

Nov. 28, 1933.

R. S. TYLER
PAPER CUTTING MACHINE
Filed Jan. 15, 1932

1,937,175

3 Sheets-Sheet 1

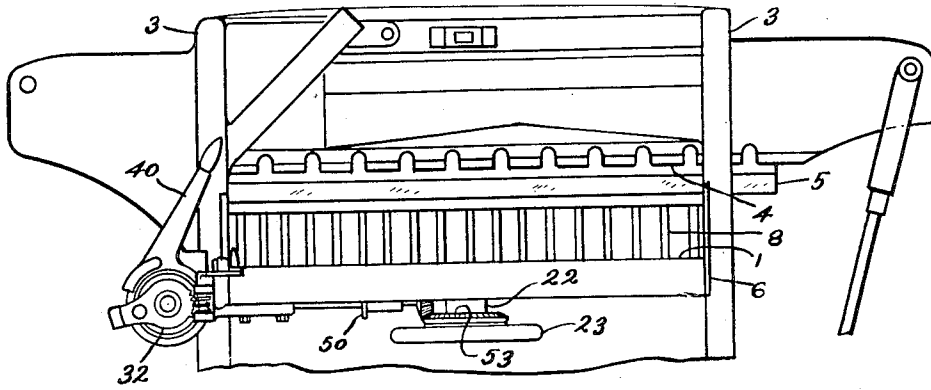


Fig. 1

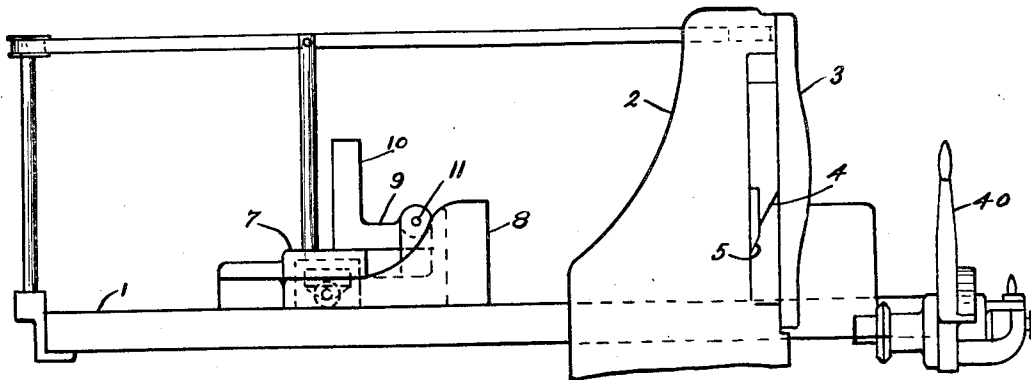


Fig. 2

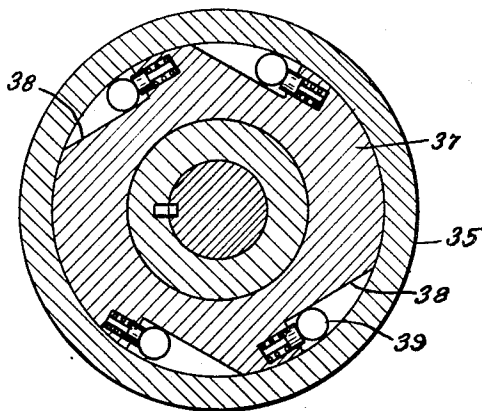


Fig. 3

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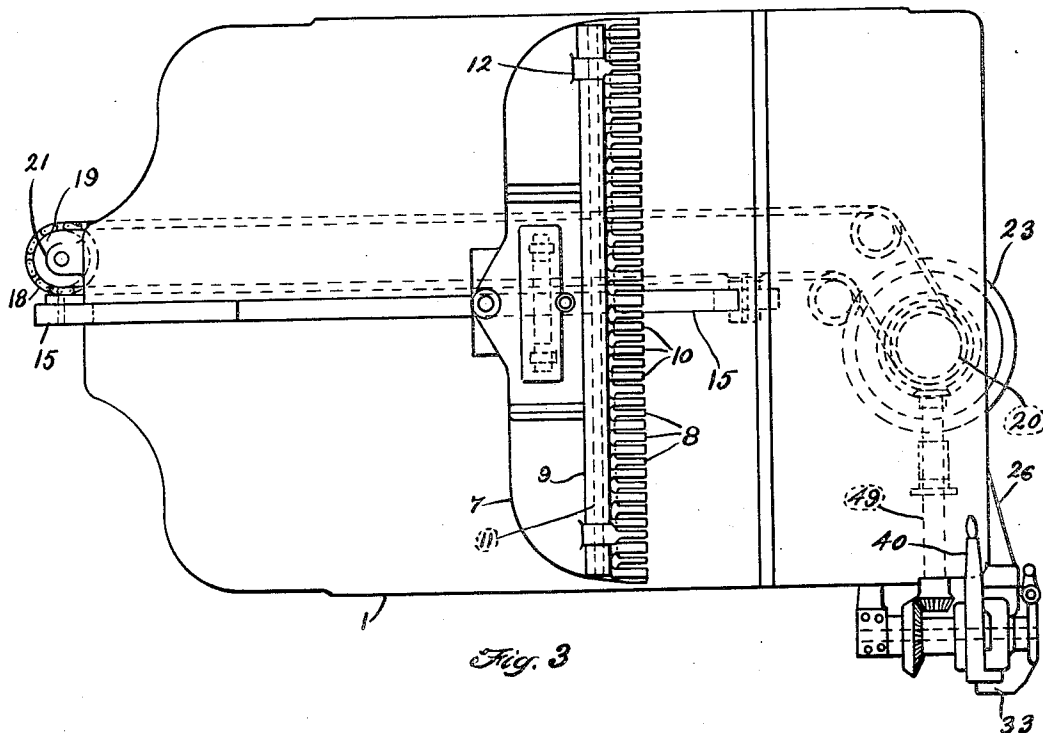
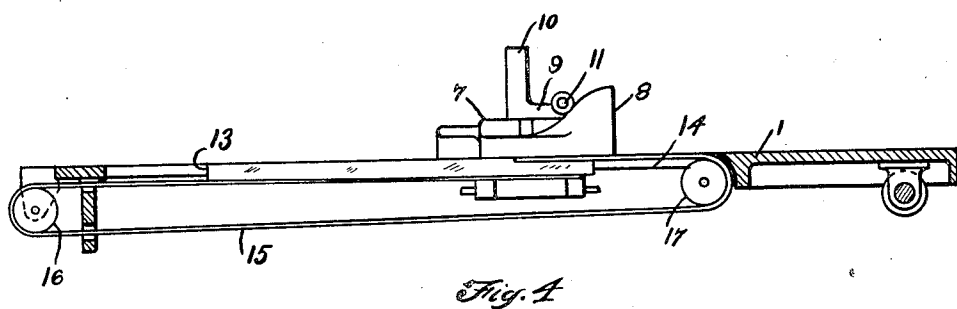
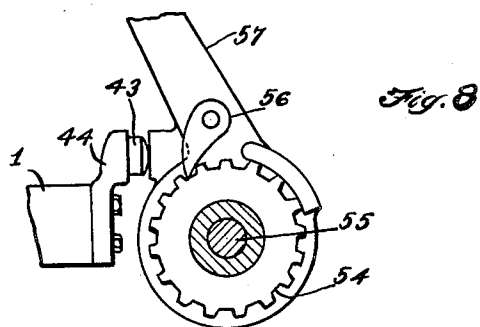
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PAPER CUTTING MACHINE

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3 Sheets-Sheet 2



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PAPER CUTTING MACHINE

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3 Sheets-Sheet 3

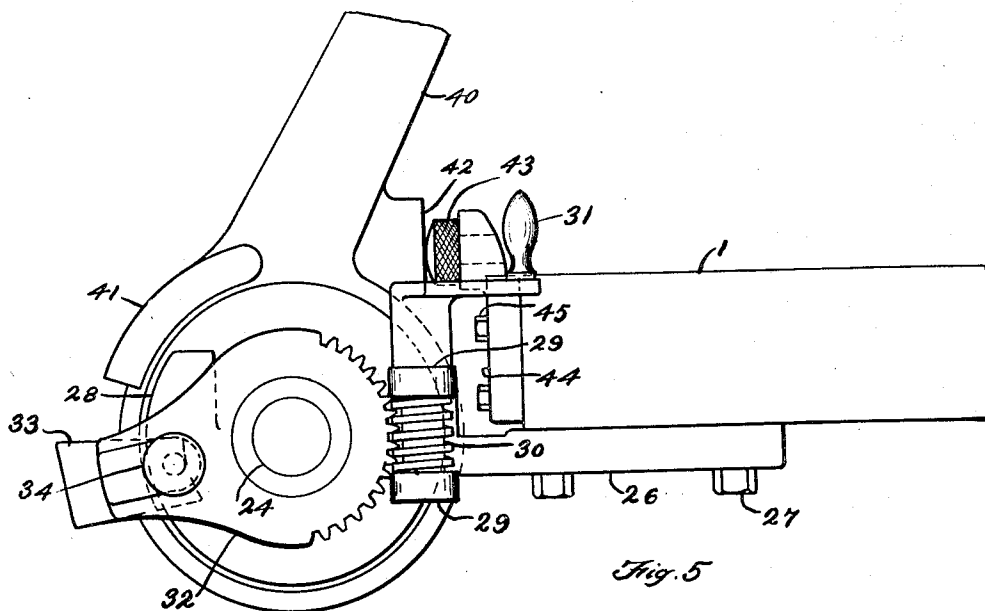


Fig. 5

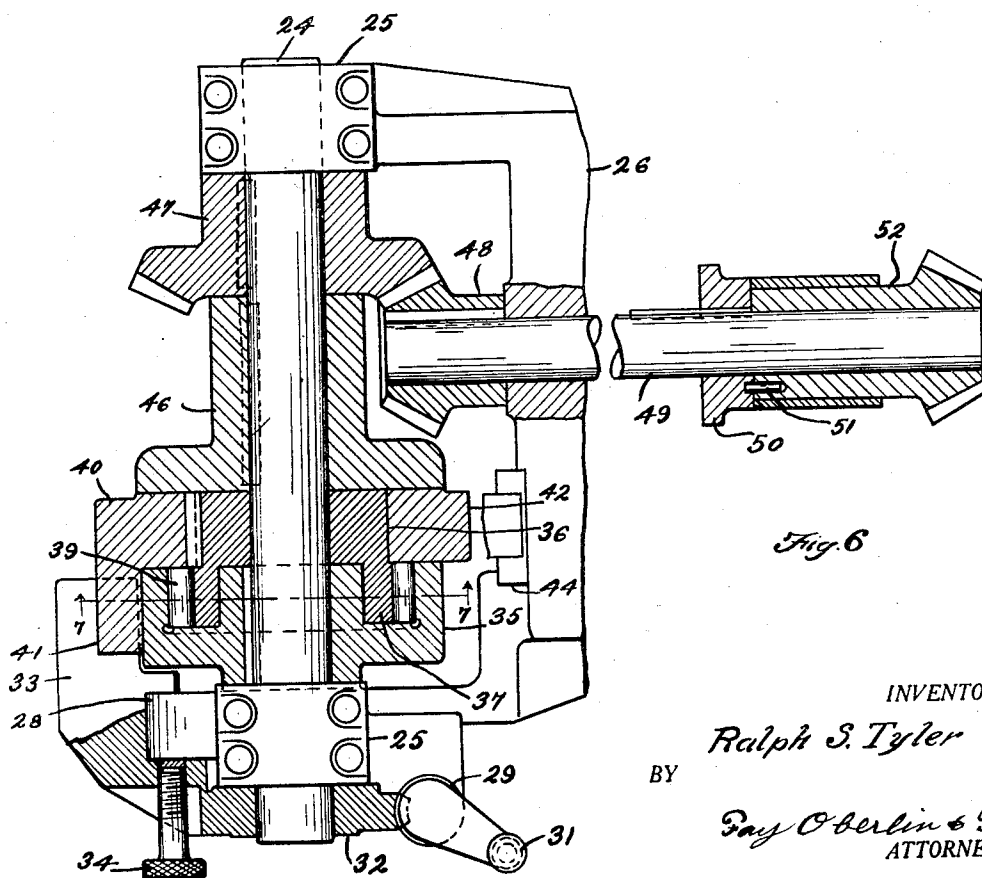


Fig. 6

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PAPER CUTTING MACHINE

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Application January 15, 1932. Serial No. 586,713

6 Claims. (Cl. 164—59)

This invention relates generally to paper cutting machines. A primary object of the invention is to provide a novel indexing device for such machines whereby the back gauge of the machine may be easily and quickly moved through predetermined uniform distances, as when cutting packs of paper or cards of uniform width.

Another object of the invention is to provide means whereby a substantially solid front face may be presented by the back gauge to a stack of paper in abutment with the gauge, and whereby small pieces of paper are prevented from entering between the fingers of the gauges usually provided in machines of the type herein described.

Another object of the invention is to provide means whereby the slot in the table in which the back gauge slides is normally covered so that the entrance into the slot of small packs of paper, such as tickets, is prevented.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims; the annexed drawings and the following description setting forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:—

Fig. 1 is a front elevation of the upper portion of a paper cutting machine embodying the novel features of my invention; Fig. 2 is a side elevation of the paper cutting machine; Fig. 3 is a plan view of the cutting machine with certain parts omitted for clearness in illustrating the novel features of the invention; Fig. 4 is a longitudinal cross-section through the table of the machine; Fig. 5 is a fragmentary front view of the indexing device; Fig. 6 is a longitudinal cross-sectional view of the indexing device and associated elements; Fig. 7 is a cross-sectional view through the ratchet for operating the indexing device, taken on a plane indicated by the line 7—7 of Fig. 6; and Fig. 8 shows a modified form of the ratchet for operating the indexing device.

A paper cutting machine of a type now commonly used for cutting stacks of paper, cards, etc., includes a table 1 having secured to the sides thereof uprights 2, whose front faces form with the rear faces of guideway bars 3, slideways for the knife bar 4, which carries the knife 5. Side guides 6 may be secured to the table adjacent the front portion thereof.

Positioned on the rear portion of the table is a back gauge 7 having a multiplicity of transversely spaced fingers 8, the front faces of which form an abutment for a stock of paper to be cut by the knife 5. The spaces between these fingers are sufficiently wide to permit the entrance of small pieces of paper which become wedged therein and must be frequently removed. In order to prevent the entrance of paper into the recesses between the fingers 8 I provide an auxiliary gauge 9 having laterally spaced fingers 10, and which is mounted for pivotal movement about a pin 11, journaled in bearings 12 forming an integral part of the gauge 7. The gauge 9, when not in use, occupies the portion shown in Figs. 2 and 4. When it is desired to use the gauge 9, it is swung through an angle of 180° to the position shown in Fig. 3, wherein the fingers 10 thereof rest on the table 1 and occupy the spaces between the fingers 8, thereby preventing the entrance of paper into the recesses between said fingers. In this position, the front faces of the fingers 10 are flush with the front faces of the fingers 8, and form therewith a substantially solid surface for the rear face of the stock of paper to be cut.

The gauge 7 is secured to a guide bar 13 which is adapted to be longitudinally moved in a slot 14 in the table 1 to thereby move the gauge to any desired position. In order to prevent the entrance of small packs of paper, such as tickets, into the portion of the slot 14 in front of the gauge, I provide a tape 15 of metal or other suitable material, the ends of which are suitably secured to the guide bar 13 and which is looped around freely rotatable sheaves 16 and 17 journaled in the table 1. The tape 15 is of a width to substantially cover the slot 14 in the table and is flush with the upper surface of the table so that it prevents the entrance of paper into the slot, but does not interfere with the movement of the stack of paper on the table. It will be readily understood, by reference to Fig. 4, that longitudinal movement of the back gauge causes the tape 15 to move in unison therewith, so that the entire portion of the slot 14 in front of the gauge is always covered by the tape.

For the purpose of moving the back gauge 7 longitudinally of the machine, I provide a chain 18, the ends of which are suitably secured to the gauge, and which is looped about horizontally disposed sprockets 19 and 20. The sprocket 19 is journaled in a bearing bracket 21 at the rear of the table, while the sprocket 20 is rigidly secured to a rotatable vertically extending shaft 22, disposed beneath the table at the front portion

thereof. The shaft 22 is adapted to be rotated by means of a hand wheel 23 to thereby move the gauge 7 to any desired position.

For the purpose of moving the back gauge 5 through predetermined uniform distances, as when cutting packs of a uniform width from a stack of paper or cards, I provide indexing mechanism, which is clearly shown in Figs. 5 to 8, inclusive.

10 The indexing mechanism includes a shaft 24 which is journaled in bearings 25 forming a part of a bracket 26, which is in turn secured to the table 1, as by bolts 27. The bracket is also provided with a guide 28 and with spaced bosses 29 15 in which is journaled a rotatable worm 30 operable by a hand lever 31. The worm 30 meshes with a worm gear 32, mounted on the end of the shaft 24, and having one side thereof extended to form an abutment or stop 33. The guide 28 20 extends through a recess in the gear 32 and holds the gear in position in the shaft 24. The position of the stop 33 may be varied by rotating the lever 31, and when in adjusted position, the stop may be locked by means of a set screw 34 extending 25 through the gear 32 and into abutment with the guide 28.

Mounted on the shaft 24 between the bearings 25 are cooperating ratchet members 35 and 36, the member 35 being keyed to the shaft, and the 30 member 36 being oscillatable with respect to the shaft. As shown in Figs. 6 and 7, the member 35 has an annular recess therein, into which the annular boss 37 of the member 36 extends. The boss 37 has portions of its periphery cut away 35 to provide inclined surfaces 38, between which and the outer face of the recess in member 35 are disposed rollers 39. Keyed to the member 36 is an operating lever 40, which has a laterally extending stop 41 and a boss 42, which is adapted to 40 abut a micrometer screw 43. Screw 43 is secured to a bracket 44 attached to the side of the table as by bolts 45.

Spaced from the lever 40, as by a collar 46, is a bevel gear 47 which is keyed to the shaft 24 and 45 is in mesh with a bevel pinion 48, keyed to a shaft 49, which is journaled in the bracket 26. Keyed to the shaft 49 adjacent the other end thereof is a plug 50, to which is secured a pin 51, which is normally in engagement with a bevel 50 pinion 52, in mesh with a bevel gear 53, which is in turn secured to the vertically extending shaft 22.

The operation of the indexing mechanism is briefly as follows:

55 When the lever 40 is moved to the left, as viewed in Fig. 5, the ratchet member 36 is moved therewith and turns free of the member 35 until the stop 41 abuts the stop 33. The lever 40 is then moved to the right until the boss 42 thereof strikes 60 the head of the micrometer screw 43, and during this movement the rollers 39 are wedged between the inclined surfaces 38 of the ratchet member 37 and the outer face of the recess in member 35, thereby causing the shaft 24 to rotate through a 65 predetermined arc and rotate the bevel gear 53. This causes the back gauge 7 to move forward a distance governed by the arc of movement of the gear 53. By varying the position of the stop 33 the extent of movement of the back gauge may 70 be varied, and close adjustment of this movement may be effected by means of the micrometer screw 43. When it is desired to disengage the indexing mechanism, this may be done by simply sliding the plug 50 rearwardly on the shaft 49 until the 75 pin 51 is clear of engagement with the pinion

52. The position of the back gauge may then be changed by manipulation of the hand wheel 23.

In Fig. 8 is shown a modification of the ratchet mechanism, in which a ratchet wheel 54, which is 80 keyed to the shaft 55, is adapted to be rotated through a predetermined arc by means of a pawl 56, pivotally secured to the lever 57.

It should be noted that by the use of the roller-ratchet indexing mechanism, it is possible to set 85 the mechanism to take a space from zero up to the maximum range of the mechanism, whereas the minimum obtainable spacing with the pawl and ratchet indexing mechanism shown in Fig. 8 is determined by the space between successive 90 teeth of the ratchet wheel 54.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated 95 by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In combination with a paper cutting machine or the like, a back gauge for said machine 100 having spaced fingers providing a gauging surface, and an auxiliary gauge having a plurality of spaced fingers, adapted to extend into the spaces between said first-named fingers and providing a gauging surface flush with said first-named gauging surface. 105

2. In combination with a paper cutting machine or the like, a back gauge for said machine having spaced fingers providing a gauging surface and an auxiliary gauge secured to said back 110 gauge having spaced fingers adapted to extend into the spaces between the fingers of said back gauge.

3. In combination with a paper cutting machine or the like, a back gauge for said machine having spaced fingers providing a gauging surface, and an auxiliary gauge pivotally secured to 115 said back gauge and having a plurality of spaced fingers adapted to be moved into the spaces between the fingers of said back gauge and providing a gauging surface flush with said first-named gauging surface. 120

4. In combination with a paper cutting machine or the like, a back gauge for said machine having spaced fingers providing a gauging surface, an auxiliary gauge secured to said back 125 gauge having spaced fingers adapted to extend into the spaces between the fingers of said back gauge and providing a gauging surface flush with said first-named gauging surface, and means 130 whereby said auxiliary gauge may be swung to cause withdrawal of the fingers thereof from the spaces between the fingers of the back gauge.

5. In a paper cutting machine or the like, a back gauge, mechanism for advancing said gauge 135 along the machine, a lever for operating said mechanism, stops for determining the extent of movement of said lever, and worm and gear means for adjusting at least one of said stops.

6. In a paper cutting machine or the like, a 140 back gauge, mechanism for advancing said gauge along the machine, a lever for operating said mechanism, a stop for determining the extent of movement of said lever in one direction, worm and gear means for adjusting said stop, and a 145 micrometer screw for adjustably determining the extent of movement of the lever in the opposite direction.

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