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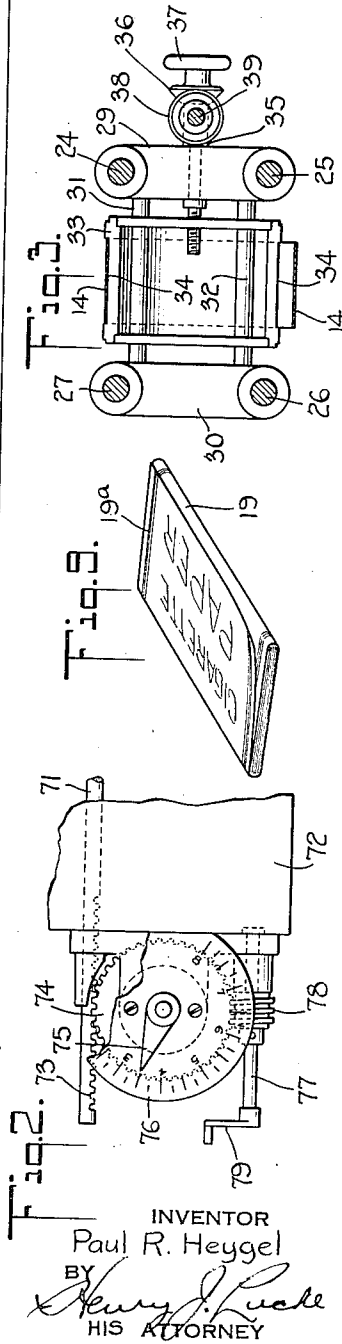
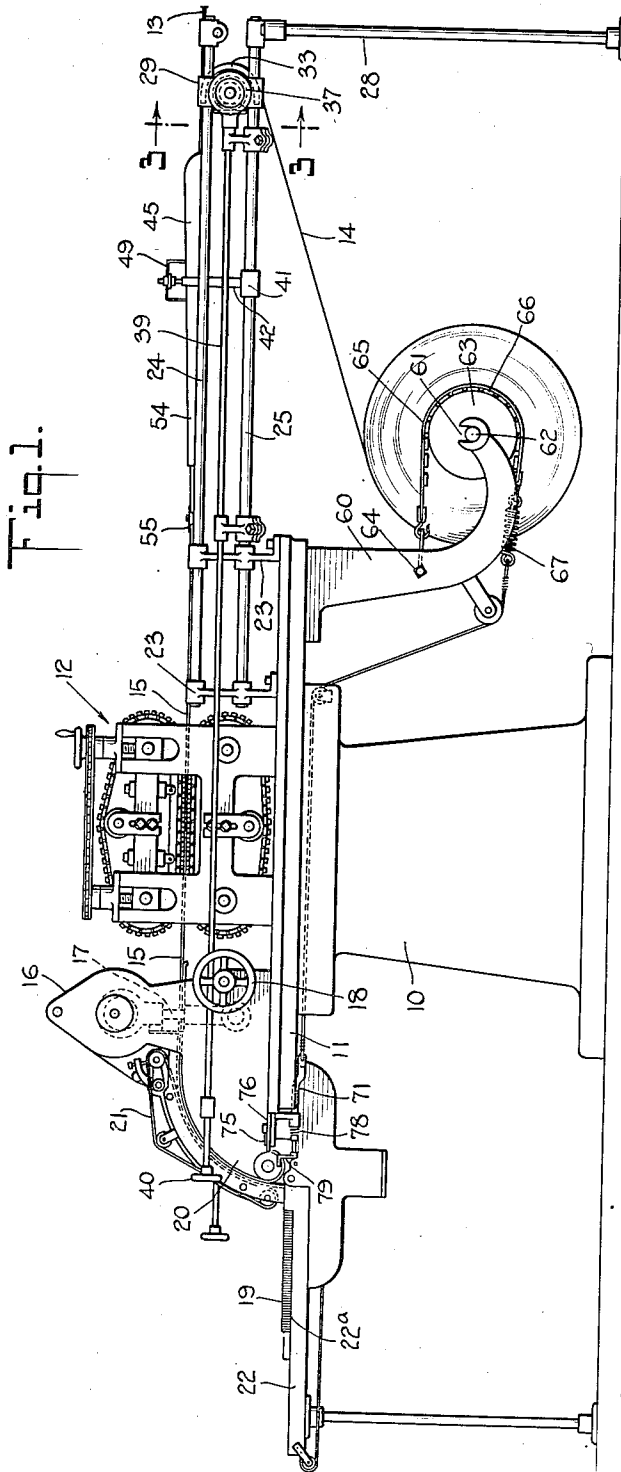
P. R. HEYGEL

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CIGARETTE PAPER BOOKMAKING MACHINE

Filed Dec. 27, 1933

2 Sheets-Sheet 1



INVENTOR
Paul R. Heygel

BY *Henry J. Luke*
HIS ATTORNEY

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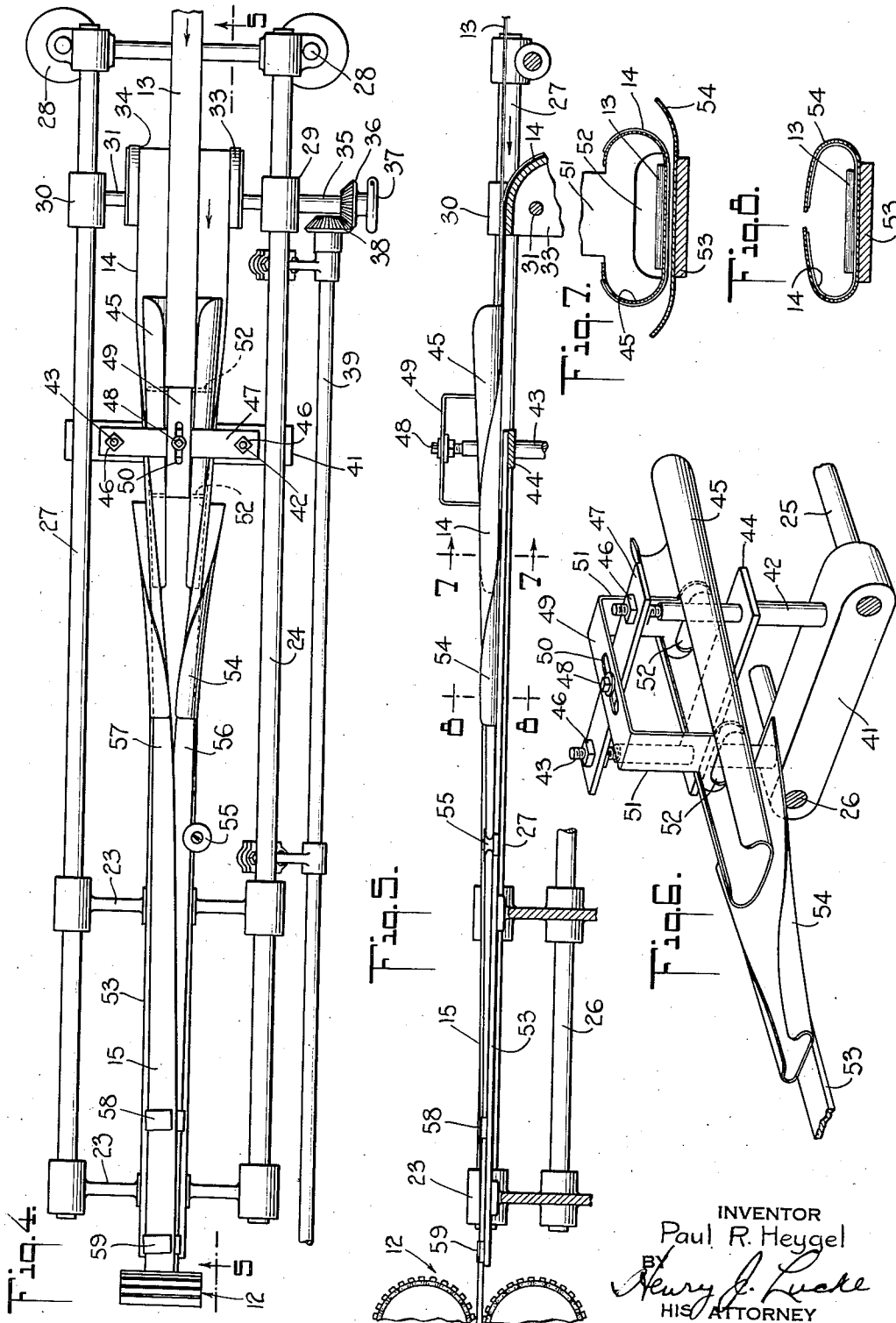
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INVENTOR
Paul R. Heygel
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Henry J. Luke
HIS ATTORNEY

UNITED STATES PATENT OFFICE

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CIGARETTE PAPER BOOKMAKING
MACHINEPaul R. Heygel, Ridgefield, N. J., assignor to
Harry H. Straus, New York, N. Y.

Application December 27, 1933, Serial No. 704,071

18 Claims. (Cl. 270—41)

My present invention relates to booking machines, such as cigarette paper booking machines, and more particularly to a web folding device for such machines.

5 In cigarette paper booking machines, and particularly in one form thereof, a plurality of strips of cigarette paper, of indefinite length, are arranged in superimposed relation to each other, and provide the ultimate leaves of the cigarette
10 books. Such strips of paper, in superimposed relation, are fed through the booking machine, and in such passage are enveloped in a cover formed of a web of paper of appropriate width.

Usually, and ordinarily, one face of the web
15 of enclosing paper is impressed or printed with various designs or indicia designating a kind or type of tobacco, the firm selling or donating the cigarette paper book, and any other indicia that may be thought desirable or necessary, each in-
20 dividual book resulting from severing the web and enclosed leaves, bearing such design or indicia. Also, and preferably the design is of a character requiring symmetrical positioning with respect to the margins of each book cover, which character-
25 istic is utilized as an aid to the operator of the bookmaking machine for properly adjusting the severing knife with relation to the moving strips of superimposed strips of paper and also for ad-
30 justing the cover web of paper with relation to the enclosed plurality of strips of cigarette paper.

In the exemplification of my invention illustrated in the accompanying drawings, I have provided means for engaging with and guiding the
35 plurality of superimposed strips of cigarette paper and associate therewith independent guiding and folding means for the web of cover or enclosing paper, the same serving to guide and fold the web into appropriate form and dimen-
40 sion before its engagement with the superimposed strips of paper. There results from the associated structures individual books of cigarette paper in which there is no distortion or bulging of the individual leaves of the book, that is, the
45 individual leaves of the book lie flat upon one another and the cover is properly and definitely positioned.

In addition to such associated means I further provide suitable means for adjusting the tension
50 of the web of cover paper in its transit from the roll, and further utilize suitable means for adjusting the web laterally of its guiding and folding means, preferably prior to its engagement with such guiding and folding means. As a mat-
55 ter both of convenience and utility, I associate

with the tension and laterally adjustable means, devices by which they may be controlled by the operator located ordinarily at the delivery end of the machine.

While the drawings illustrate a preferred em-
5 bodiment of the invention, it is to be understood that in adapting the means to meet specific needs and requirements, the details may be varied with respect to arrangement and construction as may
10 be preferred, within the scope of the invention as claimed, without departing from the spirit thereof.

A feature of my invention resides in an im-
15 proved web guiding and folding means for book-making machines.

A feature of my invention resides in the provi-
15 sion of means for unitarily guiding and feeding a plurality of superimposed strips of cigarette paper and associating therewith means for folding a
20 web of covering material therefor to approximate dimension and form of the plurality of strips of paper and in advance of the engagement of the web with the strips of paper.

Further features and objects of the invention
25 will be more fully understood from the following detail description and the accompanying drawings, in which

Fig. 1 is a side elevation of a cigarette paper
bookmaking machine to which my invention is
30 applied;

Fig. 2 is an enlarged fragmentary plan view of
the web tension indicating device;

Fig. 3 is a section on line 3—3 of Fig. 1;

Fig. 4 is a plan view of Fig. 1;

Fig. 5 is a vertical section on line 5—5 of Fig. 4;

Fig. 6 is a perspective view of the guiding means
35 for the plurality of superimposed strips of cigarette paper and the web folding and guiding means, and showing the relation between the same during operation;

Fig. 7 is a section on line 7—7 of Fig. 5;

Fig. 8 is a section on line 8—8 of Fig. 5, and

Fig. 9 is a perspective view of a completed ciga-
40 rette book as made on the machine.

Referring to the drawings 10 designates the
45 base of a cigarette bookmaking machine, provided at its top with a table or platform 11. On the table 11 is mounted a suitable feeding device 12, namely, of the pull feed type comprising
50 suitable means for feeding a number of parallelly arranged superimposed strips of cigarette paper 13, of indeterminate length, enclosed in a web of wrapping material 14, also of indeter-
55 minate length. Such assembly is designated, for convenience, by the reference numeral 15. The

feeding device 12 is adapted to operate and feed the assembly 15 by suitable pulling action, toward the left, as shown in Fig. 1, and into association with a book cutting device 16, comprising inter alia a vertically reciprocating cutter 17. The feeding device 12 is arranged to grasp the assembly 15 successively at spaced locations whereby curling or wrinkling of the enclosing cover is obviated. The cutter 17 reciprocates in synchronism with the feeding device 12. Suitable means 18 are provided for regulating the position of the cutting device 16 bodily with respect to the feeding device 12, but such means is deemed not to be a part of the present invention, and therefore the details of the same have not been included in this application.

After severance from the assembly 15, the individual cigarette paper books 19 are fed down an incline 20 by belt 21 into a collecting device 22, from which they may be removed at convenient times and in any convenient manner. The details of the book feeding and collecting means are deemed not to be any part of my present invention, and a detailed description thereof is therefore omitted in this application.

In advance of the feeding device 12, that is, to the right thereof as shown in Fig. 1, and upon the table 11 are secured bearing members 23, and in such members 23 are secured shafts 24, 25, 26 and 27 arranged to define a hollow square. These shafts 24, 25, 26 and 27 extend toward the right as shown in Fig. 1; the outer ends of the shafts 25 and 26 are supported by a pedestal 28.

Adjustably mounted on the shafts 24, 25, 26 and 27, adjacent to the right hand end thereof, is a frame comprised of bars 29 and 30, secured together as a unit by cross rods 31 and 32, arranged parallel to each other. This frame acts as a supporting means for the free ends of the shafts 24 and 27. Mounted on the cross rods 31 and 32 for sliding movement thereon toward and from the bars 29 and 30 is an arcuate shaped member 33 having a channel 34 formed on its face. The channel 34 is substantially equal in width to the width of the web 14 of covering material. Rotatably mounted in the bar 29 is a shaft 35, the inner end of which is threaded and engages in a threaded hole in the arcuate member 33. The outer end of the shaft 35 has secured thereto a bevel gear 36 and a hand wheel 37. Meshing with and driving the bevel gear 36 is a bevel gear 38 secured to one end of a shaft 39, mounted in suitable bearings and terminating adjacent the cigarette book feeding belt 21. The end of the shaft 39 is provided with a hand wheel 40 and by means of which the shaft 39 may be rotated by the operator located adjacent to the belt 21. Such rotation of the shaft 39 results in a sliding movement of the arcuate member 33 on the rods 31 and 32 and provides a lateral movement of the web 14 with respect to its line of travel.

Adjustably secured to the shafts 25 and 26, and extending therebetween, is a bar 41. Secured to the top of such bar, extending upwardly therefrom and parallel to each other, are standards 42 and 43. The standards 42, 43, support, intermediate their ends, a horizontal plate 44; resting on the top of such plate is a guide member 45 for a plurality of superimposed strips 13 of cigarette paper. The top ends of the standards 42 and 43 are threaded and adjustably mounted thereon, by means of the nuts 46, is a horizontal plate 47.

Adjustably secured to the top of the horizontal plate 47 by bolt 48 is a U-shaped member, having its element 49 provided with an elongated slot 50 and which permits longitudinal adjustment of the U-shaped member with respect to the guide 45. The arms 51 of the U-shaped member extend downwardly into the guide member 45, and at their lower ends are provided with forked members 52, the width of opening of the backs being substantially equal to the width of the strips of cigarette paper 13.

Secured to the bearing members 23 is a horizontal track 53 and on which runs the assembly 15. This track 53 terminates, at its right hand end, on top of the plate 44. Secured adjacent to the right hand end of the track 53 and partially underlying the delivery end of the guide member 45, is a combined guide and folding device 54 for the web of cover 14. Secured to one side of the track 53, adjacent to the delivery end of the combined guide and folding device 54, is a horizontally mounted grooved wheel 55, which acts to fold the adjacent side 56 of the cover web 14 under the opposite side 57 of the same member. The stated construction is clearly shown in Figs. 4 and 5, and referring to such figures, there will be seen, between the folding device 54 and the feeding device 12, additional folding devices 58 and 59 which finally and definitely complete the folding of the cover web 14 over the plurality of strips 13 of cigarette paper.

It is to be noted that the cover web 14 is fed by the feeding device 12, at the same rate of speed as the plurality of superimposed strips 13 of cigarette paper. Also, because of the paper guide 45 and the web folding and guiding device 54 and the relation of these devices to one another, the web 14 is folded about the plurality of strips 13 during the major portion of such folding operation without coming into actual engagement with such strips. It is only after such preliminary folding has been positively provided for that the cover web is definitely pressed into its final form. There is, therefore, no tendency and no possibility of the strips of cigarette paper 13 bulging or becoming distorted, as verified by actual practice of the invention.

Means are also associated with the web of cover paper 14 for adjusting the tension thereof as it is fed through the guiding and folding device 54. Such means comprises a spring tensioning device operated by a control located adjacent to the operator of the machine; as shown, and as preferred, such control comprises a visual indicator for apprising the operator of the degree of tension. Such device is clearly shown in Figs. 1 and 2, and referring to these figures, 60 designates one of a pair of arms secured to and depending from the table 11, and provided with aligned open bearings 61 in which is rotatably mounted a shaft 62 and on which is mounted a brake drum 63.

The roll of enclosing material 14 is mounted on the shaft 62 and passes over the arcuate member 33, as has been described above. Secured to one of the arms 60 by bolt 64 is one end of a brake band 65, lined with brake blocks 66, and to the other end of the band 65 is secured one end of a coil spring 67. To the other end of the coil spring 67 is attached one end of a cable 68, such cable passing under an idler pulley 69 and then over an idler pulley 70; its free end is attached to one end of a shaft 71. The shaft 71 is slidably mounted in a member 72 secured

to the table 11, and on the shaft 71 is formed the rack 73. This rack meshes with a worm wheel, or spur gear, 74, to the spindle of which is secured a pointer 75 associated with a stationary dial plate 76.

Rotatably mounted in the member 72 is a shaft 77 carrying the worm 78 and provided with a crank 79 by which it may be manually adjusted. By rotating the gear 74 the tension of the coil spring 67, and therewith the tension of the web of covering material 14, is regulated.

The source of supply of the strips of paper 13 has not been indicated, nor has means been shown for adjusting the tension on such strips.

When the bookmaking machine is in operation, the operator ordinarily stands at the delivery end, usually near the feed belt 21, so that the control devices 18, 40, 79 are within easy reach. As the individual books 19 are fed over the incline 20, they are received and arranged flatwise vertically face to face on their ends, in the collecting device 22. The collecting device 22 is provided with a straight edge 22a at its side facing the operator and such straight edge 22a serves as a gauge to enable the operator to accurately determine the line of severage of the individual books with reference to the design on the cover. From the information thus obtained the operator may adjust the cutting mechanism to thereby adjust the line of severage with respect to the design on the cover. A design such as is illustrated in Fig. 19, advantageously embodies a configuration line 19a, which may be employed as a reference indication with the gauge edge 22a.

The plurality of strips of superimposed cigarette paper 13 and the web of enclosing paper 14 are fed from their respective sources of supply through the machine by the feeding device 12. Such feeding action is preferably continuous, though it may be intermittent, however providing for an average rate of speed of the paper 13 substantially equal to that of the web 14. The tension on the web 14 is controlled at will by the operator of the machine, in the manner above described. Also, the operator, by proper manipulation of the hand wheel 40 adjusts the web 14 laterally with respect to the stream of paper 13 so as to properly position the web 14 with respect thereto. The guiding means 45 guides the plurality of superimposed strips of cigarette paper 13 as a unit and without distortion and such strips leave the exit end of the guiding means 45 and enter the combined guiding and folding means 54 for the web 14 in central relation thereto, and in central relation with respect to the moving web 14 in engagement with such combined guiding and folding means.

The web 14 of enclosing paper enters the combined guiding and folding means beneath the strips of cigarette paper 13, and is then subjected to a folding operation. The shape and size of the guiding and folding means 54 is such that the web 14 assumes a shape and size commensurate with the cross sectional area of the plurality of superimposed strips of cigarette paper 13, and such shape and size is imparted to the web 14 before such web comes into actual physical contact with such strips of paper 13.

Thus the objections to prior machines of this character, namely in the folding of the web while in actual contact with the strips of paper, causing a distortion of the individual strips, with resultant production of defective books is wholly obviated.

It will be apparent therefore that I have pro-

duced an improved machine for economically manufacturing cigarette paper books and in which a plurality of superimposed leaves of cigarette paper are enclosed or enveloped in an enclosing web of covering material symmetrically arranged about such leaves, and without bulging or distortion of either the enclosing web or the individual leaves of the book.

In general, the above and other apparent desirable results are attained by the important features of my invention, namely, means for simultaneously feeding the strips of paper constituting the leaves of the book, and the enclosing web therefor, and initially fold such web into a size and shape to satisfactorily enclose the said strips of paper, and in advance of the engagement of such web with the strips of paper; also, further in a novel construction permitting adjustment of the tension in the web of enclosing material and the lateral movement thereof with respect to the strips of paper during the feeding of both the web and the strips of paper.

Whereas I have described my invention by reference to specific forms thereof, it will be understood that many changes and modifications may be made without departing from the spirit of the invention.

I claim:

1. In a cigarette paper bookmaking machine, the combination of paper guiding means, and a combined enclosing wrapper guiding and folding means, arranged in overlapping relation to one another, each having an entrance end and an exit end, and with the exit end of the paper guiding means adjacent to and extending into the entrance end of the wrapper guiding and folding means.

2. In a cigarette paper bookmaking machine, the combination with means for feeding in a substantially horizontal plane a plurality of strips of cigarette paper in superimposed relation to one another, to constitute the leaves of a book and for simultaneously feeding a web of paper enclosing material in a substantially parallel plane relative to the first-named plane, of guiding means for said strips of cigarette paper, and combined guiding and folding means for the web of paper enclosing material for guiding and folding said web of paper and simultaneously folding the same about said strips of paper, and for maintaining the web out of physical contact with said strips during the preliminary folding operation.

3. In a cigarette paper bookmaking machine, the combination with means for feeding in a substantially horizontal plane a plurality of strips of cigarette paper in superimposed relation, and for simultaneously and at substantially the same speed feeding a web of paper enclosing material in a substantially horizontal plane below the first-named horizontal plane, of guiding means for said strips of cigarette paper, combined guiding and folding means for the web of enclosing material arranged in enclosing relation to and adjacent to one end of the strip guiding means for folding the web in enclosing relation to said strips of cigarette paper, and for maintaining the web out of physical contact with the strips during the preliminary folding operation, and means for moving the web laterally relative to the strips of cigarette paper.

4. In a cigarette paper bookmaking machine, the combination with means for feeding in a substantially horizontal plane a plurality of strips

of cigarette paper in superimposed relation, and for simultaneously and at substantially the same speed feeding a web of paper enclosing material in a substantially horizontal plane below the

5 first-named horizontal plane, of guiding means for said strips of cigarette paper, combined guiding and folding means for the web of enclosing material arranged in enclosing relation to and adjacent to one end of the strip guiding means

10 for folding the web in enclosing relation to said strips of cigarette paper, and for maintaining the web out of physical contact with the strips during the preliminary folding operation, and means for moving the web laterally relative to

15 the strips of cigarette paper during the feeding of the strips of paper and enclosing web.

5. In a cigarette paper bookmaking machine, the combination with means for feeding in a substantially horizontal plane a plurality of strips

20 of cigarette paper in superimposed relation, and for simultaneously and at substantially the same speed feeding a web of paper enclosing material in a substantially horizontal plane below the first-named horizontal plane, of guiding means

25 for said strips of cigarette paper, combined guiding and folding means for the web of enclosing material arranged in enclosing relation to and adjacent to one end of the strip guiding means for folding the web in enclosing relation to said

30 strips of cigarette paper, and for maintaining the web out of physical contact with the strips during the preliminary folding operation, and means for moving the web laterally relative to the strips

35 of cigarette paper during the feeding of the strips of paper and enclosing web and in advance of the folding operation on the web.

6. In a cigarette paper bookmaking machine, the combination with means for feeding in a substantially horizontal plane a plurality of strips

40 of cigarette paper in superimposed relation, and for simultaneously and at substantially the same speed feeding a web of paper enclosing material in a substantially horizontal plane below the first-named horizontal plane, of guiding means

45 for said strips of cigarette paper, combined guiding and folding means for the web of enclosing material arranged in enclosing relation to and adjacent to one end of the strip guiding means for folding the web in enclosing relation to said

50 strips of cigarette paper, and for maintaining the web out of physical contact with the strips during the preliminary folding operation, means for moving the web laterally relative to the strips

55 of cigarette paper and means for varying the tension on the web during the feeding thereof.

7. In a cigarette paper bookmaking machine, the combination with means for feeding in a substantially horizontal plane a plurality of strips

60 of cigarette paper in superimposed relation, and for simultaneously and at substantially the same speed feeding a web of paper enclosing material in a substantially horizontal plane below the first-named horizontal plane, of guiding means

65 for said strips of cigarette paper, combined guiding and folding means for the web of enclosing material arranged in enclosing relation to and adjacent to one end of the strip guiding means for folding the web in enclosing relation to said

70 strips of cigarette paper, and for maintaining the web out of physical contact with the strips during the preliminary folding operation, means for moving the web laterally relative to the strips of cigarette paper and means for varying the

75 tension on the web during the feeding thereof,

said lateral moving means and tension means being independently operated.

8. In a cigarette paper bookmaking machine, the combination with means for feeding in a substantially horizontal plane a plurality of strips

5 of cigarette paper in superimposed relation, and for simultaneously and at substantially the same speed feeding a web of paper enclosing material in a substantially horizontal plane below the first-named horizontal plane, of guiding means

10 for said strips of cigarette paper, combined guiding and folding means for the web of enclosing material arranged in enclosing relation to and adjacent to one end of the strip guiding means for folding the web in enclosing relation to said

15 strips of cigarette paper, and for maintaining the web out of physical contact with the strips during the preliminary folding operation, means for moving the web laterally relative to the strips of cigarette paper and means for varying the

20 tension on the web during the feeding thereof, said lateral moving means and tension means being independently operated and remotely controlled.

9. In a cigarette paper bookmaking machine, an enclosing wrapping device comprising a combined guiding and folding means for guiding a

25 web of wrapping material into association with the leaves of a book and folding the same about the leaves, and means for displacing the web

30 relative to the leaves.

10. In a cigarette paper bookmaking machine, the combination with means for simultaneously feeding a plurality of superimposed leaves of

35 paper and an enclosing wrapping therefor, of guiding and folding means for the enclosing wrapping for folding the same about the space occupied by the leaves, and means for displacing the enclosing wrapping relative to the leaves.

11. In a cigarette paper bookmaking machine,

40 the combination of guiding means for a plurality of superimposed leaves of cigarette paper constituting the leaves of a book, of an enclosing envelope guiding and folding means located at the exit end of the cigarette paper guiding means,

45 and means for displacing the enclosing envelope laterally relative to the leaves.

12. In a cigarette paper bookmaking machine, the combination of guiding means for a plurality

50 of superimposed leaves of cigarette paper constituting the leaves of a book, of an enclosing envelope guiding and folding means located in alignment with and at the exit end of the cigarette paper guiding means, and means for displacing

55 the enclosing envelope laterally relative to the leaves.

13. In a cigarette paper bookmaking machine, the combination of a guiding means for a plurality of superimposed leaves of cigarette paper

60 constituting the leaves of a book, of an enclosing envelope guiding and folding means located in alignment with and at the exit end of the cigarette paper guiding means, and means for displacing the web laterally relative to the leaves

65 and in advance of the enclosing envelope guiding and folding means.

14. In a machine of the character described, the combination of means for guiding a plurality

70 of superposed leaves of cigarette paper, means for folding an envelope for enclosing said plurality of leaves of cigarette paper, and means for adjusting the path of travel of the enclosing envelope relative to the plurality of leaves of cigarette paper.

15. In a machine of the character described,

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the combination of means for guiding a plurality of superposed leaves of cigarette paper, means for folding an envelope for enclosing said plurality of leaves of cigarette paper, and means for adjusting the path of travel of the enclosing envelope while the enclosing envelope is in motion.

16. In a machine of the character described, the combination of means for guiding a plurality of superposed leaves of cigarette paper, means for folding an envelope for enclosing said plurality of leaves of cigarette paper, and means for adjusting the path of travel of the enclosing envelope while the plurality of superposed leaves of cigarette paper are in motion.

17. In a machine of the character described, the combination of means for guiding a plurality

of superposed leaves of cigarette paper, means for folding an envelope for enclosing said plurality of said superimposed leaves, and means for adjusting the path of travel of said enclosing envelope and said plurality of superimposed leaves of cigarette paper relative to one another.

18. In a machine of the character described, the combination of means for guiding a plurality of superposed leaves of cigarette paper, means for folding an envelope for enclosing said plurality of said superimposed leaves, and means for adjusting the path of travel of said enclosing envelope and said plurality of superimposed leaves of cigarette paper relative to one another while the same are in motion.

PAUL R. HEYGEL.