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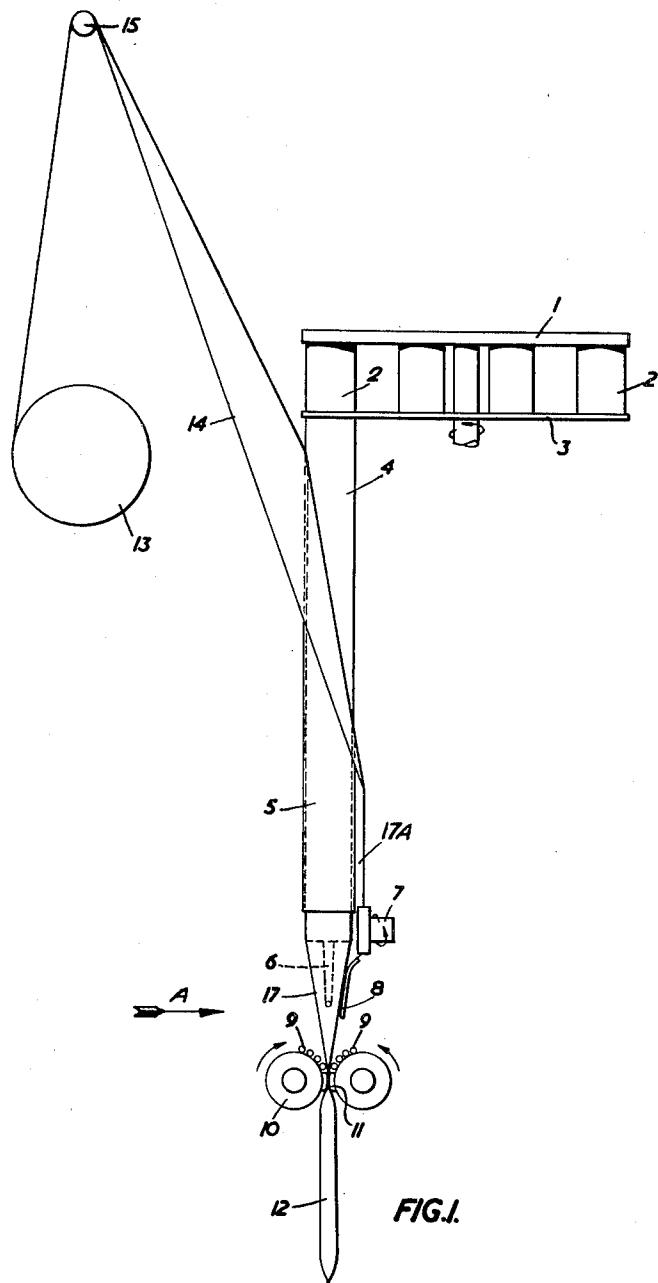
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3,045,404

WRAPPING MACHINES

Filed Nov. 20, 1961

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

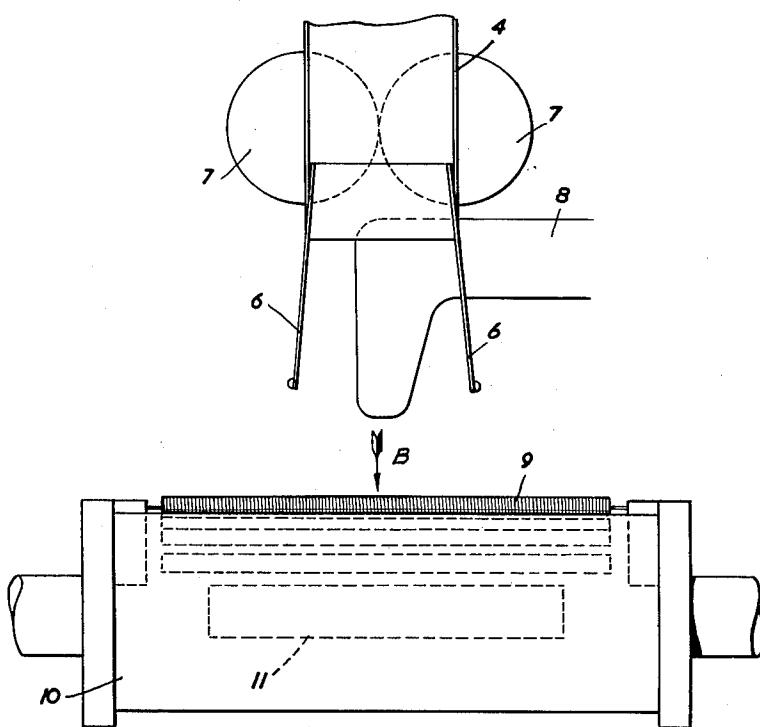


FIG. 2.

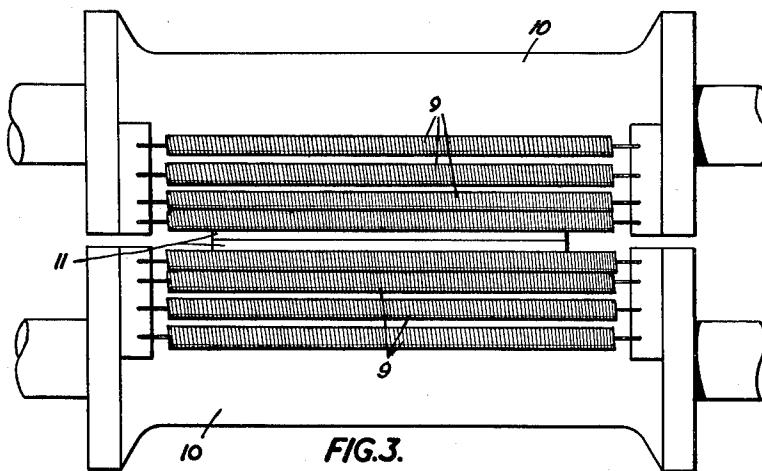


FIG. 3.

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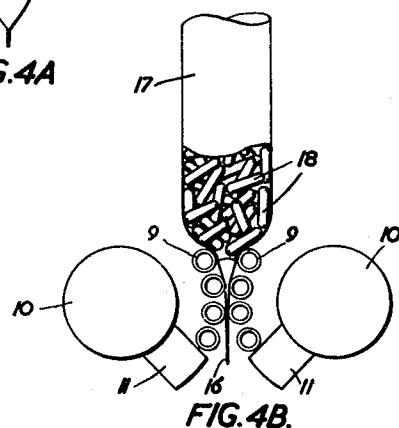
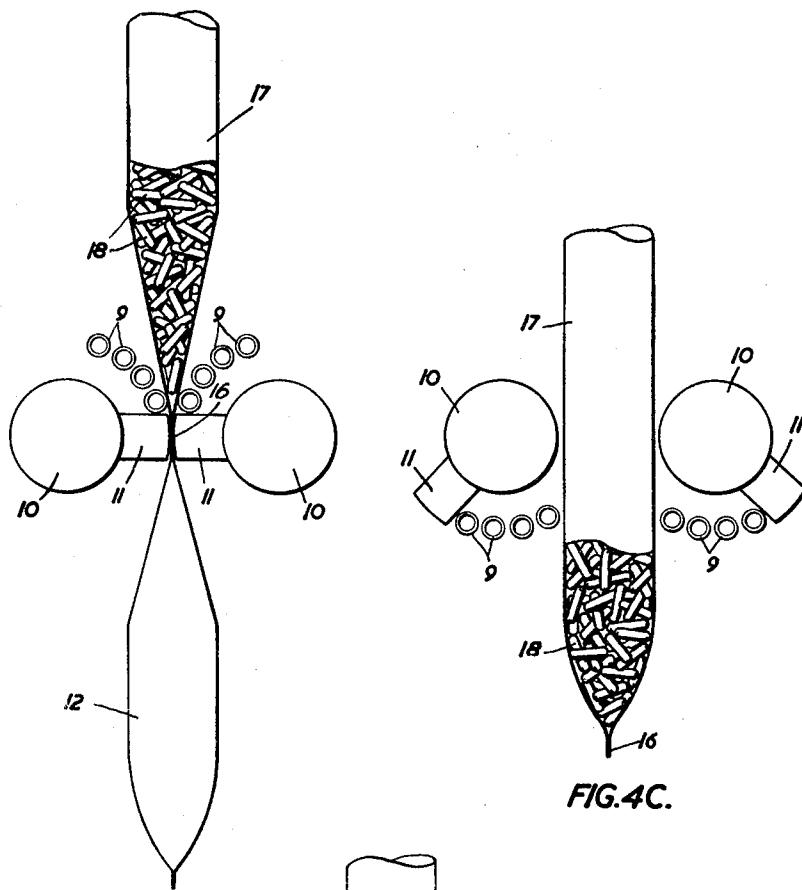
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WRAPPING MACHINES

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3 Sheets-Sheet 3



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WRAPPING MACHINES

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grove Machinery Company Limited, Yorkshire, Eng-
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4 Claims. (Cl. 53—180)

This invention relates to wrapping machines for wrapping loose articles in pillow type packets of the type comprising an upright tube former, means for feeding a web of heat sealable wrapping material downwardly in relation to the tube former, rotary heat sealing jaws situated below the tube former and arranged to engage opposite sides of the tube of wrapping material travelling downwardly from the tube former to form transverse seals therein, and means for intermittently delivering charges of loose articles downwardly through the tube former for inclusion in the packets formed by the sealing jaws.

Existing machines of this type suffer from the disadvantage that the impact of the falling articles on the newly formed transverse heat seals tends to burst them, since the seals have not set properly when they are struck by the articles.

According to the invention this difficulty is avoided by the provision of resilient members on the shafts carrying the sealing jaws, these members forming continuations of the surfaces of the jaws and acting to protect the newly formed heat seals, after the sealing jaws have released the wrapping material, from damage by the falling articles.

These resilient members serve to flatten the tube of wrapping material and thus hold the weight of the articles and delay their fall as the jaws rotate. This prevents the articles falling on the newly formed heat seal and thus allows time for the seal to set before the full weight of the articles acts on it.

The invention thus provides resilient members on the jaw-carrying shafts for holding the tube of wrapping material closed or partly closed after the sealing action is completed and so preventing the articles being fed into a packet from falling immediately onto the newly made seal and damaging it. The resilient members may be constituted by axially extending tension springs mounted on the shafts. Due to their resilience the springs can deflect if an article should become trapped between them, so avoiding crushing of the article.

The invention will now be further described with reference to the accompanying drawings, in which:

FIG. 1 is a side elevation of the tube forming apparatus.

FIG. 2 is a view on a larger scale looking in the direction of the arrow A, FIG. 1, with the wrapping material omitted.

FIG. 3 is a view looking in the direction of the arrow B in FIG. 2, and

FIGS. 4A, 4B and 4C are diagrams illustrating the operation of the supporting springs.

As shown in FIG. 1 a web 14 of heat sealable wrapping material is fed from a reel 13 over a guide roller 15 to a vertical tube former constituted by an inner tube 4 surrounded by an outer tube 5 having an oblique upper edge. The web is formed into a tube 17 having a longitudinal fin 17A as it passes downwardly between the tubes 4 and 5 and this fin 17A, which extends through a slot in the outer tube 5, is heat sealed by a pair of heated drawing rollers 7 which engage the fin and serve to feed the web from the reel 13.

Beneath the tube former is a pair of rotary shafts 10 which carry heated crimping jaws 11 which heat seal the

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tube 17 of wrapping material transversely. The jaws 11 travel at the same linear speed as the tube 17 when in contact with it. Knives (not shown) carried by the jaws 11 sever the tube 17 of wrapping material into individual packets 12, a charge of loose articles 18 (FIG. 4A) being discharged into each packet, after its bottom transverse heat seal has been formed, from a measuring tube 2 carried by a rotary feed disc 1 which rotates on a stationary underplate 3. Spreaders 6 extending downwardly from the tube 4 engage the inner wall of the tube 17 of wrapping material as it leaves the outer tube 5 and a finger 8 serves to flatten the fin 17A against the tube 17 before the latter reaches the crimping jaws 11.

As an alternative to the above arrangement, the wrapping material may be fed downwardly over the tube 4 by rollers which grip the material at various points around the tube former and press it against the tube 4. Also it is not essential that the crimping jaws 11 should carry cutting knives, since the individual packets can be severed from the tube 17 of wrapping material by a separate operation at a later stage.

To protect the newly formed transverse heat seals against damage by the falling articles, the shafts 10 carry a number of tensioned helical springs 9 which extend parallel to the axes of the shafts and form a resilient supporting surface adjacent the crimping jaws 11 and at the same level. The protective action of the springs 9 is shown in FIGS. 4A—4C. FIG. 4A shows the jaws 11 forming a transverse heat seal 16 in the tube 17 of wrapping material and the articles 18 falling into the tube 17. FIG. 4B shows the jaws 11 separated and the springs 9 flattening the tube 17 and preventing the articles from contacting the partly set heat seal 16. At the subsequent stage shown in FIG. 4C the springs 9 have released the tube 17 and allowed the article to descend against the heat seal which has now set and is able to take the full weight of the articles.

What I claim as my invention and desire to secure by Letters Patent is:

1. A wrapping machine comprising an upright tube former, means for feeding a web of heat sealable wrapping material downwardly in relation to said tube former to form said wrapping material into a tube travelling downwardly from said tube former, rotary heat sealing dies, situated below the tube former and on opposite sides of said tube arranged to engage said tube intermittently to form transverse seals therein and thereby to form said tube into a series of packets, shafts supporting said sealing dies, means for delivering a charge of loose articles downwardly through said tube former into each of said packets, and resilient members on said shafts which form continuations of said sealing dies and engage the sides of said tube above each transverse seal, immediately after formation thereof by the sealing dies, to flatten the tube and thereby protect said seal from damage by the falling articles.
2. A wrapping machine as claimed in claim 1, wherein said resilient members are helical springs mounted in tension on said shafts and extending axially thereof.
3. A wrapping machine as claimed in claim 1, wherein said tube former has a slot through which projects a longitudinal fin formed in said tube by said tube former and said feeding means is constituted by heated rollers which engage said fin.
4. A wrapping machine as claimed in claim 3, which includes spreaders extending downwardly from the tube former to engage the inner wall of the tube and a finger situated above the sealing jaws and positioned to flatten the fin against the tube.

No references cited.