

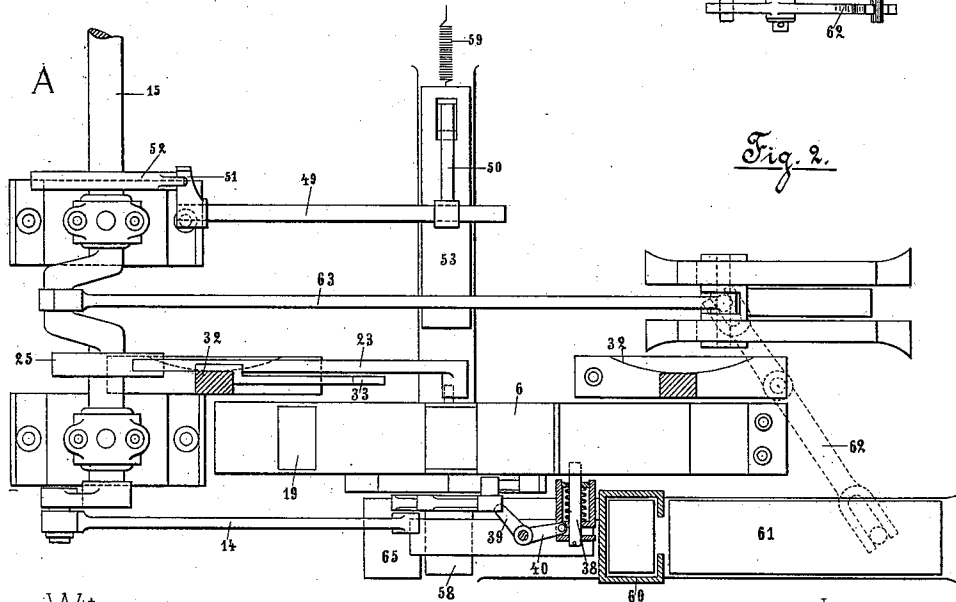
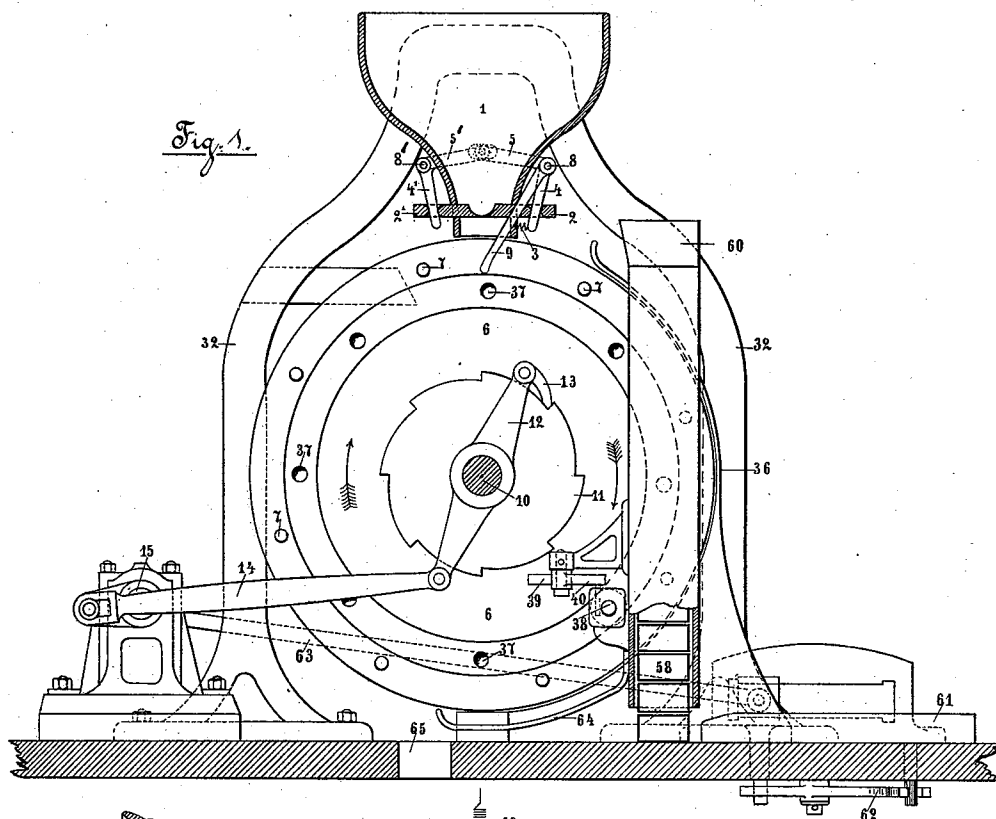
(No Model.)

3 Sheets—Sheet 1.

A. SCHUSTER.
MATCH BOX FILLING MACHINE.

No. 568,801.

Patented Oct. 6, 1896.



Witnesses:
C. Schmidt
Richard Kraemer

Inventor:
Albert Schuster

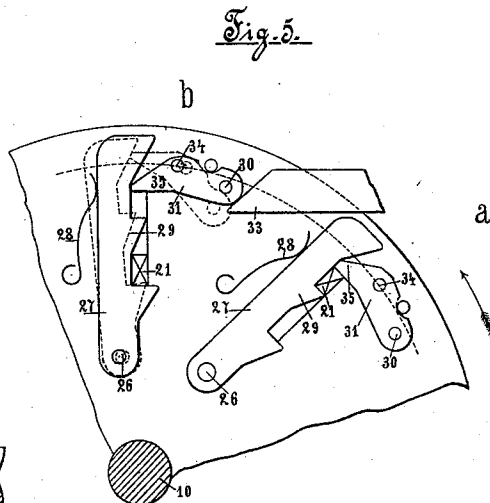
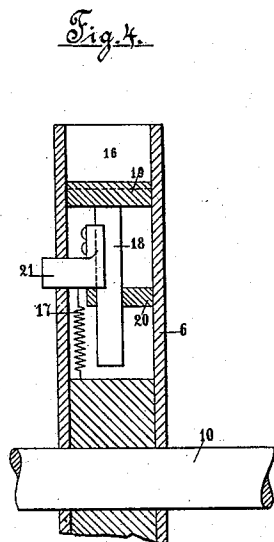
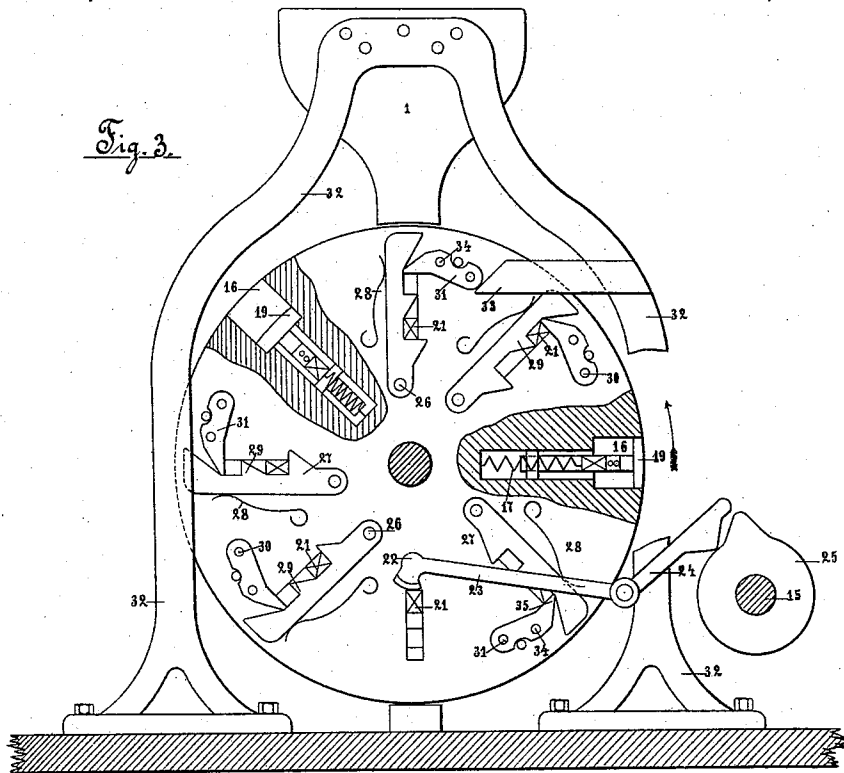
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3 Sheets—Sheet 2.

A. SCHUSTER.
MATCH BOX FILLING MACHINE.

No. 568,801.

Patented Oct. 6, 1896.



Witnesses:

G. John Klein.
Richard Kraemer

Inventor:

Albert Schuster

(No Model.)

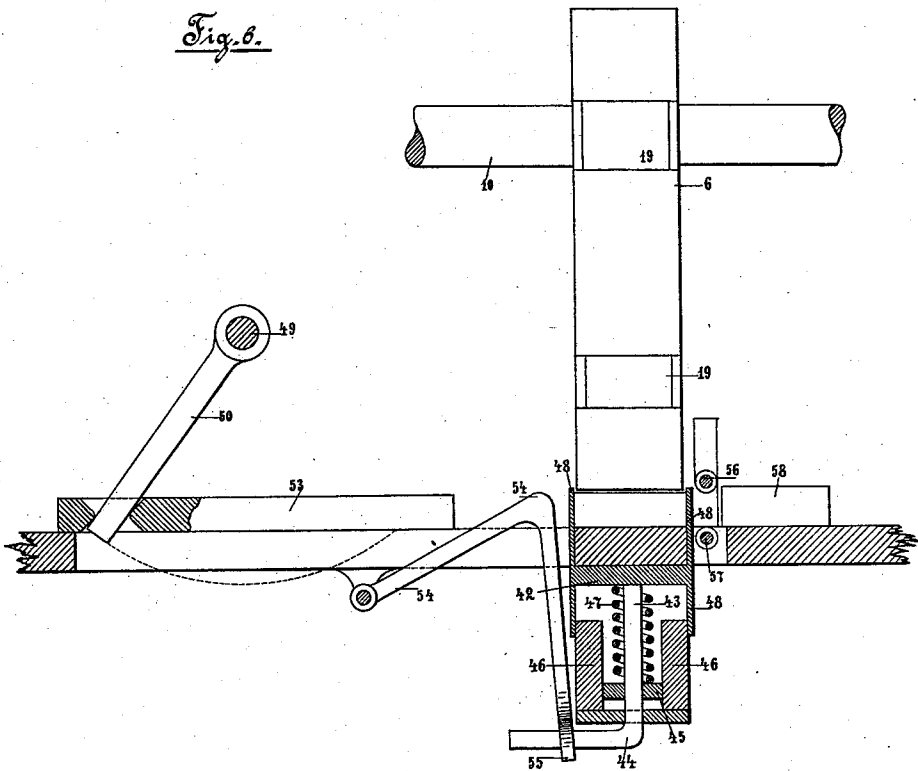
3 Sheets—Sheet 3.

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Patented Oct. 6, 1896.

Fig. 8.



Witnesses:

C. L. Smith
Richard Kraemer

Inventor:

Albert Schuster

UNITED STATES PATENT OFFICE.

ALBERT SCHUSTER, OF BERLIN, GERMANY.

MATCH-BOX-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 568,801, dated October 6, 1896.

Application filed January 2, 1895. Serial No. 533,646. (No model.)

To all whom it may concern:

Be it known that I, ALBERT SCHUSTER, a subject of the King of Prussia, German Emperor, and a resident of Berlin, in the German Empire, have invented certain new and useful Improvements in Match-Box-Filling Machines, of which the following is a specification.

My invention relates to improvements in machines for filling boxes with matches, in which machines the matches are separated into lots, these lots being delivered into inner boxes and the latter thus filled pushed into outer boxes or casings; and the object of my improvements is to provide a machine by which reliable working is secured and igniting of the matches by friction prevented. I attain this object by the machine illustrated in the accompanying drawings, in which—

Figure I is a front elevation, Fig. II a plan, and Fig. III a rear elevation, of the improved machine, partly in section. Figs. IV, V, and VI are detailed views of parts of the machine.

Similar figures refer to similar parts throughout the several views.

The matches, manufactured according to any known process, are placed in a hopper 1, (shown in section in Fig. I,) so that they rest upon the slides 2 2' of the separating device, which slides project from both sides into the hopper, and are held in this position by means of a spring 3 and the levers 4 5 and 4' 5', Fig. I. When the drum 6 revolves, studs 7 thereon come in contact with the lever 9 and turn the said lever on its pivot 8 to the right, by which movement the separating-slides 2 and 2' of the separating device are drawn out of the hopper by means of the levers 4 5 and 4' 5'. The matches will then fall upon the circular wall of the drum 6. As soon as the stud 7 has passed the lever 9 the slides 2 2', under the action of the spring, move back into the hopper, separating thereby that number or lot of matches required for the proper filling of a box.

The drum 6 is connected with the shaft 10 and the ratchet-wheel 11 of the latter. In front of the ratchet-wheel 11 there is an oscillating lever 12, loosely mounted on the shaft 10 and provided at its upper end with a ratchet-pawl 13, engaging with the said ratchet-wheel 11. The lower end of the le-

ver 12 is connected to the rod 14, actuated by the main shaft 15. For receiving the separated lots of matches the drum 6 is provided with any suitable number of chambers. In the present case eight of such chambers are shown. The number of the chambers corresponds to the number of the teeth of the ratchet-wheel. When, therefore, the main shaft 15 revolves half around, the ratchet-pawl 13 imparts motion to the drum and turns the latter forward for one-eighth of its periphery. During the other half of the revolution of the main shaft 15 the ratchet-pawl slides back over a tooth of the ratchet-wheel 11, while the drum 6 stops. This arresting of the drum is utilized for bringing the separated lot of matches into one of the chambers 16. In each of the chambers 16 is arranged a die 18, bearing a plate 19, curved with the same curvature as the periphery of the drum and under the action of a spring 17, which tends to draw the die and curved plate to the center of the drum. The die 18, sliding in a bearing 20, carries an arm 21, projecting out of the drum 6. To this arm 21 the spring 17 is fastened.

Shortly after the drum 6 has come to a stand one of the arms 21 will be pressed down by the tappet 22 of a bent lever 23 24, actuated by means of a cam 25, keyed on the main shaft 15, so as to bring the plate 19 flush with the circular surface of the drum. For securing the die with its plate in this position a latch may be employed, for instance, as shown in Fig. V. This latch or pawl 27, pivoted at 26, is pressed by means of a suitable spring 28 against the arm 21, which is prevented from being drawn back under influence of the spring 17 by means of a shoulder 29 on the pawl 27. In this position the die 18 remains until that plate 19 has come again to the position under the hopper 1. The matches separated by the slides 2 2' are then resting upon the plate 19. Shortly before the drum 6 stops the stud 30 of the pawl 31, Fig. V, has passed the edge of the piece 33, fixed to the frame 32 and been carried down thereby, whereby the shoulder 35 of the pawl 31, pivoted at 34, comes in contact with the pawl 27, in order to bring the latter into the position b. (Shown by dotted lines in Fig. V.) By this operation the arm 21 will be freed, so that the die 18, with plate 19, following the tension

of the spring 17, returns to the inward position, Fig. V. As the plate 19 is drawn inwardly toward the center of the drum the chamber 16 opens to receive the matches resting upon the said plate 19, which enter into the chamber thus formed. For preventing the matches from falling out of the chamber during the revolution of the drum a guard-plate 36 is arranged near the periphery of the drum.

10 When the filled chamber has reached its lowest position, its contents, that is to say, the separated lot of matches, are delivered into an inner box placed under the drum.

For locking the drum at its position of rest a plurality of holes 37 is arranged in the said drum, into which holes a pin 38, actuated by a spiral spring 41, is pressed as soon as the drum has finished one-eighth of its whole revolution. The disengaging of the spring-pressed pin 38, which disengaging must take place before the drum begins to rotate, is effected by means of a bent lever 39 40, against the leg 39 of which the rod 14 strikes on its passage to the right. As soon as the rod 14 returns to the left side the drum is turned forward by means of the ratchet-pawl 13, as described above, while the locking-pin 38 slides on the front plate of the drum.

The empty inner boxes placed under the drum by any suitable means are held in position by means of an H-shaped sliding piece 42, Fig. VI, the upper elastic arms of which pass through a slot in the table or plate of the machine and embrace the respective inner box. A rod 43, connected with the sliding piece 42, is in its lower part 44 bent off rectangularly and passed through a fork 55 of the bent lever 54. The sliding piece 42 is guided by means of guide-bars 46 and held in the position shown in Fig. VI by a suitable spring 47, having its bearing on plate 45.

The instant the inner box placed under the drum 6 and held in position by the elastic arms 48 of the sliding piece 42 is properly filled up with matches, which operation is done, as already stated, by the radial and outward motion of the die-plate 19, (see position *a* of Fig. V,) the lever 50, oscillating on shaft 49, is put in motion by means of the lever 51 and the cam 52, keyed on the main shaft 15, in order to push forward the slide 53, which in its forward movement turns down the bent lever 54, whereby the rectangular part 44, embraced by the bifurcated piece 55, and therefore the sliding piece 42, is also pressed down, so that the respective inner box is liberated. In its farther advance the

slide 53 forces the said inner box, properly filled up with matches, between suitable rollers 56 and 57 and into an outer box or casing 58. A suitable spring 59 brings the slide 53 back into its first position.

The outer boxes or casings are placed into a hopper 60 in the known manner and pushed forward by means of a slide 61 into alignment with the inner box that is under the drum. This slide 61 is moved back and forth by the double-armed lever 62, having forked ends engaging, respectively, with a pin 66 on slide 61 and a pin 67 on a slide 68, the latter connected by rod 63 with a crank 69 of shaft 15. 70 are guides for slide 68. 71 are guides for slide 61. The spring 64 holds the outer case 58 thus thrust forward until the inner box has been pushed into it, whereupon when the next outer case is thrust forward by the slide 61 the aforesaid filled case will be displaced thereby and will fall through the orifice 65 in the table.

I claim as my invention—

1. The combination of a drum having a number of chambers in the periphery thereof, a hopper above said drum and a box-holding frame below the drum, movable floors to said chambers guide-rods for said floors lateral arms to said guide-rods, springs for drawing inward said floors, means for periodically and successively pushing outward the arms of said guide-rods, spring-latches 29 for maintaining said arms in outwardly-extended position and dogs 31 for dislodging said latches for the purpose set forth.

2. The combination with the drum 6 having in its periphery chambers 16, of the hopper 1 above said drum and a box-holding frame 48 below said drum rod 44 43 lever 54 spring 47 and slide 53 substantially as and for the purpose described.

3. The combination with the box-holding frame 48 the hopper 1, slides 2', 2, levers 4, 4', 5, 5', and lever 9, of the drum 6 having chambers 16, pins 7 ratchet-wheel 11 lever 12 pawl 13 rod 14 and lever 39 40 with locking-bolt 38 adapted to be operated thereby for controlling the movement of the drum and hopper-slides as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ALBERT SCHUSTER.

Witnesses:

CHAS. H. DAY,
CARL THIEME.