

April 12, 1949.

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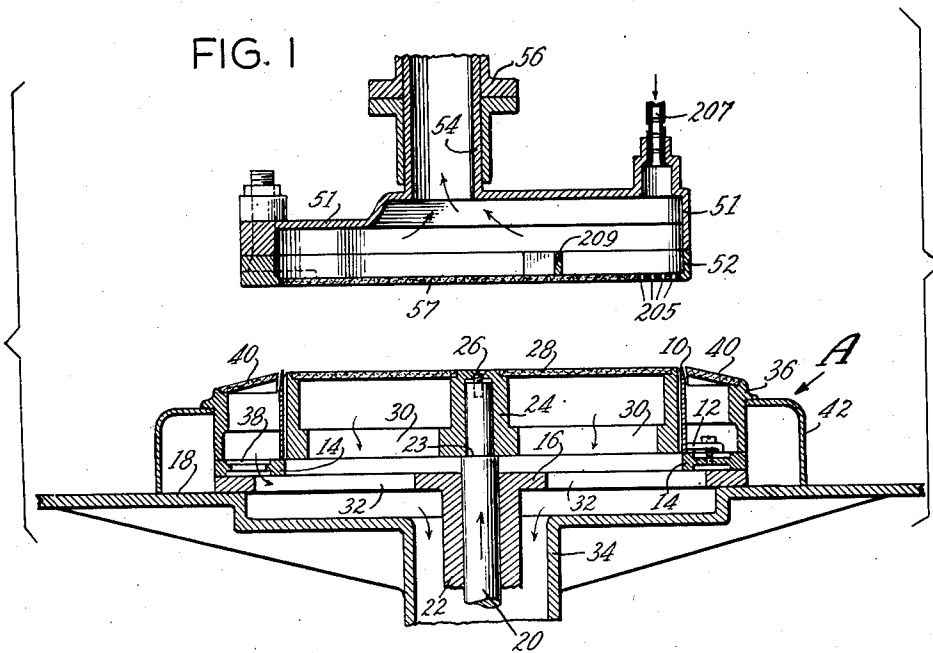
2,467,172

SUCTION BOTTOM FOR WRAPPER CARRIERS

Filed Nov. 11, 1942

2 Sheets-Sheet 1

FIG. 1



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April 12, 1949.

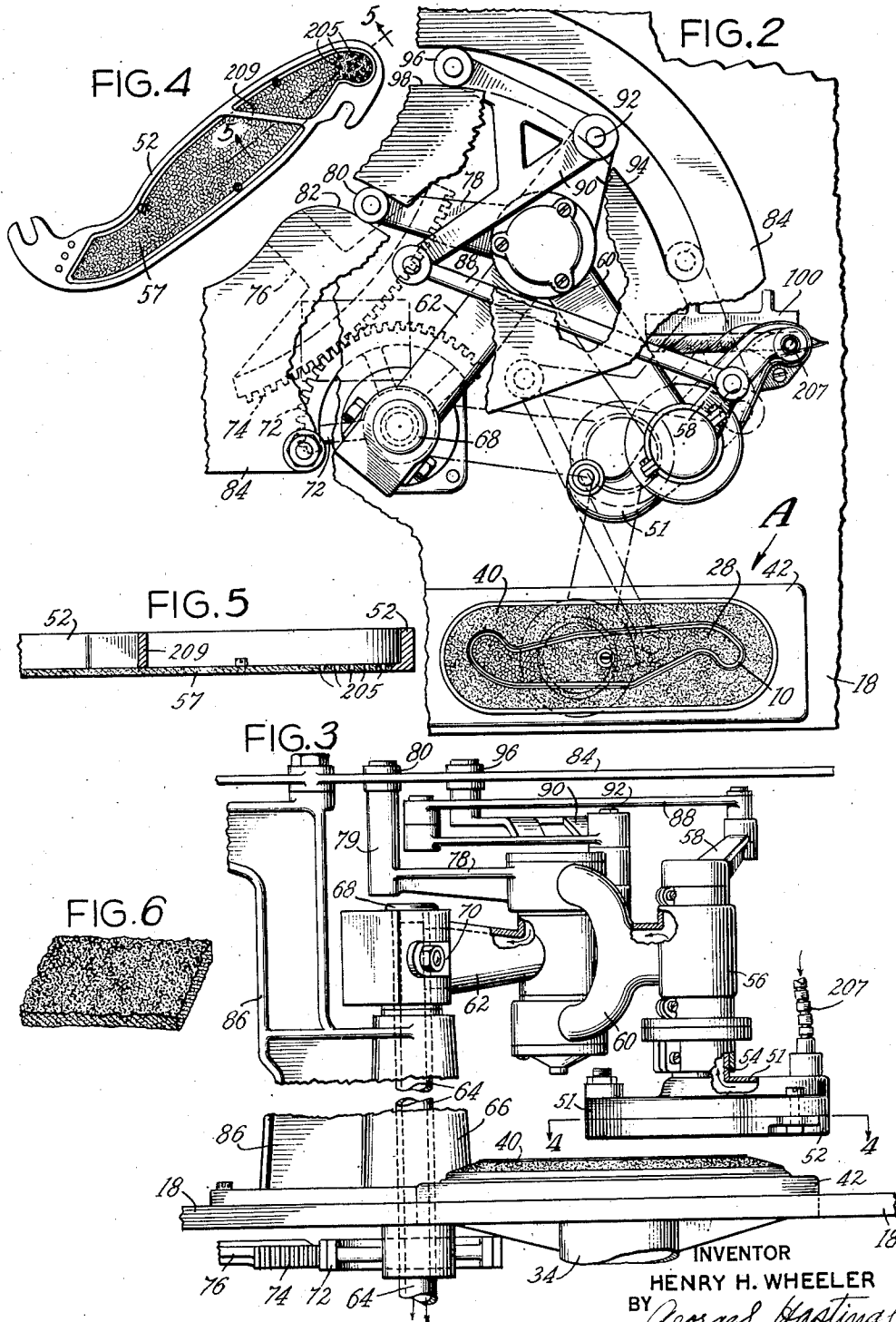
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UNITED STATES PATENT OFFICE

2,467,172

SUCTION BOTTOM FOR WRAPPER CARRIERS

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Application November 11, 1942, Serial No. 465,239

1 Claim. (Cl. 131—105)

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This invention relates to cigar machines, more particularly to improvements in the wrapper or binder carriers, and wrapper or binder cutting beds thereof. Heretofore the wrapper and binder cutting beds of cigar machines were provided with surfaces having drilled holes on which the tobacco leaf sections from which the wrappers were to be cut were spread and suctionally retained. Likewise the wrapper and binder transfers had perforated bottoms on which the wrapper and binder were suctionally retained while being transferred from the wrapper or binder cutting bed to a predetermined position. The perforations in the cigar machine parts referred to, require drilling of many individual holes at a relatively high cost; and yet the area of the drilled holes of these parts is only a small fraction of the total area thereof, wherefore the suctional force applied to said surface represents a small portion of the available atmospheric pressure for retaining the tobacco leaf section, wrapper or binder.

One of the main objects of the present invention is to utilize porous metal in cigar machines to provide the surfaces referred to. This material is similar to that described in Patent No. 2,226,520, issued December 24, 1940, and manufactured under the trade name of "Porex" by the Moraine Products Division of the General Motors Corporation, and other manufacturers. As is customary in so called powder metallurgy, this material is produced by compressing metal powder and then sintering the same to produce a porous metal mass which is permeable to air.

I have discovered that, in the case of wrapper transfers, the slipping of the wrapper upon the bottom of the wrapper carrier while it is being peeled therefrom during its application to the cigar bunch, is eliminated when porous metal of the type referred to is employed in the bottom of the wrapper carrier. This advantage may be partly attributed to the fact that the passage of air through the portion of the carrier bottom uncovered during the gradual removal of the wrapper for application to the cigar bunch, is less with said porous metal than through drilled holes. Therefore the degree of suction in a wrapper carrier having drilled holes in its bottom, is a small fraction of the initial suction when a substantial part of the wrapper has been peeled off the carrier bottom, whereas with my wrapper carrier construction the suction is slightly diminished after the removal of the major part of the wrapper from the carrier bottom. Moreover the porous metal has a rougher surface which

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serves to hinder the slipping of the wrapper on the carrier bottom during its application to the cigar bunch.

A further advantage of my invention is the economy of air. It may be noted that substantially less air passes through the porous surfaces of my invention than through the drilled surfaces used heretofore.

With these and other objects not specifically mentioned the invention consists in certain constructions and combinations hereinafter fully described.

In the accompanying drawings, which form a part of this specification and in which like characters of reference indicate the same or like parts:

Fig. 1 is a sectional view of a portion of a cigar machine provided with a wrapper cutting bed and a wrapper carrier constructed with air-permeable porous metal surfaces according to my invention;

Fig. 2 is a plan view of a standard wrapper transfer mechanism, whose wrapper-carrier head has an air-permeable bottom plate similar in construction to that shown in Fig. 1;

Fig. 3 is a side elevation of the same;

Fig. 4 is a sectional plan view of the wrapper carrier bottom taken on the line 4—4 in Fig. 3;

Fig. 5 is a fragmentary sectional view of the wrapper carrier bottom plate taken on the line 5—5 of Fig. 4; and

Fig. 6 is a perspective view of a sheet of the porous metal used in my invention.

In the form of the invention exemplified in Fig. 1, the wrapper cutting bed A comprises a wrapper cutting die 10 which conforms to the desired shape of wrapper to be cut and is held by a set of clamps, such as the clamp 12, against a base plate 14 supported on a die holder 16. The latter is mounted on table 13. A shaft 20 slidably mounted in a central bearing 22 of the die holder 16 supports on a shoulder 23 adjacent its upper end, a hollow suction head 24 which is disposed within the die 10 and conforms to the configuration thereof. The suction head 24 is secured to the shaft 20 by a screw 26. A plate 28 blanked out of a sheet of porous metal of the type previously mentioned has a central perforation admitting the shouldered portion of the suction head through which the screw 26 is inserted, and has its edge supported on an internal shoulder formed on a rim of the suction head. The head 24 is provided with apertures 30 in its bottom which communicate through apertures 32 of the holder 16 with a conduit 34 formed in table 13

and suitably connected to a source of suction (not shown).

A hollow die shell 36 surrounds the die 10 and communicates through an opening 38 in the plate and one of the apertures 32 with the conduit 34. An annular plate 40 formed of the same material as the part 28, is secured to the top of the shell 36. A housing 42 surrounds shell 36 supported by table 18. When suction is created in the interior of the head 24 and shell 36 by exhausting the air therefrom through the duct 34 by connecting the latter with the source of suction through a cam-operated valve (not shown), a sufficient degree of suction is provided on the outer faces of the parts 28 and 40 to cause adhesion of leaf tobacco laid thereon. It will be noted that the parts 28 and 40 have tortuous passages extending from the exterior faces thereof to their inner faces. Therefore, the amount of air flowing through the parts 28 and 40 and the amount of power required to produce sufficient suction to cause adhesion of the leaf tobacco thereto will be considerably less than with prior constructions wherein these parts have holes drilled therein. Moreover, the wrinkling of the leaf tobacco laid on parts 28 and 40 will not adversely affect the suction retaining the leaf tobacco thereon. A set of cutting rollers (not shown) which may be of any suitable construction as shown in the patent to R. E. Rundell, No. 1,543,874, issued June 30, 1925, to and fro across the die. The cutting rollers coast with the cutting edge of die 10, the suction head being lowered below said cutting edge during the passage of the cutting rollers, to sever a wrapper conforming to the configuration of the die. The severed wrapper continues adhering to the porous metal portion 28 of the suction head while the latter is elevated to deliver the cut wrapper to the wrapper carrier which will now be described. It will be noted that the portion of the leaf tobacco on the wrapper cutting bed in excess of the wrapper cut therefrom will adhere to the portion 40 of shell 36 until manually removed therefrom.

The wrapper carrier may be of a construction similar to that shown in the patent to R. E. Rundell, No. 1,539,274, granted May 26, 1925, and consists of a hollow suction head 51 provided with a bottom plate 52 detachably secured on its bottom and a hollow stem 54 pivotally mounted in a boss 56 formed in the free end of a swingable arm corresponding to the arm 60 of the wrapper transfer mechanism shown in Figs. 2 and 3 hereof. Since the wrapper transfer mechanism will be fully described in connection with the disclosure of Figs. 2 and 3, further description thereof at this point is deemed unnecessary.

The plate 52, which has a transverse rib 209, has a portion 57 formed of porous metal similar to and coextensive in area with the porous metal section 28 of the suction head and similarly conforming to the shape of the wrapper cut on die 10. The exterior face of the portion 57 is sufficiently rough to hinder the slipping of the wrapper thereon during its application to the cigar bunch which will be hereinafter described. Tortuous passages are provided in portion 57 through which a smaller amount of air needs to be exhausted than in the case of prior constructions having drilled holes in the wrapper carrier bottom to maintain sufficient suction to retain the wrapper on the exterior face of portion 57. When the cut wrapper is elevated on the suction

head into contact with the section 57 of the wrapper carrier, the wrapper is caused to adhere thereto by suction created on the exterior face thereof by exhausting the air through the hollow stem, as indicated by the arrows in Fig. 1. Then the suction is cut off in the suction head and the wrapper carrier is moved by mechanism, which will presently be described, to transport the adhering wrapper to the position at which it is applied to a cigar bunch.

The stem 54 of the wrapper carrier has an arm 58 by means of which it is rocked in the boss 56. The hollow arm 60, which is provided with the boss 56 at its free end, is articulated upon a hollow arm 62 secured to the upper end of a pipe 64 journaled in the standard 66 mounted on the table 18 of the machine. Pipe 64 which is connected by a tube, not shown, to a suitable source of suction, is closed at its upper end by a cap 68 and the interior of the pipe is in communication with the interior of arm 62 and with the interior of the arm 60, the latter communicating through suitable openings, not shown, in the stem 54 with the interior of the stem and thereby applying suction to the portion 57 of the wrapper carrier. The arm 62 may be secured to the upper end of the pipe 64 by a clamping bolt 70 and the pipe serves as a rock shaft. To the lower end of the pipe is secured a segmental gear 72 which meshes with a segmental gear 74. The wrapper transfer mechanism so far described, corresponds with that shown in the Rundell Patent No. 1,539,274, and is similarly controlled by a branch arm, not shown, formed on the arm 76 supporting the segmental gear 74, this branch arm being provided with a cam roller engaging a cam track in a drum cam, not shown, and thereby producing swinging movement of the pipe 64 with the arm 62.

To control the relative movement of the arms 60 and 62, the arm 60 is provided with an integral horn 78 upon the outer end of which is an integral upright 79 carrying a cam roller 80 tracking in a cam slot 82 formed in a cam plate 84 supported by a bracket 86 rising from the standard 66. As the arm 62 is swung with the shaft 64, the engagement of the cam roller 80 with the cam track 82 alters the relative positions of the arms 60 and 62 and controls the path of movement of the axis of the wrapper carrier. The wrapper carrier is also given a rocking movement on its axis. This is accomplished in the following manner. The arm 58 previously mentioned, is pivoted to one end of a connecting rod 88, the other end of said rod being pivoted to a bell crank lever 90. This bell crank is fulcrumed at 92 on a horn 94 projecting from the arm 62 beyond the point of its articulation above the arm 70. The bell crank carries a cam roller 96 tracking in a cam groove 98 formed in the cam plate 84. In this manner, as the arm 62 is moved during the rocking of pipe 64, the engagement of cam roller 96 with the cam slot 35 changes the relative angular positions of the arm 60 and the wrapper carrier. In Figs. 2 and 3, the wrapper transfer mechanism is shown in a position which it occupies when the greater part of a wrapper has been applied to a bunch in the wrapper mechanism, the latter being diagrammatically represented at 100.

The flag end of the porous metal portion 57 of plate 52 is provided with holes 205, as shown in Figs. 1 and 4, whereby the flag end of the wrapper will be blown down from the wrapper carrier by compressed air delivered to the flag end of the carrier by a hose 207 connected to a

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source of compressed air (not shown). It should be pointed out that the compressed air delivered by hose 207 to the flag end of the wrapper carrier could not pass through the porous metal portion 57 unless the holes 205 were provided. This operation takes place following the peeling off of the major portion of the wrapper from the carrier bottom while applying the same to a cigar bunch, and the cutting off of suction on the wrapper carrier.

The foregoing description has been made rather detailed for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claim should be construed as broadly as permissible in view of the prior art.

What is claimed is:

A wrapper transfer mechanism comprising a hollow wrapper carrier movable from wrapper receiving position to wrapper applying position and having a porous unitary plate formed of sintered metal powder covering its bottom and provided with tortuous passages extending from the interior face of said plate to the exterior face thereof, and a conduit adapted to connect the interior of said carrier to a source of suction to cause suctional adhesion of a cigar wrapper to said plate, whereby the suction created on the exterior face of said plate will not be substantially diminished during the gradual removal of the wrapper therefrom during application of the wrapper to a cigar bunch at said wrapper applying position, said plate having a flag end which

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is provided with a series of drilled holes, and the flag end of said carrier having an inlet adapted to admit compressed air into the interior of the carrier and thereby expel compressed air through said drilled holes and blow down the flag end of a wrapper suctionally retained on said plate.

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