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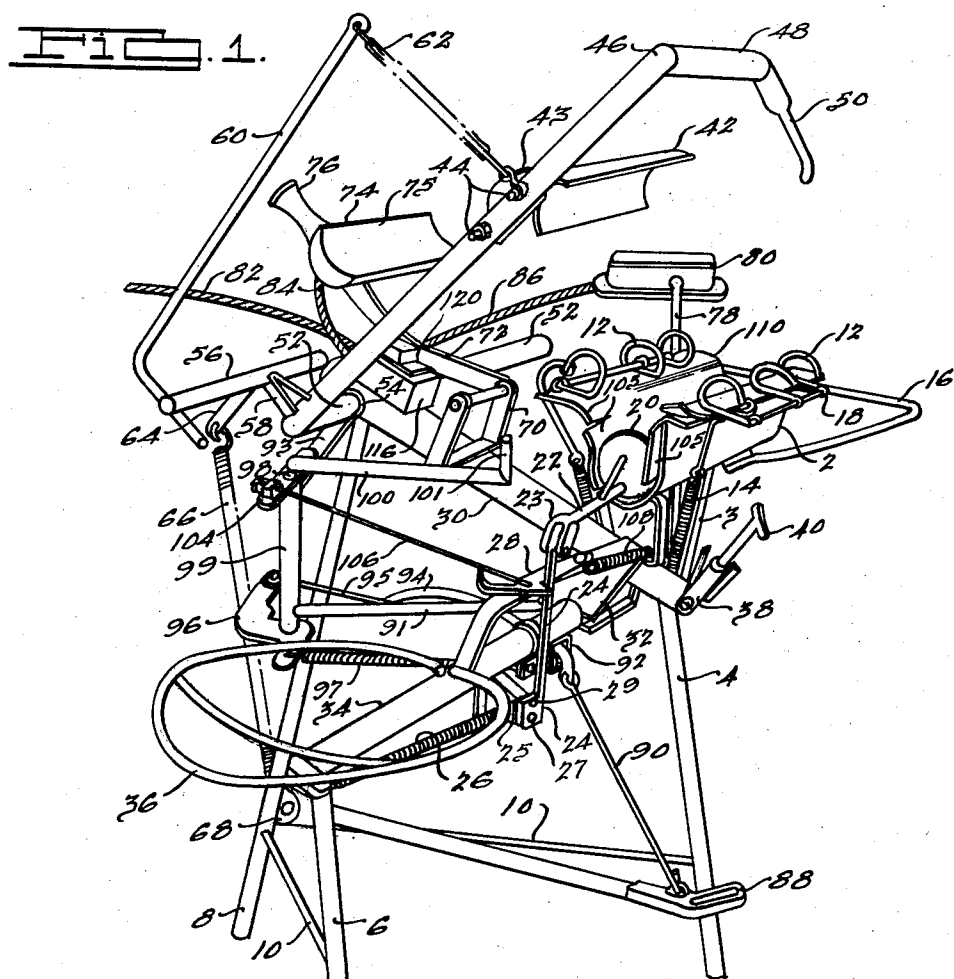
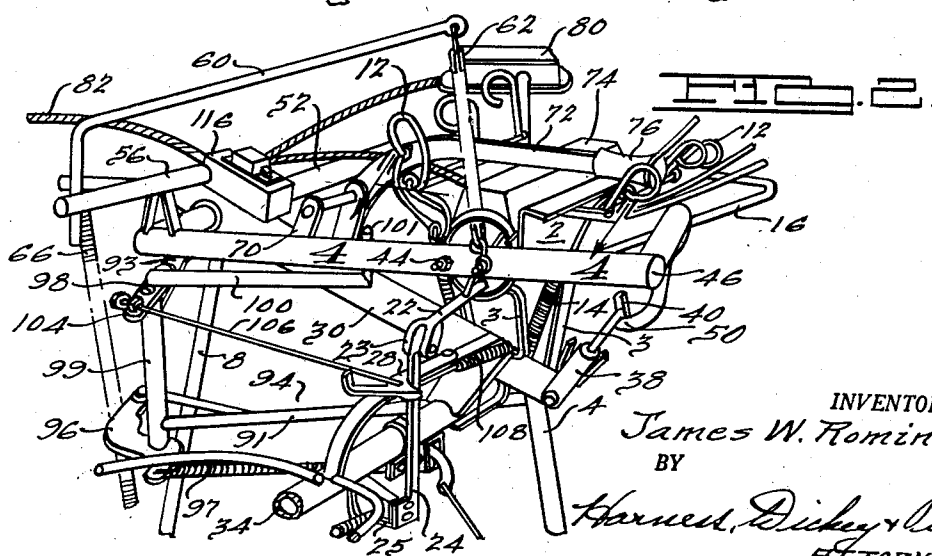
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2,907,157

METHOD OF AND APPARATUS FOR WRAPPING PACKAGES

Filed Dec. 16, 1955

2 Sheets-Sheet 1



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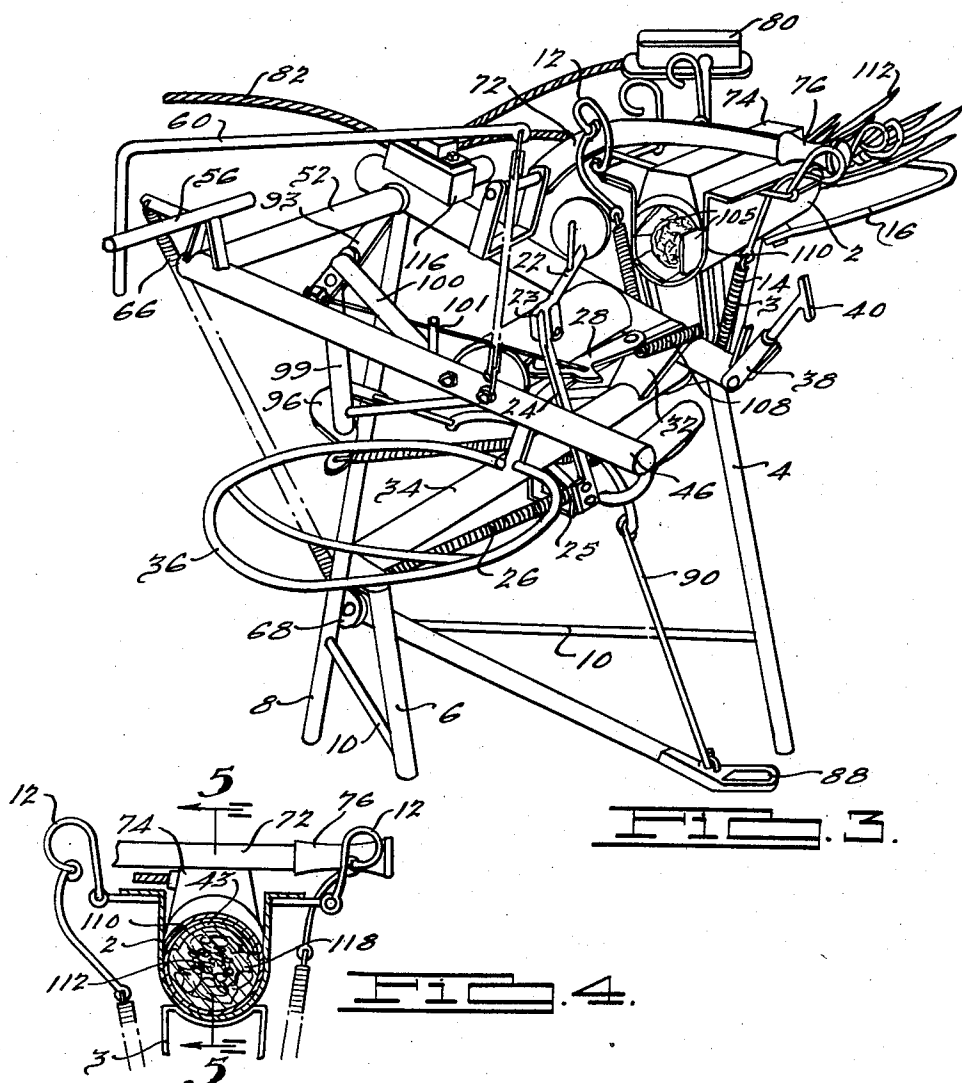
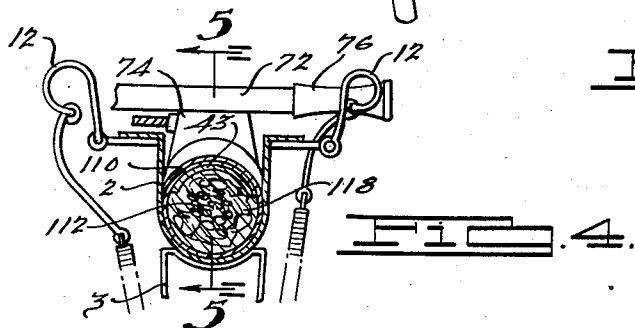
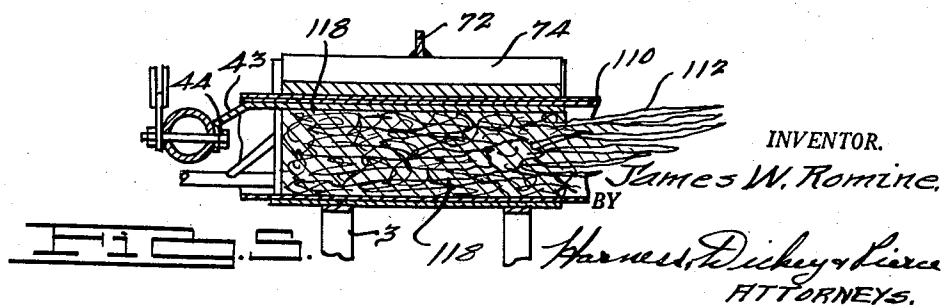
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METHOD OF AND APPARATUS FOR WRAPPING PACKAGES

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2 Sheets-Sheet 2



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2,907,157

METHOD OF AND APPARATUS FOR WRAPPING PACKAGES

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Application December 16, 1955, Serial No. 553,610

11 Claims. (Cl. 53—124)

This invention relates to an improved apparatus for wrapping and sealing articles and particularly to an apparatus for wrapping and sealing the roots of rose bushes, shrubs and other articles.

The marketing of shrubbery such as rose bushes, barberry bushes and the like is facilitated and the hazard of loss is substantially reduced when the roots are wrapped with a moisture holding preservative material such as a peat moss and sawdust mixture in heat sealable paper formed into a bag. Because of the length of the roots of rose bushes, for example, they required folding and personal handling and packing which increased the time, labor and cost.

One object of the present invention is to provide improved apparatus for packing and wrapping the roots of shrubs and bushes.

Another object is to provide improved apparatus for packing and wrapping the roots of growing plants in a cylindrical package made from a sheet of heat sealable material secured along the lapped side and bottom.

A further object is to provide a U-shaped tray having releasable fingers for holding a heat sealable sheet in which the packing material and roots are placed and confined by a plate closing one end and by a semi-cylindrical shoe which compacts the material and roots into a cylindrical shape.

A still further object of the invention is to provide a heated shoe to seal the edges of the heat sealable material which are lapped over each other and the compacting shoe after which the end plate is retracted and the material folded over the bottom and heat sealed.

The invention will be described in greater detail in connection with the accompanying drawings of which:

Figure 1 is a perspective view of a packing machine embodying features of the present invention when in a position to receive the roots of a shrub;

Fig. 2 is a broken perspective view of the machine shown in Fig. 1 when in position to heat seal the material to form a closure;

Fig. 3 is a perspective view of the machine shown in Fig. 1 with the compacting shoe and end plate withdrawn from the sealed closure;

Fig. 4 is a sectional view of the structure illustrated in Fig. 2 taken on the line 4—4 thereof; and

Fig. 5 is a sectional view of the structure illustrated in Fig. 4 taken along the lines 5—5 thereof.

Apparatus according to the preferred embodiment of the instant invention as shown in the figures includes a work-holding tray 2 rigidly supported upon a tripod by any convenient means such as the bracket 3. The tripod comprises the three legs 4, 6 and 8 firmly fastened together in spaced relationship at their upper ends by the transverse rod 30 and the longitudinal rod 34. A pair of bracing rods 10 between the legs 8 and 6 and 8 and 4 further improve the rigidity of the apparatus. The tray is of semicylindrical shape having folded-over edges and open ends so that an article such as the roots of a

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shrub 112 may be placed within the cavity of the tray and surrounded with moist preservative material 118 such as a peat moss and sawdust mixture. Toggle clamps 12 are provided along the folded-over edges of the tray releasably to hold a sheet of wrapping material 110 such as plastic coated paper within the tray. The toggle clips are biased by a spring 14 so as to be retained in either an open or closed position. An end plate 20 is adjustably connected through a yoke 23 to an arm 24 which is pivoted on a bracket 25 attached to the longitudinal bar 34 by a pin 27. The arm 24 is biased as by the spring 26 engaging a pin 29 to urge the end plate 20 away from the tray. A pivoted latch 28 extends from the transverse bar 30 to engage and restrain the pivoted arm 24 against the pressure of the spring 26 to thereby retain the end plate in position in the end of the tray. The latch 28 is urged as by a spring 108 into engagement with the arm 24.

The end of the transverse rod 30 remote from the tray and approximately directly over the upper end of the leg 8 supports a bushing 54 in which is mounted a longitudinally slidable and rotatable shaft 52. An arm 46 is mounted at right angles to the shaft 52 having at its outer end a handle 48 from which depends a catch 50. A semi-cylindrical shoe 42 is rigidly attached to the arm 46 by an extension 43 and screws 44. When the arm 46 is swung downwardly, the shoe 42 enters the tray and compacts the material therein. A latch 40 supported by a pivoted bracket 38 engages the catch 50 when the arm 46 is in its lowermost position with the shoe compacting the material within the tray. An upstanding U-shaped bracket 70 mounted on the transverse rod 30 supports the shaft of an arm 72 upon which is mounted a heating pad 74 having an arcuate face 75. The heating pad may be heated by any convenient means such as a thermostatically controlled electrical heating element (not shown) enclosed within the pad. The arm 72 may be swung forward by grasping the handle 76 thereof to bring the heating pad into close fitting relationship with the shoe 42 when in depressed lateral position.

A foot pedal 88 is provided for releasing the shoe 42 and the end plate 20 from engagement with a partially wrapped package held within the tray 2. A rod 90 is connected to the foot pedal 88 and to an arcuate horizontally movable rod 94, the forward portion of which is supported by a roller 92. A link 95 connects the rod 94 to a crank arm 96, the opposite end of which has a spring 97 attached thereto. The pedal 88 is hinged upon a bracket 68 attached to the rear leg 8 of the tripod and when depressed rotates the crank 96 in a clockwise direction. The crank 96 is rigidly attached to a rod 98 located within a bushing 99 secured to the tripod by a rod 91 and a bar 93. An arm 100 is attached to the protruding end of the rod 98 to swing therewith when the crank 96 is rotated. The arm 100 has an upstanding end 101 in position to engage the arm 46 when the arm 46 is in its lowered position. When the pedal 88 is depressed the crank 96 turns the rod 98 thereby swinging the arm 100 and causing the end 101 to bear against the arm 46 and move it to the left. This moves the shaft 52 and the shoe 42 to the left releasing the latch 40 from the catch 50 and withdraws the shoe from the package within the tray. A lever arm 104 is attached to the rod 98 and connected by a rod 106 to the latch 28 to release the arm 24 and the end plate 20. The arm 46 is spring biased toward its elevated, nonoperative position by a spring 66 attached between the bracket 68 on the leg 8 and an arm 64 on a bar 56 secured to the arm 46. The arm 46 may be reinforced as shown by a bracket and chain assembly 60 and 62.

An auxiliary hot plate 80 is attached by a bracket 78 at any convenient point, preferably relatively close to the tray 2. The heating pad 74 and the hot plate 80 may be heated by electrical resistance elements thermostatically controlled through a set of relays that may be contained in a relay box 116 shown mounted upon the transverse shaft 30. The relays are electrically connected to the heating elements by the cables 84 and 86. An On-Off control switch 120 may also be conveniently mounted in the relay box, and electrical energy may be supplied from any convenient source by means of the cable 82.

At the beginning of a wrapping operation, the machine is in the position shown in Fig. 1 except that the toggle clamps 12 are folded back to their open position. A sheet of wrapping material 110 such as paper coated with a heat sealing plastic is placed in the tray and the toggle clamps are closed over the edges thereof. If desired, the paper may be precut at one end to provide flaps 105 to facilitate forming the bottom of the package. A shrub 112 such as a rose bush has its roots placed in the tray with the main body of the bush including the branches and the leaves resting upon the U-shaped supporting bar 16. The plate 20 is then moved into the end of the tray 2 and retained therein by the latch 28. Preserving material 118 such as peat moss and sawdust is then wrapped around the roots of the bush and the swing arm 46 is depressed by grasping the handle 48 and exerting a downward force to bring the shoe 42 into contact with the roots and moss to form a cylindrical compacted mass. The catch 50 snaps over and is locked by the latch 40 so that the shoe remains in position after pressure is removed from the handle. The toggle clamps 12 are now swung back to their open position and the edges of the sheet wrapping material 110 are folded over the shoe 42 in overlapping relation. The handle 76 is swung forward and the heating pad 74 is moved down over the lapped edges of the paper thus pressing them between the pad and the shoe 42 (see Figs. 2, 4 and 5). Since the heating pad is shaped to conform generally to the shape of the shoe, it provides uniform heat and pressure over the lapped edges of the paper and thereby seals them together in tube form.

As soon as the sealing is accomplished, the operator depresses the pedal 88 to swing the push bar 190 to slide the swing arm 46 away from the tray to draw the shoe 42 out from the sealed paper tube and releases the latch hook 28 from the arm 24 and the end plate 20 from its position at the end of the tray 2. At this stage of the operation the machine appears as shown in Fig. 3 with the shoe 42 and end plate 20 withdrawn from the tray. As soon as the shoe is withdrawn from beneath the heating pad it is immediately swung upwardly into its initial position. The shaft 52 is manually slid to the right in the bushing 54 into alignment with the tray. After the heating pad is swung to its inoperative position, the flaps 105 at the end of the paper tube are folded over and moved into engagement with the auxiliary hot plate 80 to seal the bottom. Next, another piece of wrapping material is placed in the tray, the toggle clamps are snapped over to hold the paper in position, the end plate is pushed back into its position in the tray where it is held by the hook and the machine is ready to wrap another bush.

A loose connection is preferably provided between the arm 104 and rod 106 so that the latch 28 does not release the arm 24 until after the shoe 42 is withdrawn from the package. In this way the end plate 20 remains in position to restrain the package against longitudinal movement along the tray that might otherwise result from the drag of the shoe upon material within the package. A supporting rack 36 may also be included as part of the apparatus to hold a stack of precut sheets of wrapping material for the convenience of the operator.

It will be appreciated, of course, that the particular

shape of the tray and of the package chamber formed by the tray and the shoe is not critical in the practice of the instant invention. If it is desired to form a square or cuboidal package, the tray may be made rectangular in shape and the shoe and the heating pad may be made flat instead of curved as shown. Further, it will be appreciated that the apparatus according to the invention may be readily adapted to wrapping generally cylindrical or rectangular packages closed at both ends.

What is claimed is:

1. Apparatus for wrapping and sealing open-end packages comprising a shaped tray, means for releasably holding a sheet of wrapped material in said tray, a thin shoe shaped to conform to the shape of said packages, said shoe being mounted upon a swingable arm so that it may be swung into chamber-forming relationship with said tray, said arm being mounted upon a rotatable, slidably mounted shaft, bias means cooperative with said arm to urge said shoe away from said tray, releasable means to retain said shoe in said chamber-forming relationship with said tray, heating and pressure means cooperative with said shoe to press and to heat the overlapped wrapping material engaging the surface of said shoe when said shoe is in said close fitting relationship with said tray, means to slide said shaft to move said shoe with respect to said tray and to release said retaining means, a swingable end plate cooperative with said tray to restrain the material to be packed within said tray, said end plate being biased away from said tray, and releasable means to restrain said end plate against said bias.

2. Apparatus for wrapping and sealing packages comprising a shaped tray adapted to releasably hold a sheet of wrapping material therein, said tray forming a semi-cylindrical cavity with open ends, a shaped shoe member rigidly mounted upon an arm and adapted to form in cooperation with said tray an open ended cylindrical chamber, said arm being mounted upon a rotatable, slidable shaft so that said shoe member may be swung into close fitting engagement with said tray and may also be moved in a direction perpendicular to the direction in which it is swung, a movable end plate adapted when in its operative position to close one end of said chamber, and heating and pressing means adapted to cooperate with said shoe member to heat and to press sheet material disposed upon said shoe member.

3. Wrapping and sealing apparatus comprising a shaped tray defining an open cavity for receiving a sheet of paperlike material capable of being sealed, a movable shaped shoe member adapted to cooperate with said tray to form an open-ended chamber and to compact a material placed therein which is enclosed in said sheet of material when the ends thereof are overlapped on said shoe member, means for mounting said shoe member for swinging movement toward and away from said tray and for longitudinal movement relative to said tray after the ends of the paper-like material have been overlapped thereon, and sealing means cooperative with said shoe member and adapted to seal together the overlapped ends of the sheet of material disposed upon said shoe member to form a tube encompassing the material to be wrapped whereby said shoe member can be moved longitudinally relative to said tray after the overlapped ends of the paper-like material have been sealed to withdraw the shoe member from its position between the paperlike material and the compacted material.

4. Wrapping and sealing apparatus comprising a shaped tray defining an open cavity, a movable shaped shoe member adapted to cooperate with said tray to form an open-ended chamber and to compact a material placed therein, an end plate cooperative with said tray selectively to close one end thereof, and sealing means cooperative with said shoe member and adapted to seal together layers of a sheet wrapping material disposed upon said shoe member.

5. Wrapping and sealing apparatus comprising a shaped tray defining an open cavity, a movable shaped shoe member adapted to cooperate with said tray to form an open-ended chamber and to compact a material placed therein, an end plate cooperative with said tray selectively to close one end thereof, a shaped heating pad conforming to and cooperative with said shoe member to seal together layers of a heat-sealable sheet wrapping material disposed upon said shoe member, and heating means to heat seal layers of said wrapping material overlapped upon the end of said compacted material.

6. Apparatus for wrapping and sealing a package about material to be packed, comprising a tray having a bottom and sides, means for releasably holding a sheet of wrapping material within the tray, a closure shoe for the top of the tray and over which the ends of the sheet are lapped, plate means to close one end of the tray and a heat sealable member movable onto said lapped ends of the sheet on top of said shoe, said shoe being withdrawable from within the sealed sheet while said plate means closes said one end, and means to heat seal overlapping portions of said sheet folded over the end of said package.

7. Apparatus for wrapping a package embodying a tray the shape of said package and having a bottom and sides, a shoe disposable between the sides of the tray for compacting the material therein after heat sealable wrapping material has been placed within the tray with the ends extending from the sides and one end thereof, a heating element engageable with the ends of the wrapping material overlapped over the shoe for closing the sides of the package, and means for heat sealing the folded over extending ends of the wrapping material to complete the package.

8. Apparatus for wrapping and sealing a package including, in combination, a semicylindrical tray having lateral flanges at the open side thereof, toggle elements for securing the ends of a sheet of wrapping material within the tray, a shoe for entering the open side of the tray and compacting material therein to be packaged, an end plate insertable in one end of the tray within the sheet material against which the material to be packed is compacted, a heat sealing element engaging the lapped edges of the sealing material when extending over said shoe for forming a substantially cylindrical package after which the shoe and plate are withdrawn from the package, and means for heat sealing the folded over ends of the cylindrical package.

9. Wrapping and sealing apparatus for wrapping and sealing the root portions of living shrubs and bushes, said apparatus comprising, in combination, a supporting base, a tray mounted on said base and shaped to receive at

least the root portions of one of said shrubs or bushes, releasable clamping means releasably to hold a sheet of wrapping material within said tray, a shoe mounted upon an arm and adapted to cover an article held in said tray, said shoe and said tray together forming an open-ended chamber when said shoe is in its operative position, said arm being angularly mounted at its end upon a rotatable, slidable shaft, said shaft being slidably mounted in a bushing upon said base, said shoe being rigidly affixed to said arm in a position such that said arm may be moved to bring said shoe into close-fitting relationship with said tray to form said chamber, a retractable end plate swingably mounted upon said base and adapted to swing into an operative position wherein it closes one end of said chamber, a shaped heating pad conforming generally to the shape of said shoe and swingably mounted upon said base, said heating pad being swingable into close-fitting relationship with said shoe when said shoe is in its operative position, means to heat said heating pad and to maintain it at a predetermined, elevated temperature, and pedal actuated means to retract said end plate from its operative position and to slide said shaft in said bushing to withdraw said shoe from its operative position.

10. Wrapping and sealing apparatus comprising an upwardly presenting U-shaped tray defining an open cavity for receiving a sheet of paper-like material capable of being sealed, a movable downwardly presenting U-shaped shoe member adapted to fit between the legs of said upwardly presenting U-shaped tray to compact material within said tray with which it forms a chamber open at both ends, the ends of the paper-like material being adapted to be overlapped on said shoe member, and sealing means cooperative with said shoe member and adapted to seal together said overlapped ends of the paper-like material disposed upon said shoe member to form a tube completely enclosing said compacted material.

11. The invention as defined in claim 10 wherein said sealing means comprises a shaped heating pad conforming to and cooperative with said shoe member to seal together the ends of the sheet of paper-like material overlapped upon said shoe member to form a tube encompassing the compacted material to be wrapped.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 2,907,157

October 6, 1959

James Wilbur Romine

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 4, line 13, for "wrapped" read -- wrapping --.

Signed and sealed this 22nd day of March 1960.

(SEAL)

Attest:

KARL H. AXLINE

Attesting Officer

ROBERT C. WATSON
Commissioner of Patents