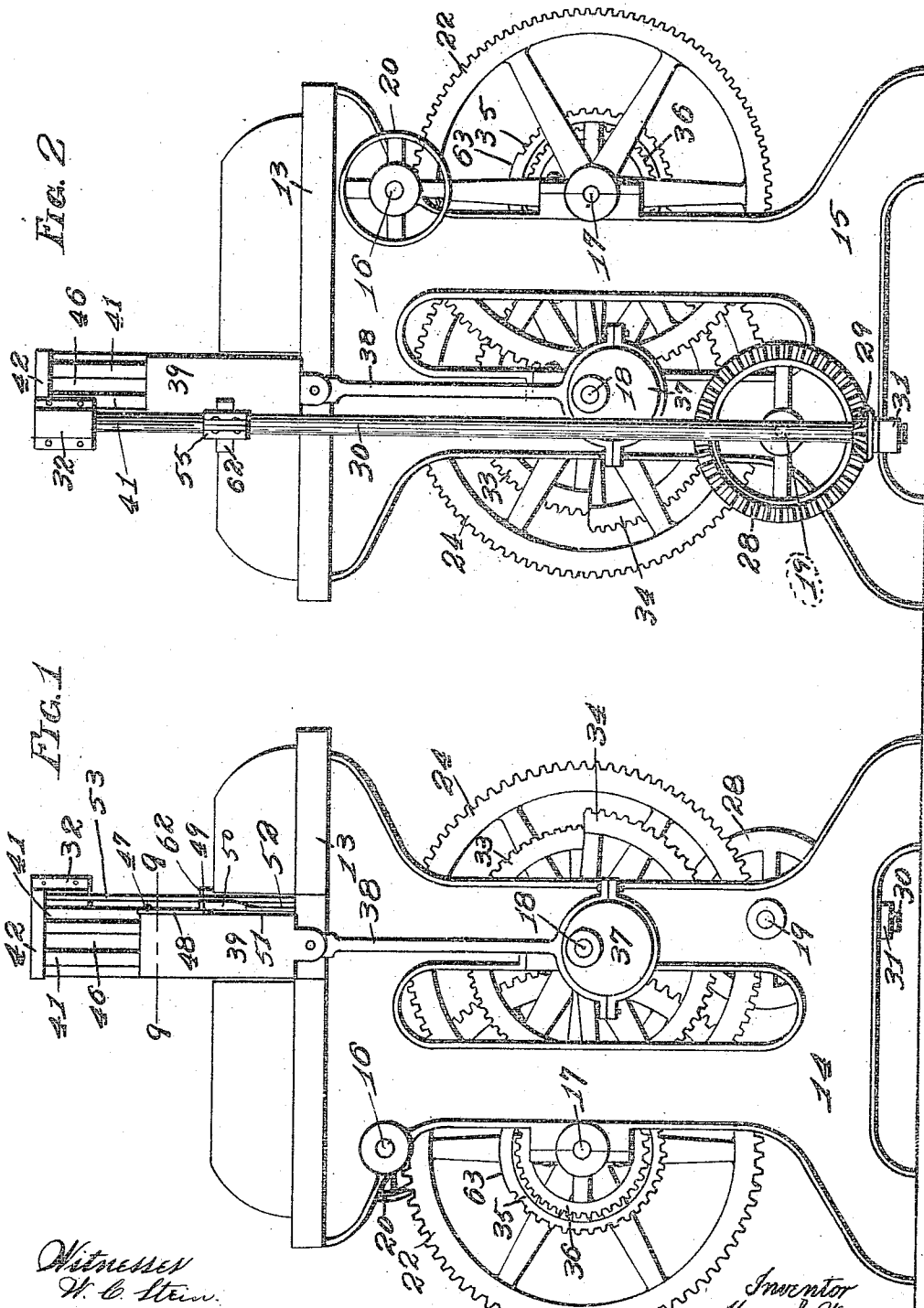


H. S. WOODWARD.
PAPER CUTTING AND TRIMMING MACHINE.
APPLICATION FILED AUG. 30, 1909.

959,674.

Patented May 31, 1910.

4 SHEETS—SHEET 1.



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4 SHEETS-SHEET 2.

Fig. 3

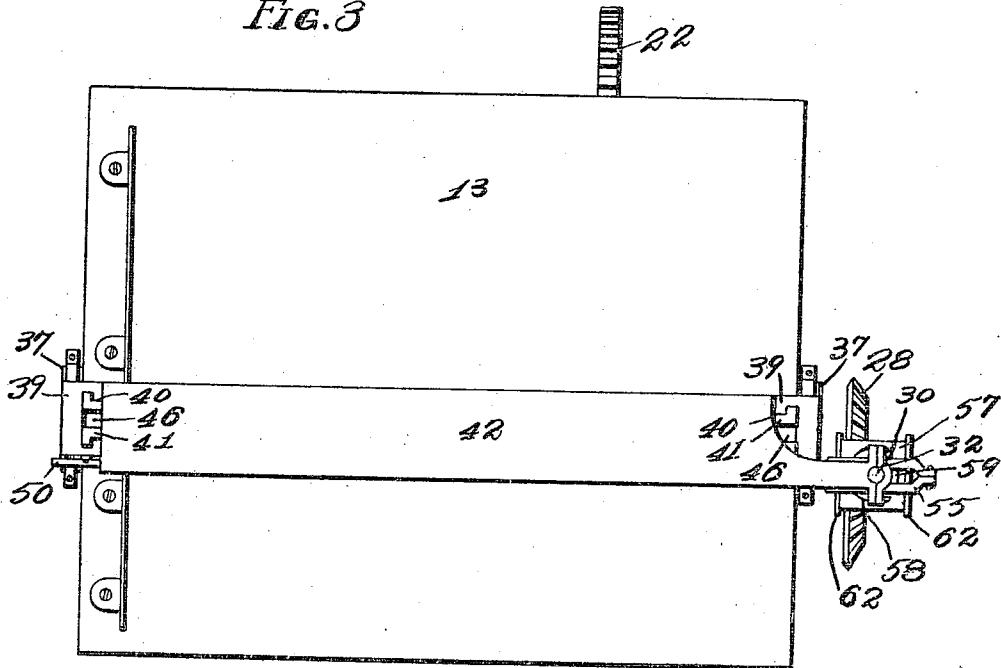


Fig. 10

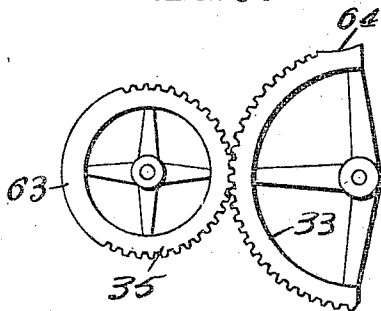


Fig. 11

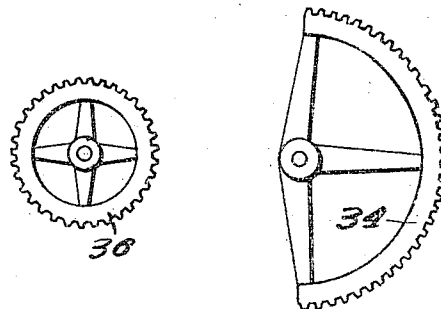
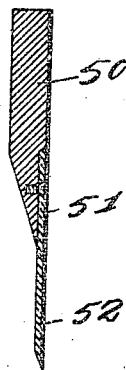


Fig. 12



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FIG. 4

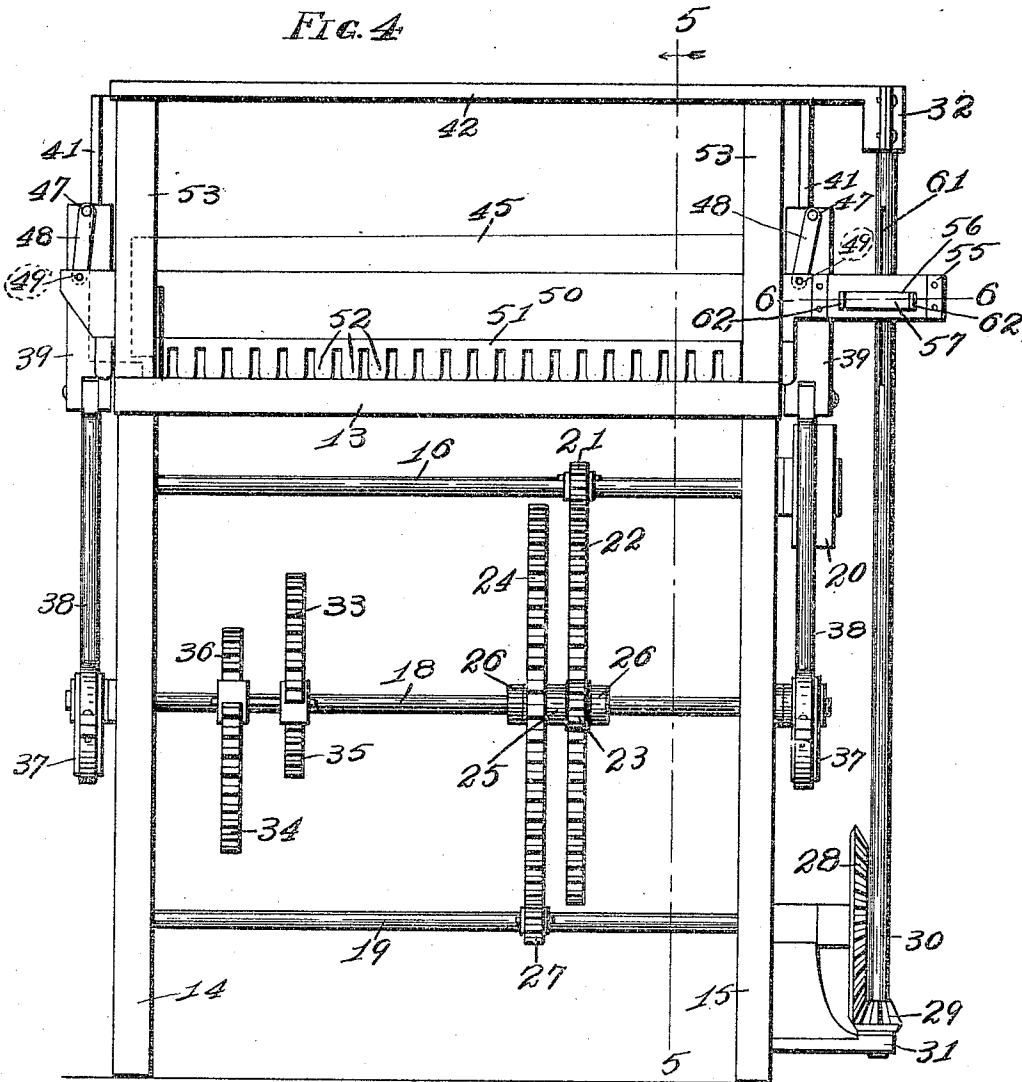
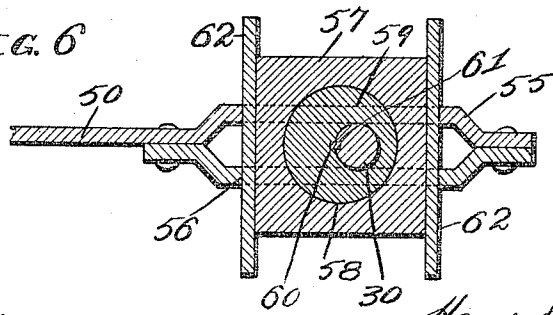


FIG. 6



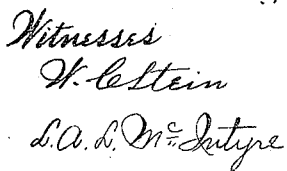
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

HARRY S. WOODWARD, OF ST. LOUIS, MISSOURI.

PAPER CUTTING AND TRIMMING MACHINE.

959,674.

Specification of Letters Patent.

Patented May 31, 1910.

Application filed August 30, 1909. Serial No. 515,342.

To all whom it may concern:

Be it known that I, HARRY S. WOODWARD, a citizen of the United States, and resident of St. Louis, Missouri, have invented certain new and useful Improvements in Paper Cutting and Trimming Machines, of which the following is a specification.

This invention relates to an improvement in paper cutting and trimming machines and has for its object to provide a rapidly reciprocating knife which is brought in contact with and cuts any number of layers of paper, and a mechanism for feeding the knife downwardly during the cutting process and to automatically raise the knife after the material has been cut.

In the drawings—Figure 1 is an end elevation of a device embodying my invention, viewing the same from the left. Fig. 2 is a view of the opposite end of the machine. Fig. 3 is a top plan view of the same. Fig. 4 is a front view. Fig. 5 is a sectional view taken along the line 5—5 of Fig. 4, and viewing the same in the direction indicated by the arrow. Fig. 6 is an enlarged detail horizontal sectional view of the knife-operating eccentric taken on the line 6—6 of Fig. 4. Fig. 7 is an enlarged detail view with parts broken away of a portion in section of the weight, slide and knife made use of in carrying out my invention. Fig. 8 is a detail perspective view of the link made use of in supporting the knife with the slide block. Fig. 9 is a detail horizontal sectional view of the guide block and its support taken on the line 9—9 of Fig. 1. Fig. 10 is a detail view of the gears made use of for raising the knife. Fig. 11 is a detail view of the gears made use of for lowering the knife. Fig. 12 is an enlarged detail sectional view of the knife.

In the construction of my invention I provide a table 13 mounted upon a pair of standards 14 and 15. Supported by the standards 14 and 15 are shafts 16, 17, 18 and 19. The shaft 16 is provided with a drive-pulley 20 by which said shaft is driven, and also a gear pinion 21 which meshes with a gear wheel 22 mounted upon the shaft 17. This gear wheel in turn meshes with a pinion 23 which is attached to the gear wheel 24 by the connecting hub 25, and said pinion and gear wheel 24 are loosely mounted upon the shaft 18 and held in position by means of the washers 26. The gear wheel 24 in turn meshes with a pinion

27 mounted upon the shaft 19, and on the end of said shaft is a bevel gear 28 which meshes with a bevel gear 29 supported on a vertical hand-operating shaft 30. This shaft is supported at its bottom in a bearing 31 and at its top in a journal bracket 32. On the shaft 18 are also mounted a pair of segmental gears 33 and 34, and these segmental gears are so arranged as to alternately engage with the small gear wheels 35 and 36 which are mounted upon the shaft 17, and by the contacting of these segmental gears with the gear wheels 35 and 36, the cutting mechanism which will be hereinafter described is raised and lowered.

On the outer ends of the shaft 18 are mounted eccentrics 37 which impart motion to the connecting rods 38, the opposite end of each of said rods being pivotally connected to the guide-blocks 39. The guide-blocks 39 are provided with guide-ways 40 which fit over and operate on the guides 41 extending upwardly from the table 13, and the top of the guides are connected by the cross-bar 42. The bottom end of the guide-blocks is provided with a projection 43 which is arranged to come in contact with the under surface of the projection 44 formed on the weight 45. The projection 44 and said weight are so arranged as to operate freely within the groove 46 formed in the guides, and the projection 43 is likewise constructed to operate in said groove so as to communicate with the projection 44 of the weight.

On one side of each of the guide-blocks is pivotally attached the upper end 47 of the knife-supporting links 48, the opposite end 49 of said links pivotally connected to the reciprocating knife bar 50 to which is removably attached the knife or cutting blade 51, said knife or cutting blade being provided with cutting teeth 52. The links 48 previously referred to operate between guides 41 and an upright guard 53, and by this arrangement the knife bar is supported in a perpendicular position. The table 13 is provided with an elongated slot 54 of sufficient depth to permit the cutting edges or blades of the knife to pass therein.

One end of the knife bar 50 is terminated in a yoke 55 provided with a slot 56 in which is mounted a sliding block 57 having a circular opening 58 in which is located and permitted to operate an eccentric 59. This eccentric is provided with a key 60 which

projects into and is permitted to operate in a key-way 61 formed in the vertical shaft 30. During the revolution of the shaft 30, and the eccentric 59, the sliding block 57 is permitted to slide in the guides 62 supported by the yoke 55 and projecting beyond the slot 56, at the same time, providing a reciprocatory action to the knife bar and cutting blade.

10 The operation of my invention is as follows: Power is imparted to the pulley 20, which revolves the shaft 16 and its pinion 21, this, in turn, operating the gear-wheel 22 which is mounted upon the shaft 17, and the

15 gear wheel 22 in turn meshes with the pinion 23 which is connected to the gear wheel 24 by the sleeve 25 and permitted to loosely operate on the shaft 18. The gear wheel 24 in turn meshes with the pinion 27 operating

20 the shaft 19 and imparting motion to the bevel gear 28, which meshes with the bevel pinion 29 operating the vertical shaft 30, and by the revolution of the shaft 30, the eccentric 59 is placed in operation, providing

25 a reciprocatory movement to the cutting blade. During the operation the shaft 17, which carries the gear wheels 35 and 36, operates bringing said gear wheels in communication with the segmental gears 33 and

30 34 mounted upon the shaft 18. The gear wheel 36, when in operation with the segmental gear 34, operates the eccentrics 37, drawing the knife blade downwardly at a slow rate of speed, and after the gear wheel

35 and segmental gear 34 have passed out of mesh, the gear wheel 35 then comes in contact with the segmental gear 33, and by its operation, the eccentrics 37 are operated at a speed more rapid than the lowering gears

40 and cause the knife to be raised ready for

cutting a new supply of material. A portion of the gear wheel 35 and the segmental gear 33 are provided with a smooth surface 63 and 64, which, when brought in contact, prevents rotation of the segmental gear 33, and the shaft and operating mechanism at this period are idle until the segmental gear 34 comes in contact with the gear wheel 36. By this operation the knife is brought in contact with the material and the manipulation of the eccentrics 37 draws the same downwardly at the same period the knife is being rapidly reciprocated.

Having thus fully described my invention, what I claim as new and desire to have secured to me by the grant of Letters Patent, is:

In a paper cutting and trimming machine, the combination of a frame; a table horizontally mounted in the frame; a knife slidably and vertically mounted in the frame and provided with a plurality of cutting teeth; means for raising and lowering the knife; a vertical revoluble shaft adapted to impart reciprocating motion to the knife during its upward and downward movements; a weight mounted above the upper surface of the table; means for raising and lowering said weight in unison with the raising and lowering of the knife, to hold or release the layers of paper being cut or trimmed, substantially as described.

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

HARRY S. WOODWARD.

Witnesses:

JAMES L. HOPKINS,
ALFRED A. EICKS.