

May 30, 1961

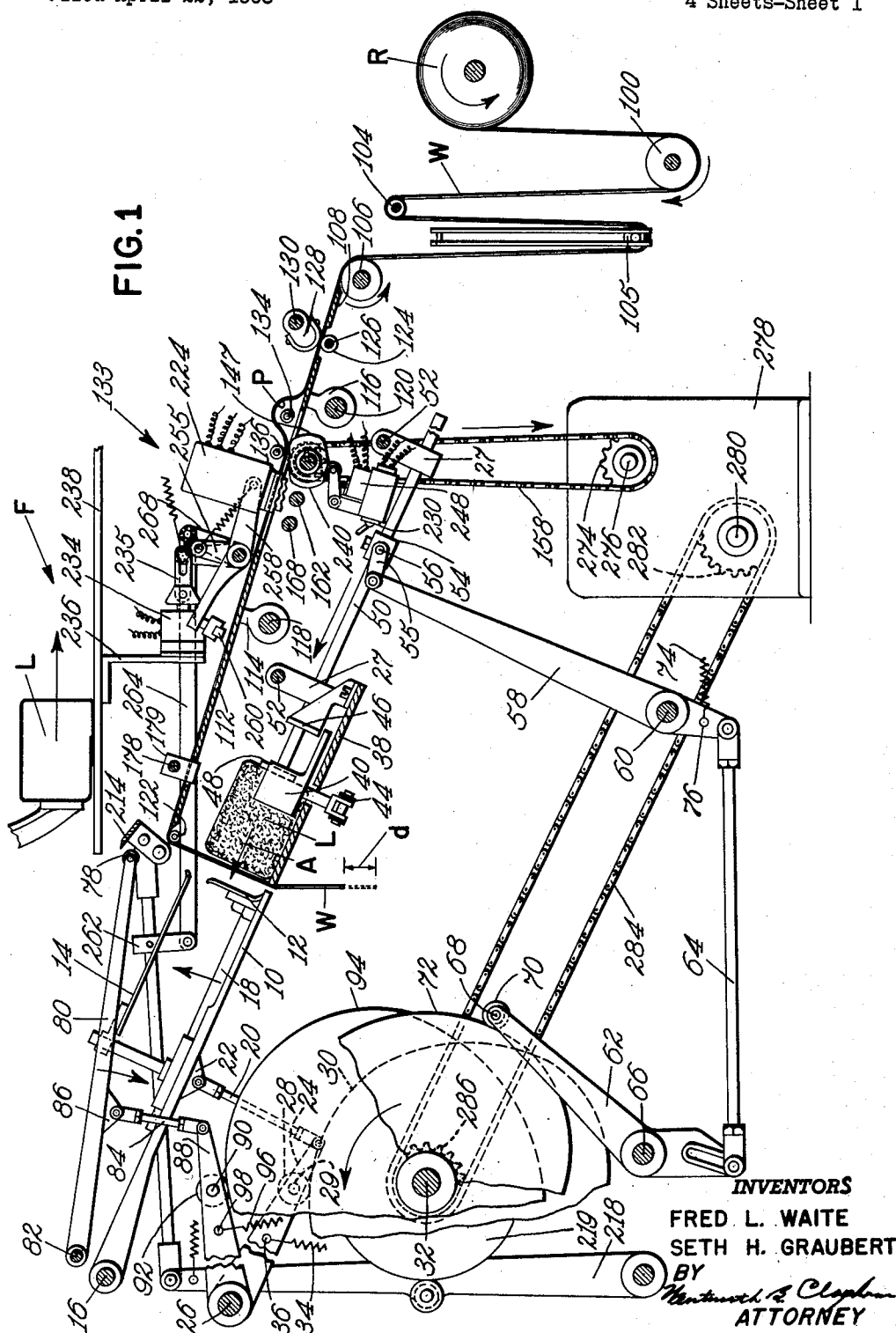
F. L. WAITE ET AL

2,985,990

REGISTRATION DEVICE FOR WRAPPING MACHINES

Filed April 22, 1958

4 Sheets-Sheet 1



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4 Sheets-Sheet 2

FIG. 2

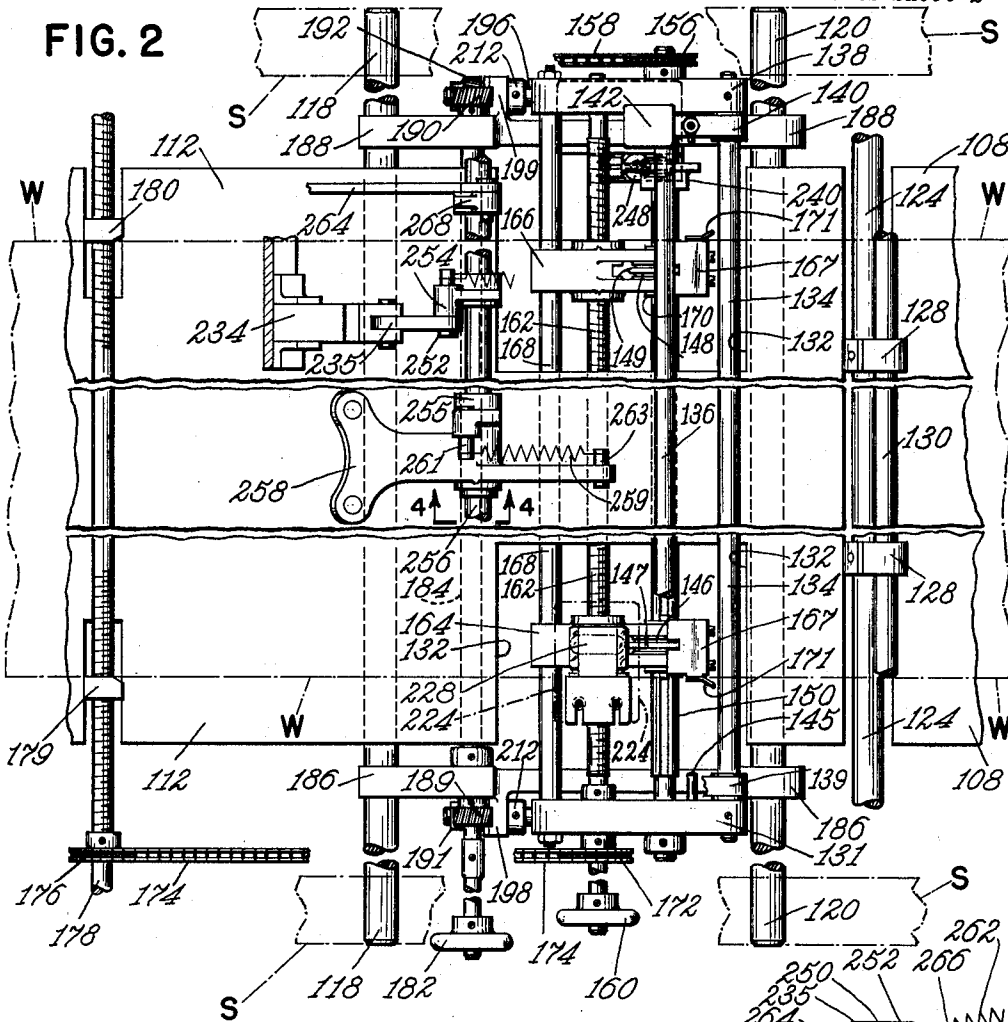


FIG. 4

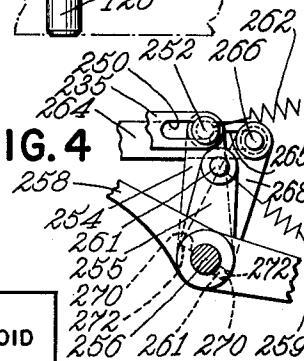
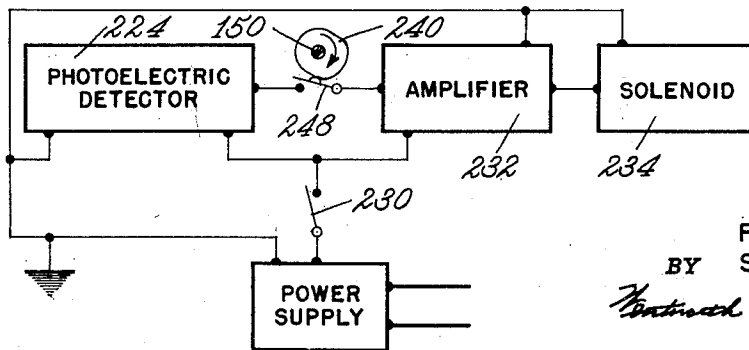


FIG. 3



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4 Sheets-Sheet 4

FIG. 7

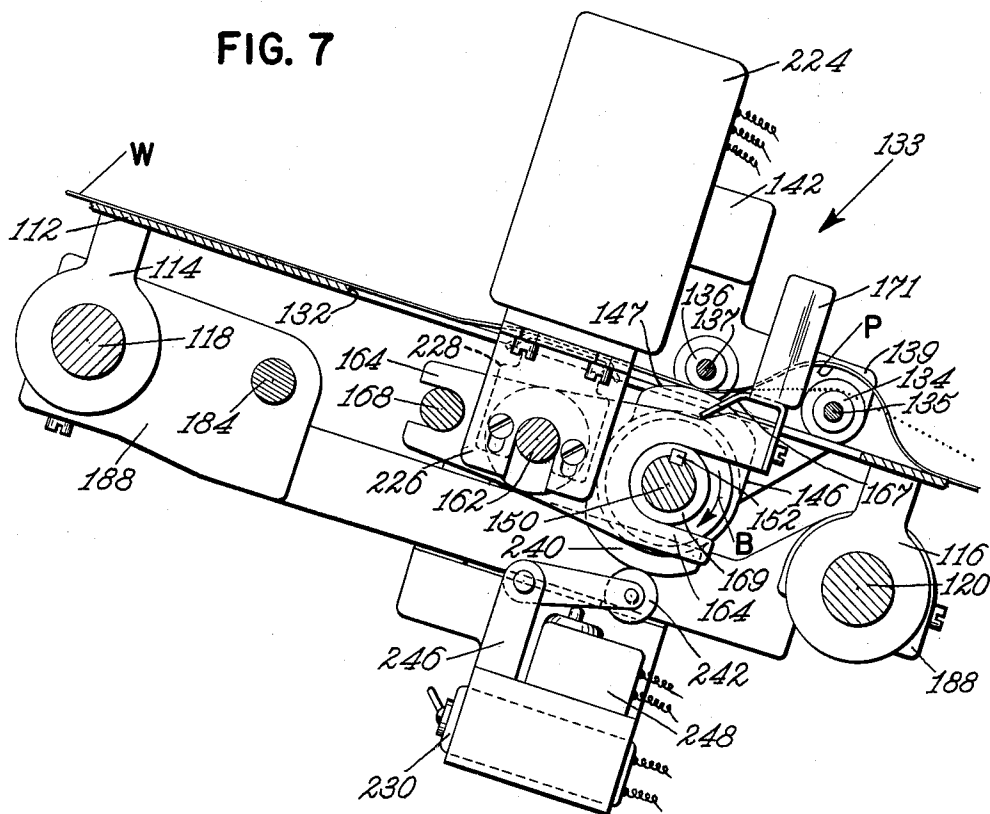


FIG. 8

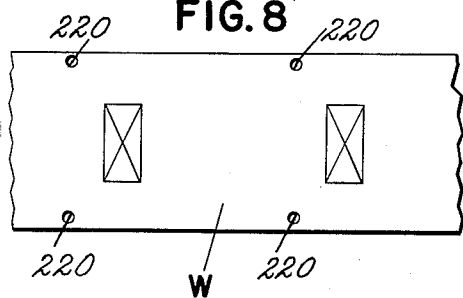
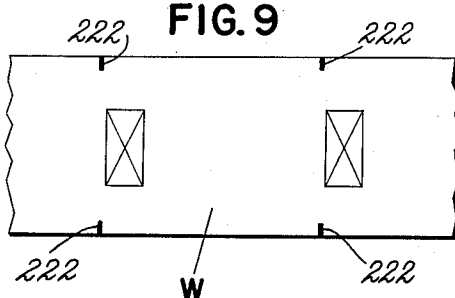


FIG. 9



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1

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REGISTRATION DEVICE FOR WRAPPING MACHINES

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11 Claims. (Cl. 53—51)

The present invention relates to wrapping machines and more particularly to web registering devices for maintaining a particular portion such as printed panels or other indicia on a continuous web of wrapping material in pre-determined position in relation to an article about which such portion of the wrapping material is wrapped.

In some registering devices heretofore available, the registration of the web of wrapping material was accomplished as the web was being fed in wrapped position about the article wrapped. Since the web feed of a wrapping machine of the type which can best use a registering device is comparatively rapid, great accuracy in web registration was impossible due to the time interval between the detection of the registration indicia and stopping of the web feed. This lack of accuracy necessitated the use of wrapping material whose exact position around the article wrapped was not critical and often resulted in the web being improperly registered on the wrapped article. In other presently available registering devices, the web travel was reversed through the use of downwardly moving roller mechanisms or intermittently actuated feeding couples, both utilizing complex drive means, again making accuracy of registration a problem.

The present invention is characterized by the provision of a series of spaced apertures or openings, preferably in the edges of the web of wrapping material, the openings being in proper spaced relationship to the particular printed panels or portions of the web to be placed in pre-determined position about the article to be wrapped. The web is disposed in the path of travel of the article to be wrapped, and fed by the machine from the supply source as the article to be wrapped and thence is traveled therethrough. The web is normally overfed as the article is being wrapped. A pair of continuously-operated web feeding couples, utilizing segmental rollers, are provided for reversing the normal web travel after the web has been severed from the supply source. These reverse feeding couples operate to slowly take up the slack caused by the overfeed until the spaced openings on the web reach the desired position in the operative range of the feeding couples. Since the couples in contact in the opening are no longer in contact with web material, the web travel is stopped, with the web now in registered position for the next article to be wrapped. If the web is provided with printed indicia rather than spaced apertures, a suitable photoelectric control device is provided. This control device is operative only on the reverse travel of the web and, upon detecting the printed indicia, a web clamp is actuated, stopping the reverse web travel by the couples in the pre-determined registered position until the next article is to be wrapped. Thus, greater accuracy of web registration is obtained than was heretofore possible in wrapping machines provided with web registering devices.

It is therefore an object of the present invention to provide a novel web registering device for a wrapping machine employing continuously-driven reverse web feed couples.

It is an added object of the invention to provide a web

2

registering device employing continuously reversely driven segmental web feed rollers.

It is another object of the invention to provide a web registering mechanism provided with selectively operable control means.

It is an object of the present invention to provide a web registering mechanism provided with control means selectively operable to properly register patterned lengths of web provided with either printed or aperture-type indicia.

Another object of this invention is to provide a control means for a web registering device employing a photo-electric detector and segmental rollers.

A further object of the present invention is to provide an adjustable web registering device for a wrapping machine to properly register a patterned length of web of wrapping material for various sized articles wrapped by the machine.

With these and other objects not specifically mentioned in view, the invention consists in certain constructions and combinations hereinafter fully described and set forth in the appended claims.

In the accompanying drawings which form a part of this specification and in which like characters of reference indicate the same or like parts:

Fig. 1 is a schematic side elevation, partially in section, of a wrapping machine provided with the present invention.

Fig. 2 is a plan view of a portion of a wrapping machine provided with the present invention.

Fig. 3 is a wiring diagram for a suitable control system for the invention.

Fig. 4 is a partial side elevation of a suitable web clamp mechanism taken along line 4—4, Figure 2.

Fig. 5 is a side elevation, partially in section, of a portion of the adjusting mechanism of the invention taken along line 5—5, Figure 6.

Fig. 6 is a plan view of the portion of the adjusting mechanism shown in Figure 3.

Fig. 7 is a detailed side elevation, partially in section of the preferred embodiment of the invention.

Fig. 8 is a plan view of a web of wrapping material utilizing aperture-type registering indicia.

Fig. 9 is a plan view of a web of wrapping material utilizing printed registering indicia.

Referring to Figures 1 and 2, which show a preferred form of the present invention associated with a wrapping machine. A lifter table 10 which may be of the general type disclosed in Jensen Patent 2,385,706 is provided with a back tension plate 12 with top tension plate 14 supported thereon. Table 10 is pivotally mounted on a shaft 16 suitably supported in side frames (not shown) and back tension plate 12 is secured to member 18 slidably mounted on table 10. An adjustable connecting rod 20 is pivoted to a lug 22 on the under side of lifter table 10 and pivotally connected to the free end of a cam lever 24 loosely mounted on a shaft 26 suitably supported in the side frames S. A cam follower 28 is rotatably mounted on a stud 29 projecting from the side of cam lever 24. Cam follower 28 engages a cam 30 which is mounted on a main cam shaft 32 suitably journaled in the side frames S and driven from a suitable power source (not shown).

A tension spring 34 attached at one end to a pin 36 projecting from cam lever 24 and at the other end to one of the side frames S maintains cam follower 28 against cam 30. Cam 30 thus imparts an oscillating motion to cam lever 24 which in turn transmits this motion to lifter table 10 through connecting rod 20 in timed relation to the other parts of the wrapping machine.

The lifter table 10 is normally maintained in an inclined position aligned with an inclined infeed runway

38 (Fig. 1) over which the articles, such as loaves L, to be wrapped are advanced by pusher plates 40 in runway 38. The pusher plates 40 are attached to an intermittently moving conveyor chain 44 which may be similar in construction and operation to that disclosed in Kottmann Patent 2,747,349. One side of each loaf L slides along a guide plate 46 adjustably mounted on runway 38. Guide plate 46 has a suitable cut-out (not shown) to allow passage of a reciprocating pusher plate 48 which pushes loaf L from runway 38 in the direction of arrow A in Figure 1 and into lifter table 10. Pusher plate 48 is affixed to one end of a rod 50 slidably supported in brackets 27 which are affixed to cross-bars 52 suitably attached to the side frames S. A sleeve 54 is adjustably secured on rod 50. A link 55 attached to a stud 56 protruding from sleeve 54 is connected to a lever 58 to operate pusher plate 48 as described hereinbelow.

Lever 58 is fulcrumed on a shaft 60 and receives its motion from cam lever 62 through connecting rod 64. Cam lever 62 is pivoted on a shaft 66 and has a cam follower 68 mounted on a stud 70 projecting from the end of cam lever 62. Cam follower 68 engages a cam track formed on the periphery of a cam 72 which is also mounted on main cam shaft 32. A tension spring 74 is employed to maintain cam follower 68 against the periphery of cam 72 and is anchored at one end to a pin 76 on lever 58 and at its other end to a suitable anchorage (not shown).

A lap roller 78 is supported in the ends of arms 80 pivoted on shaft 82 suitably supported in the side frames S. Arms 80 are actuated by a connecting rod 84 pivotally connected to lug 86 on the under side of one of the arms 80 and pivotally connected to a cam lever 88. Shaft 26 is also the fulcrum for cam lever 88 which has projecting from its side a stud 90 on which is mounted cam follower 92. Cam 94 mounted on main cam shaft 32 is engaged by cam follower 92 which is held against cam 94 by spring 96 attached at one end to pin 98 protruding from cam lever 88 and at its other end to a part of the main frame (not shown).

The web of wrapping material W is supplied to the machine from roll R (Fig. 1) suitably mounted between the side frames S. The web W passes under a continuously driven feed roller 100, over a guide roller 104. Web W then passes over a second guide roller 106, over a guide plate 108 positioned beneath web W and fastened to the side frames S.

Web W then extends over a second guide plate 112 positioned beneath web W and supported on lugs 114 and 116 mounted on cross-shafts 118 and 120 respectively. Cross-shafts 118 and 120 are suitably secured in the side frames S. Guide plates 108 and 112 are upwardly inclined as shown in Figure 1 in order to assume a position generally parallel to the direction of feed of articles to be wrapped. Web W, which extends beyond guide plate 112 and around roller 122 is draped in a substantially vertical plane normal to the direction of article feed for engagement by an article such as loaf L, being moved by pusher plate 48 onto table 10. The construction and operation of the mechanism just described may be generally similar to that disclosed in Arelt Patent 2,356,644 or Kottmann Patent 2,747,349.

Between guide plates 108 and 112, there is provided a roller 124 freely rotatably mounted on shaft 126. Positioned above and coacting with roller 124 are swinging brake shoes 128 loosely pivotally mounted on cross shaft 130. Brake shoes 128 are supported in a forwardly inclined position with their lower ends resting on top of roller 124. Web W is fed between roller 124 and brake shoes 128. By means of this mechanism web W can move freely forwardly therebetween but when web W, for any reason, tends to move in a reverse direction, brake shoes 128 coacting with roller 124 prevent such reverse movement. The brake shoe mechanism described herein may be similar in construction and operation to that dis-

closed in Kottmann Patent 2,747,349 and further disclosure is omitted in the interests of brevity.

Guide plate 112 is provided with two edge apertures or openings 132 shown best in Figure 2. Located in each of these openings 132 is a web control device 133. Since these web detecting devices 133 are essentially identical, a detailed description of one only is included herein in the interest of brevity.

Referring to Figure 7, web control device 133 includes a first guide roller 134 mounted on shaft 135 extending transversely of the wrapping machine and rotatably supported at each end in brackets 131 and 138 as shown in Figure 2. Web L passes over roller 134 and during the web feeding operation described hereinbelow occupies the position shown in dotted lines in Figure 7. Web L next passes beneath another transverse roller 136 mounted on shaft 137 rotatably supported at each end in brackets 139 and 140 which are, in turn, pivotally mounted at each end of roller 134 adjacent brackets 131 and 138.

Brackets 139 and 140 are each provided with a counterweight 142 to ensure positive engagement by roller 136 with the upper surface of web W. Adjustable stop screw 144 on each bracket 139 and 140 bears against a pin 145 on each bracket 131 and 138, limiting the downward rotation of brackets 139 and 140 and thereby the amount of pressure roller 136 and counterweights 142 exerts against web W. Stop screws 144 also operate to ensure equal pressure between roller 136 and web W.

Coacting with roller 136 to form feeding couples operative to reverse the normal web travel are two rollers 146 and 148, provided with segmental portions 147 and 149 respectively and each slidably mounted on shaft 150 by a key 152. Keys 152 are fitted into a longitudinal keyway 154 in shaft 150, thereby permitting rollers 146 and 148 to be moved toward or away from each other as described hereinbelow to accommodate various widths of web W. Shaft 150 is rotatably supported at each end in brackets 131 and 138 as shown in Figure 2.

Sprocket 156 mounted on shaft 150 is driven by chain 158 which in turn is driven by sprocket 274 on shaft 276. Shaft 276 is rotated in timed relationship to the operation of the wrapping machine through gear box 278. The input drive to gear box 278 is applied by shaft 280. Shaft sprocket 282 mounted on shaft 280 is driven by chain 284 which in turn is driven by sprocket 286 mounted on the main cam shaft 32. The associated drive mechanisms are such that rollers 146 and 148 are rotated in the direction of arrow B in Figure 7 to make one complete revolution per cycle of the associated wrapping machine.

In operation, the wrapping machine is first adjusted to accommodate the width of web W employed. Adjustment is also provided for adjusting the machine to wrap articles of varying girth. To adjust the machine for a particular web width, hand wheel 160 on threaded shaft 162 is turned. Brackets 164 and 166 threaded on shaft 162 and supported at each end on shafts 168 and the collar-like portions 169 and 170 of rollers 146 and 148, as shown in Figures 2 and 7, are thus moved along shaft 162 toward or away from each other. Mounted on the end of each of the brackets 164 and 166 adjacent shaft 150 is a web deflector 167 and an upright web guide 171. It will be understood that, as brackets 164 and 166 are thus moved, rollers 146 and 148 and upright web guides 171 are likewise moved toward or away from each other to the desired web width.

Sprocket 172 (Figures 5 and 6) is mounted on one end of shaft 162 and connected by chain 174 to sprocket 176 on threaded shaft 178. Upright front web guides 179 and 180 are threaded on shaft 178. When hand wheel 160 is actuated, sprocket 172 through chain 174 and sprocket 176 actuates shaft 178 moving front web guides 179 and 180 toward or away from each other the desired web width.

In wrapping articles of varying girth, it will be understood that, in order to place printed material on web

W in the desired location, adjustment must be provided to compensate for the variation in girth. Thus, there is provided for adjusting the position of web detecting devices 133 longitudinally of web W to accomplish the desired compensation for girth variation. Referring to Figures 2 and 6, hand wheel 182 is mounted on shaft 184 rotatably supported in brackets 186 and 188 which rest at each end on cross-shafts 118 and 120. Mounted on and rotating with shaft 184 are two helical gears 189 and 190 at each end thereof adjacent brackets 186 and 188 respectively. Co-acting with gears 189 and 190 are matching helical gears 191 and 192, each mounted at one end of threaded shafts 194 and 196 respectively. Shaft 194 extends freely through extension 198 of bracket 186 and extension 199 of bracket 136 and is threaded through threaded extension 200 of bracket 131 and is freely mounted in extension 202 of bracket 186. Shaft 196 is mounted in bracket 188 in a manner similar to shaft 194 in bracket 186 and shaft 196 is threaded through bracket 138 in like manner to shaft 194 in bracket 131. Shafts 194 and 196 are each provided with a collar 212 maintaining shafts 194 and 196 in position in brackets 186 and 188 respectively.

Upon actuation of hand wheel 182, shafts 194 and 196 are rotated through matching helical gears 189 and 191 and gears 190 and 192 respectively. The rotation of shafts 194 and 196 operates to move brackets 131 and 138 and their associated mechanism longitudinally of web W to accommodate varying girths of articles to be wrapped.

In the operation of the embodiment of the invention shown in Figures 1 and 2, after the wrapping machine has been adjusted as described hereinabove, and web W threaded through the machine as shown in Figure 1, the loaf L is pushed in the direction of the arrow shown in Figure 1 by reciprocating pusher plate 48. This motion is derived from cam 72 as previously described. As the loaf L is pushed onto lifter table 10, it presses the web W against the back tension plate 12 while the latter is displaced rearwardly and the top tension plate 14 wipes the wrapping material over the top of the loaf. The loaf is thus partially enwrapped in the portion of web W draped in its path. Cam 30 then actuates cam lever 24 and through connecting rod 20 raises lifter table 10 toward foldway F. As lifter table 10 is moved upwardly roller 78 through the action of cam 94 upon cam lever 88 and connecting rod 84 moves downwardly in the direction of the arrow shown in Figure 1. During this movement of lap roller 78, more of the web W is drawn off the feed roll R and through the machine, thereby overfeeding web W the pre-determined amount "d" shown in dotted lines in Figure 1.

When loaf L on lifter table 10 reaches a position aligned with foldway F, knife 214 is actuated through connecting rod 216 and lever arm 218 in timed relationship to table 10 by cam 219 on shaft 32 to sever the proper length of wrapper web W. The knife operating mechanism is substantially identical with that disclosed in Schmitt Patent 1,851,295 and further disclosure thereof is deemed unnecessary.

As knife 214 severs web W, shaft 150 brings the segmental portions 147 and 149 of rollers 146 and 148 into web feeding engagement with roller 136. Since there is no longer any forward feed of web by roller 100, rollers 146, 148 and 136 co-act to reverse the normal forward feed of web W. Rollers 146 and 148 make one revolution per wrapping cycle of the machine and it will be understood that during the forward feed of web W by roller 100, the timing of shaft 150 is such that the segmental portions 147 and 149 are not in contact with roller 136 thus offering no resistance to the normal forward travel of web W, preventing crushing of loaf L.

During the reverse web travel, web W is deflected upwardly by web deflector 167 as shown in Figure 7. Since brake shoes 128 prevent any further movement of web

W therebeyond, web W forms a loop p, and is no longer in contact with roller 134 until web W is again fed forward as the next article is wrapped by the associated machine.

If the web of wrapping material used is provided with apertures 220, as shown in Figure 8, web W is fed in the direction described hereinabove by rollers 136, 146 and 148 until apertures 220 are moved thereby between roller 136 and the segmental portions 147 and 149 of rollers 146 and 148. In this position, since there is no longer any web between these co-acting rollers to be engaged thereby, the reverse feed of web W is halted. Thus web W is "registered"; that is, the printed matter on web W is in position to be properly positioned on the next article wrapped by the machine.

If the web of wrapping material used is provided with printed indicia 222 as shown in Figure 9, there is provided a suitable photoelectric detector 224. Detector 224 is adjustably secured to bracket 164 by angle member 226 as shown in Figure 7. Photoelectric detector 224 is of conventional reflector-type construction and may be similar in construction and operation to that shown in the above referred to Jensen patent. A reflector plate 228 secured between member 226 and bracket 164 and under detector 224 operates to vary the intensity of light reflected to detector 224.

To change from mechanical operation when apertures 220 are used to electrical operation when printed indicia 222 are used, toggle switch 230 is actuated. This completes a circuit energizing photoelectric detector 224. Photoelectric detector 224 is connected by suitable electrical wiring to an amplifier 232 of conventional construction. Amplifier 232 is, in turn, suitably connected to a solenoid 234 secured to bracket 236 attached to guide 238 of foldway F.

Web W is fed about an article as described hereinabove and then severed by knife 214. To prevent actuation of the web detecting device during the normal forward feed of web W, means is provided for selectively by-passing amplifier 232. To accomplish this, a cam 240 is secured to shaft 150 with its high portion co-extensive with but diametrically opposite the segmental portion 147 of roller 146. A roller 242 rotatably mounted at the free end of a link 244 is adapted to be selectively engaged by cam 240 as it is rotated on shaft 150. Link 244 is pivotally mounted on standard 246 adjacent toggle switch. A normally-open switch 248, located electrically between the photoelectric detector 224 and the amplifier 232, is positioned adjacent the underside of link 244 such that, when link 244 is rotated downwardly switch 248 is closed completing the circuit to the amplifier 232.

Web W is fed normally as described hereinabove. As knife 214 severs web W, the segmental portions of 147 and 149 of rollers 146 and 148 come into engagement with roller 136 to start the reverse feed of web W. At the same time, the high portion of cam 240 engages roller 242 depressing link 244 and closing switch 248. Thus, while photoelectric detector 230 is energized during the entire wrapping cycle, amplifier 232 is energized only on the reverse feed of web W. This prevents actuation of solenoid 234 on the forward or normal feed of web W.

Web W is then fed by rollers 136, 146 and 148 as described hereinabove in connection with web provided with apertures 220. When light from detector 224 strikes a printed spot or indicia 222 on web W as the feed thereof is reversed, the intensity of the light reflected is thus diminished and the passage of electric current from detector 224 to amplifier 232 is materially altered. This variation of current energizes solenoid 234, retracting extended armature 235 thereof. Armature 235 is provided with a slot 250 through which extends pin 252 on one end of arm 254. The other end of arm 254 is fixed to shaft 256, rotatably secured in the side frames S. As armature 235 is retracted, arm 254 rotates shaft 256.

Arm 255 is likewise fixed to and rotates with shaft 256.

Adjacent arm 255 and bearing against one side thereof as shown in Figure 2 is a clamp arm 258 freely mounted adjacent its mid-point on shaft 256. Web clamp 260 is secured at one end of clamp arm 258 while spring 259 is anchored at one end on stud 263 on the other end of clamp arm 258 remote from web clamp 260. Spring 259 is fixed at its other end on stud 261 on arm 255. (See Figure 4.)

When solenoid 234 is energized and shaft 256 oscillated as described hereinabove, arm 255 secured to shaft 256 is oscillated also. As arm 255 is moved spring 259 urges clamp arm 258 into movement with arm 255, and moving web clamp 260 into engagement with the upper surface of web W and halting further reverse feeding thereof. Thus web W is in registered position for the next article to be wrapped.

It will be understood that when, as shaft 150 is rotated and roller 136 and the segmental portions 147 and 149 of rollers 146 and 148 are no longer in contact to reverse the travel of web W, cam 240 is also rotated out of contact with link 244, permitting switch 248 to return to its normally open position. This interruption in the circuit to amplifier 232 and thence to solenoid 234 de-energizes solenoid 234 permitting spring 262 to return armature 235 to its extended position. This movement of armature 235 rotates arm 254, shaft 256 and arm 255 such that clamp arm 258 and web clamp 260 are rotated upwardly through the action of spring 259 and out of engagement with web W, thus permitting free movement of web W about the next article wrapped by the associated machine.

To maintain web W taut during the severing operation by knife 214, described above, link 262 is mounted on connecting rod 216 and is pivotally connected at its other end to connecting rod 264. Connecting rod 264 is provided adjacent its free end with a slot 265 through which pin 266 extends. Pin 266 is rotatably mounted on the free end of arm 268 which is secured to and rotates with shaft 256. When connecting rod 216 actuates knife 214, it likewise actuates connecting rod 264 which, in turn, rotates arm 268 and shaft 256. The rotation of shaft 256 rotates arm 255, moving clamp arm 258 and web clamp 260 into engagement with the upper surface of web W maintaining web W taut until knife 214 has severed the proper length of web W from the supply roll R. As connecting rod 216 moves knife 214 back to its non-operative position shown in Figure 1, it likewise accomplishes the release of web W by moving rod 264 such that arm 268, shaft 256 and arm 255 are rotated to their non-operative positions. This accomplishes the release of web clamp 260 from engagement with web W and permits the reverse travel of web W by rollers 136 and 146 and 148 described above.

It will be understood that since arms 254 and 268 are both secured to and rotate with shaft 256, slots 250 and 265 permit a degree of lost motion therebetween when either arm 254 or 268 is oscillated to actuate clamp arm 258 and web clamp 260. In addition, it will be noted that arm 255 is provided with a stepped face 270 which is mounted on shaft 256 adjacent the stepped face 272 of clamp arm 258 as shown in Figure 4. The stepped faces 270 and 272 of arms 255 and 258 are separated by a gap 261 which permits a degree of lost motion therebetween.

What we claim is:

1. Web registering mechanism for a continuous web of wrapping material having a regularly recurring pattern comprising, means for advancing a patterned length of said web, continuously driven means adapted to reverse the normal feed of said web upon the severance of said patterned length of said web, each of said patterned lengths of said web being provided with registering indicia in spaced relationship to said pattern, detecting means for said registering indicia operative to interrupt said reverse web feed when said registering indicia reaches a pre-determined position whereby said pattern on said web is

disposed in a predetermined position for the next article to be wrapped, said detecting means including an electronic device for detecting printed registering indicia on said web and mechanical means for detecting aperture-type registering indicia on said web, and means for adapting said detecting means to detect a selected type of indicia on said web.

2. In a machine for wrapping articles in the leading end of a continuous web of wrapping material, web feeding means, mechanism for operating said means to overfeed a patterned length of said web and dispose it in the path of movement of said article, a web registering device for automatically adjusting the position of said patterned length of said web to a pre-determined position in said path of travel of said article, said device comprising a feeding couple adapted to engage said web and reverse the normal web feed taking up said overfeed of said machine upon the severance of said registered patterned length of said web, means for driving said couple, means for severing said web, said web being provided with equidistantly longitudinally spaced indicia, detecting means associated with said couple for scanning said indicia and operative to interrupt said reverse travel of said web when a selected indicia reaches a pre-determined position whereby the next patterned length of said web is disposed in proper registration for the next article to be wrapped by said machine, said detecting means including a photo-electric device for detecting printed registering indicia on said web and mechanical means for detecting aperture-type registering indicia on said web, and means for adapting said detecting means to detect a selected type of indicia on said web.

3. The invention defined in claim 2 wherein said feeding couple comprises an elongated upper roller located adjacent the path of travel of said web, a pair of co-acting driven rollers having web feeding segments, located at the opposite side of said web, and means for driving said segmental rollers in a direction opposite to the normal path of travel of said web, whereby when said segments on said rollers press said web against said upper roller, said web is moved in a direction opposite to its normal path of travel.

4. Web registering apparatus for use with a wrapping machine employing a continuous web of wrapping material, said web being provided with longitudinally spaced apertures and recurring patterns, a continuously driven feeding couple for reversing the normal web feed of said machine upon the severance of a patterned length of said web from about an article wrapped by said machine, means for severing said web and means for driving said couple, said couple being adapted upon engaging said apertures to interrupt said reverse travel of said web when said selected aperture reaches a pre-determined position whereby the next patterned length of said web is disposed in proper registration for the next article to be wrapped by said machine.

5. In a machine for wrapping articles in the leading end of a continuous web of wrapping material, end web feeding means, mechanism for operating said means to feed an excess of a patterned length of said web and dispose it in the path of movement of said article, a web registering device for automatically adjusting the position of said patterned length of said web to a pre-determined position in said path of travel of said article, said device comprising an elongated roller supported transversely of said web, two segmental rollers supported adjacent the lower face of said web, said elongated roller and said segmental rollers coacting to reverse the normal travel of said web to take up said excess of web upon the severance of said registered pattern length of said web, means for driving said segmental rollers and means for severing said web, said web being provided with equidistantly spaced apertures adjacent the edges of said web to identify patterned lengths of said web, each of said segmental rollers being adapted to engage its associated aperture

9

to interrupt said reverse web travel, thereby disposing the next patterned length of said web in proper registration for the next article to be wrapped by said machine.

6. The invention as defined in claim 4 including means for adjusting said web registering device in accordance with the spacing of said aperture on said web whereby said device is adapted to place said web in proper registration about various sized articles to be wrapped by said machine.

7. In a wrapping machine provided with a continuous web of wrapping material having longitudinally spaced indicia in spaced relationship to a recurring pattern on said web, means for drawing from the supply of said web a length thereof greater than the distance between successive recurring patterns, and disposing it in the path of travel of an article to be wrapped by said machine, a web severing device for severing one patterned length of said web from the remainder thereof and web registering mechanism responsive to said indicia for locating the next patterned length of said web in a pre-determined path of travel of the next article to be wrapped by said machine, said web registering device including an elongated upper roller located adjacent the path of travel of said web, a pair of co-acting driven rollers having web feeding segments, means for driving said segmental rollers in a direction opposite to the normal path of travel of said web whereby, when said segments on said driven rollers press said web against said upper roller, said web is moved in a direction opposite to its normal path of travel to take up the excess of said web upon the severance of one patterned length thereof, said segments on said driven rollers adapted to engage said indicia when said web is provided with aperture-type indicia to interrupt said opposite web travel disposing the next patterned length of said web in proper registration, a photoelectric detector arranged to intercept light reflected from said web and responsive to variations in the reflection of light created when said web is provided with printed indicia, clamp means controlled by said photoelectric detector operative to retain said web in position, by interrupting said opposite web travel when said printed indicia causes a variation in light reflected to said photoelectric detector, disposing the next patterned length of said web in proper registered position and means for adapting said web registering mechanism to handle a selected type of indicia on said web.

8. Web registering apparatus for use with a wrapping machine provided with a continuous web of wrapping material having longitudinally spaced registering indicia in spaced relationship to a recurring pattern on said web, said machine adapted to feed a length of web in excess of the distance between successive recurring patterns, disposing it in the path of travel of an article to be wrapped and severing a patterned length of said web from the remainder thereof, said apparatus comprising an elongated upper roller located adjacent the path of travel of said web, a pair of co-acting driven rollers having web feed-

10

ing segments, means for driving said segmental rollers in a direction opposite to the normal path of travel of said web whereby, when said segments on said driven rollers press said web against said upper roller, said web is moved in a direction opposite to its normal path of travel to take up the excess of said web upon the severance of a patterned length thereof, said segments on said driven rollers adapted to engage said indicia when said web is provided with aperture-type indicia to interrupt said opposite web travel disposing the next patterned length of said web in proper registration, a photoelectric detector arranged to intercept light reflected from said web and responsive to variations in the reflection of light created when said web is provided with printed indicia, clamp means controlled by said photoelectric detector operative to retain said web in position, by interrupting said opposite web travel when said printed indicia causes a variation in light reflected to said photoelectric detector, disposing the next patterned length of said web in proper registered position and means for selectively adapting said web registering mechanism to handle a selected type of indicia on said web.

9. The invention as defined in claim 8 including means for adjusting said web registering apparatus in accordance with the width of said web and the dimensions of articles to be wrapped by said device whereby said device is adapted to place said pattern in a pre-determined location about various sized articles to be wrapped by said machine.

10. The invention as defined in claim 8 wherein said means includes an operating circuit for said detector, a switch for completing or interrupting said circuit to selectively energize or de-energize said detector when said web is provided with predetermined indicia, said detector being operative to generate a clamp-actuating signal in response to the detection of printed registering indicia on said web, an amplifier for amplifying said clamp-actuating signal from said detector, means connecting said amplifier to said web clamp means and means for by-passing said amplifier during the normal forward feed of said web whereby said clamp means is actuated by said detector only on the reverse feed of said web to maintain said web in registered position.

11. The invention as defined in claim 3 wherein the reverse travel of a web provided with aperture-type registering indicia is continued until said apertures are disposed between said upper roller and said web feeding segments whereby said reverse travel of said web is arrested disposing said web in registered position.

References Cited in the file of this patent

UNITED STATES PATENTS

1,649,595	Johnston	Nov. 15, 1927
2,611,224	Jensen	Sept. 23, 1952
2,824,736	Allen	Feb. 25, 1958
2,826,882	Jensen	Mar. 18, 1958