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APPARATUS FOR SEVERING A WEB

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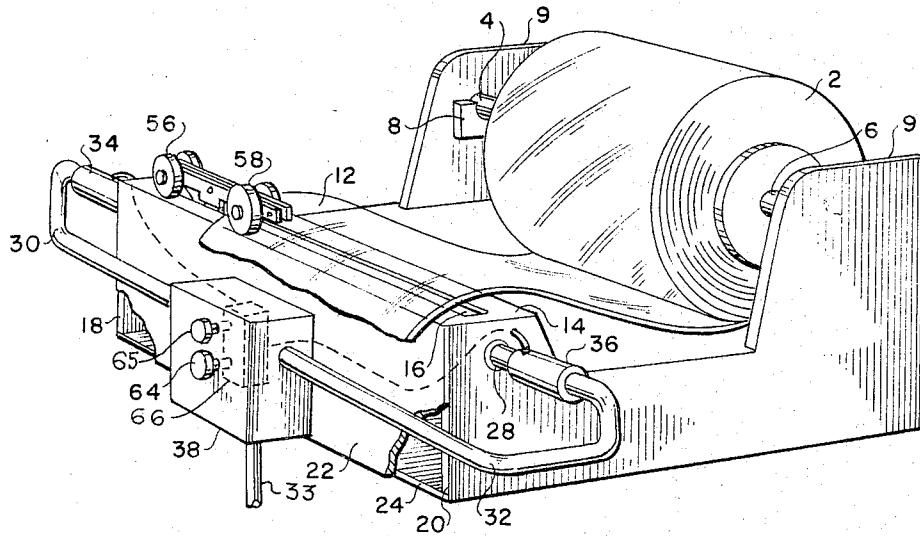


Fig. 1

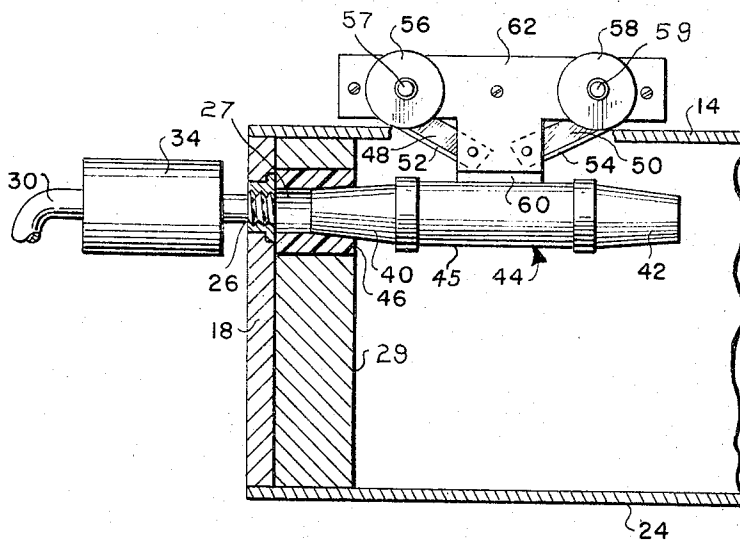


Fig. 2

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APPARATUS FOR SEVERING A WEB

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9 Claims. (Cl. 83-455)

This invention relates to an apparatus for severing a web. In one aspect the invention relates to an apparatus providing a horizontal straight line motion to a means for severing a film.

It is generally more expedient to produce a film or web of materials in such a manner as to produce an extended sheet or film which is then formed into a roll. Although rolls of film have many uses, it is frequently desirable to produce sheets of different length of material for wrapping individual packages, for example, the wrapping of products in the meat department of grocery stores.

It is an object of the invention to provide apparatus for severing a web.

Yet another object of the invention is to provide apparatus for the production of a horizontal straight line motion for a cutting means.

Yet another object of the invention is to produce sheets of film.

These and other objects of the invention will be readily apparent to those skilled in the art from the following description, drawing and appended claims.

These objects are broadly accomplished by a device comprising, in combination; a flat member having an elongated opening therethrough a shuttle cutter support from said flat member and adapted for movement from one end of the other end thereof including severing means attached thereto and extending through the opening and means (such as pneumatic means) for reciprocally moving the shuttle cutter.

In one embodiment, the shuttle cutter comprises a lower member positioned below the flat surface member and connected to a support member positioned above the flat surface member, the ends of the lower member alternately sealing off conduits which contain a pressurized fluid which drives the shuttle cutter from one end to the other.

FIGURE 1 is a perspective view showing a supply roll of film in combination with the shuttle cutter.

FIGURE 2 is a sectional view of the shuttle cutter in a terminal position.

The invention is best described by reference to the above drawings.

Any suitable type of framework may be provided which will support a roll of film in combination with the shuttle cutter. Indeed it is not essential that the film be supplied from a roll so long as an extended web be positioned across the surface of the device of this invention.

For simplicity, the invention will be described with reference to the employment of a supply roll 2 of thermoplastic film (such as polyethylene) supported by cross members 4 and 6 journaled in supports 8 on frame 9. The web 12 is pulled off the roll 2 by the operator so as to lie over the extended elongated opening 16 in the surface of flat base member 14. The opening 16 preferably extends substantially the length of the flat member 14 but is necessarily only as long as the width of the film. The flat base 14 is associated with two upright end members 18 and 20 positioned at either end of the flat member. Side walls 22 and bottom wall 24 may be provided but are not essential. The end members 18 and 20 are provided with orifices 26 and 28 which are in communication with conduits 30 and 32 having valves 34 and 36 in each of the respective conduits. Conduits 30 and 32

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are suitably connected to a source (not shown) of pressurized fluid (e.g. air) through inlet conduit 33. Valves 34 and 36 in turn are connected to a control box 38 having electrical switches 64 and 65 suitably connected (such as by electrical wiring) to valves 36 and 34 respectively through terminal box 66. Actuation of switch 64 causes the opening of valve 36 for a pre-determined timed interval to drive the cutter across the member 14. Switch 65 actuates valve 34 in the same manner. Any suitable connection, electrical, pneumatic, manual, or the like may be employed for actuating said valves.

For simplicity the operation is described with primary reference to one end of the shuttle cutter as shown in FIGURE 2 with the other end being identical. Positioned interiorly of wall 18 and adjacent thereto is a sealing block 29 containing a passageway 27 in direct communication with conduit 30 through wall 18. Preferably passageway 27 is provided with a sealing member 46, such as a rubber insert. Any suitable sealing means may be employed which will cooperate with the end 40 (and 42) to seal off the conduit 30 (and 32). The lower portion of the shuttle 44 is preferably an elongated cylindrical member 45 which may be tapered at either terminal portion (40 and 42) to sealably engage with the insert 46. Suitable support may be provided for positioning the shuttle 44 relative to the flat member 14. Cutting members 48 and 50 are attached to the shuttle 44 and extend through the elongated opening 16 so as to sever the film upon movement of the shuttle from one end to the other end of the flat base 14. Preferably a dual set of knives, heating wires or the like is provided with cutting surfaces 52 and 54 facing in opposed directions so as to sever the film when the shuttle cutter 44 moves in either direction. Since hold down of the film is frequently necessary during the cutting operation, some means should be provided for holding down the film adjacent the surface 14. A suitable device comprises a pair of rollers 56 and 58 mounted on axes 57 and 59 respectively on either side of the cutting means. For example, a support member 60 is attached to the intermediate portion 45 of the lower portion of the shuttle 44 and an elongated transverse support member 62 is attached thereto or integral therewith and extends over the elongated opening 16. A pair of knives 48 and 50 are attached to the support member 60 and the end portions of support member 62, preferably with the cutting edges at an angle with the flat member 14. Even more preferably, the cutting edges 52 and 54 are tangential to the rollers so that the cutting edge contacts the film at the point of contact of the roller 56 or 58 with the surface 14 (through the film).

In operation, the operator actuates switch 65 which opens valve 34 thereby introducing a timed blast of air or the like through conduits 33, 30, valve 34, orifice 26, and passageway 27, thus driving the shuttle 44 from one end to the other end and severing the film which has been positioned over the flat member 14. After additional film has been placed across opening 16, switch 64 is actuated either manually or automatically to open valve 36 and repeat the operation in the opposite direction.

The device is not limited to any particular type of film, plastic, paper or the like and is operable with any web-like structure, either continuous, perforated, reticulated or the like, with suitable adjustments in the cutting means. Any suitable fluid may be used to drive the shuttle cutter with air being most convenient.

It will be understood that the form of the invention shown is primarily of preferred embodiments and that changes may be made in the machine without departing from the scope of the invention and claims.

We claim:

1. Apparatus for severing a web comprising, in combination:

- (a) a flat surface member,
- (b) an elongated opening in (a),
- (c) a pair of end members associated with (a) below surface thereof,
- (d) a shuttle cutter adapted for reciprocal movement from one end of (a) to the other end thereof comprising a lower member positioned below (a), a support means positioned above (a), and attached to said lower member, and a severing means extending through said opening,
- (e) an orifice in each of said end members in communication with a source of fluid under pressure, the terminal portions of said lower member adapted to sealably engage said orifice in turn when moved to the respective end member, and,
- (f) means for reciprocally moving said shuttle cutter from one end portion of (a) to the other end portion thereof.

2. The apparatus of claim 1 wherein said terminal portions of the lower member are tapered.

3. The apparatus of claim 1 in combination with a supply roll of film.

4. The apparatus of claim 1 wherein said support member is mounted on rotating members positioned on the upper surface of (a).

5. The apparatus of claim 1 wherein said severing means comprise a pair of knives depending from said support member and extending through said elongated opening, said knives adapted to sever a web placed over said opening in either direction of movement of the shuttle cutter.

6. The apparatus of claim 5 wherein said knives are disposed at an angle from the surface of (a).

7. Apparatus for severing a web comprising, in combination:

- (a) a flat, elongated, horizontal surface member,
- (b) an elongated opening (a) extending from one end portion to the other end portion thereof,
- (c) a pair of end members associated with the ends of said flat member and extending below said flat member,

(d) a passageway in each of said end members in communication with a first and second conduit,

(e) a first and second valve means in each of said first and second conduits respectively,

(f) a source of fluid under pressure in communication with said conduits,

(g) means for alternately actuating said valve means,

(h) a shuttle cutter adapted for reciprocal movement from one end of (a) to the other end thereof comprising:

(1) an elongated cylindrical lower member, positioned below (a) and having tapered terminal portions adapted to sealably engage the entrance to said passageway when the shuttle cutter is moved to the respective end of (a),

(2) a support member positioned above said elongated opening, attached to said lower member through said elongated opening, and rotatably mounted on the surface of (a), and

(3) a pair of knives depending from said support member and extending through said opening, said knives having cutting edges inclined at an angle and facing opposing directions so as to sever the film in either direction of movement of the shuttle cutter.

8. The apparatus of claim 7 wherein said support member is mounted on rotatable members positioned on either side of said knives.

9. The apparatus of claim 7 in combination with a supply roll of film.

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