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[33] Great Britain
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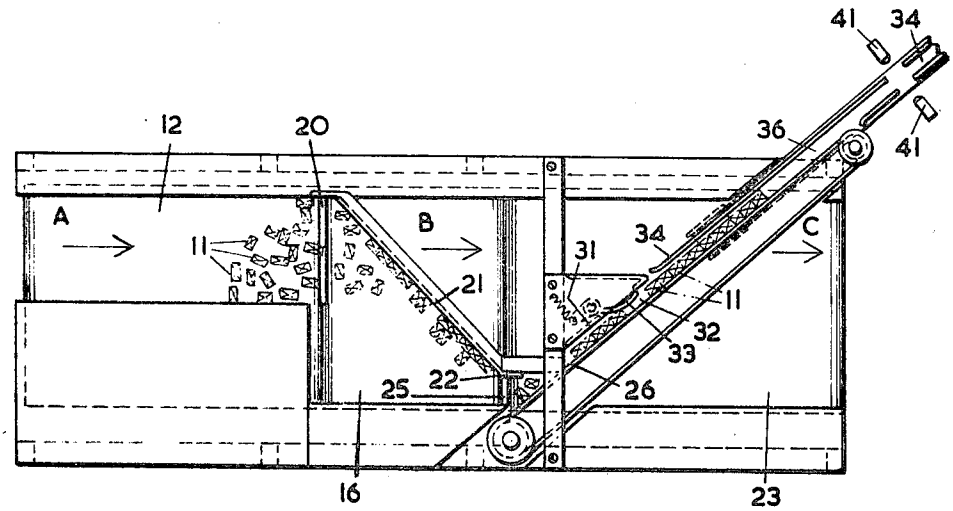
[54] **FEEDING OF ARTICLES**
5 Claims, 2 Drawing Figs.

[52] U.S. Cl. ..... 198/30, 198/33 AA
[51] Int. Cl. B65g 47/24, B65g 47/26
[50] Field of Search ..... 198/30, 33 AA

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ABSTRACT: The invention is concerned with apparatus for the feeding of articles of a rectangular, oval or other shapes having major and minor dimensions from a promiscuous mass into single file relationship for forwarding to an apparatus for further manipulation of the articles, e.g., a wrapping machine, the apparatus consisting essentially of a succession of feeding bands driven at progressively higher linear speeds, a diagonal deflector plate arranged over an intermediate band to guide the articles towards one side of that band and a deflector belt arranged for movement diagonally of the next successive band with one lap constituting one side of a guide channel so as to guide the articles into the channel as they are received by the band.



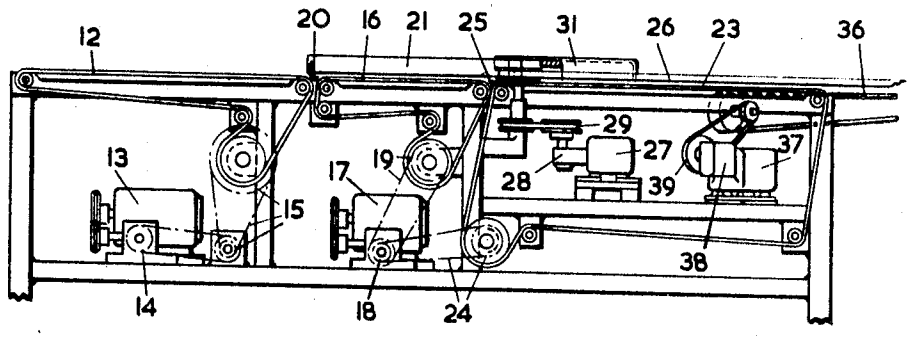

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FIG. 1.

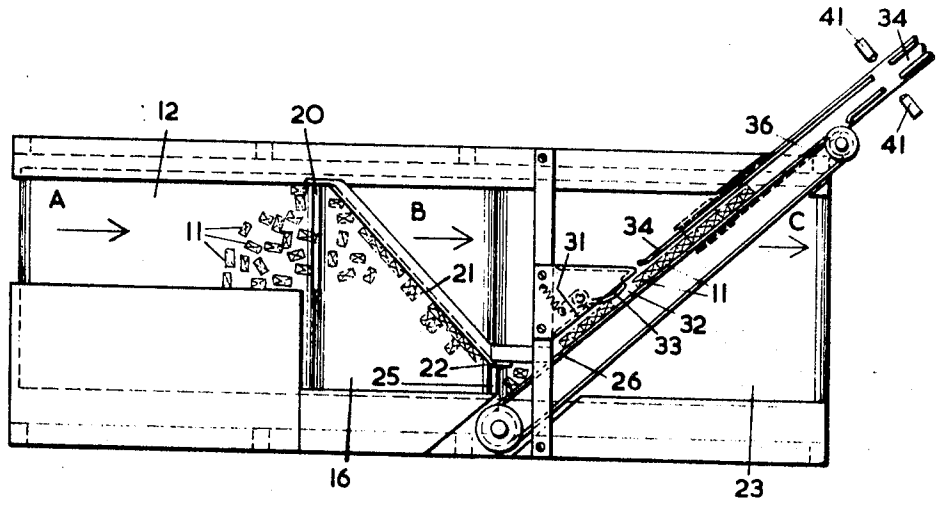

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FIG. 2.

FEEDING OF ARTICLES

This invention relates to the feeding of articles, e.g., sweets, of rectangular, oval or other shapes having major and minor dimensions, from a promiscuous mass into single file in orderly end to end relationship for forwarding to an apparatus for further manipulation of the articles, e.g., a wrapping machine.

According to the present invention, a device for the above purpose comprises an article-feeding band arranged to be driven at a predetermined linear speed, an article-receiving band arranged to be driven at a linear speed higher than that of the article-feeding band, a diagonal deflector plate arranged over the article-feeding band to guide the articles towards one side of that band so as to pass on to the article-receiving band over a side portion thereof, and a deflector belt arranged for movement diagonally of the article-receiving band with one lap constituting one side of a guide channel so as to guide the articles towards the guide channel as they are received by the article-receiving band.

Conveniently there is provided an abutment protruding into the guide channel from the side opposite the belt and arranged to be engaged by any article travelling along the channel with its major axis lying transversely of the channel so as to cause that article to turn until its major axis lies in the general direction of the channel.

The guide channel conveniently continues laterally beyond the article-receiving conveyor and leads to the feed conveyor of a wrapping machine, the portion of the channel projecting beyond the article-receiving conveyor being provided with a base constituted by a movable belt.

The abutment conveniently consists of a deflecting tongue yieldably urged inwardly of the channel, a stop member being provided to limit the movement of the tongue into the channel to such an amount that the tongue allows free passage of any article moving along the channel with its major axis lying in the general direction of the channel.

The article-feeding conveyor may be supplied with articles in any convenient manner, e.g., by a preliminary feeding conveyor continuously moving at a slower speed than that of the article-feeding conveyor.

By way of example, the invention will now be described in greater detail with reference to the accompanying diagrammatic drawings in which,

FIG. 1 is an elevation of an apparatus of an unscrambling unit constructed in accordance with the invention, and

FIG. 2 is a plan of the apparatus.

A plurality of articles 11 of rectangular shape are deposited at random upon a continuously moving preliminary feed conveyor belt 12 driven by a motor 13 through a suitable reduction gear unit 14 and chain and sprocket gearing 15. The articles 11 are moved by the belt 12 in the direction of the arrow A until they arrive at a continuously moving article-feeding conveyor belt 16 on to which they pass over a dead plate 20, the belt 16 travelling at a higher speed than the belt 12, and conveying the articles 11 in the direction of the arrow B. The belt 16 is driven by a motor 17 through a suitable reduction gear unit 18 and chain and sprocket gearing 19. Since the belt 16 travels at a higher speed than the belt 12, the articles 11 which lie in close proximity to one another on the belt 12 will be separated on belt 16 and generally individually engage a fixed guide rail 21 which extends diagonally to the direction of feed of the articles 11. Due to the continuous movement of the belt 16, the articles 11 are guided along the rail 21 from the end 22 of which they pass over a dead plate 25 on to a continuously moving article-receiving conveyor belt 23, which travels at a higher speed than the belt 16, and conveys the articles 11 in the direction of the arrow C, the belt 23 being driven by the motor 17 through chain and sprocket gearing 24.

As the articles 11 pass on to the belt 23 the end or side face

of each article (dependent upon how they are positioned on the belt 23 as they leave the end 22 of the rail 21) is engaged by a band 26 mounted for continuous movement diagonally of the direction of feed of the articles 11, the band 26 being arranged slightly above the belt 23. The band 26 is driven by a motor 27 through a reduction gear unit 28 and V-belt drive 29. The band 26 in this particular example is driven at a slower speed than the belt 23 and, in cooperation with a fixed guide 31, forms a channel 32 through which the articles pass. Any article that passes into the channel 32 with its longitudinal axis lying transversely of the channel is engaged by a spring-loaded deflector 33, extending into the channel 32, which, in cooperation with the band 26, turns that article so that its longitudinal axis lies in the direction of travel of the band 26. After leaving the channel 32 the articles 11 pass into a further channel 34 lying substantially in line with the channel 32, from where they pass on to a continuously moving conveyor belt 36, also lying substantially in line with the channels 32 and 34, which feeds the articles 11 towards the feed conveyor (which may be constituted by the belt 36 itself) of a wrapping machine. The belt 36 is driven by a motor 37 through a suitable reduction gear unit 38 and V-belt drive 39 at substantially the same speed as the band 26.

A photoelectric detection unit 41 is arranged to pass a beam of light across the belt 36, this unit controlling, in this example, the starting and stopping of the movement of the belt 12. Thus, when a gap occurs in the file of articles on the belt 36, the belt 12 commences its forwarding movement to feed articles to the belt 16. When the gap is closed by further articles passing on to the belt 36, the movement of the belt 12 is stopped. Thus, a single file of articles in orderly end to end relationship is continuously forwarded to the feed conveyor of the wrapping machine.

It will be seen that the provision of the guide channel 34 and the belt 36 provides for substantially continuous control of the articles 11 from the time they reach the belt 23 to the time of arrival at the wrapping station.

I claim:

1. A device for the purpose specified, comprising an article-feeding band arranged to be driven at a predetermined linear speed, an article-receiving band arranged to be driven at a linear speed higher than that of the article-feeding band, a diagonal deflector plate arranged over the article-feeding band to guide the articles towards one side of that band so as to pass on to the article-receiving band over a side portion thereof, and a deflector belt arranged for movement diagonally of the article-receiving band with one lap constituting one side of a guide channel so as to guide the articles towards the guide channel as they are received by the article-receiving band.

2. A device as in claim 1, comprising an abutment protruding into the guide channel from the side opposite the belt and arranged to be engaged by any article travelling along the channel with its major axis lying transversely of the channel so as to cause that article to turn until its major axis lies in the general direction of the channel.

3. A device as in claim 1, wherein the guide channel continues laterally beyond the article-receiving conveyor and leads to the feed conveyor of a wrapping machine, the portion of the channel projecting beyond the article-receiving conveyor being provided with a base constituted by a movable belt.

4. A device as in claim 2, wherein the abutment consists of a deflecting tongue yieldably urged inwardly of the channel, a stop member being provided to limit the movement of the tongue into the channel to such an amount that the tongue allows free passage of any article moving along the channel with its major axis lying in the general direction of the channel.

5. A device as in claim 1, comprising a preliminary conveyor arranged to feed the article-feeding conveyor.