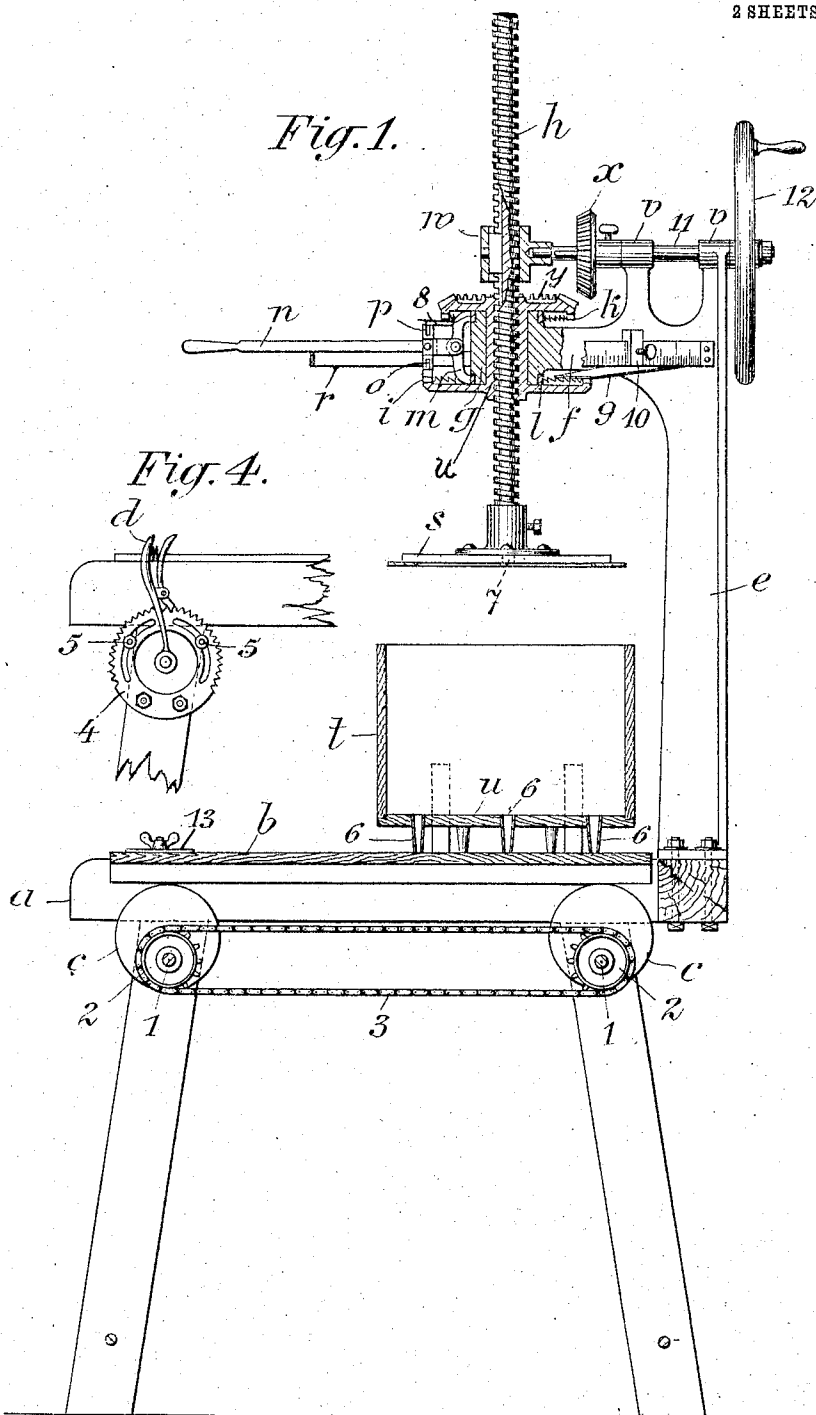


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H. LERCHE.
CONFECTIONERY MACHINE.
APPLICATION FILED JUNE 15, 1904.

2 SHEETS—SHEET 1.



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UNITED STATES PATENT OFFICE.

HUGO LERCHE, OF RAAB, AUSTRIA-HUNGARY.

CONFECTIONERY-MACHINE.

SPECIFICATION forming part of Letters Patent No. 780,675, dated January 24, 1905.

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To all whom it may concern:

Be it known that I, HUGO LERCHE, a subject of His Imperial Majesty the Emperor of Austria-Hungary, and a resident of Raab, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Confectionery-Machines, of which the following is a specification.

My invention relates to improvements in machines for the manufacture of confectionery, in which machine the regular angular displacement of a hand-lever is utilized to produce an irregular or unequal but adjustable reciprocating or up-and-down motion of a compressing-plate, while, furthermore, means are also provided to permit of an accelerated motion of such a plate; and the objects of my improvements are to impart to the said compressing-plate a longer downstroke than an upstroke independent of the operator, and thereby cause the desired quantity of prepared confectionery mixture or material to be ejected and the remainder to be retained or kept back by suction.

The nature and characteristic features of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a side elevational view, partly in section, embodying main features of my invention. Fig. 2 is a detail view illustrating in front elevation the upper portion of the machine. Fig. 3 is a top plan view thereof, and Fig. 4 is a detail view illustrating in side elevation means for raising and lowering a movable top on the table of the machine.

Referring to the drawings, *a* is a table or stand having a movable top *b* supported on a number of eccentrics *c* or their equivalents and fixed on shafts 1, journaled in the stand *a*. The raising or lowering of the top is effected by means of said eccentrics and of a lever *d*, fixed to one of the shafts 1, as shown in Fig. 3. The several shafts 1 may advantageously be geared together—*e. g.*, by means of a chain-wheel 2 and a chain 3, as shown in Fig. 1. In order to limit the rotary or angular movement of the shafts 1 when a number of successive identical up-and-down motions of the com-

pressing-plate are required, adjustable stops 5 on the guide 4 of the lever *d* may be provided, the locking of the lever permitting of the securing of the movable table-top in any required position.

The frame of the table or stand *a* carries a box *t* over the movable top *b*, sufficient space being provided between the table, raised in its uppermost position, and the movable top for the ejecting tubes or nozzles 6, which deliver the material onto the table-top. The box is intended to receive the prepared confectionery material and is furnished with a removable bottom carrying the said nozzles, so that other and differently-shaped nozzles can be readily inserted.

The box *t* is open at the top and receives a tight-fitting compressing-plate *s*, preferably provided at its edges with packing material and having air-holes 7 adapted to permit the air contained in the box to escape when the plate *s* enters the same. The air-holes 7 can be closed by pegs or taps or in any other convenient manner. The compressing-plate is detachably secured to a preferably left-hand screw-spindle *h*, having a range of vertical movement in a nut *u*, carried by a bearing *g*, arranged at the end of an arm *f*, extending from a standard *e*. This standard *e* also serves to support the driving device for the screw-spindle *h*, actuating the compressing-plate, and is fixed to the table or stand *a*. The screw-spindle *h* serves to raise and lower the compressing-plate *s* in the box and for this purpose is provided with a suitable driving-gear, which in the present instance consists of two ratchet-wheels *k* and *i*, the ratchet-wheel *k* being secured to the upper and the ratchet-wheel *i* to the lower end of the nut *u*, actuating the screw-spindle *h*. As shown in the drawings, the teeth of the ratchet-wheels *k* and *i* are so arranged that the ratchet-wheel *k* can only be actuated from left to right in Fig. 2, whereas the ratchet-wheel *i* can only be actuated in a direction from right to left in said figure. The ratchet-wheel *k* also serves as a bevel-gear and for the purpose is provided at its upper face with teeth.

Two rings 1 and 8, abutting against the ratchet-wheels *k* and *i* and connected by a

bridge *m*, are loosely mounted on the bearing *g*, as shown in Fig. 1. The bridge-piece *m* is provided with two pawls *o* and *p*, engaging, respectively, the ratchet-wheels *i* and *k*. To the bridge-piece *m* is pivotally secured a lever *n*, resting upon a large ring *r*, fixed to the standard *e*. As shown in Fig. 2, the ring has an enlarged portion which extends not more than half the circumference and gradually joins the narrow part thereof. The pawls *o* and *p* are arranged on the lever *n* in such a manner that when the same is on the narrow part of the ring the pawl *o* is in engagement with the ratchet-wheel *i*, while the other pawl, *p*, is brought into engagement with its ratchet *k* when the lever is on the enlarged part of the ring. A simultaneous engagement of the pawl *o* with the ratchet *i* can be prevented either by making the enlarged portion of the ring suitably high or, as shown in Figs. 2 and 3, by means of a plate 9 covering a section of the ratchet-wheel *i* corresponding to the enlarged portion of the ring, thereby throwing out of action this section of the ratchet *i*. The horizontal displacement of the hand-lever *n* is regulated by means of adjustable stops 10, secured on the ring *r*, which latter may be provided with a graduation (shown in Figs. 2 and 3) to facilitate proper adjustment of the stops 10.

The ratchet-wheel *k*, which is formed externally as a bevel-wheel *y*, receives motion from a similar wheel *x*, slidable and keyed on a shaft 11, arranged at a right angle to the screw-spindle *h*. A pin or other suitable means may serve for fixing the bevel-wheel *x* on the shaft 11 for purpose of the engagement or disengagement of both bevel-wheels. The shaft 11 turns in bearings *v*, provided on the standard *e*, a hand-wheel 12 being fixed on its outer end, while its inner end carries a bearing *w* for the screw-spindle *h*. A keyway is provided in this bearing to receive a key which engages a longitudinal slot in the screw-spindle, the key and the slot preventing the screw-spindle from turning while the nut *u* in the bearing *g* is actuated.

The mode of action of this machine is as follows: In order to lift the compressing-plate *s* quickly out of the box *t*, the bevel-wheel *x* is brought into engagement with the bevel-wheel *y*, whereupon the hand-wheel 12 is turned to rotate the shaft 11 and bevel-gears *x* and *y*. The nut *u* being rotated in its bearing *g* raises the screw-spindle *h*, which in turn raises the compression-plate over the box sufficiently to allow the disengagement of the same from the spindle *h* to permit the free introduction of the mass into the box *t*. Before doing that the ends of the nozzles 6 are closed by a board placed on the table *b* or by the table itself, as shown in Fig. 1, which is pressed toward the nozzles by means of the lever *d*. The box is then filled with the mass, the plate *s* again attached to the screw-spindle *h*, and lowered

upon the mass by turning the hand-wheel 12. During that time the apertures in the plate *s* are left open, so as to permit the air contained in the box to escape. These apertures are closed by pegs (not shown) at the moment when the plate *s* touches the mass in the box, whereupon the same is raised a little over the mass, thereby creating a vacuum between the mass and the plate. This vacuum prevents the running out of the mass through the nozzles 6 and discharging after lowering the table *b* onto a closing-board, should such be used. The board is then replaced by a sheet-metal plate (not shown) serving for the reception of the confectionery. Adjustable stops 13 serve to hold such a plate in proper position on the table *b*. Thereupon the table *b* is raised by means of the lever *d* and fixed in the raised position, and the bevel-wheels *x* and *y* are disengaged. It is to be assumed that the lever *n* rests on the enlarged portion of the ring *r* near one of the adjustable stops 10, which stops 10 may be adjusted in such manner as that the ratio of distance from the right-hand stop 10 to the oblique face of the ring and the distance from the oblique face to the left-hand stop 10 equals two to three. The operation of the lever *n*, resting at this time upon the enlarged portion of the ring *r*, does not incur any movement of the screw-spindle *h*, as the pawl *o* cannot engage with the ratchet *i* on account of the sheet-metal piece covering this ratchet. Furthermore, the pawl *p* engaging the ratchet-wheel *k* cannot enforce its turning movement, this ratchet-wheel being out of work at a left-hand movement of the lever *n*. If this lever is shifted on the narrower part of the ring *r*, then the pawl *o* by clearing the disk 9 engages with the ratchet-wheel *i*. This engagement results in a lowering of the screw-spindle *h*, as the latter is provided with a left-hand thread. With the spindle *h* the compressing-plate *s* descends into the box, forcing a part of the confectionery contained therein through the nozzles 6 on the sheet-metal plate until the movement of the lever *n* is terminated by the left-hand stop 10. The size and shape of parts of confectionery pressed out of the box *t* may of course differ according to the extent of the stroke of the lever *n* and to the shape of the nozzles inserted into the bottom of the box. If the pitch of the screw-spindle *h* be suitably chosen and the left-hand stop 10 adjusted in such a way that the stroke of the lever *n* results in lowering the compressing-plate *s* for a certain distance—*e. g.*, twelve millimeters—then the back movement of the lever *n* does not entail instantly a movement to the screw-spindle *h*, as the ratchet-wheel *i* is not operated if the lever *n* is turned to the right and the pawl *p* does not engage the ratchet-wheel *k* at the time the lever *n* is on the narrower part of the ring *r*. The lever *n* by ascending the enlarged portion of the ring *r* will bring the pawl *p* into en-

gagement with the ratchet-wheel $\frac{1}{2}$, and the screw-spindle $\frac{1}{2}$ is now lifted until the same strikes the right-hand stop 10 in Figs. 2 and 3. The compressing-plate s is hereby raised 5 by eight millimeters, the ratio of the distance on the enlarged portion and of the distance on the narrow portion of the ring being two to three and the compressing-plate having been sunk before by twelve millimeters. The raising 10 of the compressing-plate s results in creating a partial vacuum in the box, this vacuum preventing the out-running of the confectionery. If the lever n be moved backward, then the lever d is switched in the opposite direction, thereby lowering the table b for the purpose 15 of preventing the sucking up and depending of confectionery material. It is evident that by means of regular strokes of the lever n in both directions between the stops 10 the 20 compressing-plate s will be lowered into the box through a larger distance and then raised from this box, with the result of strokes of the compressing-plate of unequal height.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine of the character described, a material-box, a compression-plate adapted to be brought into and out of engagement with 30 the material in said box, a screw-spindle connected with said compression-plate, means engaging said spindle adapted to prevent rotation thereof, means supporting said spindle and holding the same in operative position, 35 said supporting means having gear-teeth and ratchet-teeth, forming a gear-wheel and ratchet-wheels, a gear-wheel and pawls adapted to engage said gear-teeth and ratchet-teeth and means adapted to actuate said gear-wheel 40 and pawls independent of each other to rotate said supporting means and to impart to said spindle and said compression-plate varying and defined movements with respect to said material-box.

2. In a machine of the character described, a material-box having outlets, a compression-plate adapted to be brought into and out of engagement with the material in said box, a screw-spindle connected with said compression-plate, means engaging said spindle adapt-

ed to prevent rotation thereof, means supporting said spindle having gear-teeth and ratchet-teeth forming a gear-wheel and ratchet-wheel, a gear-wheel and pawls adapted to be brought 55 alternately into engagement with said gear-teeth and ratchet-teeth to rotate said supporting means and to impart to said spindle and said compression-plate varying and defined movements with respect to said material-box, a hand-lever adapted to actuate said pawls, a 60 movable top adapted to be brought into engagement with the outlets of said box, means adapted to raise and lower said top and means connected with said raising means adapted to control the extent of raising of said top. 65

3. In a machine of the character described, a compression-plate, a screw-spindle attached thereto, a nut adapted to actuate said screw-spindle, means adapted to prevent turning of said screw-spindle in said nut, ratchet-wheels 70 arranged at either end of said nut and adapted to rotate the same in opposite directions, a hand-lever, pawls pivotally connected therewith, a ring adapted to support said hand-lever and to hold said pawls in and out of engagement with said ratchet-wheels and adjustable stops arranged on said ring adapted to limit the stroke of said hand-lever, substantially as and for the purposes described. 75

4. In a machine of the character described, 80 a compression-plate, a screw-spindle attached thereto, a nut for actuating said screw-spindle, a ratchet-wheel at each end of the said nut, a hand-lever, pawls connected therewith, said hand-lever arranged to bring one of said 85 pawls alternately into engagement with said ratchet-wheels, a ring supporting said hand-lever, adjustable stops secured to said ring to limit the strokes of said hand-lever, in a horizontal plane, in combination with means for 90 rotating said nut independent of said hand-lever and pawls, substantially as and for the purposes described.

In testimony whereof I have hereunto affixed my signature, this 21st day of May, 1904, 95 in the presence of two witnesses.

HUGO LERCHE.

Witnesses:

FRANZ REITER,
ALVESTO S. HOGUE.