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Monsees

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[54] **ARTICLE PACKAGING APPARATUS**

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[52] **U.S. Cl.** **53/239**, 53/180, 198/23, 198/50

[51] **Int. Cl.** **B65b 35/24**, B65b 39/00

[58] **Field of Search** ..... 53/36, 180, 182, 239, 251, 53/50; 198/19, 20 R, 23, 43, 50, 59, 60, 65; 221/96, 112, 119, 151, 253

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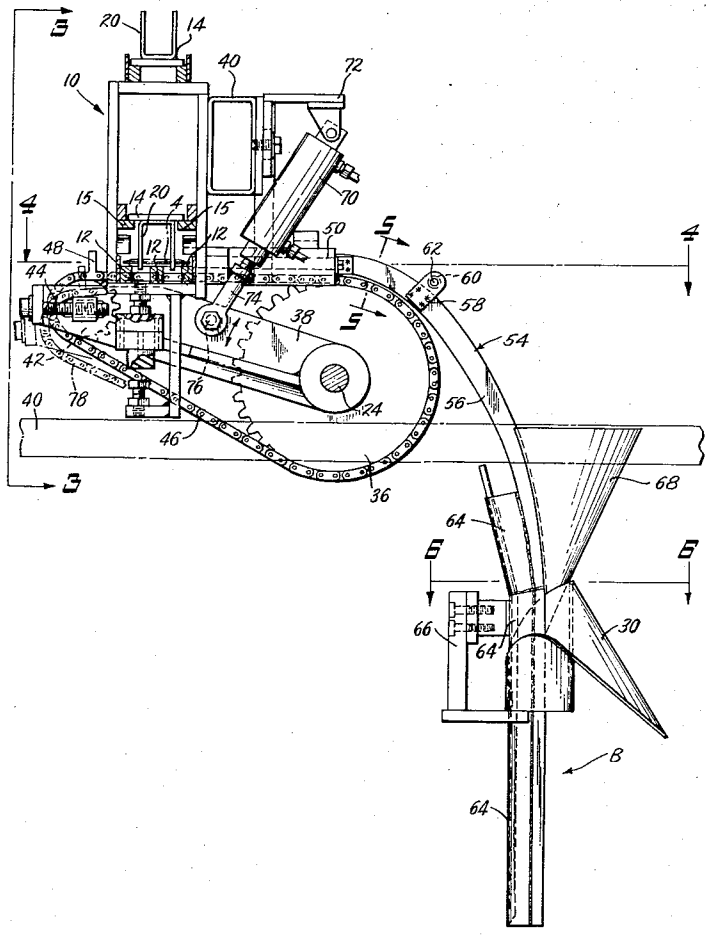
Primary Examiner—Robert L. Spruill

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[57] **ABSTRACT**

A conveyor moves a series of discrete articles along a path extending past a pair of tubular package forming and filling stations. Transfer means move articles from the conveyor onto trackways along which they slide by gravity into the formed tubular packages, along with charges of material separately deposited in the packages. Either of the transfer means may be selectively disabled while the other continues to operate.

6 Claims, 6 Drawing Figures



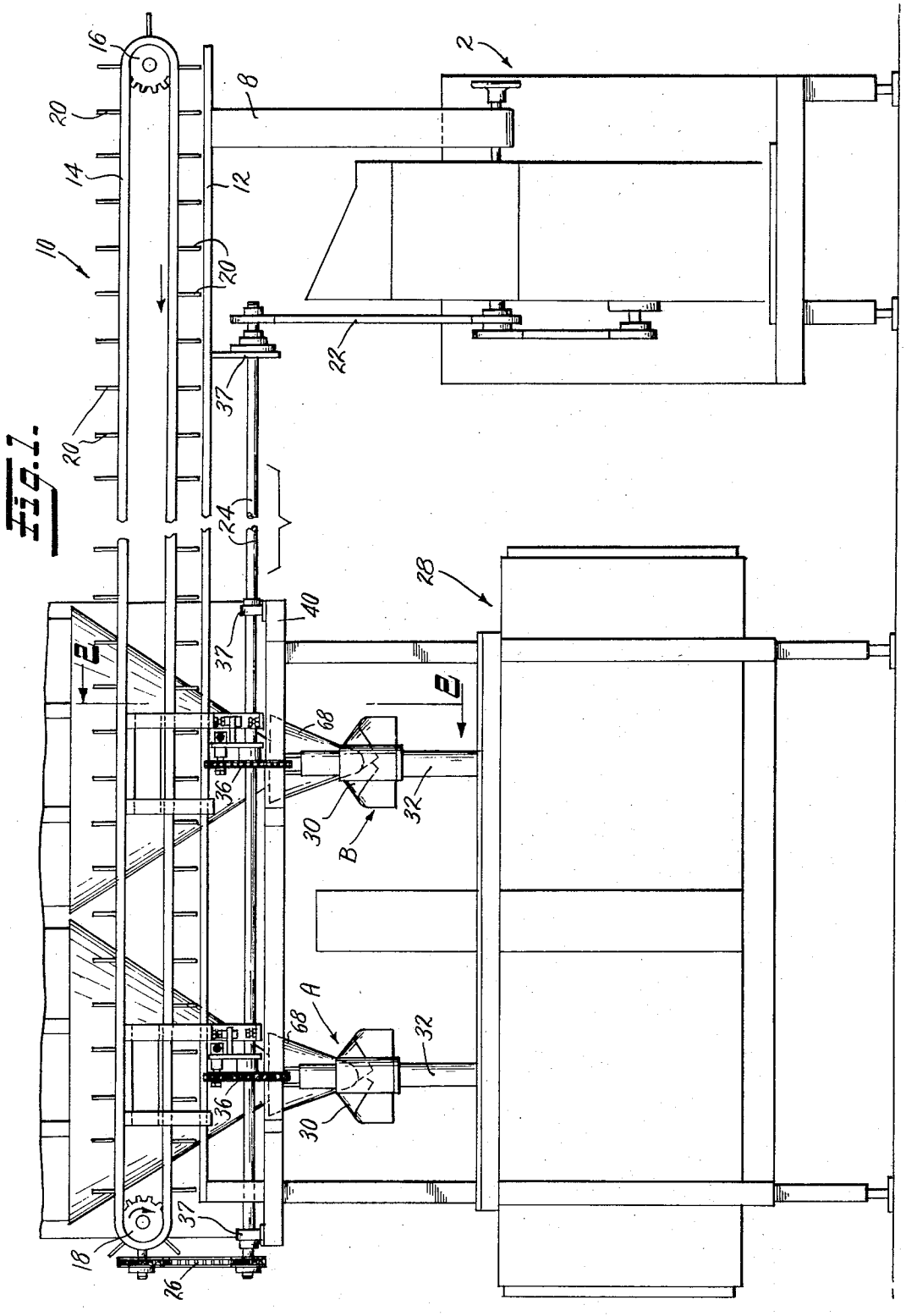

16
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14
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8
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2
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22
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32
B
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37
18
26

Fig. 1.

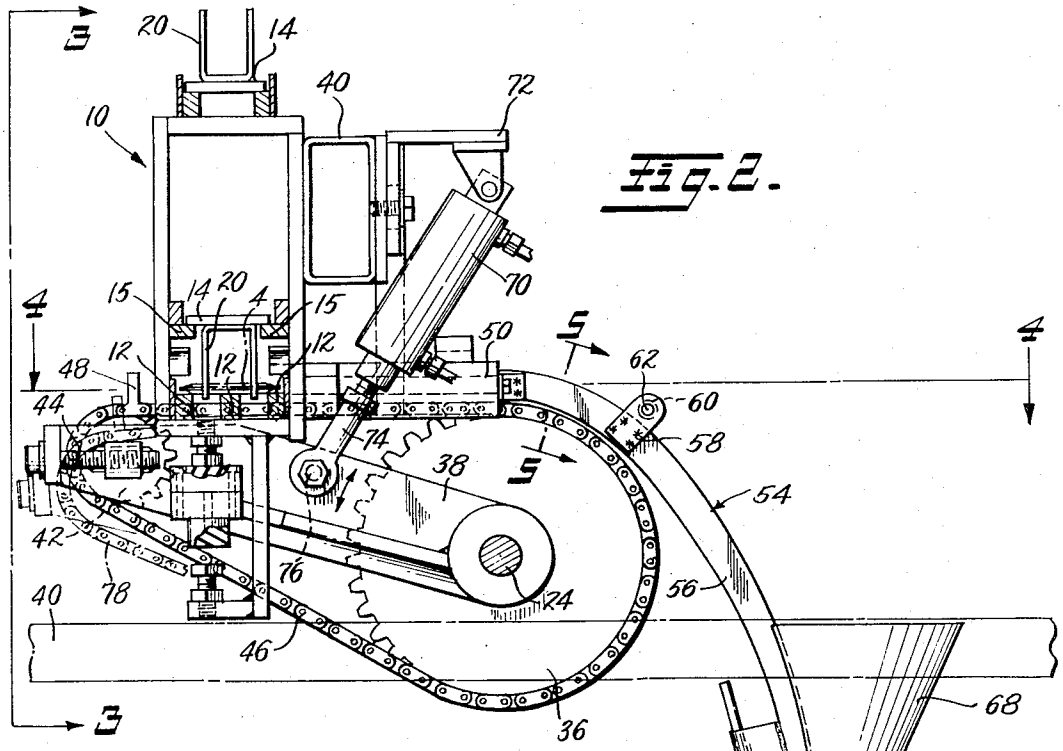
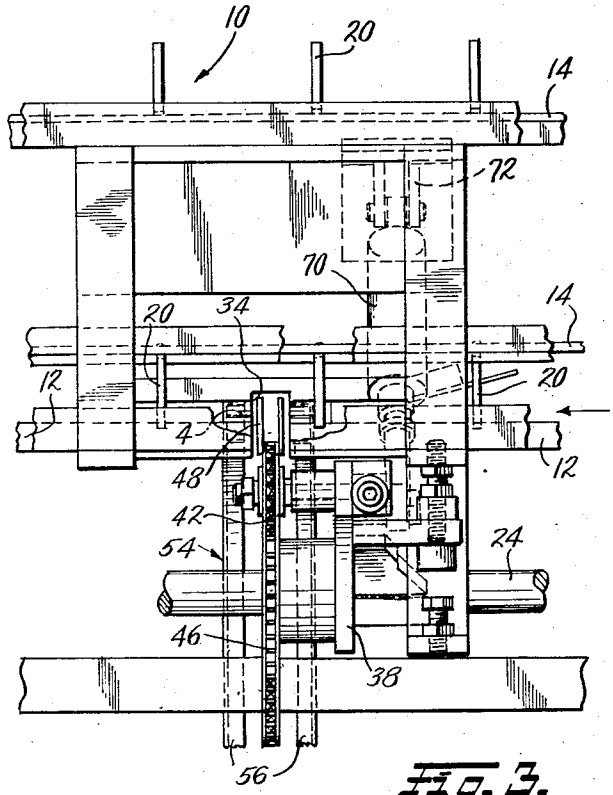

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Fig. 2.


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38
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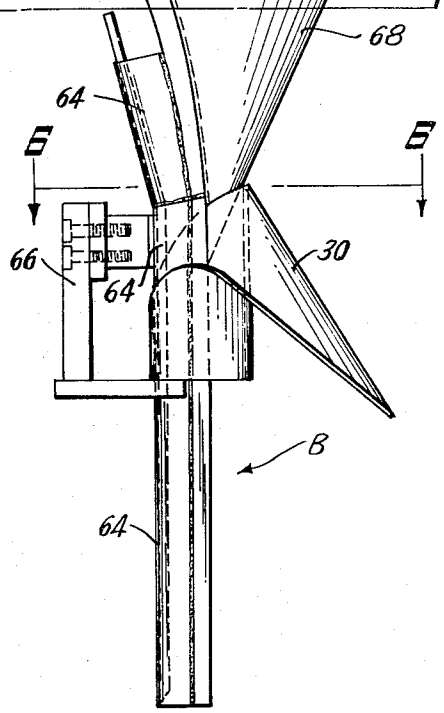

68
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6
66
64
30
8
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Fig. 3.

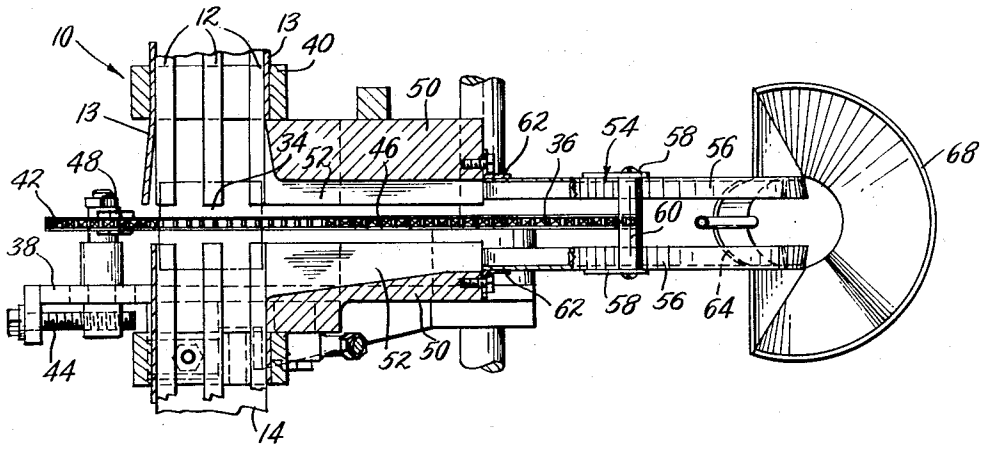


Fig. 4.

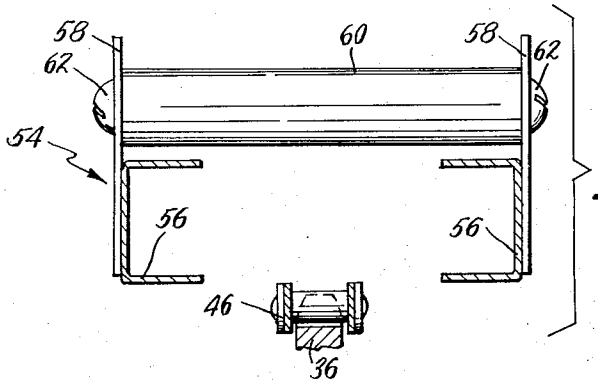


Fig. 5.

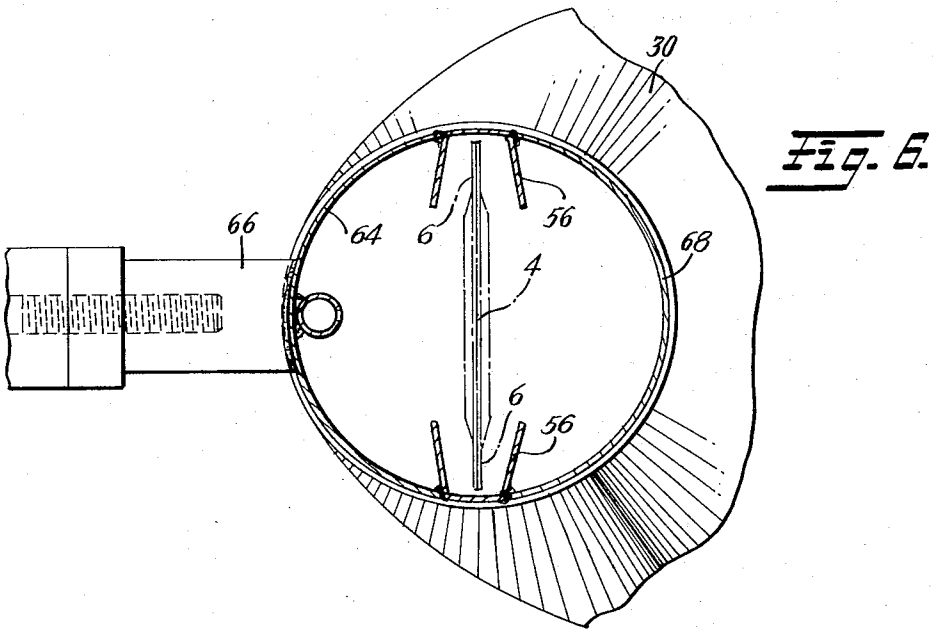


Fig. 6.

ARTICLE PACKAGING APPARATUS

BACKGROUND OF THE INVENTION

This invention is in the field of package filling apparatus and particularly apparatus for depositing discrete articles in successive packages being filled with a companion product.

It is common in the packaging and merchandising field to provide separate articles in a packaged product, which articles are not part of the product itself. One example is the small "prize" commonly packaged in containers of a well-known popcorn confection. Heretofore the deposit of a prize in each package has presented some problems and the prior practice involved a separate step or station for that purpose.

SUMMARY OF THE INVENTION

The present invention relates to apparatus for depositing a discrete article in each of successive packages being filled with a product and is best summarized by the following objects:

A principal object of the invention is to provide apparatus for receiving discrete articles adjacent a package filling station and sequentially delivering those articles to the interior of sequential packages as they are being filled with the product.

Another object of the invention is to provide such an apparatus operable in timed relation to the package filling mechanisms.

Still another object of the invention is to provide such an apparatus for feeding articles from a single supply to a plurality of packaging filling stations and wherein any one of the delivering means may be disabled at will.

It is a further object of the invention to provide such apparatus wherein the articles are placed on a chute wherein they travel by gravity into the path of movement of product being delivered into a package whereby the product moving into the package engages the article and ensures its delivery into the package with the product.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a fragmentary front elevational view of a packaging machine including mechanism for inserting an article in a bag or package while it is being formed and filled;

FIG. **2** is an enlarged fragmentary sectional view taken on the line **2—2** of FIG. **1**;

FIG. **3** is a fragmentary end elevational view as seen from the line **3—3** of FIG. **2**;

FIG. **4** is a fragmentary horizontal sectional view, taken on the line **4—4** of FIG. **2**;

FIG. **5** is an enlarged fragmentary transverse sectional view, taken on the line **5—5** of FIG. **2**; and

FIG. **6** is a fragmentary horizontal sectional view, taken on the line **6—6** of FIG. **2**.

DESCRIPTION OF A PREFERRED EMBODIMENT

In FIG. **1**, numeral **2** designates generally a device for wrapping individual articles to be deposited in a package of product. The machine **2** is only schematically shown but represents a machine for receiving discrete flat articles and wrapping the same to form a flat pillow-type article best seen at **4** in FIG. **6**. In the example shown, the "prize" is a small flat article wrapped in a suitable paper or similar material and secured around its edges to define opposed edge portions **6**.

Referring again to FIG. **1**, the articles so prepared are delivered by a pocket conveyor **8** to a horizontal conveyor device **10**. The conveyor device **10** comprises stationary fixed rails **12** (see FIGS. **2** and **4** also) along which the articles **4** slide while being supported thereby. Side rails **13** (FIG. **4**) keep articles **4** on rails **12**. An endless belt **14** is trained over sprockets or rollers **16** and **18** with its lower run spaced upwardly above the tracks **12** and supported by guides or ledges **15** (FIG. **2**). The conveyor belt **14** is provided with a multiplicity of spaced, generally U-shaped pushers **20** extending outwardly therefrom with their lower ends in proximity to the spaces between spaced rails **12**, as best shown in FIG. **2**. The wrapping machine **2** is driven in any suitable manner and is coupled by a drive belt or sprocket **22** to a shaft **24**, the other end of which is drivingly connected by a sprocket chain **26** to suitable bevelled gears (not shown) for driving sprocket wheel **18** in a clockwise direction, as seen in FIG. **1**. Thus, the belt **14** and pushers **20** are driven in timed relation to the machine **2** and in such direction that the downwardly extending pushers **20** engage wrapped articles delivered by the machine **2** and push the same along rails **12** to the left, as seen in FIG. **1**. The presence of the machine **2** is not essential to applicant's invention, articles such as articles **4** could be supplied to conveyor **10** from any suitable source, even a bulk supply.

Numeral **28** indicates generally a bag forming and filling apparatus of known construction. The machine **28** may, for example, be a twin bag apparatus as shown and described in the patent to Tew et al U.S. Pat. No. 3,256,673, granted June 21, 1966. The disclosure in that patent, insofar as it is necessary for a complete understanding of the present invention, is incorporated herein by reference.

In brief, however, the machine **28** receives strips of package forming material (not shown) which are guided over tube formers **30** and are longitudinally sealed to define a continuous tube **32** of bag forming material. Not shown in the present drawings but as part of the machine **28** there are transverse sealing jaws that cyclically engage the tube **32**, seal the same transversely and draw the same downwardly through formers **30**. The transverse seal constitutes the top of a previously filled package and the bottom of the next package to be filled. After the transverse seal is made, a charge of material is fed downwardly through the formed tube in a manner well known to the art and more fully described in the aforementioned Tew et al patent. It is to be noted that as described herein the machine **28** forms and fills a pair of bags simultaneously at stations designated A and B in the drawings.

The tracks **12** extend past and adjacent the filling stations A and B but at some elevation thereabove and laterally displaced, as best shown in FIG. **2**.

Referring now to FIG. **4**, it will be seen that the trackway defined by rails **12** is interrupted adjacent each of the stations A and B to provide a gap **34** in the trackway.

As shown in FIG. **1**, sprocket wheels **36** are keyed to the shaft **24** opposite each station A and B, and generally coplanar with the gap **34**. The shaft **24** is rotatably supported in suitable bearings **37** mounted on the frame **40** of the apparatus and a bracket **38** is pivotally mounted on the shaft **24** adjacent each sprocket wheel **36**. On the other side of the gap **34** from sprocket wheels **13** there are rotatably mounted on the outer end

of brackets **38** further sprocket wheels **42.** The wheels **42** are mounted for horizontal adjustment by means of a threaded adjusting mechanism **44** to regulate the tension in sprocket chains **46** trained over wheels **36** and **42.** Each of the chains **46** carries a single outwardly extending transfer projection or member **48** thereon and the upper run of chain **46** is directed to pass through the gap **34** previously described.

As the shaft **24** rotates the sprocket wheels **36** rotate in a clockwise direction, as seen in FIG. **2,** and thus the upper run of the chains **46** and the projections **48** thereon move through the gap **34** from left to right, and since sprocket wheels **36** and conveyor belt **14** are driven in timed relation to each other, the projection **48** will pass between pushers **20,** engage an article **4** and push the same laterally off tracks **12** toward the associated filling station A or B. A guiding means **50** is aligned with each gap **34** and includes ledge portions **52** for supporting the articles during a portion of their lateral movement and until they reach a position substantially directly above the center of shaft **24.** At this position the articles enter a guiding trackway generally designated at **54,** and shown in section in FIG. **5.** As shown in that view, the guideway **54** comprises laterally spaced channel-shaped tracks **56** arranged with their open sides facing each other. In the upper region of the guideway **54,** the channels **56** are secured to brackets **58** which in turn are held in spaced relation by a suitable spacer **60** and screws or the like **62.** At its uppermost end the guideway **54** is secured to the outer end of guiding means **50,** as shown at **62** in FIG. **4.**

As clearly evident from FIG. **2,** the guideway defined by channels **56** curves downwardly and outwardly somewhat concentric to shaft **24** for a short distance and then is directed sharply downwardly into and through a tube former **30.** In the region of the tube former **30,** the channels **56** are fixed to the longitudinal edges of a generally semi-cylindrical guide and spacer member **64** (FIG. **6**), which in turn is fixed to a bracket **66** supported on the frame of the bag forming and filling machine **28.** As shown in FIG. **2,** the member **64** extends upwardly above the tube former **30** in addition to extending downwardly therethrough. A further funnel-like member **68** is of a shape to complement the member **64** to define a generally cylindrical guide tube extending downwardly into the tube former **30** with a funnel-like portion above the tube former. As is known in the art, the guide structure defined by members **64** and **68** constitutes a directing means arranged to receive charges of product from apparatus (not shown) in timed relation to the forming of the bags by machine **28** to sequentially fill the bags with product as they are formed. It is contemplated that the product delivering means, the bag forming and filling machine **28** and the wrapping machine **2** all be operated in timed relation so that an article **4** is pushed by transfer member **48** into guideway **54** so that the latter slides downwardly along the guideway by gravity into the tube former **30** at about the same time a charge of material is delivered into the product-guiding funnel-like structure so that the material substantially surrounds and engages the article **4** to ensure its delivery and movement into the package along with the product. It is to be noted that the guide structure **54** defined by the opposed channels **56** loosely engages and guides only the opposite edge portions of the article **4** and thus prevents the latter from becoming twisted or "cocked" and impeded in its progress into the package.

The position of the transfer projections **48** on their respective chains **46** is such that the transfer means associated with station B will engage only alternate articles **4** moving along conveyor **10** while the transfer means at station A engage and transfer the intermediate articles and thus articles are constantly supplied to both bag forming and filling devices.

Referring again to FIG. **2,** the brackets **38** pivotally mounted on shaft **24** are held in the full line position of FIG. **2** by a suitable pneumatic or hydraulic motor device **70.** The device **70** is pivotally supported at its upper end on a bracket **72** mounted on the machine frame **40** and is provided with an extensible piston rod **74** pivotally connected to the bracket **38** at **76.** The motor device **70** may be of any conventional construction and it will be obvious that fluid pressure may be directed thereto to hold the bracket **38** in the upper position shown by full lines in FIG. **2.** However, if for any reason it is desired to discontinue transfer of articles **4** to either of the stations A or B, the motor device **70** associated with that particular station may be actuated to swing bracket **38** downwardly about shaft **24** to the position sketchily shown by dotted lines **78** in FIG. **2.** In this position the transfer projection **48** follows a path of movement sufficiently lower than its upper path of movement so that it does not engage articles **4** on the tracks **12** but merely passes thereunder without transferring such articles to the guideway **54.** Obviously, transfer of articles can again be resumed by operating the motor **70** to raise the bracket **38** to its full line position.

While a single specific embodiment of the invention has been shown and described herein, the same is merely illustrative of the principles involved and other forms may be resorted to within the scope of the appended claims.

I claim:

1. In combination with a cyclically operable package filling machine having a filling station defined by a generally tubular chute for receiving sequential charges of product and directing the same into successive packages;

a conveyor arranged to transport discrete articles, other than said product, to a position adjacent said filling station;

transfer means movable transversely of said conveyor in timed relation to the cyclic operation of said filling machine for engaging articles on said conveyor and moving them laterally therefrom; and

a trackway arranged to receive articles moved from said conveyor by said transfer means and extending into and along at least a portion of said tubular chute to slidably guide said articles into the path of movement of said product.

2. The combination defined in claim **1** wherein said conveyor comprises tracks for slidably supporting and guiding said articles, transport means movable parallel to said tracks and having projections thereon engageable with said articles to slide the same along said tracks; a transverse gap in said tracks adjacent said filling station; said transfer means having a pusher element cyclically movable through said gap to transfer articles to said trackway; and means interconnecting said transport means and transfer means to operate in timed relation.

3. The combination defined in claim 2 including means for selectively changing the path of movement of said pusher element to a path wherein it does not move through said gap and thereby does not push articles from said tracks while permitting said conveyor to continue operating.

4. The combination defined in claim 2 wherein at least two adjacent filling stations are provided, said conveyor extending adjacent both said filling stations and there being a transfer means for each filling station, and; means interconnecting said conveyor and transfer means for operation in timed relation wherein each of said transfer means moves alternate articles from said conveyor toward a respective filling station.

5. The combination defined in claim 1 wherein said trackway includes a major portion sloping downwardly whereby articles move therealong by gravity.

6. The combination defined in claim 1 wherein said trackway comprises a pair of spaced apart track members of channel shape with their open channels facing each other whereby to engage and guide said articles only at opposite edge portions thereof.

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