Feb. 25, 1930. G. F. WIKLE 1,748,266

WEB CUTTING DEVICE

Filed April 28, 1926 2 Sheets-Sheet 1

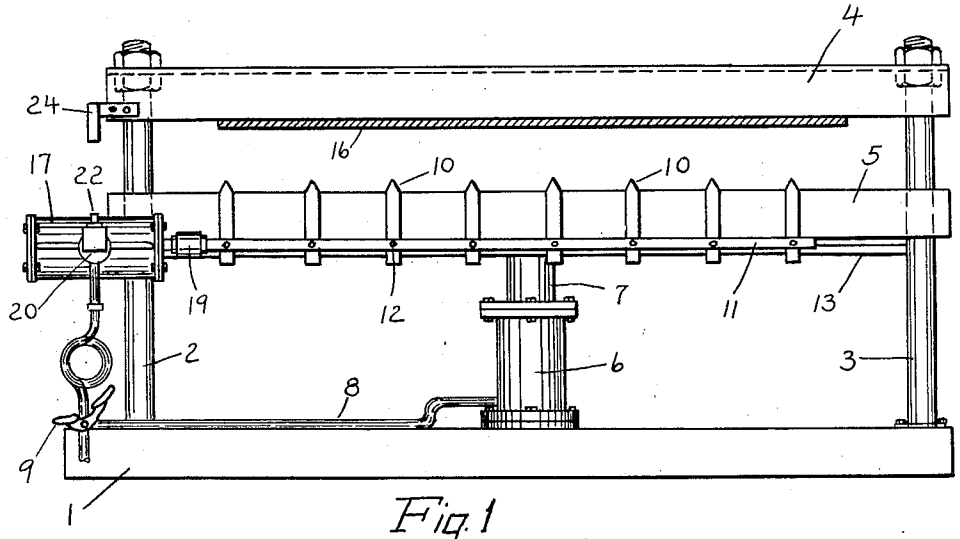


Fig. 1

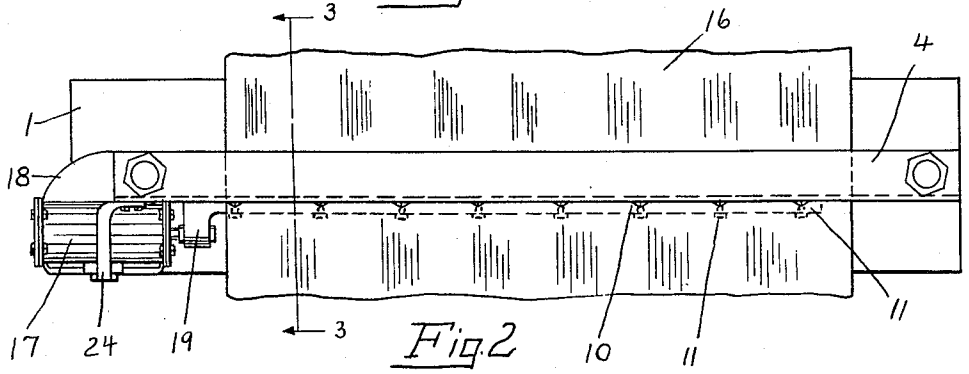


Fig. 2

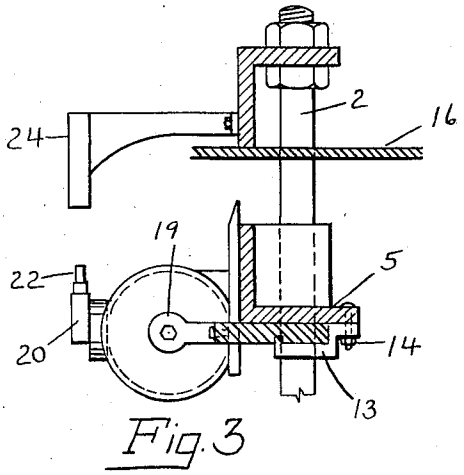


Fig. 3

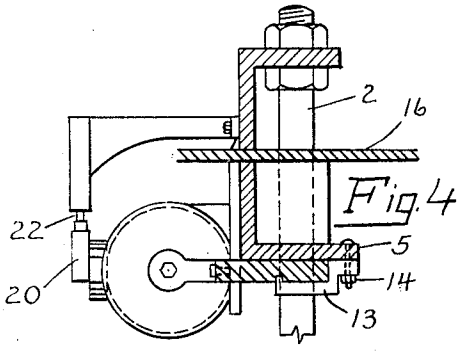


Fig. 4

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WEB CUTTING DEVICE

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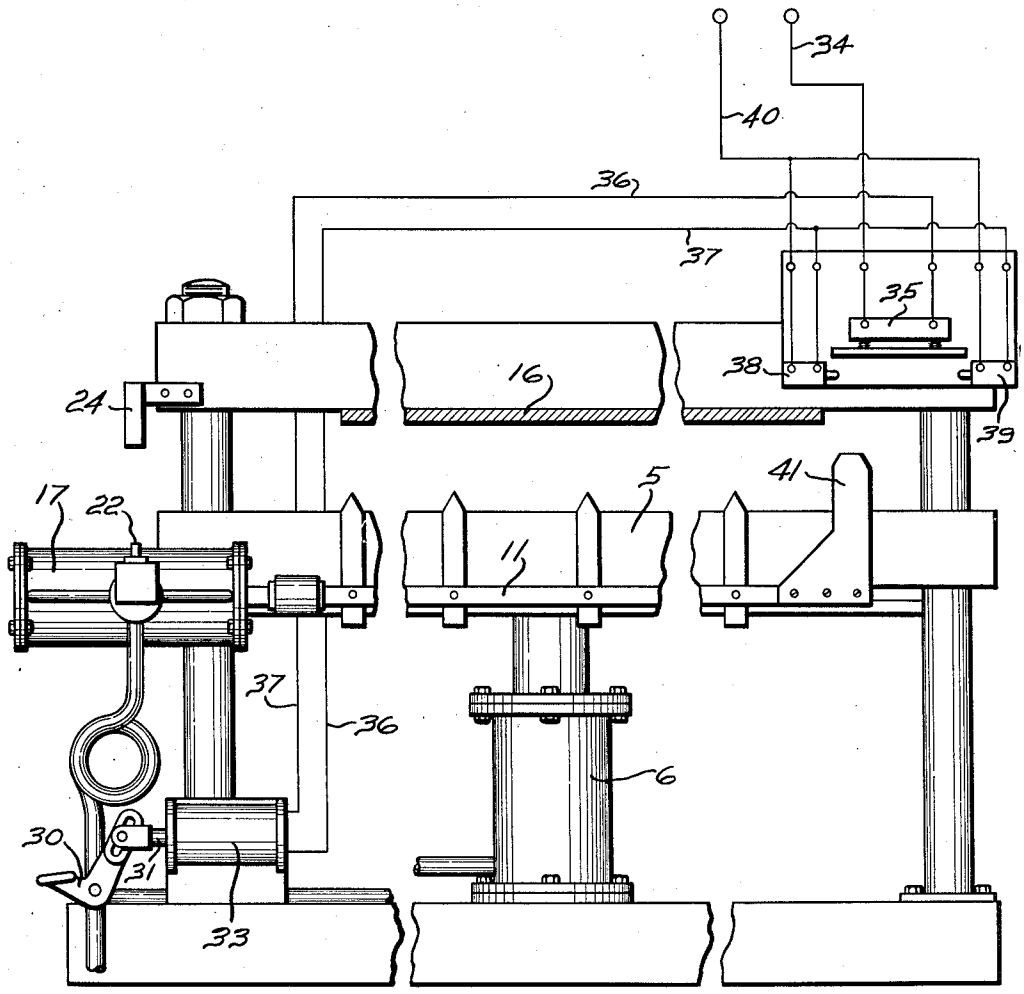


Fig. 5.

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Patented Feb. 25, 1930 1,748,266

UNITED STATES PATENT OFFICE

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WEB-CUTTING DEVICE

Application filed April 28, 1926. Serial No. 105,327.

My invention relates to devices for severing relatively wide webs of fabric or other material.

Where webs are manufactured or treated as a continuous operation and the product or treated material is formed into rolls it is essential that the severing of the web shall be accomplished in the space of a few seconds in order not to interrupt the continuous operations of the forming or treating devices. It is among the objects of my invention to provide a device, which shall be sufficiently quick in operation to permit continued operation back of the cutter, shall be simple in structure, economical to construct and operate, and substantially automatic in operation.

Other and further objects will be apparent from the following specification and claims.

In the accompanying drawings which illustrate one embodiment of my invention

Figure 1 is a front elevation,

Figure 2 is a plan view,

Figure 3 is a section on line 3—3 of Figure 2,

Figure 4 is a sectional view similar to Figure 3 but showing the parts in position for the severing operation, and

Figure 5 is a view of a modified form of invention.

Referring to the drawings 1 designates a base member provided at its ends with uprights 2 and 3 rigidly supporting at their upper ends a transverse clamping and shearing bar 4. A second clamping bar 5 is guided on uprights 2 and 3, and adapted to be moved into clamping engagement with bar 4 by a compressed air cylinder 6 to the piston 7, of which bar 5 is secured. Cylinder 6 is mounted on base 1 and is supplied with air from an air line 8 conveniently controlled by a foot operated valve as at 9. The cutting instrumentalities comprise a series of pointed, vertically positioned knives 10 removably and adjustably secured in a transverse support 11, as by set screws 12. Support 11 is mounted for reciprocation in guides 13 secured to the under side of bar 5 by bolts 14. The knife support 11 is adapted to be automatically reciprocated upon the movement of the bar 5 into clamping position by means of an air cylinder 17 secured to bar 5 by bracket 18. The piston of cylinder 16 is operatively connected to the end of support 11 as indicated at 19. Air is admitted or exhausted alternately from opposite sides of the piston head through a conventional three-way valve 20 operated by plunger 22 through a suitable pawl and ratchet not shown. As bar 5 rises into clamping position plunger 22 strikes stop 24 secured to stationary bar 4 thus depressing plunger 22 and operating valve 20.

In operation the web of fabric or other material 16 to be cut is threaded between bars 4 and 5 as indicated in Figures 1, 3 and 4. When it is desired to sever the web air is admitted to cylinder 6 by operation of foot valve 9, thus raising bar 5 and clamping the fabric between the latter and bar 4 as shown in Figure 4. As shown in the latter figure knives 10 pierce the fabric as bar 5 moves into clamping position and simultaneously with the clamping of the fabric cylinder 17 operates to move support 11, and the knife assembly carried thereby, transversely to sever the web. As will be evident from an inspection of Figure 1 the support 11 need travel only a distance equal to the space between adjacent knives in order to completely sever the web. If desired electrical or other means operated by support 11 or its associated parts, may be provided to lower bar 5 upon completion of the cutting stroke. One manner of accomplishing this result is illustrated in Fig. 5 in which the foot pedal 9 which admits fluid pressure to the cylinder 6 has been modified, as shown at 30, one arm being connected to the armature 31 of solenoid 33. This solenoid is adapted to be energized from any suitable sources of current, the current passing through lead 34 through a spring switch 35, lead 36 to the solenoid back through lead 37 and through either switch 38 or switch 39, if either be closed, to lead 40. Secured to knife support 11 is a switch actuating finger 41. Switches 38 and 39 are of the conventional snap button type and with the parts in the position shown in Fig. 5 switch 39 is open and switch 38 is closed. Assum-

ing foot pedal 30 to be now depressed to admit fluid pressure to cylinder 6, and withdrawing armature 31 from solenoid 33, knife support 11 will rise, as previously described, to pierce the fabric 16 as the support rises. Finger 41 will engage the button of switch 38 to snap it off so that when finger 41 engages and closes switch 35 both switches 38 and 39 are open. Stop 24 engaging valve plunger 22 causes the knife carrier 11 to move to the right in Fig. 5 to complete the cutting of the web, and finger 41 slides along switch 35, which is thus held closed. As the knife support 11 completes the transverse severing movement finger 41 engages the button of switch 39 snapping that switch on, thus closing the circuit of the solenoid through that switch. Energizing of the solenoid draws armature 31 to the right thus relieving the pressure in cylinder 6 and permitting bar 5 of the knife support to drop. This releases spring switch 35 opening the circuit and de-energizing solenoid 33. Finger 41 is left beneath switch 39 which is closed, switch 38 being open so that upon the next upward movement of bar 5 and support 11 switch 39 will be switched off and upon transverse movement of bar 11, this time to the left, switch 38 will be closed to energize solenoid 33 and return bar 5 to inoperative position.

The severing operation requires but a few seconds to complete and a single festoon roll placed back of the cutter will suffice to take care of the material accumulated during the cutting operation.

While I have shown the knives as mounted on the movable clamping bar it will be understood that they may be mounted on the stationary bar if desired without departing from the spirit of my invention.

I claim:

1. A device of the character described comprising relatively movable clamping bars adapted to clamp a web therebetween, a plurality of spaced knives mounted for transverse reciprocation on one of the clamping bars and adapted to pierce the web as the latter is clamped, and means to reciprocate the knives simultaneously a distance at least equal to the spacing of the knives to completely sever the web.

2. A device of the character described comprising relatively movable clamping bars adapted to clamp a web therebetween, guides on one of the clamping bars, a support reciprocable in the guides, a plurality of spaced knives secured to the support adapted to pierce the web as the latter is clamped between the bars and means to automatically reciprocate the support and the knives carried thereby to transversely sever the web.

3. A device of the character described comprising spaced uprights, a horizontal clamping bar secured thereto, a second clamping bar guided on said uprights, means to move the second bar into clamping engagement with the first named bar, a support mounted for reciprocation along the movable bar, a plurality of vertically positioned knives mounted on said support and movable therewith, and means to automatically reciprocate said support transversely as the second named clamping bar reaches clamping position.

4. A device of the character described comprising means to clamp a web, a plurality of spaced, vertically positioned knives associated with the clamping means and operable therewith to pierce the web as the latter is engaged by the clamping means and means to move the knives transversely, while the web is held by the clamping means, to completely sever the web.

In testimony whereof I have signed my name to the above specification.

GEORGE F. WIKLE.