

Fig. 6

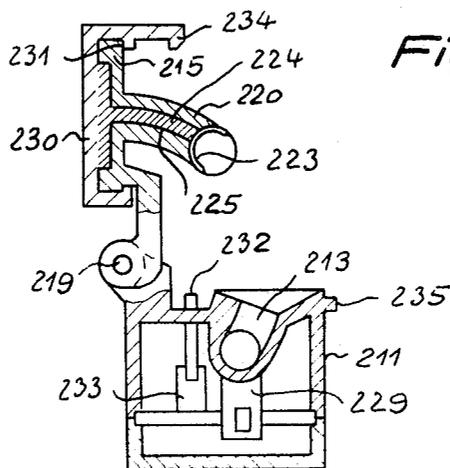


Fig. 7

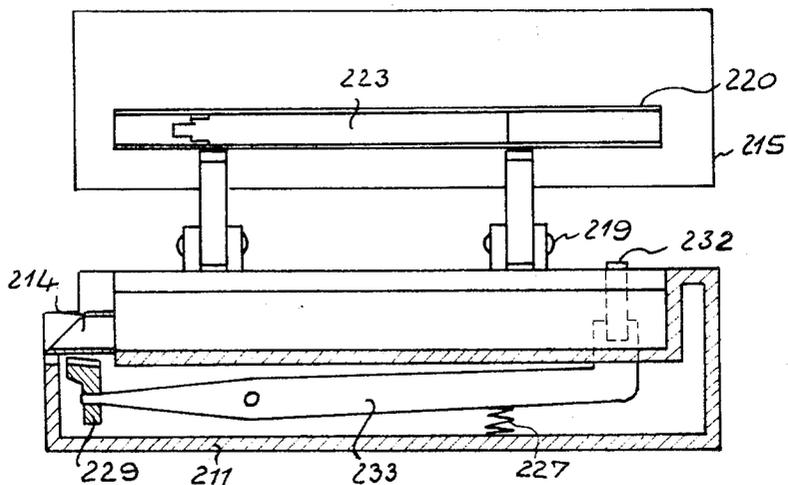


Fig. 8

DEVICE FOR FILLING CIGARETTE TUBES

The invention relates to a device for filling cigarette tubes or cigarette filter tubes. Said device comprises a housing with a chamber for pressing tobacco, said chamber being arranged in the longitudinal direction of the housing and having the shape of a first half shell fixed in the housing, a press bar in a hinged lid which covers the housing, said bar being assigned to the chamber for pressing tobacco and forming the second half shell on the side of the lid, and an ejector slide for ejecting a compressed tobacco plug into a paper tube, the slide being provided with a spoon. At the outlet of the chamber for pressing tobacco the paper tube is held clampingly on a socket.

In known devices for filling cigarette tubes the spoon projects to a great extent from the housing during the filling operation and owing to the fact that the spoon is thin and sharp-edged it can cause injuries since the thin cigarette paper tube provides no protection at all. Moreover, there is the risk that the spoon is easily bent out of shape due to inexpert treatment of the device whereby the function of the device is at least adversely affected or even completely eliminated.

It is the aim of the invention to create a functionally reliable device for filling cigarette tubes which can be easily handled and is fixed during the filling operation and whose spoon is so arranged that it is protected during the filling operation, so that injuries are avoided and damage to both the spoon and the cigarette tube held thereon are effectively prevented. In addition, it is intended to use the novel device for exerting a uniform pressure on the tobacco plug to be compressed, whereby a homogeneous structure of the tobacco plug is to be obtained.

According to the invention this is to be achieved in that the ejector slide with the spoon is so arranged in a slot in the lid that it slides longitudinally, that the lid or a portion thereof is divided into an upper portion and a lower portion, the upper portion being so designed with respect to the lower portion that it is longitudinally slidable in the direction of ejection and that the rear end of the upper portion of the lid is connected to the ejector slide.

This has the special advantage that in the pushed-out position the spoon is completely covered by the upper portion of the lid which is longitudinally slidable in the direction of ejection.

In this arrangement a bar arranged at the rear end of the slidable portion extends through a slot in the lid. The ejector slide is fixed to said bar.

A device for filling cigarette tubes which is constructed in this simple manner has the advantage that during the filling operation the portion which is longitudinally slidable on the lid completely covers the spoon, which is relatively close to the lower portion of the lid, since the slidable lid portion, the ejector slide and the spoon form a fixed structural unit and are moved as a unit. Injuries to the hand of the operator are effectively prevented in this manner. At the same time the completely filled cigarette thus is also protected against damage.

In more detail the novel device may be so designed that the guide between the slidable portion of the lid and the lid itself is designed as a dove-tailed guide or the like.

In a preferred embodiment the subject matter of the invention is so designed that a cam is provided on the lid end on the side of the bearing. In the open position of the lid the cam forms the inner front wall of the chamber for pressing tobacco and in the closed position of the lid the cam interacts with one arm of a two-armed lever, which is supported in the housing and whose other arm acts on the tiltable clamp for the paper tubes.

Thus, upon closing the device and ejecting the compressed tobacco plug the paper tubes are automatically clamped on the socket and upon opening the device they are automatically released.

Moreover, the spoon secured to the bar of the ejector slide abuts against the wall portions of the press bar which are formed by the slot, and thus forms the actual press bar.

In a further development of the invention the problem is solved in that the press bar on the side of the lid and the chamber (for pressing tobacco) which is fixed in the housing have a circular cross section and their identical radii lie in the pivot of the lid and that the bar arranged on the longitudinal slidable portion of the lid extends with corresponding curvature through a slot in the lid and the press bar and at its free end said bar carries the ejector slide with the spoon.

In this kind of arrangement the pivot of the lid which is in parallel with the chamber for pressing tobacco is suitably arranged above the chamber port.

With a device produced in this manner a uniform pressure can be exerted on the tobacco plug to be compressed, so that the tobacco plugs have a very homogeneous structure in the completely compressed state.

In more detail the front edge of the lid is in the form of an elastic lug, which engages behind a projection on the housing in the closed position of the lid and which forms a snap fastener therewith.

In order to achieve satisfactory clamping of the cigarette tubes pushed on to the socket, a pin projects through the upper side of the housing outwardly. The pin interacts with the underside of the lid on the one hand and on the other with one arm of a two-armed lever supported in the housing. The other arm of said lever acts on the tiltable clamp for the paper tubes.

The invention will now be described in greater detail with reference to the drawings.

FIG. 1 shows a filling device with storage tank, divided lid and slidable lid portion in diagrammatic representation.

FIG. 2 shows the filling device according to FIG. 1 in section.

FIG. 3 shows a filling device with storage tank and lid in one piece as well as a slidable lid portion in section.

FIG. 4 shows a filling device with slidable lid portion in diagrammatic representation.

FIG. 5 shows the filling device of FIG. 4 with the slidable lid portion pushed out.

FIG. 6 shows the filling device of FIG. 4 with the lid in section in the closed position.

FIG. 7 shows a further practical example of a filling device without storage tank in section with the lid in the open position.

FIG. 8 shows the filling device of FIG. 7 in section.

FIG. 9 shows a further practical example of a filling device in diagrammatic representation.

The filling device shown in FIG. 1 and 2 of the drawing consists of a housing 11 with a storage tank 12 for

tobacco and/or cigarette tubes, and a cylindrical half-shell chamber 13 for pressing tobacco at the outlet of which a socket 14 for the reception of cigarette tubes is provided. The storage tank 12 is covered by means of a lid 15, which is so mounted on one housing wall 16 that it is swingable about a pivot 17. On the opposite housing wall 18 a lid-shaped press bar 20 is swingably supported about a pivot 19 at right angles to the longitudinal direction of the chamber 13 for pressing tobacco, the pivot 19 being in parallel with the pivot 17. In the closed position the lid 15 abuts with its free end in a depression 21 of the lid-shaped press bar.

A portion of the lid-shaped press bar 20 is designed as a slide 30, which is longitudinally slidable in the direction of ejection. This slide 30 is guided on the lid-shaped press bar 20 by means of a T-shaped guide.

A bar 24, which carries a spoon 23 on its free end, is rigidly fastened to the slide 30 with its other end. Consequently, upon ejection of a compressed tobacco plug the spoon and the filter tube are protectively covered by the slide 30.

The lid-shaped press bar 20 and the lid 15 form a lever system, so that in their closed position they are interlocking in above-dead-center position. The storage tank 12 is covered by the lid 15 and the chamber for pressing tobacco by the press bar 20, which virtually constitutes an extension of the lid 15.

A circular elastic supporting edge 22 is arranged on the inside wall of the storage tank 12 under the lid 15. This supporting edge 22 also serves as a gasket (see FIG. 3). The tobacco thus is effectively prevented from dropping out and from drying.

The cigarette tubes, which are kept ready, are held on the socket 14 by means of a spring-supported clamp 29.

In its construction and in its mode of operation the practical example shown in FIG. 3 is very similar to that shown in FIG. 1 and 2. Merely the lid-shaped press bar 20 and the lid 15 are different; they form a one-piece lid. In this manner the compressing of the tobacco plug is achieved by simple closing of the lid. The tobacco plug is then ejected into a ready cigarette tube by sliding the slide 30 longitudinally.

The practical example of a filling device shown in FIG. 4 and 5 consists substantially of a housing 111 and a lid 115 swingably supported on its long side about a pivot 119. A portion of the lid 115 is designed as a slide 130, which is longitudinally slidable in the direction of ejection and which slides in a T-shaped guide 131. In its initial position the slide 130 rests with a recess 136 against a pin 137 secured in the lid 115.

A half-shell-shaped chamber 113 for pressing tobacco is provided in the housing 111. A socket 114 for the reception of cigarette tubes is arranged on the outlet side of said chamber 113.

A likewise half-shell-shaped press bar 120 is arranged on the underside of the lid 115. In the closed position of the lid 115 said press bar 120 is exactly opposite the chamber 113, so that an approximately cylindrical chamber for pressing tobacco is formed. The portion of the lid 115 which is designed as a slide 130 has a vertical bar 124 on its underside (see FIG. 6). The bar 124 extends through a slot 125 in both the lid 115 and the press bar 120 and carries a spoon 123 on its free end. The spoon 123 is so arranged that it abuts over its entire length against the two wall portions of the press bar 120 which are formed by the slot 125 (see FIG. 6).

Moreover, a pin 132 is provided which projects outwardly through the upper side of the housing 111. On the one hand this pin 132 interacts with the under side of the lid 115 and on the other it interacts with one arm of the two-armed lever 133 supported in the housing 111, in a manner similarly to that shown in FIG. 8. The other arm of said lever 133 acts on the tiltable clamp 129 for the paper tubes. The lever 133 is pressed against the tiltable supported clamp 129 against the force of a compression spring, so that the clamp is pressed against the surface of the socket 114 and that a cigarette tube kept in readiness on the socket is clampingly held during the ejection of a tobacco plug.

The further practical example shown in FIG. 7 and 8 resembles that shown in FIG. 4, 5 and 6 in its construction and mode of operation.

A substantial difference lies in the design of both the press bar 220 and the chamber 213 for pressing tobacco. In this practical example, too, a portion of the lid 215 which is swingably mounted on an axis 219 is designed as a slide 230. Said slide is longitudinally slidable in a T-shaped guide 231 on the lid in the direction of ejection.

The axis 219 lies above the outlet of the chamber 213. The press bar 220 arranged on the lid 215 has a circular cross-section the radius of which is at the centre of the axis 219. The cross section of the chamber 213, which is fixed in the housing, also is circular and its radius, which equals that of the press bar 220, also lies at the centre of the axis 219.

On closing the lid the press bar 220 can exert a uniform pressure on the tobacco in the chamber 213, so that a tobacco plug of very homogeneous structure can be produced.

The ejection of the tobacco plug into a cigarette tube kept in readiness on a socket 214 is achieved by means of a spoon 223, which is fastened to the free end of a bar 224, whose other end is connected to the slide 230. Said bar 224 extends in a slot through the press bar 220 and has the same curvature as said press bar.

Owing to the arrangement of the lid 215 in a swingable lid portion and in a longitudinally slidable lid portion the spoon 223 emerging from the housing 211 is protectively covered by the slide 230. Damage to the cigarette tubes is also avoided by this manner of covering.

A pin projects from inside the housing 211 outwardly through the upper side. On the one hand, said pin interacts with the underside of the lid 215 and on the other with one end of the two-armed lever 233 supported in the housing 233. On closing the lid 215 the lever 233 is swung by way of the pin 232 against the force of a compression spring 227 and is pressed against a tiltable supported clamp 229. Consequently the clamp 229 is pressed against the surface of the socket 214 and a cigarette tube kept in readiness on said socket is clampingly held thereon during the ejection of a tobacco plug.

The front edge of the slide 230, which is designed as a portion of the lid 215, is provided with an elastic lug, which engages behind a projection 235 on the housing 211 and forms a snap fastener therewith. In this manner the lid 215 is held in its compressing position during the ejection.

In a further development of the invention the practical example shown in FIG. 9 consists substantially of a housing 311, a lid 315 swingably supported about an

axis 319 on the narrow side of said housing and an ejector slide 330, which slides longitudinally in a T-shaped guide 331 on the upper side of the lid 315.

In the longitudinal direction of the rectangular housing 311 and in the direction in which the lid 315 is swung a half-shell-shaped chamber 313 for pressing tobacco is provided. The inner end of said chamber is open and at its outlet end a socket 314 for the reception of a cigarette tube is provided.

On the underside of the lid 315 a likewise half-shell-shaped press bar 320 is provided which is exactly opposite the chamber 313 in the closed position of the lid 315, so that a cylindrical chamber for pressing tobacco is formed.

On its underside the ejector slide 330 has a vertical bar, which extends through a slot in the lid 315 and in the press bar 320 and which carries a spoon 323 on its free end (similarly to the manner shown in FIG. 6). This spoon is so arranged that it abuts over its entire length against the wall portions of the press bar which are formed by the slot.

The spoon can be fastened to the vertical bar, for example, by soldering or gluing, a slide 335, which preferably has the same cylindrical cross section as the chamber for pressing tobacco, being secured in the same manner to the inner end of the spoon directly adjacent to the chamber 313 for pressing tobacco.

Moreover, a cam 332 having two functions and extending into the housing 311 is provided on the bearing side of the lid. In the open position of the lid 315 said cam closes with its surface the open inner end of the chamber 313 for pressing tobacco, so that the tobacco therein cannot drop into the housing. In the closed position the cam 332 interacts with one arm of a two-armed lever 333 supported in the housing 311. In this case the other arm is pressed against a tiltably supported clamp 329 against the force of a compression spring 327, so that said clamp is pressed against the surface of the socket 314 and clampingly holds a tube kept in readiness on the socket during ejection.

The mode of operation of the filling device is very simple. When the lid 315 is open the chamber 313 for pressing tobacco is filled with tobacco, whereupon the lid 315 is closed and the tobacco between the chamber 313 and press bar 322 and the spoon 323 is compressed so as to form a plug. By moving the ejector slide 330 the plug is pushed by the slide 335 from the chamber 313 for pressing tobacco into a tube kept in readiness. At the same time the spoon 323 emerging from the housing constantly is completely and protectively covered by the portion of the ejector slide 330 which is pushed beyond the lid 315 and the cigarette tube thus is protectively covered to an increasing extent.

The lid 315 can be opened again only upon complete withdrawal of the ejector slide 330 since otherwise the spoon 323 extending through the socket 314 would prevent the lid 315 from being opened.

In a favorable embodiment of the filler device a storage tank for tobacco and/or cigarette tubes may be provided on at least one side wall of the housing 111, 211, 313. The lid (but not the ejector slide) may protectively cover said storage tank.

We claim:

1. A device for filling cigarette tubes with tobacco comprising a housing having a bottom wall in the shape of a longitudinally extending first half shell, a lid having a lower portion forming a press-bar hinged to said

housing forming a second half shell aligned with said first half shell and defining therewith, on closing of said lid, a chamber having a longitudinal axis for forming a plug of tobacco, said lid having an upper portion forming an ejector slidable with respect to said lower portion along the axis of said chamber, and means for holding a paper tube at the end of said chamber, a slot extending in the longitudinal direction through the lower portion of said lid into said second half shell, a spoon slidably located within said second half shell for engaging the end of said plug and means connected to said upper portion of said lid extending through said slot for moving said slide and spoon longitudinally in said chamber to eject said plug into said socket.

2. The device according to claim 1 wherein said spoon includes a longitudinally extending member conforming to the shape of said second half shell, to engage the surface of said plug.

3. The device according to claim 2 wherein said means for connecting said spoon and said slidable upper portion of the lid comprises an elongated bar attached along its length to said extending member.

4. The device according to claim 2 wherein said extending spoon member slidably abuts against the surface of said second half shell.

5. The device according to claim 1 wherein said upper and lower portions of said lid are dovetailed together.

6. The device according to claim 1 including storage means in said housing adjacent said compression chamber covered by said lid.

7. The device according to claim 1 wherein said lower portion of said lid is hinged about an axis parallel to the axis of said chamber.

8. The device according to claim 1 wherein the axis in which said lid is hinged lies above the axis of the compression chamber.

9. The device according to claim 1 wherein the lower portion of said lid is hinged about an axis transverse to the axis of said chamber.

10. The device according to claim 9 including actuating means mounted adjacent said hinge, movable by the closing of said lid and a two armed lever mounted in said housing, one arm of said lever engaging said means on closing of said lid, the other arm being movable thereby to engage said means for holding the paper to clamp the same.

11. The device according to claim 10 wherein said actuating means comprises a cam mounted on the lower portion of said lid.

12. The device according to claim 11 wherein said actuating means comprises a pin freely movable and mounted in said housing.

13. The device according to claim 1 wherein said bottom wall of said housing is formed with a longitudinal channel having an arcuate cross section and a semi-circular bottom, and the lower portion of said lid is formed with a depending wall adapted to extend within said channel, the radii of said channel and depending wall being equal and have their center lying in the axis in which said lid is hinged.

14. The device according to claim 1 wherein the free end of said lid includes a flexible lug, and the free end of said housing includes a projection, cooperating to form a snap fastener.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 3,783,882
DATED : January 8, 1974
INVENTOR(S) : RUDOLF MESSNER ET AL

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

On the cover sheet [73] the name of the assignee should read -- MARTIN BRINKMANN AG, Bremen, Dotlinger Germany

Signed and Sealed this
twenty-eight Day of October 1975

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks