March 19, 1935. A. K. GAST 1,995,026

MACHINE FOR TRIMMING WALL PAPER

Filed Dec. 16, 1933 3 Sheets-Sheet 1

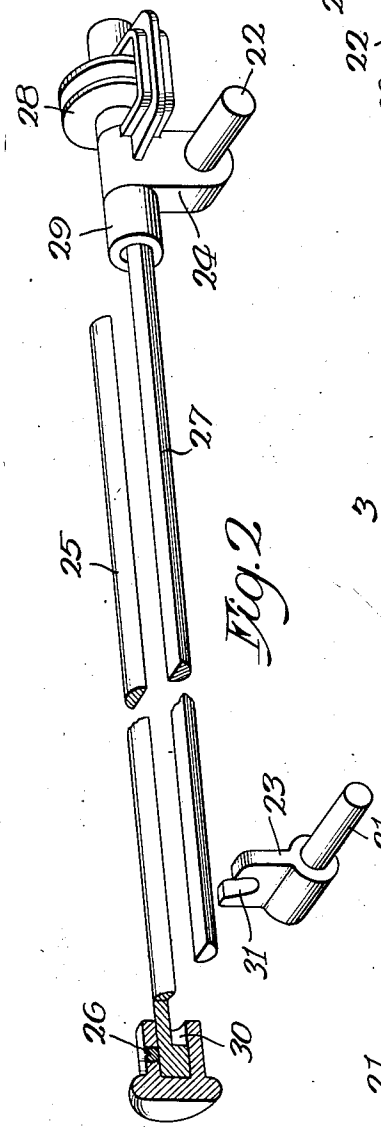


Fig. 2

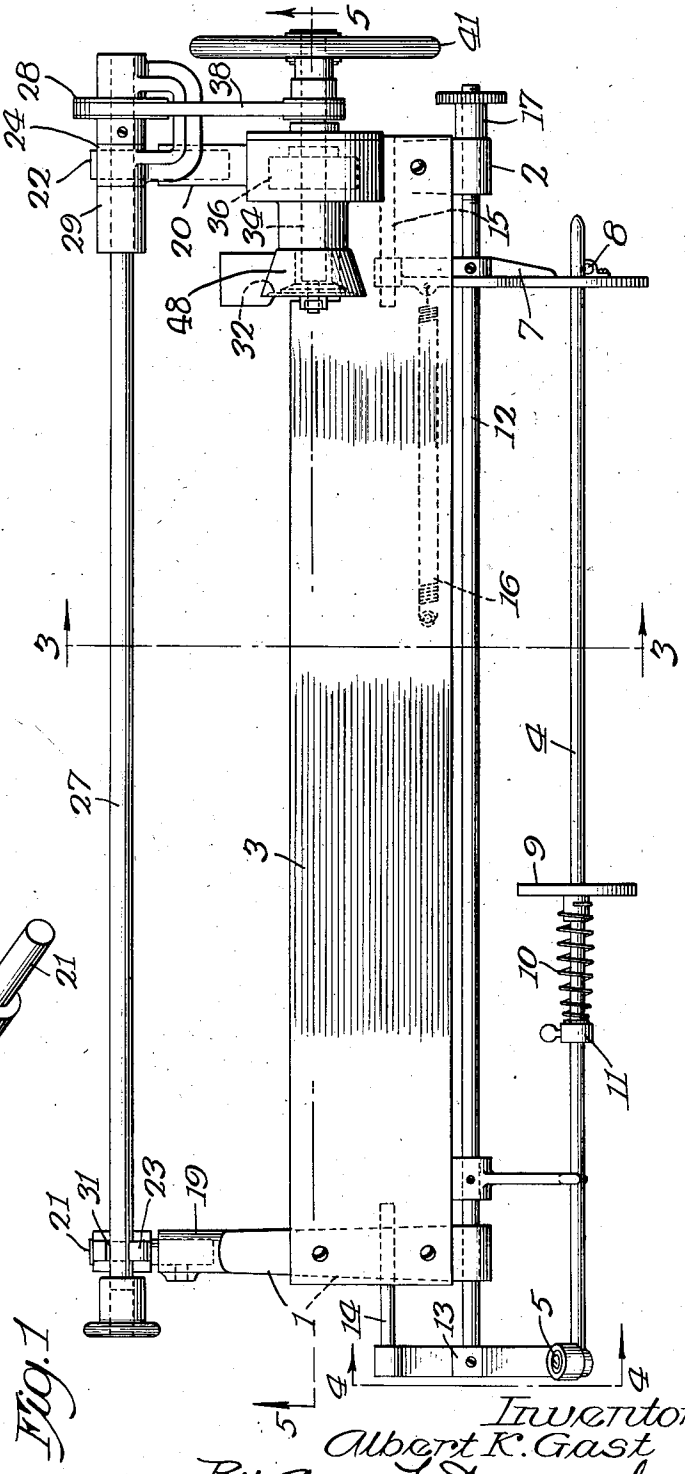


Fig. 1

Inventor
Albert K. Gast
By Arthur H. Durand
Atty.

March 19, 1935. A. K. GAST 1,995,026

MACHINE FOR TRIMMING WALL PAPER

Filed Dec. 16, 1933 3 Sheets-Sheet 2

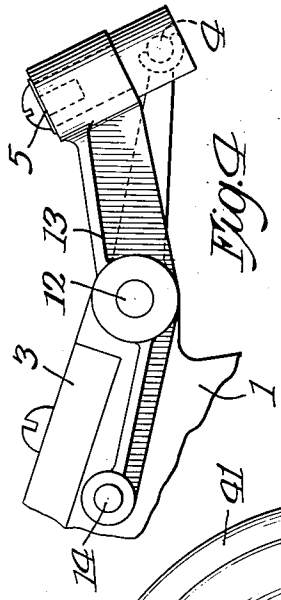


Fig. 4

Fig. 3

Inventor:
Albert K. Gast
By Arthur F. Durand Atty.

March 19, 1935. A. K. GAST 1,995,026

MACHINE FOR TRIMMING WALL PAPER

Filed Dec. 16, 1933 3 Sheets-Sheet 3

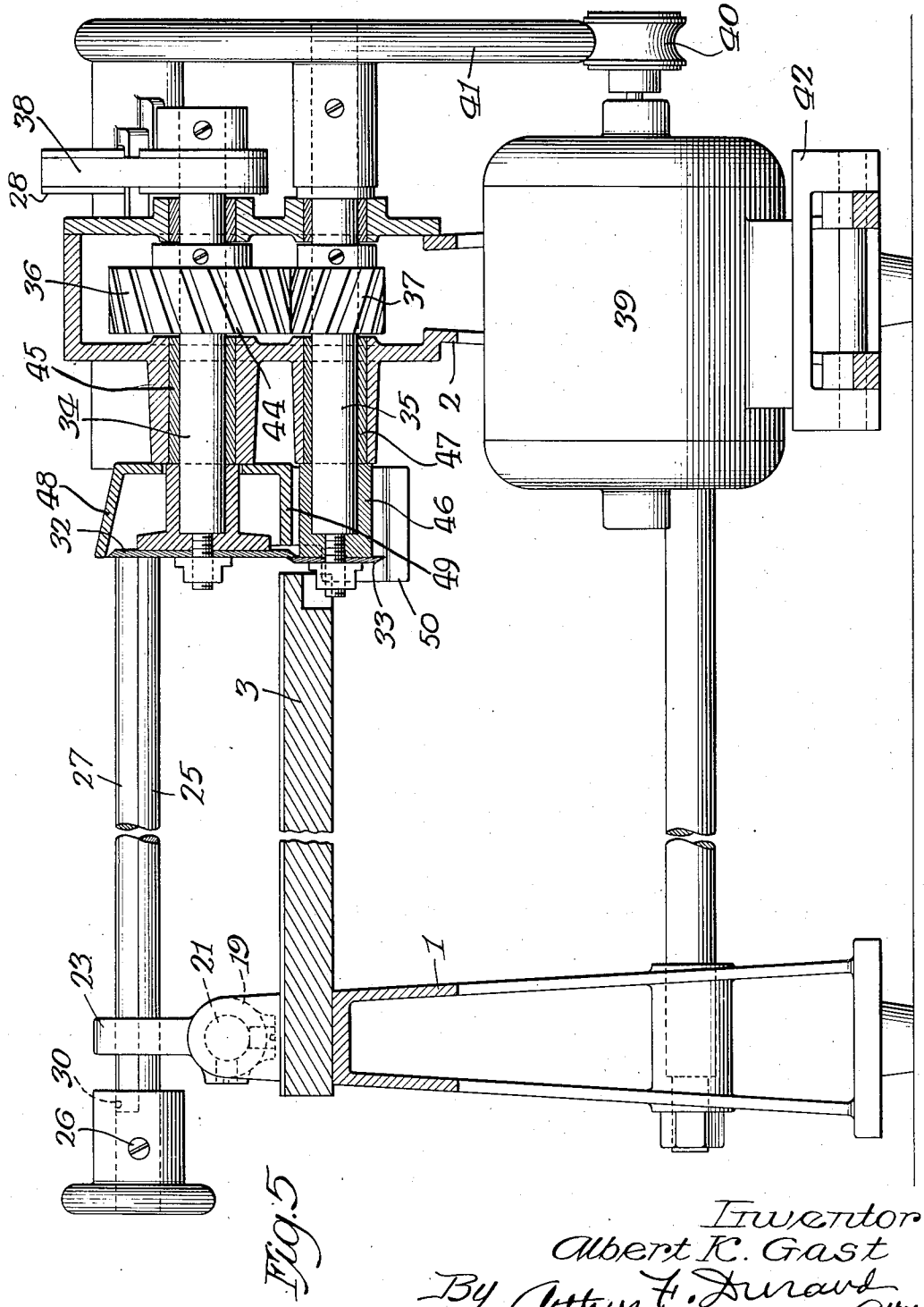


Fig. 5

Inventor
Albert K. Gast
By Arthur H. Durand
Atty.

Patented Mar. 19, 1935 1,995,026

UNITED STATES PATENT OFFICE

1,995,026

MACHINE FOR TRIMMING WALL PAPER

Albert K. Gast, St. Joseph, Mich.

Application December 16, 1933, Serial No. 702,696

16 Claims. (Cl. 164—65)

This invention relates to machines for trimming wall paper. Ordinary wall paper is made with a sort of selvage at the edge thereof, and the paper must be cut back to the pattern thereof, by removing said selvage, before the paper can be properly applied to a wall. Different methods and different devices have been employed for trimming wall paper for this purpose, but they have not been entirely satisfactory.

The object of the invention, therefore, is to provide a novel and improved construction and arrangement whereby a roll of paper may be easily and quickly placed in a trimming machine embodying the principles of the invention, whereby the machine, preferably power-operated, may then be employed for quickly and very accurately trimming off the selvage along the edge of the wall paper, and whereby the trimmed paper is rolled up again and easily and quickly removed from the machine, in a manner more satisfactory than was heretofore possible with the previous methods and devices for doing this kind of work.

To the foregoing and other useful ends, the invention consists in matters hereinafter set forth and claimed, and shown in the accompanying drawings, in which,—

Fig. 1 is a plan view of a wall-paper trimming machine embodying the principles of the invention.

Fig. 2 is an enlarged perspective of the means for rolling up the trimmed paper, on a larger scale, with certain parts shown broken away for convenience of illustration.

Fig. 3 is an enlarged transverse vertical section on line 3—3 in Fig. 1 of the drawings.

Fig. 4 is an enlarged fragmentary or detail view.

Fig. 5 is an enlarged vertical longitudinal section on line 5—5 in Fig. 1 of the drawings.

As thus illustrated, the invention comprises a couple of end frames 1 and 2, upon which the various operative parts are mounted. For example, the two end frames are connected together by the inclined table 3 secured thereto at its ends, over which the wall paper is taken from the rod 4 on which the roll of untrimmed paper is placed. This rod 4 has a hinged support 5 at one end thereof, adjacent the frame 1, and has its other end portion adapted to enter the slot 6 in the bracket 7 that is rigid with the other frame 2 of the machine. A spring-pressed pawl 8 near the throat of said slot 6 serves as a catch to hold the rod in place, after the paper is placed thereon, and the end of the rod is then swung down and allowed to enter said slot. To hold one end of the roll of paper tightly against the bracket 7, the rod 4 is provided with a spring-pressed member or clamp 9, which is slidable on the rod 4, and the tension of the spring 10 may be regulated by adjusting the shoulder 11 one way or the other on said rod. A parallel rod 12 is slidably mounted on the two end frames, to support the brackets 7 and 13, which latter supports the hinge joint 5 previously mentioned. Rods 14 and 15, which engage the brackets 7 and 13 and also the frames 1 and 2, prevent rotation of the rod 12 in its bearings on said end frames, and serve to keep the rod 4 in fixed position while the untrimmed paper is unwinding therefrom. A coil spring 16, connected at one end with the under side of the table 3 and at the other end with the bracket 7, serves to keep the shoulder 17 on the rod 12 tightly against the adjacent portion of the frame 2, to insure accurate positioning of the untrimmed roll of paper. The shoulder 17 is threaded on the rod 12, and by adjusting this shoulder the position of the untrimmed roll of paper may be changed or varied axially thereof. Thus a roll of untrimmed paper on the rod 4, between the bracket 7 and the disk-like clamp 9, is in position to be partially unwound, by pulling its end portion upwardly over the table 3, preferably from the bottom or lower side of the roll of paper, in the manner indicated by the dotted line 18 in Fig. 3 of the drawings.

At the other side of the machine, brackets 19 and 20 are provided on the two end frames, and short rods 21 and 22 are solidly inserted in these two brackets, and on these rods are the adjustable brackets 23 and 24 that support the longitudinally divided or two-part winding-up rod upon which the trimmed paper is wound automatically during the trimming operation. This rod has the section 25 thereof rigidly mounted in the head 26, while the other section 27 is mounted for rotation in the bracket 24, and for that purpose has a pulley 28 on the end portion thereof. The section 27 has a short sleeve 29 attached thereto adjacent the bracket 24, and when the two sections are combined, the end of the section 25 will fit into the sleeve 29 and be held in place at this point. The end of the section 27 will slip into the cavity 30 in the head 26, and in this way the two sections will be held tightly and firmly together, so that they will rotate like a solid or one-piece rod. But when the trimmed paper has been wound thereon, the head 26 can be lifted and the rod swung upwardly, as the bracket 24 is hinged on the short rod 22 for this purpose, and this will lift the distal end of the split or divided rod out of the notch 31 in the bracket 23, and the

section 25 can then be pulled out of the roll of trimmed paper, and the roll can then be removed from the section 27 of the rod.

So far as the devices already described are concerned, the cutting means can be of any suitable character, but, as a matter of further and special improvement, upper and lower cutting knives 32 and 33 are provided and are removably held fixed on the ends of the upper and lower shafts 34 and 35 and are mounted in suitable bearings on the end frame 2 of the machine. Spiral gears 36 and 37, of different diameters, corresponding to the different diameters of the disk-like knives 32 and 33, are employed to gear the two shafts together, in the manner shown in Fig. 5 of the drawings. A belt 38 connects the shaft 34 with the pulley 28 previously mentioned, whereby the split rod 25 and 27 is driven by power taken from the shaft 34 of the upper cutting knife.

For driving the cutting mechanism, and for thereby driving the split rod 25 and 27 at the desired speeds, an electric motor 39 is provided on the end frame of the machine, and this motor has a pulley 40 that engages the periphery of the wheel 41 on the outer end of the shaft 35 previously mentioned. In this way, the motor 39 drives the wheel 41, and the latter drives the gearing and the cutting knives, and, through the gearing and the belt 38, the said split or divided rod 25 and 27 is rotated at the desired speed. In this connection, it will be observed that the spiral gears 36 and 37 exert an end thrust on their respective shafts, axially thereof, in one direction on one shaft, and in the opposite direction on the other shaft, whereby the disk-like knives 32 and 33 are held tightly together, thereby to insure a clean and effective cut in the paper. As shown, the knives are removable for sharpening purposes, and may be kept at a high degree of sharpness to insure a proper cutting of the paper.

In use, the machine thus constructed and operated, receives the untrimmed roll of paper on the rod 4, and one end of the paper is drawn upwardly over the table 3, as previously explained, with the selvage edge portion thereof between the knives 32 and 33, and the end of the paper is then clamped between the sections 25 and 27 of the split rod, and the latter, with the end of the paper thus tightly held, is then returned to the bearing 31 in which it rotates. The motor 39 is then started, and the paper is rapidly trimmed back to the pattern of the paper, in the desired manner, and quickly rolled up on the split rod 25 and 27, and is then easily removed from the latter in the manner explained. It will be seen that the two knives rotate in opposite directions, as indicated by the arrows in Fig. 3 of the drawings, in a manner to draw the paper between them, and the trimmed portion of the paper drops down at the adjacent end of the table 3 and accumulates below.

Any suitable or desired means can be employed for controlling the electric motor, to start and stop the machine, and it is obvious that this can be done by a hand switch or a foot switch, but preferably by a foot switch in order to leave both hands free to manipulate the paper and portions of the machine.

Furthermore, if desired, the motor 39 may be mounted on a swinging base 42 which has its distal end supported by a coil spring 43, thereby to insure sufficient friction between the pulley 40 and the wheel 41 to cause the desired operation of the machine. With this arrangement, the machine could be started and stopped by raising and lowering the motor and its pulley, and any suitable means could be employed for that purpose, to control the machine in that manner.

As shown in Fig. 5 of the drawings, there is clearance at 44 between the gear 36 and the end of the bearing 45 in which the shaft 34 is supported. This permits enough endwise displacement of the shaft 34, to the left, during the operation of the gears, to keep the knife 32 pressed tightly against the knife 33, but the shaft 35 is held by the knife hub 46 against any displacement to the right, as this hub engages the end of the bearing 47 in which the shaft 35 is supported. In this way, there is sufficient endwise or axial thrust of one knife against the other to keep the knives in tight cutting engagement, but the cutting line is perfectly straight on the paper, inasmuch as the lower knife 35 is held absolutely against axial displacement. In this way, as preveiously explained, the camming action of the spiral gears is utilized to keep the two knives tightly together, thus obviating the necessity of any special provisions for this purpose.

Furthermore, it will be seen that the upper knife 32 has a housing 48 that is fastened in a suitable manner to the end of the bearing 45, so that the edge of this knife is protected and guarded, and in addition the said housing or guard 48 is provided with a lower portion 49 that directs the cut-off strip of paper downwardly against the under side of the deflector 50, which latter then deflects the trimmings downwardly and out of the way, where they cannot get tangled up with the paper.

What I claim as my invention is:

1. A machine for trimming wall paper, comprising a rod for supporting the roll of untrimmed paper, a hinge-joint support for one end of said rod, whereby the distal end may be swung outward to permit the placing of said roll thereon, means for positioning said roll on said rod, means for supporting the distal end of the rod in position while the machine is operating, and screw and spring means co-operating to adjust said rod supporting means and said rod in unison, by endwise movement of the rod, together with a guide for the inner end of said last-mentioned supporting means, to keep the latter from rotating about the axis of said screw means.

2. A structure as specified in claim 1, comprising an endwise movable rod forming a support for said first-mentioned rod, forming the axis of said screw means, said guide serving to prevent said second-mentioned rod from rotating, whereby to maintain the desired position of the first-mentioned rod during the operation of the machine.

3. A structure as specified in claim 1, said positioning means comprising spring-pressed means on said rod to keep the roll of untrimmed paper tightly against said means for supporting the distal end of the rod, exerting its spring tension in a direction opposite to that of said first-mentioned spring means.

4. A machine for trimming wall paper, comprising a sleeveless split rod for receiving the end of the paper between the flat opposing sides of the sections thereof, socket means at each end of the rod for enclosing and holding the two sections tightly together to clamp the end portions of the paper tightly in the rod, means in the form of a bearing directly engaging both sections for supporting the rod at a point between the socket means for rotation with the trimmed paper thereon, forming the trimmed paper into a roll, and

means for rotating said split rod in said bearing during the operation of the machine to automatically roll up the trimmed paper thereon, said rod being mounted at one end to swing into position at an angle to the normal or operative position thereof, and one section of the rod in this angular position thereof being endwise removable from one end of the roll of trimmed paper, whereby the trimmed paper is then removable endwise from the other section of the rod.

5. A structure as specified in claim 4, there being a pulley on the non-removable section of the rod, and the removable section having a head for engaging the distal end of the non-removable section, together with means for receiving the other end of the removable section, whereby the two sections are held tightly together with the paper between them.

6. A machine for trimming wall paper, comprising disk-like knives mounted on parallel shafts, with the flat edge portions of the two knives tightly together, spiral gears connecting the two shafts, and means for driving one shaft to drive the other shaft through said gears, the end thrust on the two shafts caused by said gearing being resisted on one shaft only by the interengagement of the knives, the spiral formation of the two gears thereby serving alone to hold the two knives tightly together, and a thrust bearing for one of said shafts, whereby the action of the spiral gears is prevented from causing a zigzag cut in the paper, serving to insure a straight cut therein.

7. A structure as specified in claim 6, comprising a holder for rolling up the trimmed paper, and means whereby said holder is driven through said spiral gears at the same speed as the upper knife, which latter is larger and rotates more slowly than the lower knife.

8. A structure as specified in claim 6, the upper knife being of greater diameter than the other, and said gears corresponding in diameter to their respective knives, whereby the two knives revolve in opposite directions to draw the paper between them, with the upper knife rotating more slowly than the lower knife.

9. A structure as specified in claim 6, comprising a motor forming the means for driving the lower one of said shafts, with friction driving means between the motor and the shaft driven thereby, and means to support said motor directly below said gears, whereby the weight of the motor may be used to regulate the friction drive.

10. A structure as specified in claim 6, comprising a motor forming the means for driving the lower one of said shafts, with friction driving means between the motor and the shaft driven thereby, and means to support said motor directly below said gears, in combination with means for movably mounting the motor, whereby the friction in said drive may be changed or varied.

11. A machine for trimming wall paper, comprising a split rod for receiving the end of the paper between the sections thereof, means for holding the two sections tightly together to clamp the end portions of the paper tightly in the rod, means for supporting the rod for rotation with the trimmed paper thereon, forming the trimmed paper into a roll, and means for rotating said split rod during the operation of the machine to automatically roll up the trimmed paper thereon, said rod being mounted at one end to swing into position at an angle to the normal or operative position thereof, one section of the rod in this angular position thereof being endwise removable from within the roll of trimmed paper, whereby the trimmed paper is then removable endwise from the other section of the rod, there being a pulley fixed to and holding the non-removable section of the rod, and the removable section having a head for engaging the distal end of the non-removable section, together with means for receiving the other end of the removable section, whereby the two sections are held tightly together with the paper between them.

12. In a paper trimming machine, a winding shaft comprising two half round sections with their flat sides together, a handle fixed on the end of one section and removably supporting the adjacent end of the other section, means to embrace the other ends of both sections, and means rigid with said other section to rotate the shaft and thereby wind the paper in direct engagement with both sections, the handle section being removable from the adjacent end of the roll, and the other section being removable from the other end.

13. In a paper trimming machine, a pair of co-operating rotary knives, spiral gearing between the axes of said knives, operating as the sole means to hold the edges of the knives tightly together, and means for driving said gearing to operate the knives in opposite directions.

14. A machine for trimming wall paper, comprising upper and lower disks having sharp edges serving as cutting knives, means for operating said knives, and a combined guard and deflector for the upper knife, serving as a guard to protect the edge of the upper knife, and having lower portions that serve to deflect the trimmings downwardly away from the paper.

15. A structure as specified in claim 14, said upper knife being larger than the lower knife, and a table, the upper surface of which forms a feeding plane above the upper edge of the lower knife.

16. A machine for trimming wall paper, comprising disk-like knives mounted on parallel shafts, with the flat edge portions of the two knives tightly together, spiral gears connecting the two shafts, and means for driving one shaft to drive the other shaft through said gears, the end thrust on the two shafts caused by said gearing being resisted on one shaft only by the interengagement of the knives, and the spiral formation of the two gears thereby serving alone to hold the two knives tightly together, comprising a motor forming the means for driving the lower one of said shafts, with friction driving means between the motor and the shaft driven thereby, and means to support said motor directly below said gears, in combination with means for movably mounting the motor, whereby the friction in said drive may be changed or varied.

ALBERT K. GAST.