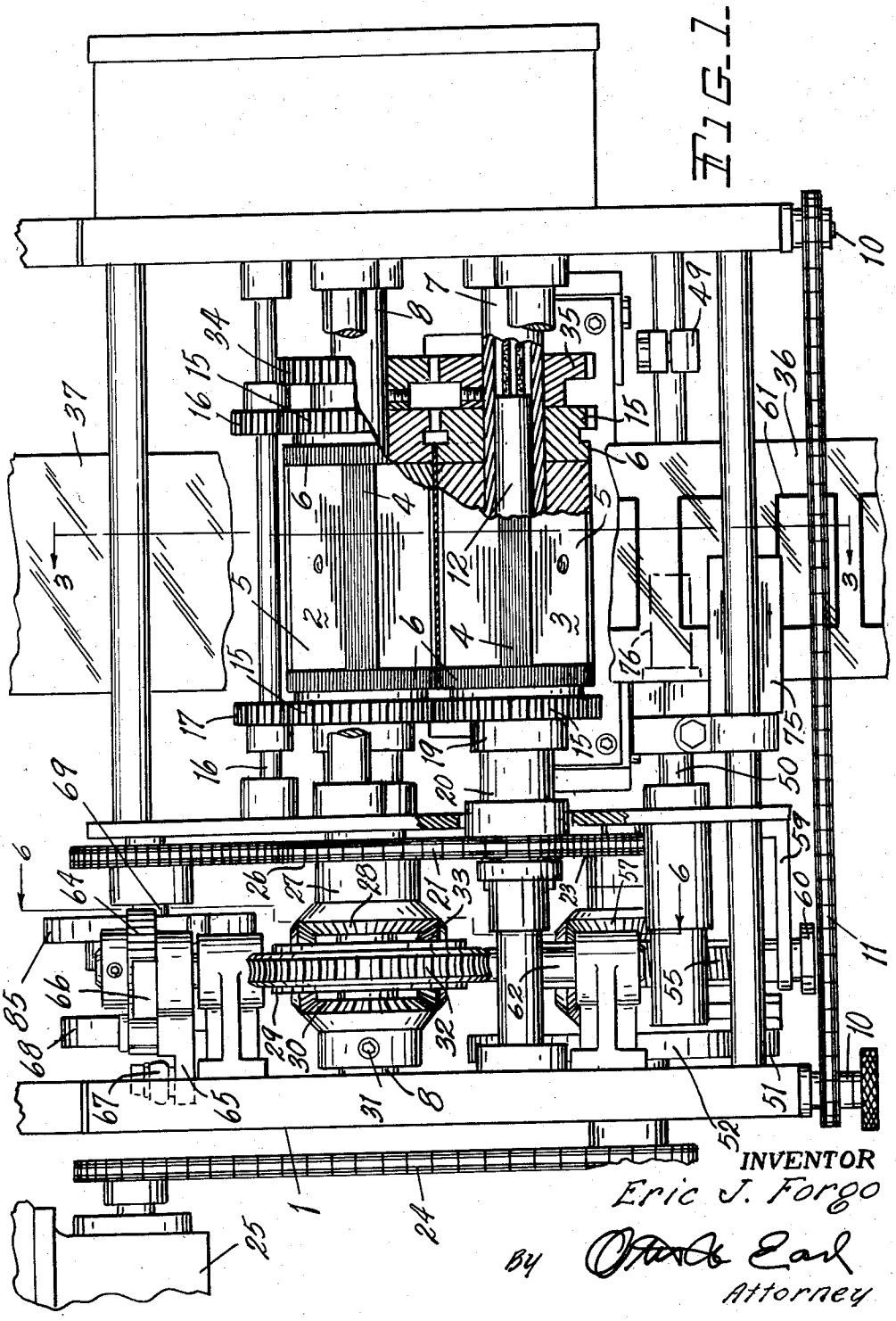
Feb. 3, 1959 E. J. FORGO 2,871,639

WRAPPER INDEXING MECHANISM FOR WRAPPING MACHINES

Filed Feb. 4, 1957 5 Sheets-Sheet 1

FIG. 1.



INVENTOR
Eric J. Forgo
By Clarence Earl
Attorney

Feb. 3, 1959 E. J. FORGO 2,871,639

WRAPPER INDEXING MECHANISM FOR WRAPPING MACHINES

Filed Feb. 4, 1957 5 Sheets-Sheet 2

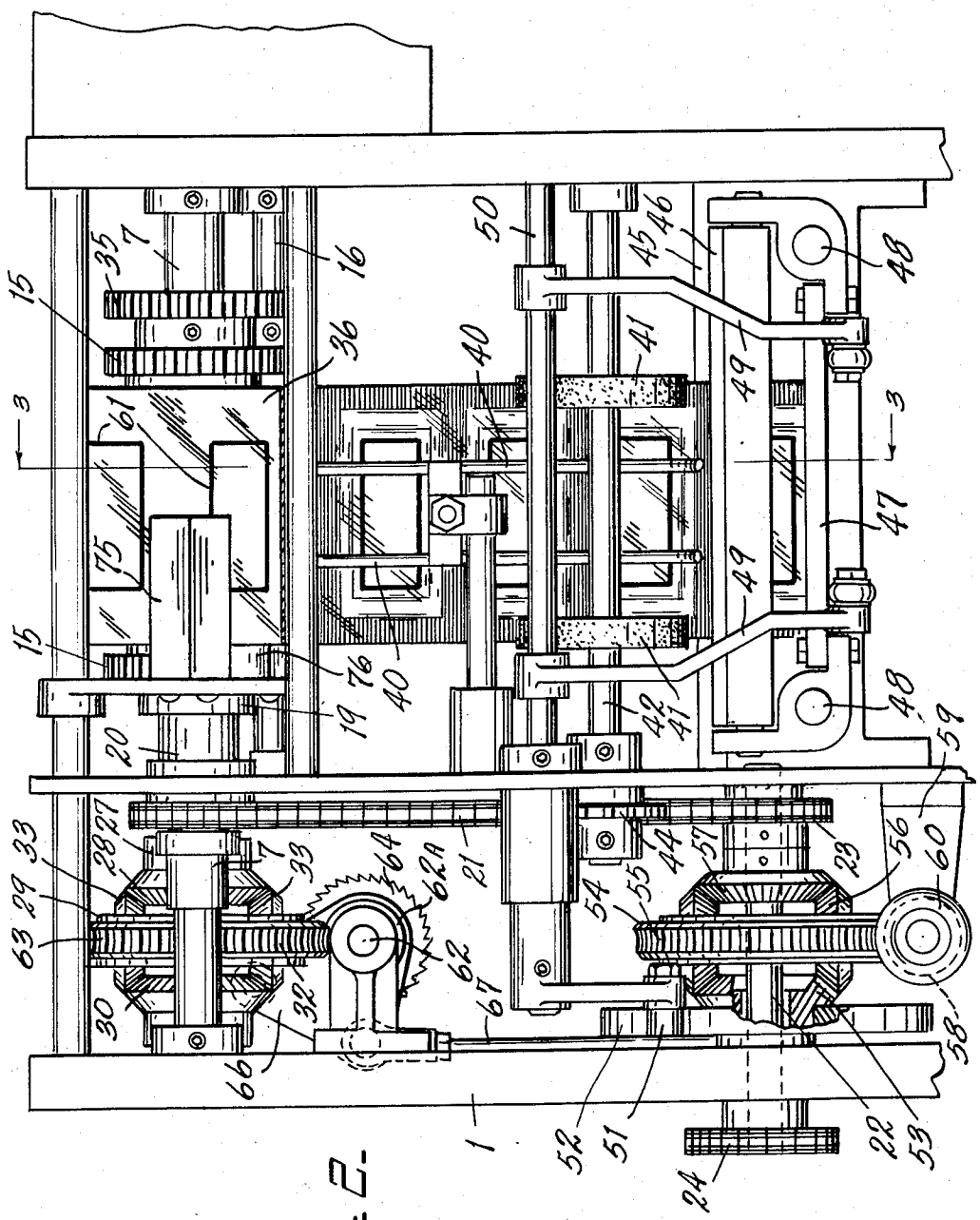


FIG. 2.

INVENTOR.
Eric J. Forgo
BY
Attorney.

Feb. 3, 1959 E. J. FORGO 2,871,639

WRAPPER INDEXING MECHANISM FOR WRAPPING MACHINES

Filed Feb. 4, 1957 5 Sheets-Sheet 3

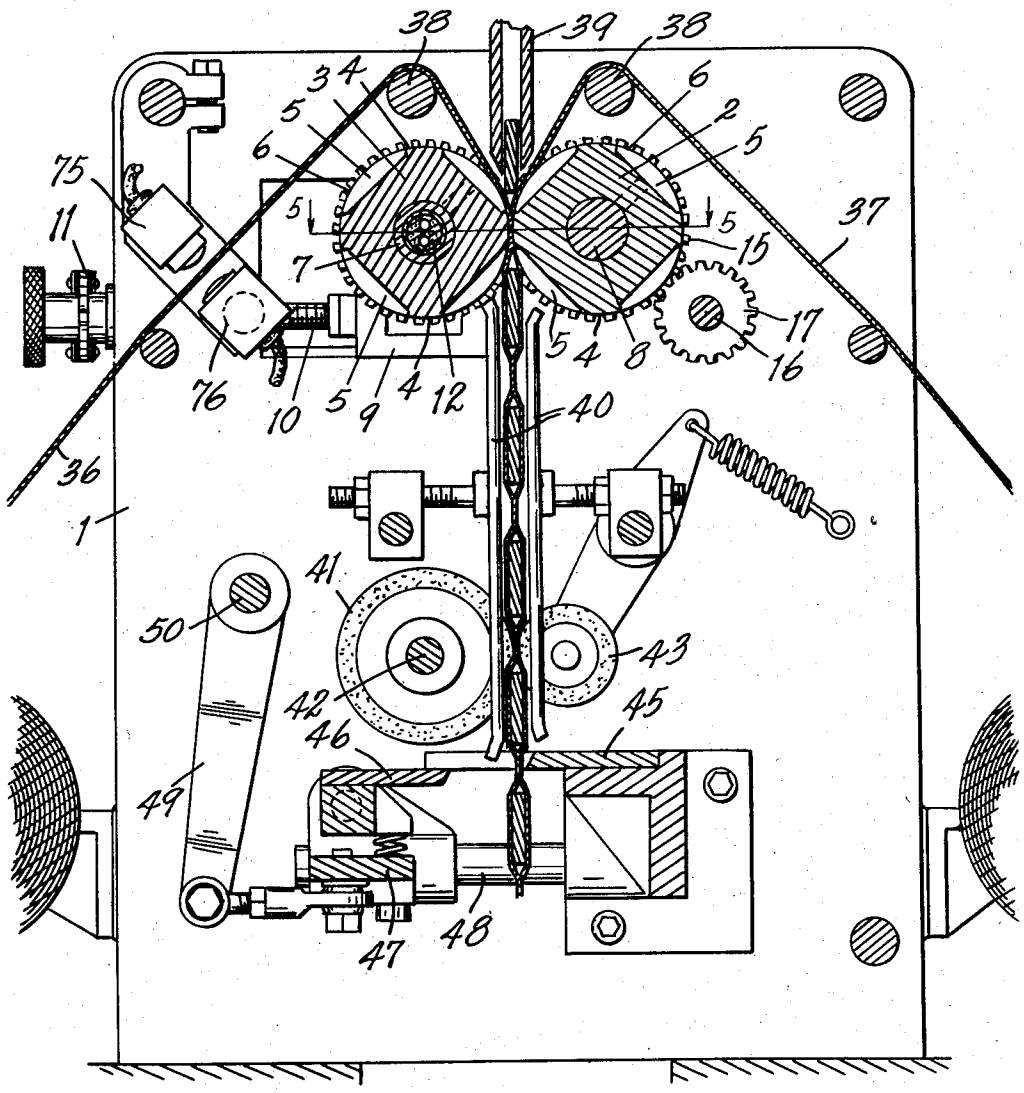


FIG. 3.

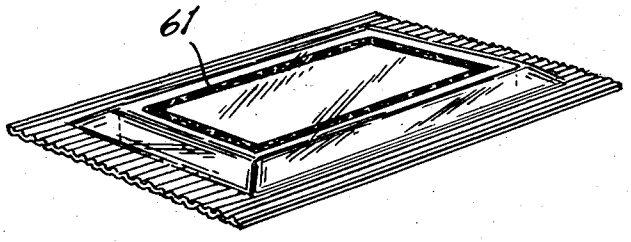


FIG. 4.

INVENTOR.
Eric J. Forgo
BY
Earl
Attorney.

Feb. 3, 1959 E. J. FORGO 2,871,639

WRAPPER INDEXING MECHANISM FOR WRAPPING MACHINES

Filed Feb. 4, 1957 5 Sheets-Sheet 4

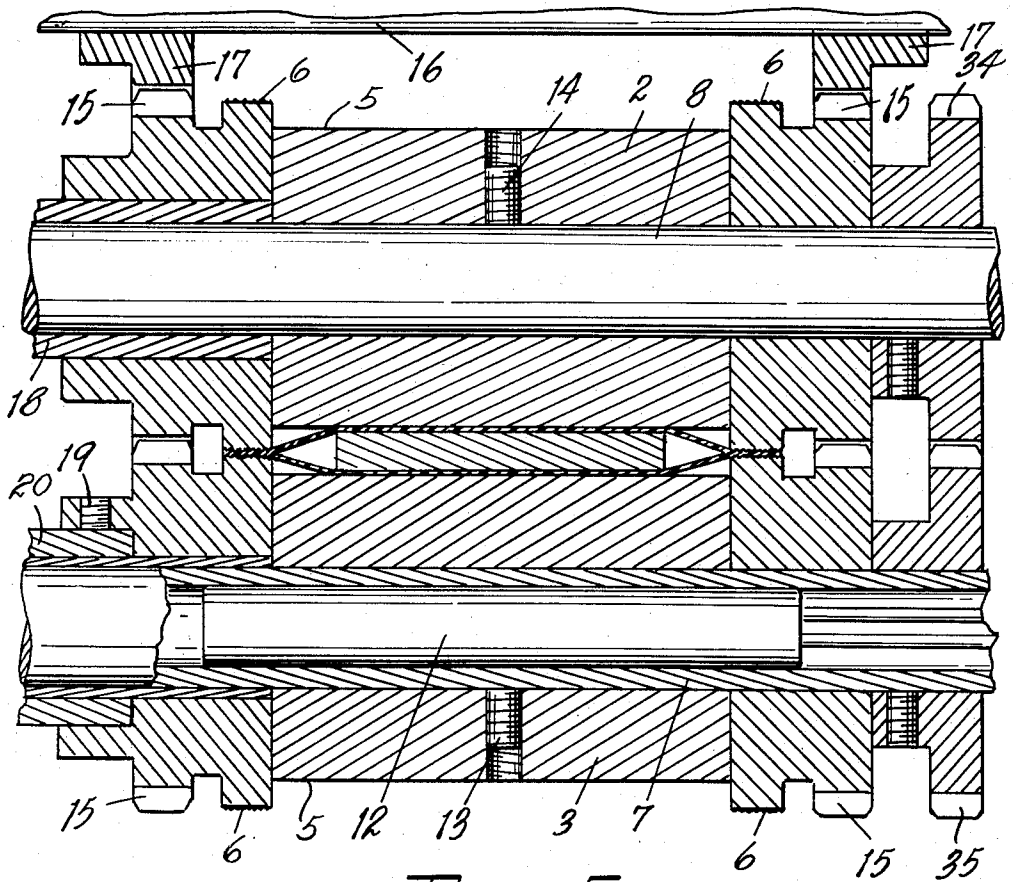


FIG. 5.

INVENTOR.
Eric J. Forgo
BY
Attorney.

Feb. 3, 1959 E. J. FORGO 2,871,639

WRAPPER INDEXING MECHANISM FOR WRAPPING MACHINES

Filed Feb. 4, 1957 5 Sheets-Sheet 5

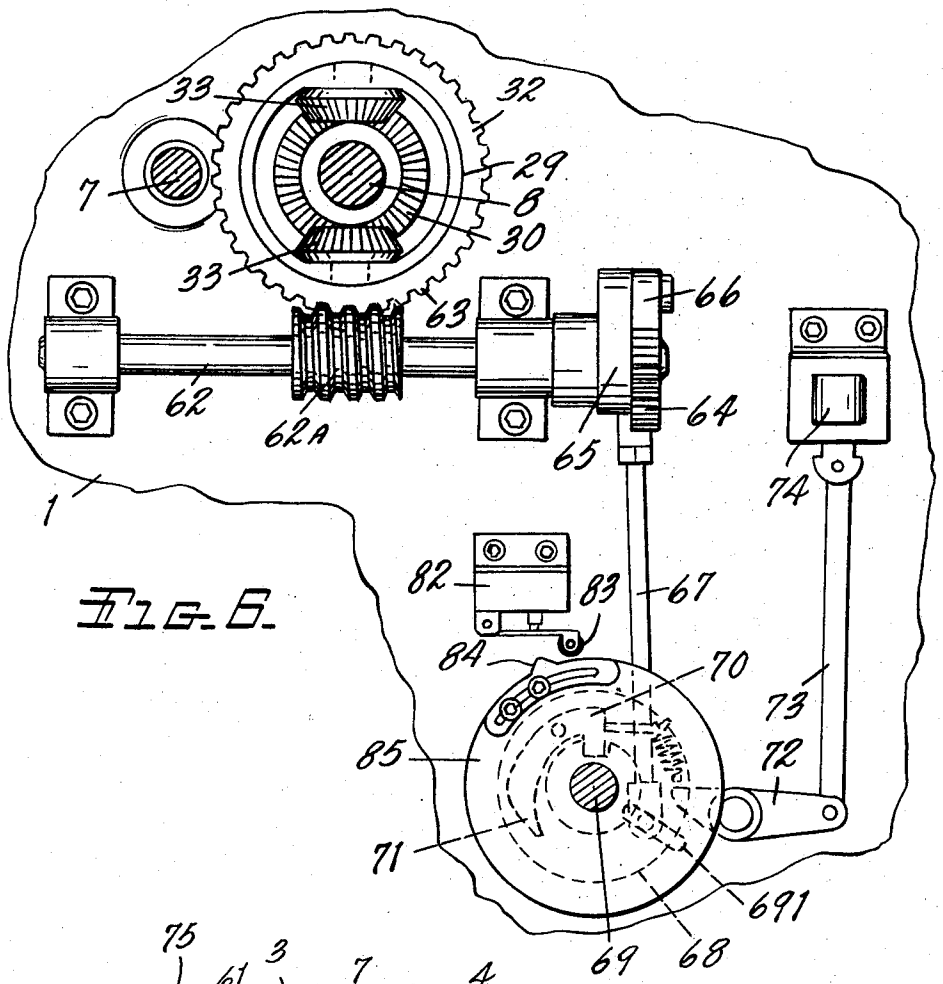


FIG. 6.

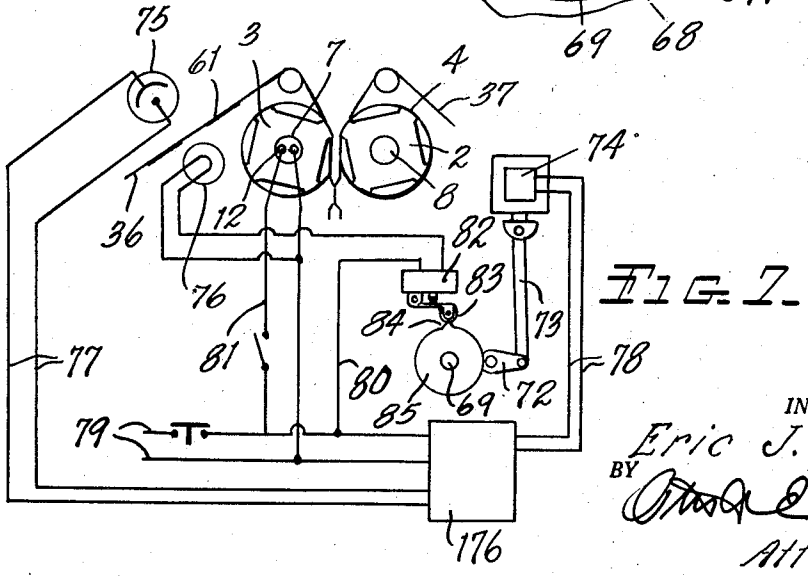


FIG. 7.

INVENTOR.
Eric J. Forgo
BY
Attorney.

United States Patent Office 2,871,639 Patented Feb. 3, 1959

2,871,639

WRAPPER INDEXING MECHANISM FOR WRAPPING MACHINES

Eric J. Forgo, Battle Creek, Mich., assignor to Battle Creek Packaging Machines, Inc., Battle Creek, Mich.

Application February 4, 1957, Serial No. 638,041

16 Claims. (Cl. 53—180)

This invention relates to improvements in wrapper indexing mechanism for wrapping machines. The principal objects of this invention are:

First, to provide means for properly indexing the wrapper and indicia thereon with respect to the packages formed by a machine that successively packages articles one after the other between two strips of wrapping material and seals the strips together around each article.

Second, to provide means for varying the driving speed of mating pocket forming rolls and side sealing feed rollers that direct strips of wrapping material between the rolls whereby indexing indicia and labeling designs on the strips can be maintained in registry with the pockets and packages formed in the strips by the pocket forming rolls.

Third, to provide means for automatically controlling the speed of advance of wrapping strips with respect to the speed of pocket forming rolls through which the strips are fed to package articles in pockets in the strips.

Fourth, to provide a machine that will rapidly and economically package a succession of articles in pockets between two strips of wrapping material with labeling and indexing indicia on the webs properly indexed with each article.

Other objects and advantages of the invention will be apparent from a consideration of the following description and claims. The drawings, of which there are five sheets, illustrate a highly practical form of the wrapper indexing mechanism and the manner in which the mechanism operates.

Fig. 1 is a fragmentary top plan view of a wrapping machine for wrapping articles in successive pockets between two strips of wrapping material with the strip indexing mechanism of the invention applied thereto. Portions of the strip feeding and sealing rolls and the pocket forming rolls are broken away in axial cross section.

Fig. 2 is a fragmentary end elevational view of the mechanism shown in Fig. 1.

Fig. 3 is a fragmentary vertical cross sectional view taken along the plane of the line 3—3 in Figs. 1 and 2.

Fig. 4 is a perspective view of the package formed by the machine.

Fig. 5 is a fragmentary cross sectional view through the wrapping and sealing rolls taken along the plane of the line 5—5 in Fig. 3.

Fig. 6 is a fragmentary cross sectional view through the drive to the wrapper indexing mechanism taken along the plane of the line 6—6 in Fig. 1.

Fig. 7 is a diagrammatic view illustrating conventionally the electrical circuit of the wrapper indexing mechanism and conventionally illustrating the coacting mechanical parts of the wrapping machine.

Wrapping machines are presently available that draw in two continuous strips of heat sealable wrapping material between two opposed packaging rolls. The packaging rolls have meeting pockets that permit articles to pass between the rolls and be packaged in pockets formed in the strips. The packaging rolls have registering transversely extending sealing portions that seal the strips between successive articles and pockets and further have continuously contacting opposed rims at each end which continuously feed and seal the side edges of the wrapping strips to form individual packages of articles with each package sealing completely around each article. Various means and mechanisms are available for delivering the articles to be wrapped successively in timed relation to the pocket forming portions of the wrapping rolls and a knife may or may not be provided and operated in timed relation to the packaging rolls to sever the strips of packages into individual separate packages. So far as the packaging operation generally considered is concerned the present invention utilizes the principles of these prior machines.

In the packaging machine illustrated a supporting framework is indicated in its entirety at 1. The framework rotatably supports a pair of packaging rolls at 2 and 3 positioned in horizontally extending side by side relation so that their peripheries are in rolling contact around the sealing strips 4 on each roll. The sealing strips 4 are desirably serrated to crimp the wrapping strips therebetween and between the sealing strips the rolls are flattened or cut away to form packaging pockets 5 between the rolls as the rolls rotate. Positioned directly against each end of each packaging roll 5 is a completely circular side sealing disc 6 each having an axially serrated periphery that forms a continuation of the sealing strips 4. The side sealing disc 6 functions as in prior machines to continually feed two strips of wrapping material between the rolls while sealing the side edges of the wrapping strips together. However the side sealing discs 6 are separate from and driven independently of the wrapping rolls as will be described.

The packaging rolls 2 and 3 and the side sealing discs 6 are rotatably supported on parallel shafts 7 and 8 supported in suitable bearings in the framework 1. In order to regulate and adjust the spacing between the packaging rolls and the discs the bearings which support the shaft 7 are supported in slidable bearing brackets 9 adjustably supported in the framework 1. Screws 10 function to adjust the bearing brackets and the two screws are connected for concurrent adjustment by the cross chain 11. As appears most clearly in Figs. 1, 3 and 5 the shaft 7 is hollow and has a heating element 12 inserted through one end to heat the packaging roll and sealing discs on that shaft. The packaging roll 3 is non-rotatably secured to the shaft 7 by a set screw 13 while the packaging roll 2 is non-rotatably secured to the shaft 8 by a set screw 14 so that the packaging rolls rotate with the shafts. The side sealing discs 6 are separate from the packaging rolls and are rotatable with respect to the shafts 7 and 8. Each side sealing disc 6 and a gear 15 integrally formed therewith or non-rotatably connected thereto and the gears at each end of each packaging roll are constantly meshed with the gears at the ends of the other roll. A cross shaft 16 positioned at the side of one of the packaging rolls has pinions 17 drivingly engaged with the gears at each end of one of the shafts so that when any of the gears 15 are rotated all of them rotate at the same speed.

The gear 15 and side sealing disc 6 on the left end of the shaft 8 as viewed in Figs. 1 and 5 is rotatably mounted on a sleeve 18 positioned relatively rotatably around the shaft 8. The left gear 15 on the shaft 7 has a laterally extending hub 19 that rotates on the shaft 7 and connects to a sprocket 20. The sprocket 20 is driven by the chain 21 from a drive shaft 22 and sprocket 23 connected by the chain 24 to a source of power such

as the motor 25. (See Figs. 1 and 2.) After passing the sprocket 20 the chain 21 drivingly engages a sprocket 26 on a hub 27 supported on the left end of the shaft 8. The hub 27 carries a beveled gear 28 which forms the driving sun gear of a differential generally indicated at 29. The driven sun gear 30 of the differential is mounted on and pinned to the shaft 8 as at 31 and the ring gear 32 of the differential is rotatable about the shaft 8 between the sun gears 28 and 30. The ring gear 32 carries beveled pinions 33 meshing with both the sun gears so that as the sprocket 26 and hub 27 are rotated the pinions 33 and driven sun gear 30 will simultaneously rotate to equally and oppositely drive the shaft 8 if the ring gear 32 is held stationary.

It will thus be seen that so long as the ring gear of the differential 29 is held stationary the packaging rolls 2 and 3 and the sealing discs 6 will rotate in converging relation at equal peripheral speeds. The drive to the several sealing discs 6 is through the sprocket 20 and hub 19 to the left gears 15 and across through the cross shaft 16 and pinions 17 to the gears 15 and sealing discs 6 at the right side of the machine. The drive to the packaging rolls is through the sprocket 26 and hub 27 to the differential 29 and from the differential to the shaft 8 which directly drives the packaging roll 2. The right end of the shaft 8 carries a gear 34 that is constantly meshed with a gear 35 connected to the shaft 7 to rotate the packaging roll 3.

Simultaneous rotation of the packaging rolls and the side sealing discs functions to draw in a pair of continuous heat sealable strips 36 and 37. The wrapping strips are directed downwardly in converging relation to the bight of the rolls by guide rods 38 on opposite sides of an article feed chute 39. The articles to be wrapped are directed through the chute 39 in timed relationship with the rotation of the packaging rolls by mechanism not illustrated herein. Each article is received in the mating pockets of the packaging rolls, and the wrapping strips are sealed together completely around each article to form a continuous strip of individually packaged articles. The strip of articles descends between guide rods 40 to feed rolls 41 mounted on a shaft 42. Spring pressed backing rolls 43 cooperate with the feed rolls 41 and the shaft 42 is driven by a sprocket 44 from the same chain 21 that drives the packaging rolls.

After passing the feed rolls 41 and the guide bars 40 the strip of packages is directed past a stationary shear blade 45. A cutter bar 46 is reciprocal into coacting relation with the shear blade to operate each package individually from the strip by cutting through the middle of the transverse seals in the strip of packages. The cutter bar 46 is carried by a cross head 47 reciprocable on guide rods 48. The cross head 47 is reciprocated by the crank arms 49 connected to a rock shaft 50. The rock shaft 50 projects to the left side of the machine as shown in Fig. 2 and has a cam follower 51 mounted on an arm in the path of a cam wheel 52. The wheel 52 is carried by and rotatable with the driven sun gear 53 of a differential generally indicated at 54. The ring gear 55 of the second differential and its pinions 56 are driven by a sun gear 57 connected to the drive shaft 22 along side of the sprocket 23 so that the rock shaft 50 and cutter bar 46 are actuated in timed relation to the rotation of the packaging rolls 2 and 3.

In order to permit relative angular adjustment of the point of actuation of the cutter bar with respect to the strip of packages being delivered, the ring gear 55 of the differential 54 is engaged by a worm 58 supported in the brackets 59 and having a hand control wheel 60 so that the angular position of the cam wheel 52 can be advanced or retracted with respect to the drive shaft 22 and the packaging roll feed.

Adjustment of the registry of the cutter bar 46 by means of the control knob 58 and differential 54 as just described is sufficient to assure severing of the wrapper strips between the wrapped articles as there cannot be a great deal of variation in the length of the strip of articles or the position of the transverse seals between the packaging rolls and the cutter bar. However, the rate at which the wrapper strips are drawn through the packaging rolls may vary depending upon the tension applied to the wrapper strips and slippage of the strips between the packaging rolls. Therefore if one of the wrapping strips such as 36 has a labeling indicia thereon as at 61 designed to be centered on each of the packages this periodically repeated indicia may get out of registry with the packages formed by the packaging rolls. In order to adjust the relative position of the wrapper indicia 61 on the wrapper strip into registry with the packages formed by the packaging rolls the differential 29 is arranged to be automatically controlled to vary or adjust the speed of the packaging rolls with respect to the speed of the side sealing discs 6. This control is effected by means of a control shaft 62 having a worm 62*a* meshed with the teeth 63 on the periphery of the ring gear 32.

The control shaft 62 has a ratchet wheel 64 secured thereto along side of a lever 65 oscillatably supported on the shaft 62. Pivotally mounted on the lever 65 is a pawl 66 that is drivingly engageable with the ratchet wheel to advance the control shaft with each oscillation of the lever 65. The lever 65 is actuated by a control rod 67 that extends downwardly to a crank wheel 68 to which it is radially adjustably connected as at 69 to adjust the throw of the connecting rod and therefore the range of movement of the control shaft 62. The crank wheel 68 is rotatably mounted on a shaft 69 driven in timed relation with the other portions of the machine by the chain 21. Carried on the side of the crank wheel 68 is a one revolution clutch mechanism including a clutch dog 70 spring biased toward engagement with a notch in the shaft and having a tail 71 projecting into the path of a control lever 72 positioned alongside of the shaft. The lever 72 normally holds the tail 71 and dog 70 out of engagement with the shaft and the crank wheel 68 normally remains stationary. The lever 72 is, however, connected by means of a link 73 to a solenoid 74 so that when the solenoid which energized the lever 72 is retracted, engagement of the clutch dog with the shaft for one revolution of the crank wheel 68 is permitted. Thus while the crank wheel 68 and control shaft 62 are rotating the speed of rotation of the packaging rolls 2 and 3 will be advanced or retracted with respect to the speed of the side sealing discs 6 to effect a correcting or registering movement of the packaging rolls and side sealing discs with respect to each other. The direction of the relative motion is depending upon the pitch of the worm 62A and is immaterial as the position of the wrapper strip with the indicia thereon can be either advanced to catch up with a preceeding pocket or retracted to bring it into correct registry with a succeeding pocket.

The solenoid 74 which controls the one revolution clutch is actuated in response to signals or impulses received from an index sensing device such as the photoelectric cell 75 positioned to intercept and sense variations in a light beam from the lamp 76 on the opposite side of the wrapper strip 36. As appears most clearly in the schematic wiring diagram in Fig. 7, the photoelectric cell 75 is connected to an amplification and relay box 176 by the wires 77. The signal impulses from the sensing device are transmitted from the amplifier to the solenoid by the wires 78. Power for the sensing device and amplifier is supplied from the power source 79 which also feeds energy to the lamp 76 through the wire 80 and to the heater 12 through the wire 81.

In order to prevent each successive indicia mark 61 from actuating the solenoid 74 and automatically adjusting the differential 29, the wire 80 to the lamp 76 is interrupted by a switch 82 having a cam actuated trip member 83. The trip member 83 is positioned to be engaged and actuated by a cam 84 angularly adjustably

mounted on a wheel 85 on the shaft 69. The cam 84 is adjusted to open the switch 82 and deenergize the lamp 76 of the sensing device at all times during the rotational cycle of the shaft 69 except when the pockets of the packaging rolls are in proper angular registry with the indicia 61 on the incoming wrapper strip 36. At this point the switch 82 is closed and the lamp 76 lighted and if the selected label indicia 61 is in proper registry the light from the lamp will be blocked from the photoelectric cell 75 and no registering or correcting impulse will be transmitted to the solenoid 74. If, however, the labeling indicia is not in proper registry it will not intercept the light beam and a signal will be imparted to the solenoid to engage the one revolution clutch and effect correcting rotation of the control shaft 62. This correcting rotation will be repeated during successive cycles until the wrapper strip with the wrapping indicia thereon is again brought into proper registry with the packaging rolls.

The machine and control mechanism as thus described will operate at high speed and with minimum attention to rapidly package small articles, the wrapping of which would have been prohibitive without automatic controls.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a packaging machine having coacting packing rolls with mating pockets in their sides and sealing strips between said pockets adapted to meet on opposite sides of a package as the rolls rotate, side sealing discs at each end of each roll adapted to feed two strips of thermosealing wrapping material between said rolls, one of said rolls and the discs at each end thereof being heated to seal said strips together when the discs and sealing strips meet, means for driving said rolls and discs comprising, gears connected to each of said discs with the gears at the ends of one roll meshing with the gears at the ends of the other roll, a cross shaft having pinions meshed with the gears at the ends of one roll whereby all said gears rotate in unison, a sprocket connected to one of said gears, a first shaft on which one of said rolls and two of said gears and discs and said sprocket are mounted, a second shaft on which the others of said gears and discs are rotatably mounted, a second sprocket relatively rotatably mounted on said second shaft, the other of said rolls being relatively non-rotatably mounted on said second shaft, said first roll being relatively non-rotatably mounted on said first shaft, meshing gears on said shafts, a chain trained around said sprockets to drive the same, a sun gear of a differential drivingly connected to said second sprocket and rotatable on said second shaft, a second sun gear drivingly connected to said second shaft, a ring gear rotatable around said sun gears and having pinions meshing therewith, gear teeth on said ring gear, a control shaft having a gear meshing with said teeth on said ring gear, a ratchet wheel on said control shaft, a pawl oscillatably engageable with said ratchet wheel, a shaft driven in timed relation to said chain, a crank wheel rotatably mounted on said last shaft, a rod radially adjustably connected to said crank wheel and connected to said pawl to oscillate the same, a one revolution clutch connected to rotate said crank wheel from said last shaft, a trip member positioned to engage said one revolution clutch, a solenoid mechanically connected to actuate said trip member, means for delivering two strips of wrapping material separately to said discs, one of said strips having indexing indicia thereon at repeated intervals, an electric eye positioned to sense the location of each indexing indicia, a cam rotated in timed relation with said chain by said last shaft, a switch connected to render said eye inoperative and positioned to be actuated by said cam, and means electrically connecting said eye to said solenoid to trip said clutch when one of said indexing indicia is out of registry with said eye and said rolls.

2. In a packaging machine having coacting packing rolls with mating pockets in their sides and sealing strips between said pockets adapted to meet on opposite sides of a package as the rolls rotate, side sealing discs at each end of each roll adapted to feed two strips of thermosealing wrapping material between said rolls, one of said rolls and the discs at each end thereof being heated to seal said strips together where the discs and sealing strips meet, means for driving said rolls and discs comprising, gears connected to each of said discs with the gears at the ends of one roll meshing with the gears at the ends of the other roll, means connecting said gears whereby all said gears rotate in unison, a sprocket connected to one of said gears, a first shaft on which one of said rolls and two of said gears and discs and said sprocket are mounted, a second shaft on which the others of said gears and discs are rotatably mounted, a second sprocket relatively rotatably mounted on said second shaft, the other of said rolls being relatively non-rotatably mounted on said second shaft, said first roll being relatively non-rotatably mounted on said first shaft, meshing gears on said shafts, a chain trained around said sprockets to drive the same, a sun gear of a differential drivingly connected to said second sprocket and rotatable on said second shaft, a second sun gear drivingly connected to said second shaft, a ring gear rotatable around said sun gears and having pinions meshing therewith, gear teeth on said ring gear, a control shaft having a gear meshing with said teeth on said ring gear, a ratchet wheel on said control shaft, a pawl oscillatably engageable with said ratchet wheel, a shaft driven in timed relation to said chain, a crank wheel rotatably mounted on said last shaft, a rod eccentrically connected to said crank wheel and connected to said pawl to oscillate the same, a one revolution clutch connected to rotate said crank wheel from said last shaft, a trip member positioned to engage said one revolution clutch, a solenoid mechanically connected to actuate said trip member, means for delivering two strips of wrapping material separately to said discs, one of said strips having indexing indicia thereon at repeated intervals, an electric eye positioned to sense the location of each indexing indicia, a cam rotated in timed relation with said chain, a switch connected to render said eye inoperative and positioned to be actuated by said cam, and means electrically connecting said eye to said solenoid to trip said clutch when one of said indexing indicia is out of registry with said eye and said rolls.

3. In a packaging machine having coacting packing rolls with mating pockets in their sides and sealing strips between said pockets adapted to meet on opposite sides of a package as the rolls rotate, side sealing discs at each end of each roll adapted to feed two strips of sealable wrapping material between said rolls, said rolls and discs being adapted to seal said strips together where the discs and sealing strips meet, first drive means connecting said discs for equal converging rotation, a second drive means connecting said rolls for equal converging rotation, a first shaft on which one of said rolls and two of said discs are mounted, a second shaft on which the others of said discs and roll are mounted, said rolls being relatively non-rotatably connected to said shafts, a power source drivingly connected to said first drive means, a sun gear of a differential drivingly connected to said first drive means and rotatable on said second shaft, a second sun gear drivingly connected to said second shaft, a ring gear rotatable around said sun gears and having pinions meshing therewith, gear teeth on said ring gear, a control shaft having a gear meshing with said teeth on said ring gear, a ratchet wheel on said control shaft, a pawl oscillatably engageable with said ratchet wheel, a shaft driven in timed relation to said power source, a crank wheel rotatably mounted on said last shaft, a rod eccentrically connected to said crank wheel and connected to said pawl to oscillate the same, a one revolution clutch connected to rotate said crank wheel from said last shaft, a trip member positioned to engage said one

revolution clutch, a solenoid mechanically connected to actuate said trip member, means for delivering two strips of wrapping material in converging relation to between said discs, one of said strips having indexing indicia thereon at repeated intervals, an electric eye positioned to sense the location of each indexing indicia, a cam rotated in timed relation with said source, a switch connected to render said eye inoperative and positioned to be actuated by said cam when said indicia are in registered relation to said rolls and said eye, and means electrically connecting said eye to said solenoid to trip said clutch when one of said indexing indicia is out of registry with said eye and said rolls.

4. In a packaging machine having coacting packing rolls with mating pockets in their sides and sealing strips between said pockets adapted to meet on opposite sides of a package as the rolls rotate, side sealing discs at each end of each roll adapted to feed two strips of sealable wrapping material between said rolls, said rolls and discs being adapted to seal said strips together where the discs and sealing strips meet, first drive means connecting said discs for equal converging rotation, a second drive means connecting said rolls for equal converging rotation, a first shaft on which one of said rolls and two of said discs are mounted, a second shaft on which the others of said discs and roll are mounted, said rolls being relatively non-rotatably connected to said shafts, a power source drivingly connected to said first drive means, a sun gear of a differential drivingly connected to said first drive means and rotatable on one of said shafts, a second sun gear drivingly connected to said one of said shafts, a ring gear rotatable around said sun gears and having pinions meshing therewith, gear teeth on said ring gear, a control shaft having a gear meshing with said teeth on said ring gear, a ratchet wheel on said control shaft, a pawl oscillatably engageable with said ratchet wheel, a shaft driven in timed relation to said power source, a crank wheel, a rod eccentrically connected to said crank wheel and connected to said pawl to oscillate the same, a one revolution clutch connected to rotate said crank wheel from said last shaft, a trip member positioned to engage said one revolution clutch, a solenoid mechanically connected to actuate said trip member, means for delivering two strips of wrapping material in converging relation to between said discs, one of said strips having indexing indicia thereon at repeated intervals, an electric sensing device positioned to sense the location of each indexing indicia, a cam rotated in timed relation with said source, a switch connected to render said device inoperative and positioned to be actuated by said cam when said indicia are in registered relation to said rolls and said device, and means electrically connecting said device to said solenoid to trip said clutch when one of said indexing indicia is out of registry with said device and said rolls.

5. In a wrapping machine, a pair of parallel shafts having a pair of wrapping rolls thereon and driven thereby, meshing gears drivingly connecting said shafts, said rolls having mating pockets in their surfaces with mating sealing strips between the pockets, side sealing discs relatively rotatably mounted on said shafts at each end of each roll and in rolling contact to feed a pair of strips of heat sealable wrapping material between said rolls, one of said rolls and the discs at the ends thereof being heated to seal the side of said strips and the centers thereof between the pockets formed by said rolls, gears connected to each of said discs with the gears on one shaft meshed with the gears on the other shaft, means connecting the gears at one end of the shafts to the gears at the other end of the shafts for simultaneous rotation, a differential connected to drive one of said shafts at variable speeds and having a regulatory part, a source of power connected to said differential and to one of said gears to drive said discs and said differential at constant speeds, a control shaft connected to the regulatory part of said differential, control shaft drive means for rotating said control shaft to vary the speed of the drive through said differential and including a ratchet wheel on the control shaft and an oscillatable pawl drivingly engageable with said ratchet wheel, a crank wheel having a connecting rod connected to said pawl and having a one revolution clutch connection to said power source, an electrically actuated clutch control member arranged to engage said clutch, an electrical sensing device positioned to electrically sense the passage of indexes positioned at equal intervals on one of said strips, a cam driven by said source of power and angularly adjustable with respect thereto, a switch positioned to be actuated by said cam and electrically connected to render said sensing device inoperative during a portion of the cycle of said power source, and means electrically connecting said sensing device to said clutch control member to actuate said clutch in response to the sensing function of said sensing device.

6. In a wrapping machine, a pair of parallel shafts having a pair of wrapping rolls thereon and driven thereby, meshing gears drivingly connecting said shafts, said rolls having mating pockets in their surfaces with mating sealing strips between the pockets, side sealing discs relatively rotatably mounted on said shafts at each end of each roll and in rolling contact to feed a pair of strips of heat sealable wrapping material between said rolls, one of said rolls and the discs at the ends thereof being heated to seal the sides of said strip and the centers thereof between the pockets formed by said rolls, gears connected to each of said discs, means connecting the gears associated with the discs for simultaneous rotation, a differential connected to drive one of said shafts at variable speeds and having a regulatory part, a source of power connected to said differential and to one of said gears associated with the discs to drive said discs and said differential at constant speeds, a control shaft connected to the regulatory part of said differential, control shaft drive means for rotating said control shaft to vary the speed of the drive through said differential and including a ratchet wheel on the control shaft and an oscillatable pawl drivingly engageable with said ratchet wheel, a crank wheel having a connecting rod connected to said pawl and having a clutch connection to said power source, an electrically actuated clutch control member arranged to engage said clutch, an electrical sensing device positioned to electrically sense the passage of indexes positioned at equal intervals on one of said strips, a cam driven by said source of power, a switch positioned to be actuated by said cam and electrically connected to render said sensing device inoperative during a portion of the cycle of said power source, and means electrically connecting said sensing device to said clutch control member to actuate said clutch in response to the sensing function of said sensing device.

7. In a wrapping machine, a pair of parallel shafts having a pair of wrapping rolls thereon and driven thereby, meshing gears drivingly connecting said shafts, said rolls having mating pockets in their surfaces with mating sealing strips between the pockets, side sealing discs relatively rotatably mounted on said shafts at each end of each roll and in rolling contact to feed a pair of strips of sealable wrapping material between said rolls and to seal the sides of said strips and the centers thereof between the pockets formed by said rolls, other gears connected to each of said discs with the gears associated with the discs on one shaft meshed with the gears associated with the discs on the other shaft, means connecting said other gears at one end of the shafts to the other gears at the other end of the shafts for simultaneous rotation, a differential connected to drive one of said shafts at variable speeds and having a rotatable regulatory part, a source of power connected to said differential and to one of said other gears to drive said discs and said differential at constant speeds, a control shaft

connected to the regulatory part of said differential, control shaft drive means for rotating said control shaft to vary the speed of the drive through said differential and including a ratchet wheel on the control shaft and an oscillatable pawl drivingly engageable with said ratchet wheel, a crank wheel having a connecting rod connected thereto and to said pawl and having a one revolution clutch connection to said power source, an electrically actuated clutch control member arranged to engage said clutch, an electrical sensing device positioned to electrically sense the passage of indexes positioned at equal intervals on one of said strips, a cam driven by said source of power and angularly adjustable with respect thereto, a switch positioned to be actuated by said cam and electrically connected to render said sensing device inoperative during a portion of the cycle of said power source, and means electrically connecting said sensing device to said clutch control member to actuate said clutch in response to the sensing function of said sensing device.

8. In a wrapping machine, a pair of parallel shafts having a pair of wrapping rolls thereon and driven thereby, meshing gears drivingly connecting said shafts, said rolls having mating pockets in their surfaces with mating sealing strips between the pockets, side sealing discs relatively rotatably mounted on said shaft at each end of each roll and in rolling contact to feed a pair of strips of sealable wrapping material between said rolls to seal the sides of said strips and the centers thereof between the pockets formed by said rolls, other gears connected to each of said discs with the gears associated with the discs on one shaft meshed with the gears associated with the discs on the other shaft, means connecting said other gears at one end of the shafts to the other gears at the other end of the shafts for simultaneous rotation, a differential connected to drive one of said shafts at variable speeds and having a rotatable regulatory part, a source of power connected to said differential and to one of said other gears to drive said discs and said differential at constant speeds, a control shaft connected to the regulatory part of said differential, control shaft drive means for rotating said control shaft to vary the speed of the drive through said differential and including a ratchet wheel on the control shaft and an oscillatable pawl drivingly engageable with said ratchet wheel, a crank wheel having a connecting rod connected thereto and to said pawl and having a one revolution clutch connection to said power source, an electrically actuated clutch control member arranged to engage said clutch, a sensing device positioned to sense the passage of indexes positioned at equal intervals on one of said strips, a cam driven by said source of power and angularly adjustable with respect thereto, a switch positioned to be actuated by said cam and electrically connected to render said sensing device inoperative during a portion of the cycle of said power source, and means connecting said sensing device to said clutch control member to actuate said clutch in response to the sensing function of said sensing device.

9. In a wrapping machine, a pair of parallel shafts having a pair of wrapping rolls thereon and driven thereby, meshing gears drivingly connecting said shafts, drive means connected to said shafts, said rolls having mating pockets in their surfaces with mating sealing strips between the pockets, side sealing discs relatively rotatably mounted on said shafts at each end of each roll and in rolling contact to feed a pair of strips of heat sealable wrapping material between said rolls, one of said rolls and discs at the ends thereof being heated to seal the sides of said strips and the centers thereof between the pockets formed by said rolls, other drive means connecting the discs for simultaneous rotation, a differential connected to drive one of said drive means at variable speeds and having a regulatory part, a source of power connected to said differential and to the other of drive means to drive said other drive means and said differential at constant speeds, a control shaft connected to the regulatory part of said differential, control shaft drive means for rotating said control shaft to vary the speed of the drive through said differential and including a ratchet wheel on the control shaft and an oscillatable pawl drivingly engageable with said ratchet wheel, a crank wheel having a connecting rod connected to said pawl and having a clutch connection to said power source, an electrically actuated clutch control member arranged to engage said clutch, an electrical sensing device positioned to electrically sense the passage of indexes positioned at equal intervals on one of said strips, a cam driven by said source of power, a switch positioned to be actuated by said cam and electrically connected to render said sensing device inoperative during a portion of the cycle of said power source, and means electrically connecting said sensing device to said clutch control member to actuate said clutch in response to the sensing function of said sensing device.

10. In a wrapping machine, a pair of parallel shafts having a pair of wrapping rolls thereon and driven thereby, meshing gears drivingly connecting said shafts, drive means connected to said shafts, said rolls having mating pockets in their surfaces with mating sealing strips between the pockets, side sealing discs relatively rotatably mounted on said shafts at one end of each roll and in rolling contact to feed a pair of strips of heat sealable wrapping material between said rolls to seal the side of said strips and the centers thereof between the pockets formed by said rolls, a second drive means connecting the discs for simultaneous rotation, a differential connected to drive one of said drive means at variable speeds and having a regulatory part, a source of power connected to said differential and to the other of said drive means to drive said other drive means and said differential at constant speeds, a control shaft connected to the regulatory part of said differential, control shaft drive means for rotating said control shaft to vary the speed of the drive through said differential, an electrically actuated control member arranged to actuate said control shaft drive means, an electrical sensing device positioned to electrically sense the passage of indexes positioned at equal intervals on one of said strips, a cam driven by said source of power, a switch positioned to be actuated by said cam and electrically connected to render said sensing device inoperative during a portion of the cycle of said power source, and means electrically connecting said sensing device to said control member to actuate said control shaft in response to the sensing function of said sensing device.

11. In a wrapping machine having side by side packaging rolls with mating pockets in their sides and side sealing discs at one end of each roll, a first drive means connected to convergingly rotate said rolls, a second drive means connected to convergingly rotate said discs, a power source connected directly to one of said drive means, an infinitely variable differential drive mechanism drivingly connected between said source and the other of said drive means and having a control member adapted to vary the ratio of the mechanism from a one to one ratio, an electrical sensing device positioned to sense the presence of index marks on a strip of wrapping material being directed to said rolls and discs and adapted to produce an electrical signal in response to passage of the marks, means connected to actuate said control member from the one to one ratio condition of said mechanism in response to said signal, means for preventing the transmission of said signal to control said actuating means, and means driven in timed relation with said source and connected to actuate said transmission preventing means when said rolls are in registry with the desired position of an index mark with respect to said sensing device.

12. In a wrapping machine having side by side packaging rolls with mating pockets in their sides and opposed side sealing discs at one end of each roll, a first drive means connected to convergingly rotate said rolls, a second drive means connected to convergingly rotate said discs, a power source connected directly to one of said drive means, an infinitely variable differential drive mechanism drivingly connected between said source and the other of said drive means and having a control member adapted to vary the ratio of the mechanism, a sensing device positioned to sense the presence of index marks on a strip of wrapping material being directed to said rolls and discs and adapted to produce a signal in response to passage of the marks, means connected to actuate said control member in response to said signal, means for preventing the transmission of said signal to said control actuating means, and means driven in timed relation with said source and connected to actuate said transmission preventing means when said rolls are in registry with the desired position of an index mark with respect to said sensing device.

13. In a wrapping machine having side by side packaging rolls with mating pockets in their sides and side sealing discs at each end of each roll, a first drive means connected to convergingly rotate said rolls, a second drive means connected to convergingly rotate said discs, a power source connected directly to one of said drive means, an infinitely variable drive mechanism drivingly connected between said source and the other of said drive means and having a control member adapted to vary the ratio of the mechanism and means connected to actuate said control member.

14. In a wrapping machine having cooperative packaging rolls with mating pockets in their sides and registering sealing discs at one end of each roll, a first drive means connected to convergingly rotate said rolls, a second drive means connected to convergingly rotate said discs, and means connected to operate said drive means at relatively different speeds, one of said drive means being selectively variable in driving speed.

15. In a wrapping machine having cooperative packaging rolls with mating pockets in their sides and registering side sealing discs at one end of each roll, a first drive means connected to convergingly rotate said rolls, a second drive means connected to convergingly rotate said discs, and means connected to operate said drive means at relatively different speeds.

16. In a wrapping machine, a pair of parallel shafts having a pair of wrapping rolls thereon and driven thereby, drive means connected to rotate said shafts and rolls, said rolls having mating pockets in their surfaces with mating sealing strips between the pockets, side sealing discs relatively rotatably mounted about said shafts at one end of each roll and in rolling contact to feed a pair of strips of sealable wrapping material between said rolls to seal the side of said strips and the centers thereof between the pockets formed by said rolls, and other drive means connecting the discs for simultaneous rotation.

References Cited in the file of this patent

UNITED STATES PATENTS

2,611,225	Williams	Sept. 23, 1952
2,730,852	Clark	Jan. 17, 1956