March 31, 1953 E. H. HIGGINS 2,633,133

CIGARETTE MAKING MACHINE

Filed Feb. 15, 1950 2 SHEETS—SHEET 1

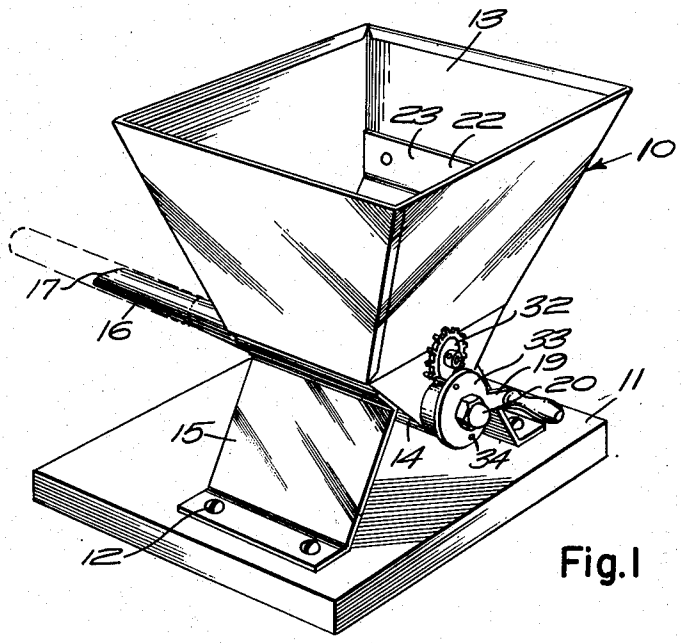


Fig.1

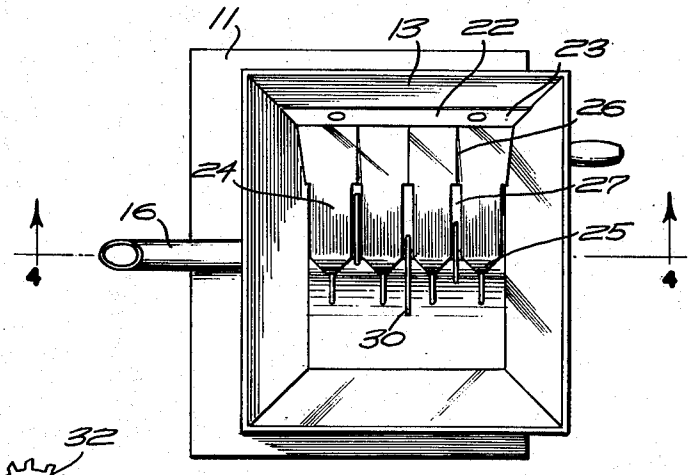


Fig.2

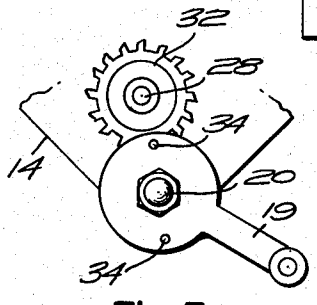


Fig.3

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CIGARETTE MAKING MACHINE

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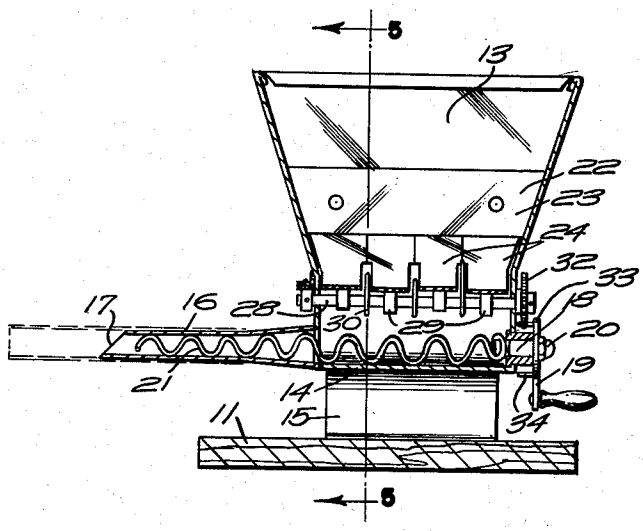


Fig.4

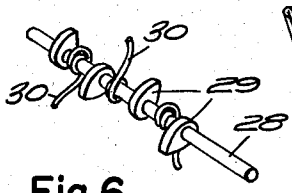


Fig.6

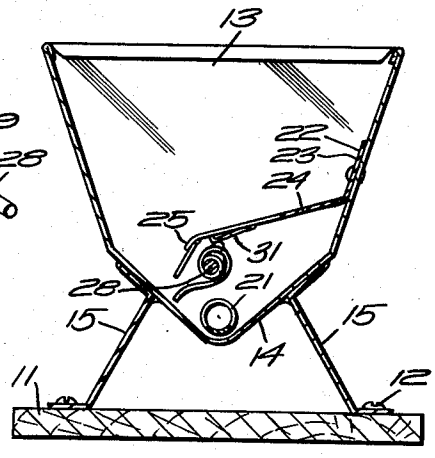


Fig.5

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Patented Mar. 31, 1953 2,633,133

UNITED STATES PATENT OFFICE

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CIGARETTE MAKING MACHINE

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Application February 15, 1950, Serial No. 144,218

2 Claims. (Cl. 131—74)

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My present invention relates to cigarette making machines, and more particularly to a cigarette making machine for home use.

The principal object of the present invention is to provide a cigarette making machine for home use which has an even and constant feed of the tobacco into the cigarette paper.

A further object of the present invention is to provide a cigarette making machine for home use which will make a fully packed and firm cigarette.

Another object of the present invention is to provide a cigarette making machine that is simple in construction and easy and economical to manufacture and assemble.

With the above and other objects and advantageous features in view, my invention consists of a novel arrangement of parts more fully disclosed in the detailed description following, in conjunction with the accompanying drawings and more particularly defined in the appended claims.

Fig. 1 is a perspective view of a cigarette making machine embodying my invention.

Fig. 2 is a top plan view of the same.

Fig. 3 is a fragmentary side elevation showing the details of the crank and drive construction.

Fig. 4 is a section taken on line 4—4 on Fig. 2.

Fig. 5 is a section taken on line 5—5 on Fig. 4, and

Fig. 6 is a perspective view of the drive shaft and cam assembly.

Numerous attempts have heretofore been made to provide a cigarette making machine for home use. These machines have all had certain defects which make them undesirable. The type of machine in which the tobacco is rammed into the cigarette paper, either splits the paper or packs the tobacco so solidly that it is difficult to draw on. In the type of machine in which the tobacco is fed from a hopper to the cigarette paper with a spiral worm drive, it has been found that the tobacco will become matted in the hopper and will not feed evenly or at all. The resultant cigarette is too loosely packed and the tobacco has a tendency to fall out of it.

The present invention overcomes all of the above defects by providing a machine of the hopper type in which the tobacco is separated and fed to the spiral feed evenly and constantly. The resultant cigarette is firm and fully packed, but not so firmly packed as to make it difficult to draw. This is accomplished by providing a vibrating action in the hopper tending to move the tobacco downwardly towards the spiral feed and

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simultaneously providing a pushing action of the tobacco into the feed.

Referring more in detail to the drawings illustrating my invention, the cigarette making machine 10, shown in Fig. 1, may be mounted on any suitable base 11 as by means of the screws 12. In use, the base 11 may be clamped to a table with any conventional clamping means (not shown), or may be provided with one or more suction cups for fastening it to the table top (also not shown). The cigarette making machine 10 can be made of any suitable material, either metal or plastic, the illustrated form being made of sheet metal. It comprises a rectangular hopper 13 which tapers slightly downwardly and terminates in a bottom portion 14 which tapers sharply in a wide V cross section as shown in Fig. 5. The hopper 13 is supported on angularly disposed leg plates 15 which are screwed to the base 11. Extending laterally from one side of the hopper 13 and adjacent one bottom end of the V-shaped bottom 14 is a tubular feed portion 16, Figs. 1 and 4. The portion 16 tapers towards its outer end and is open at both ends. The outer end is cut off at an angle 17, and the inner end communicates with the lower end of the bottom 14. At the opposite side of the bottom 14 is mounted a short rotatable shaft 18 axially in alignment with the axis of the tube 16. The shaft 18 is manually rotatable by means of a hand crank 19 bolted to its outer end as at 20.

A spiral tempered wire 21 is positioned in the lower end of the bottom 14, with one end fastened to the inner end of the shaft 18 and the other end extending almost completely through the tube 16, as shown in Fig. 4. The wire 21 is spiralled to form widely spaced tubes, as shown in Fig. 4, the tubes tapering toward the outer end, with the large end being attached to the shaft 18. It is preferred that the wire 21 be made of tempered stainless steel.

With the above construction, if tobacco is placed in the hopper 13, it will normally tend to slide downwardly upon the spiral wire 21, and rotation of the crank 19 will cause the wire to turn and form a worm drive to push the tobacco outwardly along the tube 16. However, I have found that the tobacco has a tendency to mat and solidify to such an extent that the wire will merely bore a hole in the tobacco and very little tobacco will pass along the tube 16. I have, therefore, devised a secondary feed and vibrator construction which will prevent the clogging of the drive. As shown in Figs. 2, 4 and 5, I provide a vibrator plate 22 having a solid portion 23

riveted to one side of the hopper 13. Extending downwardly laterally from the portion 23 are a plurality, four shown, of spring tongues 24 which terminate in tapered, downwardly extending tips 25. The spring tongues are cut away along their side edges, so that they are separated at their upper ends by narrow slots 26 and at their lower ends by wider slots 27. The length of the tongues is such that they will extend laterally from the side of the hopper to just beyond the spiral wire 21 and at a slight downward angle as shown in Fig. 5. This leaves a gap beyond the end of the tongues so that the tobacco is directed towards one side of the hopper and will be fed towards the spiral wire 21 in a thin, flat stream by means of drive shaft 28 rotatably mounted adjacent the base of the hopper 13 in spaced parallel relationship with the spiral wire 21. As shown in Fig. 6, the shaft 28 is provided with alternate cams 29 and wire feed fingers 30, each at a different angular position on the shaft 28. The cams 29 are so spaced that each cam is positioned beneath the end of the spring tongue 24, as shown in Fig. 4.

Each spring tongue is provided underneath with an L-shaped member 31, as shown in Fig. 5, which forms an abrupt shoulder. As each cam 29 is rotated counterclockwise, the end of the cam rides along the long leg of the member 31 slightly lifting the spring tongue 24. As the cam passes the end of the member 31 forming the abrupt shoulder, it will release the spring tongue 24 further and cause it to snap downwardly with a vibrating action. Since the cams 29 are in different angular positions, the spring tongues 24 will vibrate alternately. It is preferable, however, that every other spring tongue vibrate almost simultaneously. The secondary wire feed 30 rides in the slot 27 between the spring tongues 24 and pushes the tobacco from the end of the spring tongues towards the spiral wire drive 21. These feeds 30 also tend to break up any lumping of the tobacco. The slots 27 are of such width that the feed fingers 30 just clear the sides of the spring tongues 24. This prevents the tobacco from clinging to the feed fingers or from winding around the shaft 28.

The shaft 28 is driven by a gear or sprocket 31 fastened to its outer end above the handle 19. The handle 19 is provided with a plate 32 having two inwardly extending pins 33 at diagonally opposite points on its circumference. These pins are positioned so that they will engage one tooth of the gear 31 in passing, while the handle 19 is being turned. The ratio is such that each turn of the handle 19 moves the gear 31 a distance of two teeth and approximately eight revolutions of the handle 19 will provide a single revolution of the shaft 28.

With the above construction, a package of tobacco may be completely emptied into the hopper 13 and the bulk of the tobacco will rest on the spring tongues 24. A cigarette paper in tubular form is slipped over the end of the tube 16 as far as it will go without tearing. Turning movement of the crank handle 19 will cause a vibrating action of the spring tongues 24 as hereinabove described and tend to slide the tobacco towards one side of the hopper 13 and downwardly towards the wire feed 21. Finally, the feed fingers 30, which are also alternately positioned, will tend to push the tobacco towards the wire 21. With this constant even feed insured, the spiral wire 21 will feed the tobacco into the free end of the cigarette paper shown in dotted lines in Fig. 4. As this portion of the cigarette becomes packed with tobacco, the constant feed of more tobacco will tend to push the cigarette paper off the tube 16. This pushing pressure has been found sufficient to insure just the right packing of the tobacco, and the cranking action of the handle 19 is stopped when the cigarette paper is completely full and completely off the tube 16.

It can thus be readily seen that I have provided a cigarette making machine with a main feed and a secondary vibrating feed which insures the proper amount of tobacco being fed at all times to the cigarette paper. The device is simple in construction and easy and economical to manufacture and assemble. Its operation is very simple.

While I have described a specific embodiment of my invention, it is obvious that changes may readily be made in the size, shape and relative arrangement of parts without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. A cigarette machine comprising a hopper, a tube extending laterally from the bottom of said hopper, means adjacent the bottom of said hopper for feeding tobacco from said hopper through said tube, a plurality of spring tongues extending from one side of said hopper and spaced from said feeding means, a rotatable shaft in said hopper beneath said tongues, spaced fingers on said shaft for pushing the tobacco downwardly during the rotation of said shaft, and a cam on said shaft under each tongue for vibrating said tongues during the operation of said feeding means, said feeding means comprising a rotatable spiral wire extending from the bottom of said hopper through said tube, the diameter of said spiral tapering towards the free end in said tube.

2. A cigarette machine comprising a hopper, a tube extending laterally from the bottom of said hopper, means adjacent the bottom of said hopper for feeding tobacco from said hopper through said tube, a plurality of spring tongues extending from one side of said hopper and spaced from said feeding means, a rotatable shaft in said hopper beneath said tongues, spaced fingers on said shaft for pushing the tobacco downwardly during the rotation of said shaft, and a cam on said shaft under each tongue for vibrating said tongues during the operation of said feeding means, said shaft being geared to rotate on operation of said feeding means, said feeding means comprising a rotatable spiral wire extending from the bottom of said hopper through said tube, the diameter of said spiral tapering towards the free end in said tube.

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