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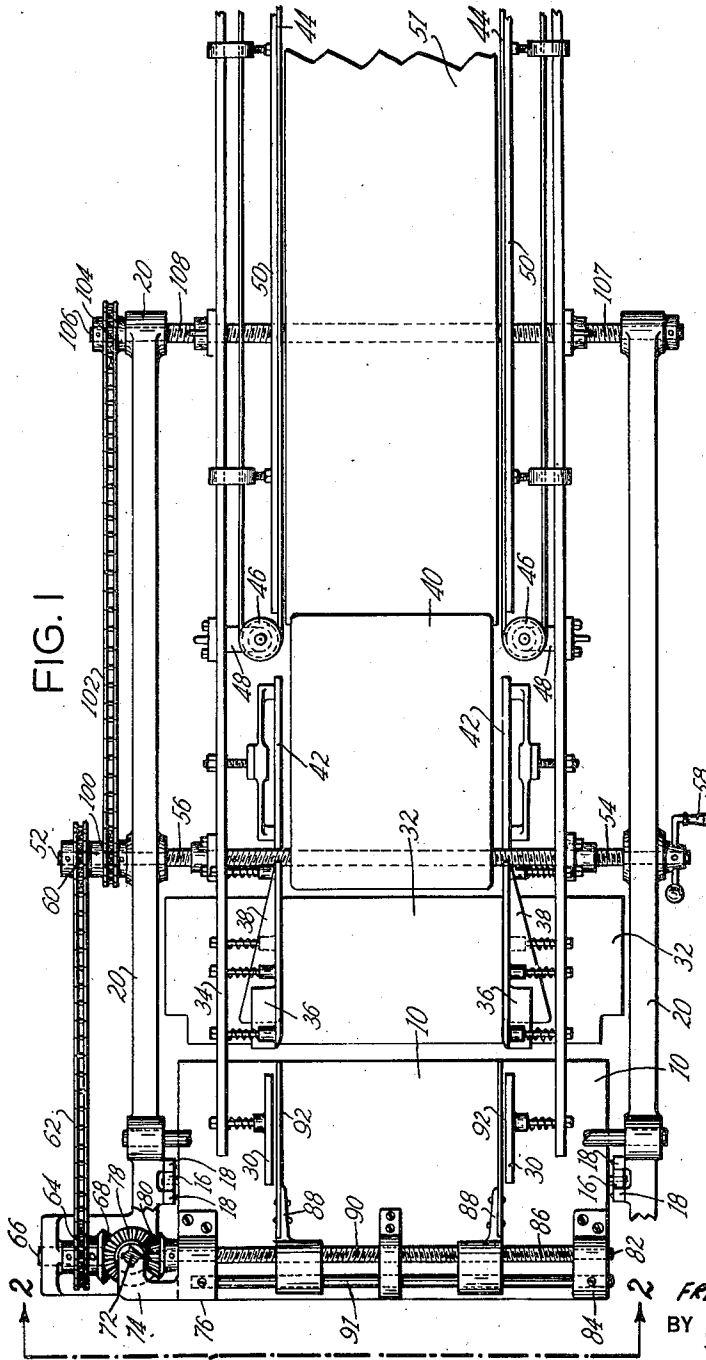
F. F. TONE

2,360,910

SINGLE ADJUSTMENT FOR VERTICALLY RECIPROCATING TABLES

Filed Nov. 14, 1940

4 Sheets-Sheet 1



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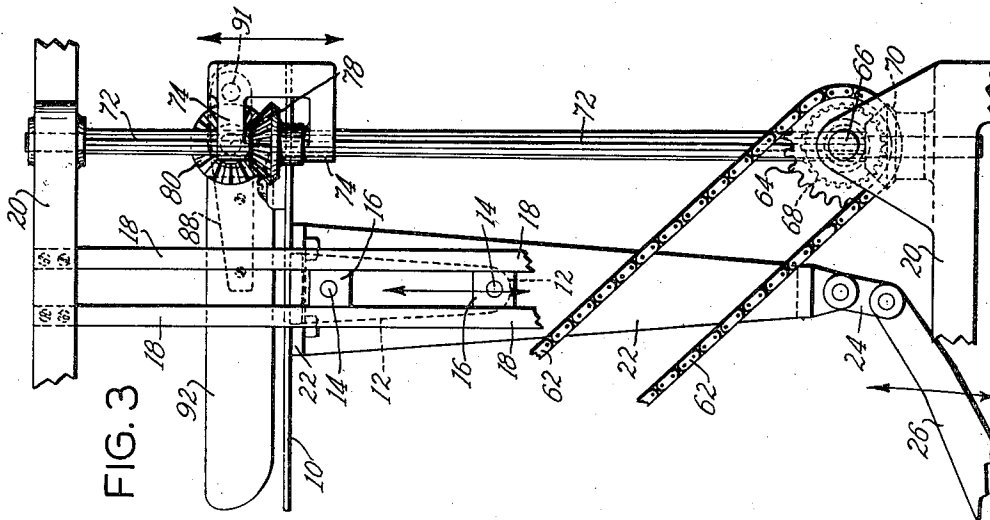
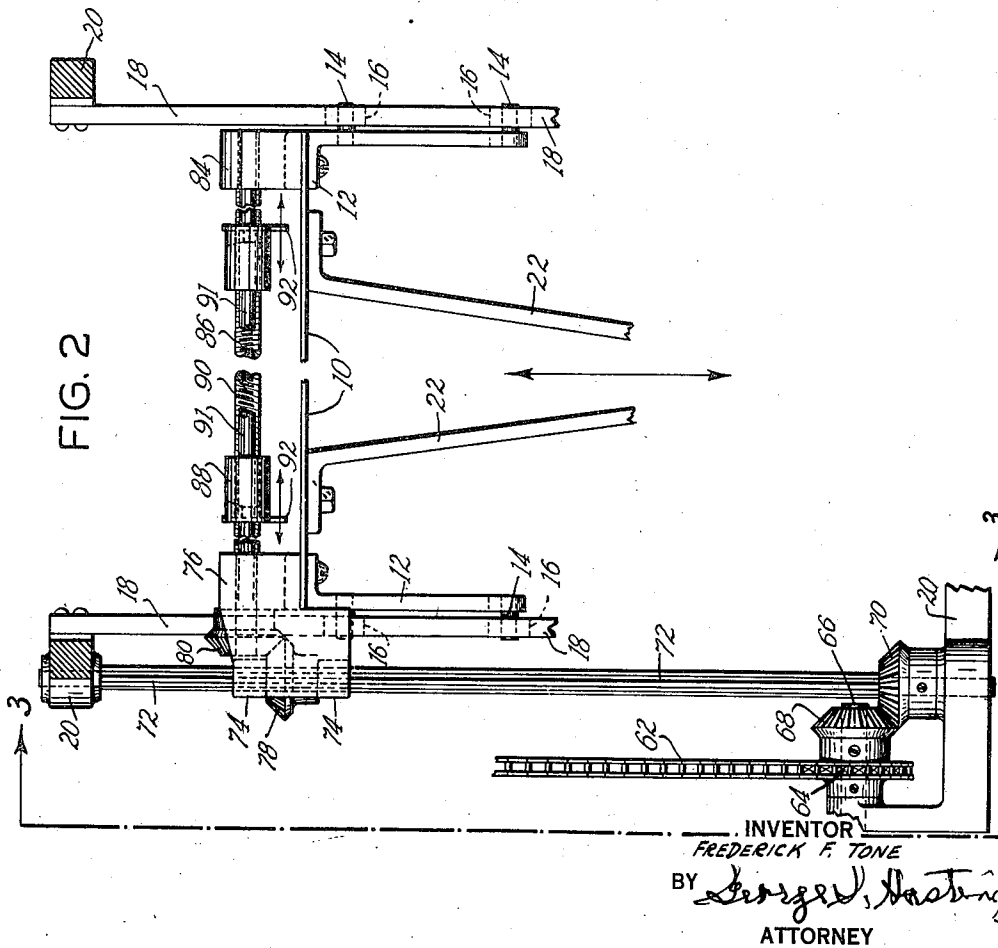
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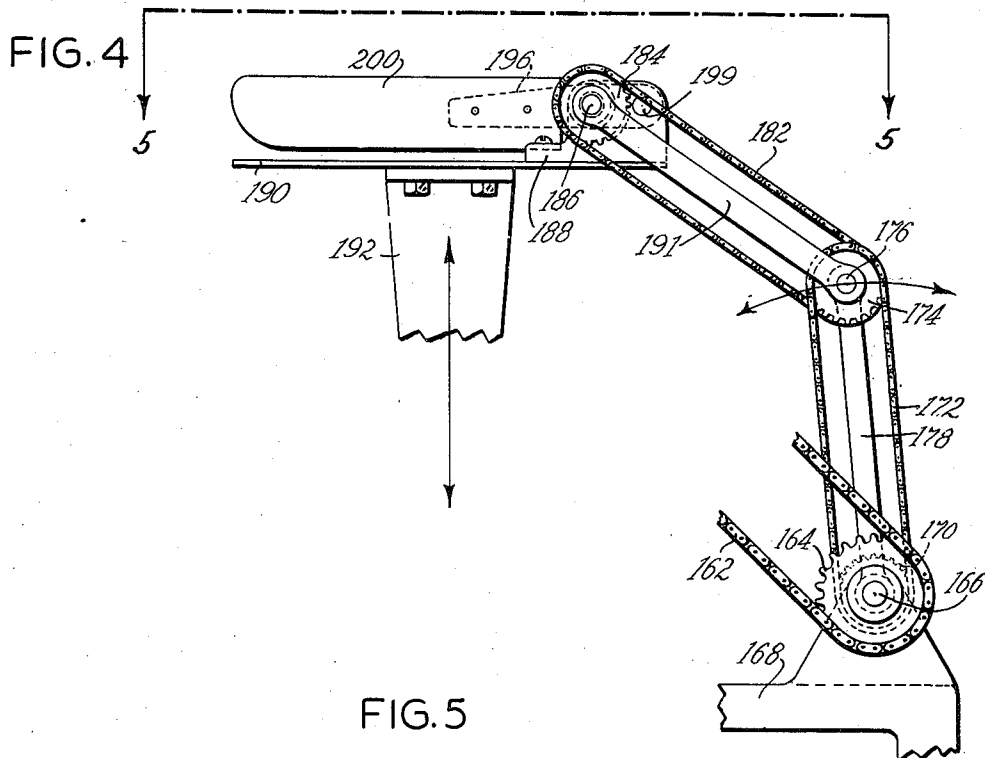
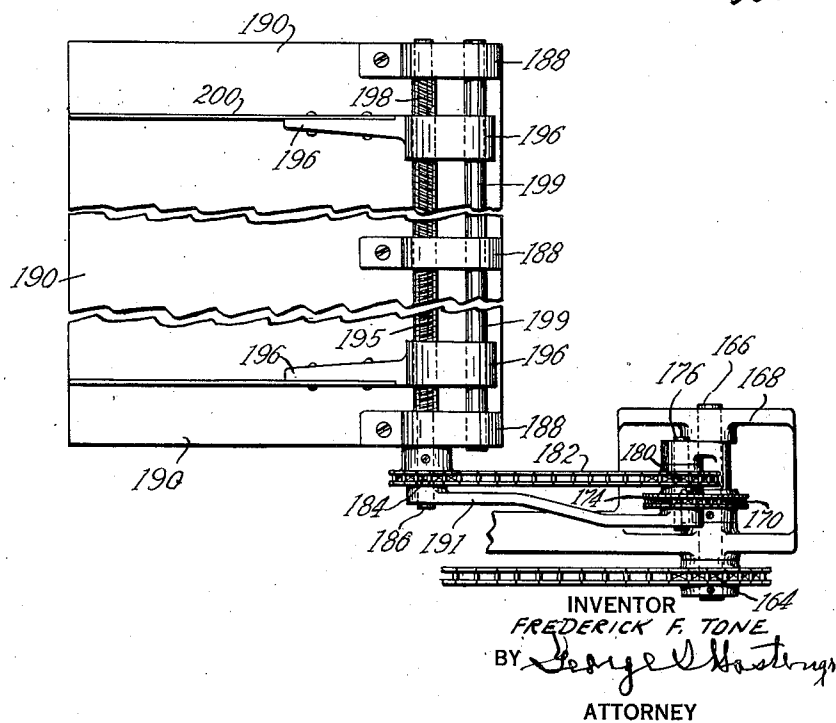


FIG.5



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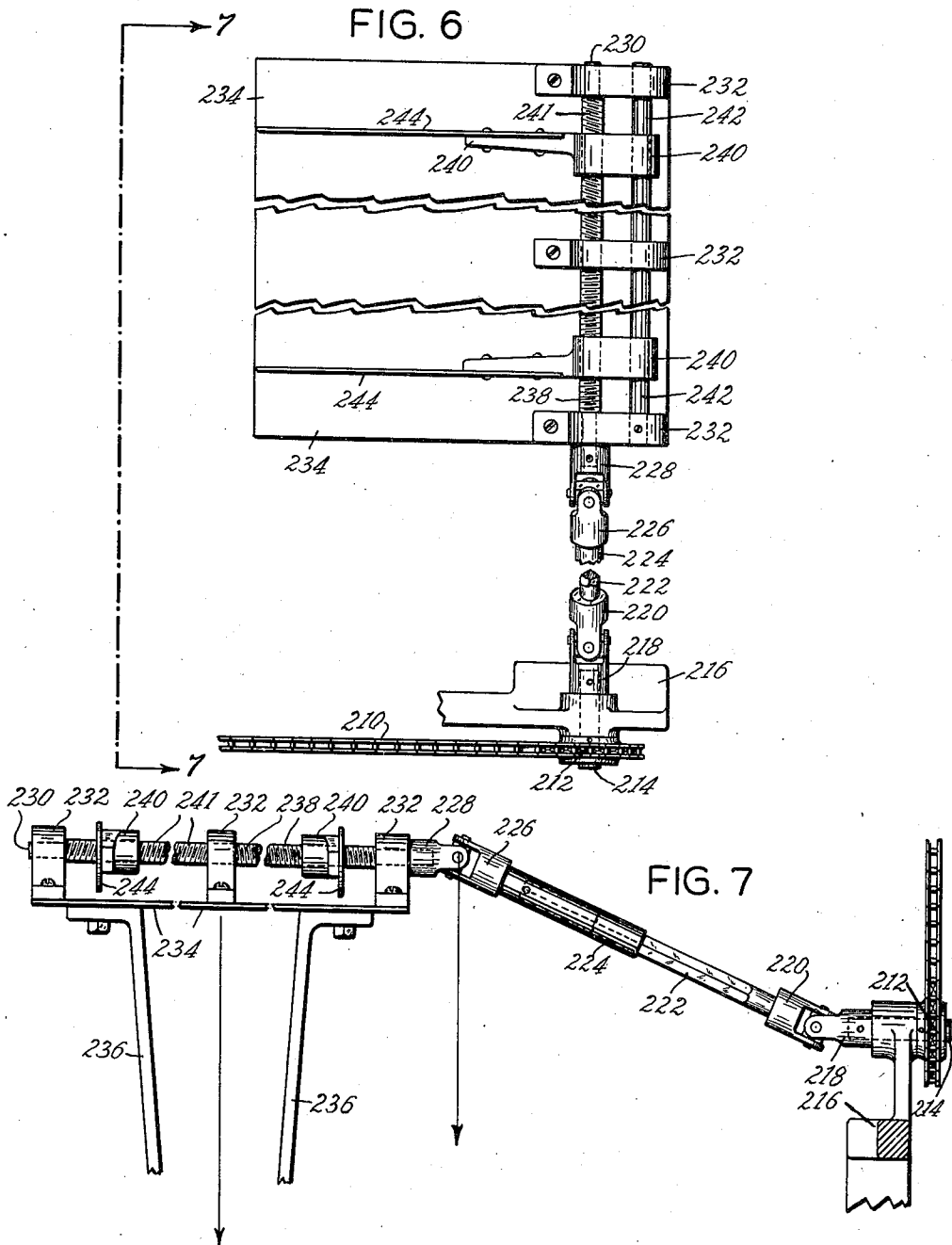
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4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

2,360,910

SINGLE ADJUSTMENT FOR VERTICALLY
RECIPROCATING TABLES

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7 Claims. (Cl. 93—2)

This invention relates to wrapping machines, more particularly to the adjustment of the tuckers, folders, heat sealers and delivery belts thereof. The main object of the invention is to provide mechanism for adjusting tuckers supported on a member which carries the article to be wrapped from one position to a different position, the tuckers serving to fold the wrapping material over the ends of the article on said member. To this end, in the particular embodiments of the invention selected for exemplification, said member comprises a table carrying the tuckers and movable vertically from one position at which the article is delivered thereto to a different position at which the article is removed, and the article is enfolded and the wrapping material is tucked over the ends of the article during the delivery of the latter to the table.

An important object of the invention is to provide a single tucker adjusting device operated from another part of the machine for tuckers on lifter tables having bodily vertical movement from one horizontal position to another horizontal position on a different level. There are two general types of lifter tables, the foregoing type, and the swinging lifter table. The swinging lifter table offers less difficulty in adjusting the tuckers thereon because it is possible to adjust the same along the hinge line of the table. Applicant's invention has the merit that it will operate to adjust tuckers in the more difficult situation where there is no hinge line along which an adjustment can be made.

A further object is to adjust tuckers supported on a table of the nature described simultaneously with folders and heat sealers which serve to fold the remaining outstanding flaps into overlapping relation on the ends of the articles and heat seal the same together. With these and other objects not specifically mentioned in view, the invention consists in certain constructions and combinations hereinafter fully described.

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 plan view of the preferred construction for simultaneously adjusting the tuckers, folders, heat sealers and delivery belts;

Fig. 2 is an end elevation of the tucker adjusting mechanism thereof;

Fig. 3 is a side elevation of the tucker adjusting mechanism;

Fig. 4 is a fragmentary side elevation of a modified form of tucker adjusting mechanism;

Fig. 5 is a plan view of the same;

Fig. 6 is a fragmentary plan view of still another modified form of tucker adjusting mechanism; and

Fig. 7 is an end elevation of the same viewed from line 7—7 in Fig. 6.

Referring to Figs. 1 to 3, the horizontal lifter table 10 is provided with brackets 12 carrying pins 14 pivotally mounted in blocks 16 sliding between upright bars 18 fastened to the side frames 20 of the machine. To the bottom of the lifter table is fastened a yoke 22 which is connected by a link 24 to a lever 26 actuated by a cam (not shown). Thus, the lifter table is periodically raised from a lower level at which it receives the article such as a loaf of bread or other object and elevates it to an upper level. The machine may be equipped with a web feed of the type shown in the patent to L. Ferenci, No. 2,082,945, issued June 8, 1937, which feeds a cut wrapper through a guide (not shown) on table 10 until its forward end projects sufficiently therefrom to be gripped by oppositely disposed rollers (not shown), while the table is at its upper position, whereby the wrapper is draped during the descent of the table across the path of the article delivered thereto. When the article is advanced upon the table it is enfolded in the draped wrapper and the tuckers fold the wrapper over the ends of the article. Then during the ascent of the table said rollers release the wrapper to permit its forward end to be wiped downwardly over the article and the top folders 30 (Fig. 1) wipe the top flaps of the wrapper downwardly over the tuckers. The construction of the rollers and the mechanism for actuating the same to grip and release the wrapper may be similar to that shown in the above patent. A pusher, not shown, which may be similar to that disclosed in the above mentioned patent, advances the partially wrapped package on to the plate 32. The folders 30 are mounted on brackets 34 which also support plow folders 36 and bottom folders 38 which act to complete the folding of the wrapper ends as the packages are successively delivered to the plate 32. Beyond the folders is arranged a stationary table 40, and on the brackets 34 there are supported heat sealers 42 of well known construction which are suitably heated by electric cartridges thereon, not shown, to the proper temperature to heat seal the overlapped folds on the package ends together when waxed paper, heat sealable Cellophane or other thermoplastic coated materials are used for the wrapping material. The heat sealed packages are pushed by the following packages in between 55 vertical belts 44 which are spaced apart suffi-

ciently to admit the heat sealed packages and advance them to the delivery position. The belts 44 are supported on pulleys 46 carried by brackets 48 fastened to the bracket 34 and their inner runs are backed up by members 50 to engage the packages with sufficient pressure to advance the packages therebetween. A horizontal belt 51 supports the packages between belts 44. The construction of the belts 44 and 51 and the mechanism for driving the same may be similar to that shown in the above mentioned patent to which reference may be had for a complete description of the details.

A shaft or spindle 52 journaled in the side frames 20 is provided with a right-hand threaded portion 54 threaded into one of the brackets 34 and a left-hand threaded portion 56 threaded into the other bracket 34 whereby turning of the crank handle 58 on spindle 52 will adjust the frames 34 with the folders, heat sealers and belts 44 to accommodate various lengths of packages. A sprocket 60 on spindle 52 drives a sprocket chain 62 running over a sprocket 64 mounted on a stub shaft 66 supported in one of the frames 20. Shaft 66 carries a bevel gear 68 meshing with a bevel gear 70 fastened on an upright shaft 72. Between extensions 74 of bearing bracket 76 fastened to the lifter table 10 is supported a bevel gear 78 which is splined on shaft 72 and meshes with a bevel gear 80 fastened on a shaft 82 supported at one end in bracket 76 and at its other end in a bracket 84 which is also secured to the lifter table. Shaft 82 has a right-hand threaded portion 86 threaded into one of the tucker supporting arms 88 and a left-hand threaded portion 90 threaded into the other tucker arm 88. Each of the tucker supporting arms is slidably mounted upon a rod 91 fastened in the bearing brackets 76 and 84 and each arm carries a tucker 92. Thus upon turning the crank handle 58 on spindle 52 the tuckers will be adjusted toward or away from each other, simultaneously with the folders, heat sealers and delivery belts. A sprocket 100 on spindle 52 drives a sprocket chain 102 running over a sprocket 104 fastened on a spindle 106 which has a right-hand threaded portion 107 threaded into one of the brackets 34 and a left-hand threaded portion 108 threaded into the other of the brackets 34 whereby the spindles 52 and 106 will be turned in unison to adjust the brackets 34.

Referring to Figs. 4 and 5, the tuckers may be adjusted by a modified construction shown therein comprising a sprocket chain 162, which may be driven from an adjusting spindle as in Fig. 1, running over a sprocket 164 fastened to a stub shaft 166 journaled in a bracket 168 provided on one of the side frames of the machine. On a sprocket 170 fastened on shaft 166 is mounted a sprocket chain 172 running over a sprocket 174 fastened to pintle 176 at the upper end of an arm 178 which is pivoted on shaft 166 and free to rock thereon. The pin 176 is free to revolve in the arm 178 and also carries a sprocket 180 fixed thereon and driving a sprocket chain 182 trained over a sprocket 184 fastened to the projecting end of a spindle 186 mounted in bearing brackets 188 fastened to the lifter table 190. Pin 176 and spindle 186 are connected by a link 191 and the table may be equipped with a supporting bracket or yoke 192 connected to a cam actuated lever, not shown, and guided for vertical movement from a lower level to an upper level in the same manner as shown in Figs. 1 to 3, inclusive. Spindle 186 has a right-hand threaded portion 195

threaded into one of the tucker supporting arms 196 and a left-hand threaded portion 198 threaded into the other tucker supporting arm 196, and each of these arms is guided by a rod 199 supported by brackets 188 and supports a tucker 200. Accordingly, when the shaft 166 is turned by sprocket chain 162 in the proper direction, the tuckers 200 will be moved toward or away from each other to accommodate packages of various lengths.

Referring to Figs. 6 and 7, wherein still another modified form of the invention is depicted, a sprocket chain 210, which may be driven from an adjusting shaft (not shown), similar to the shaft 52 in Fig. 1 as described above, runs over a sprocket 212 mounted on the stub shaft 214 supported in a bracket 216 provided on one of the side frames of the machine. To the shaft 214 is fastened one of the sections 218 of a universal joint whose other section 220 is provided with an elongated extension 222 provided with a squared cross-section or other means preventing rotation thereof in a tubular extension 224 wherein it has a sliding fit. The tubular extension 224 is formed on a section 226 of a second universal joint whose other section 228 is fastened to a spindle 230 mounted in bearing brackets 232 of a lifter table 234 which may be equipped with a supporting bracket or yoke 236 connected to a cam actuated lever, not shown, for movement with a package from one level to another in the manner described in connection with Figs. 1 to 3 inclusive. The spindle 230 has a right-hand threaded portion 238 threaded into one of the tucker supporting arms 240 and a left-hand threaded portion 241 threaded into the other tucker supporting arm 240. These tucker supporting arms are slidably mounted on a rod 242 supported by bearing brackets 232 and carry the tuckers 244. Thus upon turning the shaft 214 the tuckers will be adjusted regardless of the position of the lifter table.

It may be noted that with each of the constructions shown herein the tuckers and other members coacting therewith may be adjusted while the table is in operation and regardless of the position at which the latter may be. In the case of the construction shown in Figs. 2 and 3, it may be observed that the table 10 is guided for movement in a straight vertical path without any tilting movement which would displace the bevel gear 78 with relation to the upright shaft 72 and interfere with its sliding movement thereon. In the construction shown in Figs. 4 and 5, the reciprocation of the lifter table will not produce any rotation of shaft 186 which would change the setting of the tuckers. The same is true of the construction shown in Figs. 6 and 7.

What is claimed is:

1. In a wrapping machine, the combination with a member movable from a position at which it receives an article enfolded in a wrapper to a different horizontal position, of a pair of tuckers supported on said member for tucking the ends of the wrapper enfolding the article delivered to said member, and means for relatively adjusting said tuckers to accommodate articles of various lengths, said means including bearings rigidly connected to said member a spindle journaled in the bearings supported on said member and having a threaded portion threaded into one of said tuckers, and mechanism including a shaft mounted on a stationary part of the machine, and a device operated by said shaft and connected to said spindle for turning the same to adjust said

tucker at any position of said member, said device including a rigid link pivotally connected to said spindle and a rigid link pivotally connected to said shaft, and said rigid links being movably connected to each other to permit movement of said member from one of said positions to the other of said positions.

2. In a wrapping machine, the combination with a member movable from a horizontal position at which it receives an article enfolded in a wrapper to a horizontal position at a different level, of a pair of tuckers supported on said member for tucking the ends of the wrapper enfolding the article delivered to said member, and means for relatively adjusting said tuckers to accommodate articles of various lengths, said means including a shaft having a portion threaded into one of said tuckers, a link mounted on said shaft, a link pivoted on a stationary axis and pivotally connected to the other link, a rotatable member concentric with said stationary axis, a rotatable member concentric with and fastened to said shaft, a pair of intermediate rotatable members concentric with the pivotal connection of said links, an endless member running over one of said intermediate members and the rotatable member on said shaft, and an endless member running over the other intermediate member and the rotatable member on said stationary axis whereby turning of the latter member will turn said shaft to produce relative adjustment of said tuckers.

3. In a wrapping machine, the combination with a table movable from a position at which it receives an article enfolded in a wrapper to a horizontal position at a higher level, of a pair of tuckers supported on said member for tucking the ends of the wrapper enfolding the article delivered to said member, and means for simultaneously adjusting said tuckers relatively to each other to accommodate articles of various lengths, said means including bearings rigidly connected to said table, a spindle journaled in the bearings supported on said table and having a right-hand threaded portion threaded into one of said tuckers and a left-hand threaded portion threaded into the other of said portions, a member pivotally connected to said spindle, a stationary shaft, and a connecting link pivotally connected to said shaft and having a connection with said member permitting movement of the latter with said spindle as said table is raised and lowered.

4. The combination with a member movable from one position at which it receives an article enfolded in a wrapper to a horizontal position at a different level, of means for moving said member along a straight vertical path from article receiving position to said different level, a pair of tuckers supported on said member, and mechanism for simultaneously adjusting said tuckers toward and away from each other to accommodate articles of various lengths, said mechanism including a shaft supported on said member and having a right-hand threaded portion threaded into one of said tuckers and a left-hand threaded portion threaded into the other of said tuckers, a sprocket fastened to said shaft, a stationary driving sprocket, an arm having a pivot concentric

with said driving sprocket, an intermediate sprocket mounted on said arm, and sprocket chains connecting said driving and intermediate sprockets and said intermediate sprocket and the sprocket on said shaft whereby turning of said stationary sprocket will move said tuckers toward or away from each other.

5. The combination with a member movable from one position at which it receives an article enfolded in a wrapper to a horizontal position at a different level, of means for moving said member from article receiving position to said different level, a pair of tuckers supported on said member, and mechanism for simultaneously adjusting said tuckers toward and away from each other to accommodate articles of various lengths, said mechanism including a spindle having a right-hand threaded portion threaded into one of said tuckers and a left-hand threaded portion threaded into the other of said tuckers, a universal joint mounted on said spindle, a shaft, a universal joint connected to said shaft, and a sliding connection between said universal joints whereby turning of said shaft will move said tuckers toward or away from each other.

6. The combination with a horizontal member movable from one position at which it receives an article enfolded in a wrapper to a horizontal position at a different level, of means for moving said member along a straight vertical path from article receiving position to said different level, a pair of tuckers supported on said member, and mechanism for simultaneously adjusting said tuckers toward and away from each other to accommodate articles of various lengths, said mechanism including a spindle having a right-hand threaded portion threaded into one of said tuckers and a left-hand threaded portion threaded into the other of said tuckers, a bevel gear on said spindle, an upright shaft having splined thereon a bevel gear meshing with the bevel gear on said spindle, and means for turning said upright shaft to adjust said tuckers toward and away from each other.

7. In a wrapping machine, the combination with a table movable to an upper position from a lower position at which it receives an article partially enfolded in a wrapper, of a pair of tuckers supported on said table and adapted to tuck the end flaps of the wrapper enfolding the article delivered to the table, bearings secured to said table, a spindle journaled in said bearings and having a left-hand threaded portion threaded into one of said tuckers and a right-hand threaded portion threaded into the other of said tuckers, whereby turning of said spindle will simultaneously move said tuckers toward or away from each other, and means for rotating said spindle to adjust said tuckers toward and away from each other, said means including a rigid member connected to said spindle, a stationary shaft, a rigid member connected to said stationary shaft, the rigid member connected to said shaft being movable to permit vertical movement of said table from one of said positions to the other of said positions, and said members being connected to each other.

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