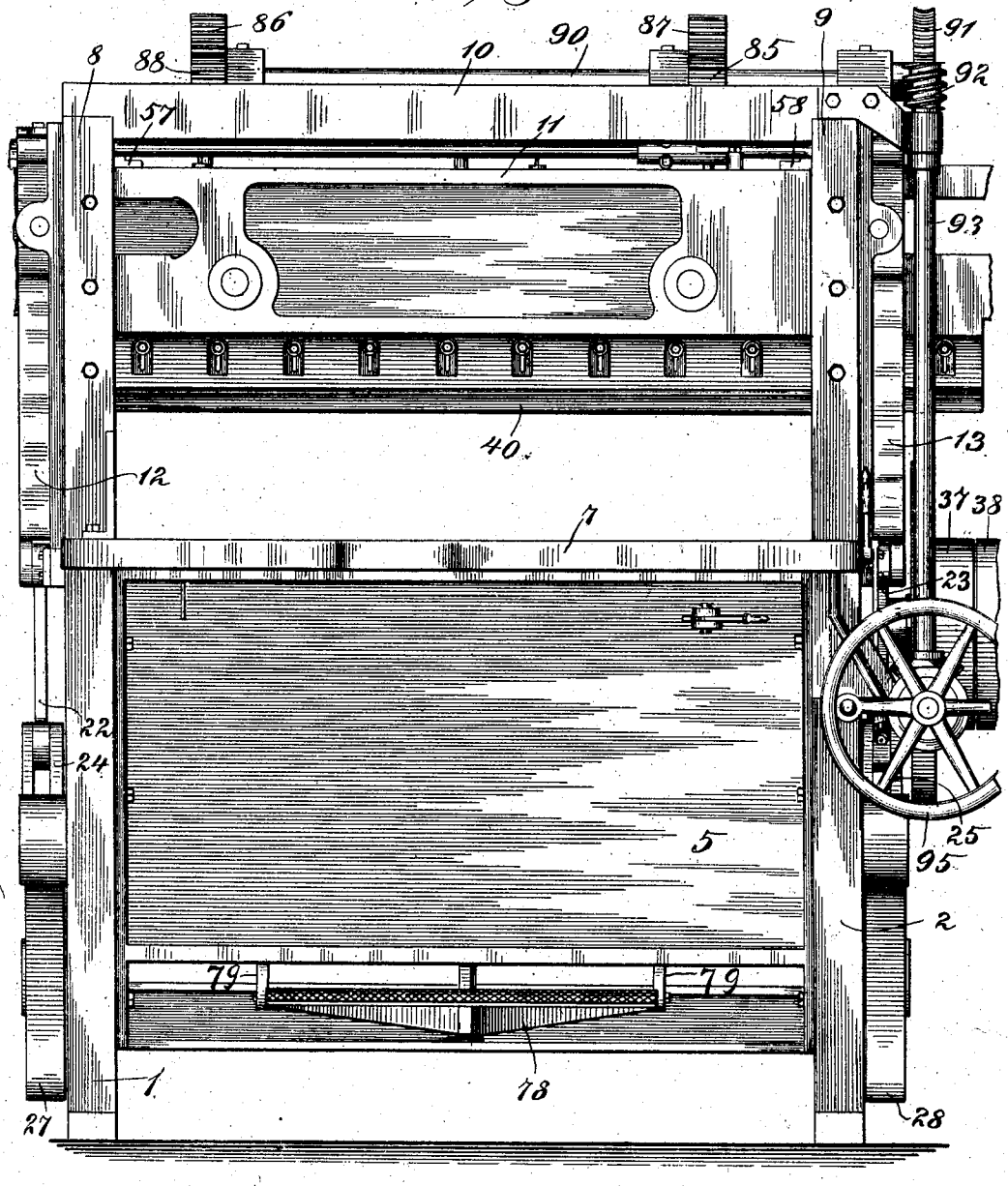
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5 SHEETS—SHEET 3.

Fig. 3.



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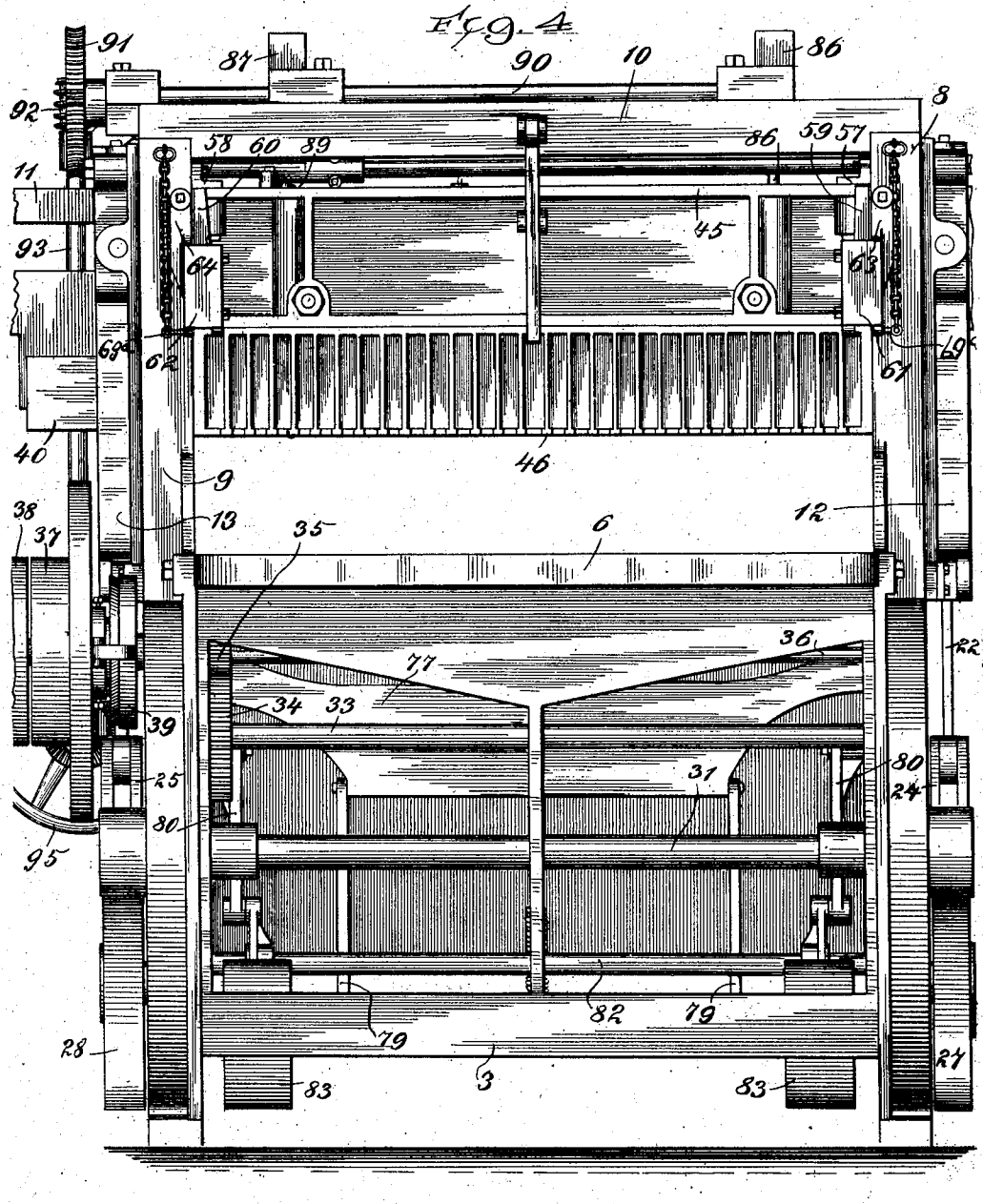
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APPLICATION FILED NOV. 4, 1902.

5 SHEETS—SHEET 4.

Fig. 4.



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No. 839,351. PATENTED DEC. 25, 1906

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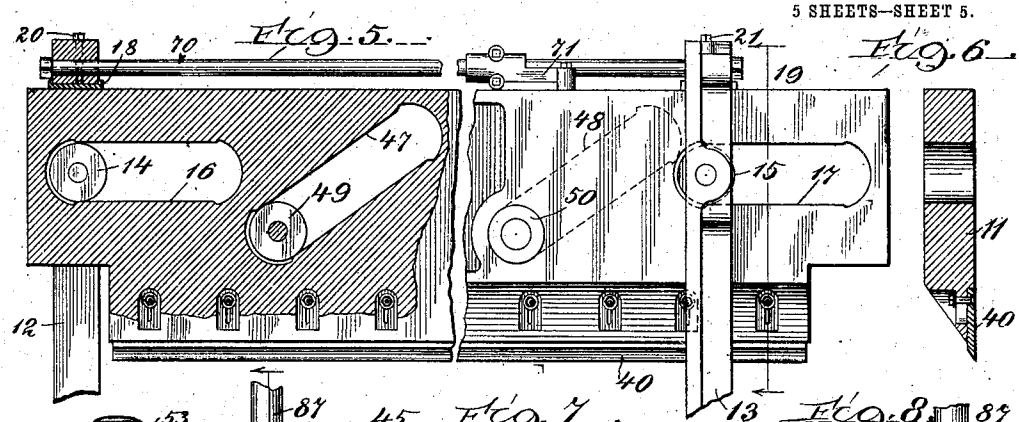


Fig. 5.

Fig. 6.

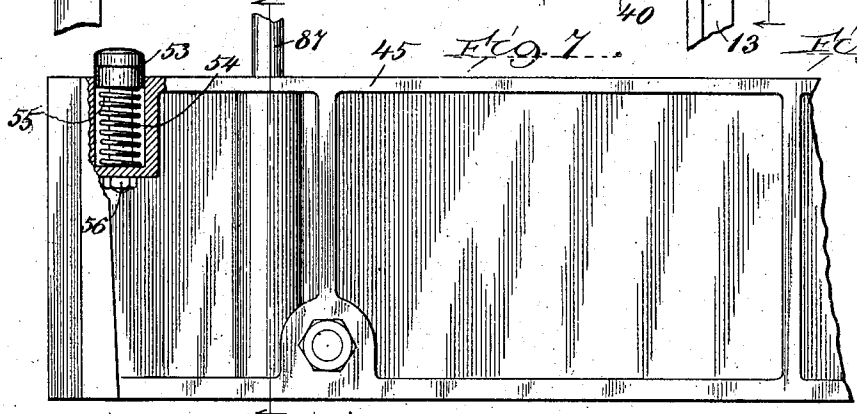


Fig. 7.

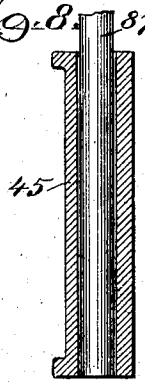


Fig. 8.

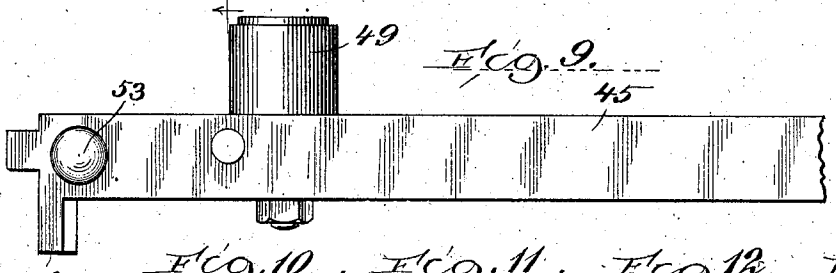
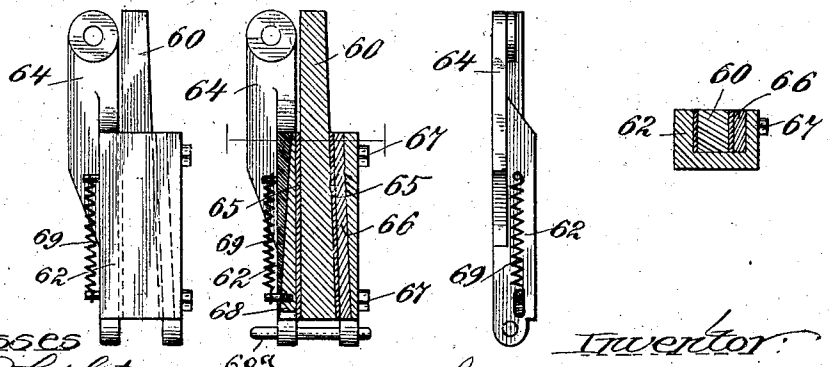


Fig. 9.

Fig. 10. Fig. 11. Fig. 12. Fig. 13.



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PAPER-CUTTING MACHINE.

No. 839,351. Specification of Letters Patent. Patented Dec. 25, 1906.

Application filed November 4, 1902. Serial No. 130,255.

To all whom it may concern:

Be it known that I, SAMUEL K. WHITE, a citizen of the United States, and a resident of Batavia, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Paper-Cutting Machines, of which the following is a specification.

My invention relates to paper-cutting machines, and more particularly to a machine for cutting paper in pile form.

The object of my invention is to so improve the various features of the machine as to render the machine more powerful and at the same time more rapid and more accurate and reliable in operation than any cutting-machine of the character referred to heretofore devised.

Among the more important features of my invention are improvements in the construction of the cutter-bar and the mechanism for operating the same, including means for overcoming the momentum of the cutter-bar and parts connected therewith, improvements in the cutting-bed, and improvements in the paper-clamp and the mechanism for controlling the same. These and other features of the invention will more fully appear from the following description.

The invention consists of the novel parts, improvements, and combinations hereinafter described.

The accompanying drawings, which are referred to herein and form a part hereof, illustrate a machine embodying the various features of my invention, the same serving, in connection with the description herein, to explain the principles of the invention and the best mode contemplated by me of carrying those principles into effect.

Of the drawings, Figure 1 is a vertical longitudinal section of the machine. Fig. 2 is an end elevation as seen from the left in Fig. 3. Figs. 3 and 4 are respectively a front and rear elevation of the machine. Fig. 5 is an elevation, partly in section, illustrating the details of the cutter-bar and parts connected therewith. Fig. 6 is a transverse section of the same. Fig. 7 is a rear elevation of one member of the clamp. Figs. 8 and 9 are respectively a transverse section and a top plan view of the same. Figs. 10 to 16, inclusive, are detail views illustrating various features of the construction.

The machine which is shown in the drawings as embodying the various features of my invention is of that type of reciprocating paper-cutters in which a straight knife is given a compound movement with relation to a stationary cutting-bed, said movement being known as a "draw cut." The machine shown, moreover, belongs to that type of reciprocating paper-cutters in which the paper-clamp is power-operated and forms a part of the mechanism for producing the desired movements of the cutter-bar. It is to be understood, however, that although certain important features of the invention relate to the clamping mechanism the invention as to certain other features is not limited to a machine in which the type of clamping mechanism referred to is employed.

Referring now to the drawings in detail, and more particularly at first to the general views shown in Figs. 1, 2, 3, and 4, the frame of the machine consists of two vertical side members 1 and 2, the lower parts of which are firmly secured together by the transverse girders 3, 4, and 5 and by the cutting-tables 6 and 7 and the upper ends or standards 8 and 9 of which are firmly secured together by the top girder 10. The standards 8 and 9 are provided with vertical slots in which the cutter-bar 11 is accurately guided to move in two directions—to wit, upwardly and downwardly to and from the cutting-table and horizontally or in the direction of its length.

As far as some of the features of my invention are concerned, any suitable means may be provided for giving the cutter-bar its vertical reciprocating or cutting movement. In accordance with the best embodiment of the invention, however, the means shown for reciprocating the knife are used, and these means constitute one of the principal features of my present invention. In accordance with the embodiment of this feature of my invention shown a pair of slide-bars 12 and 13 are mounted to slide vertically in suitable guides on the outer sides of the standards 8 and 9, said bars being provided with vertical slots that embrace the cutter-bar, as clearly shown in Fig. 2. In accordance with the best construction each of these bars has a double-bearing connection with the cutter-bar 11, one of said bearings consisting of the rollers 14 and 15, pivoted on transverse studs connecting the opposite

sides of the said bars and adapted to engage with the upper and lower surfaces of the slots 16 and 17 of the cutter-bar, and the other of said bearings consisting of the plates 18 and 19, located at the tops of the slots in the slide-bars 12 and 13 and adapted to slide on the upper surface of the cutter-bar 11.

In order that the bearings 14, 15, 18, and 19 may be accurately adjusted with relation to each other to evenly distribute the pressure, means are provided for adjusting the plates with relation to the slide-bars, the adjusting means shown consisting of set-screws 20 and 21.

Any suitable means may be employed for reciprocating the slide-bars 12 and 13. In accordance with the best construction, however, the means shown are used, said means constituting one feature of the present invention. As shown, the slide-bars 12 and 13 are connected by means of links 22 and 23 with the short arms 24 and 25 of a pair of levers, which, as shown, are pivoted at the opposite ends of the transverse shaft 26, journaled at a suitable point in the said frames 1 and 2 below and preferably somewhat to one side of the vertical plane of the slide-bars 12 and 13. Any suitable means may be provided for operating said levers. Preferably, however, they are operated by means adapted to give them a slow powerful movement in one direction and a quick return. As shown, said levers are provided with the elongated rearwardly-extending arms 27 and 28, which are slotted on their inner surfaces to receive a pair of crank-pins carried by large gear-wheels 29 and 30, fixed to the opposite ends of a transverse shaft 31, journaled at a suitable point in the opposite side frames 1 and 2. The gear-wheels 29 and 30 are driven in unison by a pair of pinions, one of which is shown in Fig. 2, said pinions being affixed to the opposite ends of the shaft 33, suitably journaled in the side frames 1 and 2. The shaft 33, in accordance with the construction shown, is provided at an intermediate point with a gear 34, which is driven by a pinion 35, fixed to the power-shaft 36, said power-shaft being suitably connected with the tight and loose pulleys 37 and 38 and a clutch 39. (See Fig. 4.) As the details of this power mechanism form no part of my present invention, the same will not be further described herein.

With the object in view of bringing the cutter-bar and the parts connected therewith to a gradual stop at the limit of their upper or return stroke the arms 24 and 25 of the operating-levers are so arranged with relation to the arms 27 28 of said levers and to the links 22 and 23 that the arms 24 and 25 and the links 22 and 23 approach the position of alinement with each other as the bars 12 and 13 near the limit of their upper stroke. By reason of this construction the said arms 24 and 25 and links 22 and 23 act somewhat like toggle-joints to reduce the motion of the slide-bars 12 and 13 with relation to the movement of the power mechanism. The cutter-bar and the parts connected therewith are thus brought to a very gradual rest, and the thumping or jarring that would otherwise result is effectually prevented.

The cutter-bar 11 is provided in the usual manner with a suitable knife 40, and the cutting-table 6 7 is provided with a suitable stationary cutting-bed 41, with which the knife coöperates. For the purpose of firmly supporting the cutting-bed 41 throughout its entire length to prevent the same from yielding under the action of the knife the top of the girder 5 is accurately fitted to the under surface of the table 7 directly beneath the cutting-bed 41, and said girder is provided with a vertical web which is arranged in the cutting-plane and extends as far as possible toward the base of the machine.

The clamping mechanism and the connections thereof with the cutting mechanism will next be described. As shown, the paper-clamp consists of an upper power-section 45 and a lower clamp-section 46, both said clamp-sections being fitted to slide vertically in suitable grooves in the standards 8 and 9 directly to the rear of the cutter-bar 11. For moving the clamp downward into an even-pressure contact with the pile of paper during the cutting operation and at the same time to give the cutter-bar a movement in the direction of its length during the cutting operation a diagonal slot-and-pin connection is provided between the clamp and the cutter-bar. As shown, the cutter-bar is provided on its rear face with diagonal grooves 47 and 48, (see Fig. 5,) and the upper section 45 of the clamp is provided near its lower edge with stud-rollers 49 and 50 in position to engage the lower ends of said grooves when both the cutter-bar and the clamp are at the limit of their upper strokes. The grooves 47 and 48 may, as far as some of the features of my invention are concerned, be extended clear through the cutter-bar, so as to form open slots therein, as is the usual construction in this type of cutter. In accordance with my invention, however, these slots are closed, the maximum strength and stiffness of the cutter-bar being secured by the construction shown.

By reason of the fact that when the machine is in operation the clamp reaches the limit of its upper stroke in advance of the cutter-bar 11 the clamp is not cushioned by the toggle-like action of the links 22 and 23 and arms 24 and 25. In accordance with my invention, therefore, special means are provided for gradually absorbing the momentum of the clamp. Any suitable device may be employed for this purpose. In the machine shown two forms of cushioning devices are

used. One of these devices consists of a pair of spring-pressed plungers arranged at the opposite ends of the clamp-section 45. One of said spring devices is shown in detail in Fig. 7, the same consisting of a plunger 53, fitted in a suitable socket 54 in the clamp-section 45 and pressed upwardly by a helical spring 55, which is confined between a shoulder on the plunger and the bottom of the socket 54. The upward motion of the plunger is adjustably fixed by the nut 56, which is threaded on the lower end of the plunger and in position to engage the under side of the socket. Suitable brackets 57 and 58 are secured to the inner sides of the standards 8 and 9 in position to engage the plungers 52 and 53.

In accordance with the preferred construction additional cushioning devices in the form of friction-brakes are provided. As shown, these friction devices consist of a pair of vertical friction-blocks 59 and 60, affixed to the rear surface of the clamp-section 45, near the opposite ends thereof, in position to enter a corresponding pair of friction-sockets 61 and 62 as the clamp approaches the limit of its upper stroke, said blocks being suitably secured, as by means of the brackets 63 and 64, to the standards 8 and 9. The friction-blocks 59 and 60 are preferably slightly tapered in the direction of their vertical movement, and the sockets 61 and 62 are correspondingly tapered, so that the pressure on the friction-blocks is increased as the clamp nears the limit of its movement in the upper direction. The inner surfaces of the friction-sockets may be provided with a lining 65 of a suitable friction material. Preferably, also, means are provided for adjusting the width of the friction-sockets. As shown, one side of the socket is provided with a removable part 66, which is held in position by bolts 67 in such a manner that packing material may be inserted between the part 66 and the side of the socket. With the object in view of readily releasing the clamp from the friction devices at the beginning of its downward movement the friction-sockets 62 and 63 are, in accordance with the construction shown, provided with wedge members 68, which are held against upward movement, but are free to move downwardly with the friction-blocks 59 and 60, and thus relieve the pressure thereon, suitable springs 69 being provided to return the wedges 68 in position to grip the friction-blocks 59 and 60 on their return movement. Any other suitable means for releasing the friction-blocks 59 and 60 may of course be provided. As the cushioning-springs 55 are under compression while the clamp is at the limit of its upward stroke, said springs will act to assist the cutter-bar in releasing the clamp from the friction devices, and thus make certain that the clamp will start downwardly with the cutter-bar, so as to clamp the paper before it is cut. As the clamping pressure in this type of clamp mechanism is due to the resistance of the cutter-bar to movement in the direction of its length, and as the resistance to this movement is largely dependent upon the sharpness of the knife, it is desirable in order to control the pressure of the clamp on the paper to provide some means for varying at will the resistance of the cutter-bar to a movement in the direction of its length. Any suitable means may be provided for this purpose. In accordance with the embodiment of the machine illustrated a friction bar or rod 70 is arranged above and parallel to the cutter-bar 11, said friction-bar 70 being secured at its opposite ends to the upper ends of the slide-bars 12 and 13. Mounted on the upper part of the cutter-bar 11 in position to engage the friction-bar 70 is an adjustable friction-clamp 71. As shown, this clamp consists of a pair of oppositely-arranged jaws 72 and 73, which are freely pivoted at one end on the bar 11 and are formed at their opposite ends to embrace the friction-bar 70, suitable clamp-screws 74 and 75 being provided to vary the pressure of the jaws. If it is found that the pressure of the clamp on the paper is insufficient, it may be increased by increasing the friction on the bar 70. On the other hand, as the knife becomes dull the resulting increased pressure may be relieved by loosening the friction on the bar 70.

With the object in view of bringing the clamp down on the pile of paper without operating the cutter, as is required to accurately set the pile of paper in the machine and to cut certain kinds of stock with accuracy, the lower or clamp section 46 of the clamp is made movable independently of the power-section 45, and means are provided whereby the clamp-section 46 may be moved into and out of contact with the paper manually and without starting the cutting mechanism. In accordance with the construction shown the section 46 is secured to the upper end of a pair of vertically-movable slide-bars 75, which are located in suitable grooves in the standards 8 and 9 and are extended downwardly to a suitable point below the table 6. The bars 76 are connected at their lower ends to the opposite ends of a vertically-movable transverse frame 77, which is connected at points near its opposite ends to a suitable treadle 78 by means of links 79. The treadle 78 is preferably made nearly as wide as the machine and is pivotally connected at the opposite sides of its rear end to the lower part of the back girder 3. By reason of this construction it will be seen that pressure applied at any point along the front of the treadle will move the clamp-section 45 of the clamp downwardly at both sides with

equal force. For the purpose of counterbalancing the clamp the lower ends of the bars 76 are connected, by means of links 80, with one end of the levers 81, which levers are fulcrumed at an intermediate point on the transverse shaft 82 and are provided at their opposite ends with counterbalance-weights 83. Means are preferably provided also for producing a counterbalancing force which increases as the clamp approaches the limit of its upper stroke, so as to assist in a measure the devices hereinbefore described for overcoming the momentum of the clamp. As shown, this means consists of a tension-spring 84, which is fixed at one end to the girder 3 and at the opposite end to an arm 85, carried by the rock-shaft 82 and so arranged that the tension of the spring increases as the clamp nears the limit of its upper stroke. For the purpose of bringing the clamp-section 46 into contact with the paper by hand with the force required to hold the same during the cutting operation a pair of vertically-moving plungers 86 and 87 are mounted in the top girder 10, the same extending downward through suitable openings in the upper clamp-section 45. The plungers 87 are provided at their upper ends with suitable racks which are engaged by suitable pinions 88 and 89, mounted on a transverse shaft 90, which is suitably journaled in boxes carried by the girder 10 adjacent to the plungers. The shaft 90 may be operated by any suitable means. As shown, it is provided at one end with a worm-wheel 91, which engages a worm 92, carried by the vertical shaft 93, journaled in suitable brackets carried by the standard 9. At its lower end the shaft 93 is geared to a short horizontal shaft journaled in a bracket 94 and provided at its outer end with a hand-wheel 95. Both the foot and hand operating means for the clamp are usually used in conjunction with the power-clamp, either to aid in setting the stock in the machine or to increase the clamping power or for both purposes. When, however, small cuts are being made or for other reasons extremely light clamping is desired, the foot-clamp may be used alone or it may be supplemented by the hand-clamp, the power-section 45 being locked at the upper limit of its stroke by suitable means, as the pins 69[a], removably fitted in suitable openings in the friction-sockets 61 and 62 below the blocks 59 and 60.

The operation of the various parts of the machine having been fully described in connection with the construction thereof, further description of the operation will be unnecessary.

My invention in its broader aspects is not limited to the particular construction shown nor to the particular construction by which it can be carried into effect, as many changes may be made in the construction without departing from the main principles of the invention and without sacrificing its chief advantages.

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

1. In a paper-cutting machine, the combination of a cutter-bar and mechanism for reciprocating the same, said mechanism consisting of a lever pivoted in operative relation with each end of the said bar, connections between one arm of each lever and the corresponding end of the bar, and power devices for operating said levers, each of said connections including a link pivoted to the corresponding lever-arm and arranged to approach close alinement therewith as the bar nears the limit of its return stroke, whereby the cutter-bar is gradually brought to rest on its return stroke, substantially as described.

2. In a paper-cutting machine, the combination of a cutter-bar and mechanism for reciprocating the same, said mechanism consisting of a lever pivoted in operative relation with each end of said bar, connections between one arm of each lever and the corresponding end of the bar, and power devices for operating said levers to reciprocate said cutter-bar with a quick return stroke, each of said connections including a link pivoted to the corresponding lever-arm and arranged to approach close alinement therewith as the bar nears the limit of its return stroke, whereby the cutter-bar is gradually brought to rest on its return stroke, substantially as described.

3. In a paper-cutting machine, the combination of a cutter-bar and mechanism for reciprocating the same, said mechanism consisting of a lever pivoted in operative relation with each end of said bar, connections between one arm of each lever and the corresponding end of the bar and power devices for operating said levers, each of said connections including a slide adapted to engage the bar and a link pivoted to the slide and to the corresponding lever-arm and arranged to approach close alinement with the lever-arm as the bar nears the limit of its return stroke, whereby the cutter-bar is gradually brought to rest on its return stroke, substantially as described.

4. In a paper-cutting machine, the combination of a cutter-bar and means for reciprocating the same, said mechanism consisting of a lever pivoted in operative relation with each end of said bar, connections between one arm of each lever and the corresponding end of the bar and power devices consisting of a crank engaging a groove in the other arm of each lever so as to reciprocate said cutter-bar with a quick return stroke, each of said connections including a slide adapted to engage the bar and a link pivoted to the slide and to the corresponding lever-arm and arranged to

approach close alinement with the lever-arm as the bar nears the limit of its return stroke, whereby the cutter-bar is gradually brought to rest on its return stroke, substantially as described.

5. In a paper-cutting machine, the combination of a cutter-bar, mechanism for reciprocating said bar transversely to the direction of its length to cut the paper, said mechanism including a slide arranged at each end of the bar, each slide having a plurality of bearings on said bar in the direction of its cutting movement, means for adjusting one of said bearings with relation to the other, and means for moving the cutter-bar in the direction of its length during the cutting operation, substantially as described.

6. In a paper-cutting machine, the combination of a cutter-bar, mechanism for reciprocating said bar transversely to the direction of its length to cut the paper, said mechanism including a slide arranged at each end of the bar, each slide having a rolling and a sliding bearing on said bar one arranged beyond the other in the direction of the cutting movement, means for adjusting the slide-bearing with relation to the other, and means for moving the cutter-bar in the direction of its length during the cutting operation, substantially as described.

7. In a paper-cutting machine, the combination of a cutter-bar, mechanism for reciprocating said bar, a paper-clamp, connections between the cutter-bar and the clamp whereby the latter is operated by and with the cutter-bar, and means independent of the mechanism for reciprocating the cutter-bar for effectively resisting the motion of the clamp as it approaches the limit of its return movement, substantially as described.

8. In a paper-cutting machine, the combination of a cutter-bar, mechanism for reciprocating said bar, a paper-clamp, connections between the cutter-bar and the clamp whereby the clamp is operated by and with the cutter-bar, and means consisting of a friction-brake one member of which is carried by the frame and the other by the clamp for retarding the motion of the clamp as it approaches the limit of its return movement, substantially as described.

9. In a paper-cutting machine, the combination of a cutter-bar, mechanism for reciprocating said bar, a paper-clamp, connections between the cutter-bar and the clamp whereby the clamp is operated by and with the cutter-bar, and means consisting of a friction-brake for retarding the motion of the clamp as it nears the limit of its return motion, and means for releasing the brake as the clamp begins its forward stroke, substantially as described.

10. In a paper-cutting machine, the combination of a cutter-bar, mechanism for reciprocating said bar, a paper-clamp, connections between the cutter-bar and the clamp whereby the clamp is operated by and with the cutter-bar and a friction-brake for retarding the motion of the clamp as it nears the limit of its return motion, said brake having a spring-controlled sliding bar to release the clamp at the beginning of its forward stroke, substantially as described.

11. In a paper-cutting machine, the combination of a cutter-bar, mechanism for reciprocating said bar, a paper-clamp, connections between the cutter-bar and the clamp whereby the clamp is operated by and with the cutter-bar, and means consisting of a friction-brake and a spring cushioning device for retarding the motion of the clamp as it approaches the limit of its return movement, substantially as described.

12. In a paper-cutting machine, the combination of a cutter-bar, mechanism for reciprocating said bar, a paper-clamp, connections between the cutter-bar and the clamp whereby the clamp is operated by and with the cutter-bar, and means consisting of a friction-brake and a spring cushioning device for retarding the motion of the clamp as it approaches the limit of its return movement, said brake having means for releasing the clamp at the beginning of its forward stroke and said cushioning device being constructed to assist in starting the clamp on its forward stroke, substantially as described.

13. In a paper-cutting machine, the combination of a cutter-bar, mechanism for reciprocating said bar, a paper-clamp, connections between the cutter-bar and the clamp whereby the clamp is operated by and with the cutter-bar, and means consisting of a friction-brake for retarding the motion of the clamp near the limit of its return motion, said brake consisting of a wedge member affixed near each end of the clamp and friction-sockets affixed to the frame in position to receive the wedge members as the clamp approaches the limit of its return motion, substantially as described.

14. In a paper-cutting machine, the combination of a cutter-bar, mechanism for reciprocating said bar, a paper-clamp, connections between the cutter-bar and the clamp whereby the clamp is operated by and with the cutter-bar, and means consisting of a friction-brake for retarding the motion of the clamp near the limit of its return motion, said brake consisting of a wedge member affixed near each end of the clamp and friction-sockets affixed to the frame in position to receive the wedge members as the clamp approaches the limit of its return motion, each socket having a yielding member to release the wedge at the beginning of the forward motion of the clamp, substantially as described.

15. In a paper-cutting machine, the combination of a cutter-bar, mechanism for re-

ciprocating said bar, a paper-clamp, connections between the cutter-bar and the clamp whereby the clamp is operated by and with the cutter-bar, said connections being such that the cutter-bar is caused to move in the direction of its length during the operation of cutting and that the clamping pressure is dependent upon the resistance of the cutter-bar to movement in the direction of its length, and means for varying said resistance, substantially as described.

16. In a paper-cutting machine, the combination of a cutter-bar, mechanism for reciprocating said bar, a paper-clamp, connections between the cutter-bar and the clamp whereby the clamp is operated by and with the cutter-bar, said connections being such that the cutter-bar is caused to move in the direction of its length during the operation of cutting and that the clamping pressure is dependent upon the resistance of the cutter-bar to movement in the direction of its length, and means consisting of an adjustable friction device for varying said resistance, substantially as described.

17. In a paper-cutting machine, the combination of a cutter-bar, mechanism for reciprocating said bar, a paper-clamp, connections between the cutter-bar and the clamp whereby the clamp is operated by and with the cutter-bar, said connections being such that the cutter-bar is caused to move in the direction of its length during the operation of cutting and that the clamping pressure is dependent upon the resistance of the cutter-bar to movement in the direction of its length, and means for varying said resistance, said means consisting of a longitudinal friction member carried with the cutter-bar in the direction of the cutting movement but held against movement in the direction of its length and an adjustable clamp affixed to the cutter-bar and adapted to engage said longitudinal member, substantinally as described.

18. A paper-cutting machine including in combination a pair of side frames, a cutter-bar having diagonal grooves extending only part way through said bar, mechanism carried by said side frames for reciprocating said cutter-bar, a cross-girder connecting said side frames, said girder having a web of great width located in the plane of movement of the cutter-bar, and a cutting-bed supported throughout its entire length in the plane of said web, substantially as described.

19. In a paper-cutting machine, the combination with a cutter-bar and means for reciprocating the same, of a paper-clamp having a power member connected to the cutter-bar and operated thereby, a clamp member movable independently of the power member, and means for operating the clamp member independently of the power member, and means for locking said power member against clamping movement, substantially as described.

20. In a paper-cutting machine, the combination with a cutter-bar and means for reciprocating the same, of a paper-clamp having a power member connected to the cutter-bar and operated thereby and a clamp member movable independently of the power member, a rock-shaft journaled parallel with said clamping member, an arm affixed near each end of said rock-shaft, connections between said arms and the ends of said clamp member, and means for operating said clamp member independently of the power member, substantially as described.

21. In a paper-cutting machine, the combination with a cutter-bar and means for reciprocating the same, of a paper-clamp having a power member connected to the cutter-bar and operated thereby and a clamp member movable independently of the power member, a rock-shaft journaled parallel with said clamping member, an arm affixed near each end of said rock-shaft, connections between said arms and the ends of said clamp member, a foot-lever, and connections between said foot-lever and clamp member for operating said clamp member independently of the power member, substantially as described.

22. In a paper-cutting machine, the combination with a cutter-bar and means for reciprocating the same, of a paper-clamp having a power member connected to the cutter-bar and operated thereby and a clamp member movable independently of the power member, a rock-shaft journaled parallel with said clamping member, an arm affixed near each end of said rock-shaft, connections between said arms and the ends of said clamp member, means for operating said clamp member independently of the power member, and means for counterbalancing the weight of said clamp member consisting of balance-weights and a spring so connected to said shaft as to oppose the weight of said clamp with an increasing force as the clamp rises, substantially as described.

23. In a paper-cutting machine, the combination with a cutter-bar and means for reciprocating the same, of a paper-clamp having a power member connected to the cutter-bar and operated thereby and a clamp member movable independently of the power member, a rock-shaft journaled parallel with said clamping member, an arm affixed near each end of said rock-shaft, connections between said arms and the ends of said clamp member, a foot-lever, and connections between said foot-lever and the clamp member for operating said clamp member independently of the power member, and means for counterbalancing the weight of said clamp member consisting of balance-weights and a

spring so connected to said shaft as to oppose the weight of said clamp with an increasing force as the clamp rises, substantially as described.

24. In a paper-cutting machine, the combination with a cutter-bar and means for reciprocating the same, of a paper-clamp having a power member connected to the cutter-bar by means adapted to give the cutter-bar a longitudinal movement during the cutting operation, and a clamp member movable independently of the power member, a plurality of plungers for operating the clamp member, said plungers being provided with rack-teeth, a shaft having pinions for operating said plungers and hand-operating means for operating said shaft, substantially as described.

25. In a paper-cutting machine, the combination of a cutter-bar having diagonal grooves, studs engaging said grooves, and means for reciprocating said bar, said grooves extending only part way through said bar, substantially as described.

26. In a paper-cutting machine, the combination of a cutter-bar having diagonal grooves, a paper-clamp having studs engaging said grooves, and means for reciprocating said bar, said grooves, except for openings adapted to aline with said studs at one part of the stroke of the bar, extending only part way through said bar, substantially as described.

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

SAMUEL K. WHITE.

Witnesses:

E. S. SMITH,

E. M. SMITH.