United States Patent [19]

Becker

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[45] **June 26, 1973**

[54] **RETRACTABLE OVERHEAD CRIMPER**

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[52] **U.S. Cl.** **53/380**

[51] **Int. Cl.** **B65b 7/14**

[58] **Field of Search** 53/380

[56] **References Cited**

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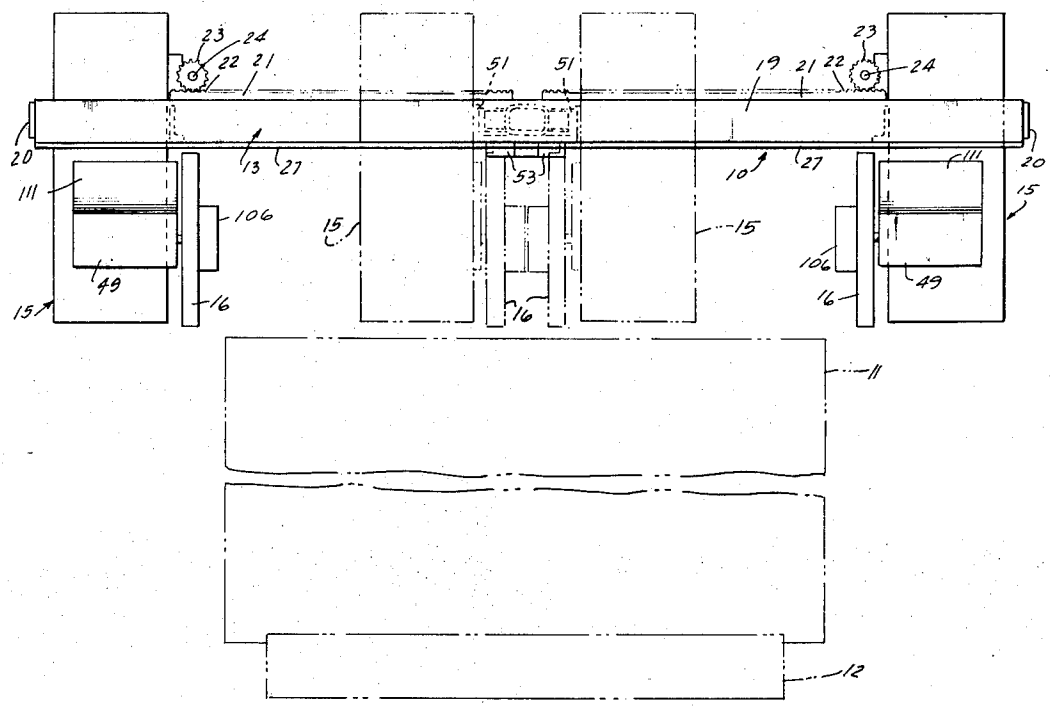
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[57] **ABSTRACT**

Apparatus for folding down and tucking in the ends of a wrapper extending beyond the ends of a roll of paper, by the use of rotatably driven crimper paddles. The roll is supported on two parallel spaced rolls rotatably driven to rotate the roll during crimping in a direction opposite to the direction of rotation of the crimping paddles. A cross beam is supported above the roll in a cross machine direction and has a separate crimper carriage for each end of the roll mounted to ride along the cross beam. The crimper carriages each have a telescopic arm carrying the crimper paddles at their lower ends, which can be retracted within the carriage to clear the maximum diameter of roll that can be wrapped, and to sit in the center of the machine when not in use. The crimper arms are lowered by power when at the center of the machine to within an inch of the roll. Lowering movement of the crimper carriages then stops. The crimper carriages are then moved outwardly beyond the ends of the roll and lowered with the crimper paddles positioned into crimping positions along the ends of the roll. The drive to the crimper paddles is then started and the roll is rotatably driven by its support rolls for little more than one revolution of the roll to completely tuck in the projecting end portions of the wrapper.

17 Claims, 5 Drawing Figures



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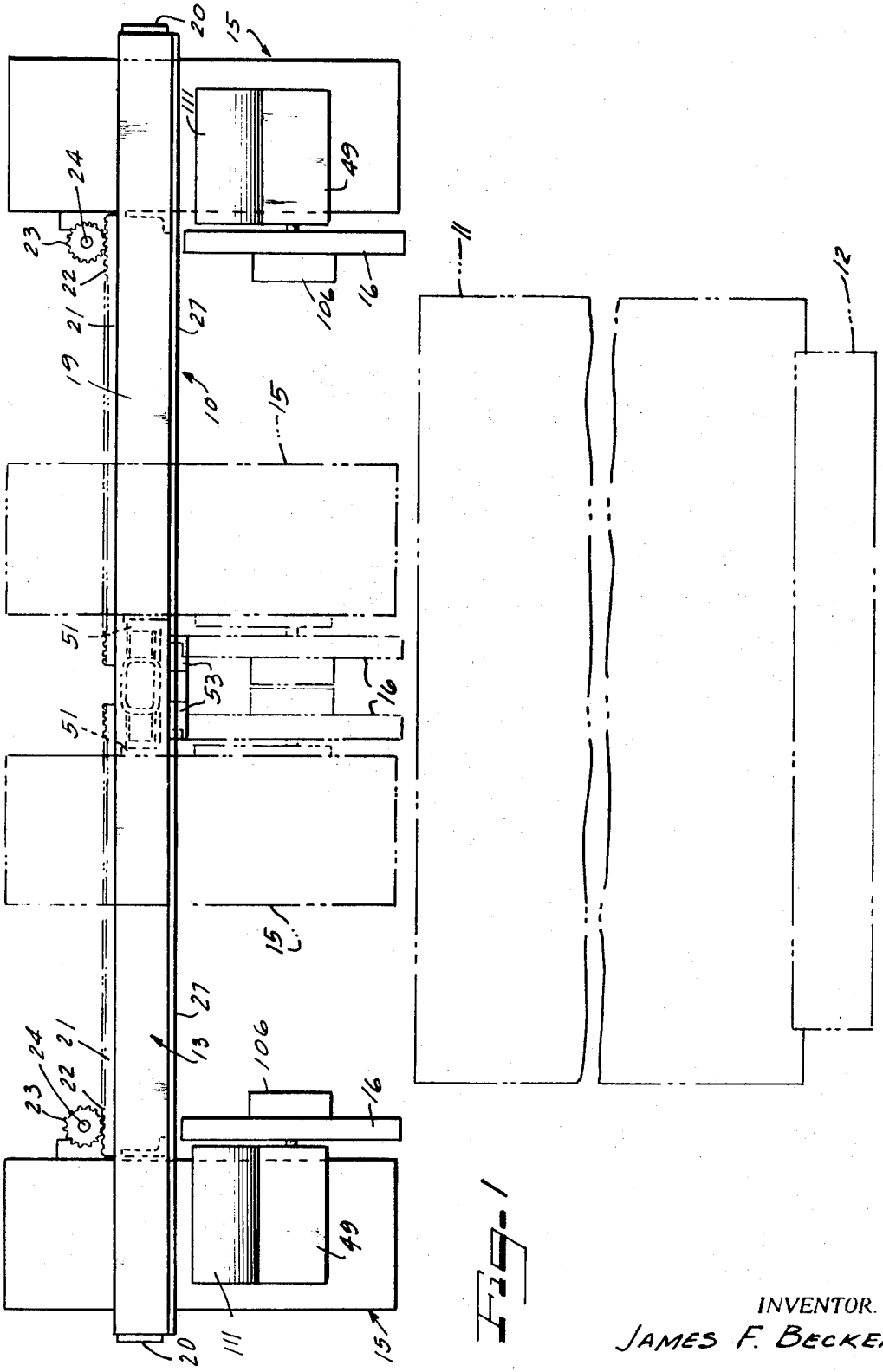
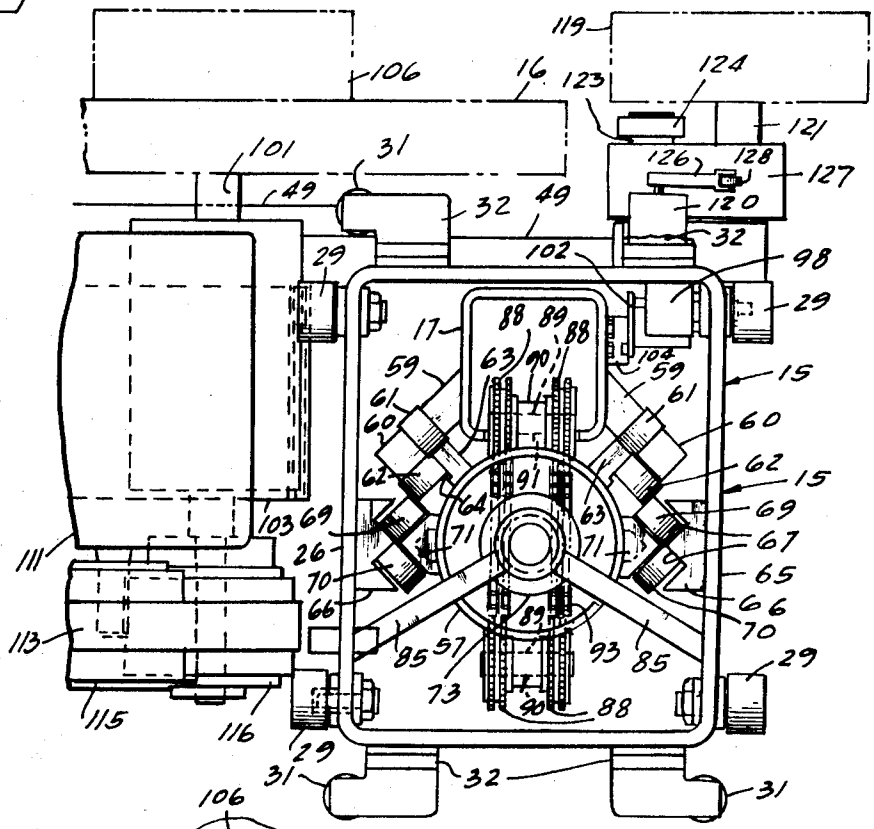


Fig. 1

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Fig. 5



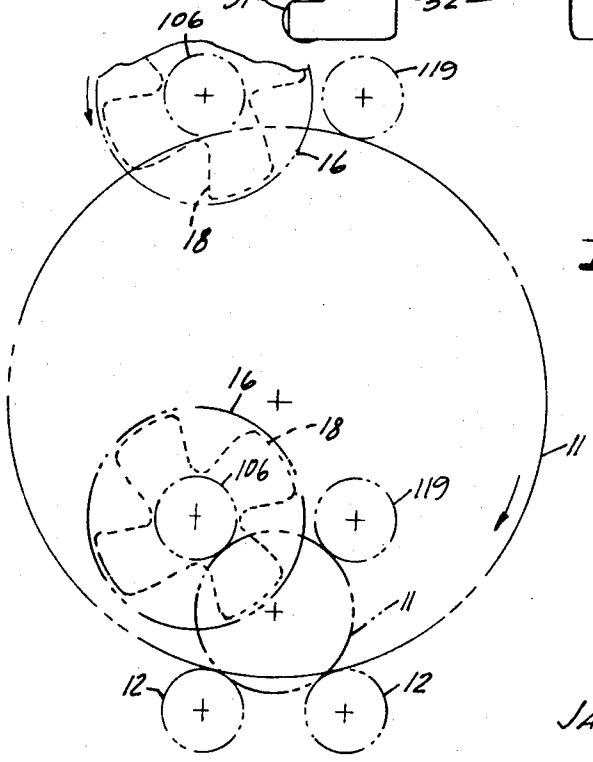
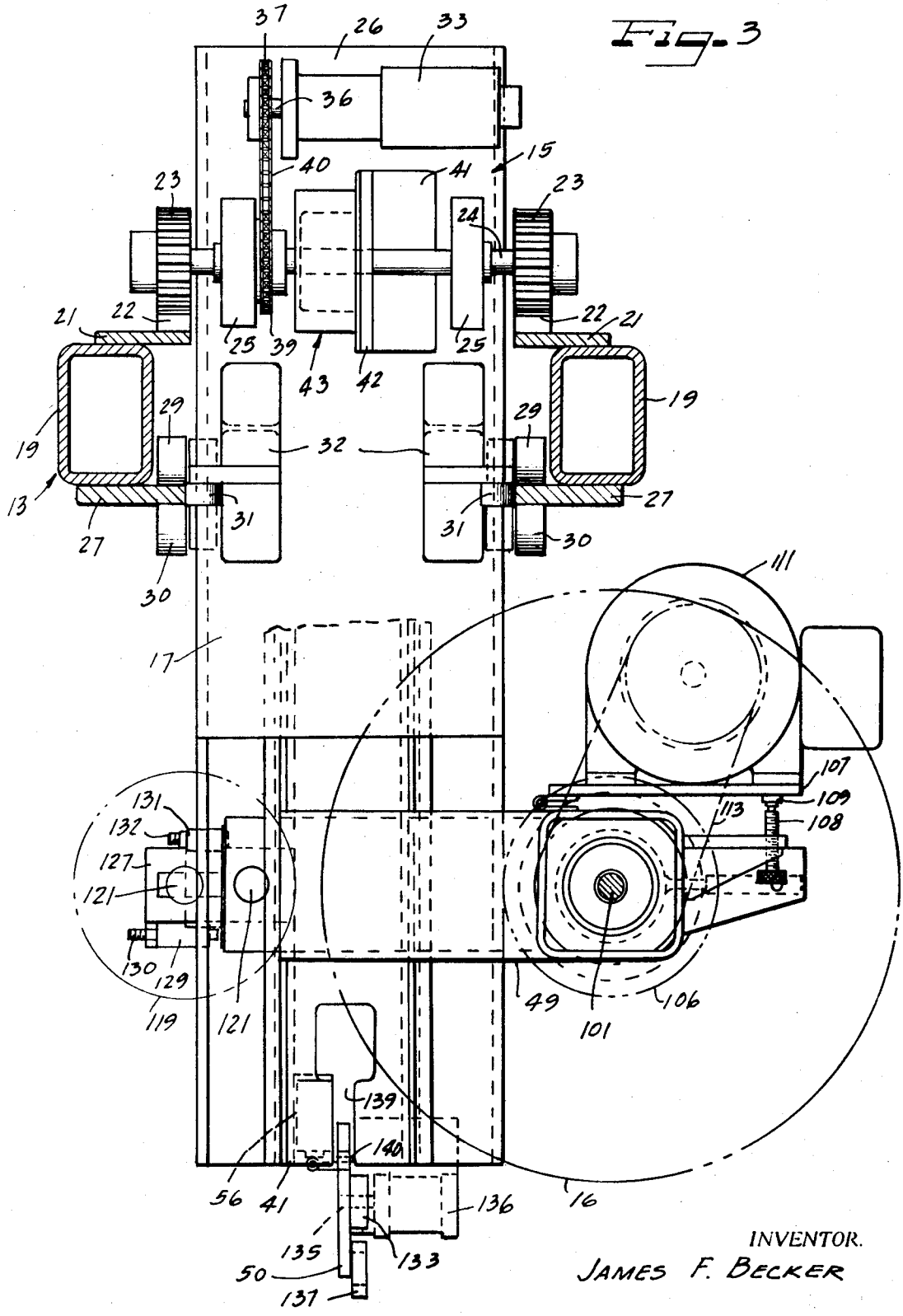


Fig. 2

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Fig. 3



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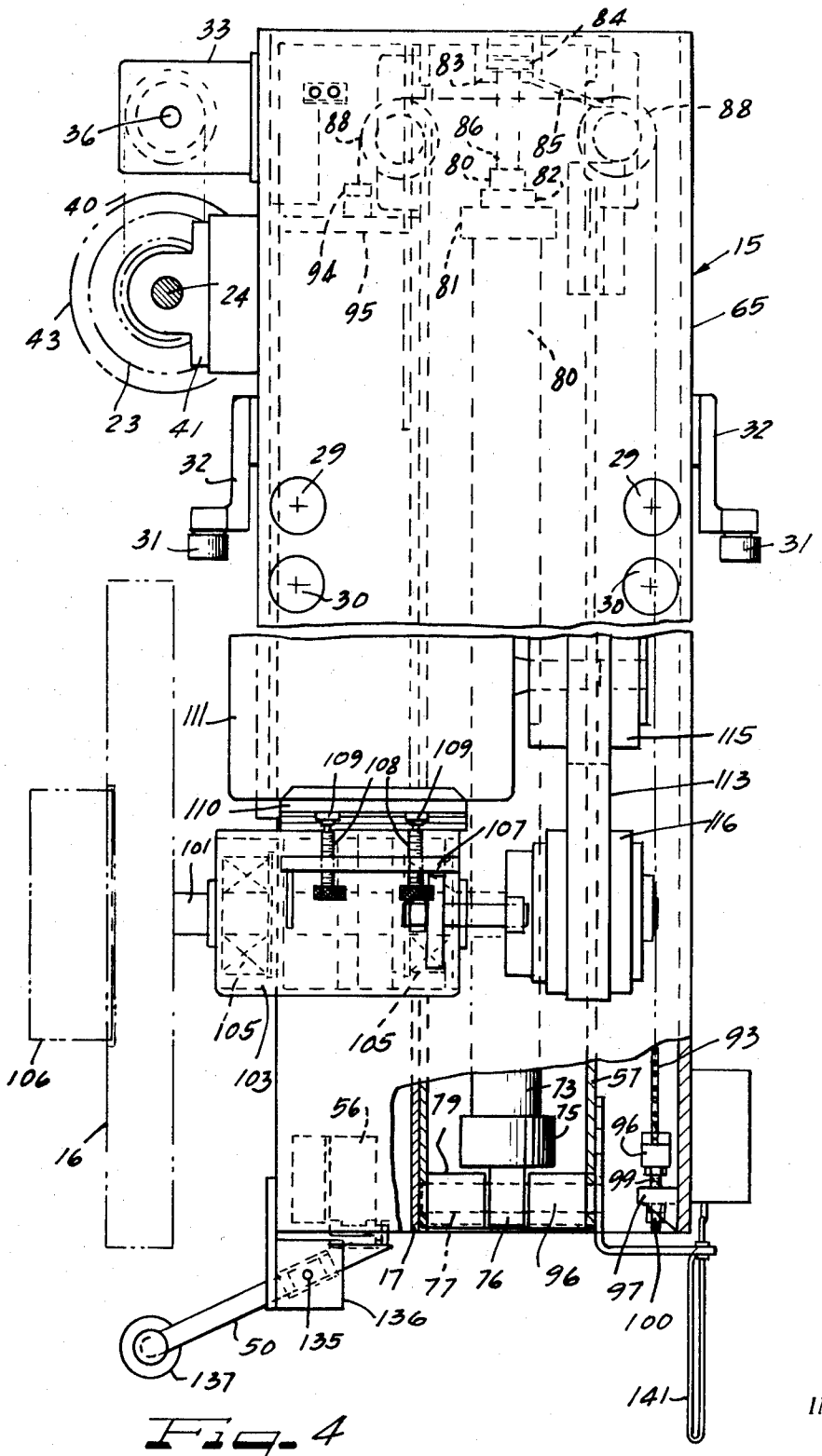


Fig. 4

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RETRACTABLE OVERHEAD CRIMPER

FIELD OF THE INVENTION

Crimper for folding down and tucking in the end portions of a wrapper extending beyond the ends of a wrapped roll of paper.

BACKGROUND, SUMMARY AND OBJECTS OF THE INVENTION

Heretofore, crimpers have been in use, which fold down and tuck in opposite end portions of a wrapper extending about a roll of paper and extending beyond the ends of the roll, by the use of rotating crimper paddles. These crimper paddles are mounted on the ends of vertically swingable arms, carried by frame structures extending substantial distances beyond opposite ends of the roll stand, as in U.S. Pat. No. 3,290,861, dated Dec. 13, 1966 and U.S. Pat. No. 3,411,269, dated Nov. 19, 1968. The framework for supporting the swingable arms and crimper paddles requires substantial operating space at each end of the roll, and unduly blocks the floor at opposite ends of the roll and is not readily susceptible to changes in roll diameters.

The crimper of the present invention improves upon the foregoing prior art crimpers in that the arms that support the crimper paddles on the crimping carriages are telescopically mounted relative to the carriages and can be retracted to clear the maximum diameter of roll and to sit above the roll in the center of the machine when not in use and to thereby provide a clear operating area around the wrapper drums with no troublesome obstacles.

The advantages of the present invention besides clearing the operating area around the wrapper drums from troublesome obstacles, are that wrappers on rolls of various diameters and axial lengths may readily be tucked along the ends of rolls with a minimum of attention from the operator of the machine and with no delays as the roll lengths and diameters may vary.

An object of the present invention, therefore, is to provide a novel and improved form of crimper for tucking in and folding the projecting ends of a wrapper along the ends of the roll, arranged to require little, if any, floor area around the support and drive drums for the roll of paper when not in use and constructed with a view toward utmost efficiency in crimping and simplicity in construction and operation and adaptation to varying diameters and widths of rolls.

Another object of the invention is to improve upon the crimpers heretofore in use, by supporting the crimper paddles above the wrapped roll to be crimped, and then lowering the paddles into position for crimping.

Still another object of the invention is to provide a simple and improved form of crimper in which crimper carriages are supported above the roll and crimper arms are telescopically mounted relative to the carriages and lowered along the ends of the roll, having means limiting downward movement of the crimper arms and crimper paddles into position effective to initiate the crimping of the wrapper along the ends of the roll and to hold the roll down against the forces impressed on the wrapper and roll by the crimping paddles.

Other objects, features and advantages of the invention will be readily apparent from the following description of a preferred embodiment thereof, taken in conjunction with the accompanying drawings, although variations and modifications may be effected without departing from the spirit and scope of the novel concepts of the disclosure.

DESCRIPTION OF THE DRAWINGS

FIG. **1** is a diagrammatic view in side elevation of a crimper constructed in accordance with the principles of the present invention and supported in a cross machine direction above a wrapped roll of paper.

FIG. **2** is a diagrammatic end view of a portion of the crimper illustrated in FIG. **1**, illustrating the range of rolls that can be crimped, and showing the press wheels of the crimper in engagement with the periphery of a minimum diameter roll and holding the roll to its supporting and driving drums.

FIG. **3** is a fragmentary end view of the crimper, showing the crimper support beams in a transverse section and showing the crimper arm and paddle in extended relation relative to the crimper carriage.

FIG. **4** is a partial fragmentary side elevational view of the crimper carriage and arm shown in FIG. **3** with the cross beams removed.

FIG. **5** is a top plan view of the crimper carriage looking substantially along line V—V of FIG. **4** and rotated **90°** in a clockwise direction from the position shown in FIG. **4**.

DESCRIPTION OF PREFERRED FORM OF INVENTION

In FIG. **1** of the drawings, I have shown a crimper **10** for folding down and tucking in the portions of the wrapper which extend beyond opposite ends of a roll **11**, which may be a roll of paper. The roll of paper **11** is shown in FIGS. **1** and **2** as supported on spaced drums **12**, which may be wrapper drums supported for rotation about axes parallel to the axis of the roll. The drums **12** are rotatably driven in the same direction at the same uniform rates of speed, to rotate the roll and wrap the roll with a sheet of paper as the sheet passes in the nips between the roll and drums, and is adhered to the roll by adhesive applied to the leading end thereof, in a manner known to those skilled in the art so not herein shown or described. The support and drive for the drums **12,12** may be of any conventional form and are no part of the present invention, except insofar as the drums form a support and drive means for rotatably driving the roll of paper having the wrapper wrapped thereabout during the crimping of the projecting ends of the paper along the ends of the roll of paper. The support and drive for said drums, therefore, need not herein be shown or described further.

The crimper **10** generally includes a cross beam **13** suitably supported in vertically spaced relation relative to the largest diameter roll to be wrapped and extending in a cross machine direction beyond opposite ends of the maximum width roll to be wrapped to support two crimper carriages **15** and crimper paddles **16** carried by crimper arms **17**, telescopic relative to said crimper carriage, to clear the maximum diameter roll to be wrapped, and crimped, and to be moved beyond the ends of the maximum diameter roll to tuck in and fold the ends of the wrapper projecting beyond opposite ends of the roll.

The crimper paddles **16** are illustratively shown as being disk-like in form and may be like the crimper paddle shown and described in U.S. Pat. No.

3,411,269, dated Nov. 19, 1968, and include crimper blades **18** extending outwardly from the center of the paddle and formed and pitched to fold down and tuck in the projecting ends of the wrapper as the crimper paddles rotate along opposite ends of the roll in a tucking or crimping direction, opposite to the direction of rotation of the wrapped roll.

The cross beam **13** is shown in FIGS. **1** and **3** as being in the form of two hollow box-like beam sections **19** connected together at their opposite ends by end frame members **20.** The cross beam **13** may be supported at its opposite ends on suitable columns (not shown) forming a part of the building structure or any other suitable support means, which will form a support sufficiently rigid to support said cross beam and the two crimper carriages between said beam sections to withstand the forces of crimping.

The crimper carriages **15,** crimper arms **17** and crimper paddles **16** and operative and control means therefor are each of the same construction so one only need herein be shown or described in detail.

As shown in FIGS. **1** and **3,** support plates **21** extend along the tops of the beams **19** and inwardly therefrom toward the center of said beam and have racks **22** extending therealong. Each set of racks is meshed with pinions **23** on opposite ends of a traverse shaft **24,** for moving the carriage along said racks. The shaft **21** is suitably journalled in bearings (not shown) carried by bearing boxes **25** extending from an end wall **26** of the frame for the carriage **15,** and herein shown as extending inwardly of said carriage.

Each carriage **15** is supported and guided on guide plates **27,** welded or otherwise secured to the bottoms of the cross beams **19** and extending inwardly therefrom, in parallel spaced relation with respect to the support plates **21.** The guide plates **27** extend from the outer ends of the beams **19** toward the center thereof and inwardly of said beams and are engaged by support rollers **29** disposed at opposite ends of the carriage and suitably mounted thereon, and journalled in suitable bearings (not shown) for free rotation with respect to said carriage. Rollers **30** like the rollers **29,** are spaced beneath said rollers **29** in alignment therewith and engage the undersides of the guide plates **27** to retain the carriage from tilting movement relative to said guide plates.

Vertical axis rollers **31** are suitably mounted on the undersides of horizontal ledges of brackets **32** suitably mounted on the wall **26** of the carriage frame and positioning said rollers between the rollers **29** and **30** to engage the inner ends of the guide plates **27** and retain the carriage from lateral movement relative to the box-like beams **19** (FIG. **3**). The mountings for the rollers to depend from the horizontal ledges of the brackets **32** may be a conventional shaft (not shown) and anti-friction or other bearings journalling the rollers for free rotation relative to said brackets. The brackets **32** and vertical axis rollers **31** supported thereby are at each end and side of the carriage as shown in FIGS. **3, 4** and **5** and are in association with each pair of rollers **29** and **30.**

The drive means for the pinions **23** for the individual carriages **15** for moving the carriages in and out along the cross beam **13** is shown as being a motor **33** suitably mounted on the wall **26** of the carriage frame and having a motor shaft **36** having a sprocket **37** keyed or otherwise secured thereto and having driving engagement with a sprocket **39** on the shaft **24** through an endless chain **40.** The motor **33** may be of various suitable forms and is herein shown as being an air motor of a conventional type. A brake bracket **41** is mounted on the end wall **26** and has a bracket leg **42** extending outwardly of said wall forming a mounting for a brake **43,** for braking the shaft **24** and preventing overtravel of the carriage **15** along the cross beam **13.** The brake **43** may be of various suitable forms. An air brake of the type termed "a Fawick brake," manufactured by the Fawick Air Flex Division of Eaton Yale & Towne, Inc. is a satisfactory brake for stopping travel of the carriages along the cross beam **13.** The brake, therefore, need not herein be shown or described further.

Each vertically movable crimper arm **17** is mounted in the associated carriage frame **65** for telescopic movement relative to the carriage frame and carries a cross or crimper beam **49** adjacent its lower end, forming a mounting for the power driven crimper paddle **16.** The telescopic crimper arm **17,** cross beam **49,** mounting for the crimper paddle on said cross beam and the drive for the crimper paddle will hereinafter be more clearly described, as this specification proceeds.

At the termination of a crimping operation, the crimper paddle **16** is retracted by retractable movement of the crimper arm **17** into position above the top of the largest diameter roll to be crimped. The two carriages **15** are then moved inwardly along the cross beam **19** to a position adjacent a bumper **51** at the transverse center of the cross beam and forming a stop for said carriage at its opposite ends. As the carriages **15** approach the bumper **51,** they may trip limit switches **53,** operable to stop operation of the motor **33** and engage the brake **43** and thereby stop inward travel of said carriages (FIG. **1**).

Downward travel of the crimper arm **17** and crimper paddle **16** is stopped by a pivoted actuator arm **50** pivotally supported to extend beneath the crimper arm **17** and come into engagement with the roll being crimped, and actuating a limit switch **56.** The limit switch **56** may stop the crimper arm in its downward travel about an inch short of the top of the roll. Tripping of this limit switch will also start the carriages moving outwardly beyond the end of the roll. The actuator or sensing arm **50** is under pressure and forces the extended portion of the wrapper down, tripping the limit switch **56** and causing outward travel of the carriage to stop, and allows downward travel of the crimper arm **17** and crimper paddle **16** to resume, as will hereinafter more clearly appear as this specification proceeds.

Referring now in particular to the details of the crimper carriage **15** and crimper arm **17** mounted for telescopic or retractable movement with respect to an open rectangular vertically extending frame **65** for the crimper, FIG. **5** of the drawings shows the crimper arm **17** as a rectangular box-like arm or beam carried for vertical slidable movement relative to a crimper arm slide **57,** shown as being in the form of an open vertically extending cylinder. As shown in FIGS. **4** and **5,** the crimper arm **17** is spaced to one side of the crimper arm slide **57** and is guided on said slide for vertical movement relative to said arm slide. Bracket arms **59** and **60** extending angularly inwardly of opposite sides of said crimper arm form supports for freely rotatably guide rollers **61** and **62** respectively. The rollers **61** and **62** have cylindrical engaging faces extending at right angles with respect to each other. At least four sets of supports **59** and **60** and rollers **61** and **62** are spaced

vertically along the crimper arm **17** to have rolling guiding engagement with guide tracks **63** extending radially of the periphery of the crimper arm slide **57.** As shown in FIG. **5,** the rollers **61** engage the outer surfaces of the guide tracks **63** and carry the reaction loads imparted to the crimper arm during the crimping operation. The rollers **62** engage outer faces **64** of the guide tracks **63** at right angles to the engaging faces of the rollers **61** and retain the crimper arm **17** from relative sidewise movement with respect to said crimper arm slide.

The crimper arm slide **57** is guided for telescopic movement relative to the frame **65** for the carriage **15,** on diametrically opposed vertically extending slides **66** extending along the insides of opposite side walls for the carriage frame **65.** Each slide **66** has two right angled slide faces **67** converging from a peak towards the wall of the carriage frame and engaged by rollers **69** and **70** carried in roller supports **71** extending diametrically of the crimper arm slide **57** and supporting the rollers **69** and **70** for rotation about horizontal axes extending at right angles with respect to each other. A series of rollers **69** and **70** may be spaced along the crimper arm slide to accommodate free vertical movement of said slide and retain said slide in position during the crimping operation, and in its various positions relative to the carriage frame **65.**

A cylinder **73** extends vertically along the crimper arm slide **57,** concentric with the center thereof. The cylinder **73** has an open cap end opening to the bottom thereof and extending within and secured to a generally cylindrical support member **75** having a tongue **76** depending therefrom. A clevis pin **77** extends through said tongue and is pivotally mounted at its opposite ends in clevis supports **79** at the bottom of the crimper arm slide **57** and suitably secured thereto.

A piston rod **80** extends within the cylinder **73** and has a piston (not shown) on the inner end thereof slidably sealed to the interior wall of said cylinder. The piston rod **80** extends through a cap **81** and packing gland **82** and has a shouldered screw **86** threaded therein and extending upwardly therefrom. Suitable means may be provided for locking said screw to said piston rod. An upwardly opening cup-like support **83** is provided for the shouldered screw **86** and piston rod **80.** Said support is secured to the carriage frame **65** as by diagonal support arms **85** extending inwardly from the opposite inner walls of the carriage frame **65.** As herein shown, two supports **85** are shown as securing the cup-like support **83** to the carriage frame, a third support extending at substantially 120° to the supports **85** (not shown) may also be provided to mount the support to the carriage frame. The shouldered screw **86** threaded in the upper end of the piston rod **80** forms a mounting for a self-aligning bushing **84** abutting the shoulder of said shouldered screw and carried in the cup-like receptacle formed in the support **83.**

Laterally spaced double sprockets **88,** are mounted on sprocket shafts **89,** at each side of the crimper arm slide **57,** for free rotation with respect to said crimper arm slide. Bearing supports **90** extend diametrically from opposite sides of the crimper arm slide and form bearing mountings for the sprocket shafts **89,** supporting said sprocket shafts to accommodate free rotation of the sprockets **88.** The sprockets **88** extend within open portions **91** in the wall of the crimper arm slide **57** and have double chains **93,** which may be double roller chains trained thereabout, across the crimper arm slide **57** through the open portions thereof and downwardly from one set of sprockets on one side of the crimper arm slide to a chain anchor **94** extending upwardly of an anchor plate **95** extending across the hollow interior portion of the crimper arm **17** and welded or otherwise secured thereto. The chains **93** likewise extend downwardly of the opposite sprockets **88** to a chain anchor **96** carried in a bracket **97,** fixed to the interior wall of the carriage frame **65** and extending inwardly therefrom. A threaded shaft **99** is provided to secure the chain anchor **96** to the bracket **97.** Said threaded shaft extends through said bracket and is adjustably locked thereto as by lock nuts **100.**

The crimper arm slide **57** and crimper arm **17** are shown in FIGS. **3, 4** and **5** as being in their uppermost telescopic or retracted positions. When it is desired to extend said crimper arm and crimper arm slide relative to the carriage frame **65,** fluid under pressure is released from the piston rod end of the cylinder **73.** The crimper arm and crimper arm slide will move downwardly by gravity, it being understood that the cap end of the cylinder **73** is open. Downward travel of said crimper arm and crimper arm slide is stopped by the actuator arm as previously mentioned, and as will hereinafter clearly appear as this specification proceeds.

When it is desired to raise the crimper arm slide and crimper arm relative to a roll of paper and telescope said crimper arm and slide within the carriage frame **65,** fluid under pressure is admitted to the piston rod end of the cylinder to exert pressure on the cylinder in an upward direction and move the cylinder and crimper arm slide upwardly and effect upward movement of the crimper arm **17** at twice the speed of upward movement of the crimper arm slide, through the chains **93.** Upward movement of the crimper arm is limited by a limit switch **98** having an actuator arm **102** tripped by a tripper plate **104** at the upper end of the tripper arm **17.** The sprockets **88** and chains moving upwardly with the crimper arm slide **57** and cylinder **73** will raise the crimper arm **17** two inches for each inch of upward movement of the cylinder **73,** in a manner which is readily apparent to those skilled in the art.

The cross or crimper beam **49** is disposed beneath the bottom of the carriage frame **65** when the crimper arm **17** is in its retracted position and extends beyond one side of said crimper arm **17** and carriage **15** to provide an outboard bearing support for the crimper paddle **16.** As shown in FIGS. **3, 4** and **5,** the crimper paddle **16** is keyed or otherwise secured to a shaft **101** projecting beyond opposite sides of the cross or crimper beam **49** and is journalled on said cross beam in a housing **103,** carrying spaced bearings **105,** and journalling the shaft **101** and crimper paddle **16** for rotation about an axis spaced from and parallel to the axis of rotation of the roll **11.** A press wheel **106** is mounted on the outer end of the shaft **101** for free rotation with respect thereto, and extends axially outwardly of the crimper paddle **16,** and is shown as being partially recessed therein.

The housing **103** has a ledge **107** extending outwardly of the end thereof, forming a support for adjustment screws **108** extending upwardly therefrom and having swivel heads **109,** forming supports for a motor support plate **110,** for a motor **111** which may be an electric motor. The motor support plate **110** is hinged to the crimper beam **49** at the opposite side thereof

from the adjustment screws **108**, on a hinge member **112**, and affords a means for taking up tension on matched V-belts **113** forming a drive member from the motor **111** to the shaft **101** and crimper paddle **16**. The belts **113** may be "Woods" matched V-belts. The drive from the motor **111** to the shaft **101** through the V-belts **113** includes a motor shaft **114** having a V-belt sheave **115** keyed or otherwise secured thereto. The V-belt sheave **115** may be a variable V-belt sheave to enable the speed of the crimper paddle to be varied, where required. The V-belt sheave **115** may be of any commercial form and is of itself no part of the present invention, so need not herein be shown or described further. The matched V-belts **113** have driving engagement with a V-belt sheave **116** suitably secured to the shaft **101** for rotatably driving said shaft and the crimper paddle **16**.

On the opposite side of the center line of the roll **11** from the press wheel **106**, spaced an equal distance from the center line of the roll **11** from the press wheel **106** is a press wheel **119**. The press wheel **119** is movably mounted, allowing limited upward movement of said wheel when it moves downwardly to rest on the roll of paper. This movement is sufficient to trip a limit switch **120** indicating that the crimper is properly positioned and ready to crimp. The two press wheels **106** and **119** engaging the roll of paper, at each end thereof, equal distances from each side of the center line of the roll, thus straddle the roll and hold it firmly in place, so it will not be moved by the forces impressed on the roll by the crimping paddles.

The press wheel **119** is freely mounted on a shaft **121** mounted on the end of a pivoted arm **122**, pivotally mounted on a pivot shaft **123** extending from the crimper beam **49**, and parallel to the shaft **121**. A nut **124** is threaded on the end of said shaft to retain the arm **127** thereto. The arm **127** has a boss **129** depending therefrom (FIG. 3). A stop screw **130** is threaded in said boss and is effective to limit downward movement of the press wheel **119**. A boss **131** on the upper end of the arm **127** and has a stop screw **132** threaded therein effective to limit upward movement of the press wheel. A switch arm **126** of the limit switch **120** has a follower roller **128** on its free end riding along the top surface of the arm **127** and tripping the limit switch **120**, indicating that the crimper is properly positioned and ready to crimp.

The actuator arm **50** is shown in FIG. 3 as having a hub **133** intermediate its ends, mounted on a shaft **135** of a torque actuator **136** and pivoted thereby into engagement with the top surface of the roll. A follower roller **137** is freely mounted on the end of the actuator arm **50** and comes into engagement with the surface of the roll of paper **11** upon downward extensible movement of the crimper arm **57**, to trip the limit switch **56** and stop lowering movement of the crimper arm and crimper paddle and start movement of said crimper arm and crimper paddle outwardly to find the end of the roll.

The torque actuator **136** may be in the form of a rotary torque motor, such as an air motor, and supplies the pressure to bias the follower roller **137** into engagement with the top surface of the roll and to force the extended portion of the wrapper down as it passes beyond the end of the roll. The opposite end of the arm **50** from the follower **137** is movable in a slot **139** in an outer wall of the telescopic arm **17** and engages a trip arm **140** for actuating the limit switch **56**. As the follower roller **137** engages the surface of the roll **11**, the arm **140** will be released to terminate downward movement of the crimper arm and crimper paddle about an inch short of the top of the roll. This limit switch stopping downward travel of the crimper arm and crimper paddle also starts the carriage to move outwardly to the end of the roll. As the end of the roll is reached the torque motor **136** will exert pressure on the arm **50** to force the extended portion of the wrapper down and trip the limit switch **56**, to stop outward travel of the carriage and allow downward travel of the crimper arm and crimper paddle to resume. At this time, the motor **111** is energized to drive the crimper paddle **16** and brush the wrapper extension out of the way of the paddles and thereby prevent wadding and fouling of the wrapper and end bands as the crimper paddles seat against the side of the roll.

A sensor **141** depends from the bottom of the crimper arm slide **57** and senses roll diameter and duration of the drive to the crimper wheel and drums **12**. The sensor may be in the form of a cable type of potentiometer controlling energization of the motor **111** and the motor (not shown) for driving the wrapper drums **12** and controlling the duration of the drive to the drums supporting the roll and the drive to the crimper paddles for one revolution of the roll plus a small amount of overtravel. The cable type of potentiometer and control may be a conventional form contained in a control casing for effecting the transmission of signals to an electrical control circuit (not shown), to effect a drive to the crimper wheel **50** as well as the wrapper drums **12**, to rotate the wrapped roll for one revolution and drive the crimping wheel during rotation thereof. The potentiometer and controls form no part of the present invention, so need not herein be shown or described further.

I claim as my invention:

1. In a crimping apparatus for folding down and tucking in the ends of a wrapper extending around and beyond opposite ends of a roll of paper, and in combination with a roll stand supporting and rotatably driving a roll of paper, including

a pair of parallel spaced rolls driven at a uniform angular velocity,

a cross beam supported above the roll stand and extending in a cross machine direction,

a separate crimping assembly for each end of the roll, movably mounted on said cross beam,

each crimping assembly including a carriage supported to ride along said cross beam,

a vertically extending crimper arm carried by each carriage and guided for telescopic movement relative thereto in a vertical direction,

a crimper paddle mounted on each crimper arm for rotation about an axis parallel to the axis of the roll and facing the end of the roll,

power means moving said carriages inwardly toward the center of the roll at the termination of a crimping operation and outwardly beyond the ends of the roll to initiate a next succeeding crimping operation,

other power means raising said arms and crimper paddles above the top of the roll, to accommodate movement therealong to the transverse center of the roll, and accommodating lowering of said arms to bring the crimper paddles along opposite ends of

the roll, to crimp the projecting ends of the wrapper to the roll by rotatably movement of said crimper paddles in directions opposite to the direction of rotation of the roll.

2. The crimping apparatus of claim 1, including means on said arms limiting movement of said crimper arms downwardly along the ends of the roll and holding the roll in place to withstand the forces impressed thereon by said crimper paddles.

3. The crimping apparatus of claim 2,

wherein the means on said arms limiting downward movement of said arms and holding the roll in place comprise a pair of press wheels coming down into engagement with the roll upon lowering movement of said crimper paddles.

4. The crimping apparatus of claim 3, including a movable mounting for one of said press wheels accommodating limited movement thereof, when said press wheel settles on the roll, and a limit switch tripped by said movable mounting, limiting downward movement of the associated crimper arm and crimper paddle.

5. The crimping apparatus of claim 3, including sensing means on each carriage sensing the roll upon downward movement of the associated carriage and stopping downward travel of said carriage toward the roll as said carriages are positioned on opposite sides of the transverse center of the roll, and then initiating outward travel of said carriages.

6. The crimping apparatus of claim 5,

wherein the sensing means includes an actuator arm pivoted to said telescopic arm and depending therefrom,

a separate follower roller on the end of each actuator arm engaging the roll upon downward movement of said telescopic crimper arms and said crimper paddles,

and means biasing said actuator arms and follower rollers into engagement with the roll of paper under a preselected pressure.

7. The crimping apparatus of claim 6, including a separate limit switch actuated by each actuator arm upon engagement with the roll to stop downward travel of said crimper arms and paddles and effect outward travel of said carriages and crimper paddles beyond the ends of the roll, and forcing said follower rollers to force down the extended portions of the wrapper as said follower rollers move beyond the ends of the roll and actuate said limit switches to continue downward travel of said crimper arms and paddles.

8. The crimping apparatus of claim 7,

wherein the means biasing each arm and follower roller to engage the roll under pressure and force down the extended portions of the wrapper, as the follower roller moves beyond the ends of the roll, comprise a fluid pressure operated rotary motor.

9. The crimping apparatus of claim 8,

wherein the actuator arm is pivoted intermediate its ends and the end of the arm opposite the follower roller releases the limit switch as said follower roller engages the surface of the roll, to stop downward travel of the associated crimper arm and initiate outward travel thereof and trips the limit switch as the rotary motor forces the follower roller beneath the periphery of the roll beyond the end of the roll to stop outward movement of the associated carriage and crimper paddle and continue downward travel of said telescopic crimper arms and crimper paddles.

10. The crimping apparatus of claim 9,

wherein the means on said arms limiting movement of said arms downwardly along the ends of the roll, and holding the roll in place to withstand the forces impressed thereon by said crimper paddles comprise press wheels mounted on said crimper arms in equally spaced relation on opposite sides of the axis of rotation of the roll of paper, and

wherein means operated by one of said press wheels is effective to stop downward travel of said telescopic arms and crimper arms and accommodate rotation of said crimper paddles and roll of paper, to crimp the projecting ends of the wrapper to the ends of the roll of paper.

11. The crimping apparatus of claim 10, including a movable mounting arm freely rotatably supporting one of said press wheels and accommodating limited upward movement of said press wheel upon engaging the periphery of the roll and a limit switch operated by said arm and effective to stop downward movement of the associated crimper arm and paddle indicating that the crimper is properly positioned and ready to crimp.

12. The crimping apparatus of claim 11, including a potentiometer mounted on one of said crimper arms and sensing roll diameter, and means operated by said potentiometer timing rotation of the roll of paper and crimper paddle for one revolution of the roll plus a small overtravel.

13. An apparatus for crimping the ends of a wrapper extending around and beyond opposite ends of a roll of paper, rotatably driven during the crimping operation, comprising,

a cross beam supported above the roll of paper and extending parallel to the axis of rotation of the roll of paper, and includes two parallel spaced beam members,

a pair of carriages mounted on said cross beam and extending between said beam members,

rack and pinion means for moving said carriages along said beam members, toward the center of said cross beam at the termination of a crimping operation and outwardly along said cross beam beyond the ends of the roll of paper to effect a next succeeding crimping operation,

each carriage having a crimper arm mounted for telescopic movement relative thereto,

cylinder and piston means extensibly and retractably moving the crimper arms toward and from the roll of paper relative to the carriage,

a cross beam carried by each crimper arm,

a crimper paddle rotatably mounted on said cross beam adjacent one end thereof,

a freely rotatable press wheel coaxial with said crimper paddle for engagement with the top of the roll to one side of the center of the roll,

a second freely rotatable press wheel mounted on said cross beam and spaced from the axis of rotation of the roll a distance equal to the spacing of said first press roll from the axis of rotation of the roll of paper and on the opposite side thereof to straddle the roll of paper and hold it firmly in place during the crimping operation,

and movable mounting means for said second press wheel, permitting limited movement of said press wheel upon settling of the press rolls on the roll and

effective to indicate the crimper is in proper position and ready to crimp.

14. The crimping apparatus of claim **13,**

wherein the movable mounting means for the second press wheel includes,

an arm pivoted to the cross beam for movement about an axis parallel to the axis of rotation of the press wheel, and

means limiting movement of said arm in upward and downward directions.

15. The crimping apparatus of claim **14,** including a limit switch tripped by movement of said arm in an upward direction and effective to limit lowering movement of said crimper arm and indicate the crimper is properly positioned and ready to crimp.

16. The crimping apparatus of claim **13,** including an actuator arm pivoted to said crimper arm and depending therefrom, a follower roller on the end of said actuator arm, means biasing said actuator arm in engagement with the roll of paper, said actuator arm being effective to limit downward movement of the associated crimper arm short of the roll of paper and initiating outward travel of said carriage toward the end of the roll of paper.

17. The crimping apparatus of claim **16,**

wherein the means biasing the actuator arm and follower roller to engage the periphery of the roll of paper, comprises a fluid pressure operated rotary actuator, forming a support for said actuator arm and forcing said actuator arm to fold down the projecting end portion of the wrapper as said follower roller moves beyond the end of the roll and effective to initiate downward travel of said crimper arm and paddle along the end of the roll of paper.

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