

Oct. 23, 1928.

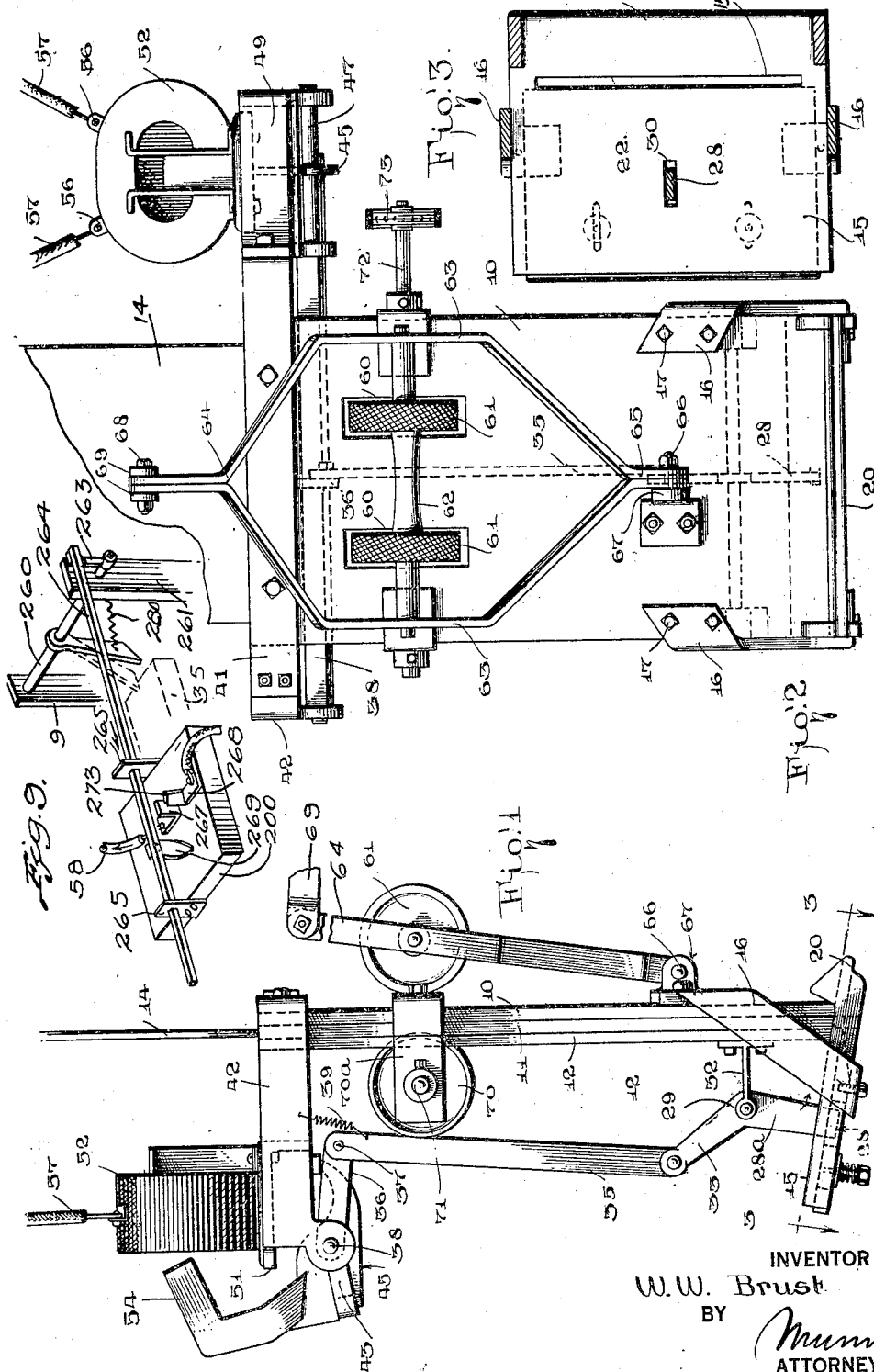
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CUTTING DEVICE

Filed Jan. 18, 1927

2 Sheets-Sheet 1



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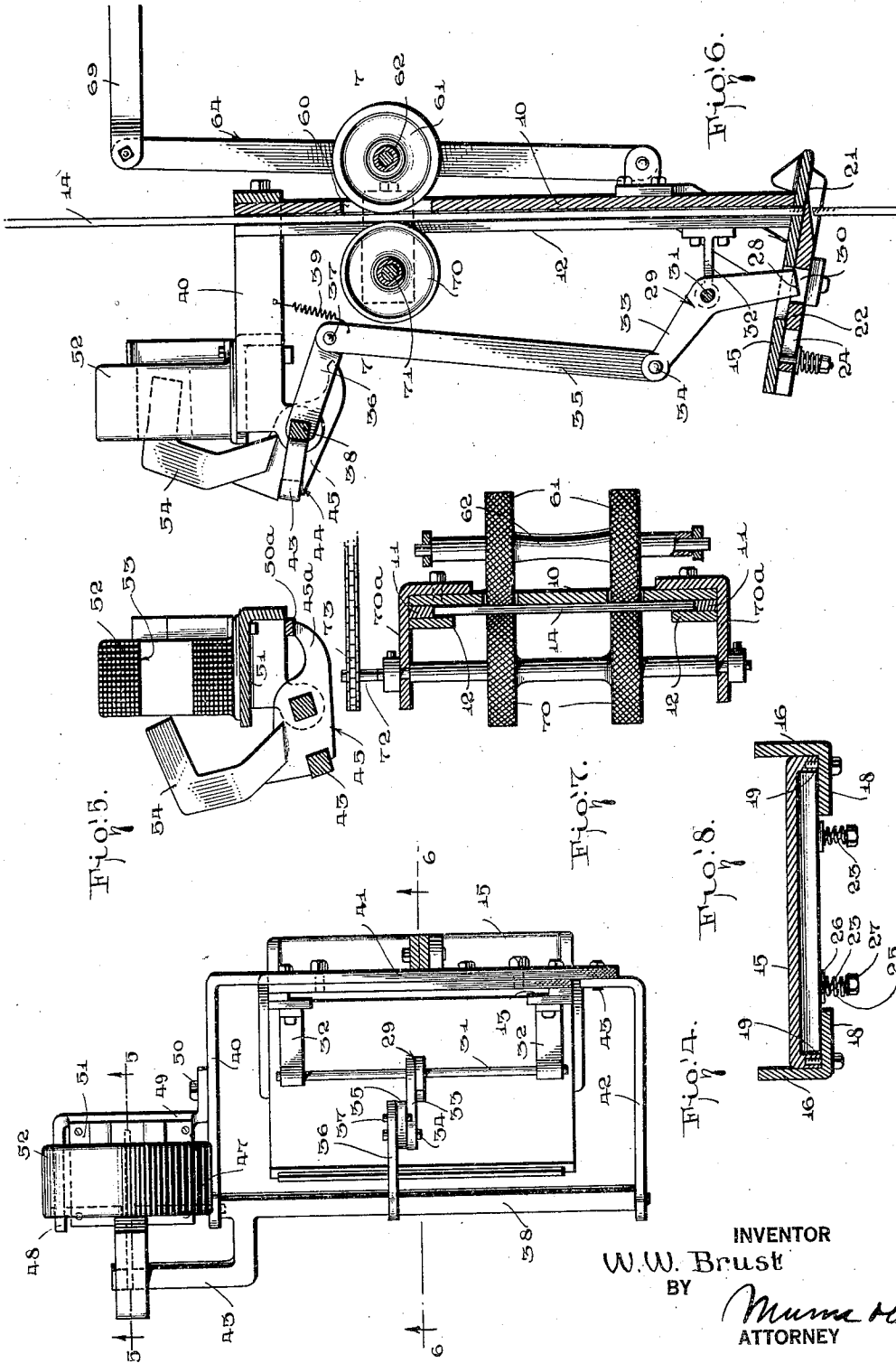
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2 Sheets-Sheet 2



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CUTTING DEVICE.

Application filed January 18, 1927. Serial No. 161,902.

This invention relates to a cutting device for cutting strips of paper employed in sealing boxes.

5 An object of the invention is the provision of a device adapted to be associated with a box sealing machine for cutting predetermined lengths of glued paper which is adapted to seal the loose edges of a packing box.

10 A further object of the invention is the provision of a cutting device adapted to be associated with a machine for sealing packages for cutting predetermined lengths of sealing strips, the device being adapted to be automatically operated after a package has been passed beneath the cutting device.

15 This invention will be best understood from a consideration of the following detailed description, in view of the accompanying drawings forming a part of the specification; nevertheless it is to be understood that the invention is not confined to the disclosure, being susceptible of such changes and modifications which shall define no material departure from the salient features of the invention as expressed in the appended claims.

20 Figure 1 is a side view in elevation of a cutting machine constructed in accordance with the principles of my invention.

Figure 2 is a rear view in elevation of the device.

Figure 3 is a horizontal section taken along the line 3—3 of Figure 1.

35 Figure 4 is a plan view of the knife or cutting machine.

Figure 5 is a vertical section taken along the line 5—5 of Figure 4.

40 Figure 6 is a vertical section taken along the line 6—6 of Figure 4.

Figure 7 is a horizontal section taken along the line 7—7 of Figure 6.

Figure 8 is a fragmentary vertical section through the slide for holding the knife, and

45 Figure 9 is a view in perspective of the switch and operating arm controlling the circuit of a solenoid.

Referring more particularly to the drawings 10 designates a supporting plate to which is secured a spacing plate 11 which co-operate with the bars 12 to form tracks or guides 13 through which a paper 14 is adapted to be moved. A second plate 15 is supported at the bottom of the plate 10 by means of straps 16 which are secured at 55 their upper ends, as shown at 17, to the rear

face of the plate 10 while the lower end of the straps are bent under as shown at 18 and secured to flanges 19 projecting downwardly from the plate 15. The plate 15 projects beyond the outer face of the plate 10, as shown at 20, and the cutting edge 21 of a knife 22 moves in close contact with the lower face of the plate 15. This knife rests upon the flanges 18 and is guided by means of bolts 23 having their upper ends secured to the plate 15 and movable through slots 24 in the blade 22. A spring 25 disposed between a washer 26 and a nut 27 on the bolt tends to maintain the blade in close contact with the plate 15. The plate 15 has a passage 15^a through which the paper is drawn.

The blade is actuated by means of the free end 28 of one arm of the bell crank lever 29 projecting into an elongated slot 30 of the blade 22, the bell crank lever being pivoted on a rod 31 carried by brackets 32 secured to the bars 12. The upper arm 33 of the lever 29 has pivotal connection at 34 with a link 35. A link 36 is pivoted at 37 to the upper end of the link 35. The lever 36 is rigidly connected with a squared shaft 38 which when rotated oscillates the lever 36 for reciprocating the blade 32. A spring 39 secured to a horizontal bar 40 has its opposite end connected with the link 35 to maintain the link in its uppermost position and the blade 22 retracted in an inoperative position.

A strap 41 is secured to the upper end of the plate 10 and is formed integrally with the bar 40. A second bar 42 is secured at 43 to one end of a strap 41 and extends in parallel relation with the bar 40. The outer free ends of bars 40 and 42 provide bearings 95 for the squared shaft 38, said shaft having a crank 43 extending in parallel relation with said shaft and adapted to have its free end seated within a notch 44 in an oscillating armature 45 pivoted on an axle 47 rotatably supported by the bar 40 and a bar 48 disposed in parallel relation to the bar 40. The bar or bracket 48 is secured to the bar 40 by an integrally formed member 49 which is secured at 50 to the bar 40. The inner end of the armature has a toe 45^a engaging a stop 50^a for limiting the outward tilted movement of said armature.

A plate or platform 51 is secured to the member 49 and provides a support for a magnet 52. This magnet has a passage or core 53 in which is adapted to be moved an

armature 54 secured to or formed integrally with the oscillating member 45. The magnetic coil 52 is provided with contacts 56 which are adapted to be connected to a suitable source of current by means of wires 57. The supporting plate 10 is slotted, as shown at 60, through which are adapted to be moved a pair of rollers 61 carried by a shaft 62 mounted in bearings in a pair of arms 63 of an oscillating member 64. The ends of the arm 63 are brought together, as shown at 65, and pivoted at 66 to a bracket 67 secured to the outer face of a plate 10. The upper ends of the arms 63 are brought together and are pivotally connected, as shown at 68, to a reciprocating member 69 which is connected to some part of the sealing machine whereby member 64 will be oscillated periodically. Adjacent the openings 60 are located a pair of rollers 70 mounted on a shaft 71 rigid therewith so that when said shaft is rotated the rollers will be revolved simultaneously. The shaft, as shown at 72, extends beyond one side edge of the plate and is provided with a gear or pulley 73 adapted to be revolved continuously during the operation of the sealing machine.

The operation of my device is as follows: The cutting machine is adapted to be employed in connection with my sealing machine for cutting transversely through strips of glued paper which are adapted to be employed after moistening upon the loose ends of packing boxes. The device is adapted to be periodically oscillated, particularly the member 64 for moving the wheels 61 through the openings 60 for forcing the paper 14 into contact with the revolving rollers 70 whereby the paper after sealing is moved downwardly beyond the plate 15 which is inclined at an angle to the horizontal so that the glued paper will be in position for the cutting operation when the cutter is automatically operated after a package has passed beneath said member.

The magnet 52 is connected by means of wires 57 to any suitable source of current so that when the circuit is automatically closed and the magnet is placed in circuit with the source of current the armature 54 will be moved into the core 53 of the magnet and thereby raise the crank 43. When the crank 43 is raised the squared shaft 38 will be rocked, moving the link 35 downwardly and likewise the arm 33 of the bell crank lever 29 so that the arm 28^a is moved in a direction indicated by the arrow in Fig. 1, whereby the blade 22 will be moved to the position shown in Fig. 6 and cut the paper. The circuit to the solenoid or magnet 52 is closed when the rear end of the package passes beneath the knife and a switch of said circuit is operated by an arm dropping below the end of the package, the arm and switch being shown in Fig. 9.

When the circuit is open the spring 39 will come into action and force the armature 54 from its operative position with the coil 52 and raise the link 35, thereby oscillating the bell crank 29 to move the blade 22 back to its inoperative position.

After the paper has been cut and released from its connection with a moving package the paper will remain stationary. However, at this time the link 69 is automatically operated, moving the frame 64 inwardly towards the outer face of the supporting plate 10 from whence the roller 61 will be moved into engagement with the paper 14 which is forced into engagement with the roller 70. At this time the friction between the paper and rollers 61 and 70 and through the rotation of the roller 70 causes the paper 14 to be moved downwardly and in position to be applied to the next preceding package. This action, of course, is only momentarily and as soon as the paper has been moved down sufficiently to connect with an oncoming package the frame 64 will be automatically moved out of the way and the paper will be drawn through a guide on the member 14 until the blade 22 is again brought into action at the end of the package for severing the paper 14. The automatic operating means for switching on and off of the current is described and claimed in my co-pending application, Serial No. 191,209, filed May 13, 1927.

As has been stated the circuit of the solenoid is periodically controlled by a switch mounted on a block 200 formed of some non-conducting material. The switch consists of two members 267 and 268 which are spaced from each other through which is adapted to pass the switch blade 269, the switch blade being carried by a reciprocating rod 264 which is slidably mounted in supports 265 secured to the block 200. The switch blade 269 is adapted to pass between the contacts 267 and 268 when the rod 264 is moving in the direction indicated by the arrow in Fig. 9. When the rod is moved in a reverse direction the blade 269 engages the inclined face 273 of the contact 268 and is moved to one side so that it does not pass between the contacts 267 and 268 after closing the circuit through the wires 57 and 58 to the solenoid. The rod 264 is reciprocated by means of link 263 and a rock shaft 264 mounted in bearings in the standard 261 and also by means of the rock arm 262 which is adapted to be engaged by the package 35 as it is carried along by a traveling carrier not shown. When the arm 262 is moved to the dotted line position a switch blade 269 is moved between the contacts 267 and 268 thereby closing the circuit and causing operation of the knife. The spring 280 returns the arm 262 to its normal inoperative position as shown in full lines after it has been released by the package 35.

This package is carried by a traveling belt through a box forming machine and the glued tape is applied to the box and then cut periodically by the knife when the arm 262 has been moved to the dotted line position. The blade 269 is formed of resilient material so that it will spring past the contact 268 when the rod is shifted.

I claim:

1. In a device of the character described comprising a frame, a knife slidably mounted in the frame, a track for guiding a strip of sealing paper through the frame and transversely of the knife, means for reciprocating the knife comprising a solenoid, an armature adapted to be oscillated by the solenoid, a shaft operatively connected with and adapted to be rocked by the solenoid, a bell crank lever having connections with the knife, means connecting the bell crank lever with the shaft whereby rocking of the shaft will cause oscillation of the bell crank lever and reciprocation of the knife, a roller located adjacent the strip of paper and adapted to be revolved continuously, an idle roller carried by the frame and adapted to be moved for forcing paper in engagement with the revolving roller for periodically forcing the strip of paper through the frame, and means for periodically moving the idle roller into engagement with the paper.

2. A device of the character described comprising a frame, a solenoid carried by the frame, an armature pivotally mounted on the frame and adapted to be actuated by the solenoid, a shaft rockably mounted in the frame and having a crank arm operatively connected with the armature, a knife slidably mounted in the frame, a lever rigid with the shaft, a bell crank pivotally mounted on the frame, a link connecting one end of the lever with one end of the bell crank, said knife being provided with a slot adapted to

receive the free end of the bell crank whereby actuation of the armature causes rocking of the shaft and reciprocation of the knife.

3. A device of the character described comprising a frame, a solenoid carried by the frame, an armature pivotally mounted on the frame and adapted to be actuated by the solenoid, a shaft rockably mounted in the frame and having a crank arm operatively connected with the armature, a knife slidably mounted in the frame, a lever rigid with the shaft, a bell crank pivotally mounted on the frame, a link connecting one end of the lever with one end of the bell crank, said knife being provided with a slot adapted to receive the free end of the bell crank whereby actuation of the armature causes rocking of the shaft and oscillation of the knife, a track for guiding a strip of paper through the frame and transversely of the path of movement of the knife, and means for periodically moving the paper through the track.

4. A device of the character described comprising a frame, a knife slidably mounted in the frame, a track carried by the frame and adapted to guide a strip of sealing paper therethrough, means for periodically moving the strip of paper through the track and into operative relation with the knife, and consisting of a continuously driven roller, said frame being provided with an opening, and idling rollers normally out of engagement with a strip of paper, and adapted to be moved through the opening for forcing the paper into engagement with the continuously driven roller, means for moving periodically said second mentioned rollers through the opening, and means for actuating the knife for cutting the strip of paper.

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