Nov. 16, 1954 A. J. PARKER ET AL 2,694,399

CIGARETTE PERFORATING DEVICE

Filed Sept. 12, 1950

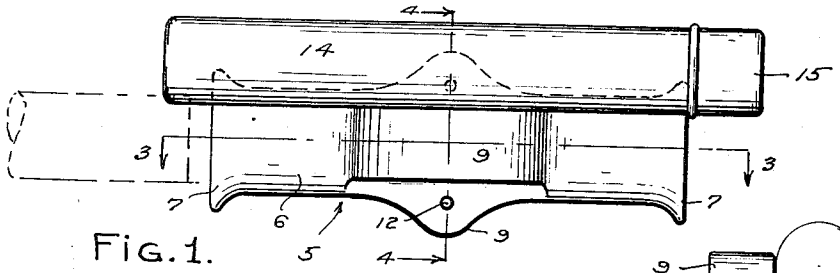


Fig. 1.

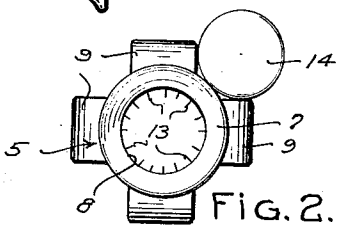


Fig. 2.

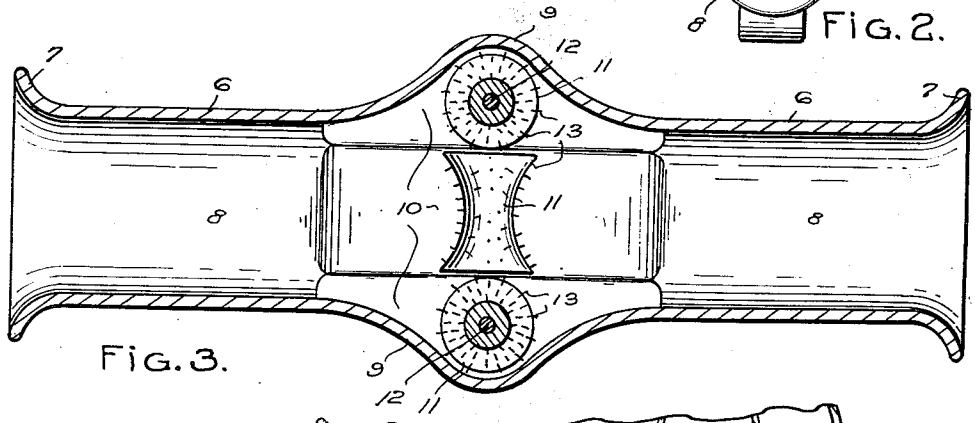


Fig. 3.

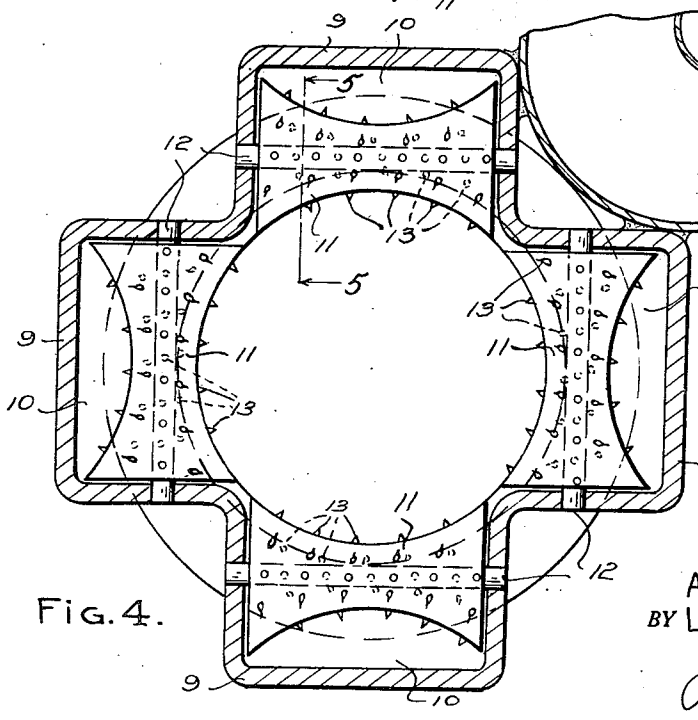


Fig. 4.

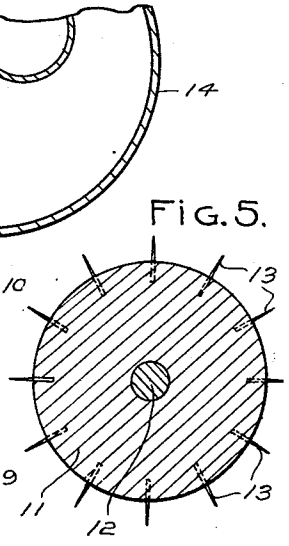


Fig. 5.

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United States Patent Office 2,694,399
Patented Nov. 16, 1954

2,694,399

CIGARETTE PERFORATING DEVICE

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Application September 12, 1950, Serial No. 184,466

2 Claims. (Cl. 131—170)

This invention relates to a perforating device and has particular reference to a device for perforating the wrapper of a conventional preformed rolled tobacco product, such as cigarettes.

The device of the present invention contemplates a means for quickly and conveniently perforating a cigarette wrapper as a means to permit a circulation of air through the cigarette as a cooling medium and to accomplish certain improvements to a cigarette as disclosed in a copending application for an improved cigarette filed by Allen J. Parker, under date of August 14, 1950, bearing Serial No. 179,282, now abandoned.

The invention provides a means for quickly perforating a cigarette wrapper in predetermined uniform lines of perforations throughout its length through the medium of grooved rollers, the rollers having their contacting surfaces provided with a multiplicity of properly spaced upstanding piercing pins.

The invention further contemplates a tubular device that is flared at its opposite ends to facilitate the traverse of the cigarette therethrough from either end and of such a diameter as to accurately direct the cigarette through the perforating rollers with no tendency to crush or bend.

It is also contemplated that the present invention shall be produced as a smoker's accessory and may be provided with a conventional cigarette lighter rigidly positioned against and parallel with the outer side wall of the device.

Other novel features of construction and operation will be readily apparent during the course of the following description, reference being had to the accompanying drawings, wherein like characters of reference are employed to denote like parts throughout the several figures.

In the drawings:

Figure 1 is a slightly enlarged side elevation of a device constructed in accordance with the invention,

Figure 2 is an end view thereof,

Figure 3 is a longitudinal sectional view thereof, taken on line 3—3 of Figure 1,

Figure 4 is a greatly magnified transverse section thereof, taken on line 4—4 of Figure 1, and

Figure 5 is a detail section through one of the perforating rollers, illustrating one method of securing the perforating pins and taken substantially on line 5—5 of Figure 4.

Referring specifically to the drawings, the numeral 5 designates the device as a whole, embodying a barrel 6, having substantially cylindrical end portions 8, the opposite ends of which are outwardly flared, as at 7. The pockets 10 have their transverse axes disposed in a single plane and the transverse axes of each pocket extend at right angles to the transverse axes of the pockets adjacent thereto. The inner diameter of the said portions 8 of the barrel 6 is such as to permit sufficient clearance for the sliding reception of a cigarette of conventional diameter. The flared ends 7 facilitate the entry of a cigarette from either end of the device.

Intermediate its length, the barrel is pressed outwardly at equidistantly spaced points around its circumference, as at 9, providing recesses or pockets 10, for the rotatable reception of perforating rollers 11, rotatably supported upon shafts 12. The several rollers, here indicated as being four in number, are grooved to define an arc to correspond to the arc of curvature of the inner wall surface of the cylindrical portions of the barrel and the rollers having their longitudinal axes in a single plane and the longitudinal axes of each roller extending at right angles to the longitudinal axes of the rollers adjacent thereto.

The spacing of the rollers from each other is just sufficient to prevent their edges from contacting. The rollers jointly form a cylindrical opening corresponding to the inner diameter of the barrel and lie wholly within the pockets 10. The wall of the barrel that forms the pockets 10, partakes of a sweeping curve to merge into the wall of the barrel in opposite directions in an ornamental design. The side walls of the pockets 10, forming the bearing for the shafts 12, are preferably formed flat and parallel with the ends of the rollers.

Each roller is provided over its entire grooved area, with a plurality of upstanding and equidistantly spaced sharpened pins 13. The pins are arranged in any desirable uniform line around the circumference of the rollers and, as here indicated, are arranged in circumferential spiral rows, preferably staggered with respect to each other. It may be found desirable also, that the pins be arranged in circumferential staggered rows. The pins are preferably radial to the axis of the barrel, as shown. The pins are engaged with the rollers in any desirable manner, such for instance, as that illustrated in Figure 5, wherein the surface of the roller is drilled at the predetermined points and the pins inserted and secured therein against displacement. As shown, the pins projecting from the surfaces of the rollers, extend into the path of a cigarette traversing the barrel, whereby the cigarette is progressively perforated throughout its length in uniform rows of perforations as it is shoved through the barrel.

Since the perforating device is primarily adapted to serve as a smoker's accessory to perforate his cigarettes as he uses them, it has been found that the addition of a conventional tubular lighter device creates an added convenience to the user. For this purpose, a conventional tubular lighter, preferably of a slender tubular construction, shown at 14, is soldered or otherwise rigidly attached to the outer surface of the barrel 6 between a pair of adjacent flat sidewalls of the pockets 10. A removable cap 15 covers the usual corrugated lighter wheel, not shown.

In the use of the device, the operator merely selects a cigarette of any conventional tubular form and shoves it into the barrel 6, from either end. Continued shoving of the cigarette through the barrel brings its wrapper surface into contact simultaneously with the several rollers and as the cigarette passes therethrough, the needle sharp pins provide a series of equidistantly spaced and uniform rows of fine perforations. The overall length of the barrel is such that the shortest standard cigarette will project from the opposite end thereof, while its opposite end is flush with the barrel end. The standard cigarette is considered to be a cigarette of substantially two and three quarter inches in length. The operator then grasps the projecting perforated end and pulls it outwardly, completing the perforating of the rest of the cigarette. The sharp pins offer relatively little resistance to the passage of the cigarette and there is no tendency for the cigarette to become distorted. The rollers 11 are accurately formed as to their grooving and are freely rotatable on their shafts 12.

While the structure of the present invention has been designed primarily for the perforating of cigarette wrappers, it follows, that minor structural changes may be made as will readily adapt the device to the perforating of cigar wrappers.

It will be apparent from the foregoing, that a very simple and convenient device has been provided to accurately and uniformly perforate the wrapper of the conventional nonperforated cigarette. The desirability of perforating a cigarette wrapper has been clearly set forth in the above mentioned application Serial No. 179,282 and the device of the present invention is designed as a means to easily and quickly perforate a cigarette of the type that is marketed in a conventional manner. The structure readily lends itself to manufacture from metal, plastic and any other desirable material having sufficient rigidity, although it is contemplated that the rollers shall be formed of metal in order to maintain their accuracy throughout the life of the device.

It is to be understood, that the invention is not limited to the precise form shown, but that various changes in the shape, size and arrangement of parts may be resorted to

as fall within the spirit of the invention or the scope of the subjoined claims.

Having described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A device for perforating the wrappers of preformed cigarettes that comprises a barrel having substantially cylindrical end portions open at both ends and having its ends flared outwardly, the barrel having an inner diameter that permits an easy sliding movement of a cigarette therethrough, the barrel having a length shorter than that of a conventional cigarette, and the inner walls of the barrel intermediate its length being provided with pockets equidistantly spaced around the circumference of the barrel, and grooved rollers rotatably supported in the pockets, the longitudinal axes of the rollers being in a plane at a right angle to the longitudinal axis of the barrel, the rollers being grooved to define an arc corresponding to the arc of curvature of the inner wall surface of the cylindrical portions of the barrel and being flush therewith, the surface of each roller being provided with equidistantly spaced rows of upstanding sharpened pins, the rows of pins being spirally arranged about the rollers and the pins of each row being equidistantly spaced, and being, when in piercing position, radial to the longitudinal axis of the barrel, thereby projecting into the path of movement of the cigarette progressively as the rollers are rotated under the influence of the cigarette when it is forced between the rollers whereby the wrapper of the cigarette is perforated in uniform rows of spaced perforations throughout its length.

2. A cigarette wrapper perforating device for preformed cigarettes that comprises a barrel having substantially cylindrical end portions open at both ends and with the ends outwardly flared, the barrel having an inner diameter of a size to permit the unobstructed sliding movement of a cigarette therethrough, the barrel having a length shorter than that of a conventional cigarette, the barrel intermediate its length being provided with pockets that open into the interior of the barrel, and the pockets being arranged with their transverse axes in a single plane,

said axes of each pocket extending at right angles to the transverse axes of the pockets adjacent thereto, grooved piercing rollers rotatably supported within the pockets, shafts for the rotatable support of the rollers, the rollers being grooved to define arcs corresponding to the arcs of curvature of the inner wall surface of the cylindrical portions of the barrel and with their surfaces flush with the inner wall of the cylindrical portions of the barrel, the axes of the rollers being in a plane at a right angle to the longitudinal axis of the barrel, and the ends of each roller terminating a slight distance from the ends of its adjacent rollers, and spiral rows of sharpened piercing pins extending around the grooved rollers, when in piercing position, radial to the axis of the barrel as they are progressively brought into piercing position as the cigarette is forced through the barrel, the pins being upstanding and equidistantly spaced from each other, the said pins in each row being staggered with respect to the pins of the adjacent rows, and said pins being adapted to project into the path of a cigarette shoved through the barrel to engage and perforate the cigarette wrapper in equidistantly spaced rows of perforations throughout its length.

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