

(No Model.)

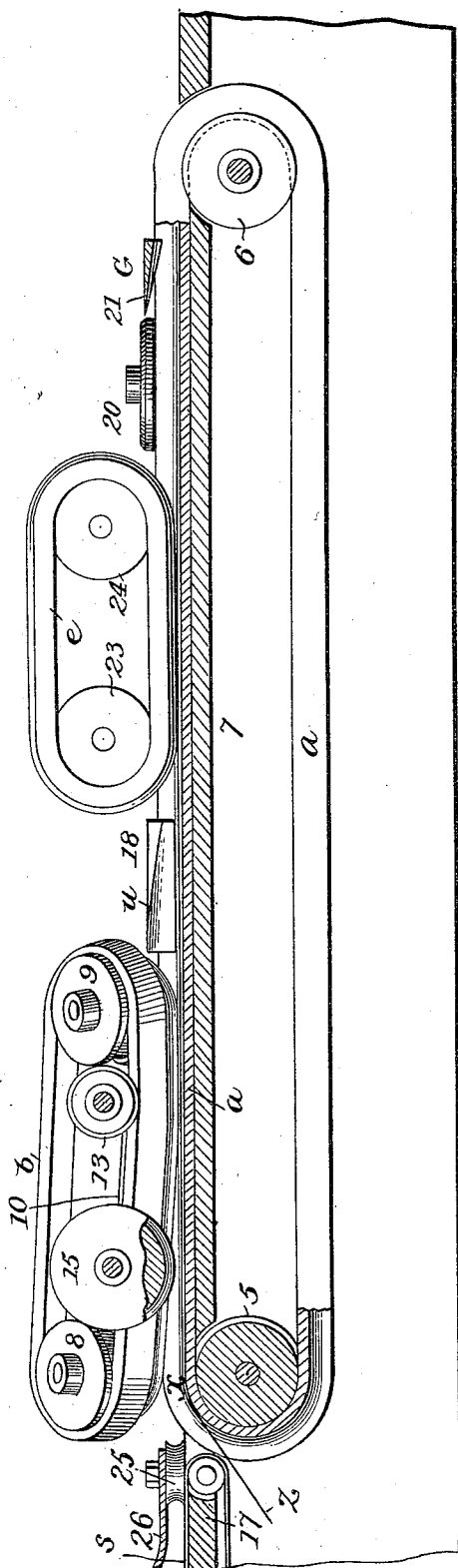
4 Sheets—Sheet 1.

B. BARON.
CONTINUOUS CIGARETTE MACHINE.

No. 543,839.

Patented Aug. 6, 1895.

Fig. 1



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(No Model.)

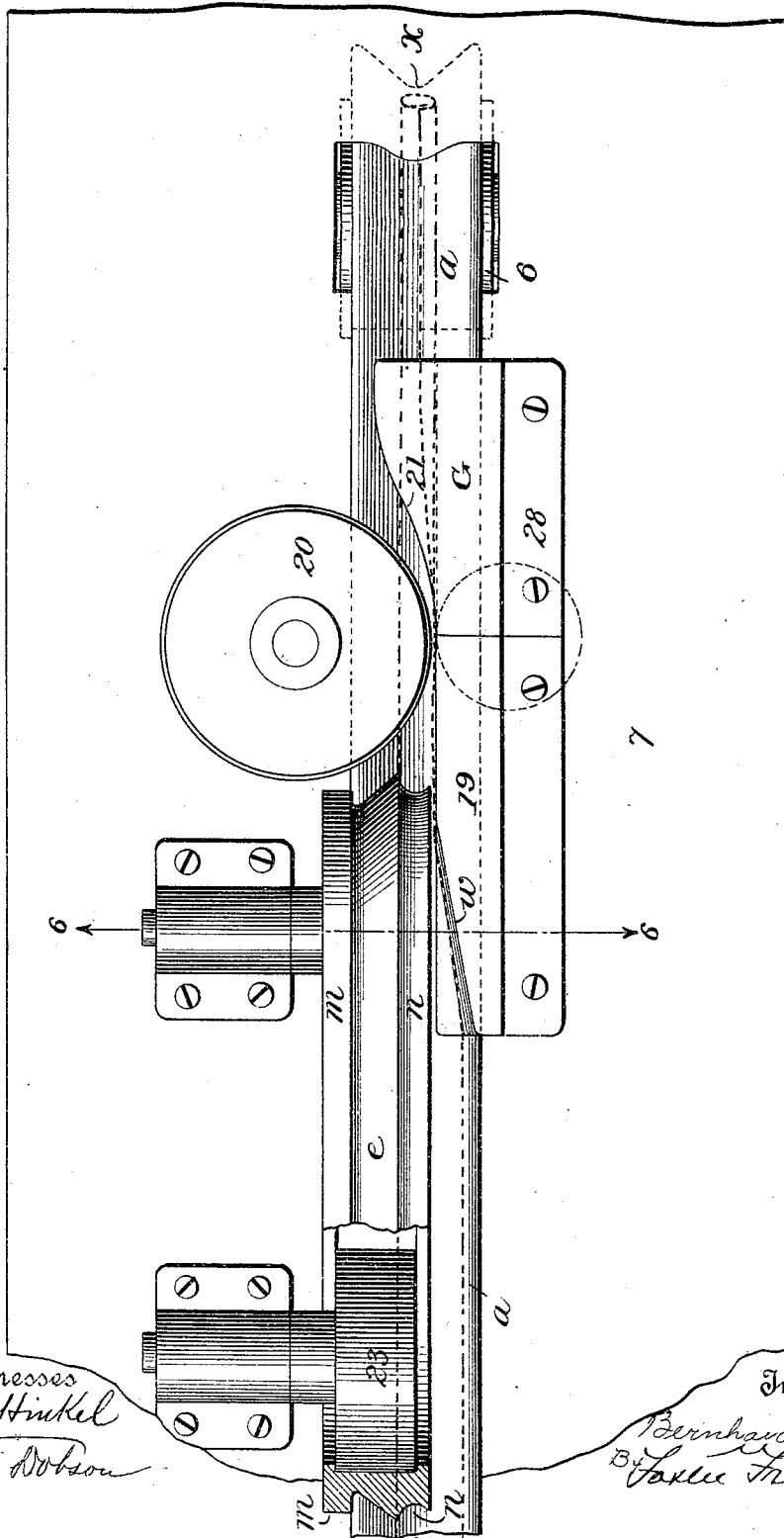
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B. BARON.
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Fig. 3.



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4 Sheets—Sheet 4.

B. BARON.
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Fig. 4.

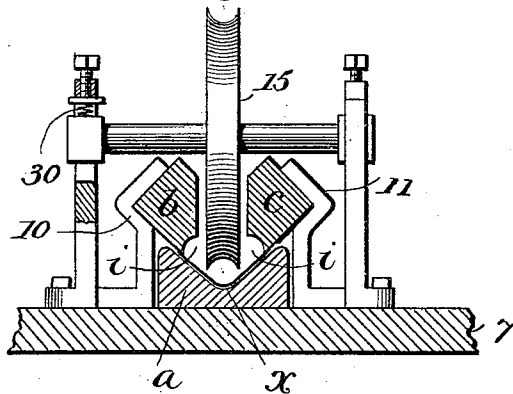


Fig. 5.

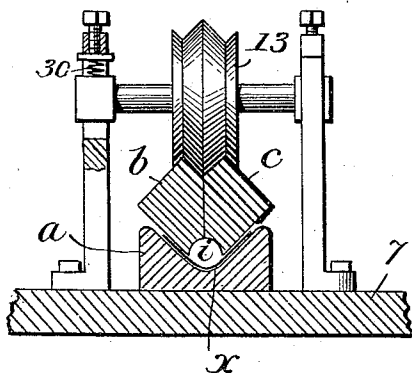


Fig. 6.

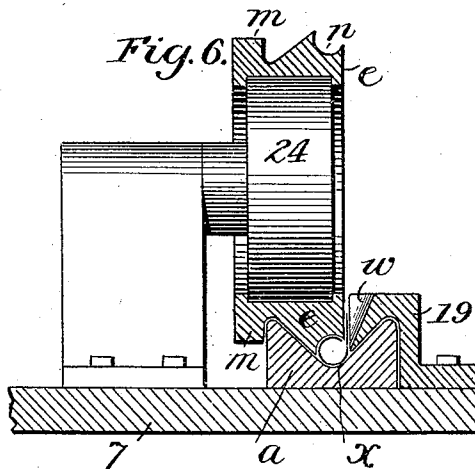


Fig. 8.

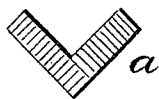


Fig. 9.

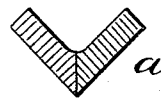
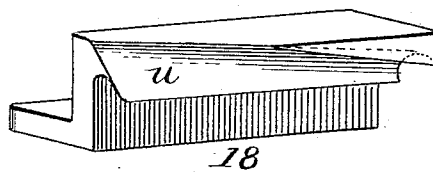


Fig. 7.



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UNITED STATES PATENT OFFICE.

BERNHARD BARON, OF NEW YORK, N. Y.

CONTINUOUS-CIGARETTE MACHINE.

SPECIFICATION forming part of Letters Patent No. 543,839, dated August 6, 1895.

Application filed October 17, 1894. Serial No. 526,189. (No model.)

To all whom it may concern:

Be it known that I, BERNHARD BARON, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Continuous-Cigarette Machines, of which the following is a specification.

My invention relates to that class of machines in which a continuous rod is formed from loose material, and in the manufacture of cigarettes, fed to a traveling strip of paper and afterward inclosed thereby and sealed therein; and my invention consists in a mold for molding the tobacco-rod, or rod of other material, composed of endless traveling bands, and of means for holding the inturned edge of the paper in contact with the molded rod, and of certain details of construction, as hereinafter fully set forth, and as illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional elevation of sufficient of a cigarette-machine to illustrate my improvement. Fig. 2 is an enlarged plan view of the molding devices shown in Fig. 1. Fig. 3 is an enlarged plan in part section of the wrapping devices shown in Fig. 1. Fig. 4 is a cross-sectional view on the line 4 4, Fig. 2. Fig. 5 is a cross-sectional view on the line 5 5, Fig. 2. Fig. 6 is a cross-section on the line 6 6, Fig. 3. Fig. 7 is a perspective view of one of the folders. Figs. 8 and 9 illustrate modified forms of the lower mold-section.

In the ordinary modes of forming continuous fillers, or as they are termed "filler-rods" for cigarettes, it has been common, in many instances, to make use of devices which act upon a mass of tobacco to suddenly compress the same to about the size of the finished filler-rod. While these have proved to be more or less successful in different instances, it has been found that it is a serious disadvantage to suddenly compress the tobacco, and in order to obviate this objection I make use of a filler-rod forming-mold consisting of several parts traveling in unison, which are gradually brought together until they form a practically-closed chamber, the convergence being so gradual as to prevent any injuriously abrupt pressure upon the tobacco; and I further form the parts of the mold of elastic material, which acts less injuriously upon the tobacco than molds made of metal or rigid

material, and which has the further advantage of being in endless pieces, capable of being carried around supporting guide-wheels, so that they can travel continuously with the tobacco or rod and can be moved toward or from each other with facility.

The mold may consist of any suitable number of endless traveling sections or bands; but I prefer to make it of three bands *a b c*, the band *a*, which is generally the lower section of the mold, having a groove *x* with converging sides which tend to throw the tobacco, which is deposited sometimes upon the said band, but preferably on the paper strip thereon, toward the center, and which also serves as a guide upon which the other two bands *b c* may move downward toward the center of the groove to gradually compress the mass therein.

Each of the bands or sections *c b* is so constructed in cross-section that when the two bands are brought together in their lowest position in respect to the band *a* there will be formed or inclosed a substantially cylindrical opening or chamber formed by the central rounded portion of the groove *x* and by the rounded portions or grooves *i i* at the lower edges of the bands or sections *c b*, which may otherwise, however, be of any suitable cross-sectional shape.

Each of the bands or sections *a b c* may be of any desired length. Preferably they consist each of a continuous rubber band, the section *a* passing around two guide-wheels and over the table or platform of the machine, and the sections *b c* being each carried by two guide-wheels, which are so arranged that each of the sections *c b* is supported at an angle to the section *a*. Inasmuch, however, as the pulleys do not alone support the bands *b c* in the proper position for operation, I make use in connection with them of guides 10 11, which will support a portion of the sections *b c* in their proper positions at the point where it is necessary for them to operate directly upon the tobacco. Each of these guides 10 11 is so constructed as to coincide at its inner face with the outer face of the band or section which is in contact with it and to support the section at the point where it co-operates directly with the section *a* in such wise as to cause the said section *b* or *c* to gradually approach the center of the section

a and also gradually descend until it meets the other side section and forms and closes the traveling chamber or mold in which the tobacco-filler rod is formed. Thus the lower section *a* is supported upon the table 7 and each of the sections *b c* is supported against its guide, and the sections all converge until they are in contact and form a closed traveling chamber, and it therefore follows that the tobacco deposited upon the lower section and naturally gravitating toward the bottom of the groove in the said section will gradually be collected in a mass approximating a tobacco rod in the center of the lower section and will be gradually compressed and condensed until the rod is formed, and will then be carried with the closed traveling chamber and held in a compressed state for a distance equal to the distance in which the sections constituting the traveling mold are in close proximity to each other.

After the tobacco has been held in a condensed state for a proper length of time the rod is released, and this is effected by gradually carrying the side sections *b c* outward and upward until they leave the section *a*, which results from the form of the guides and the arrangement of the wheels 9 in respect to the guides, or the latter may be continued for any desired length, so as to conduct and guide and direct the sections *b c* away from the section *a*.

To compress and hold the sections together at the point where the tobacco is subjected to the greatest pressure, I may use a pressure device in the form of a pressure-wheel 13, so arranged as to bear upon both of the sections *b c* about the point where they are in contact with each other and hold them in such contact while traveling together and prevent any possibility of their spreading or opening.

To further facilitate the above-described operations, it may be better to subject the tobacco after it has been deposited upon the section *a* and before it is acted on by the side sections *b c* to a certain amount of pressure, and this can be done by means of a presser-wheel 15, having a grooved edge and arranged vertically above the section *a* in position to compress the tobacco toward the center and deepest portion of the groove of said section. If desired, the wheels 13 and 15 may be supported by spring-bearings, with springs 30 exerting a pressure tending to depress these wheels.

The parts above described will of themselves constitute a most effective device for molding a tobacco rod to be delivered to a traveling wrapper-strip as in other cigarette-making apparatus; but this would necessitate carrying down the lower section away from the tobacco rod, and then bringing the strip of wrapper-paper upward and into line to receive the said rod, and to avoid this I prefer to conduct the strip of paper *z*, of which the wrapper is to be made, to the section *a* of the mold and to deposit the tobacco upon the

surface of the said strip and carry the strip and the tobacco together through the traveling sectional mold, compressing the tobacco directly upon the strip. Thus the strip of paper *z* is conducted from its proper supporting-roll upward toward and into the traveling section *a* at its receiving end, and the tobacco is deposited from any suitable feeding device upon the strip of paper, and is then conducted with the strip through the traveling sectional mold and is compressed upon the paper, (the paper being bent to conform to the shape of the groove in the section *a*,) until finally the paper with the rod upon it leaves the sections *b c*. It then becomes necessary to turn down one edge of the paper over the rod thus molded, and this is done by bringing one edge of the paper into contact with the inclined or diagonal edge *u* of a bar or folder, which is supported above the section *a* at one side of the same and extending into the groove *x*, after which the opposite edge of the paper is brought against an inclined or diagonal edge *w* at the end of a strip or bar 19, Fig. 3, which also extends into the groove of the section *a* at the opposite side of said groove, this edge of the paper, however, being thereby brought only to a vertical position, so that its inner face may be presented to the action of a paster-wheel 20, which applies the paste to the inner standing face of the paper in a manner too well known to need further description. After the paste has thus been applied the standing edge of the paper is brought against the inclined edge 21 of a folder *G*, which lays the pasted edge of the paper over and upon the other intumed edge and holds it upon the same until the two edges are pasted together around the inclosed tobacco rod.

Heretofore much difficulty has been experienced in cigarette-machines in holding the tobacco rod in its compressed state at the point where one edge of the paper is turned down upon the rod, while the other is held standing to approach the pasting device in proper position. This has resulted from the fact that any attempt to bear upon the tobacco rod at this point throughout its whole length would be attended with a great deal of friction. In order to overcome these objections I make use of another traveling mold-section *e*, in the form of a traveling band having a face *n*, corresponding with that of a section of the tobacco rod and its wrapper, at the point where it bears upon the same, and I impart to this band the same motion that the tobacco rod and its wrapper have, so that they travel together under compression in connection with the lower section *a* to a point adjacent to the paster-wheel.

The section *e* may be supported in any suitable manner. As shown, it is supported upon two wheels 23 24, and it preferably has a flange *m*, Fig. 6, for bearing against one edge of the section *a*, so as to properly define the position of the section *e* at all points and prevent too great pressure at any point or at

any time upon the cigarette-rod and its wrapper. The tobacco rod is thus held under proper compression during the entire time between the folding in of one edge of the wrapper-strip over the same and the point where the paste is applied.

While I have referred to the lower section *a* as a section of one piece, it will be evident that it may consist of two pieces, which together constitute a section having a central groove deepest at the center—as, for instance, as shown in Figs. 8 and 9.

It will be evident that when the paper is carried in contact with the traveling sections of a mold, which sections consist of rubber or other soft elastic material, that there is much less danger of wounding and tearing the same than could possibly result where the paper is drawn through a former of any kind by means of a strip or tape, and it will also be evident that as the paper does not come in contact with any standing or stationary part (except with the folders and where the back edge of the paper travels against the part that holds it vertical during the pasting operation) there is very little friction, and the speed of operation may be very greatly increased over that usually employed; but in order still further to increase this speed, if necessary, the back support of the paper, instead of being a stationary strip, as before described, may be a roller arranged as shown in dotted lines 25, Fig. 3.

I have not shown in connection with the parts above described any devices for imparting movement to the various rollers and for driving the same positively, because it will be evident to any mechanic that ordinary driving-gears from a shaft or other suitable devices may be employed.

Any suitable means may be employed for depositing the tobacco on the traveling wrapper-strip. I have shown a conveyer-belt *s*, Fig. 1, and two grooved rollers 25 25, and an upper guard-plate 26, the belt conveying the tobacco between the wheels, which collect it to the center of the belt, and the latter delivers it to the traveling wrapper.

Without limiting myself to the precise construction and arrangement of parts described, I claim as my invention—

1. The combination in a mold for forming rods, of three or more endless traveling bands of flexible material, all having grooved edges or faces which together form a circular chamber when the said bands are brought together, and means for gradually bringing the bands toward each other at one point to form said chamber, substantially as set forth.

2. The within described mold for forming a continuous rod, the same consisting of three or more traveling continuous flexible sections or bands all having grooved faces which together form a closed chamber of proper shape when the sections are brought together, supports for the said sections for holding them in separated positions for the introduction of

the material between the same, and means for bringing the sections together to compress the material and form a closed chamber, and hold the material within said chamber while the said sections are traveling in unison, and means for gradually separating the sections to release the traveling rod after it has been formed, substantially as set forth.

3. The combination in a mold for molding rods of tobacco or other material, the same consisting of an endless traveling band having a groove or channel deepest at the center, and side bands, and supports for the bands whereby they are held in position separated near one end of the machine, gradually converging to form a closed chamber at one point, and then diverging, substantially as set forth.

4. A mold for forming continuous rods consisting of three endless grooved bands, means for driving the same in unison, and devices for converging the said traveling bands at one point to form a practically closed chamber at that point, substantially as described.

5. The combination with the traveling endless band *a* having a central groove, and the traveling endless bands *b*, *c*, and means for bringing all the bands together to form a closed chamber at one point, substantially as set forth.

6. The combination of a traveling band *a*, having a groove, and supporting wheels 5, 6, and two traveling bands 8, 9, and their supporting wheels, and guides arranged to deflect the latter bands into and from the groove of the band *a*, substantially as set forth.

7. The combination of the lower traveling band *a*, having a groove, and side bands *b*, *c*, and means for carrying the side bands in unison with the band *a*, and guides arranged to carry the side bands into and from the groove of the band *a*, substantially as set forth.

8. The combination of the endless band *a*, having a groove, and its supporting wheel or pulleys, and the endless side bands *b*, *c*, supported by pulleys and having faces which together with the face of the groove in the band *a* form a closed chamber when the bands are brought together, and means for bringing the said bands together at one point, substantially as set forth.

9. The combination of the traveling band *a* having a groove, the traveling side bands *b*, *c*, means for bringing the said bands together, and a pressure wheel 13, substantially as set forth.

10. The combination of the traveling bands *a*, *b*, and *c*, and means for bringing them together at one point to form a closed chamber, and a presser wheel 15 arranged in advance of the point where the bands are brought together, substantially as and for the purpose set forth.

11. The combination of the grooved band *a*, and its supporting wheels, the grooved bands *b* and *c* and their supporting wheels, and the independent guides 10, 11, for bringing said bands together to form between them

a closed chamber, substantially as and for the purpose set forth.

12. The combination of a sectional traveling mold, consisting of three grooved endless bands and means for bringing them together to form a molding chamber, and supports and guides for a traveling strip of paper arranged to direct the strip into the groove of the lowermost of the said bands at a point in advance of that where the three bands are brought together, substantially as set forth.

13. The combination of the three grooved endless traveling bands *a*, *b* and *c*, forming a closed molding chamber between them when brought together, and devices for supplying a strip of paper to the band *a*, all arranged to permit the paper to travel upon the face of the latter band below the bands *b* and *c*, substantially as and for the purpose set forth.

14. The combination of the traveling band *a*, having a groove and the molding bands *b*, *c*, and means for bringing them together above the band *a* to form a closed chamber, and a traveling band *e*, extending into the groove in the traveling band *a* at one side of the same, substantially as and for the purpose described.

15. The combination with the molding device including a traveling grooved band *a*, and means for feeding a wrapper strip to said band and for folding in one edge thereof onto

the filler, of a traveling band above and extending partly over the groove in the band *a*, and adapted to engage and hold down said inturned edge of the wrapper, substantially as set forth.

16. The combination with the molding device, including a traveling grooved band *a*, and means for feeding a wrapper strip to said band and for folding in one edge thereof onto the filler, of a traveling endless grooved band *e*, above and extending partly over the groove in the band *a*, in a position to engage and hold down said inturned edge, and means in rear of said band *e*, for pasting and folding down the second edge of the wrapper, substantially as set forth.

17. The combination with the molding device including a traveling grooved band *a*, of a traveling band *e*, extending laterally over one side of and into said band *a*, and having a grooved face *n*, and a flange *m* bearing against one edge of the band *a*, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BERNHARD BARON.

Witnesses:

CHARLES E. FOSTER,

W. CLARENCE DUVALL.