May 31, 1932. A. E. BURTCHAELL 1,860,491

FACING AND STACKING MACHINE

Filed Feb. 19, 1929 2 Sheets-Sheet 1

Fig. 1.

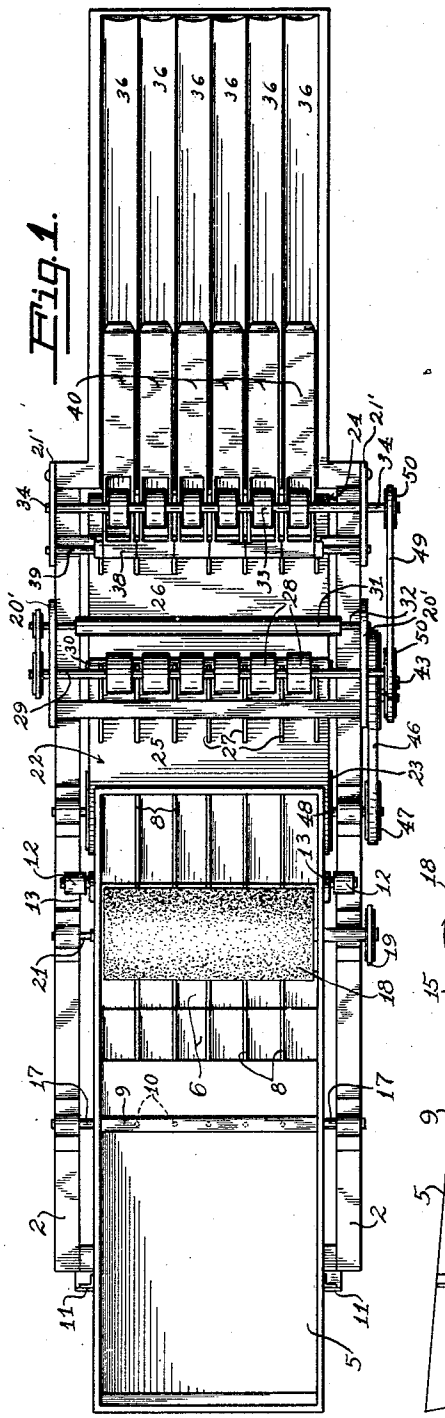
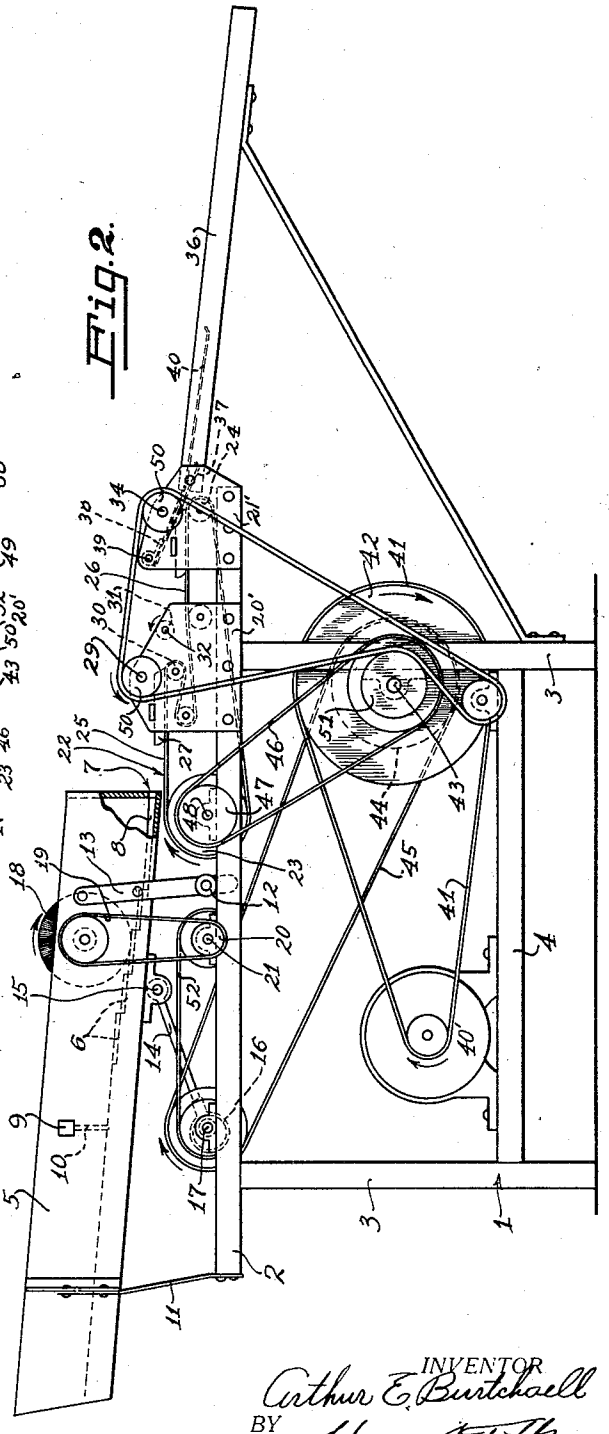


Fig. 2.



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Fig. 3.

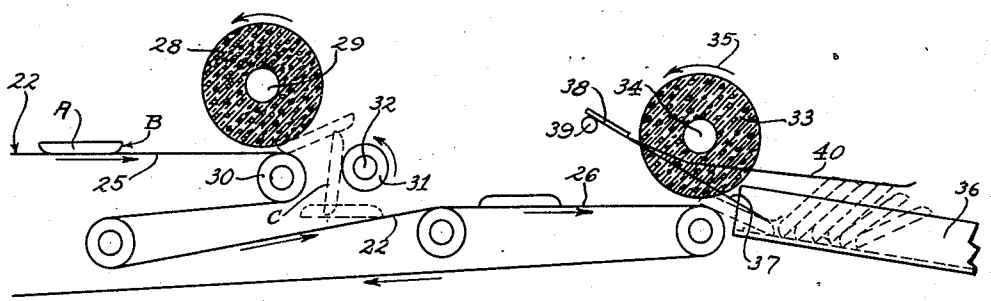



Fig. 4.

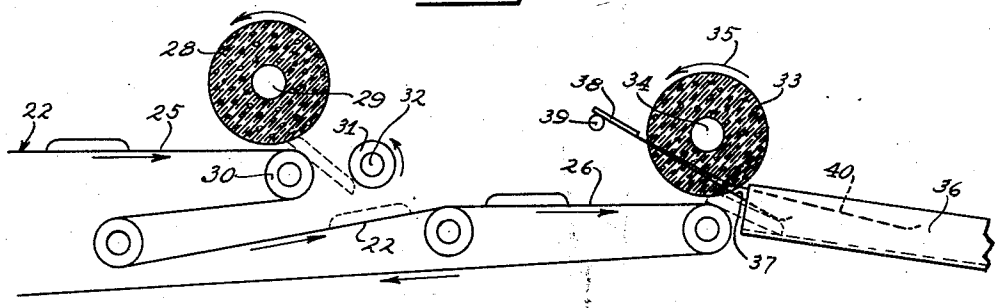
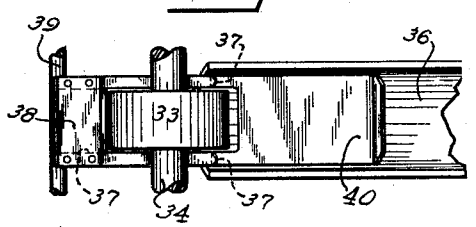



Fig. 5.




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# UNITED STATES PATENT OFFICE

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## FACING AND STACKING MACHINE

Application filed February 19, 1929. Serial No. 341,239.

The present invention relates to improvements in facing machines for snaps, crackers, biscuits and the like, whereby the articles may be delivered promiscuously to the machine or apparatus and be discharged therefrom with corresponding faces all disposed in one direction.

In the baking of snaps, cookies and the like, the articles are formed with relatively flat bottom, and a somewhat irregular top connecting with the bottom through a rounded edge, and this formation is effectively used in carrying out the present invention.

The objects of the invention are to mechanically, at high speed, with few operators and at little cost, effectively and accurately position successive snaps, cookies or similar articles with corresponding faces all in the same direction, whereby packers will be facilitated in packaging the goods; to reverse snaps or similar articles presented to the apparatus in an upside down position and to permit articles presented in a right side up position to remain, and to accomplish these results automatically by the same mechanism and without harm or injury to the articles. A further object is to provide means for arranging the faced snaps or cookies in overlapping upwardly inclined relation, whereby an operator or packer may grasp the line or stacked snaps and with slight manipulation form a stack or roll with all the surfaces in contacting parallel relation.

With the above mentioned and other objects in view, the invention consists in the novel construction and combination of parts hereinafter described, illustrated in the accompanying drawings and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

To more clearly comprehend the invention, reference is directed to the accompanying drawings, wherein—

Figure 1 is a view in plan of the preferred embodiment of my invention, illustrating the same consisting of a plurality of duplicate units.

Figure 2 is a view in side elevation.

Figure 3 is a view in diagrammatic detail side elevation of the facing roller and associated parts acting on a snap in upside down position to place the same right side up.

Figure 4 is a view similar to Figure 3, with the parts acting on a faced snap.

Figure 5 is a view in detail plan of one of the stacking rollers and its associated spring fingers.

In the drawings, the numeral 1 indicates a supporting frame, consisting of the top side frame members 2, supporting legs 3 and a lower or platform forming member 4.

Above one end of the frame is positioned an elongated open topped hopper 5, the bottom of which is inclined and is formed on its upper surface with steps 6, each step being of a depth slightly greater than the thickness of the snap the machine is designed to handle. The lower end of the hopper, immediately above the bottom, is formed with a discharge slot 7. The steps and slots are illustrated in parallel rows, being separated by dividing walls 8. Transversely of its upper end, above the uppermost step, the hopper is provided with a transverse rod 9 from which depend fingers 10 between which the snaps pass in their downward travel and are thereby formed into rows, one in alignment with each row of steps. The rear end of the hopper is supported by flexible strap members 11 extended upwardly from the members 2, and the forward end of the hopper is supported at each side by a roller 12 on the lower end of a mounting member 13, the rollers riding on the upper surface of the members 2.

Rapid longitudinal vibratory movement is imparted to the hopper 5 to cause the contents thereof to pass downwardly therein and discharge from the apertures 7. This is accomplished by a link 14 pivoted at 15 to the hopper and connected at its opposite end with an eccentric 16 on a shaft 17.

To insure rows of snaps of a single thickness or height discharging from the apertures 7, I mount transversely of and within

the hopper 5, a relatively flexible rotary brush 18, the lower periphery of which is spaced from its associated line of steps a distance slightly greater than the thickness of one snap but less than the thickness of two snaps. The brush is rotated in a direction reverse to that of the travel of the snaps by power from a belt 19 operating off of a pulley 20 on a shaft 21.

It will thus be observed that as the snaps progressively travel down the steps in the bottom wall of the hopper 5, any superimposed snaps, or those resting on ones below, will be swept off and but a single layer of snaps will remain in each row.

Extended upwardly from the members 2 are the side plates 20′ and 21′ arranged in opposing pairs. Between said plates and longitudinally of the frames extends an endless conveyor belt 22 of a width slightly greater than the width of the hopper, said belt at the ends of its flight, upper and lower, operating over the rollers 23 and 24. The upper flight of the belt is divided approximately midway of its length into the primary and secondary flights 25 and 26.

The snaps or articles discharge through the apertures 7 into parallel rows onto one end of the primary section 25 of the upper flight 22 of the endless conveyor, and are conveyed thereby between guide plates 27 to a point beneath a facing roller 28, Figs. 3 and 4. These rollers, one being provided for each row of snaps, are carried on a transverse shaft 29, and are constructed of relatively soft sponge rubber. The rollers are so positioned above the primary flight 25 as to afford a space between their peripheries and the upper surface of the flight, of a thickness slightly less than that of the snaps being handled.

As clearly illustrated in Figs. 2, 3 and 4, the primary flight 25 terminates by passing over a roller 30 at a point inwardly from a line disposed vertically through the far side of the peripheral edge of the rollers 28.

Disposed transversely of the secondary flight 26, at a point slightly beyond, above and parallel with the end of the primary flight 25 is a roller 31 on a shaft 32 and rotated in the direction of the arrows, Figs. 3 and 4.

With the endless belt travelling in the direction of the arrows, Figs. 3 and 4, and with rollers 28 and 31 rotating in the direction of their indicating arrows, the action of facing the snaps is clearly illustrated as follows.

Referring to Fig. 3, wherein a snap A is conveyed by the primary section of the belt 22 in an upside down position, it will be observed that it passes beneath the elastic roll 28 and as the trailing portion of its rounded edge B reaches the declining curvature of the roller 30, the snap is inclined with its forward edge upwardly disposed and it thus leaves the primary belt section in this position, dropping by gravity to the dotted line position C, Fig. 3, where the action of the roller 31 causes a pressing of the lower edge of the snap onto the forward end of the secondary flight 26 of the belt 22, and said lower edge striking the belt, the snap is caused to travel, lower edge first, and thus be reversed in its position from that illustrated in full line on the primary flight 25. This action is accomplished by the rounded edge of the snap riding over the curved surface of the primary flight as it passes over the roll 30.

It will be observed in Fig. 4 that a snap deposited on the primary flight 25, in a right side up position, is discharged from the end of the primary flight at a point where it passes around the roller 30, with the forward edge of the snap inclined downwardly, it having dropped beneath the surface of the roller 31, and as it is discharged by the roller 28, it drops right side up onto the secondary flight 26 of the belt 22.

It will be thus observed that the parallel rows of snaps are all correspondingly faced as they are deposited onto the secondary flight 26 of the main conveyer belt 22, and when in such position they are conveyed toward the discharge end of the secondary flight 26, and pass beneath the conveyer rollers 33, preferably of yieldable sponge rubber, the rolls being mounted on a shaft 34 rotated to drive the rollers in the direction of the arrow 35—Figs. 3 and 4.

Arranged in parallel alignment with each row of snaps is a concave trough 36 best illustrated by shading and end of trough in Fig. 5, and projecting into the end thereof, one disposed on each side of its respective roller 33, are friction spring fingers 37 carried by a plate 38 on a rod 39. Projecting into each trough, beyond the ends of the fingers 37, is a stacking spring 40, the action of which is to retard travel of the snaps longitudinally of the trough, and to enable the action of successive snaps, as the same pass beneath the fingers 37, to ride on preceding snaps and thus assume inclined overlapping relation, as in Fig. 3.

The respective parts of the apparatus are actuated by a motor 40′ which operates, through a band 41, a driving wheel 42 on a shaft 43. On said shaft is a pulley 44 connected through belt 45 with the cam shaft 17. A belt 46 operating over a pulley 47 on shaft 48 which mounts pulley 23 over which belt 22 operates, causes the travel of belt 22 in the direction of the arrows—Figs. 3 and 4. Batteries of rollers 28 and 33 are driven in the direction of arrows 35, Figs. 3 and 4, by a belt 49 operating over rollers 50 on the ends of shafts 29 and 34, the belt being driven by pulley 51 on shaft 43. Shaft 21 operating

brush 18 is driven by a belt 52 from cam shaft 17.

I claim:—

1. An apparatus for facing snaps and the like, comprising a vibrating hopper provided with a stepped bottom downwardly inclined toward one end and communicating with a discharge slot in the lower end of said hopper, means within the hopper for acting on the snaps to remove from said bottom steps all snaps excluding a single layer, an advancing and supporting means onto which the snaps discharge from the hopper with one face resting thereon, and means at the end of said advancing means for reversing any snaps presented thereto in an inverted position.

2. An apparatus for facing snaps and the like, comprising a vibrating hopper provided with a stepped bottom downwardly inclined toward one end and communicating with a discharge slot in the lower end of said hopper, means within the hopper for acting on the snaps to remove from said bottom steps all snaps excluding a single layer, an advancing and supporting means onto which the snaps discharge from the hopper with one face resting thereon, means cooperating with said advancing means for reversing any snaps presented thereto in an inverted position, and means for maintaining the snaps in position as they are discharged from the advancing means.

3. An apparatus for facing snaps, biscuits and the like, each having a convex face or bevelled edge portion, comprising means for receiving and advancing the biscuits while resting flat thereon on one face, roller means of resilient material intermediate the path of travel and operating on an axis transversely parallel with a cooperating surface of the receiving and advancing means, said roller contacting with the inverted surface of a biscuit while advancing to cause the same to roll on its trailing bevelled edge, whereby the forward edge of said inverted biscuit is raised as the contact with the roller terminates, and means cooperating with said roller for receiving the forward thrust of the inverted biscuit as it discharges from the roller contact for completing the reversing of the inverted biscuit, the aforesaid advancing means providing for continuous forward movement.

4. In an apparatus for facing snaps which have the edge portion of one face bevelled, a conveyor belt adapted to receive snaps thereon, and having a pair of advanceable sections in horizontally stepped relationship providing an upper section and a lower section, the upper section adapted to discharge snaps onto the lower section, a resilient rotatable roller adjacent the discharge end of the upper advancing section adapted for rolling contact with all snaps at substantially the time of discharge of the snaps from said upper advancing section, the direction of rotation of said roller being in the same direction as the direction of movement of the upper advancing belt section, and a means disposed transverse of the belt adjacent the stepped portion thereof and in spaced relation to the belt, and adapted to interrupt momentarily the forward movement of the snaps which were received with bevelled face downward on the upper belt section.

In testimony whereof I have signed my name to this specification.

ARTHUR E. BURTCHAELL.