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3,363,397

MACHINE FOR PACKAGING SOLID ARTICLES

Filed Nov. 24, 1964

4 Sheets-Sheet 1

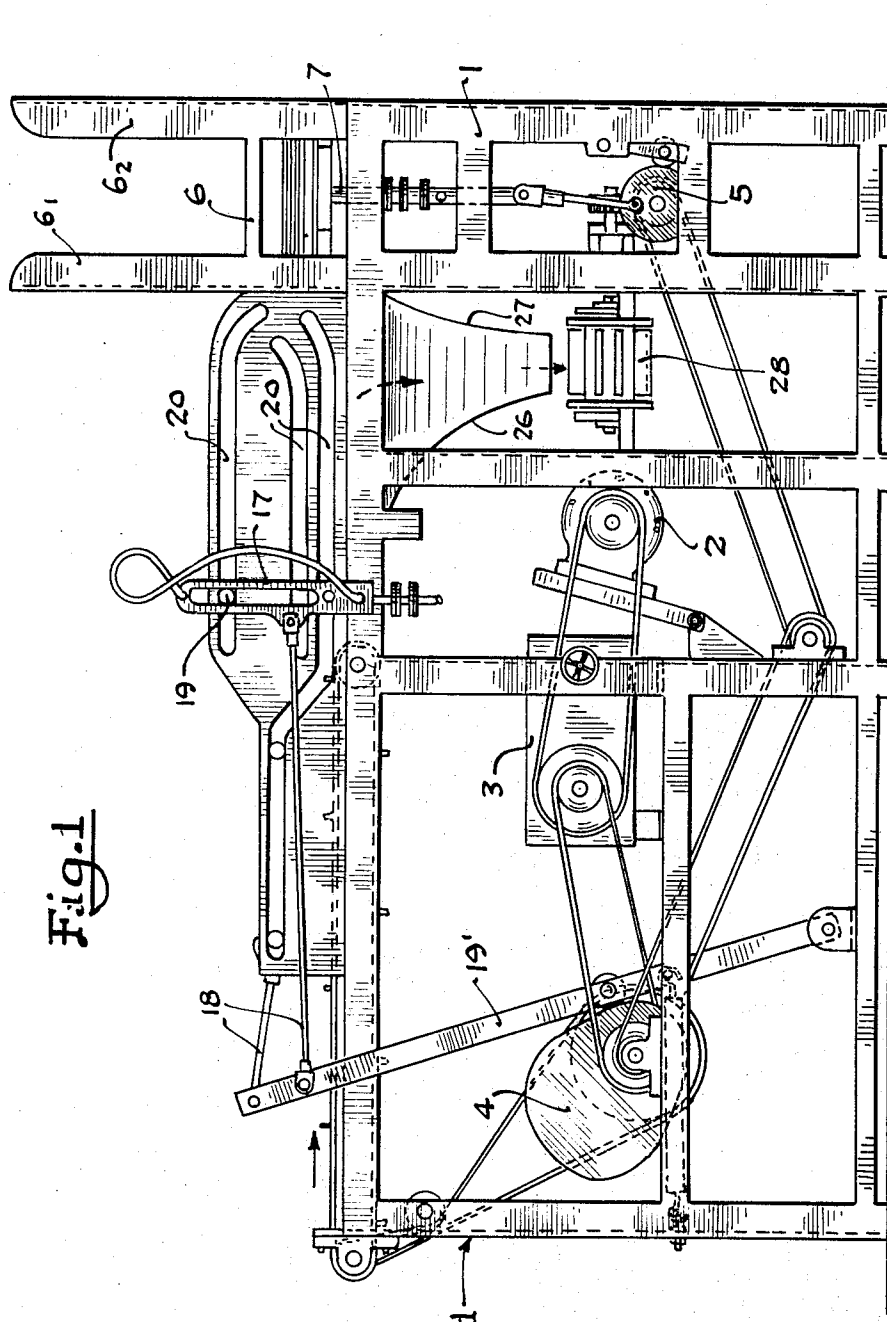


Fig. 1

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4 Sheets-Sheet 2

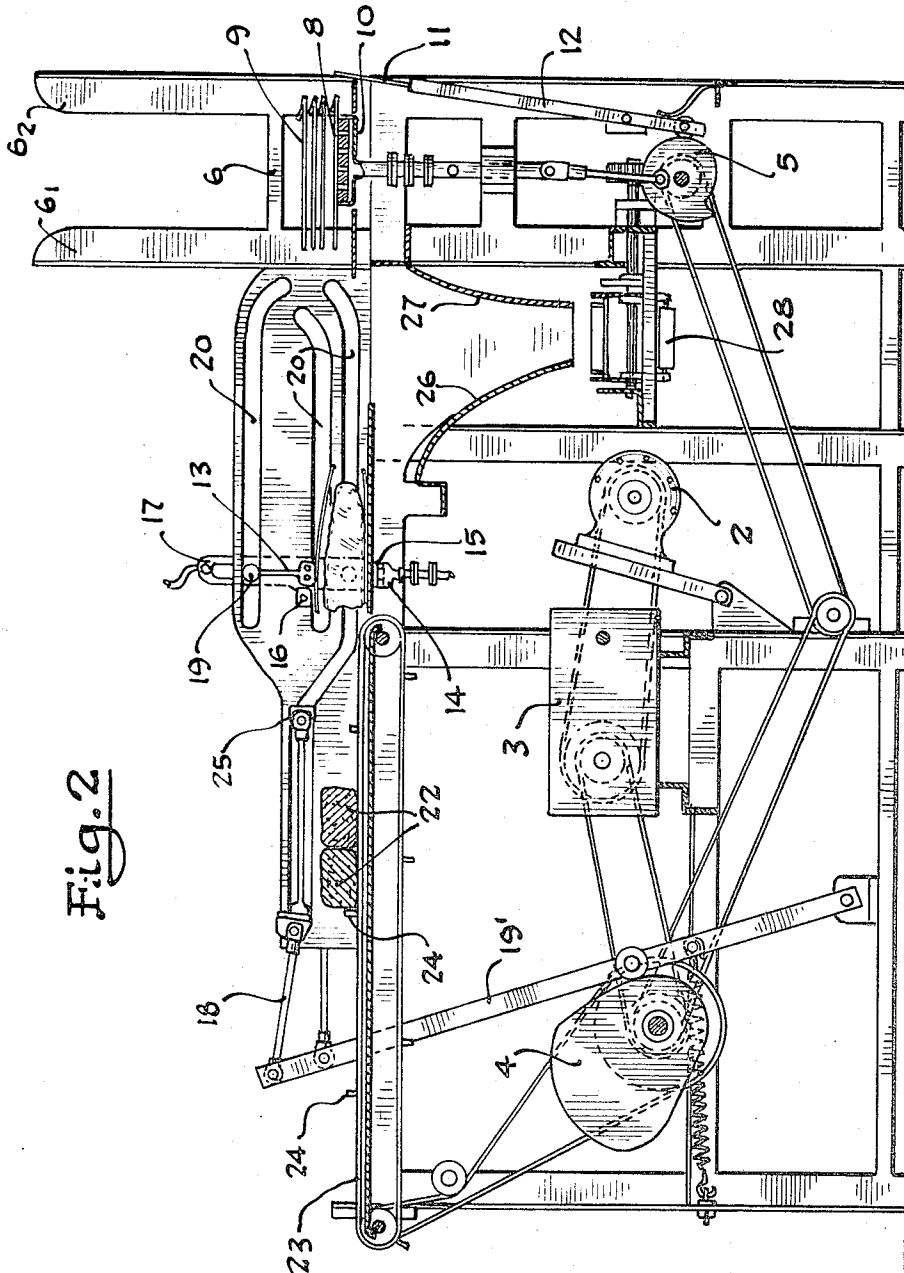


Fig. 2

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4 Sheets-Sheet 3

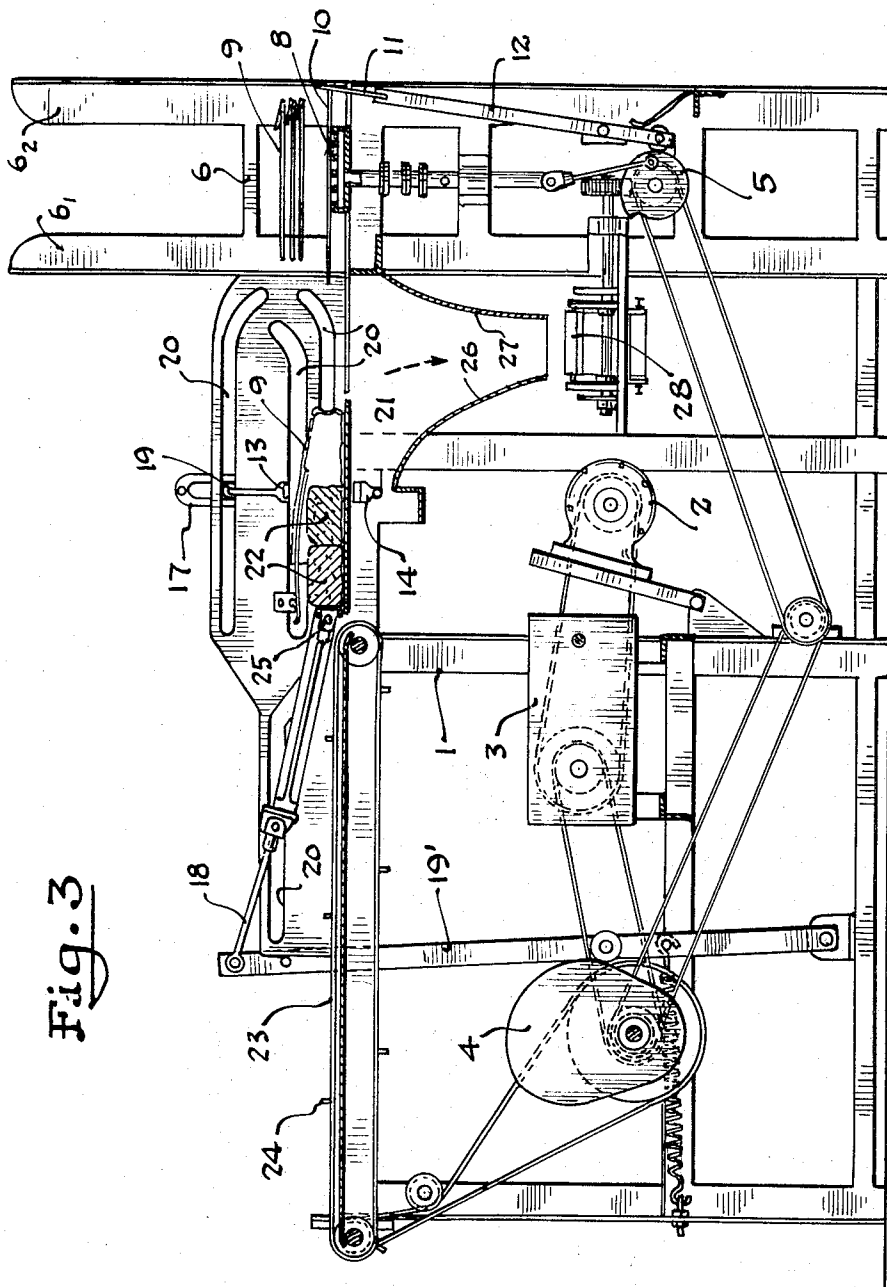


Fig. 3

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4 Sheets-Sheet 4

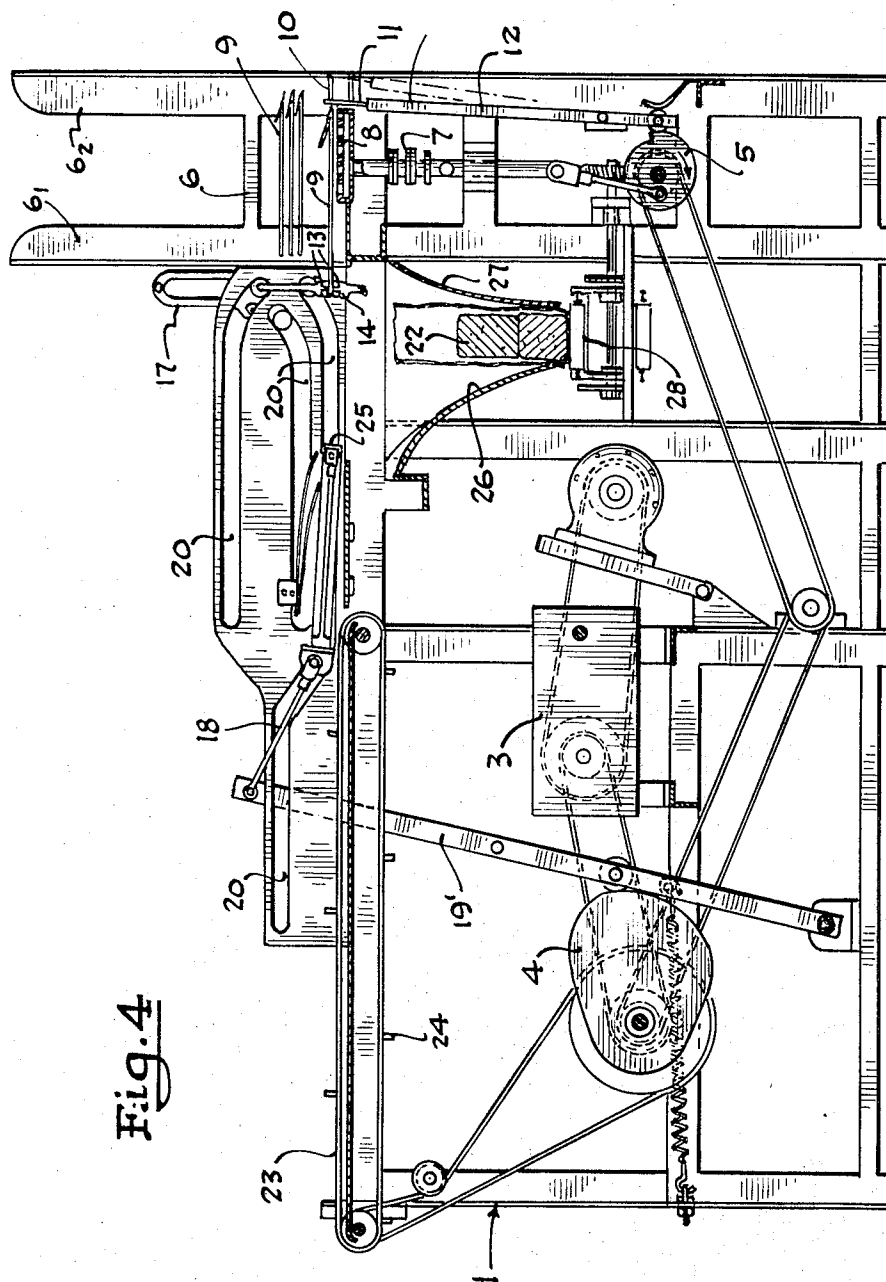


Fig. 4

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MACHINE FOR PACKAGING SOLID ARTICLES
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4 Claims. (Cl. 53—188)

A first object of the invention is to produce a machine for packaging solid articles such as rusks, biscuits or the like and package fragile articles horizontally so as to check their displacement to prevent the articles from being broken.

Another object of the invention is to displace the articles for packaging and the packed article according to the progressive but rapid movements ensuring continuous production.

Another object of the invention is to actuate the mechanisms of the machine from a single control point.

Other objects and advantages will be revealed of the characteristics and description, as well as by the attached drawings, in which:

FIGURE 1 is a diagrammatical view of the machine showing the assembly of the component elements;

FIGURE 2 is a partial sectional view of the machine showing the beginning of an operatory cycle.

FIGURE 3 is a view showing the packing of the article to be packaged;

FIGURE 4 is a view showing the packed article ejected from the machine.

According to the invention, this machine consists of a metal frame inside and in the lower part of which there is an electric motor 2, its reducing gear 3 and cams 4 and 5, actuating the various mechanisms of the machine.

The packets for filling are placed at the top of the frame, on the right of the machine, in a part 6 called "feed magazine."

The packets are piled one on top of the other between vertical guides 6₁ and 6₂, underneath this pile, is a hollow square section tube 7, surmounted by flexible suction parts, in which, at the right moments, a pneumatic depression is created, by means of a vertical alternating movement controlled by a cam 5, which takes the packets from the magazine one after the other for placing them on the distributor 10.

Fingers 11, carried by a lever 12 controlled by the cam 5, horizontally thrust each packet placed on the distributor or packet support 10 for making it emerge towards the left of the distributor where it is secured by the two suckers 13 and 14.

These two sucking parts are each formed of a square section hollow tube, surmounted by flexible suckers 15 and 16, in which, at the right moments, there is also created a pneumatic depression.

The suckers 13 and 14 are supported by vertical guiding plates 17 and move in guides by means of connecting-rods 18 controlled by a lever 19 which is itself controlled by the cam 4.

The horizontal and vertical displacements of the suckers 13 and 14 are obtained by means of rollers 19 rolling in hollow guides 20 provided in vertical plates placed on either side of the machine. It will be recognized that the guides 20 are in effect cam surfaces and that the rollers 19 riding therein induce strokes in the suction elements 13 and 14.

By these movements, the suckers seize the packet presented in front of the distributor 10. Sucker 13 raises and carries along the top side of the packet 9, the sucker 14 the bottom side, and the packet, thus opened, caps the funnel 21 on whose walls it is held during filling. The funnel can be viewed as defining the filling station of the machine.

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During these operations, the articles 22 to be packaged are automatically deposited and arranged at the left side of the machine, by means of a double driving chain 23, which, by means of its cross bars, 24, takes them to the right between lateral guides.

At a certain moment, a thrust-rod 25 or delivery element, also actuated by the lever 19, takes the place of the cross bars of the double chain and thrusts the articles for packaging into the funnel 21.

When these articles 22 reach the bottom of the packet 9 capping the funnel 21, this packet is liberated then ejected between the guides 26, 27 to drop and be positioned vertically on a conveyor chain 28 which discharges it from the packaging machine, towards a new machine which will proceed to close the packet automatically.

What I claim is:

1. In a machine for packaging articles in a packet adapted to be opened by suction means incidental to thrusting into a packet the article to be contained therein, and wherein the packets are to be advanced one-by-one from a supply magazine to a filling station in the machine: means defining a filling station where each article to be packaged is to be thrust into an open packet; a first feed means including a reciprocal delivery element having a stroke in a first direction for delivering an article to the filling station and for thrusting the article into an open packet, said first feed means including a pair of juxtaposed suction elements effective to grip and open opposed sides of a packet to enable the article to be thrust into the open end of the packet, means for guiding said suction elements to produce reciprocal strokes therefor in a direction substantially normal to the strokes of the delivery element to enable the suction elements to grip and then open the packet, said guide means also inducing reciprocal strokes of the suction elements substantially parallel to said first direction to move a packet from adjacent the supply magazine to the filling station; a second feed means including a reciprocal extractor for extracting a packet from the supply magazine in the machine in the course of a stroke thereof and depositing the extracted packet in position to be gripped by said suction elements; and means for synchronizing the extraction stroke of the extractor with the gripping of an extracted packet by said suction elements.

2. A machine according to claim 1 wherein the synchronizing means includes cams of which there is one cam assigned to each of the first and second feed means.

3. A machine according to claim 2 wherein the extractor includes a suction element effective to extract and deposit an extracted packet on a support, and a feed finger for moving the deposited packet forward on the support into position to be gripped by the suction elements when the packet is transferred to the filling station.

4. A machine according to claim 2 wherein the guiding means includes a guide plate presenting cam surfaces, the suction elements themselves having elements engaged with and controlled by said cam surfaces.

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