Feb. 16, 1971 F. PIZMOHT 3,563,003

WRAPPING MACHINE

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FIG. 1

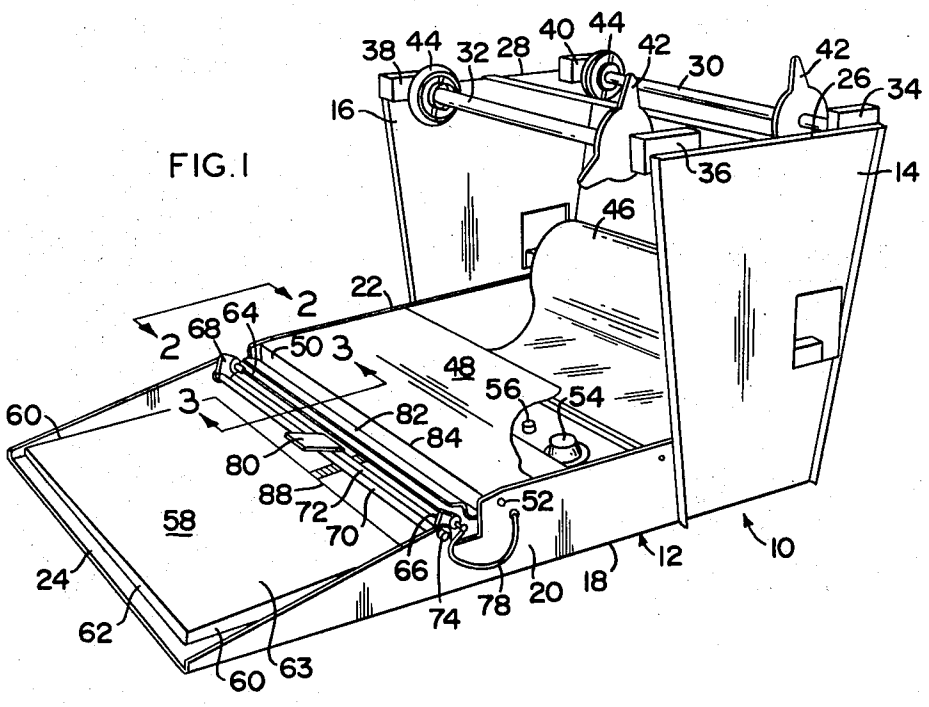


FIG. 2

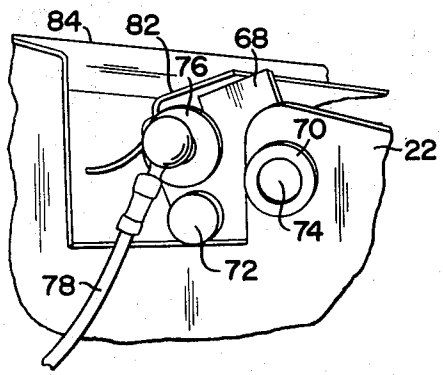
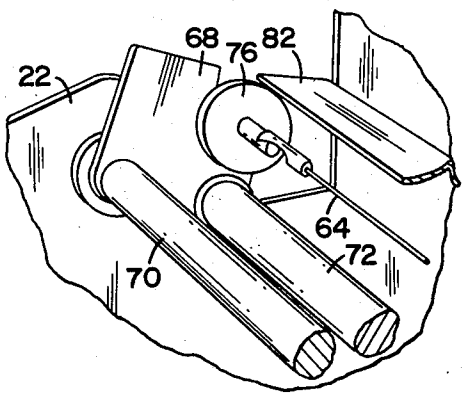


FIG. 3



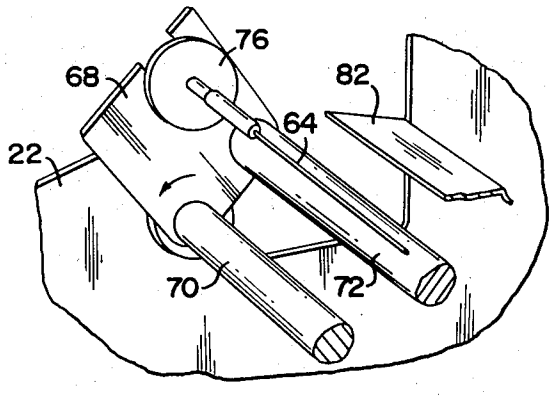


FIG. 4

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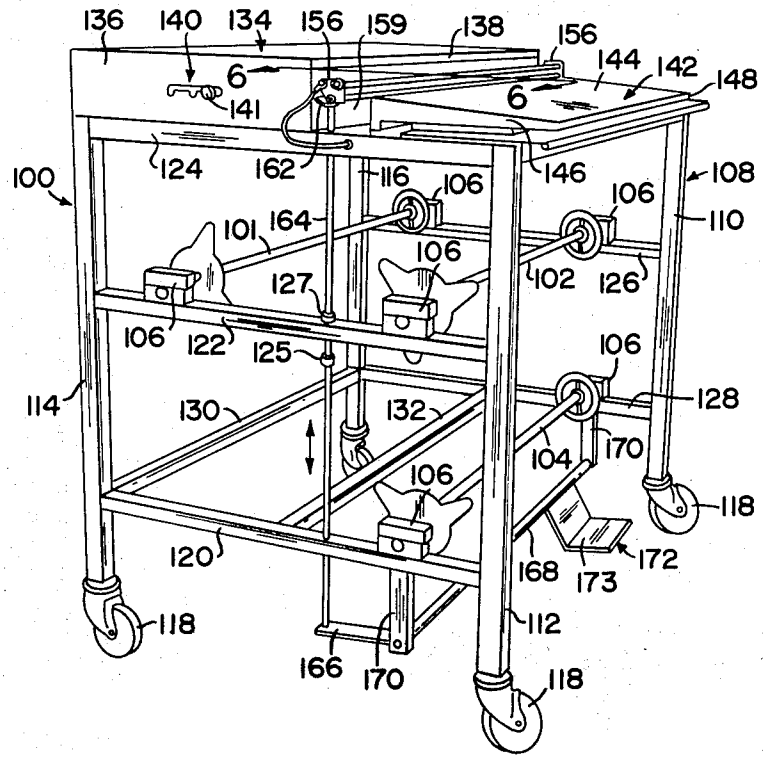
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FIG. 5



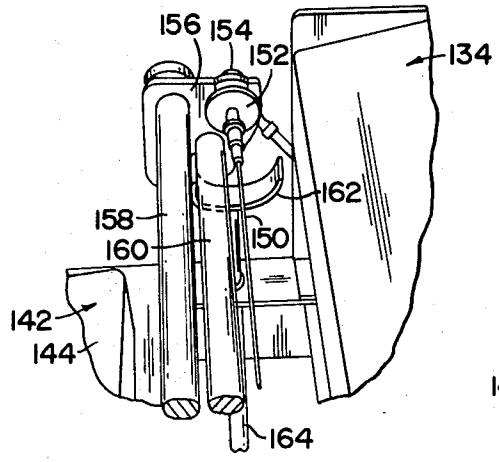


FIG. 6

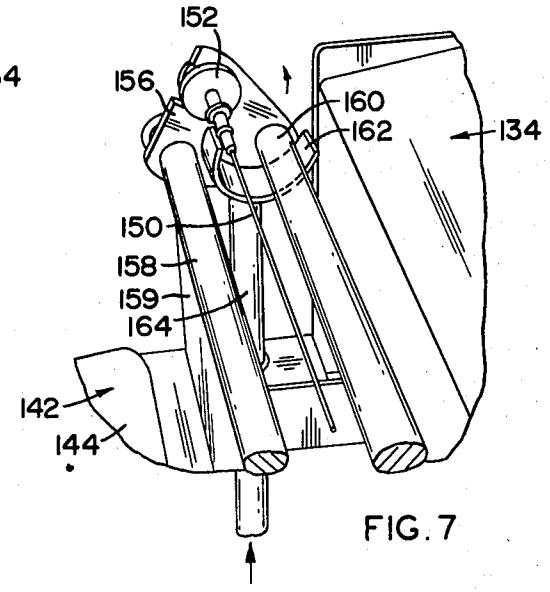


FIG. 7

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WRAPPING MACHINE

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Int. Cl. B65b 67/10
U.S. Cl. 53—390 15 Claims

ABSTRACT OF THE DISCLOSURE

A package wrapping machine having rolls of wrapping material supported on a rotatable shaft held at either end by a framework. A platform for wrapping packages is mounted behind a closely spaced heated sealing plate on the framework. An electrically heated wire is suspended by two rotatably mounted brackets and positioned between the wrapping platform and the sealing plate. In its recessed position, the heated wire is at a lower level than the platform in order to prevent inadvertent contact with the wire. During use, the heated wire is raised to a higher level by an actuator which rotates the brackets holding it. The actuator may be a plate which is motivated by contact with the package as it is moved from the wrapping platform to the heating plate. A manually operated foot pedal may also function as the actuator. A shield is optional to further protect the heated wire in its recessed position.

BACKGROUND OF THE INVENTION

Normally, a package wrapping machine has rolls of wrapping material suspended either above or below a platform. Slightly lower and closely spaced from the platform, on which the packages are wrapped, is a heated sealing plate. An electrically heated wire is positioned between the platform and the sealing plate at about the level of the platform.

The wrapping material, which is usually some type of temperature sensitive thermoplastic film, such as polyethylene and polyvinyl chloride, unrolls to a position near the platform where the package is wrapped. After the package is wrapped, it is transferred from the wrapping platform to the sealing plate. During the transfer, the plastic wrapping material is pressed against the hot wire and severed. The remaining material is then tucked under the package and pressed against the heated plate to seal it.

The temperature control knob and switch are usually located below the hot wire or on the side of the wrapping platform.

Many problems and inconveniences have developed as a direct result of the conventional construction of package wrapping machines. While the heated wire's proximity to the wrapping platform is very convenient, it is also a constant source of burns to the operator. The operator normally stands in front of the sealing plate and reaches across the heated wire when drawing film from the rolls and wrapping packages on the platform. In this position he necessarily has his arms extended over the wire. Inattention or fatigue may cause the operator to lower his arms onto the heated wire. Moreover, the step of transferring the package from the wrapping platform to the heated plate normally requires the operator to retract his

hands slightly above the wire. Even the slightest misjudgment could result in a severe burn.

It is possible for the operator to use an exaggerated movement to avoid the wire during the wrapping process. The operator may also lean over and look around the package to determine that the wrapping material alone is in contact with the heated wire. However, at best such movements are inefficient, awkward and tiring.

The position of the exposed heated wire creates another problem. The wrapped package often contacts the hot wire while it is being removed from the wrapping platform. A burn in the wrapping material on the package naturally destroys the possibility of a hermetic seal. As a consequence, the package must be rewrapped. Moreover, if the burn extends through the wrapping material to the package, or goods therein, everything will probably have to be discarded. This is particularly true in the case of foods which are primarily wrapped with this type of machine.

Striking the heated wire with the package has other detrimental effects. The heated wire, which is relatively thin, soon bends and eventually breaks under such impacts. A bent wire, of course, makes it more difficult to obtain a fast, clean cut of the wrapping material. Only the higher sections of the nonuniform wire will contact and sever the wrapping material.

The exposed heated wire also burns anything that is inadvertently laid on the package wrapping machine while it is not in use.

Additional opportunity for burning the operator's hands occurs because the temperature control, switch and fuse are usually located under the wire between the closely spaced wrapping platform and sealing plate. It is, thus, necessary to reach through a narrow opening partially formed by the heated wire to make any adjustment.

At times the controls are located on the side of the wrapping platform. While this location virtually eliminates the possibility of burning the operator's hands, it has its own problem. The controls are very vulnerable to inadvertent change by bumping from anybody or anything.

This invention has virtually eliminated all of the disadvantages discussed above by providing a retractable heated wire and placing the controls under a pivotably mounted wrapping platform. In its recessed position, the heated wire is located well below the forward edge of the wrapping platform. In this position, there is no serious chance that the operator will inadvertently contact the wire while he is either wrapping a package or transferring it to the sealing plate. During the transfer, the wrapped package cannot contact the recessed heated wire because it simply cannot fit into the small space in which the wire is located. Thus, burnt packages and bent wires are also eliminated.

Once the package and the operator's hands are safely beyond the heated wire, the wire is then raised to a position where it naturally severs the wrapping material. There are numerous actuators for raising the heated wire. An actuating plate in the path of the package during its transfer to the sealing plate as well as a manual foot pedal may act as the actuator.

The controls, namely, the temperature adjustment for the plate, on-off switch and fuse are located under the wrapping platform. The front edge of the platform is

hinged so that the rear edge may be easily raised by the operator from his working position. The controls are thus easily accessible at a position remote from the heated wire and the side of the platform where they can easily be bumped.

DESCRIPTION OF THE INVENTION

This invention relates to a package wrapping machine having a framework with means attached thereto for rotatably supporting rolls of wrapping material. A platform on which the packages are wrapped is connected to the framework. Closely spaced from and slightly below the level of the platform is a heated sealing plate. An electrically heated wire is supported between the platform and the sealing plate. The heated wire is retractable so that it is substantially below the front edge of the wrapping platform. A means for retracting and raising the electrically heated wire permits the efficient and timely cutting of the wrapping material. An optional shield may be used to protect the wire in its retracted position.

FIG. 1 is a perspective view of the package wrapping machine of this invention.

FIG. 2 is a cut away side plan view of the mounting means for the heated wire.

FIG. 3 is a sectional of the heated wire and supporting structure taken through 3—3 of FIG. 1.

FIG. 4 is the device of FIG. 3 in a different position.

FIG. 5 is a perspective view of an alternate embodiment of the wrapping machine.

FIG. 6 is a sectional taken through 6—6 of FIG. 5 and shows a detailed view of the supporting structure for the electrically heated wire.

FIG. 7 shows the device of FIG. 6 in a different position.

As illustrated in FIGS. 1 through 4, the package wrapping machine **10** comprises a framework **12** with side plates **14** and **16** extending upwardly from a base section **18**. The base section **18** includes a bottom surface (not shown) and upwardly turned sides **20** and **22** generally tapering toward the forward end **24**.

Attached to upper edges **26** and **28** of side plates **14** and **16** are rotatably mounted shafts **30** and **32**. The ends of the shafts **30** and **32** are journaled in blocks **34**, **36**, **38** and **40**. Side braces **42** and **44** on the shafts **30** and **32** secure the rolls of wrapping material in position.

Below the shafts **30** and **32** is a mounted roll of wrapping material **46**. The wrapping material is fed under the wrapping platform **48** which is pivotably mounted along its front edge **50** by means of a pin **52**. When the rear of the wrapping platform **48** is rotated upwardly, the temperature control knob **54**, fuse **56** and on-off switch (not illustrated) are exposed for adjustment by the operator.

The temperature control mount **56** regulates the temperature of a heated sealing plate **58** which is located slightly forward of but at a lower level than the wrapping platform **48**. The sealing plate **58** may be coated with Teflon and is generally rectangular in shape having sides **60**, front **62** and a downwardly tapering top **63**.

Between the sealing plate **58** and the wrapping platform **48**, an electrically heated wire is held by two brackets **66** and **68** through disc-shaped insulators **76** at either side of the machine. Electric wires **78** conduct current through the wire **64** thus causing it to heat.

The brackets **66** and **68** are also connected to shafts **70** and **72**. The shaft **70** is pivotably mounted in the sides of the framework at **74**, thus allowing the brackets to rotate.

An actuating plate **80** is welded or otherwise attached to at least the shaft **70** and usually to the shaft **72** to provide a means for pivoting the entire bracketed assembly about the pivot means **74**.

When in its normal rest position as shown in FIG. 3, the heated wire **64** is protected by a shield **82** which has an S-shaped cross section and is attached near the forward edge **50** of the wrapping platform **48**. The shield acts as a

protection against inadvertent contact with the hot wire by either the operator's hand or the package. While the shield adds additional protection, it should be noted that it is not absolutely necessary since the wire in its rest position is actually substantially below the top forward edge **84** of the wrapping platform **48**. It is only necessary that the heated wire **64** is well below the front edge **50** of the wrapping platform **48**. In this way anything that would happen to rest across the opening defined by the wrapping platform **48** and sealing plate **58** would not contact the wire even if the shield **82** were not present.

As illustrated in FIG. 4, when the actuating plate **80** is pressed downwardly, the bracket **68** rotates counterclockwise about the shaft **70**. During this rotation the heated wire **64** rises from its protected position below the shield **82** to a level nearly equal to that of the wrapping platform **48**. In this position it is readily available to sever the plasticized wrapping material which is normally used with the machine.

In operation, the embodiment shown in FIGS. 1 through 4 has the wrapping material **46** pulled through an appropriate opening under the wrapping platform **48** to a position immediately in front of the heated wire **64**. After the package is wrapped on the platform **48**, it is then pulled toward the operator and across the actuating plate **80**. As the actuating plate **80** is pressed downwardly, the heated wire **64** rises and severs the wrapping material. As the package is further pulled toward the operator and onto the heated sealing plate **58**, the actuating plate **80** is released and the wire retracts behind the shield **82**. The wire retracts because the brackets holding it are counterbalanced to rotate about the shaft **70** to its lowest position. A spring or other mechanism may be used to recess the wire.

During the cutting motion, the package has its rearwardly facing edge directly above the hot wire so that there is no flap remaining after the cut is made. Thus, as the wrapped package comes to rest on the heated sealing plate **58**, it can be immediately sealed in a compact package without any further movement by the operator.

As seen in FIGS. 5 through 7, a second embodiment of the wrapping machine **100** has shafts **101**, **102** and **104** rotatably in pairs of blocks **106**. The blocks **106** are supported on a framework **108** which includes vertical supports **110**, **112**, **114** and **116** which are, in turn, mounted on wheels **118**. Cross members **120**, **122**, **124**, **126**, **128**, **130** and **132** plus other members are not shown from the rest of the framework. Above the framework there is a wrapping platform **134** having sides **136** and a front **138**. A film selector **140** is located under the wrapping platform and a selector handle **141** extends out from the side. The film selector **140** allows the operator to select film from any one of the shafts **100**, **102** or **104** without rethreading the machine.

In front of the wrapping platform **134** and at a slightly lower level is the heating plate **142**. The heating plate **142** has a top surface **144** generally tapering downwardly as a convenience for the operator. There are sides **146** and a front **148** to support the top surface **144**. Between the wrapping platform **134** and the sealing plate **142** is an electrically heated wire **150**. Insulators **152** and appropriate holding means **154** such as a screw or bolt secure the electrically heated wire **150** to brackets **156**. The brackets **156** are themselves held by a shaft **158** which is rotatably secured to the framework by a panel **159**. A second shaft **160** is supported between the brackets **156** and engages a concave cradle **162** which is mounted at the upper end of a push rod **164**. The push rod **164** extends downwardly from the cradle through apertures in the cross members **120**, **122** and **124** of the framework. Stops **125** and **127** in the form of rings on the push rod limit its movement by engaging a cross member of the frame. The lower end of the push rod **164** is engaged by a projection **166** from a rotatably mounted shaft **168**. The shaft **168** has its ends secured to

downwardly extending blocks **170** and has a foot pedal **172** extending radially outwardly therefrom. The foot pedal has a V-shaped cross section so that a front section **173** is convenient for the operator.

In the embodiment shown in FIGS. 5 through 7 the wrapping operation is identical. However, in this embodiment the heated wire is raised when the operator places his foot on the pedal **172**, thus, rotating the shaft **168** and the bar **166**. The bar engages the lower end of and raises the push rod **164** and cradle **162**. The extent of the motion of the push rod is governed by stops **125** and **127**. The cradle **162** generally has a concave shape and engages the shaft **160** which is rigidly attached to the bracket **156**. The shaft **160** moves along the cradle **162**, thus, raising the bracket and the heated wire **150** to a position where it is available to sever the wrapping material.

Other devices will be apparent to move the heated wire from its recessed position. For example, spring-biased pins on the ends of the heated wire could fit in slots in the bracket to provide a reciprocal motion. It is also possible to have the heated wire move from behind a shield or to have a retractable shield and a stationary wire.

For ease of description, the principles of the invention have been set forth in connection with but two illustrated embodiments. It is not my intention that the illustrated embodiments nor the terminology employed in describing them be limiting inasmuch as variations in these may be made without departing from the spirit of the invention. Rather I desire to be restricted only by the scope of the appended claims.

I claim:

1. A package wrapping machine comprising:
- a framework;
- means attached to the framework for rotatably supporting a roll of wrapping material;
- a platform connected to the framework on which said packages are wrapped;
- a heated sealing plate mounted on the framework and substantially adjacent to the platform but spaced therefrom;
- an electrically heated wire suspended between the platform and sealing plate;
- means for moving the heated wire to a position where it is accessible to cut the wrapping material and recessing the heated wire to a position where it cannot readily be contacted, said means for moving and recessing including an actuating plate that is operatively connected to the heated wire and that is positioned near the space between the wrapping platform and the sealing plate so that the package may contact the actuating plate while it is being transferred to the sealing plate.

2. The package wrapping machine of claim **1** wherein the means for moving and recessing the electrically heated wire further includes pivotably mounted brackets which are operatively attached to the framework.

3. The package wrapping machine of claim **1** which further includes controls for the wrapping machine beneath the platform which is pivotably connected along one of its edges.

4. The package wrapping machine of claim **2** wherein said actuating plate is operatively connected to and extends radially outwardly from the brackets.

5. The package wrapping machine of claim **2** which further includes a shield which protects the heated wire in its recessed position.

6. A package wrapping machine comprising:
- a framework;
- means attached to the framework for rotatably supporting a roll of wrapping material;
- a platform connected to the framework on which said packages are wrapped;
- a heated sealing plate mounted on the framework and substantially adjacent to the platform;
- an electrically heated wire suspended between the platform and sealing plate;
- means for moving the heated wire to a position where it is accessible to cut the wrapping material and recessing the heated wire to a position where it cannot readily be contacted;
- the means for moving and recessing including pivotably mounted brackets which are operatively attached to the framework, a push rod with an upwardly facing concave cradle on its upper end which engages a rod attached to at least one of the brackets in order to pivot the brackets; and
- means for actuating the push rod.

7. The package wrapping machine of claim **6** wherein the push rod is actuated by a pivotably mounted foot pedal.

8. The package wrapping machine of claim **7** wherein the foot pedal is attached to a pivotably mounted shaft operatively attached to the framework, said shaft having a radially extending member extending therefrom which abuts against and motivates the push rod when the foot pedal is depressed.

9. The package wrapping machine of claim **8** wherein the push rod extends through framework members along one side of said framework and is supported by said framework.

10. The package wrapping machine of claim **9** wherein means are mounted on said push rod for regulating the reciprocating movement thereof.

11. The package wrapping machine of claim **10** wherein said means for regulating the movement of the push rods includes radially extending projections on the push rod which engage members of the framework.

12. The package wrapping machine of claim **11** wherein the temperature controls for the electrically heated wire are located beneath the platform which is pivotably mounted.

13. A package wrapping machine comprising:
- a framework;
- shafts supported on the framework for rotatably supporting rolls of thermoplastic wrapping material;
- a platform connected to the framework on which the packages are wrapped;
- a heated sealing plate mounted on the framework adjacent to and in front of the platform;
- an electrically heated wire suspended between the platform and sealing plate;
- brackets supporting the heated wire;
- a shield mounted between the platform and the sealing plate to protect the heated wire;
- means for moving the heated wire relative to the shield to expose and recess the heated wire, including
- an actuating plate operatively connected to the heated wire to permit the movement thereof so that movement of a package to the sealing plate from the wrapping platform engages the actuating plate and moves the heated wire to a position where it is accessible to cut the wrapping material.

14. The package wrapping machine of claim **13** wherein the heated wire is held by pivotably mounted brackets, the platform is pivoted at one end and controls are located beneath the platform.

15. A package wrapping machine comprising:
- a framework;
- a first shaft attached to the framework for rotatably supporting thermoplastic material;
- a platform connected to the framework above the shaft for wrapping packages;
- a heated sealing plate mounted on the framework and substantially adjacent to the platform;
- an electrically heated wire suspended between two brackets between the wrapping platform and the sealing plate;
- a second shaft connected to the framework and rotatably supporting the brackets;

a third shaft suspended between the two brackets;

a push rod extending through the horizontal portions of the framework and having a generally concave cradle at one end;

the cradle so positioned to engage the third shaft;

a foot pedal operatively connected to the push rod so that depression of the foot pedal causes the cradle on the push rod to engage the third shaft, rotate the brackets and raise the heated wire.

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