Aug. 23, 1966 A. D. BROADBENT 3,267,642

WRAPPING MACHINES

Filed Jan. 28, 1963 4 Sheets-Sheet 1

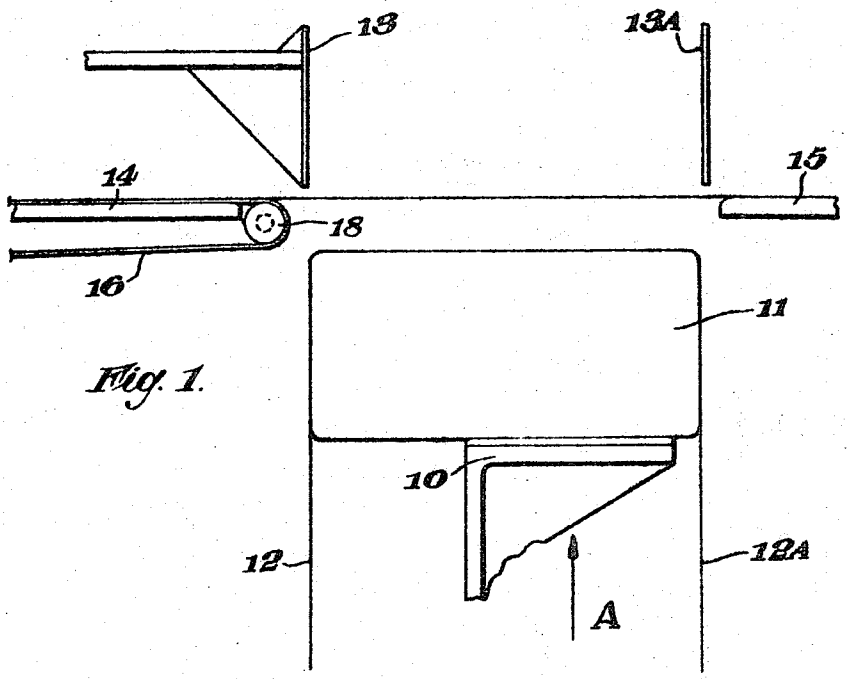


Fig. 1.

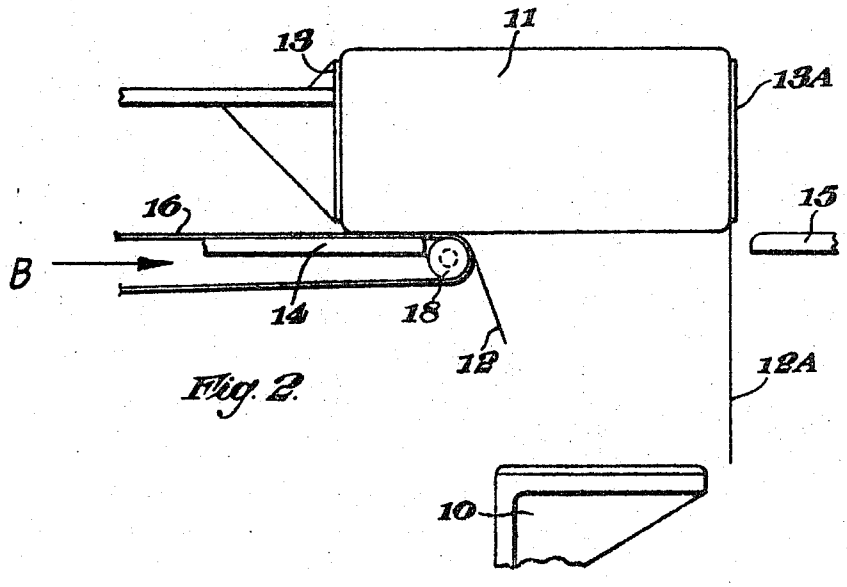


Fig. 2.

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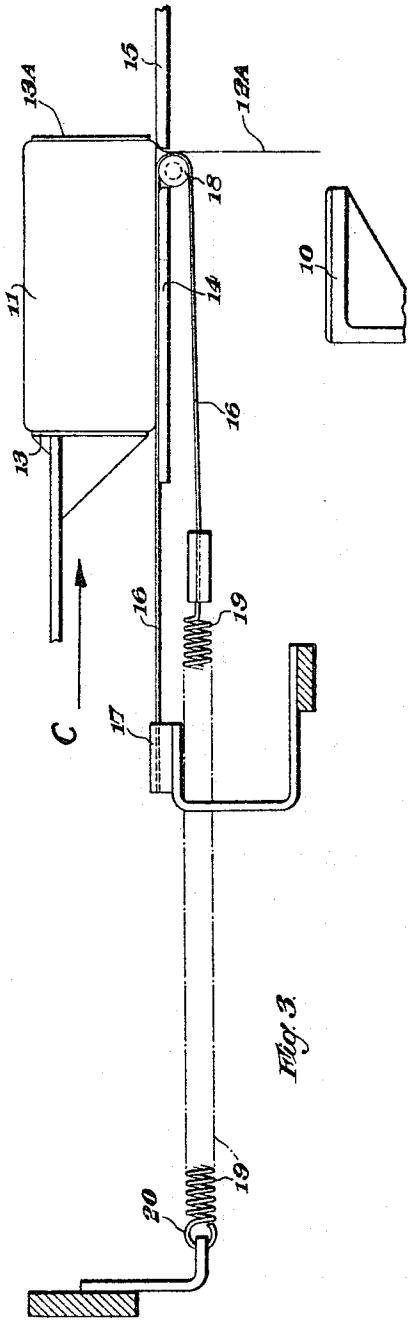


Fig. 3

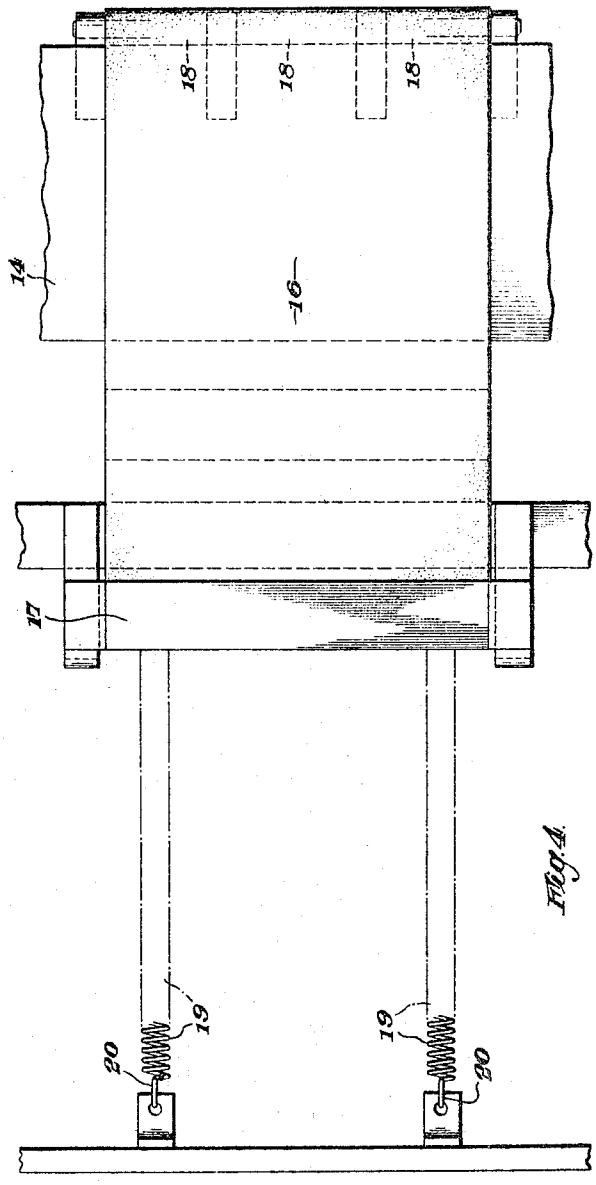


Fig. 4.

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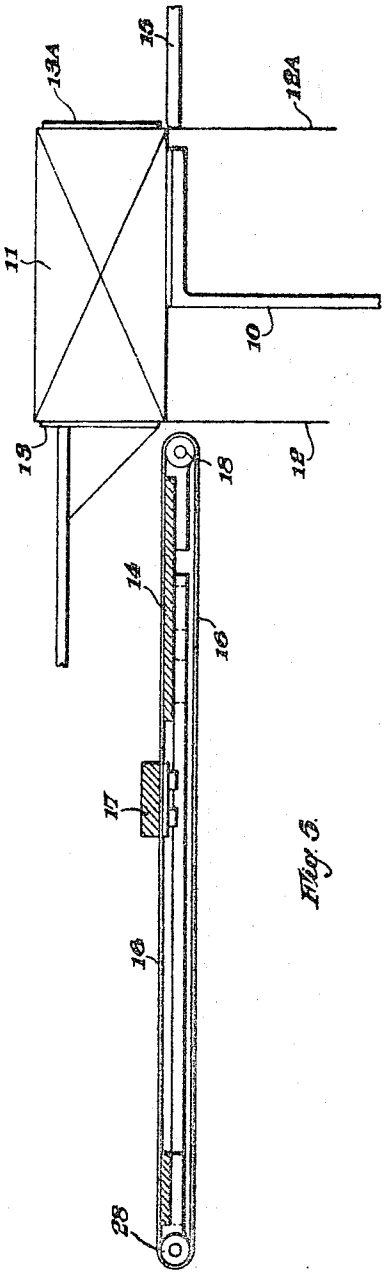


Fig. 5.

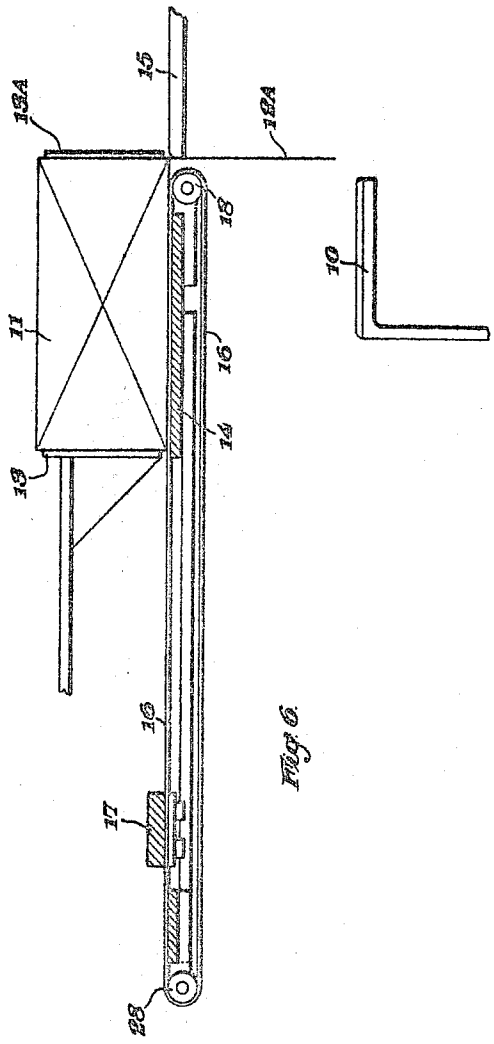


Fig. 6.

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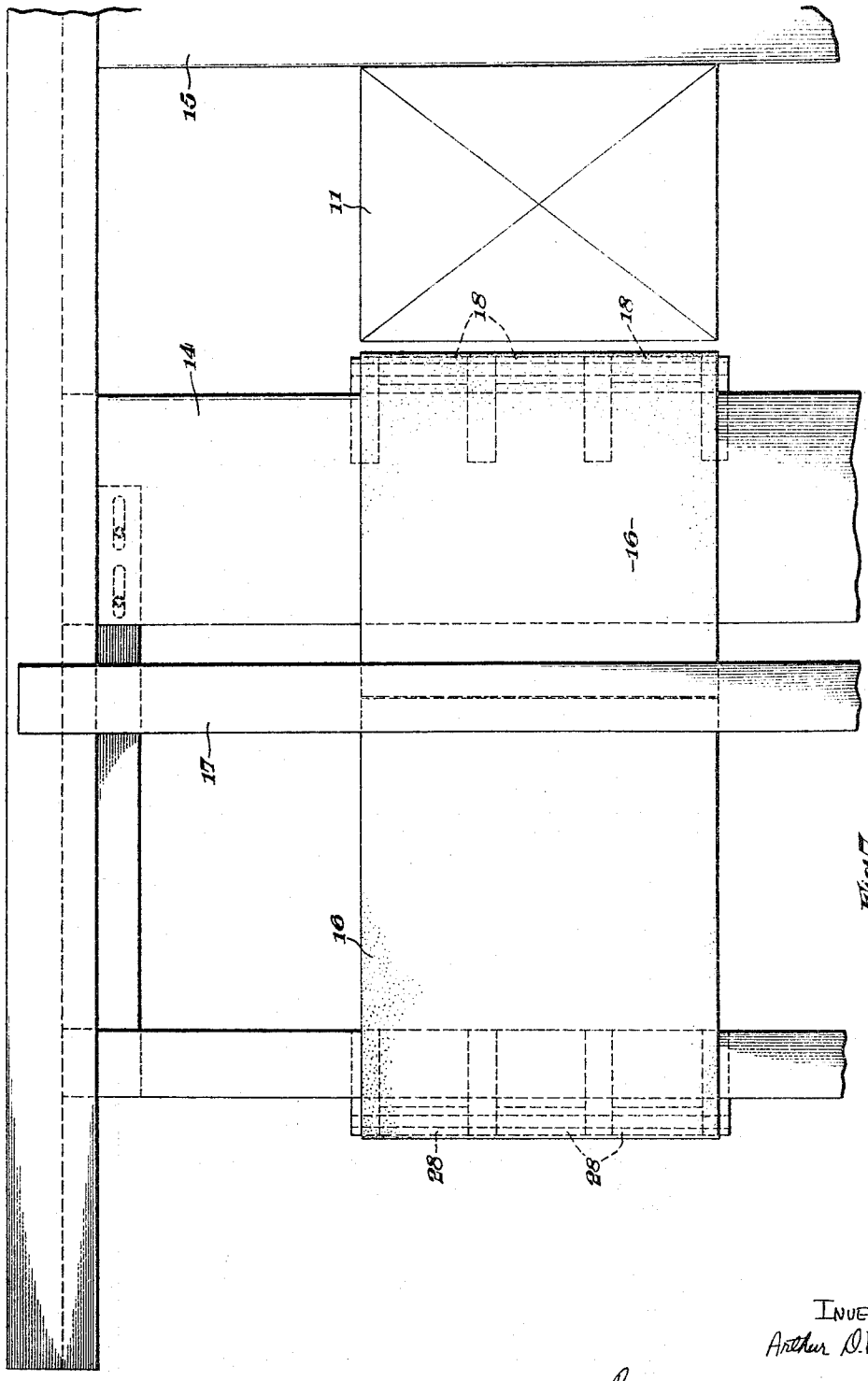


Fig. 7.

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United States Patent Office 3,267,642 Patented August 23, 1966

3,267,642

WRAPPING MACHINES

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Filed Jan. 28, 1963, Ser. No. 254,278
3 Claims. (Cl. 53—228)

Difficulty may be encountered in wrapping machines which employ rigid folding blades to fold a wrapper against the side, or the top or bottom face, of an article which is soft and limp, due to friction between the folder and the article causing distortion of the article so that it forms an obstruction to movement of the folder. This prevents the achievement of a satisfactory wrap and also causes damage to the article.

With a view to obviating this difficulty, this invention provides, in a wrapping machine, a folder for folding a wrapper against a surface of an article presented to it, which carries on the surface thereof facing the article a smooth, thin, flexible belt which is arranged to advance with the folder and roll the wrapper progressively against the surface of the article. By this action the wrapper is caused to conform with the surface of the article without the exertion of friction or pressure on the article in the direction of travel of the folder.

The belt may be fixed at one end and extend around a rotatable roller at the leading end of the folder, its other end being attached to a tension spring which allows the belt to pay out as the folder is advanced. Alternatively the belt may extend around rotatable rollers at both ends of the folder and be fixed at both ends to a fixed anchorage.

Two alternative embodiments of the invention will now be described in more detail with reference to the accompanying diagrammatic drawings in which:

FIGS. 1, 2 and 3 are side elevations showing successive stages in the operation of the first embodiment,

FIG. 4 is a plan view of the folder in the position shown in FIG. 3,

FIGS. 5 and 6 are side elevations, partly in section, showing successive stages in the operation of the second embodiment, and

FIG. 7 is a plan view of the folder in the position shown in FIG. 5.

Like reference numerals indicate like parts throughout the figures.

Turning first to FIGS. 1–4, the wrapping mechanism includes an elevator **10** which, at each machine cycle lifts a limp article **11** (see arrow A), having a wrapper folded about it in U formation with dependent tails **12**, **12A**, into a pair of grippers **13**, **13A**. A folder **14** then advances in the direction of arrow B, as shown in FIGS. 2 and 3, to fold the tail **12** of the wrapper against the base of the article, the elevator **10** meanwhile retiring.

The grippers **13**, **13A** then carry the article away in the direction of the arrow C shown in FIG. 3, a fixed plate **15** folding the other tail **12A** of the wrapper against the base of the article.

A belt **16**, of smooth, thin, flexible material having a minimum of stretch, is fixed at one end to a bar **17** on the machine frame, extends over the upper surface of the folder **14** and around freely rotatable rollers **18** at the forward end of the folder and is attached at its other end to tension springs **19** which are connected at **20** to the machine frame. Accordingly as the folder advances the belt **16** is drawn forward against the action of the springs **19** to roll the tail **12** of the wrapper against the base of the article in the manner described above.

The alternative construction shown in FIGS. 5–7 is substantially the same, but the belt is fixed at both ends to the bar **17** and extends around two sets of freely rotatable rollers **18**, **28** located respectively at the forward and rear ends of the folder **14**. The belt exerts a similar rolling action on the tail **12** of the wrapper.

A folder provided with a belt as described above may equally well be utilized to fold a wrapper against the top surface of an article or, moving up or down, to fold a wrapper against a side or end face of an article.

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

1. A wrapping machine, adapted for wrapping soft and limp articles, which includes grippers for supporting an article with a wrapper folded around three surfaces thereof in U formation with a projecting tail, said grippers contacting the portions of the U-shaped partially folded wrapper which cover the side walls of the article and thus aid in preserving the shape of said article, an elongated folder disposed in a plane parallel to and immediately adjacent to that of the remaining uncovered surface from which the tail projects, and means for imparting to said folder a movement from a point laterally of said article which movement is exclusively a linear movement in the plane of said folder across said surface of the article from which said tail projects to fold said tail against said surface; said folder comprising a rigid support, a rotatable roller at the leading end of said support, and a smooth thin flexible belt fixed at one end thereof to an anchorage approximately in the plane of said surface but located further away from said article than said roller, and extending from said anchorage over the surface of said support which faces said surface of the article and around said roller, means for anchoring the opposite end of the belt to maintain the necessary tautness in the belt during operation; said belt being adapted, upon advance of said folder, to be drawn around said roller and extended progressively linearly forward from said anchorage over said surface of the article to engage said tail of the wrapper and apply it progressively against said surface of the article without the exertion of friction or pressure on the article in the direction of travel of the folder.

2. A wrapping machine as claimed in claim **1**, wherein said opposite end anchoring means includes a tension spring, said belt being drawn forwardly about the roller and against the action of said spring upon advance of the folder to apply said tail against said article.

3. A wrapping machine as claimed in claim **1**, wherein said folder includes rotatable rollers at both ends thereof and said belt is trained to run around both rollers and is fixed at both its ends to said fixed anchorage and means for fixing said anchorage at a point intermediate said rollers.

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