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PROCESS AND APPARATUS FOR THE MANUFACTURE OF CIGARETTES WITH A SHORT MOUTHPIECE OF WADDING, CREPE PAPER OR THE LIKE

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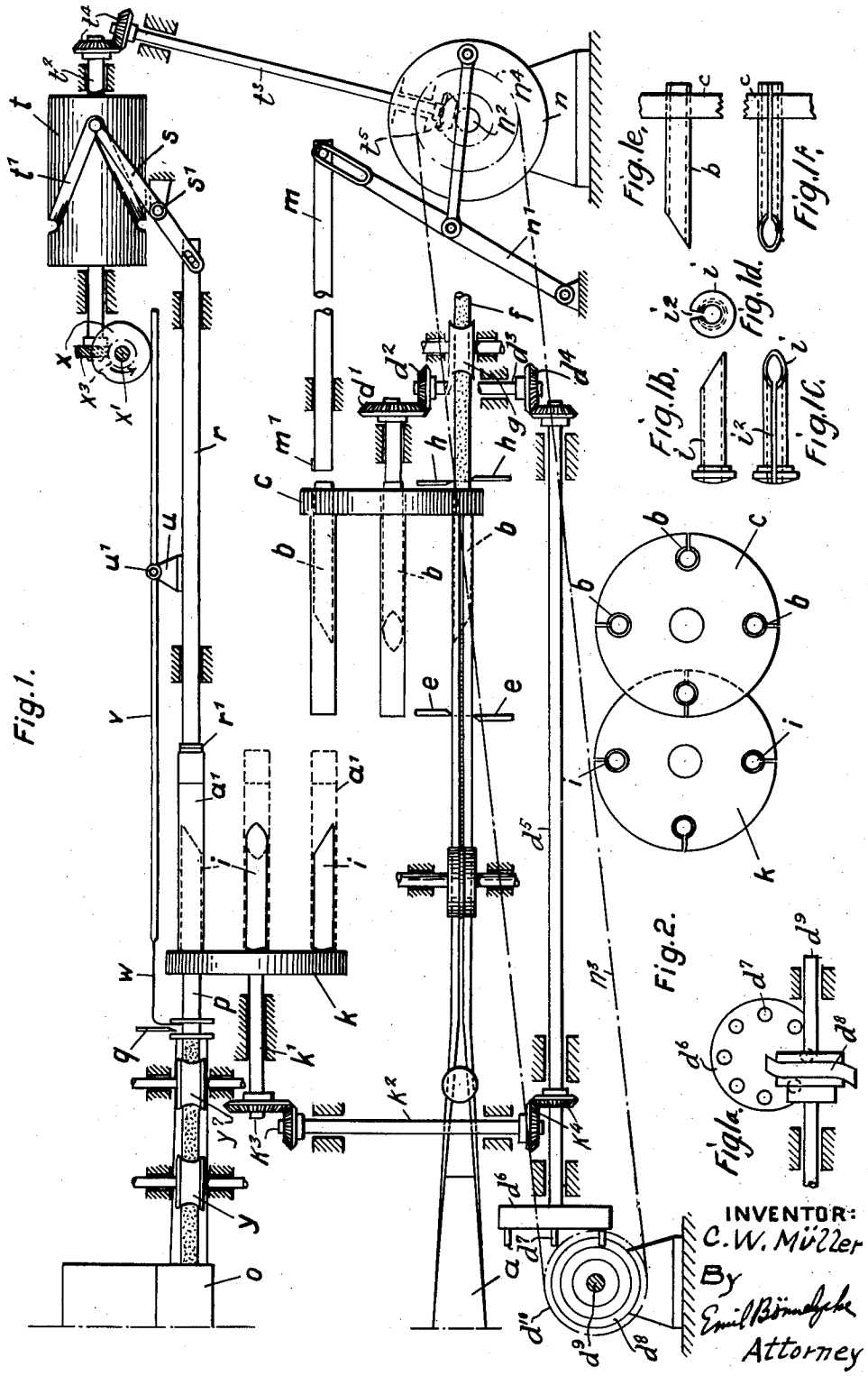


Fig.1.

Fig.1e. Fig.1f. Fig.1d. Fig.1b. Fig.1c.

Fig.2.

Fig.1a.

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PROCESS AND APPARATUS FOR THE MANUFACTURE OF CIGARETTES WITH A SHORT MOUTHPIECE OF WADDING, CREPE PAPER OR THE LIKE

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This invention relates to a process and apparatus for the manufacture of cigarettes with a short mouthpiece of wadding, crepe paper or the like. In order to economize tobacco in the manufacture of cigarettes it is suitable to provide the cigarettes at the mouthpiece end with a short filling of wadding, crepe paper or the like. Such cigarettes, like the known mouthpiece cigarettes with a long cardboard mouthpiece, are manufactured by filling. In this connection, there is the disadvantage that the shells with the short mouthpiece of wadding or paper can only be removed with difficulty from the filling revolver in order to be pushed on the filling spoon, for the reason that the mouthpiece is extremely short relative to the portion of tobacco.

The present invention remedies this disadvantage by the fact that the manufacture of the shells with the mouthpiece, and also the filling, are each carried out in the known manner by means of so-called shell spoons or filling spoons, but the two spoons are so disposed relative to each other that the shells provided with the mouthpiece are transferred from the shell spoon directly to the filling spoon, that is to say, it is no longer necessary to remove the shells provided with a mouthpiece from the shell machine and to transfer them into a separate filling machine. The shell spoon and filling spoon execute feed movements in opposite directions such that in one position they are situated opposite the continuous length of shell and the tobacco rod respectively, and in the other position they are situated opposite each other in the same direction.

An embodiment of the invention is shown diagrammatically by way of example in the accompanying drawing wherein:—

Figure 1 is a plan view of one embodiment,
Figure 1*a* is a side view of a part of Figure 1,
Figure 1*b* is a side view of a spoon,
Figure 1*c* is a plan view of Figure 1*b*,
Figure 1*d* is a side view of Figure 1*b*,
Figure 1*e* is a side view of another spoon arranged within the disc carrying it,
Figure 1*f* is a plan view of Figure 1*e*,
Figure 2 is a side view of the discs holding the spoons.

In the drawing, *a* is the paper strip supplied to the machine which is formed in the usual manner into a paper shell which moves towards the shell spoon. In the example shown, a number, for example four, of such shell spoons *b* are provided, being mounted in common on one disc *c*. The disc *c* is mounted on a spindle d and is rotated stepwise. For this purpose the spindle d is provided with a bevel gear d^1 engaging a second bevel gear d^2 on a spindle d^3. This spindle is connected by means of a pair of bevel gears d^4 with a spindle d^5 at one end of which there is arranged a disc d^6 having pins or projections d^7 projecting into the path of a rotating cam d^8. The cam is carried by a spindle d^9 intermittently driven by any means not shown in the drawing. Figure 1 shows the instant at which the forwardly moved paper shell has been pushed on to the lowermost spoon. The necessary length of shell is now cut off by the pair of knives *e*. At the same time, a strip, for example a strip of wadding *f*, for making the mouthpiece is fed from the opposite side. This may be done by means of a conveying device *g*. The strip of wadding is inserted into the spoon itself and the necessary piece is cut off by a pair of knives *h*. Thus, a severed length of the paper shell is placed upon or around the spoon, while a corresponding piece of wadding is situated inside the spoon. As soon as this has taken place, the disc *c* is fed further by one quarter of a revolution. A fresh length of the paper shell is pushed on to the next spoon *b* and a fresh piece of the strip of wadding is inserted into it. Oppositely directed to the shell spoons, there are provided a number of filling spoons *i* mounted on a disk *k*. The latter in its turn is mounted in the machine frame on a spindle k^1 and the disc *k* makes stepwise revolutions in the same time sequence as the disc *c*. For this purpose the spindle k^1 is connected with the spindle k^2 by means of bevel gears k^3 and the spindle k^2 is driven by the spindle d^5 by means of a pair of bevel gears k^4. During each pause of the two discs, a shell spoon *b* and a filling spoon *i* are situated opposite each other. Figure 2 shows the position of the two discs relatively to each other. The inwardly directed spoons lie in the same line. As soon as the spoon *b* with the shell lying upon it has arrived in front of the filling spoon, a plunger *m* moves towards it. The said plunger *m* engages the shell spoon internally, and has a lug m^1 which passes through a slot b^1 provided in the spoon and the disc *c*. Consequently, the front face of the plunger *m* bears against the wadding mouthpiece, while the lug m^1 bears against the shell, so that on the plunger *m* being moved forward by the crank *n* and the lever n^1 actuated by the said crank, the shell together with the mouthpiece is pushed off the shell spoon and on to the filling spoon. The shell thus pushed on to the

filling spoon i is shown in Fig. 1 of the drawing at a^1. The crank n is provided on a spindle n^2 driven by the spindle d^9 by means of a belt n^3 running over the pulleys n^4 and d^{10} respectively. The introduction of the tobacco rod is now effected on the filling spoon. The tobacco rod is made in the rod forming device indicated in the drawing at o, and is fed to the disc k from the rear thereof. It is inserted into a short tube p and as soon as the necessary length of tobacco rod has been inserted through the spoon into the short tube, the rod is severed by the knife q.

During the insertion of the rod into the spoon and hence into the shell, the latter must be held on the spoon by a known device because otherwise it would be pushed off the spoon, due to the friction of the tobacco against the shell during insertion. This may be effected for example by means of the head r^1 of a slide rod r bearing against the rear end of the cigarette during insertion of the tobacco. The slide rod r is guided in a suitable manner in the machine frame and its free rear end is hinged to a lever s which is pivoted about a point s^1 in the machine frame, and which has its other end engaging a groove t^1 of a grooved drum t by means of a roller or a pin. The groove t^1 is such that the lever s and hence also the slide rod r are given a reciprocating movement. The drum t is mounted on a spindle t^2 journalled in the machine frame and driven by the spindle n^2 by means of an intermediate spindle t^3 and the bevel gears t^4 and t^5 respectively. A lever v is rotatably mounted in a small support u on the slide rod r. The lever rocks about the pin u^1 mounted in the support u, and its front end carries a hook-like member w, while the rear end is under the control of a cam x mounted on a shaft x^1. This shaft is connected with the spindle t^2 by means of a pair of screw gears x^2. As soon as the rod made in the rod forming device o has been pushed forward by the guiding and pressing rolls y and y^1, and the necessary length has been cut off, the lever v is rocked by the cam x so that the hook w is brought in front of the tobacco filling which it inserts into the shell through the action of the cam x. During its further movement, the hook w then passes through the slit i^2 provided in the spoon i and disc k draws the shell, ready filled and provided with the mouthpiece, off the spoon while the rod r is restricted. The cigarette is then finished, and it falls off the spoon and may be conveyed away in the usual manner.

Of course, the arrangement may be otherwise constructionally designed. For instance, the devices for actuating the individual mechanisms, the device for forming the rod, for forming the shell, the cut-off devices and so forth, may be constructed in any other way, and in particular any known kind of such devices may be employed for the purpose of the present invention. Of course, the apparatus may also be constructed with only one single shell spoon, and a single filling spoon, or spoons, reciprocating in one plane may be employed instead of the spoons rotating stepwise.

I claim:—

1. An apparatus for the manufacture of cigarettes with short mouthpieces of wadding, crepe paper or the like, comprising means for feeding a continuous length of shell, a shell spoon for receiving a shell, a filling spoon for receiving a tobacco charge, and means for executing feed movements for the spoons in opposite directions so that in one position the spoons are situated opposite the shell and the tobacco charge respectively and in another position the spoons are situated opposite each other in axial alignment.

2. An apparatus for the manufacture of cigarettes with short mouthpieces of wadding, crepe paper or the like, comprising means for feeding a continuous length of shell, a spoon for receiving the shell in predetermined lengths, means for feeding a tobacco rod, a spoon for receiving the tobacco rod in predetermined lengths, and means for moving the spoons from their feed positions to a position opposite each other to transfer the shell from the shell spoon to the tobacco spoon.

3. An apparatus according to claim 2, in which means are provided for feeding the wadding to the shell spoon.

4. An apparatus according to claim 2, in which individual cutting means are provided to cut the tobacco rod and the shell into predetermined lengths.

5. An apparatus for manufacturing cigarettes comprising a spoon for receiving the shell of the cigarette, a second spoon for receiving the tobacco, means for transferring the shell from the first-mentioned spoon to the second-mentioned spoon and means for moving the spoons out of axial alignment relative to each other to receive their respective materials and in axial alignment when transferring the shell from the first-mentioned spoon to the second spoon to then receive the tobacco.

6. An apparatus for the manufacture of cigarettes with short mouthpieces of paper wadding or the like, comprising a spoon rotatably mounted to receive the shell of the cigarette and the wadding; a second spoon rotatably mounted to receive the tobacco, means for transferring the shell from the first-mentioned spoon to the second-mentioned spoon, and means for rotating the spoons from the positions out of axial alignment from each other where they receive their respective materials into the position where the spoons are in axial alignment with each other when transferring the shell and wadding from the first-mentioned spoon to the second spoon to then receive the tobacco.

7. An apparatus for the manufacture of cigarettes with short mouthpieces of wadding, crepe paper or the like, comprising means for feeding a continuous length of shell, means for feeding a tobacco rod, a plurality of shell spoons, a plurality of filling spoons, and means for executing feed movements for the spoons in opposite directions so that in one position one of the shell spoons and one of the filling spoons are situated opposite the continuous length of shell and the tobacco rod respectively, and in another position the said shell and filling spoons are opposite each other in axial alignment.

8. An apparatus according to claim 7, in which the shell spoons and the filling spoons are mounted on discs set in stepwise rotation by said means.

9. An apparatus according to claim 1, in which individual means are provided for cutting off a section of shell and a section of tobacco rod, and in which a feeding device is provided for a strip of wadding forming the mouthpiece mounted opposite the means for feeding the continuous length of shell so that simultaneously a section of shell cut off from the continuous length of shell is placed on the shell spoon, and a section of wadding cut off from the continuous length of mouthpiece is inserted into the shell spoon.

10. An apparatus according to claim 1, in which

transfer means are provided which executes its working movement in timed relationship with the feed movement for the shell spoon to transfer the shell from the shell spoon onto the filling spoon in the same axial direction as the shell spoon in its position opposite the filling spoon.

11. An apparatus according to claim 1, in which means are provided for severing a length of rod, and a hook-like member is provided to engage the severed length of rod and to insert it into the shell and thereupon during its subsequent movement to withdraw the finished cigarette off the filling spoon.

12. An apparatus according to claim 1, in which means are provided for severing a length of rod, a hook-like member is provided to engage the severed length of rod and to insert it into the shell and thereupon during its subsequent movement to withdraw the finished cigarette off the filling spoon, said hook-like member forming the end of a double lever, and in which a slide is provided to move in the longitudinal direction of the rod and having a cam mounted thereon engaging the double lever and adapted to rock it to bring a needle-shaped end alternately into and out of engagement with the rod.

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