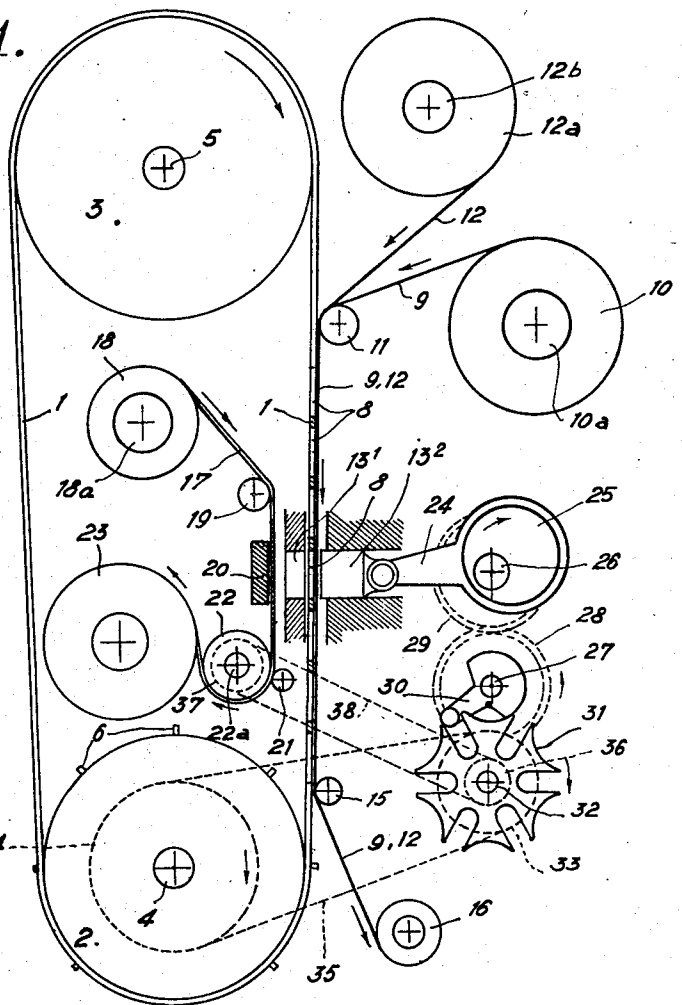
April 20, 1954 L. M. MUTTI 2,675,851

MACHINE FOR THE MANUFACTURE OF SELF-ADHESIVE TABS

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Fig. 1.



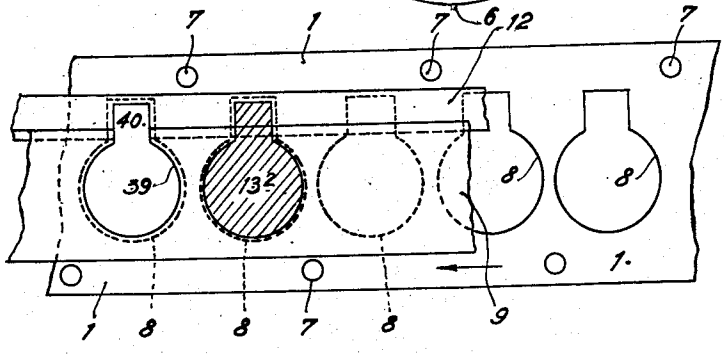


Fig. 2.

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Fig. 4

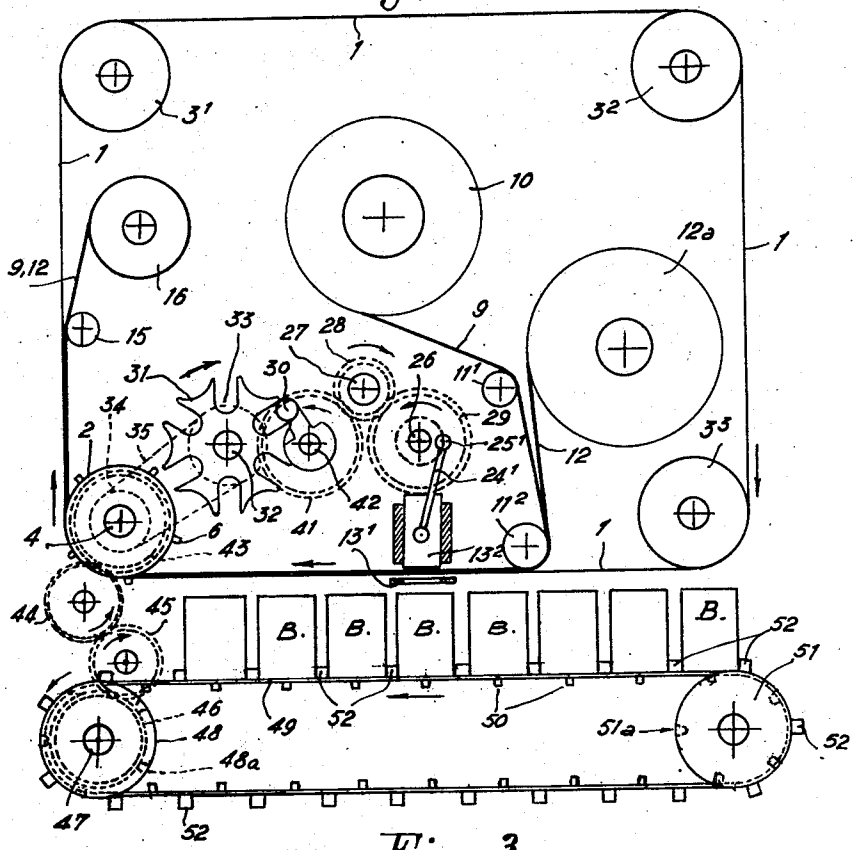


Fig. 3

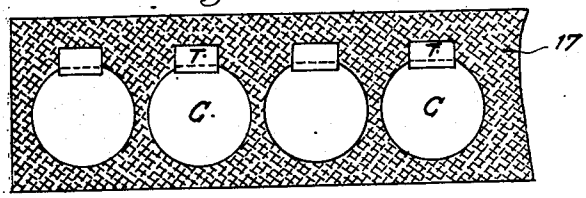
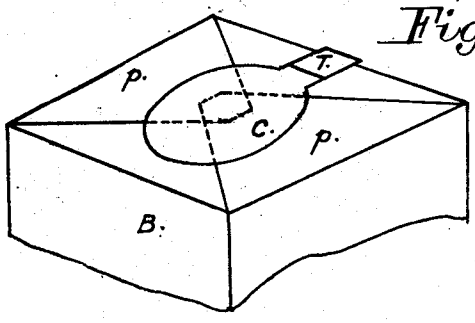


Fig. 5



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MACHINE FOR THE MANUFACTURE OF SELF-ADHESIVE TABS

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Application August 8, 1952, Serial No. 303,231

Claims priority, application France July 2, 1952

2 Claims. (Cl. 154—1)

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Self-adhesive tabs for closing boxes and similar uses are presently manufactured by cutting a flexible self-adhesive band into sections, using scissors or equivalent means, so as to obtain sections of uniform square or rectangular shape.

The present invention has for its object the manufacture of self-adhesive tabs, with or without gripping flaps, of any desired shape, these tabs being adapted particularly for closing various boxes or packages, the self-adhesive tab being placed on the folds of the box or of its envelope, or astride over the angle formed by the cover and an adjacent side of the box, or closing an aperture formed in one side of the box.

To this effect, the invention has for its object a machine for the manufacture of self-adhesive tabs which is mainly characterised in that it comprises in combination: an endless carrier band formed with regularly spaced apertures the shape of which corresponds to that of the self-adhesive tabs to be manufactured, means for intermittently advancing said carrier band, a support for a reel of self-adhesive band, means for guiding the self-adhesive band unwound from said reel into contact with said carrier band so that said self-adhesive band adheres to and is drawn along by said carrier band, punching means comprising a die, a punch and punch actuating means, said die and said punch having a section corresponding to the shape of said apertures, said die being placed on one side of said carrier band and said self-adhesive band adhering thereto and said punch being placed on the other side of said carrier band and said self-adhesive band adhering thereto, said means for intermittently advancing the carrier band and said punch actuating means being coupled in such manner that at each stoppage of said carrier band one of said apertures faces said punch, and said punch actuating means actuates said punch during the halt of said carrier band.

When it is desired to manufacture self-adhesive tabs with gripping flaps, the machine further comprises a support for a reel of flexible non-adhesive tape, means for guiding said tape unwound from its reel in such manner that said tape is laterally set off with respect to said self-adhesive band and engaged between said carrier band and said self-adhesive band so as to adhere to the latter by part of its width, said apertures, said die and said punch being shaped and placed in such manner that said punch cuts through said self-adhesive band as well as through said non-adhesive tape and punches out a self-adhesive tab together with its gripping flap.

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The self-adhesive tabs leaving the punching means can be gathered in any convenient manner.

However, according to another feature of the invention, the machine may further comprise a support for a flexible band, a flexible band on said last-mentioned support, means for advancing said flexible band behind said die, in parallel direction with said carrier band, said means for advancing the flexible band being synchronised with said means for advancing the carrier band, and an anvil placed behind said flexible band, in alinement with said die, so that the self-adhesive tabs punched out by said punch and leaving said die are applied successively by said punch on said flexible band.

In another embodiment, the machine comprises an endless conveyor and means for advancing said conveyor intermittently, in synchronism with said carrier band, said conveyor being adapted to support a series of boxes and to pass said boxes one by one under said die, so that the self-adhesive tabs punched out by said punch are successively applied by said punch on said boxes.

The appended drawings show by way of example a first embodiment of the machine according to the invention, for the manufacture of self-adhesive tabs with gripping flaps, and a second embodiment in which the self-adhesive tabs are applied on boxes passing under the die of the punching means.

Fig. 1 is a diagrammatic vertical section of the first embodiment.

Fig. 2 is a partial view showing the respective positions of the self-adhesive band, the tape forming the gripping flaps and the carrier band.

Fig. 3 shows a portion of the receiving support on which the punched out tabs are applied.

Fig. 4 is a diagrammatic vertical section of the second embodiment.

Fig. 5 is a perspective view of a box closed by the machine of Fig. 4.

On Fig. 1, the reference 1 designates the endless carrier band which is for example of metal. The intermittent advance of this band is obtained by means to be described later. The band 1 passes around two drums 2 and 3, the drum 2 being rotated by its shaft 4 on which it is keyed, while the drum 3 rotates freely on its shaft 5. Preferably, in order to avoid skidding, the driving drum 2 is provided with two rows of projections 6 which engage corresponding holes 7 (Fig. 2) formed in the band 1. The latter is formed with regularly spaced apertures 8 (Fig. 2) the

shape of which corresponds to that of the self-adhesive tab C with gripping flap T to be obtained (see Fig. 3).

A band 9 unwound from a reel 10 carried by a shaft 10*a* passes around a roller 11 which applies it against a rectilinear portion of the carrier band 1. The band 9 is provided at least on its side which is applied against the carrier band 1 with a layer of permanent adhesive which renders said band 9 self-adhesive, so that the band 9 adheres to the carrier band 1 and is drawn along by the latter. The band 9 may be of any convenient material, such as paper, fabric, plastic, etc.

Between one edge of the self-adhesive band 9 and the endless band 1 is engaged by part of its width a tape 12 from which the gripping flaps T are to be formed. The tape 12 is unwound from a reel 12*a* mounted on a shaft 12*b* and is set off laterally with respect to the band 9, so that the tape 12 adheres to the band 9 by part of its width, while the remainder of the tape 12 is left free.

Thus, the band 9, which is drawn along by the endless metal band 1, in its turn draws along the tape 12. The latter may be of any convenient flexible material: paper, cardboard, fabric, etc.

On both sides of the whole formed by the bands 1 and 9 and the tape 12 and at a point of their common rectilinear path are placed the two members of a punching device the shape of which corresponds to the contour of the whole formed by the tab C and flap T to be obtained, said members being the die 13^1 and the punch 13^2 which face each other and also face one of the apertures 8 of the band 1, at each stoppage of said band. The apertures 8 are slightly greater than the cross section of the punch 13^2.

After having passed the punching device, the band 9 and the tape 12 pass around a roller 15 and are wound up together on a receiving reel 16. In order to ensure that the upwinding is made regularly and without interference with the movement of the band and tape, the reel 16 is rotated intermittently, in synchronism with the advance of the carrier band 1, and with a constant upwinding speed.

The machine may advantageously be provided with means for receiving the punched out tabs C—T on a flexible support which is preferably apertured and from which they are subsequently to be detached by the user.

The flexible receiving support is for example a band of tarlatan 17 which is unwound from a reel 18 mounted on a shaft 18*a*, is led around a roller 19 and then advances in parallel direction to the band 1, between the die 13^1 and an anvil 20, whereafter the band 17 passes between a roller 21 and a driving drum 22 which is rotated intermittently, in synchronism with the movement of the band 1, the band 17 being finally wound up on a receiving reel 23 provided with driving means similar to that previously mentioned in connection with the reel 16.

The intermittent movement of the endless band 1 and of the flexible support 17 as well as the synchronism of this movement with that of the punch 13^2 may be obtained by any convenient means.

The stroke of the punch 13^2 is determined in such manner that it cuts out the tab C with its flap T and applies them on the support 17 which leans against the anvil 20. The punch 13^2 is driven for example by a connecting rod 24 actuated by an eccentric which is keyed on a shaft 26 driven through equal toothed wheels 28 and 29 by a shaft 27 which is rotated by a motor. On the shaft 27 is keyed a crank 30 which actuates a Maltese cross 31 keyed on the shaft 32 which drives, preferably through sprocket wheels 33, 34 and a chain 35, the shaft 4 of the drum 2 which drives the endless band 1. On the other hand, the shaft 32 drives, also preferably through sprocket wheels 36, 37 and a chain 38, the shaft 22*a* of the drum 22 which drives the flexible receiving support 17.

Thus, at each stopping of the band 1 and of the support 17, the punch 13^2 cuts out of the band 9 and of the tape 12 a self-adhesive tab C together with its gripping flap T and applies them upon the support 17. Once this operation is finished, the band 1 and the support 17 are again advanced and stop when another aperture 8 of the band 1 faces the punch 13^2 (Fig. 2), the latter effecting another operation, and so forth. The remainders of the band 9 and of the tape 12, in which openings 39 and 40 have been cut out (Fig. 2), are wound up on the reel 16, while the flexible support 17, having the self-adhesive tabs C with their gripping flaps T glued thereon in succession (Fig. 3), is wound up on the reel 23.

Referring now to the second embodiment shown in Fig. 4, the reference 1 designates as before the endless carrier band driven by the drum 2 with projections 6, the band 1 following here a rectangular path defined by three other, freely rotating drums 3^1, 3^2 and 3^3.

The self-adhesive band 9 unwound from the reel 10 passes around two guide rollers 11^1, 11^2 before it is brought into contact with and adheres automatically to the carrier band 1. In this embodiment, the band 9 is applied to the inner face of the carrier band 1, on a rectilinear portion of its path.

The tape 12 from which the flaps T are to be cut out is unwound from the reel 12*a* and is engaged with a certain lateral displacement, as in the first embodiment, between the self-adhesive band 9 and the carrier band 1.

After having passed through the zone of operation of the punching means 13^1, 13^2, the band 9 and the tape 12 pass on the drum 2, between the projections 6 thereon, then on the roller 15, and are finally wound up on the reel 16.

The die 13^1 of the punching means is in this embodiment placed on the outer side of the carrier band 1. The punch 13^2 is driven by a connecting rod 24^1 actuated by the eccentric crank pin 25^1 of the shaft 26 on which the toothed wheel 29 is keyed. The toothed wheel 29 meshes with the toothed wheel 28 keyed on the motor shaft 27. The toothed wheel 28 meshes also with a toothed wheel 41 which has the same diameter as the wheel 29 and is keyed on a shaft carrying the crank pin 30 which actuates the Maltese cross 31. The latter is keyed on a shaft 32 which drives through sprocket wheels 33, 34 and a chain 35 or by any other suitable transmission the shaft 4 of the drum 2 which drives the endless carrier band 1.

On the shaft 4 is keyed a toothed wheel 43 which drives through other toothed wheels 44, 45, 46 a shaft 47 carrying the driving drum 48 of an endless conveyor 49 the driving side of which is parallel to the rectilinear portion of the path of the carrier band 1 passing through the punching means 13^1, 13^2. The movement of the conveyor 49 is thus intermittent and synchronous with that of the carrier band 1. The conveyor is adapted to carry a series of boxes B and to pass the same

one by one under the die 13¹. Each of the boxes B or their envelopes presents closing folds p (Fig. 5) and during the halt of each box under the die 13¹ a self-adhesive tab C with its gripping flap T is applied upon the center of the folds p, whereby the closure of the box or of its envelope is completed.

To this effect, the conveyor 49 is formed for example by a metal band carrying on its inner side projections 50 adapted to engage recesses 48a and 51a formed in the driving drum 43 and in the freely rotating drum 51 of the conveyor. The outer surface of the conveyor band 49 carries cross bars 52 between which the boxes B are placed. The conveyor could however be constructed in any other convenient manner.

Obviously the boxes with folds may be replaced by boxes having an aperture to be closed by the self-adhesive tab C. On the other hand, in the machine of Fig. 4 as well as in that of Fig. 1, the reel 12a can be dispensed with when it is desired to manufacture self-adhesive tabs without gripping flaps. This is more convenient particularly when, as in the case of Fig. 4, the tabs are applied directly upon the boxes to be provided therewith.

It will be understood that the invention is not limited to the embodiments which have been described and shown and covers all modifications thereof which fall within the scope of the appended claims.

I claim:

1. A machine for the manufacture of self-adhesive tabs, comprising in combination: an endless carrier band formed with regularly spaced apertures the shape of which corresponds to that of the self-adhesive tabs to be manufactured, means for intermittently advancing said carrier band, means for guiding a self-adhesive band into contact with said carrier band so that said self-adhesive band adheres to and is drawn along by said carrier band, punching means comprising a die, a punch and punch actuating means, said die and said punch having a section corresponding to the shape of said apertures, said die being placed on one side of said carrier band and said self-adhesive band adhering thereto and said punch being placed on the other side of said carrier band and said self-adhesive band adhering thereto, said means for intermittently advancing the carrier band and said punch actuating means being coupled in such manner that at each stoppage of said carrier band one of said apertures faces said punch, and said punch actuating means actuates said punch during the halt of said carrier band.

2. A machine as claimed in claim 1, for the manufacture of self-adhesive tabs having each a gripping flap, comprising a support for a reel of flexible non-adhesive tape, means for guiding said tape unwound from its reel in such manner that said tape is laterally set off with respect to said self-adhesive band and engaged between said carrier band and said self-adhesive band so as to adhere to the latter by part of its width, said apertures, said die and said punch being shaped and placed in such manner that said punch cuts through said self-adhesive band as well as through said non-adhesive tape and punches out a self-adhesive tab together with its gripping flap.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
568,515	Buckingham et al.	Sept. 29, 1896
1,189,093	Gompf	June 27, 1916
1,986,611	Thomsen	Jan. 1, 1935
2,157,556	Menschner	May 9, 1939
2,286,159	Reynolds	June 9, 1942
2,333,750	Tompkins	Nov. 9, 1943
2,468,619	Franke	Apr. 26, 1949
2,483,458	Fischer et al.	Oct. 4, 1949
2,491,281	Rowe	Dec. 13, 1949