April 28, 1964 H. ROSENTHAL 3,131,278

DISPENSING APPARATUS

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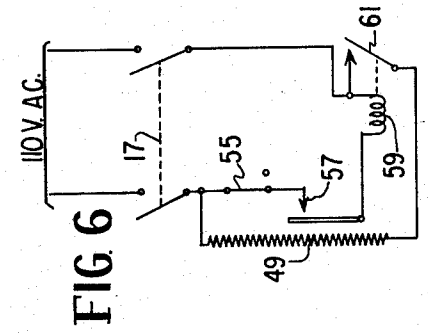

FIG. 6

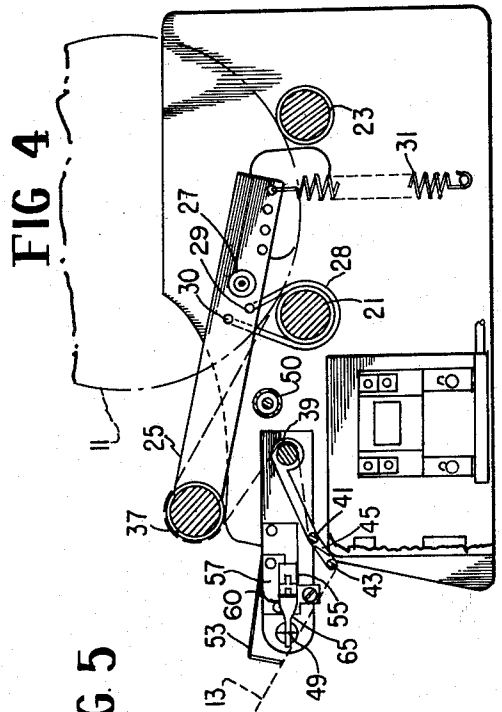

FIG. 4

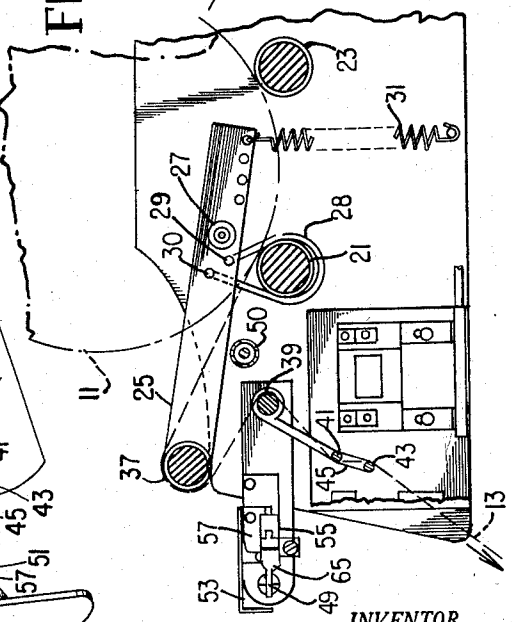

FIG. 5

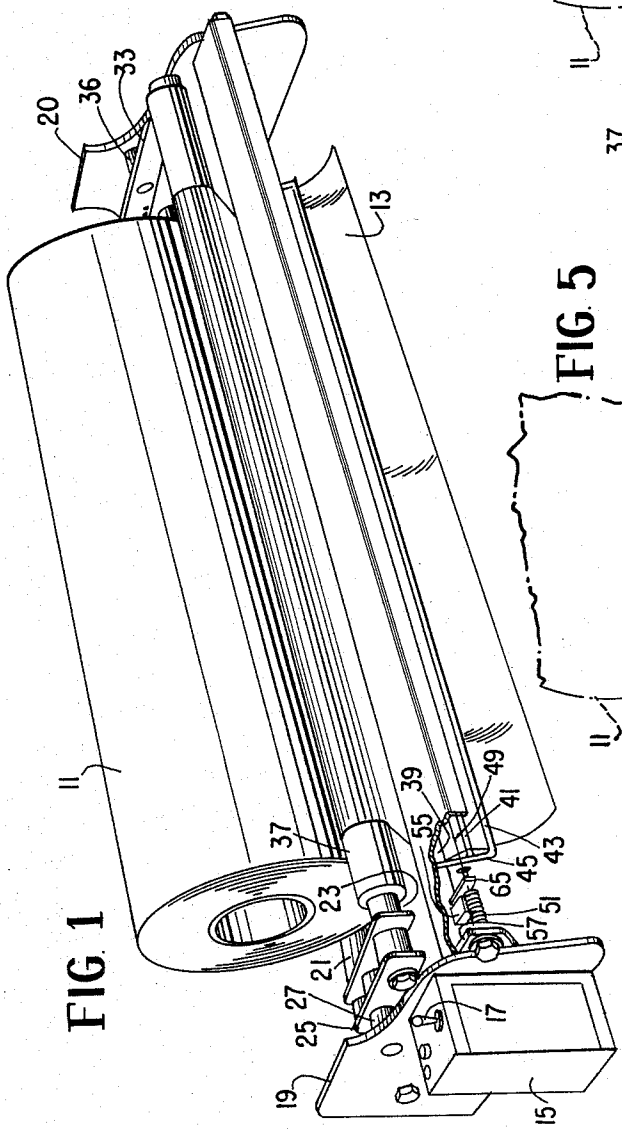

FIG. 1

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FIG. 2

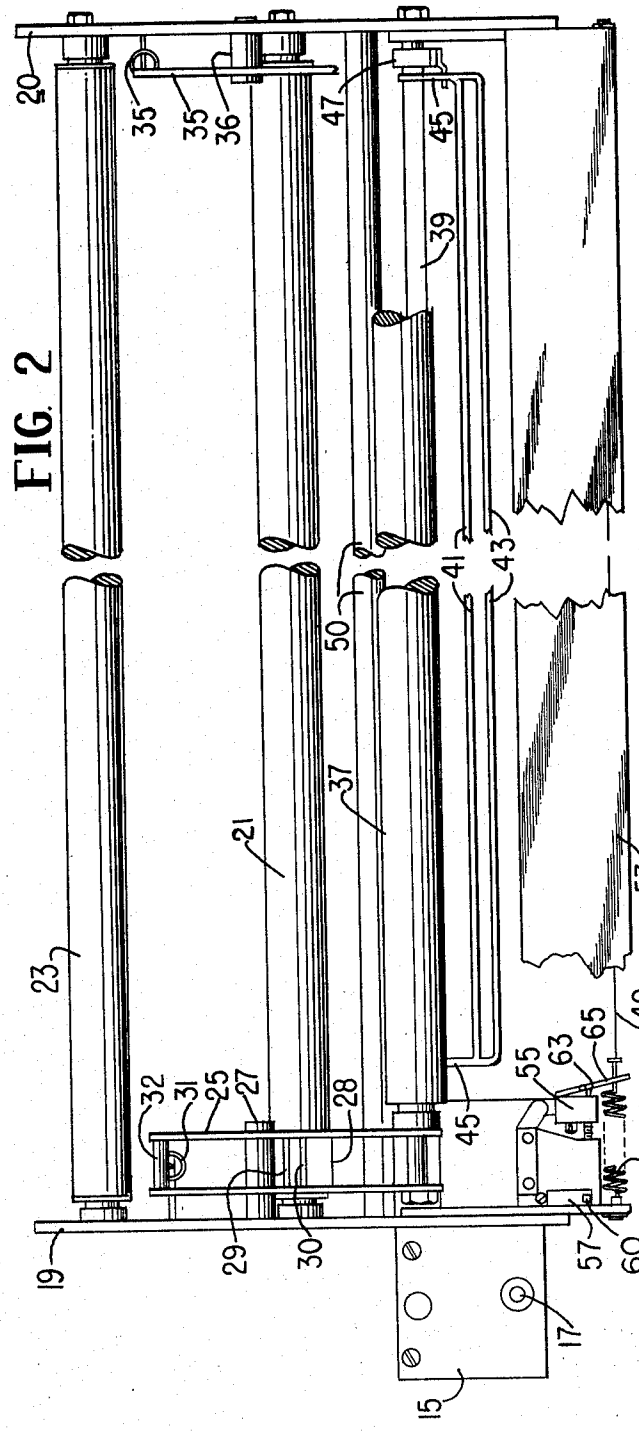
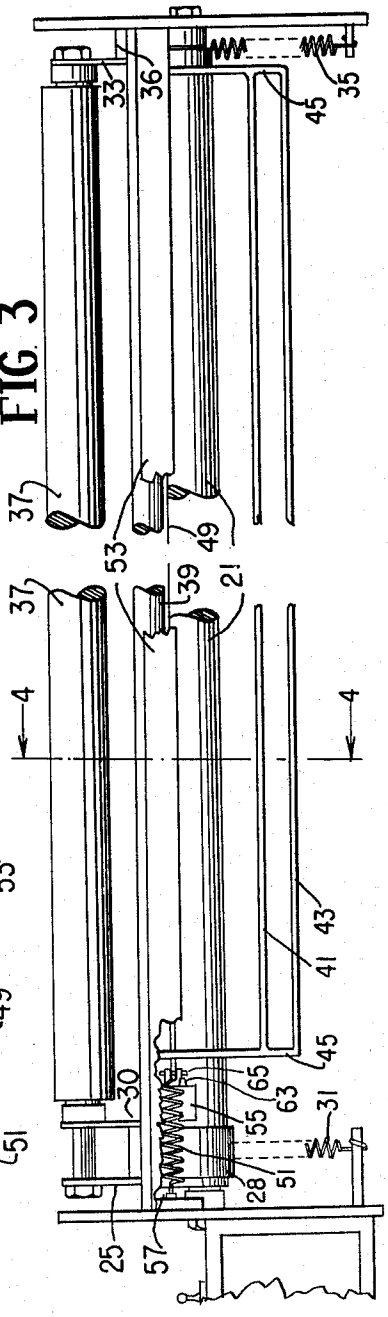


FIG. 3



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3,131,278

DISPENSING APPARATUS

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7 Claims. (Cl. 219—19)

This invention relates to dispensing apparatus, and more particularly to an improved apparatus for dispensing plastic wrapping material or a similar sheet material from supply rolls.

Many of our present day merchandising methods include the wrapping of certain items in a protective film of polyethylene or similar transparent plastic material. Use is made of such material to protect meats, fruits, and other grocery products, clothing, linens, and a great number of other products. Obviously, this wrapping procedure takes time, making it desirable to simplify the wrapping operation to reduce costs.

One way of simplifying the wrapping procedure is to provide for rapid dispensing of the wrapping material. An ideal way of doing this is to provide means for dispensing the wrapping material similar in operation to the ordinary wax paper dispensers, where the user need only pull the material to the desired length and tear it off. This is difficult to accomplish with plastic film, however, for the extreme thinness of the material, the attraction due to static electricity, and the ductile nature of the film make it difficult to handle and hard to cut accurately.

It is possible with certain types of material to accomplish the severing operation using an electrically heated element but this necessitates a control circuit for causing the element to be energized and de-energized at the required time.

Accordingly, it is an object of this invention to provide a dispensing apparatus for heat sensitive web-like material stored on a roll which apparatus is low in cost and simple in operation.

It is a further object of this invention to provide a film dispensing device which severs pieces of film from a roll by use of a heated element.

Another object of the invention is to provide a dispensing apparatus for web-like plastic film on a roll which automatically supplies electrical current to heat a wire to sever the film only when a piece of the film is being removed.

A feature of the invention is the provision of dispensing apparatus having means for supporting a roll of web-like material and having a member engaged when the material is removed from the roll which member operates a switch to energize a heater wire which severs the material upon contact of the film therewith.

Another feature of the invention is the provision of a dispensing apparatus for web-like material stored on a roll which apparatus includes means thereon for presenting the leading edge of the material in such a manner that it may easily be grasped by the operator of the apparatus.

Another feature of the invention is the provision, in a dispensing apparatus for heat sensitive web-like material having an electrically heated wire, of a switch to cut off the heating current upon a given expansion of the wire.

FIG. 1 is a perspective view of the dispensing apparatus of the invention;

FIG. 2 is a top plan view thereof;

FIG. 3 is a front elevational view thereof;

FIG. 4 is a sectional view along the line 4—4 of FIG. 3;

FIG. 5 is the view of FIG. 4 with the brake unlocked; and

FIG. 6 is a schematic diagram of the circuit of the invention.

Briefly the invention includes means for rotatably supporting a roll of heat sensitive web-like material such as polyethylene film. Guide means present the leading edge of the material from the storage roll in a position for dispensing. An electrically conducting wire is provided for severing the desired length of web-like material from the storage roll, the wire being connected to a heating circuit which provides current for heating the wire to facilitate severing of the material. A protective cover for the wire is hinged to permit its displacement by the material when drawn from the roll for access to the wire. A switch is connected in the heating circuit and is operable to close the heating circuit upon displacement of the cover. Consequently, when the leading edge of the web-like material is brought up to contact the wire, the protective cover will be displaced sufficiently to actuate the switch causing the wire to heat. A second switch is provided in the heating circuit which will open upon a given expansion of the wire to terminate the heating after each cutting operation.

Referring now to FIG. 1, a roll 11 of heat sensitive web-like material, for example polyethylene film 13, is shown as it is normally positioned on the dispensing apparatus. It may be seen that the apparatus includes frame members 19 and 20 to which support rollers 21 and 23 which support the roll of material 11 are secured. A control box 15 having a starting switch 17 is secured to the frame member 19.

The details of construction of the apparatus are best seen in FIGS. 2 and 3, with further reference to FIG. 1. Support rollers 21 and 23 extend between frame portions 19 and 20. These rollers provide support for the roll 11 as shown in FIG. 1. A double lever 25, adjacent frame member 19, is pivotally supported on pivot 27 extending from the frame member 19. A brake belt 28 is looped around support roller 21 and has its ends fixed to double lever 25 by means of pins 29 and 30. Spring 31 is fixed to a cross-bar 32 of double lever 25 to bias brake belt 28 into engagement with support roller 21 for frictional braking thereof.

A single lever 33, similarly biased by a spring 35, is pivotally mounted on pivot 36 adjacent frame member 20. A brake release roller 37 extends between double lever 25 and single lever 33 and is attached thereto, on the opposite side of pivots 27 and 36 from springs 32 and 35 respectively. Consequently, pressure applied to release roller 37 will pivot levers 25 and 35 against the bias of their respective springs 32 and 35 to release belt 28 from frictional engagement with support roller 21, enabling roll 11 to rotate.

A guide rod 39 extends between frame members 19 and 20 in parallel relationship to release roller 37. Parallel guide bars 41 and 43, having a common frame 45, are rotatably mounted at either end by frame 45 to guide rod 39. A stop 47 is rigidly fixed to guide rod 39, at one end, to limit rotation of frame 45. As a result, the force of gravity will cause frame 45 to rest against stop 47 positioning guide bars 41 and 43 at a particular angle. As will be explained later, such an arrangement allows guide bars 41 and 43 to present the leading edge of film 13 in a convenient position for dispensing.

A nichrome heater wire 49 extends across the front of the apparatus from frame member 19 to frame member 20. Wire 49 is connected to an electrical supply and attains a high temperature upon passage of current through it, to facilitate the cutting of a desired length of plastic film 13 from the roll. A tubular conduit 50 extends between frame members 19 and 20 to contain return circuit wiring for wire 49. A tension spring 51 is interposed between an end of wire 49 and frame member 19. As wire 49 expands due to heating, spring 51 will

absorb the slack, keeping wire 49 under tension at all times to facilitate the cutting operation. The protective cover 53, of generally L-shaped cross-section, extends over the top and front of wire 49, protecting persons and materials around the machine from the possibility of contact with the wire. Cover 53 is hinged to raise upwardly upon contact with its lower edge.

FIGS. 4 and 5 show the operation of the apparatus more clearly. Roll 11 of film 13 is shown in phantom. Roll 11 rests on support rollers 21 and 23. Film 13 is looped over the top of release roller 37, and passed behind guide rods 39 and between guide bars 41 and 43. When frame 45 is resting against stop 47, guide bars 41 and 43 will position film 13 in such a manner that it may easily be grasped by an operator of the apparatus. As shown in FIG. 5, when tension in the direction of the arrow is applied to film 13 to withdraw a desired amount from roll 11, force is transmitted to release roller 37, displacing levers 25 and 33 against the bias of springs 31 and 35 respectively. The pressure of belt 28 on support roller 21 is thereby released, permitting support roller 21 to turn and consequently, permitting roll 11 to turn as well. In this manner the plastic film may be withdrawn to the desired length. Release of pulling force on film 13 causes return of levers 25 and 33 to their original position, braking support roller 21 and consequently roll 11. In this manner, tension is maintained on film 13 at all times to prevent any tangling or folding difficulties.

The desired length of film 13 may be severed from the remainder of the material by moving film 13 upward as shown in FIG. 4 until it contacts wire 49. By doing so, film 13 will engage the lower edge of protective cover 53, raising the cover sufficiently to permit contact of film 13 with the wire 49.

In FIG. 6, the electrical circuit of the apparatus is shown. Wire 49 is connected across a 110 volt A.C. source. Starting switch 17, of the toggle type, is operable manually by the operator of the machine. A cut-off switch 55 is connected in parallel with wire 49 and is normally closed. An actuating switch 57 is connected in series with switch 55 to relay 59. When starting switch 17 is closed and when actuating switch 57 is also closed, relay 59 will be energized to close relay switch 61, completing the heating circuit for wire 49.

Referring to FIGS. 4 and 5, the operation of actuating switch 57 may be seen. Switch 57 is located adjacent protective cover 53. Switch 57 is of the snap action type and has an actuating button 60 in contact with protective cover 53. When cover 53 is in its normal position, that of FIG. 5, switch 57 will be open. When the film 13 is drawn upward to displace cover 53 and to engage wire 49, button 60 will be released causing switch 57 to close. This permits current to flow through relay 59, closing relay switch 61 to heat wire 49.

Referring to FIGS. 2 and 3, switch 55 is located adjacent an end of wire 49. Switch 55 is also of the snap action type and has an actuating button 63 thereon. An actuating member 65 is fixed to one end of wire 49 and is in engagement with button 63. Upon a given expansion of wire 49, actuating member 65 will be displaced sufficiently to actuate button 63, opening switch 55. This in turn, as may be seen in FIG. 6, will de-energize relay 59 and open relay switch 61 to break the heating circuit for wire 49. Thus, the length of the heating cycle of wire 49 may be controlled by proper setting of actuating member 65.

It may be seen therefore, that the invention provides an improved apparatus for dispensing transparent plastic wrapping material or similar substances from storage rolls, automatically supplying electrical current to heat a wire for severing the material only during the dispensing operation. Furthermore, the heating cycle of the wire may be controlled, and simplicity of operation is attained.

I claim:

1. An apparatus for dispensing heat sensitive web-like material from replaceable supply rolls, including in combination, means for rotatably supporting a supply roll of web-like material, means for guiding the web-like material from the supply roll to a dispensing position, an electrical heater wire positioned to extend above the web-like material when in dispensing position, a heating circuit connected to said wire to cause heating of said wire for severing the heat sensitive web-like material, a switch connected in said heating circuit and operable to close said circuit, and a pivotal protective cover for said wire coupled to said switch, said cover being mounted above said wire a short distance therefrom and having an overhanging portion positioned to be engaged by the web-like material to be raised thereby as said web-like material is raised into engagement with said wire, said cover pivoting away from said wire to operate said switch to a closed position, said wire thereby being energized to heat and sever the web-like material in contact therewith.

2. An apparatus for dispensing heat sensitive web-like material from replaceable supply rolls including in combination, means for rotatably supporting a supply roll of web-like material, means for guiding the web-like material from the supply roll to a dispensing position, an electrical heater wire, a heating circuit connected to said wire to cause heating of said wire for severing the heat sensitive web-like material, a first switch connected in said heating circuit and operable to energize said circuit, and a member coupled to said first switch and positioned to be engaged by the web-like material to close said first switch upon movement of the web-like material toward said wire, a second switch normally closed and connected in said heating circuit, said second switch being openable to de-energize said heating circiut when opened, and means on said wire engageable with said second switch to open the same upon a given expansion of said wire due to heating thereof, so that when the web-like material is moved into contact with said wire said first switch will close to energize said wire causing said wire to heat and sever the web-like material, and expansion of said wire due to heating thereof will operate said second switch to de-energize said circuit.

3. An apparatus for dispensing heat sensitive web-like material from replaceable supply rolls including in combination, means for rotatably supporting a supply roll of web-like material, means for guiding the web-like material from the supply roll to a dispensing position, an electrical heater wire, a heating circuit connected to said wire to cause heating of said wire for severing the heat sensitive web-like material, a protective cover for said wire, said cover being pivotal to expose said wire upon movement of the web-like material toward said wire, a first switch having a first actuating stem and operable to de-energize said heating circuit, said first switch being located with said first actuating stem adjacent said cover so that said cover when pivoted will cause said first actuating stem to operate said first switch, a tension spring attached to one end of said wire to keep said wire under constant tension despite expansion due to heating, a second switch having a second actuating stem and operable to de-energize said heating circuit, means attached to the juncture between said tension spring and said wire engageable with said second actuating stem to open said second switch upon a given expansion of said wire, so that when the web-like material is moved into contact with said wire, said first switch will close to energize said wire causing said wire to heat and sever the web-like material and expansion of said wire due to heating thereof will open said second switch to de-energize said circuit.

4. An apparatus for dispensing plastic web-like material from replaceable supply rolls including in combination, support rollers adapted to carry a supply roll of web-like material, brake means for said support rollers including means for releasing said brake means upon with

drawal of the material from the supply roll, a guide rod parallel to said support rollers, a pair of guide bars parallel to said guide rod and having a common frame pivotal about the axis of said guide rod, an electrical heater wire parallel to said guide bars, a heating circuit connected to said wire to cause heating of said wire for severing the plastic web-like material, a protective cover for said wire, said cover being pivotal to expose said wire upon movement of the web-like material toward said wire, a first switch having a first actuating stem and operable to energize said heating circuit, said first switch being located with said first actuating stem adjacent said cover so that said cover when pivoted will cause said first actuating stem to close said first switch, a tension spring attached to one end of said wire to keep said wire under constant tension despite expansion due to heating, a second switch having a second actuating stem and operable to energize said heating circuit, means attached to the juncture between said tension spring and said wire engageable with said second actuating stem to open said second switch upon a given expansion of said wire, so that when the web-like material is moved into contact with said wire, said first switch will close to energize said wire causing said wire to heat and sever the web-like material, and expansion of said wire due to heating thereof will open said second switch to de-energize said circuit.

5. An apparatus for dispensing plastic web-like material from repleacable supply rolls including in combination, support rollers adapted to carry a supply roll of web-like material, brake means for said support rollers, a brake release roller parallel to said support rollers and rotatably attached to said brake means so that force applied to said brake release roller will cause the release of said brake means from said support rollers, a guide rod parallel to said brake release roller, a pair of guide bars parallel to said guide rod and having a common frame pivotal about the axis of said guide rod, an electrical heater wire parallel to said guide bars, a heating circuit connected to said wire to cause heating of said wire for severing the plastic web-like material, a protective cover for said wire, said cover being pivotal to expose said wire upon movement of the web-like material toward said wire, a first switch having a first actuating stem and operable to enerize said heating circuit, said first switch being located with said first actuating stem adjacent said cover so that said cover when pivoted will cause said first actuating stem to close said first switch, a tension spring attached to one end of said wire to keep said wire under constant tension despite expansion due to heating, a second switch having a second actuating stem and operable to energize said heating circuit, means attached to the juncture between said tension spring and said wire engageable with said second actuating stem to open said second switch upon a given expansion of said wire, so that when the web-like material is moved into contact with said wire, said first switch will close to energize said wire causing said wire to heat and sever the web-like material and expansion of said wire due to heating thereof will open said second switch to de-enerize said circuit.

6. An apparatus for dispensing polyethylene film from replaceable supply rolls including in combination, first and second support rollers adapted to carry a supply roll of film, a pair of levers located at either end of said support rollers, a brake belt looped around said first support roller and having each of its ends fastened to one of said levers, a pair of brake springs biasing said levers to hold said belt in contact with said first roller, a brake release roller parallel to said support rollers and rotatably mounted on said levers so that force applied to said roller will cause said lever to move against the bias of said brake springs thereby releasing said brake belt from contact with said first support roller, a guide rod parallel to said brake release roller, a guide frame pivotal about the axis of said guide rod and having a pair of guide bars parallel to said guide rod, an electrical heater wire parallel to said guide bars, a heating circuit connected to said wire to cause heating of said wire for severing the film, a protective cover for said wire, said cover being pivotal to expose said wire upon movement of the film toward said wire, a first snap-action switch having a first actuating stem and operable to energize said heating circuit, said first switch being located with said first actuating stem adjacent said cover so that said cover when pivoted will cause said first actuating stem to close said first switch, a tension spring attached to one end of said cutting wire to keep said wire under constant tension despite expansion due to heating, a second snap action switch having a second actuating stem and operable to energize said heating circuit, means attached to the juncture between said tension spring and said wire engageable with said second actuating stem to open said second switch upon a given expansion of said wire, so that when the film is moved into contact with said wire, said first switch will close to energize said wire to cause said wire to heat and sever the film, and so that expansion of said wire due to heating will open said second switch to de-energize said circuit.

7. An apparatus for dispensing heat sensitive web-like material from replaceable supply rolls including in combination, means for rotatably supporting a supply roll of web-like material, means for guiding the web-like material from the supply roll to a dispensing position, an electrical heater wire, a heating circuit connected to said wire to cause heating of said wire for severing the heat sensitive web-like material, a first switch connected in said heating circuit and operable to close said circuit, a second switch normally closed and connected in said heating circuit said second switch being openable to de-energize said heating circuit when opened, and means coupled to said wire and engageable with said second switch to open the same upon a given expansion of said wire due to heating thereof, thereby causing said wire to be heated only during the severing operation.

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