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WEB SPLICER FOR CIGARETTE MACHINE

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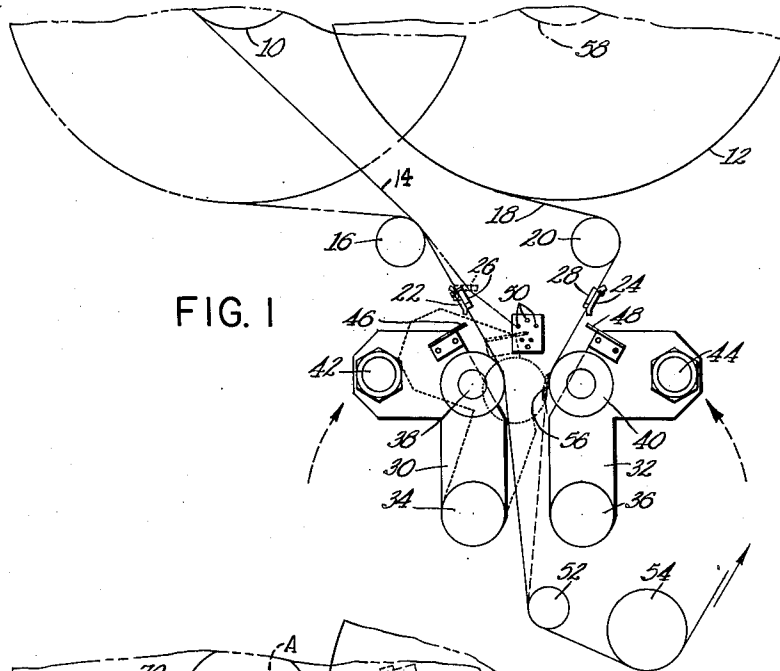


FIG. 1

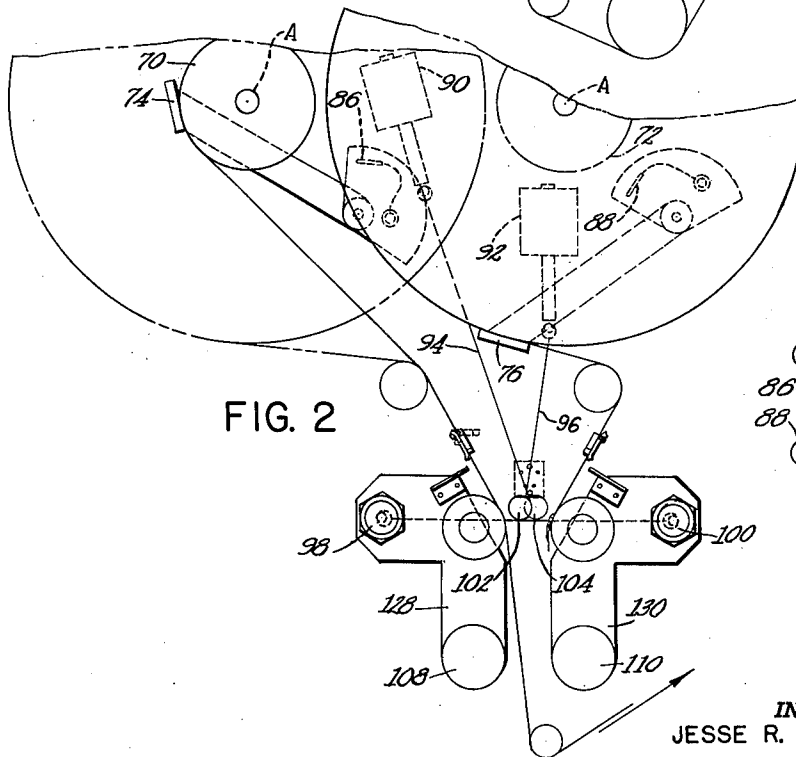
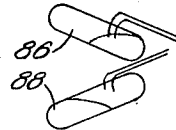


FIG. 2

FIG. 3



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WEB SPLICER FOR CIGARETTE MACHINE

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This invention relates to cigarette making machines and more particularly to an improved web splicer for either cigarette paper or cork tipping material.

Heretofore, it was always necessary when employing an automatic splicer to have the new bobbin in a particular location to permit the paper to be joined to that of the spent bobbin. This required a movable spindle mount so as to permit the new bobbin to be moved into the position of the spent bobbin after the paper was joined thereto, so as to permit the tape of another new bobbin to be attached to the replaced bobbin when it became spent. This required moveable bobbin supports to permit the bobbins to be moved about in the manner indicated. This was objectionable because of the room required and also because of the complexity of the mechanism required.

It is therefore an object of this invention to provide a simple web splicer which will not require a spent bobbin reel or a replaced bobbin reel to be moved laterally in order to splice a new bobbin tape onto the tape of the old bobbin reel.

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 of reference have been applied to corresponding parts throughout the several views which make up the drawings.

FIG. 1 is a front elevation of the manually operated web splicer.

FIG. 2 shows a front elevation of the automatically operated web splicer.

FIG. 3 shows mercury switches in open and closed positions.

In the embodiment shown in FIGURE 1, the spent web reel 10 and the new web reel 12 are for purposes of simplicity in illustration, shown in close proximity to each other on bobbin supports or mounts A. In this respect, in order for the new reel 12 to be placed on its mounting pivot, the spent reel 10 has to be depleted to the diameter shown in solid lines in FIGURE 1 to allow room for the new reel. It will be understood that the two web mounts could be separated further apart than shown so that two full reels (one in use and one replacement) could be supported simultaneously next to each other, and they have been shown positioned closer together in the present case to facilitate illustrating the invention.

In FIGURE 1, web 14 is being unreeled from the in-use bobbin and travels over guide roller 16. Web 18 leading from bobbin 12 is draped over guide roller 20 and is stationary. These guide rollers 16 and 20 may be spring loaded to feed out a loop of web so as to prevent the tearing of the web when the web is initially accelerated.

Guides 22 and 24 support the webs in position awaiting actuation of the web splicer. Each guide 22 and 24 has a gravity biased member 26 and 28 holding the web against the guides 22 and 24.

Pivoted L-shaped brackets 30 and 32 which pivot on pivots 34 and 36 respectively are located below the guides 22 and 24. These brackets carry a second set of guide rollers 38 and 40, actuating handles 42 and 44, and also knives or cutters 46 and 48. Ledger pins 50 are located

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circumferentially equal distances from pivots 34 and 36 as are the blades 46 and 48. In addition to the guide rollers mentioned before, there are rollers 52 and 54 over which web being fed travels on its way to the cigarette making machine.

In the embodiment of the invention shown in FIGURE 1, I have shown how the splicer may be operated manually. In this case the operation may be briefly described as follows. The web 14 travels over guide roller 16, and stationary guide 22, past knife 46, over roller 38 and then over rollers 52 and 54 on through the cigarette making machine. Roller 38 is mounted on a pivoted L-shaped bracket 30 which pivots on pivot 34. When reel 10 is about to become exhausted, the operator pushes handle 42 of L-shaped bracket 30 which carries with it knife 46 and roller 38. The knife 46 severs web 14 as it passes through the web 14 between the ledger pins 50. The trailing end of the lower severed portion of web 14 is then pressed against web 18 of pulley bobbin 12. The trailing end of the severed web and the leading end of the new web are secured to each other by suitable means such as knurling the two together or by a suitable adhesive as indicated by the reference character 56. This will cause web 18 to be unreeled and conveyed through the cigarette making machine.

When the speed of the web and the dead inertia of the bobbin is such that the acceleration of the new bobbin from dead rest may possibly tear the web, suitable tension loop forming means are provided to form a loop to provide for a gradual acceleration of the new bobbin. This gradual acceleration of the bobbin may, for example, be accomplished by spring loading the pivotally mounted guide rollers 16 and 20.

When the new bobbin 12 is depleted and reaches the diameter shown in phantom 58, web 18 will be traveling over guide roller 20 and a new full bobbin has been substituted for bobbin 10. The leading end of the new tape from bobbin 10 will then be positioned over the spring biased roller 16 and over guide 22 and will be resting on roller 38 in the same manner as tape 18 rests on roller 40 shown in FIGURE 1.

When the handle 44 is pushed it causes a severance of web 18 in the manner just described for web 14 and simultaneously joins the severed trailing end to the leading end of the new tape in the manner described.

This construction of splicer has the advantage that new reels can be positioned in place and do not have to be orbited, or orbitally mounted to enable a new reel to be spliced onto the tape from a depleted reel. As a consequence, the structure for joining webs can be made of simple components and there is less likelihood of web breakage after a splice has been made because there is no orbiting of the spinning reel as it feeds tape to the cigarette making machine.

FIGURE 2 shows another embodiment of my invention, wherein the severing and splicing operation is automatically initiated. The reel mounting arrangement, the guiding of the tapes, the severing and splicing operation are substantially the same as that described in connection with FIGURE 1. Instead of actuating the splicer manually by means of handles 42 and 44, there is instead provided an automatic means for accomplishing this. This apparatus comprises feeler arms 74 and 76 which ride against the periphery of reels 70 and 72 respectively. Each arm carries a mercury switch 86 and 88 which are so mounted that they close a contact when the reel becomes depleted. Feeler arms 74 and 76 also act as a drag brake on the paper or cork tape so that proper tension is applied to the tape regardless of whether the reel is full or is becoming empty.

When one of the mercury switches 86 or 88 closes it will actuate their respective solenoid 90 or 92. The sole-

noids are connected through suitable linkages or cables to the pivoted brackets 128 and 130. Upon actuation of the solenoid 90 or 92 they pull in their respective plungers and cause their respective brackets 128 or 130 to pivot on their pivots 108 or 110. This accomplishes the splicing operation which has already been described in connection with FIGURE 1.

When cables are employed such as cables 94 and 96 they interconnect the plungers of solenoids 90 and 92 with suitable connecting lugs 98 and 100 of brackets 128 and 130. The cables 94 and 96 pass around pulleys 102 and 104 respectively.

After the solenoid 90 or 92 has been actuated, the brackets 128 or 130 which were actuated have to be returned to its starting position. Any suitable means can be employed for this purpose and if desired a simple spring biasing brackets 128 and 130 outwardly can be used for this purpose.

The invention hereinabove described may therefore 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 embodiments 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. An automatic web splicer for a cigarette machine comprising a pair of stationary bobbin supporting means, a bobbin mounted on one of said supporting means for supplying the web to the cigarette machine, a mechanical feeler to detect the ending of the supply of web, switches activated by the mechanical feeler when it detects the ending of the supply of web, a pair of pivoted supports, either of said supports carrying the web while it is being delivered to the cigarette machine, a blade transverse to the web attached to and integral with each of said supports, a second bobbin in storage mounted on the other stationary bobbin supporting means, the web from the bobbin in storage being draped over the other of said supports, an adhesive mounted at the leading end of the web from the bobbin in storage, and a pair of solenoids actuated selectively by one of said switches to actuate said pivoted supports, causing the respective blades to cut the supplied web and adhere its trailing end to the leading end of the web of the bobbin in storage.

2. A splicer for cigarette tape in a cigarette machine to join the lead end of tape from a new reel to the trailing severed end of the expiring tape comprising a guide roller over which said cigarette tape from the exhausted reel passes, a pair of pins positioned on one side of said expiring tape, a cutting knife positioned on the opposite side of said expiring tape and being pivotally mounted to pass between said pins to sever said expiring tape, said knife being interconnected with said guide roller to push the trailing end of the tape severed by said knife immediately up against the leading end of a new reel of tape which is positioned in front of a uniting support, pivotable means on which said knife and said roller are mounted, and means for securing said tapes of material together when said guide roller brings them into contact with each other.

3. A web splicer for a cigarette making machine comprising a stationary bobbin mount, a bobbin containing a web of cigarette paper mounted on said stationary mount and supplying the web to the cigarette machine, a pair of rollers over which the web is bridged on its way to the cigarette machine, a first bracket pivotally mounted and supporting one of said rollers, a severing device attached to said bracket and positioned transverse to the web, a second bobbin of web material held in storage, a second stationary mount supporting said second bobbin, another pair of rollers over which the web from the storage bobbin is draped, a second bracket pivotally mounted and supporting one of the rollers of said other pair of rollers and actuating means attached to the first bracket to actuate said first bracket to simultaneously sever the

web from the spent bobbin by said severing device and adhere its trailing end onto the leading end of the web from the bobbin in-storage by pressing one of the first pair of rollers against one of the second pair of rollers so as to continue supplying the web to the cigarette machine from the in-storage bobbin without stopping the cigarette making machine.

4. An automatic splicer for cigarette making machines comprising an in-use bobbin of tape, a pair of rollers over which the tape travels, a clip interposed between the said rollers holding the web in a sliding grip, a knife located transversely to the web between said rollers, ledger pins spaced from said knife on the other side of said tape, a second bobbin of tape in-storage spaced from said first bobbin, a second pair of rollers over which the storage tape is draped, an adhesive spot located at the leading end of said storage bobbin of tape, a bracket supporting said knife and one of the rollers over which the in-use tape is travelling and an actuating means to actuate the bracket so that the knife will push and cut the in-use tape between said ledger pins and at the same time to actuate one of the rollers over which the in-use tape is travelling against the adhesive to adhere the in-use tape onto the in-storage tape and cause the storage tape to be supplied through the cigarette making machine without stopping the cigarette machine.

5. A web splicing mechanism for a cigarette making machine comprising a pair of supporting means arranged in spaced relationship to each other, a bobbin of web supported by one of said means supplying web through the cigarette machine, another bobbin of web in-storage supported by the other of said means, a pair of guide rollers over which the web being supplied is guided, another pair of guide rollers over which the web in-storage is draped, pivoted brackets adjacent to the webs pivotable about one of their ends, blades between the rollers of each pair and mounted on one end of said brackets, and actuating means attached on the other ends of said brackets to drive the blades against the supplied web, cut through said supplying web and cause the two lower rollers to meet and fasten the web being supplied to the in-storage web to continue the supply of web through the cigarette making machine from the in-storage bobbin without stopping the cigarette making machine.

6. An automatic cork splicing mechanism for a cigarette making machine comprising a pair of bobbins of cork spaced from each other, one bobbin in-use and one in-storage, two sets of guide rollers, each of said sets consisting of a first roller and a second roller over one set, the cork in-use travels on its way to the cigarette machine and over the other set of rollers, the cork in-storage is draped, the cork in-storage terminating at the second roller towards the cigarette making machine, a spot of adhesive located on the said in-storage cork of said second roller, a pair of pivoted guide shoes, one guide shoe riding the circumference of the bobbin in-use, to act as a drag brake so that proper tension is applied to the cork, the other resting on the circumference of the bobbin, a pair of pivoted brackets for supporting said second roller, a cutter secured to each of said pivoted brackets, a sensing device attached to each of the said guide shoes so that the sensing device riding on the bobbin in-use can register when the bobbin in-use is empty, cables attached to the brackets and solenoids attached to the other end of said cables, one of said solenoids energized by the sensing device when it registers the empty bobbin and pulling the cable and actuating the cutter, so as to cut the in-use cork and paste it on the storage cork.

7. A splicing device comprising a pair of spaced bobbins of web, one bobbin being in-use and the other in-storage, a first pair of rollers including a roller over which the web from the in-use bobbin travels, a second pair of rollers including a roller over which web from a storage bobbin is draped, a pair of clips controlling the tension of their respective webs, a pivoted bracket supporting

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one of the second pair of rollers, an adhesive spot attached to the end of the web of the in-storage bobbin, said end being located on the roller supported by said bracket, a second pivoted bracket on which is mounted one of the rollers over which the in-use web is travelling, a cutting means attached to the second of said pivoted brackets and an actuating means to cut and force the roller of the in-use web against the roller of the storage web so as to splice the two webs together.

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