This invention relates to cigarette rod formers, its main object being to keep at a minimum the retarding effect of the rod former surface on the moving stream of tobacco and thus make possible production of more uniform cigarettes at higher speeds than heretofore obtainable and more particularly, to provide a rod former and rod forming tongue which is provided with a device for supplying small quantities of a suitable fluid for this purpose to the under side of the tongue.

It has been found that in increasing the speeds of cigarette machines, for reasons hitherto unknown, when a machine which is making entirely satisfactory cigarettes at 1,000 per minute is speeded up to 1,400 or 1,600 per minute, the cigarettes become erratic in their weight and in "feel." That is, cigarettes when felt longitudinally have hard and soft places in them, as though the tobacco hesitated in passing through the former tube and the rod forming tongue which serve to compress the tobacco to cigarette cross-section. These soft and hard spots appear to be due in part at least to partial jamming as a result of friction and sudden releasing of the tobacco as it is compressed at the former.

It has been discovered that by supplying a very small quantity of a variety of fluids having a lubricating and/or cleaning or anti-gumming effect such as light oil to the under side of the forming elements this difficulty can be decreased or eliminated.

Though not absolutely necessary it has been found desirable to feed this liquid continuously in minute and controlled quantities and to this end it is one object of the invention to provide in connection with the forming elements a source of supply of the liquid and a wick or other liquid dispensing means for feeding the liquid gradually while the former is in operating position. With these 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 the accompanying drawing, in which like characters of reference indicate the same or like parts, Fig. 1 is a side elevation of a cigarette rod former illustrating the invention; Fig. 2 is a plan view of the device shown in Fig. 1; Fig. 3 is an enlarged cross section taken on line 3--3 of Figs. 1 and 2; and Fig. 4 is an enlarged cross section on line 4--4 of Figs. 1 and 2.

In carrying the invention into effect, there is provided a continuous rod cigarette machine in combination with rod forming mechanism for compressing and forming a moving stream of tobacco and having for this purpose a stationary forming surface, of means for feeding a liquid in small quantities to the surface while same is in operative position for cleaning and/or lubricating said surface. Preferably this construction includes means for slowly feeding the liquid consisting of a wick leading from a source of supply to the surface and in the best constructions this wick consists of a hardwood plug having its grain running in the direction of desired liquid flow. The method employed in carrying the invention into effect for the purpose of preventing hard and soft spots in cigarettes produced by continuous rod cigarette machines having stationary compressing surfaces consists in continuously feeding minute quantities of cleaning or lubricating liquid to said surface while the same is in operation to prevent friction and gummy accumulations on said surface. The various means referred to may be varied widely 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 precise details of the structure shown and described.

Referring to the drawing, the tobacco T is deposited by the feed chute 5 of the tobacco feed upon the paper strip P in a channel formed by a support bar 6 and by side bars 7 mounted thereon. The paper strip P rests on, and is propelled by, an endless belt 8 supported by a pulley 9 on shaft 10, the said belt running in a concave depression of a bar 11 adjoining the support bar 6. Bars 12...
mounted on bar 11 hold between them the rod former tongue 13 into which the tobacco T on paper strip P is led by the former tube 14 inserted between the bars 7.

The rod former tongue 13, which is a long thin hollow half-cone with its large flared end towards the incoming tobacco, and which forms a constricted throat for compressing the tobacco, is provided with a high narrow saddle piece 15 extending axially along its middle portion. Through the saddle 15, a number of vertical liquid wells 16 are drilled and into the reduced, slightly tapered lower portions of these wells, plugs or wicks 17 of hardwood such as boxwood, with the grain running downwardly, are driven. The protruding lower ends of the plugs are then trimmed to conform with the inner surface of the rod former. When any suitable lubricating and/or cleaning fluid O is placed in the wells 16 it seeps through the plugs 17 and gradually and continuously provides the inner surface of the rod former with just the small quantity of liquid needed to overcome friction. While a wide variety of liquids may be used, and most liquids not, in themselves gummy or sticky would have to some extent the effect desired, a light colorless mineral oil such as that used for medicinal purposes, has been found satisfactory in practice. Such a liquid is efficient in keeping the surface clean of gummy or sticky substances such as tobacco gum, and flavorings such as rum, molasses, etc., and has a lubricating effect.

The guide 14, which is shaped with a high flaring opening near the tobacco feed chute 3 tapering down to fit the entering end of the rod former 13, has similar wick plugs 18 inserted into the bottoms of wells 19, the tops of all the wells 19 being connected by a communicating channel 20 for the reception of a quantity of the lubricating or cleaning liquid O. The channel 20 has a cover 21 which is removable by means of knobs 22. If desired, a conventional oil cup, preferably of the automatic drip type, may be inserted into the cover 21, but since the actual consumption is extremely low, the liquid O in the wells 16 or in the channel 20 will be sufficient for ordinary purposes.

What is claimed is:

1. In a continuous rod cigarette machine, the combination with rod forming mechanism having a stationary forming surface acting on a moving stream of tobacco, of means for feeding a liquid in small amounts to the surface while the same is in operating position to facilitate passage of the tobacco, said means including a source of supply of liquid and a device for slowly and continuously feeding liquid from said source to said surface.

2. In a continuous rod cigarette machine, the combination with rod forming mechanism having a stationary forming surface acting on a moving stream of tobacco, of means for feeding a liquid in small amounts to the surface while the same is in operating position to facilitate passage of the tobacco, said means including a source of supply of the liquid and a wick leading from said source of supply to said surface.

3. In a continuous rod cigarette machine, the combination with rod forming mechanism having a stationary forming surface acting on a moving stream of tobacco, of means for feeding a liquid in small amounts to the surface while the same is in operating position to facilitate passage of the tobacco, said means including a source of supply of the liquid and a wick leading from said source of supply to said surface.

4. In a continuous rod cigarette machine, the combination with rod forming mechanism having a stationary forming surface acting on a moving stream of tobacco, of means for feeding a liquid in small amounts to the surface while the same is in operating position to facilitate passage of the tobacco, said means including a source of supply of the liquid and a wick leading from said source of supply to said surface.

5. In a continuous rod cigarette machine, the combination with rod forming mechanism having a stationary forming surface acting on a moving stream of tobacco, of means for feeding a liquid in small amounts to the surface while the same is in operating position to facilitate passage of the tobacco, said means including a source of supply of the liquid and a wick leading from said source of supply to said surface.

6. In a continuous rod cigarette machine, the combination with rod forming mechanism having a stationary forming surface acting on a moving stream of tobacco, of means for feeding a liquid in small amounts to the surface while the same is in operating position to facilitate passage of the tobacco, said means including a source of supply of the liquid and a wick leading from said source of supply to said surface.

7. In a continuous rod cigarette machine, the combination with rod forming mechanism for forwarding a stream of tobacco, of means for feeding a liquid in small amounts to the surface while the same is in operating position to facilitate passage of the tobacco, said means including a source of supply of the liquid and a wick leading from said source of supply to said surface.

8. The combination with mechanism for forwarding a stream of tobacco, of tobacco forming means having a stationary surface.
engaging said stream to confine the same to desired cross-section, and means for continuously and gradually supplying a liquid to said surface while in operating position to facilitate the passage of the tobacco.

9. The combination with mechanism for forwarding a stream of tobacco, of tobacco forming means having a stationary surface engaging said stream to confine the same to desired cross-section, means for continuously and gradually supplying a liquid to said surface while in operating position for facilitating passage of said tobacco, said supplying means comprising a source of supply of liquid and a wick leading from said source of supply to said surface.

10. In a continuous rod cigarette machine, the combination with a rod forming mechanism having a relatively stationary surface acting on a stream of moving tobacco, of means for feeding a liquid to said surface while same is in operating position to keep resistance of said surface to the passage of the tobacco there along at a minimum.

11. The method of preventing hard and soft spots in cigarettes produced by continuous rod cigarette machines having a stationary compressing surface acting on a moving stream of tobacco, which consists in continuously supplying minute quantities of lubricating oil to said surface while the same is in operation to reduce the coefficient of friction of said surface to the tobacco.

12. The method of preventing hard and soft spots in cigarettes produced by continuous rod cigarette machines having a stationary compressing surface acting on a moving stream of tobacco, which consists in continuously supplying minute quantities of cleaning liquid to said surface while the same is in operation to prevent any gummy accumulations on said surface.

13. The method of increasing the uniformity of cigarettes produced by continuous rod cigarette machines having a stationary compressing surface acting on a moving stream of tobacco, which consists in keeping said surface during the operation of the machine continuously moist with a liquid free from sticky ingredients.

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

ELBERON D. SMITH.