Jan. 13, 1942. D. W. MOLINS 2,269,598

TOBACCO MACHINE FOR FORMING CONTINUOUS TOBACCO RODS ON FILLERS

Filed March 6, 1939 3 Sheets-Sheet 1

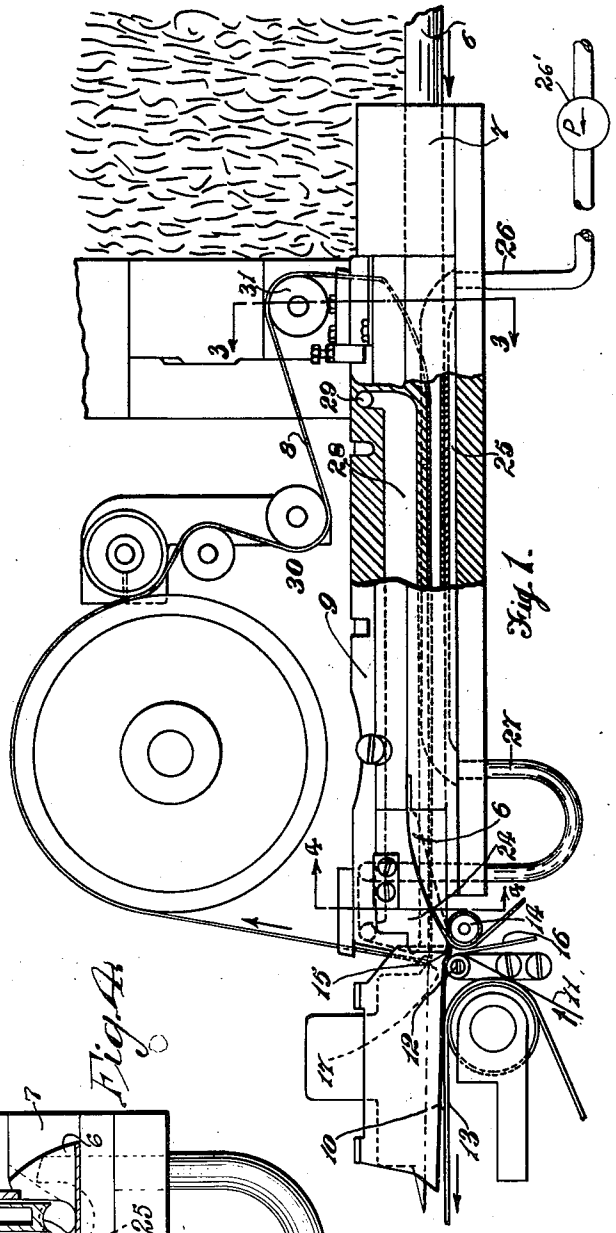

Fig. 1.

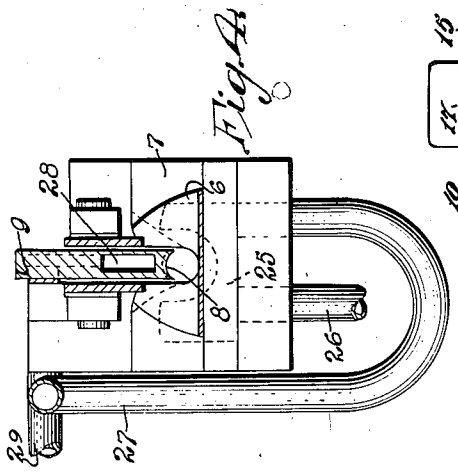

Fig. 2.

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Filed March 6, 1939 3 Sheets-Sheet 2

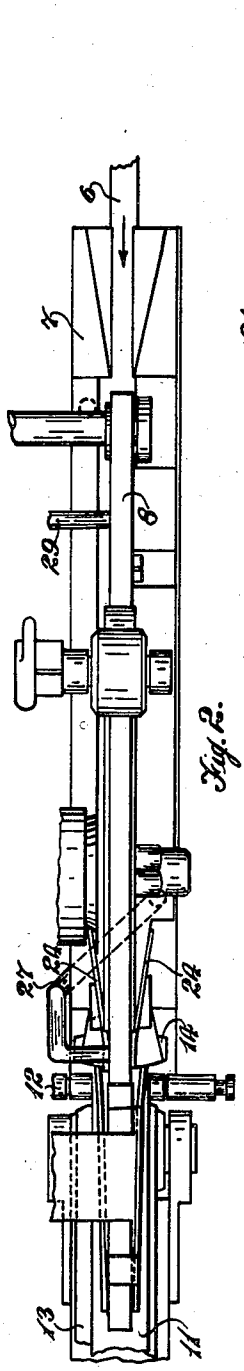

Fig. 2.

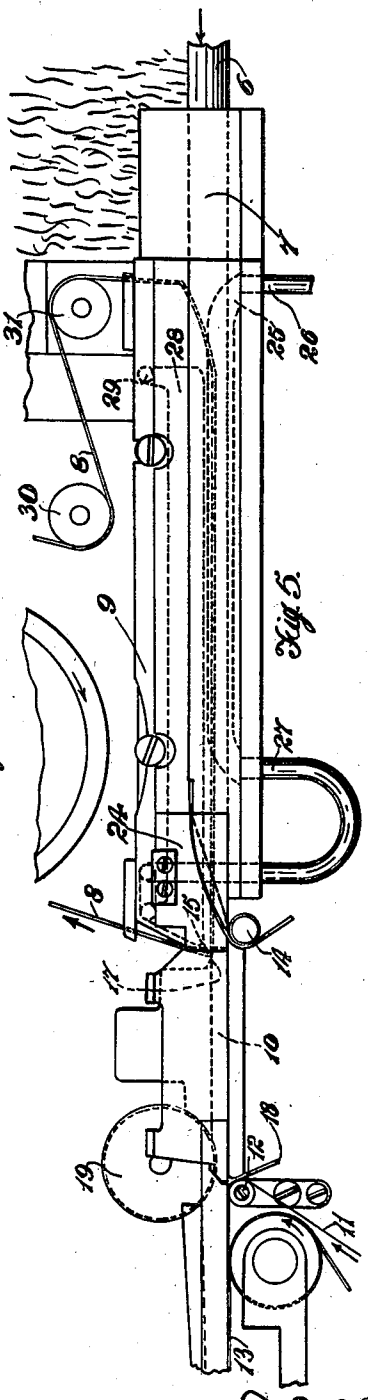

Fig. 5.

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TOBACCO MACHINE FOR FORMING CONTINUOUS TOBACCO RODS ON FILLERS

Filed March 6, 1939 3 Sheets-Sheet 3

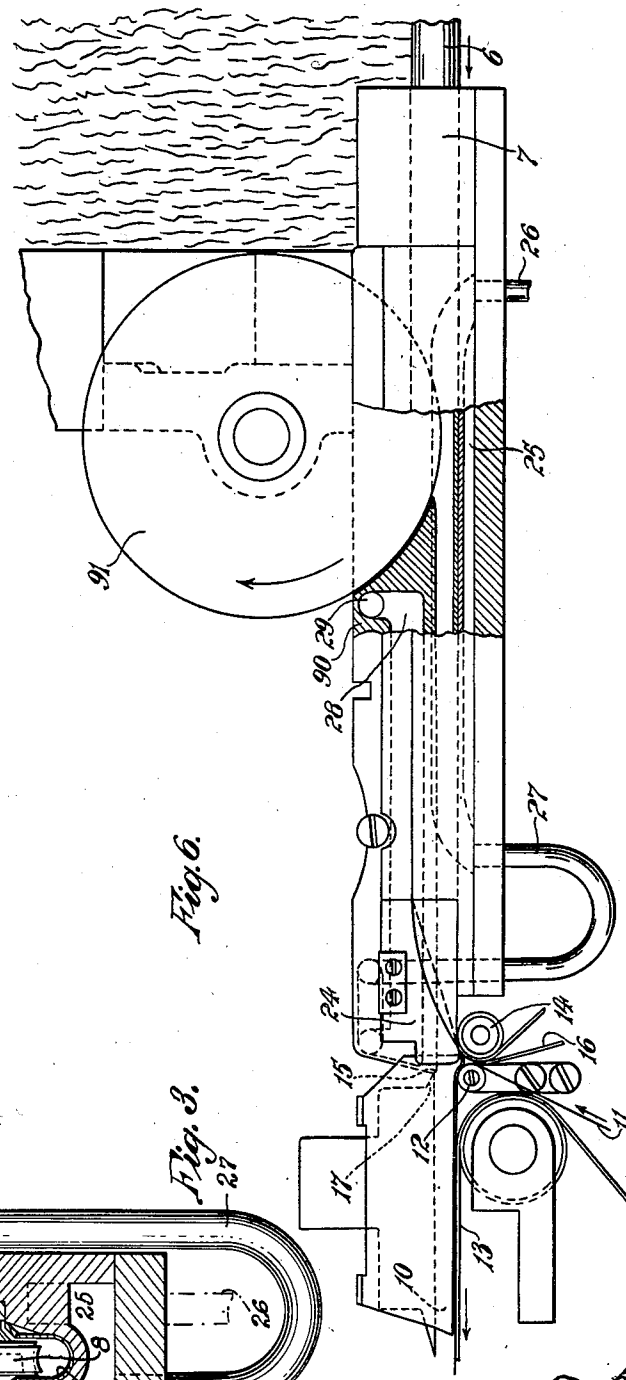

Fig. 6.

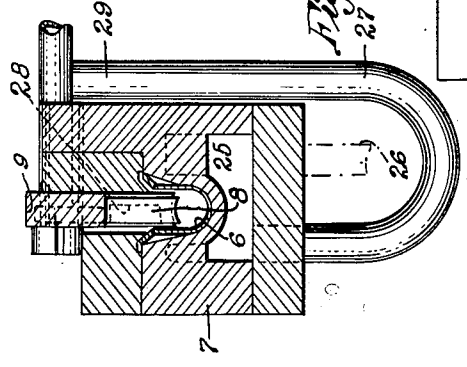

Fig. 3.

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UNITED STATES PATENT OFFICE

2,269,598

TOBACCO MACHINE FOR FORMING CONTINUOUS TOBACCO RODS OR FILLERS

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Application March 6, 1939, Serial No. 260,174
In Great Britain March 29, 1938

15 Claims. (Cl. 131—84)

This invention is for improvements in or relating to machines for forming a continuous tobacco rod or filler, such for example as in continuous rod cigarette making machines or in tobacco packaging machines in which a continuous tobacco filler is formed, but in which such filler is of a larger cross-section than is a filler of a continuous rod cigarette making machine, and this larger filler is severed into sections or lengths for subsequently inserting into packages.

Where throughout the specification the term "mass" is used it shall mean weight per unit length considered lengthwise of the filler or the tobacco fed, and the term "desired mass" shall be taken to mean the weight, or substantially the weight, per unit length which it is desired that the continuous tobacco filler shall have.

The expression "continuous tobacco filler" when used herein means a rod-like stream of tobacco of a cross-section comparable with that included within a wrapper (for example, the paper wrapper of a cigarette) which is finally to contain the filler, which rod-like stream is continuously moved lengthwise of itself, and the expression is not to be taken as limited to a filler of any given length or even to the final filler which is severed into sections, since the filler after being formed in accordance with the present invention may be subjected to further treatment, which further treatment forms no part of the present invention.

In prior United States Patent No. 2,149,924, issued March 7, 1939, there is disclosed a method and apparatus for forming a continuous tobacco filler in which the tobacco is compacted in a passage. According to the earlier specification the tobacco before entering the passage is engaged by two rollers whose tobacco engaging surfaces are opposed to an endless conveyor which conveys the tobacco forwardly into the passage.

In this earlier construction the compression (i. e. compression applied laterally to the tobacco) at the inlet end of the passage acts principally as a means for reducing the height of the advancing tobacco stream so as to guide it under the top wall of the confining passage. The parts are arranged so that compacting of the tobacco (i. e. compacting due to change in momentum) can occur either on the endless band which feeds the tobacco into the passage and which also forms a part of the confining passage or the compacting can occur on the paper web. Since the position at which compacting occurs in the passage depends on the quantity of tobacco entering the passage at a given instant the compacting may sometimes take place at a portion of the passage where the paper web forms part of the bottom wall and sometimes at a portion of the passage where the endless band forms part of the bottom wall. Thus it will be seen that compacting in the passage may be effected under different conditions according as to whether compacting takes place where the tobacco is on the endless band or when it is on the paper web.

In the present invention the conveyor which feeds the tobacco to the confining passage at a greater linear speed than that at which it is taken away from the passage is wholly external to the confining passage in which the tobacco is to be compacted due to this reduction of speed. The confining passage is of a length such that it extends on each side of the point of compacting of the tobacco and the compressed tobacco stream is controlled by means of guides, including movable side guides which latter are movable in the same direction as and at substantially the same linear speed as the conveyor which feeds the tobacco into the passage. All the guides are arranged to extend lengthwise of the conveyor and to co-operate therewith wholly to confine and to compress the stream of tobacco to a cross section smaller than that of the passage and to retain the stream in said compressed state up to or substantially up to the point at which it enters the confining passage. Thus the compressed tobacco has sufficient rigidity to ensure that compacting is effected within the confining passage and since according to the present invention the conveyor feeding tobacco into the confining passage is wholly external thereto, moving surfaces are arranged to engage a sufficiently large portion of the periphery of the compressed tobacco to impart sufficient driving power to the tobacco to permit axial compacting to be effected in the confining passage in such a way as to cause the tobacco to build up in the passage, and by providing side guides moving in the same direction as and substantially at the same speed as the conveyor feeding tobacco into the confining passage such a result can be obtained. These side guides may be part of the conveyor itself, as for instance when the conveyor is of U formation. In such a case the upstanding limbs of the U may constitute the moving side guides. The top guide opposed to the surface of the first conveyor may comprise a member having a stationary tobacco engaging surface. The first conveyor may comprise an endless band and that part of the band which supports the tobacco stream may be folded substantially to U form whereby the upstanding

limbs of the U provide movable guides for the tobacco stream. In this last-mentioned case a top endless guide band may be mounted for movement above the first conveyor and between the upstanding limbs of the U formed thereby, that part of the guide band which is opposite to the base of the U formed by the first conveyor being movable in the direction of movement of the first conveyor and disposed at a distance from the base of the U such that the tobacco on the first conveyor is compressed between the first conveyor and the guide band. Above the top endless guide band at the region where the latter engages the tobacco there may be provided a rigid member which determines the maximum distance of the tobacco engaging portion of the top endless guide band from the first conveyor.

Where the moving guides are engaged by stationary members a fluid is preferably circulated through the stationary members for the purpose of cooling such members and the moving guides engaged thereby.

Further, according to the present invention there is provided apparatus for forming a continuous tobacco filler comprising a confining passage in which a stream of tobacco is compacted to the cross-section of the passage, a first conveyor to feed a stream of tobacco into the passage, movable guides, which guides include a guide opposed to the first conveyor and comprising an endless band, extending lengthwise of the first conveyor and co-operating with the first conveyor to compress the stream of tobacco, a rigid member located behind said endless band at the region where the latter engages the tobacco to determine the maximum distance of the tobacco engaging portion of the endless band from the first conveyor, and a second conveyor movable in the same general direction as and at a linear speed less than that of the first conveyor to move the tobacco away from the outlet of the confining passage, the length of said passage being such as to extend on each side of the point of compacting of the tobacco.

Three examples of apparatus made in accordance with the invention will now be described with reference to the accompanying drawings, in which:

Figure 1 is a side elevation, partly in section, of apparatus for forming a continuous tobacco filler.

Figure 2 is a plan of Figure 1.

Figure 3 is a section on the line 3—3, Figure 1, and is drawn to an enlarged scale.

Figure 4 is a section on the line 4—4, Figure 1, and is drawn to an enlarged scale.

Figure 5 is a side elevation of a modified form of apparatus for forming a continuous tobacco filler.

Figure 6 is a side elevation, partly in section, of a further modified form of apparatus for forming a continuous tobacco filler.

Like reference numerals refer to like parts throughout the specification and drawings.

Tobacco is fed by any suitable tobacco feeding mechanism and is showered so as to be directed downwardly on to the surface of a first conveyor 6 comprising a continuously movable endless band. The shower of tobacco extends along the length of the first conveyor. The tobacco receiving portion of the first conveyor is supported by a stationary rigid member comprising a trough 7 which is so arranged that the endless band 6 is folded by the walls of the trough to substantially U form. The upstanding limbs of the endless band 6 form guides for the stream of tobacco which is formed on the first conveyor by tobacco particles received from the shower of tobacco.

When the tobacco has been received by the first conveyor 6 it is moved thereby out of the hopper, and above the first conveyor there is provided a top endless guide band 8 which extends lengthwise of the first conveyor and is arranged so that that part of the guide band 8 which is opposed to the base of the U formed by the first conveyor 6 is movable in the same direction as the first conveyor 6 and at the same speed as the speed of the first conveyor. The endless guide band 8 is disposed above the first conveyor at a distance such that a given portion of the tobacco stream on the first conveyor 6 is subjected to a compression which is applied laterally of the direction of movement of the stream by the co-operation of the U shaped first conveyor and the moving endless guide band 8. Due to the fact that the band 8 extends lengthwise of the first conveyor, the tobacco is subjected to a continuous compression for the purpose of obtaining the necessary rigidity of the tobacco to enable it to enter a confining passage 10 (described later) in its compressed state.

A stationary rigid member comprising a fixed plate or shoe 9 is located behind the endless guide band 8 at the region where the latter engages the tobacco, and the member 9 determines the maximum distance of the tobacco engaging portions of the endless band 8 from the first conveyor. As can be seen from Figures 3 and 4, the guide band 8 is arranged between the upstanding limbs of the U formed by the first conveyor 6 so that the tobacco stream is substantially wholly confined by the first conveyor and the top endless guide band.

The compressed stream of tobacco is fed by the first conveyor 6 and its co-operating moving guides into a confining passage 10 in which the tobacco is compacted in the direction of movement thereof to a cross-section determined by the walls of the confining passage. A second conveyor 11 is provided to move the tobacco from the outlet of the confining passage, and the second conveyor moves at a linear speed which is less than that at which the first conveyor 6 is moving. In the construction shown, the second conveyor 11 comprises an endless web of cigarette paper which passes over a roller 12 and which is supported by an endless band 13 which later cooperates with folding mechanism, not shown, arranged to fold the paper web about the continuous tobacco filler supported thereby. Preferably the first conveyor 6 is moved at a sufficiently high speed in relation to the second conveyor 11 that the mass of tobacco on the first conveyor 6 is at all points or substantially all points below the desired mass. When using some modern existing tobacco feeding mechanisms it is found that a difference of 20% between the speeds of the first and second conveyors respectively will give the above result. The tobacco feeding mechanism is of course arranged to feed a sufficient quantity of tobacco to form a continuous tobacco filler of the desired mass on the second conveyor.

Since the tobacco carried by the first conveyor 6 is transferred to a slower moving conveyor (i. e. the second conveyor 11), the momentum of the tobacco is reduced. The confining passage 10 through which the tobacco passes is so arranged that the momentum of the tobacco

is reduced in the passage and the length of the confining passage is, considered in the direction of movement of the tobacco therethrough, so chosen that the passage extends on either side of the point of compacting of the tobacco, since the point of compacting varies from time to time due to the fact that the compressed stream of tobacco fed into the confining passage is at some points of greater mass than at other points.

It will be understood that since the compacting is to be effected in the confining passage 10 after the tobacco has left the first conveyor, it is necessary that the tobacco be given sufficient rigidity to enable compacting to occur in the passage, that is to say, that the tobacco be subjected to a compression which will enable the tobacco to retain its compressed state until it is actually inside the passage before any material lateral expansion occurs. Thus in the present invention the tobacco is compressed and is controlled in its compressed state up to or substantially up to the confining passage so that it may be said to be pushed into the passage at the faster speed to enable the compacting to be effected inside the passage.

To enable the first conveyor 6 and its co-operating moving guides laterally to compress the stream of tobacco on the first conveyor and control the compressed stream up to or substantially up to the point at which the compressed stream enters the confining passage, the arrangement of the mechanism is such that the roller 14 around which the conveyor 6 passes and the end 15 of the shoe 9 around which the guide band 8 passes are positioned as closely as possible to the inlet of the confining passage, see Figure 1, and, as can be seen from Figure 1, the band 8 extends for a short distance beyond the point at which the first conveyor 6 passes around the roller 14.

Between the end of the confining passage and the roller 14 there is provided a bridge piece 16 over which the tobacco stream passes from the conveyor 6 into the inlet of the confining passage 10. A pair of short stationary guides 24 are provided to guide the tobacco stream over the bridge 16 as the conveyor 6 flattens out over the roller 14. The length of the bridge piece 16 is reduced to the minimum possible. The top wall of the confining passage 10 is arranged as closely as possible to the endless guide band 8, and as shown in Figure 1, a part 17 of the top wall of the confining passage is arranged to scrape the endless guide 8 so as to remove particles of tobacco which may adhere thereto.

In the construction shown in Figure 1, the second conveyor 11 comprises the whole of the bottom wall of the confining passage.

Referring to Figure 5, it will be seen that the second conveyor 11 is wholly external of the confining passage 10 and is arranged to be as close as possible to the outlet of the confining passage. In this modified construction the bridge piece 16 is not employed, but the bottom wall of the confining passage is, as can be seen from Figure 5, in close proximity to the roller 14 around which the first conveyor 6 passes. A bridge piece 18 is, however, provided between the outlet end of the confining passage 10 and the roller 12 around which the second conveyor 11 passes. In the modified construction shown in Figure 5 it may be desirable to provide a positively driven roller 19 which is located at the outlet of the passage and which is movable with the same surface speed as that of the second conveyor so as to assist the continued forward movement of the tobacco issuing from the confining passage 10. The periphery of the roller 19 is preferably shaped, for example the periphery is concave.

It will be appreciated that when all the walls of the confining passage are stationary walls, the confining passage is made as short as possible to reduce the tendency to choke, but long enough to ensure that the point of axial compacting occurs within the passage.

In each of the constructions described above, the cross-sectional area of the passage is greater than the cross-sectional area to which the tobacco is compressed by the co-operating bands 6 and 8.

In a machine for making 1200 cigarettes per minute, the cigarettes being of a length of 70 millimetres, a diameter of 8 millimetres and of a weight of 25 cigarettes to the ounce (avoirdupois), the height of the hand 8 above the first conveyor 6 is preferably made 6 millimetres and the distance between the upstanding limbs of the U formed by the first conveyor 6 is 8 millimetres. The length of the shoe 9 beneath which the band 8 passes while compressing the tobacco stream and which is parallel with the bottom of the conveyor 6 is in such a case 250 millimetres. The confining passage at the inlet end is approximately 2 millimetres larger in height and 3 millimetres larger in width than the compressed incoming tobacco stream. Further, in order to reduce as far as possible the tendency for the tobacco to choke in the passage, the passage in each construction is caused to diverge slightly from the inlet end towards the outlet end, as seen in Figure 1, the amount of divergence having been exaggerated in the drawing for the sake of clarity. A divergence which is found suitable under average working conditions is an increase of 1 millimetre in the width of the passage and an increase of 2 millimetres in the height of the passage. Since these increases in dimensions in the passage are gradual over a length of passage of anything between 75 millimetres to 180 millimetres in the case of the construction shown in Figure 1 and of a length of about 75 millimetres in the construction shown in Figure 5, it will be appreciated that notwithstanding the fact that the passage diverges, the extent of the divergence of the walls is sufficiently small that the cross-sectional area of the tobacco filler is not materially affected by the different cross-sectional areas of the passage at different points along its length.

The compacting effected in the confining passage is, in each construction, such as to cause the tobacco to build up to the walls of the passage and to issue from the passage at the slower speed.

In each of the examples described above, the first conveyor and the co-operating moving guides are wholly external of the confining passage. Further, the upper surface of the bridge piece 16 and the tobacco engaging surface of the bottom wall of the confining passage are arranged at substantially the same level as the tobacco receiving surface of the first conveyor. It will, therefore be seen that since the endless band 8 extends beyond the point at which the first conveyor passes around the roller 14 the lateral compression of the tobacco stream is maintained while the stream is moved into the confining passage in which it is to be compacted.

In the constructions described above it is found that there is a considerable amount of heating

of the endless bands 6 and 8 and of the metal parts 7 and 9 with which the bands engage. To reduce the heating referred to, water is circulated through apertures formed in the trough 7 and the shoe 9. As shown in the drawings, cool water enters an aperture 25 in the trough 7 through a pipe 26 and passes out of the aperture 25 through a pipe 27 which is also connected with the shoe 9 so that the water passes into an aperture 28 in the shoe 9. The water passes out of the aperture 28 through a further pipe 29. A pump 26' of any suitable form is provided to circulate the water.

It will be appreciated that if desired the water may be circulated in the reverse direction from that described above, that is, the water may be caused first to pass through the shoe 9. Further, if desired, air may be employed instead of water, but due to the fact that only a relatively small area can be exposed to the action of the cooling fluid it is preferred to employ water.

In Figure 6 there is shown a further alternative construction. In this case instead of having a moving top guide such as the guide 8 in the constructions shown in Figures 1 and 5, the top guide comprises a shoe 90 and to ensure that the tobacco passes under the shoe 90 a wheel 91 is provided at the front end of the shoe 90.

In all cases according to the present invention, the tobacco stream before being fed into the confining passage is compressed to a cross-sectional size which is smaller than the cross-sectional size of the passage by the cooperation of the first conveyor and guides which extend lengthwise of the first conveyor, and the tobacco so compressed is controlled up to or substantially up to the point at which it enters the confining passage. By reason of the fact that these cooperating guides extend lengthwise of the first conveyor each portion of the tobacco stream will be subjected to a compressing action over a relatively long period of time (that is to say, although the time is only a fraction of a second, it is, nevertheless, a relatively long time in comparison with the time in which a roller could apply a similar compressive force) and that fact, together with the fact that the first conveyor according to the present invention is wholly external to the confining passage, makes it possible to ensure that the compacting is effected under similar conditions. This controlled compression according to the present invention gives the tobacco sufficient rigidity to enable it to effect the compacting against the slower moving tobacco moving outwardly from the passage, and makes it possible to ensure that the compacting of the tobacco in the confining passage will, for example, in the construction shown in Figure 1, at all times take place on the paper web. That is to say, at whatever portion of the passage the tobacco is compacted by a change in speed, the conditions will remain the same, that is, there will be three stationary walls and the bottom wall will in all cases be a similar wall moving at a constant speed. In the construction shown in Figure 5 the compacting will be effected in a passage having stationary walls, and so in that case the compacting is effected in all cases under identical conditions.

What I claim as my invention and desire to secure by Letters Patent is:

1. Apparatus for forming a continuous tobacco filler comprising a confining passage in which a stream of tobacco is compacted to the cross-section of the passage, a first conveyor wholly external to the passage to support and feed a stream of tobacco into the passage, guides, including side guides movable in the same direction as and at substantially the same speed as the conveyor, extending lengthwise of the first conveyor and co-operating with the first conveyor substantially wholly to confine and to compress the stream of tobacco to a cross-section smaller than that of the passage and to retain the stream in said compressed state substantially up to the point at which it enters the confining passage, and a second conveyor movable in the same general direction as and at a linear speed less than that of the first conveyor to support and move the tobacco away from the outlet of the confining passage, the length of said passage being such as to extend on each side of the point of compacting of the tobacco.

2. Apparatus for forming a continuous tobacco filler comprising a confining passage in which a stream of tobacco is compacted to the cross-section of the passage, a first conveyor wholly external to the passage to support and feed a stream of tobacco into the passage, movable guides, which guides include a guide opposed to the first conveyor and comprising an endless band, extending lengthwise of the first conveyor and co-operating with the first conveyor to compress the stream of tobacco to a cross-section smaller than that of the passage and to retain the stream in said compressed state substantially up to the point at which it enters the confining passage, and a rigid member located behind said endless band at the region where the latter engages the tobacco to determine the maximum distance of the tobacco engaging portion of the endless band from the first conveyor, and a second conveyor movable in the same general direction as and at a linear speed less than that of the first conveyor to support and move the tobacco away from the outlet of the confining passage, the length of said passage being such as to extend on each side of the point of compacting of the tobacco.

3. Apparatus as claimed in claim 1 wherein one of the guides is disposed opposite the surface of the first conveyor and comprises a member having a stationary tobacco engaging surface.

4. Apparatus for forming a continuous tobacco filler, comprising a confining passage having a generally uniform transverse sectional area and in which a stream of tobacco is compacted to the cross-section of the passage, means wholly external to the passage and arranged substantially wholly to confine and to compress a stream of tobacco to a cross-section smaller than that of the passage and to support and feed the stream so compressed into the passage, and means to support and move the tobacco away from the outlet of the confining passage at a linear speed less than that at which it is fed into the passage, the length of said passage being such as to extend on each side of the point of compacting of the tobacco.

5. Apparatus for forming a continuous tobacco filler, comprising a confining passage having a generally uniform transverse sectional area and in which a stream of tobacco is compacted to the cross-section of the passage, a first conveyor wholly external to the passage to support and feed a stream of tobacco into the passage, side guides and a movable top endless guide band comprising guide surfaces which extend lengthwise of the first conveyor and cooperating therewith substantially wholly to confine and to com-

press the stream of tobacco to a cross-section smaller than that of the passage and to retain the stream in said compressed state substantially up to the point a which it enters the confining passage, the top endless guide band being movable with the first conveyor to assist the feeding of the compressed stream of tobacco, and a second conveyor movable in the same general direction as and at a linear speed less than that of the first conveyor to support and move the tobacco away from the outlet of the confining passage, the length of said passage being such as to extend on each side of the point of compacting of the tobacco.

6. Apparatus for forming a continuous tobacco filler, comprising a confining passage having a generally uniform transverse sectional area and in which a stream of tobacco is compacted to the cross-section of the passage, means wholly external to the passage and arranged substantially wholly to confine and to compress a stream of tobacco to a cross-section smaller than that of the passage and to support and feed the stream so compressed into the passage, said means including a conveyor having a tobacco receiving surface of substantially U form, and means to support and move the tobacco away from the outlet of the confining passage at a linear speed less than that at which it is fed into the passage, the length of said passage being such as to extend on each side of the point of compacting of the tobacco.

7. Apparatus for forming a continuous tobacco filler, comprising a confining passage having a generally uniform transverse sectional area and in which a stream of tobacco is compacted to the cross-section of the passage, a first conveyor wholly external to the passage to support and feed a stream of tobacco into the passage, said first conveyor having a tobacco receiving surface of substantially U form, a movable top endless guide band which extends lengthwise of the first conveyor and cooperates therewith substantially wholly to confine and to compress the stream of tobacco to a cross-section smaller than that of the passage and to retain the stream in said compressed state substantially up to the point at which it enters the confining passage, the top endless guide band being movable with the first conveyor to assist the feeding of the compressed stream of tobacco, and a second conveyor movable in the same general direction as and at a linear speed less than that of the first conveyor to support and move the tobacco away from the outlet of the confining passage, the length of said passage being such as to extend on each side of the point of compacting of the tobacco.

8. Apparatus for forming a continuous tobacco filler, comprising a confining passage having a generally uniform transverse sectional area and in which a stream of tobacco is compacted to the cross-section of the passage, a first conveyor wholly external to the passage to support and feed a stream of tobacco into the passage, said first conveyor having a tobacco receiving surface of substantially U form, a movable top endless guide band located between the upstanding limbs of said U which band extends lengthwise of the first conveyor and cooperates therewith substantially wholly to confine and to compress the stream of tobacco to a cross-section smaller than that of the passage and to retain the stream in said compressed state substantially up to the point at which it enters the confining passage, the top endless guide band being movable with the first conveyor to assist the feeding of the compressed stream of tobacco, and a second conveyor movable in the same general direction as and at a linear speed less than that of the first conveyor to support and move the tobacco away from the outlet of the confining passage, the length of said passage being such as to extend on each side of the point of compacting of the tobacco.

9. Apparatus for forming a continuous tobacco filler, comprising a confining passage having a generally uniform transverse sectional area and in which a stream of tobacco is compacted to the cross-section of the passage, a first conveyor wholly external to the passage to support and feed a stream of tobacco into the passage, said first conveyor having a tobacco receiving surface of substantially U form, a movable top endless guide band located between the upstanding limbs of said U which band extends lengthwise of the first conveyor and cooperates therewith substantially wholly to confine and to compress the stream of tobacco to a cross-section smaller than that of the passage and to retain the stream in said compressed state substantially up to the point at which it enters the confining passage, the top endless guide band being movable with the first conveyor to assist the feeding of the compressed stream of tobacco, a rigid member located above the top endless guide band at the region where the latter engages the tobacco, to determine the maximum distance of the tobacco engaging portion of the top endless guide band from the first conveyor, and a second conveyor movable in the same general direction as and at a linear speed less than that of the first conveyor to support and move the tobacco away from the outlet of the confining passage, the length of said passage being such as to extend on each side of the point of compacting of the tobacco.

10. Apparatus for forming a continuous tobacco filler, comprising a confining passage in which a stream of tobacco is compacted to the cross-section of the passage, a first conveyor wholly external to the passage to support and feed a stream of tobacco into the passage, a stationary guide opposed to the surface of the first conveyor and which extends lengthwise of the first conveyor and cooperates therewith substantially wholly to confine and to compress the stream of tobacco to a cross-section smaller than that of the passage and to control the stream so compressed substantially up to the point at which it enters the confining passage, and a second conveyor movable in the same general direction as and at a linear speed less than that of the first conveyor to support and move the tobacco away from the outlet of the confining passage, the length of said passage being such as to extend on each side of the point of compacting of the tobacco.

11. Apparatus for forming a continuous tobacco filler, comprising a confining passage having a generally uniform transverse sectional area and in which a stream of tobacco is compacted to the cross-section of the passage, an endless conveyor band wholly external to the passage to support and feed a stream of tobacco into the passage, means to fold the tobacco receiving surface of the conveyor band to substantially U form, a movable top endless guide band which extends lengthwise of the conveyor band and cooperates therewith substantially wholly to con-

fine and to compress the stream of tobacco to a cross-section smaller than that of the passage and to retain the stream in said compressed state substantially up to the point at which it enters the confining passage, the top endless guide band being movable with the conveyor band to assist the feeding of the compressed stream of tobacco, and a second conveyor movable in the same general direction as and at a linear speed less than that of said conveyor band to support and move the tobacco away from the outlet of the confining passage, the length of said passage being such as to extend on each side of the point of compacting of the tobacco.

12. Apparatus for forming a continuous tobacco filler, comprising a confining passage in which a stream of tobacco is compacted to the cross-section of the passage, an endless conveyor band wholly external to the passage to support and feed a stream of tobacco into the passage, means to fold the tobacco receiving surface of the conveyor band to substantially U form, a stationary guide disposed between the upstanding limbs of said U and which extends lengthwise of the conveyor band and cooperates therewith substantially wholly to confine and to compress the stream of tobacco to a cross-section smaller than that of the passage and to control the stream so compressed substantially up to the point at which it enters the confining passage, and a second conveyor movable in the same general direction as and at a linear speed less than that of said conveyor band to support and move the tobacco away from the outlet of the confining passage, the length of said passage being such as to extend on each side of the point of compacting of the tobacco.

13. In apparatus for forming a continuous tobacco filler, a conveyor for a stream of tobacco, means extending continuously along a relatively long portion of the conveyor and cooperating with the conveyor substantially to enclose and to subject the tobacco stream thereon to a high compression, guides having passages formed therein and co-acting with said means and conveyor, and circulating means to circulate a cooling fluid through the passages in said guides.

14. In apparatus for forming a continuous tobacco filler, an endless conveyor band for a stream of tobacco, an endless pressure band having a tobacco engaging surface movable in the same direction as the tobacco receiving surface of the conveyor band and cooperating with the latter substantially to enclose and to subject the tobacco thereon to a high compression, a guide located behind each of said tobacco engaging surfaces to determine the distance therebetween, each of said guides having a passage formed therein, and circulating means to circulate a cooling fluid through the passages in said guides.

15. In apparatus for forming a continuous tobacco filler, an endless conveyor band for a stream of tobacco, a guide to fold the tobacco receiving surface of the band to U form, a stationary member having a continuous tobacco engaging surface extending along a relatively long portion of the band and cooperating therewith substantially to enclose and to subject the tobacco stream to a high compression, said guide and said stationary member each having a passage formed therein, and circulating means to circulate a cooling fluid through the passages in said guide and said stationary member.

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