The present invention relates to a machine for packing cigarettes while a wrapper is used which is completed prior to filling said cigarettes into said wrapper and which is provided with a fold at the bottom. The material to be packed is preferably already covered by a wrapper, for instance of tinfoil. Such machines are known. However, they are of rather wide dimensions while, on the other hand, the output of the machine is low. It is, therefore, an object of the present invention to provide a machine for packing cigarettes which while being relatively smaller than heretofore known machines of the type involved will have a relatively increased output over heretofore known machines. It is another object of this invention to provide a machine for packing cigarettes which will be considerably simpler than machines of the above mentioned type as heretofore known. These and other objects and advantages of the invention will appear more clearly from the following specification in connection with the accompanying drawings in which:

Fig. 1 represents a vertical section through a machine according to the present invention which section is taken along the line I—I of Fig. 3.

Fig. 2 represents a horizontal section taken along the line II—II of Fig. 1.

Fig. 3 is a side view of the machine shown in Figs. 1 and 2.

Fig. 4 is a side view of the mouthpiece used in connection with the machine according to the present invention.

Fig. 5 is a top view of the mouthpiece on a somewhat larger scale than that used in Figs. 1 to 3.

Fig. 6 is a perspective view of a wrapper with a fold at the bottom.

Fig. 7 is a back view, partly in section, of the machine shown in Figs. 1 to 3.

General arrangement

In order to increase the speed and thereby the output of the machine, according to the present invention, the wrapper prepared on a turret head and provided with a bottom fold is tangentially with regard to said turret head passed into the path of the material to be wrapped, for instance into the path of a tinfoil pack containing cigarettes, the material to be wrapped and the wrapper moving in the same direction. The pack thus continues during the sliding-in step to move in the same direction and is not deflected therefrom.

The wrappers which are made in a manner known per se on the turret head and folded around a folding mandrel are withdrawn from the folding mandrel by a suction slide and then are in a direction vertical to the direction of movement of said suction slide passed by means of another slide over into the path of the pack or the material to be wrapped. This results in a very simple construction of the machine and above all also in a very clear and easily observable arrangement of the necessary slides or the like.

The arrangement according to the invention has the further advantage that a plurality of turret heads can be arranged side by side while a transporting device common to said turret heads can be employed for the material to be wrapped. Such a double or multiple machine requires considerably less space than the arrangement of a plurality of single machines with the same output as that of a multiple machine.

Structural arrangement

Referring now to the drawings in detail, the arrangement shown in Fig. 1 employs two turret heads 1 and 2 known per se which have their shafts 3, 4 arranged side by side in spaced and parallel arrangement with each other. Provided between these shafts 3 and 4 is a further shaft 5 for an indexing disc 6 which latter is driven by means of a transverse shaft 9 and a crank 7 with roller 8. The indexing disc 6 has connected thereto a gear 10 meshing with a gear 11 for driving the turret head 1 and a meshing with a gear 12 for driving the turret head 2. As will be clear from Figs. 3 and 7, the shaft 9 is driven through the intervention of a bevel gear 13 meshing with a bevel gear 14 which is driven by the vertical shaft 15. The lower end of shaft 15 has connected thereto a bevel gear transmission 16 and 17 which is driven by the vertical shaft 18. This main shaft 18 has connected thereto a pulley 19 which is drivingly connected to a motor (not shown in the drawing). The two turret heads are actuated and rotated in steps according to the indexing disc or Geneva cross 6 through the intervention of said pulley and the above mentioned transmission means.

The turret heads work in a manner known per se so that the blank 20 used for forming the wrapper is conveyed from the front side of the machine to each turret head (Fig. 3). The said blank is then folded around the folding mandrel 21 while in a manner known per se clamping levers 22 and 23 (Fig. 1) are employed. The blank 20 is held stationary by the clamping lever 22 and then while the turret head moves on is folded over by means of brushes 24 and 25. Subsequently, by means of small levers 26 and 27 a lateral folding is effected so that so to speak a hose is formed around the folding mandrel 21. This station is at the highest point of the turret head 1 and 2 and is clearly indicated in Figs. 1 and 3.

Thereupon when indexing further, a bottom fold is produced in a manner known per se by switches or slidings which are stationarily arranged and thus fold over the necessary ears or flaps. After the bottom fold has been produced, the bottle is subjected to pressure by the turret head passing by a stationary sliding plate 28.

At the lowest run of the turret head, the wrapper 29 is still on the mandrel while the bottom 30 is closed. Fig. 6 shows this wrapper with the closed bottom and the still open top end. From this lowest run of the station, the completed wrapper 29 is withdrawn from the folding mandrel 21. This is accomplished by a suction slide 31 (Fig. 2) which is connected with a vacuum pump so that the wrapper 29 at the bottom 30 can be withdrawn from the mandrel 21.

The drive for this slide will be evident from Fig. 3. Associated with the slide 31 is a slide rod 32 which is connected with the pump (not shown in the drawing). Connected to this slide rod 32 is a small pull rod 33 which is actuated by means of levers 34 and 34'. This bell crank lever comprises a roller 35 which latter rolls on a cam 36. This cam controls the reciprocating movement of the slide 31. The cam 36 is mounted on a shaft 37 which is driven by a transverse shaft 40 through a bevel gear transmission 38 and 39. This transverse shaft in its turn is driven by the bevel gear transmission 41, 42 the wheel 42 of which is mounted on the main shaft 18.

By means of the slide 31, the wrapper 29 is brought between the legs 43 and 44 of a clamp which is movable upwardly and downwardly in vertical direction. This
movement is controlled by a rod 45 which in its turn is controlled by a roller 47 and a cam disc 48 through the intervention of a lever 46. The lowermost position of this clamp 43, 44 defines the plane or level along which the material to be packed is conveyed.

The wrapper 29 thus moved downwardly is now displaced perpendicularly to the axis of the shaft of the turret head by means of a further slide 49. More specifically the wrapper 29 is passed into a path along which the cigarettes wrapped in tin foil are conveyed. This slide 49 is driven through a rod 50 which is connected to a bell crank lever 51 with roller 52. This roller is controlled by the cam disc 53 mounted on the shaft 40. On the other side, the corresponding slide is likewise controlled by a rod 54 through a lever 55 and a rod 56 which latter is connected with a bell crank lever 57. This bell crank lever is likewise controlled by the cam disc 53.

For purposes of conveying the cigarette packs 59 (Fig. 2) wrapped in tinfoil, there is provided a chain 69 carrying individual chain hooks 61. The tinfoil packs 59 are arranged in front of said chain hooks (Figs. 2 and 4) and are moved onto the turret heads 1 and 2 from the rear thereof. Covers 62 (Figs. 1 and 2) guide the tinfoil packs. The tinfoil packs are conveyed into a mouthpiece 63. The completed wrapper 29 is slipped onto the open end of this mouthpiece 63 by means of a small oscillating lever 64 (Fig. 4). In this way the wrapper will assume the position at the end of the mouthpiece 63 which position is indicated in Fig. 5 by dash lines. The tinfoil pack 59 is now pushed into the wrapper 29 by means of the hooks 61. In order to allow the passage of the chain hooks, the mouthpiece 63 as well as the remaining chain path is provided with a slot 65. As soon as the tin foil pack 59 has been moved into the wrapper 29, the lever 64 swings out again in conformity with the transporting speed of the chain. The now filled wrapper 29 is advanced along the path of the chain so that in a manner known per se the still open end of the wrapper can be sealed. The lever 64 is controlled by means of a cam disc 69 through a lever 65, a rod 66 and a lever 67.

It is, of course, understood that the present invention is, by no means, limited to the particular construction shown in the drawings but also comprises any modifications within the scope of the appended claims.

What I claim is:

1. In a machine for wrapping packed units into wrappers which have a bottom fold and are completed prior to placing said packed units into said wrappers, the combination of: a rotatable turret including folding mandrels having their axes arranged substantially parallel to the axis of rotation of said turret and respectively adapted to support wrapper blanks, means arranged for cooperation with said mandrels for folding the respective wrapper blank thereon into a wrapper having a bottom fold, conveying means arranged to receive and convey said packed units in spaced relationship to each other in a continuous movement in a certain direction along a path parallel to and extending in the direction of the axis of rotation of said turret, suction slide means arranged to withdraw the respective completed wrapper from the respective folding mandrel in axial direction of the latter and in a plane spaced from the plane containing said path, clamping means arranged adjacent said suction slide means and operable to receive the respective wrapper withdrawn by said suction slide means from the respective mandrel and to move said withdrawn wrapper in a direction parallel to the direction of movement of said clamping means into the path of movement of said packed units on said conveying means, and means arranged adjacent said path and operable temporarily to hold stationary each completed wrapper in said path of said packed units until one of said packed units has been received by said respective wrapper.

2. A machine according to claim 1, which includes a plurality of turrets arranged in spaced relationship to each other and having their axes of rotation substantially parallel to each other, said conveying means being common to said turrets and having associated therewith a double chain track for conveying the packed units.

3. In a machine for wrapping packed units into wrappers which have a bottom fold and are completed prior to placing said packed units into said wrappers, the combination of: a pair of turrets arranged in spaced relationship with each other with the axes of rotation of said turrets substantially parallel to each other, each of said turrets including folding mandrels having their axes arranged parallel to the axes of rotation of said turrets and respectively being adapted to support wrapper blanks, means arranged for cooperation with said mandrels for folding the respective wrapper blank thereon into a wrapper having a bottom fold, rotatable indexing means common to said two turrets, gear means drivenly connecting said indexing means with said turrets, said indexing means being arranged to rotate said turrets by steps, conveying means arranged to receive and convey said packed units in spaced relationship to each other in a continuous movement in a certain direction along a path parallel to and extending in the direction of the axes of rotation of said turrets, a double chain track associated with said conveying means for conveying said packed units, stripper means respectively associated with said turrets and arranged to withdraw the respective completed wrapper from the respective mandrel on said turrets in axial direction of said mandrel and in a plane spaced from the plane containing said path, transfer means arranged for cooperation with said stripper means and operable to withdraw from the latter the respective wrapper held thereby and to place said respective wrapper into the path of said packed units, and means arranged adjacent said conveying means and operable temporarily to hold stationary each completed wrapper in said path of said packed units until one of said packed units has been received by the respective wrapper.

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