Oct. 15, 1957 H. A. OLDENKAMP 2,809,640

CIGARETTE MOUTHPIECE MACHINE

Filed July 27, 1955

FIG. 1

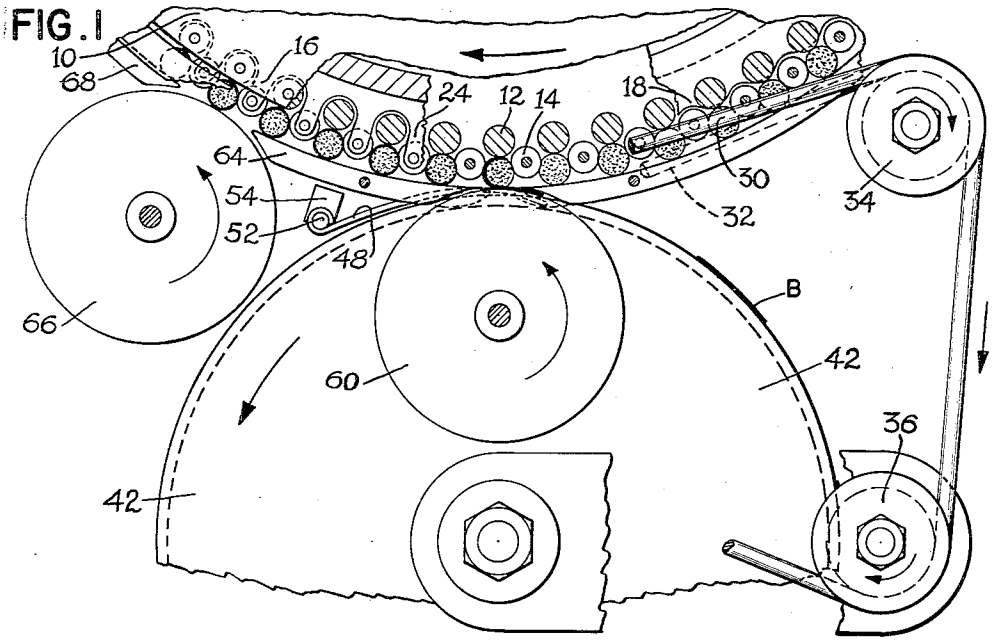


FIG. 2

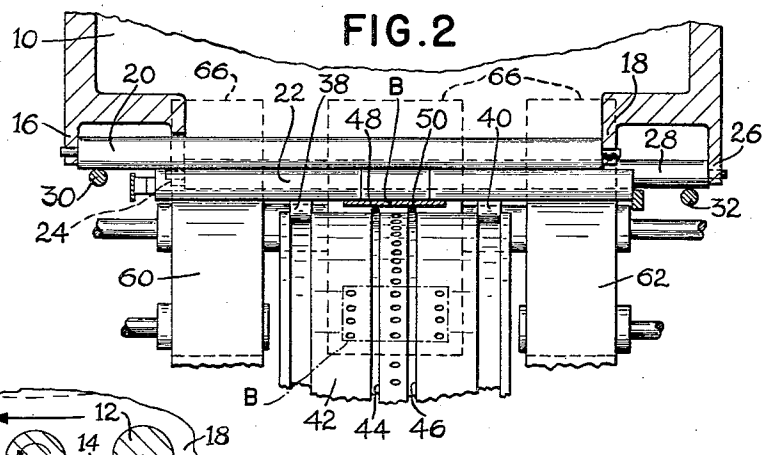
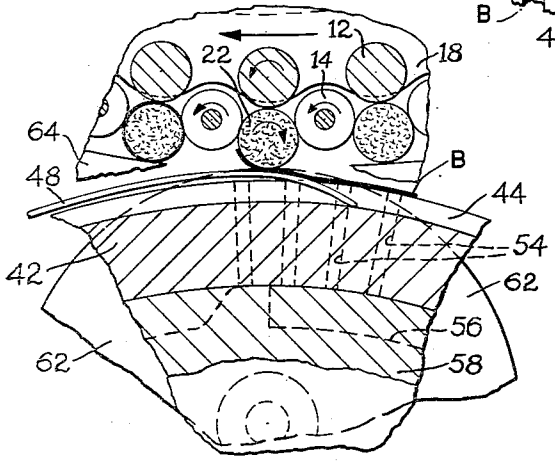


FIG. 3



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CIGARETTE MOUTHPIECE MACHINE

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Application July 27, 1955, Serial No. 524,635

10 Claims. (Cl. 131—94)

This invention relates to a machine for applying uniting bands to composite assemblies of mouthpiece cigarettes.

In an "assembly" type of cigarette making machine, the mouthpieces are attached to cut lengths of cigarette rod by means of uniting bands. In such machines, it has been found that difficulties are sometimes encountered and in effecting a transfer of the uniting band to the cigarette assembly and in attaching the uniting bands to the assembly. Sometimes the uniting band has a tendency to adhere to the uniting band conveyor while at other times, it has been difficult to set the uniting band conveyor at exactly the correct distance from the assembly drum so as to effect a smooth, uniform application of the uniting band to the composite assembly. This critical adjustment is sometimes upset when there is a slight deviation in the diameter of the cut lengths of cigarettes or mouthpieces.

It is, therefore, an object of this invention to provide a device for consistently effecting a transfer of a uniting band from a conveyor to a composite cigarette assembly without deforming the components making up the assembly.

Another object of this invention is to provide a device for transferring and applying uniting bands to a composite assembly of cut lengths of cigarette rod and mouthpieces to effect a positive transfer of each uniting band to the assembly.

Another object of this invention is to provide a uniting band conveyor which will remove the leading end of the uniting band from the conveyor prior to its being brought into contact with the cigarette assembly.

A further object is to provide sponge rubber rollers for positively rotating an assembly in conjunction with a nest of cylindrical rollers supporting the cigarette assembly when the uniting band is being applied thereto.

A further object is to provide a sponge rubber roller for rolling the cigarette assembly having the uniting band applied thereto after leaving the uniting band applying station.

Other objects and features of the invention will appear as the description of the particular physical embodiment selected to illustrate the invention progresses. In the accompanying drawings, which form a part of this specification, like characters or reference have been applied to corresponding parts throughout the several views which make up the drawings.

Fig. 1 is a front elevation partly in section illustrating the cigarette assembly drum in conjunction with the uniting band transfer mechanism.

Fig. 2 is a sectional end elevation taken at the transfer station.

Fig. 3 is an enlarged detailed sectional frontal elevation showing the uniting band being applied to the assembly.

The present invention is particularly well suited for use with the general type of "assembly" cigarette machine shown in co-pending application, Serial No. 509,293 of George Dearsley, filed May 18, 1955.

In a machine of the general type referred to, apparatus is employed for feeding pairs of cut lengths of cigarette rod laterally on an assembly drum and for subdividing mouthpieces into suitable subdivisions which are inserted in between the cut lengths of cigarette rod carried on the drum. The components of each composite assembly are then brought into axial abutment with each other on the assembly drum. If desired, further reference may be made to Serial No. 509,293 for a more detailed disclosure of this type of machine.

The assembly drum **10**, which may be similar to the construction of the assembly drum shown in application Serial Number 509,293, consists of one row of inner rollers **12** and a second row of outer rollers **14**. The inner rollers are pivotally mounted at their ends in suitable flanges **16** and **18**. One end **20** of the inner rollers **12** projects beyond the length of composite cigarette assembly **22**. The outer roller is similarly rotatably supported at its ends in suitable flanges **24** and **26**. One end **28** of the outer roller **14** projects beyond the opposite end of the composite assembly of cut cigarette lengths having axially aligned mouthpieces inserted there between.

When the rollers **12** and **14** approach the uniting band applying station, the ends **20** and **28** of the rollers come into contact with belts **30** and **32** which travel in the direction indicated by the arrow in Fig. 1, and are trained over pulleys **34** and **36**.

By engaging with the belts **30** and **32**, the rollers **12** and **14** are rotated, which results in the composite assembly of cut lengths of cigarette rod and double length mouthpieces being rotated by the time they reach the uniting band applying station.

The composite assemblies are held in their respective nests of rollers **12** and **14** by means of suitable guides **38** and **40**. The uniting band conveying drum **42**, traveling in the direction indicated by the arrow in Fig. 1, carries spaced cut lengths of uniting band material B upwardly on its periphery in a manner similar to that disclosed in the co-pending application of George Dearsley, Serial Number 509,293. The structure of the uniting bands conveyor drum **42** may be similar to that disclosed in said co-pending application.

The present uniting band conveying drum has two grooves **44** and **46** formed along the periphery thereof in which the ends stripping wires **48** and **50** ride. These wires may be made from spring steel. The opposite ends of the wires **48** and **50** are mounted on a suitable stud **52** extending from a suitable bracket **54** attached to frame of the machine.

When the uniting band reaches its uppermost position, as shown in Fig. 3, it comes into contact with the wires **48** and **50** and slides upwardly thereon thus disengaging the uniting band from the uniting band conveyor **42**. Since, the wires **48** and **50** contact the assembly, the uniting bands are brought directly to the assembly. The trailing end of the band is still on the drum at the time the trailing end is brought into contact with the assembly. In this way the uniting band material is maintained under full control at all times.

The uniting band B up to this point has been held on the periphery of the conveying drum **42** by the means of suction acting through suction holes **54** which are connected through a cut out portion **56** formed in the shoe **58** to a source of suction.

It will be noted in Fig. 3 that when the uniting band B comes into position where it is separated from the suction drum, the cut out position **56** comes to an end thereby cutting off any suction beyond this point. This facilitates the wires **48** and **50** stripping and deflecting the uniting band from the suction conveying drum into contact with the cigarette assembly as shown in Fig. 3.

At the uniting band applying station, the ends of the

cigarette assembly come into contact with the rotating sponge rubber rollers **60** and **62** which are driven in timed relationship with the belt **30** and **32** to thereby impart positive rotary movement to the composite cigarette assembly. This results in the uniting band being applied about the rotating composite cigarette assembly. The composite assembly, held in their respective nests of rollers **12** and **14**, has the uniting bands applied thereabout as they are moved in the direction of the arrow in Fig. 1 over a suitable retaining guide **64** towards the sponge rubber rollers **66** which travels in time with the movement rollers **60** and **62** and effects a smooth application of the uniting band to the composite assembly. The composite assembly is then moved over the guides **68** and from there the processing of the united composite assembly may be the same as that disclosed in the co-pending application Serial Number 509,293 mentioned above.

By providing an incline rise to the stripping wires **48** and **50** to effect a stripipng of the uniting band from the uniting band conveying drum **42** a slight pressure may be exerted against the cigarette assembly when the uniting band is applied thereto. This avoids the necessity of a very fine adjustment of the spacing between the conveying drum **42** and the nests of assembly rollers **12** and **14**. This has been found desirable because of slight variations which may be encountered in the diameter of the cigarette assembly does not interfere with the proper functioning of the band applying mechanism because in each case the band is brought into direct contact with the cigarette assembly thereby resulting in the correct application of the band to the assembly. The arrangement shown may be used with either a continuously or an intermittently operated assembly conveying drum.

The invention herein above described may be varied in construction within the scope of the claims, for the particular device selected to illustrate the invention is but one of many possible embodimens of the same. The invention, therefore, is not to be restricted to the precise details of the structure shown and described.

What is claimed is:

1. A device for applying uniting bands to composite assemblies of axially aligned cut lengths of cigarette rod and mouthpieces comprising, a uniting band applying station, a uniting band conveying drum for bringing cut lengths of prepasted uniting band material to said uniting band applying station, said uniting band conveying drum having a pair of grooves extending around the periphery thereof stationary springs having one end of said springs riding in said grooves for disengaging the cut lengths of uniting bands from the uniting band drum and directing them into contact with the assembly of composite lengths of cigarette rod and mouthpieces and means for positively rotating said cut lengths of cigarette and mouthpiece to apply said uniting bands thereto.

2. A device for applying uniting bands to composite assemblies of cut lengths of cigarette rod and mouthpieces comprising, a uniting band applying station, an assembly conveying drum having nests of rollers for cradling composite assemblies of cut lengths of cigarette rod and mouthpieces therebetweenand moving them to said uniting band applying station, a uniting band conveyor for moving spaced, prepasted, cut sections of uniting band material to said station, said uniting band conveyor having, a groove formed around the periphery thereof, and a spring and having one end thereof riding in said groove, and having an adjoining portion of said spring provided with a bend so that this portion comes in contact with the assemblies held in said nests to cause the cut section of uniting band material to slide up on said spring away from the uniting band conveying drum into contact with the composite assembly to apply the uniting band thereabout.

3. A uniting band applying mechanism for applying uniting bands to composite assemblies of cut lengths of cigarette rod and mouthpieces comprising, an assembly drum conveyor for laterally conveying composite assemblies of cut lengths of cigarette rod and mouthpieces, a uniting band applying station, a uniting band conveyor positioned adjacent said assembly drum conveyor for carrying prepared, spaced, cut lengths of uniting band material to the uniting band applying station, said uniting band conveyor having a plurality of grooves extending around the periphery thereof on which said prepasted cut lengths of uniting band material are supported, wires having one end thereof engaging with said grooves and having a portion provided with a band for engaging with said composite assemblies as they are carried by said assembly drum to deflect cut uniting bands away from the uniting band drum into contact with said composite assemblies and means for imparting rotating motion to said composite assemblies to apply the uniting band thereabout.

4. Apparatus for applying uniting bands to composite assemblies of cigarettes and mouthpieces comprising, a uniting band applying station an assembly drum for conveying a composite assembly of cigarettes and mouthpieces laterally to a uniting band applying station, a uniting band conveying drum, having a plurality of grooves formed in the periphery of said drum, means for holding prepasted, cut lengths of uniting band material on the periphery of said uniting band conveyor over the grooves formed therein, spring members having one end thereof riding in the grooves to deflect the uniting bands carried on said uniting band drum away from the uniting band drum into contact with a composite assembly, and means for positively rotating said composite assembly as said uniting band is brought into contact therewith.

5. Apparatus for applying uniting bands to composite assemblies of cigarettes and mouthpieces as they are held in axial abutment with each other comprising, means for rotating said composite assemblies, composite assemblies of cigarettes, a conveyor for said composite assemblies, a uniting band conveyor traveling along a predetermined path of travel and having prepasted cut lengths of uniting band material supported on its surface, said conveyor having grooves formed around the periphery of the surface of said uniting band conveyor, and springs having one end riding in said grooves and having a curved, yieldable portion extending away from said uniting band conveyor and in contact with a composite assembly of cigarettes for deflecting a uniting band away from the uniting band conveyor and pressing it into contact with a composite assembly that is being rotated to cause the uniting band material to be applied about the assembly to join the components of said assembly together.

6. Apparatus for applying uniting bands to composite assemblies of cigarette rod and mouthpieces to form mouthpiece cigarettes comprising, rollers confining each of said composite assemblies on opposite sides, said rollers having one end thereof extending beyond one end of said composite assembly, a driving belt engaging with the extending end of said rollers to impart rotary movement thereto, an inner roller positioned between each pair of side rollers for supporting another portion of said composite assembly, and having one end thereof extend beyond the opposite end of the composite assembly, means for driving the end of the inner roller which extends beyond the length of said composite assembly to impart rotary movement to said inner roller, a uniting band conveyor spaced a distance from said composite assembly, said conveyor having grooves formed around the periphery of said uniting band conveyor, and stationary springs having one end thereof extending into said stationary grooves and having a portion of the spring, provided with a bend and thereby arranged to extend away from the grooves and conveying drum so that it comes into the path of travel of said composite assembly to thereby cause the leading end of said uniting band to be slid along said springs away from said uniting band conveyor and into contact with said composite assembly to

apply the uniting band about the composite assembly.

7. Apparatus for applying uniting bands to composite assemblies having the features provided for in claim 6 including sponge rubber rollers mounted adjacent said uniting band conveyor and traveling in a direction to impart positive rotary movement to the composite assembly in conjunction with the rollers confining said composite assemblies to rotate the same to apply the uniting band thereabout.

8. Apparatus for applying uniting bands to composite assemblies of cut lengths of cigarette rod and mouthpieces to form mouthpiece cigarettes comprising, an assembly drum, rotatable rollers mounted on said assembly drum for confining said composite assemblies around approximately 180° of their peripheries, a uniting band conveying drum spaced from the path of travel of the composite assemblies as they are carried by said assembly drum, means for supporting prepasted cut lengths of uniting band material on said uniting band conveying drum, means for rotating the rollers on said assembly drum to impart rotary movement to the composite assembly when it is opposite to the uniting band conveying drum, said uniting band conveying drum having a plurality of grooves extending around the periphery of said uniting band conveyor, and springs having one end thereof riding in said grooves to cause cut lengths of uniting band material to be deflected away from said uniting band conveying drum when they are brought into contact with said springs, said springs being of such configuration that they yieldably contact the composite assembly at that portion thereof which is not supported by said rollers when the composite assembly drum brings the composite assembly opposite to the uniting band conveyor, and said springs acting to deflect the leading end of the cut length of uniting band material into contact with the composite assembly

and applied thereabout by the rollers on said assembly drum.

9. Apparatus having the features provided for in claim 8 including rollers adapted to rotate so that their peripheral surfaces travel in the same direction as the peripheral surface of said uniting band conveying drum and means engaging with the ends of the composite assembly to impart positive rotary movement thereto to facilitate the application of the uniting band thereabout.

10. Apparatus for applying uniting bands to a composite assembly of cigarettes comprising, an assembly drum, rollers mounted on said assembly drum for supporting composite assemblies of cigarette rod and mouthpieces, a uniting band conveyor for moving cut lengths of prepasted uniting band material towards the assembly drum to apply the uniting band material to the composite assemblies, said uniting band conveyor having grooves formed around the periphery of said uniting band conveyor, means for holding cut lengths of uniting band material over said grooves and on said uniting band conveying drum, wires having one end thereof extending into said grooves and having an adjoining portion engaging with a composite assembly to direct a uniting band from the band conveying drum into contact with a composite assembly to join the cut length of rod to the mouthpiece by applying a uniting band thereabout and means for rotating said assembly to facilitate applying the uniting band thereto.

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