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PAPER UNITING DEVICE FOR CONTINUOUS ROD CIGARETTE MACHINES

Filed Nov. 24, 1930

FIG. 1

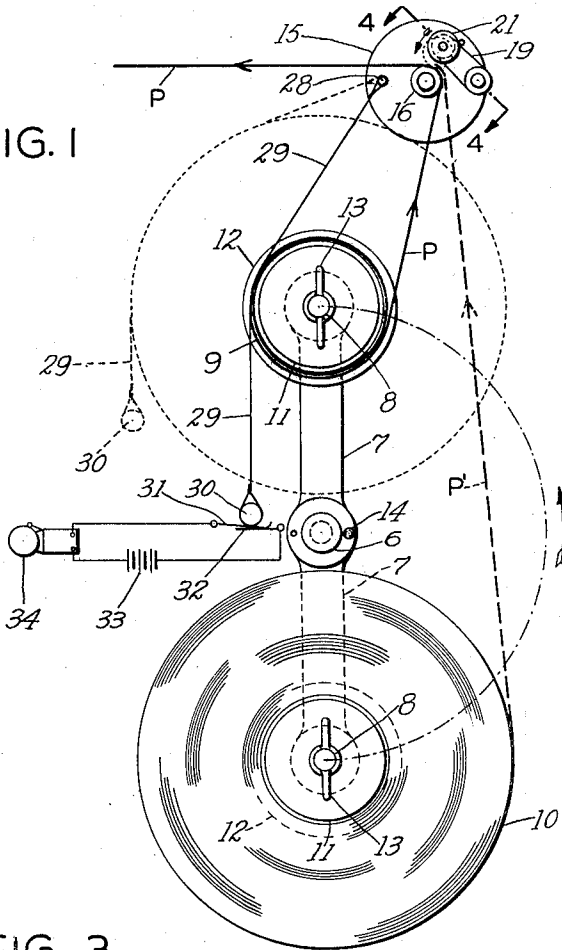


FIG. 2

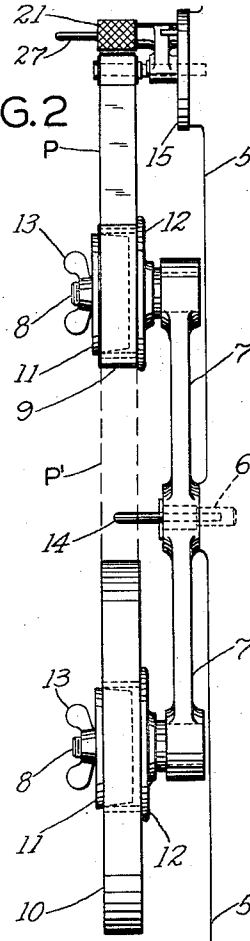


FIG. 3

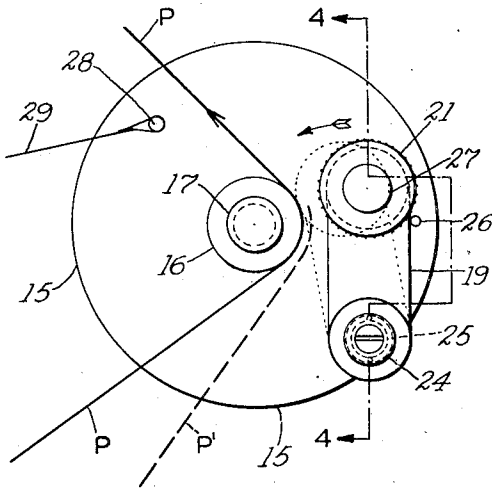
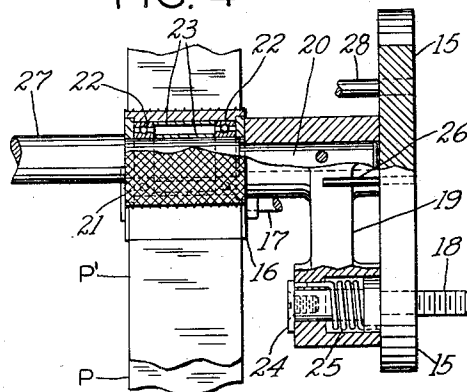


FIG. 4



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PAPER UNITING DEVICE FOR CONTINUOUS ROD CIGARETTE MACHINES

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This invention relates to paper-uniting devices for cigarette machines, its main object being to provide means for uniting the end of one paper reel with the beginning of another, without stopping the machine. With this and other objects not specifically mentioned in view, the invention consists in certain constructions and combinations which will be hereinafter fully described and then specifically set forth in the claims hereunto appended.

In continuous-rod cigarette machines, the paper for the cigarette rod is fed continuously from a reel, and when one reel is exhausted, the beginning of a new reel must be attached to the end of the paper of the first in order to keep the rod continuous and thus to avoid the necessity for rethreading the paper through all the rod guiding parts. Heretofore, the usual method employed has been to paste the ends together, and when this cannot be done quickly enough, the machine has to be stopped.

To avoid this inconvenience and delay, the present invention provides a mechanical impact device permanently attached to the machine in such a manner that the beginning of the new reel can, at the proper time, be held in position and by a single blow of the said device be united with the end of the old reel. The improved device consists of two rollers, a smooth fixed roller over which the continuous rod-paper is made to pass on its way into the cigarette machine, and a knurled or otherwise roughened, ridged or pointed, movable roller attached a short distance from the first roller to a pivoted arm held in spaced position by a spring and stop. When a reel is nearly exhausted, the leading end of a new reel is held in the space between the two rollers and a quick impact is given to the arm of the movable roller, thereby causing the projections of the roughened roller to exert a hammer-blow effect upon the two thicknesses of paper between the two rollers for the short time during which the two rollers are in rolling engagement, thus uniting the ends. To prevent excessive wastage of cigarettes, the paper of the old reel underlying the joint so made is torn off by the operator immediately after

actuating the uniting device. The approach of the exhaustion of the operating paper reel is announced by an electric alarm actuated by the usual tension strap employed to act as a brake on the reel to keep the paper at the proper tension.

In the accompanying drawing which forms a part of this specification and in which like characters of reference indicate the same or like parts:

Fig. 1 is a front elevation of a portion of a paper uniting device for a cigarette machine, embodying the present invention;

Fig. 2 is a side elevation of the device shown in Fig. 1;

Fig. 3 is an enlarged detail view of the improved paper uniting device shown in Fig. 1; and

Fig. 4 is a detail sectional view of the same, on line 4—4 of Figs. 1 and 3.

In carrying the invention into effect, there is provided a support for two reels of paper arranged to be turned to either of two positions to feed the paper from either of said reels, and means for uniting the leading end of the spare reel to the paper of the reel in feeding position while paper is being fed from the latter. In the best constructions contemplated, the support includes a lever provided at either end with studs adapted to carry a reel of paper, and said means includes a roller over which the paper from the reel in feeding position is adapted to run and a movable arm carrying a knurled roller adapted to attach the leading end of the spare reel to the portion of the operating reel running over the first roller. In the preferred form of construction, there is provided mechanism for apprising the operator when the operating reel is nearly exhausted, including a bell connected to a circuit, a tension strap bearing against the circumference of the operating reel and provided with a weight at its lower end for closing the circuit to ring the bell when the operating reel is nearly exhausted. These various means and parts may be widely varied in construction within the scope of the claims, for the particular device selected to illustrate the invention is but one of many possible concrete embodiments of the same.

The invention, therefore, is not to be restricted to the specific construction shown and described.

In the frame 5 of the cigarette machine is fastened a stud 6 on which is pivoted a lever 7 carrying at each end a flanged stud 8 for the reception of paper reels 9, 10, fastened thereon by pressing a conical block 11 toward the flange 12 by means of a wing nut 13. The arm 7 is held in position by a pin 14 inserted into frame 5 through either one of two diametrically opposite holes provided for this purpose in its hub. When starting the machine, the arm 7 is so held that the operating reel 9 is on the top, and the spare or idle reel 10 on the bottom stud.

A mount 15 attached to frame 5 in the proper position above the paper reel on arm 7, carries a fixed roller 16 on a stud 17. On another stud 18 in mount 15 is torsionally pivoted an arm 19 carrying a fixed stud 20 on which turns a knurled roller 21 carried by ball bearings 22 positioned on stud 20 by spacing rings 23. The arm 19 is held to stud 18 by means of a retaining washer 24 and is tensioned by a torsion spring 25 which holds it against a stop pin 26 attached to mount 15. The stud 20 is extended to form a handle 27 by means of which the arm 19 can be swung on stud 18.

From pin 28 fastened to disk 15 is suspended a strap 29 carrying a weight 30, this strap being hung to bear against the circumference of reel 9 so as to exert a braking action, keeping the paper in uniform tension as the reel is unwound. In its lowermost position, the weight 30 comes to rest on a contact spring 31 thereby pressing the same against a contact plate 32 and closing the circuit of a battery 33 or other source of electricity through a bell 34 or other alarm.

When the alarm 34 apprises the operator that the paper P of reel 9 is nearly exhausted, he holds the end P' of the spare reel 10 in the space between the rollers 16 and 21 and imparts a blow to the handle 27 of stud 20, thereby causing the knurled roller 21 to hit the roller 16, with the two layers of paper between, thus hammering the leading end P' of the new reel onto the end P of the old one while the two rollers turn together during the duration of the impact. After the blow has been dealt and immediately after the spring 25 has brought the roller 21 back against stop 26, the operator tears off the underlying unused end of reel 9, thereby reducing the number of imperfect cigarettes having two thicknesses of paper, to a minimum. The new reel now being fed into the machine, the arm 7 is swung half way around along the path indicated by arrow in Fig. 1, and secured in its new position by the pin 14. The core of the old reel 9 is then removed and a new spare reel is put into its place, ready to be joined to the reel now in operation when

the alarm 34 gives the next signal. All these operations can be performed while the machine is running, so that no time is wasted as heretofore and, since in a modern high speed cigarette machine a paper reel lasts not much more than half an hour, the production of the machine is materially increased.

What is claimed is:

1. In a paper uniting device for cigarette machines, the combination with a support arranged to carry two reels of paper and adapted to be moved into either of two positions to feed the paper from either of said reels, of means for uniting the leading end of the idle paper reel to the paper of the reel in feeding position while paper is being fed from the latter, said means including a stationary mount, a roller mounted on said disk and over which the paper from the reel in feeding position is adapted to run, an arm torsionally pivoted on said mount, and a knurled roller rotatably mounted on said arm, whereby the leading end of the idle paper reel may be united to the paper of the reel in feeding position by a single blow of said roller.

2. In a paper uniting device for cigarette machines, the combination with a support arranged to carry two reels of paper and adapted to be moved into either of two positions to feed the paper from either of said reels, of means for uniting the leading end of the idle paper reel to the paper of the reel in feeding position while paper is being fed from the latter, and mechanism for apprising the operator of the cigarette machine when the paper of the reel in feeding position is nearly exhausted, said mechanism including a bell, a circuit connected to said bell, a strap arranged to bear against the circumference of the reel in feeding position and provided at its lower end with a weight which is adapted to close the circuit to ring the bell when the reel in feeding position is nearly exhausted.

3. Means for uniting the leading end of an idle paper reel to the paper of a reel in feeding position while paper is being fed from the latter, comprising a stationary mount, a roller mounted on said disk and over which the paper from the reel in feeding position is adapted to run, an arm torsionally pivoted on said mount, and a knurled roller carried by said arm.

4. Means for uniting the leading end of an idle paper reel to paper from a reel in feeding position, comprising a support on one side of the paper in feeding position for supporting said paper and said leading end, a paper indenting device on the opposite side of said paper, and means mounting said device for movement toward and away from said support for indenting said paper and said leading end to unite the same by a single blow of said device.

5. Means for uniting the leading end of an

idle paper reel to paper from a reel in feeding
position, means on one side of the paper in
feeding position for supporting said paper
and said leading end, a roller provided with
5 a paper indenting surface on the opposite
side of said paper, and means mounting said
roller for movement toward and away from
said support for indenting said paper and
said leading end to unite the same by a single
10 blow of said roller.

In testimony whereof, I have signed my
name to this specification.

FRANK DI IANNI.

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