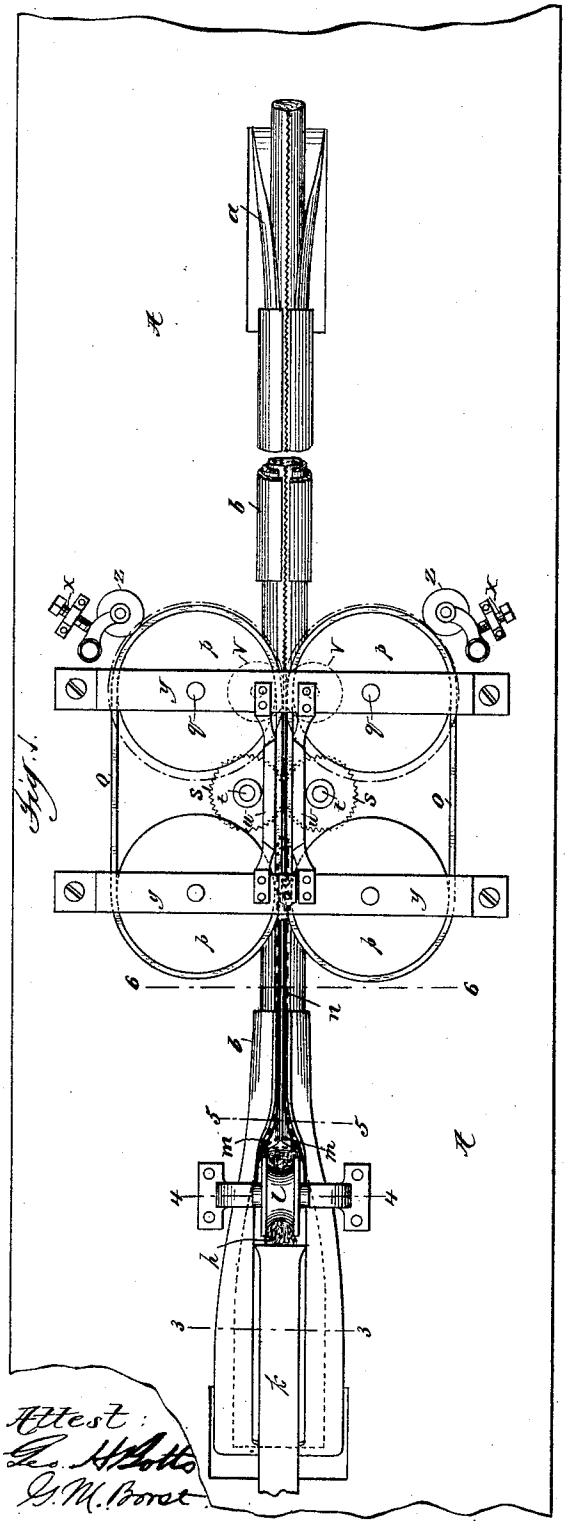
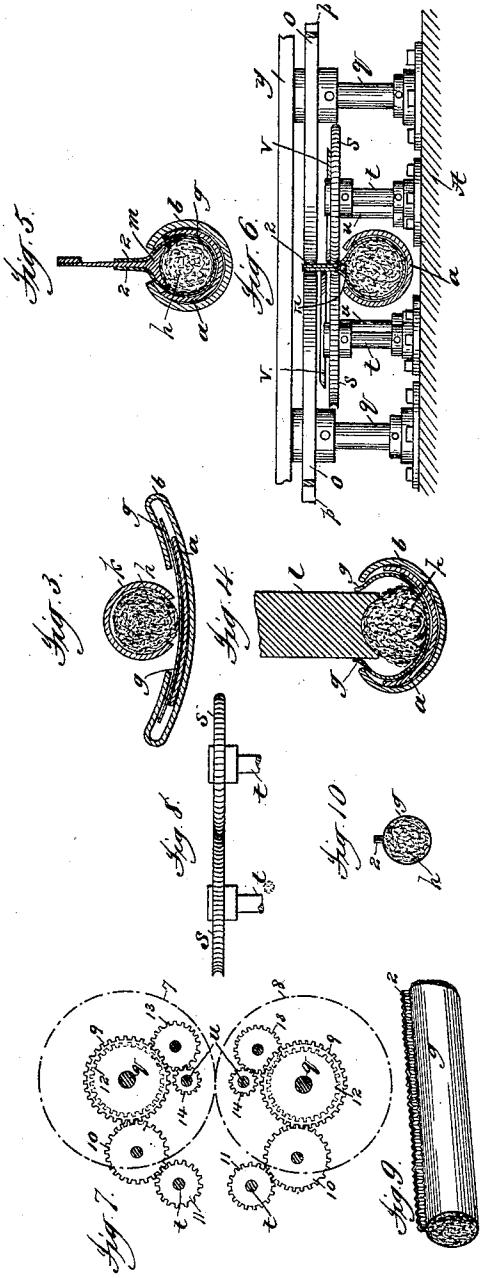
(No Model.) 2 Sheets—Sheet 1.

F. S. KINNEY.

CIGARETTE MACHINE.

No. 437,207. Patented Sept. 30, 1890.





Attest:
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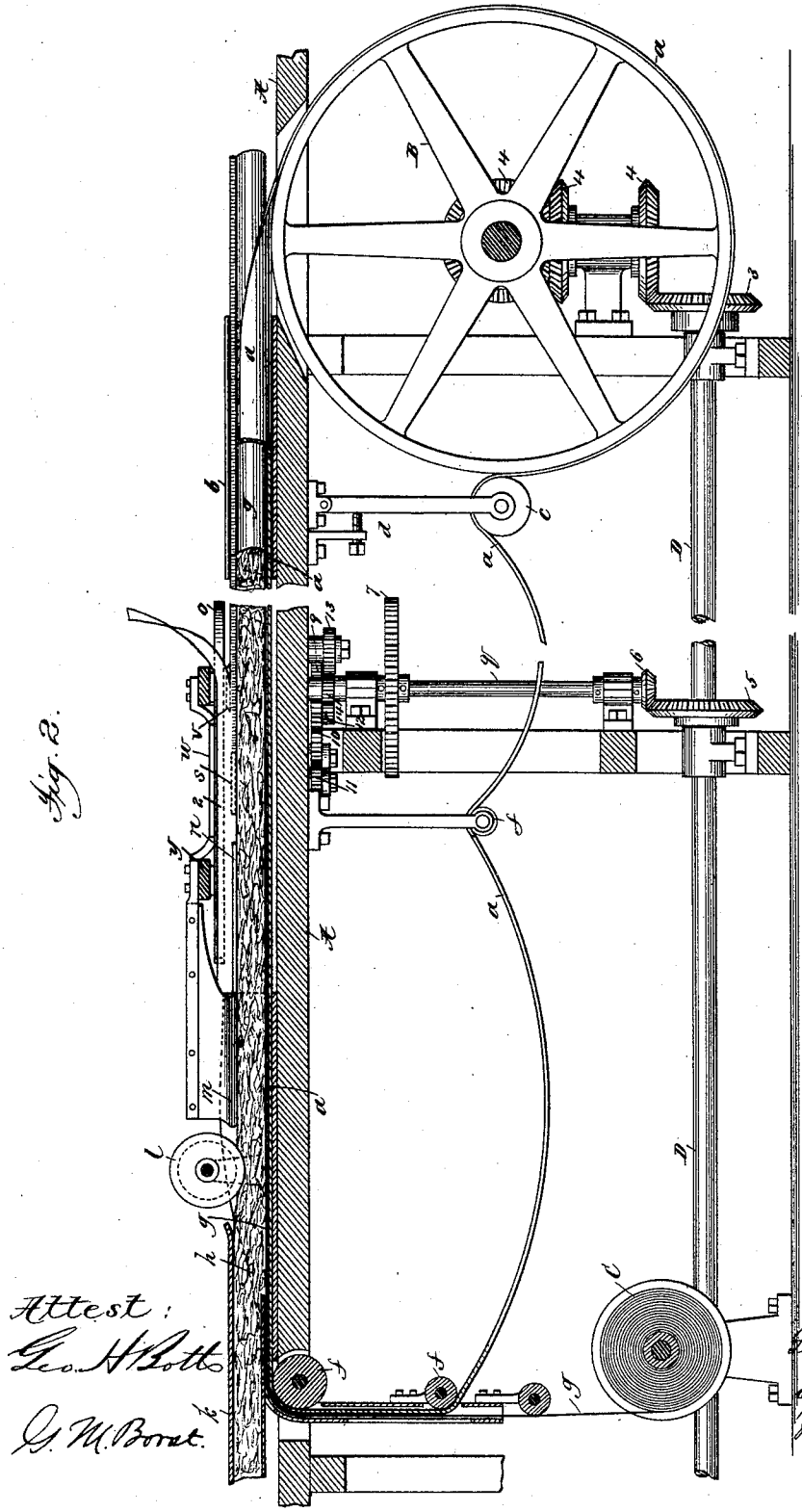


Fig. 2.

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UNITED STATES PATENT OFFICE.

FRANCIS S. KINNEY, OF PEQUANAC, ASSIGNOR TO THE AMERICAN TOBACCO COMPANY, OF NEWARK, NEW JERSEY.

CIGARETTE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 437,207, dated September 30, 1890.

Application filed March 31, 1888. Serial No. 269,113. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS S. KINNEY, a citizen of the United States, residing at Pequanac, in the county of Morris and State of New Jersey, have invented certain new and useful Improvements in Cigarette-Machines, fully described, and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to that class of cigarette-machines in which the paper in the form of a continuous web is wrapped around the tobacco and its edges united, after which the wrapper and the tobacco contained therein are cut into suitable lengths to form the cigarettes. In this class of machines as heretofore constructed the edges of the wrapper have been united to form the tube inclosing the tobacco by means of paste applied to one or both the overlapping edges of the paper.

The present invention relates particularly to a mechanism by which the edges of the wrapper are united by being crimped and pressed together, so as to adhere without the use of paste or other cement.

A full understanding of the invention can be best given by describing in detail a mechanism embodying the same. All preliminary description will therefore be omitted and a detailed description given, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of so much of a cigarette-making machine as is necessary to illustrate the application of the present invention thereto. Fig. 2 is a vertical sectional elevation of the same. Figs. 3, 4, 5, and 6 are enlarged cross-sections, taken, respectively, on the lines 3 4 5 6 of Fig. 1. Fig. 7 is a horizontal section taken just below the bed-plate, showing particularly the gearing for communicating motion to the several parts. Fig. 8 is an enlarged edge view of a portion of the crimping-disks. Fig. 9 is an enlarged perspective view of a portion of a cigarette having the edges of its wrapper united by a machine embodying the present invention, and Fig. 10 is a cross-section of the same.

Referring to said figures, it is to be understood that A represents the bed-plate or table of the machine, which serves to support the principal parts of the mechanism. Located beneath this table is a large drum or pulley B, around which passes a band *a*, which serves to advance the tobacco and the wrapper during the operation of folding the latter into tubular form around the tobacco. The folding of the paper around the tobacco is effected by means of a folding-guide *b*, which is located above the table, and through which the band *a* passes, and which is curved, as indicated in Figs. 3 to 6, so as to gradually transform the band from the substantially flat form which it has upon entering the guide, as indicated in Fig. 3, to the substantially tubular form indicated in Fig. 6. The folding-guide *b* may be of any suitable construction, but as herein illustrated it is made in two parts, a portion being omitted at the point where the crimping-disks and trimmers act upon the wrapper, as will be hereinafter explained. The band *a* is pinched against the pulley B sufficiently to cause it to be properly advanced by the pulley by means of a pulley *c*, having an adjusting-screw *d* for regulating its pressure against the pulley B, and the band is guided in its passage from the pulley B to the folding-guide by means of suitable pulleys *f*, arranged as shown.

The web of paper *g*, of suitable width to form the wrapper around the tobacco, is led from a roll C and passes over one of the pulleys *f* above the band *a*, and thence with the belt through the folding-guide *b*, being thereby transformed from the substantially flat condition indicated in Fig. 3 to the tubular form indicated in Fig. 6. The tobacco *h* is delivered through a tubular guide *k* onto the traveling paper and band as the latter enters the folding-guide *b*, and is then carried forward by the paper and the band *a* through the guide, so that the paper is formed into a tube around the tobacco by the action of the guide, as indicated in Figs. 3 to 6. The delivery of the tobacco to the tubular guide *k* and its advancement through that guide onto the paper and band may be effected by any suitable mechanism—as, for example, a mechanism such as or similar to that shown in the Letters Patent granted to C. G. and W. H. Emery, July 11, 1882, No. 260,959. Located just in advance of the tubular guide *k* is a pressing-roll *l*, having a concave periphery,

which acts upon the tobacco, so as to press it downward onto the paper and band and compress it to about the proper dimensions for the cigarette, as indicated in Fig. 4. Located just in advance of the roll *l* is an internal guide *m*, which presses upon the tobacco so as to prevent it from expanding upward as it passes from beneath the roll *l*, as indicated in Fig. 5. This guide is provided with inclined sides, which act to direct the edges 2 of the paper upward through the slot in the upper side of the folding-guide *b*, as indicated in Fig. 5, and prevent them from overlapping each other. This internal guide *m* is provided with a forwardly-extending finger *n*, which presses upon the tobacco after it leaves the guide *m*, and prevents any portion of it from working upward, so as to get between the upwardly-extending edges 2 of the paper, as indicated in Fig. 6.

The wrapper *g*, having been turned around the tobacco by the action of the folding-guide *b* and the band *a*, and its edges 2 directed upward by the internal guide *m*, will be advanced by the band, and as it is advanced the upwardly-projecting edges 2 of the paper are nipped by a pair of driven metal belts *o*, which pass around pulleys *p*, mounted upon shafts *q*, which project upward through the table A. As the edges 2 of the paper are held by the belts *o*, they are acted upon below the belts and in close proximity to the tobacco by a pair of crimping-disks *s*, also mounted upon vertical shafts *t*, which extend upward through the table A. The finger *n* extends forward to near the point where the crimping-disks *s* act upon the paper, and thus prevents any tobacco from getting between the edges of the paper at that point to prevent the proper action of the disks. The edges of the disks *s* are milled or otherwise formed, so as to crimp and indent the edges of the paper, and thus cause the fibers of the paper to interlock to some extent and adhere to each other sufficiently to join the edges of the wrapper. In addition to being milled, the edge of one of the crimping-disks will also preferably be made slightly concave and the edge of the other one correspondingly convex, as indicated. The disks, however, may be made of any form to suitably indent or perforate and crimp the paper. During this crimping operation the edges of the paper are held firmly by the belts *o*, so that the action of the disks in crimping the paper will have the effect of drawing it tightly around the tobacco, so as to wrap the latter snugly, and thus form a firm and solid cigarette. After passing the crimping-disks and being thus crimped, the surplus of the paper above the line of crimping is removed by a pair of revolving cutters *v*, mounted upon shafts *u*, also extending vertically through the table A. This completes the wrapping and uniting of the paper around the tobacco. After being thus trimmed the tube inclosing the tobacco will pass forward through the other portion of the guide *b* and thence forward to suitable cutting mechanism, by which it is severed into suitable lengths to form cigarettes. The belts *o* are supported between the pulleys *p*, so as to nip the paper firmly by means of stationary guides *w*, between which the belts pass. The guides *w* and the upper ends of the shafts *q*, and also the internal guide *m*, are supported upon suitable brackets *y*, rising from the bed-plate A. The various parts may be driven in proper relation to each other in any suitable manner. One form of driving mechanism suitable for the purpose is illustrated in the present case. For this purpose the machine is provided with a main shaft D, having a bevel-gear 3, from which the pulley B is driven through suitable gears 4. The shaft D is also provided with a second bevel-gear 5, which engages with a gear 6, mounted upon an extension of one of the shafts *q*. This shaft is provided with a gear 7, which engages with a corresponding gear 8, mounted upon the opposite shaft *q*, thus imparting motion to the two belts *o*. The two shafts *q* thus driven are provided with gears 9, which engage with intermediates 10, which in turn engage with gears 11, mounted upon the shafts *t* of the crimping-disks. The shafts *q* are also provided with gears 12, which engage with intermediates 13, which in turn engage with gears 14, mounted upon the shafts *u* of the revolving cutters *v*. The belts *o* are prevented from slipping upon the driven pulleys *p* by means of pulleys *z*, which are provided with screws *x*, by which they are pressed against the belts *o*, as shown in Fig. 1.

The relative sizes of many of the parts are, as will be readily understood, considerably exaggerated in the drawings for the purpose of more clearly illustrating their construction and operation. The cigarette forming the product of this machine is covered by my patent, No. 427,176, dated May 6, 1890.

What I claim is—

1. The combination, with the mechanism for folding the wrapper around the tobacco, with its edges 2 projecting, of the crimping-disks arranged to act upon the projecting edges 2 of the wrapper, substantially as described.

2. The combination, with the mechanism for folding the wrapper around the tobacco, with its edges 2 projecting, of the crimping-disks arranged to act upon the edges 2 of the wrapper and the cutters for trimming off the surplus paper, substantially as described.

3. The combination, with the mechanism for folding the wrapper around the tobacco, with its edges 2 projecting, of the belts *o* for grasping the edges of the paper and the crimping-disks, substantially as described.

4. The combination, with the mechanism for folding the wrapper around the tobacco, of the belts *o* for grasping the edges of the paper, the crimping-disks, and the rotary cutters, substantially as described.

5. The combination, with the slotted fold-

ing-guide *b*, of the band *a*, means for directing the edges of the paper through the slot in the guide *b*, and means for securing the projecting edges of the paper together, substantially as described.

6. The combination, with the slotted folding-guide *b*, of the band *a* and the internal guide *m*, having inclined sides by which the edges of the paper are directed through the slot in the guide *b*, substantially as described.

7. The combination, with the slotted folding-guide *b*, of the band *a*, pressing-roll *l*, and the internal guide *m*, having inclined sides by which the edges of the paper are directed through the slot in guide *b*, substantially as described.

8. The combination, with the mechanism for folding the wrapper around the tobacco, of the belts *o* and the finger *n*, placed in the rear of the belts and pressing upon the surface of the tobacco inside the wrapper, substantially as described.

9. The combination, with the mechanism for folding the wrapper around the tobacco, of the belts *o*, the finger *n*, and the crimping-disks, substantially as described.

10. The combination, with the mechanism for folding the wrapper around the tobacco, of the belts *o*, finger *n*, crimping-disks, and the rotary cutters, substantially as described.

11. The combination, with the folding-guide *b*, of the band *a*, the internal guide *m*, and the crimping-disks, substantially as described.

12. The combination, with the folding-guide *b*, of the band *a*, the internal guide *m*, the finger *n*, and the crimping-disks, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FRANCIS S. KINNEY.

Witnesses:
J. J. KENNEDY,
JAMES A. HOVEY.