L. LINDELÖF.

MACHINE FOR FILLING CIGARETTE SHELLS WITH TOBACCO.

APPLICATION FILED FEB. 27, 1905.

930,395. **Patented Aug. 10, 1909.**

Fig: 1.

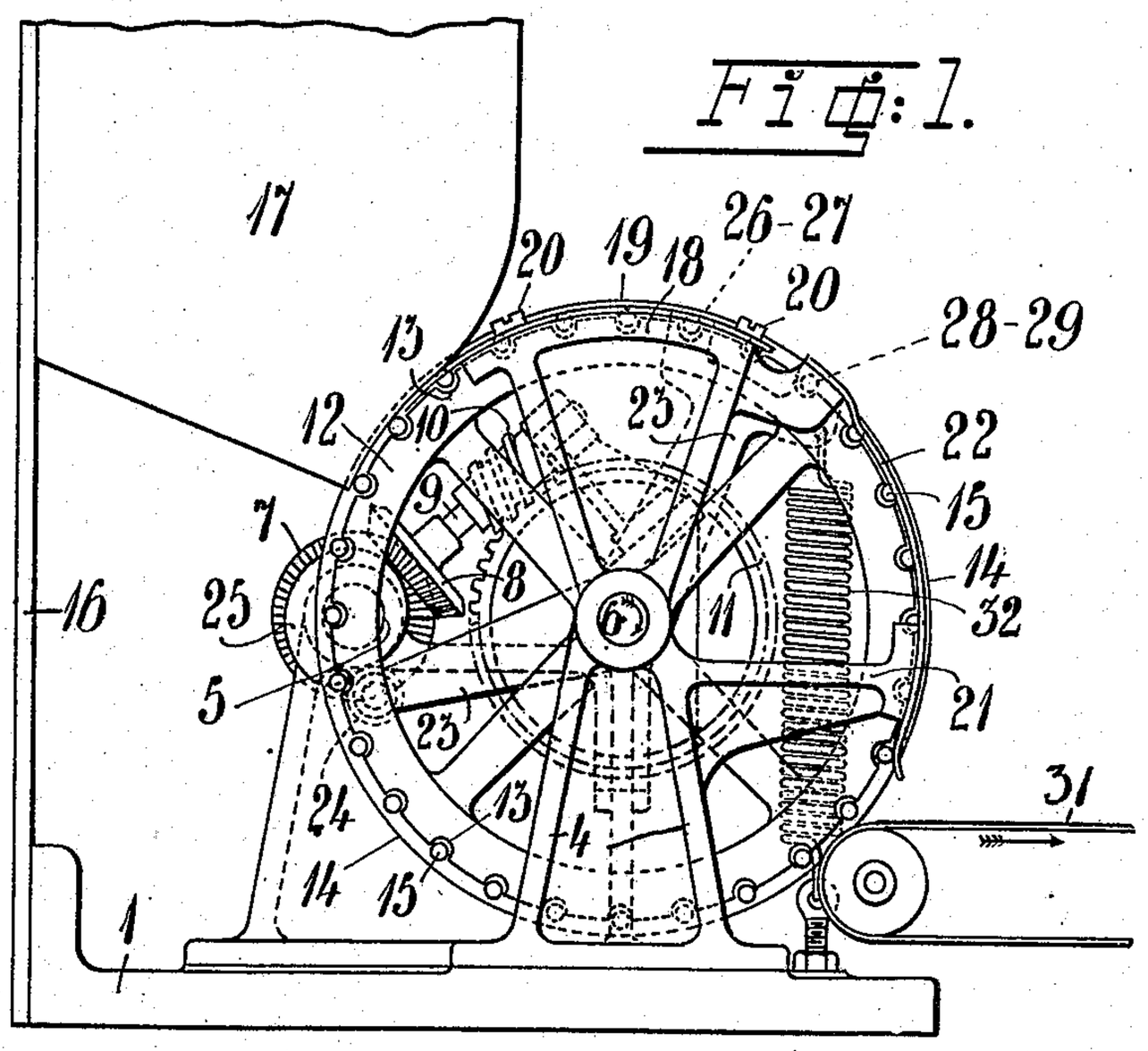
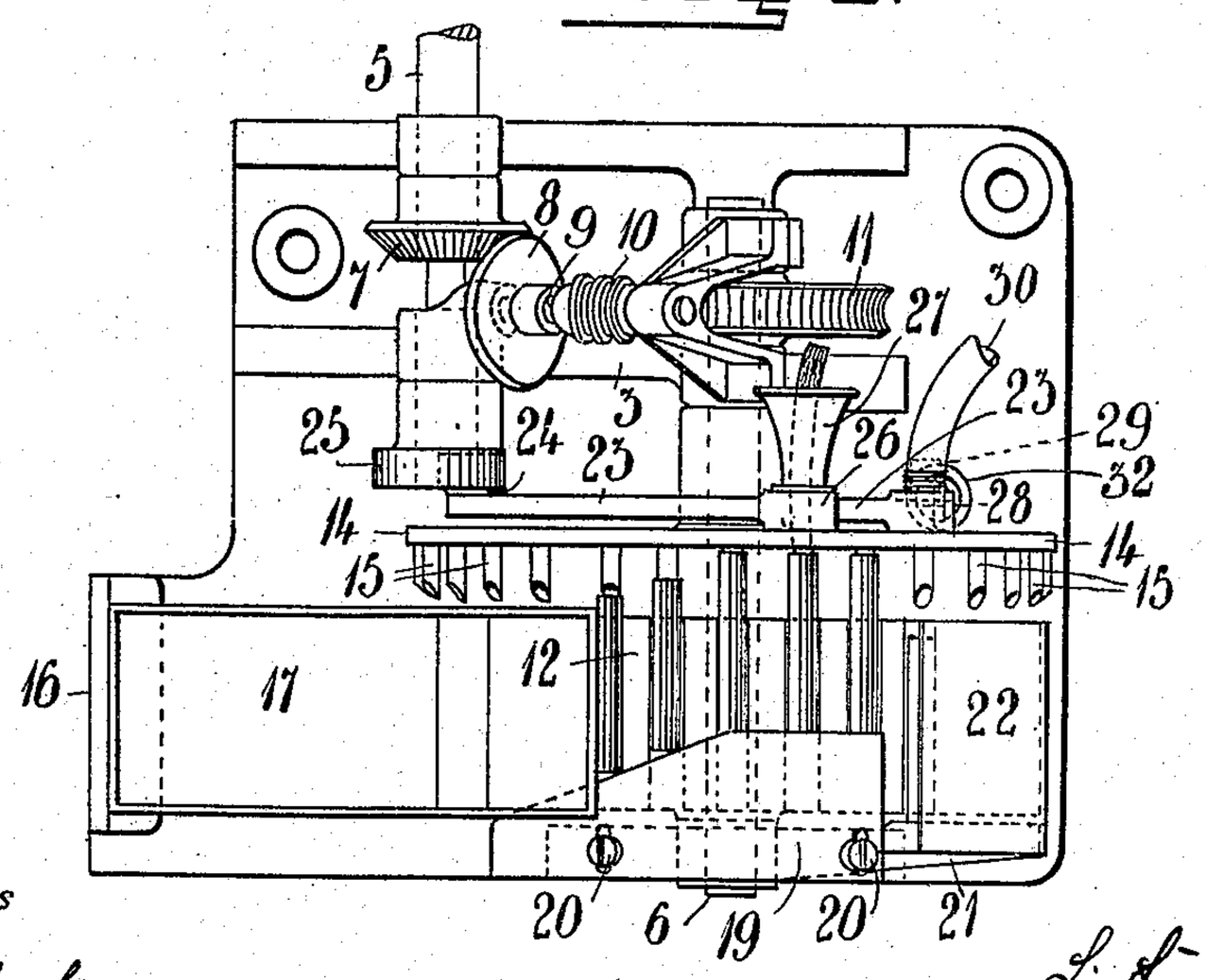


Fig: 2.



Witnesses

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MACHINE FOR FILLING CIGARETTE-SHELLS WITH TOBACCO.

No. 930,395. Specification of Letters Patent. Patented Aug. 10, 1909.

Application filed February 27, 1905. Serial No. 247,607.

To all whom it may concern:

Be it known that I, LEONARD LINDELÖF, a subject of Emperor of Russia, and resident of Helsingfors, Finland, Russia, have invented new and useful Improvements in Machines for Filling Cigarette-Shells with Tobacco, of which the following is a specification, reference being had to the drawings accompanying and forming part hereof.

This invention relates to improvements in machines for automatically filling cigarette shells with tobacco.

In such machines heretofore known there is commonly used a number of stationary filling pipes on which the shells are placed to receive the string of tobacco and the mechanism feeding the shells to the said filling pipes must be stopped during the whole process of placing the shells onto the filling pipes, filling the shells and pushing off the same from the filling pipes, much time being thereby wasted.

The object of the present invention is to reduce the time required for accomplishing the said process and thus to increase the efficiency of the machines.

The invention consists, chiefly, in the provision of a rotary disk, an endless belt, chain, or the like for supporting the filling pipes and having a continuous or step-by-step motion. The shells may be delivered to the filling machine either directly by a shell-making machine or by means of rotary drum, an endless belt, or the like, having in well known manner grooves to receive the shells and moving together with the said filling pipes. For leading the tobacco, which is fed in any suitable or well known manner to the machine in the shape of a continuous string or suitable portions thereof, to the filling pipes one or more mouth-pieces are used and to the latter is, in the case the filling pipes are moving continually, imparted by suitable means an intermittent motion in such manner that the said mouth-piece or mouth-pieces will accompany the filling pipes, while the tobacco is fed into a shell and thereupon be rapidly brought back to the next filling pipe or pipes.

The devices forming the tobacco into a string or portions thereof form no part of the present invention and are, therefore, neither shown nor described.

In the accompanying drawing I have shown an apparatus embodying my invention.

Figure 1 shows an elevation of the apparatus and Fig. 2 a top-view of the same.

To the base plate 1 are secured brackets 2, 3 and 4 in which are journaled two shafts 5 and 6. The main shaft 5 rotates in the direction of the arrow in Fig. 1. From the said main shaft 5 the movement is transmitted by means of the bevel wheels 7 and 8 to a shaft 9 and therefrom by means of a worm 10 and worm-wheel 11 to the said shaft 6, the latter being rotated in the direction of the arrow. To the shaft 6 is secured a drum 12 having on its circumference grooves 13 to receive the cigarette shells. The bevel wheels 7 and 8 and the worm-wheel 11 are of such size that the drum 12 at each revolution of the shaft 5 will be rotated through an angle corresponding to the distance between two adjacent grooves. On the shaft 6 is further provided a disk 14 supporting obliquely cut off filling pipes 15 the number of which corresponds to the number of grooves 13 of the drum 12 and each of which is placed opposite one of the said grooves. To the base plate 1 is secured a bar 16 supporting a holder 17 for the shells. The bracket 4 is provided with an upwardly projecting arm 18 to which by means of screws 20 or the like is secured a curved plate 19. The edge of the latter facing the filling pipes 15 is inclined as shown in Fig. 2 and the object of the same is to push the shells onto the filling pipes. In order that the plate 19 may be adjusted in accordance with the length of the shells used the holes for the said screws 20 may be made oblong as shown in Fig. 2. However, the said plate 19 may be made adjustable in any other convenient manner as will be easily understood. To the said arm 18 and to another arm 21 of the bracket 4 is secured a protecting screen 22 inclosing a part of the drum and adapted to prevent the cigarettes from dropping out too easily from the grooves 13 of the drum.

A characteristic part of the apparatus is a two-armed lever 23 journaled on the shaft 6 and being prevented from sliding on the same by means of the bearing 3 and the boss of the disk 14. The left arm of the said lever 23 is provided with a roller 24 engaging a cam-disk 25 and pressed against the same by a spiral spring 32, while the other arm of the said lever moves close to the disk 14 and is provided with two holes 26 and 28 of the same or a slightly less width

than the filling pipes 15. The said holes 26 and 28 are placed at exactly the same radial distance from the shaft 6 as the filling pipes. The distance between the holes 26 and 28 is twice as great as the distance between two adjacent filling tubes. On account thereof the said two holes will always simultaneously be opposite two of the filling tubes (see Fig. 2). As mentioned above the disk 14 rotates from the left to the right through an angle corresponding to the distance between two adjacent filling pipes while the shaft 5 makes one revolution. The shape of the cam-disk 25 is such that the lever 23 will at first be rapidly turned backward to the left from the position shown in Fig. 2 and exactly as far as to bring the holes 26 and 28 opposite the next filling pipes to the left whereupon the lever will be turned at lower speed from the left to the right exactly following the movement of the drum 12 and the disk 14 so that the holes 26 and 28 will remain opposite the said filling pipes 15. As soon as the lever 23 has again reached the position shown in Fig. 2 the movement just described will be repeated.

The hole 26 may be continued outward by a pipe 27 the outer end of which is funnel-shaped. The string of tobacco being produced and fed into the apparatus by means of well known or suitable devices forming no parts of the present invention, is during the movement of the lever 23 to the right led through the said pipe 27 and the hole 26 into the filling pipe being for the moment opposite the said hole and thus into the shell on the said filling pipe. The speed at which the string of tobacco is fed through the pipe 27 should be such that the shell will be fully filled with tobacco while the lever moves to the right following the disk 14. When the lever 23 is thereupon rapidly turned backward to the next filling pipe, the string of tobacco will be cut off between the sharp edges of the hole 26 and the filling pipe 15. As soon as the hole 26 has arrived opposite the next filling pipe, the string of tobacco will in the same manner as now described be fed into the same and so on. While the pipe 26—27 passes the space between two adjacent filling pipes, the path of the string of tobacco is barred and the said string will thus be somewhat compressed longitudinally if the same is fed continually. Since, however, the backward movement of the lever 23 is very quick in relation to the forward movement such compression causes no disadvantage.

To the lever 23 and opposite the hole 28 is further secured a short pipe 29 to which is attached a flexible pipe 30 of India rubber or any other suitable material. Through the said flexible pipe 30 is led a current of gas, for instance air, under pressure in the same moment as the said pipe and hole 28, 29 in the backward movement of the lever arrives opposite a filling pipe, whereby the cigarette on the latter will be blown off from the filling pipe and thrown into one of the grooves of the drum 12, the cigarette being retained in the same by means of a projection 33 on the arm 18 and the said protecting screen 22. The above mentioned current of gas under pressure may be obtained by any well known or suitable device.

Instead of utilizing gas under pressure for removing the cigarette from the filling pipes obviously any mechanical means may be used for the said purpose, for instance one or more reciprocating pins, or the like.

After the cigarettes have been removed from the filling pipes they may pass any well known device for cutting their ends even.

The apparatus described works as follows: The holder is filled with shells whereupon the drum 12 and the lever 23 are put in motion. According as the grooves of the rotary drum 12 pass the holder 17 each of them will receive one shell and the latter will thereupon be placed on the filling pipes by means of the inclined edge of the plate 19. As soon as the first shell arrives at the place where the lever 23 is oscillating, the mechanisms forming the string of tobacco and effecting the current of compressed gas are put in operation. The shells will now while passing the hole and pipe 26, 27 be filled with tobacco and thereupon while passing the hole and tube 28, 29 be removed from the filling pipes and thrown back into the grooves of the drum 12 where they will be retained by the protecting screen 22 until they at the lower edge of the latter drop down onto an endless belt 31 or the like, transporting them to any desired place.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:

1. The combination with a machine for filling cigarette shells with tobacco, of movable filling pipes, means for continuously moving the said filling pipes, and means for pushing the shells onto the said filling pipes, substantially as and for the purpose set forth.

2. In a machine for filling cigarette shells with tobacco the combination, of movable filling pipes at equal distances from each other, means for imparting a continuous movement to the said filling pipes, means for feeding the shells to the said filling pipes, means for pushing the said shells onto the said filling pipes, and means for feeding tobacco into the said filling pipes and shells, substantially as and for the purpose set forth.

3. In a machine for filling cigarette shells with tobacco the combination, of a rotary disk, filling pipes secured to said disk, means

for continuously rotating the said disk, means for feeding the shells to the said filling pipes, means for pushing the said shells onto the said filling pipes, means for feeding the tobacco into the said filling pipes and shells, and means for removing the cigarettes from the said filling pipes, substantially as and for the purpose set forth.

4. In a machine for filling cigarette shells with tobacco, the combination of a rotary disk, means for continually rotating the said disk, filling pipes secured to the same, means for automatically pushing shells onto the said filling pipes, a lever provided with a feed pipe, means for oscillating said lever, and means for ejecting the filled tubes from the said filling-pipes, substantially as and for the purpose set forth.

5. In a machine for filling cigarette shells with tobacco the combination, of a rotary disk, means for continually rotating the said disk, filling pipes secured to the same, a lever provided with holes, means for oscillating the said lever, a feed pipe on the said lever communicating with one of the holes of the said lever, means for ejecting the filled tubes from the said filling-pipes, a holder for the cigarette shells, a rotary drum having grooves on its circumference adapted to receive the shells from the said holder, means for continuously rotating the said drum with the same speed as that of the rotary disk carrying the filling pipes, and a plate having an inclined edge adapted to push the cigarettes onto the said filling-pipes, substantially as and for the purpose set forth.

6. In a machine for filling cigarette shells with tobacco, the combination of a rotary disk, means for continuously rotating the said disk, filling pipes secured to the same, a lever provided with holes, means for oscillating the said lever, a feed pipe on the said lever communicating with one of the holes thereof, a flexible pipe communicating with the other of the said holes, means for automatically feeding the shells to the said filling pipes, and means for pushing the said shells onto the said filling pipes, substantially as and for the purpose set forth.

7. In a machine for filling cigarette shells with tobacco the combination, of a rotary disk, means for continuously rotating the said disk, filling pipes secured to the same, a lever provided with holes, means for oscillating the said lever, a feed-device on the said lever communicating with one of the holes of the said lever, a flexible pipe communicating with the other of the said holes, a holder for the cigarette shells, a rotary drum having grooves on its circumference adapted to receive the shells from the said holder, means for continuously rotating the said drum with the same speed as that of the rotary disk carrying the filling pipes, and a plate having an inclined edge adapted to push the cigarettes onto the said filling pipes, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LEONARD LINDELÖF.

Witnesses:
JOHN DELMAR,
KARL RUNCSKOG.