

Feb. 12, 1952

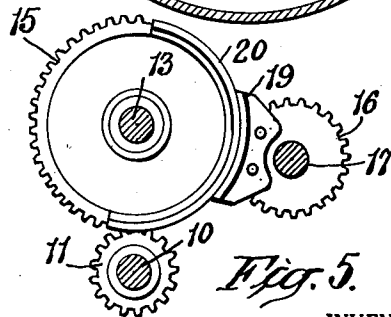
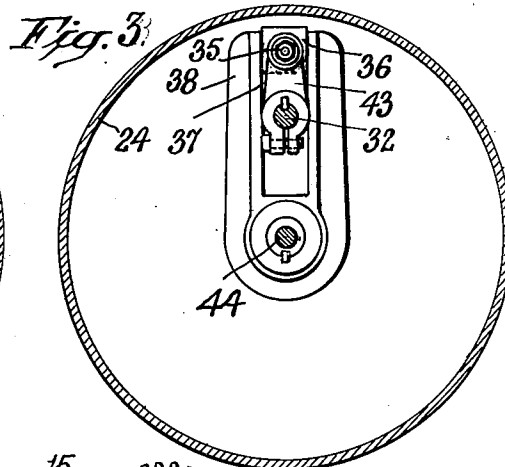
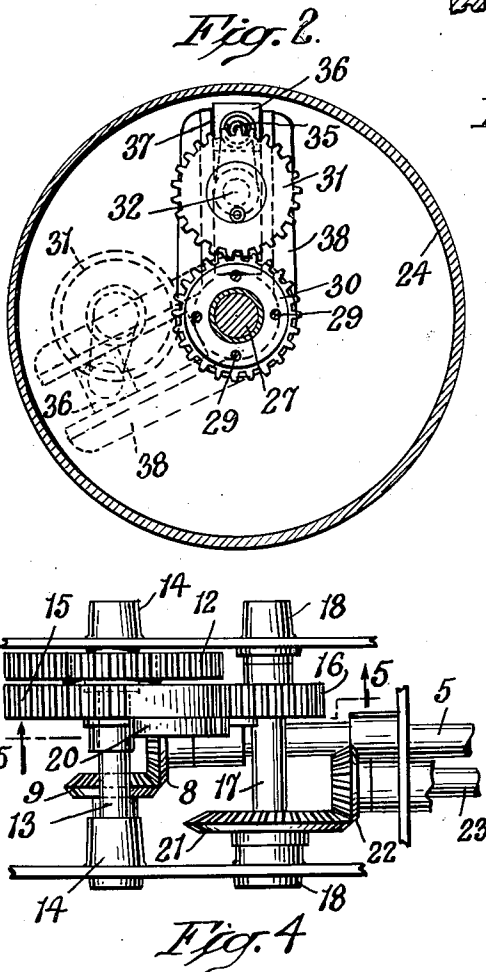
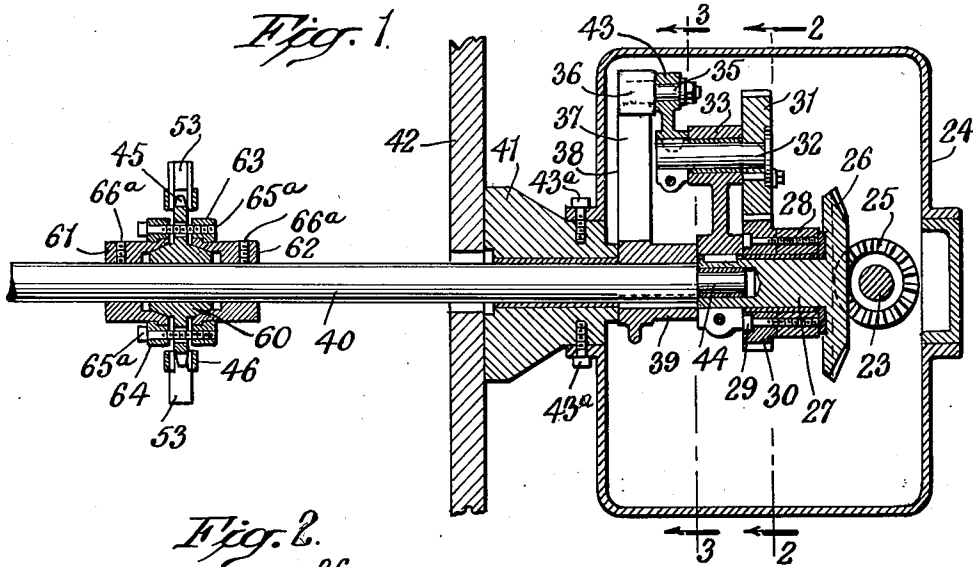
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2,585,829

CONVEYER MECHANISM FOR CONFECTIONERY MACHINES

Filed Feb. 16, 1949

2 SHEETS—SHEET 1



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Feb. 12, 1952

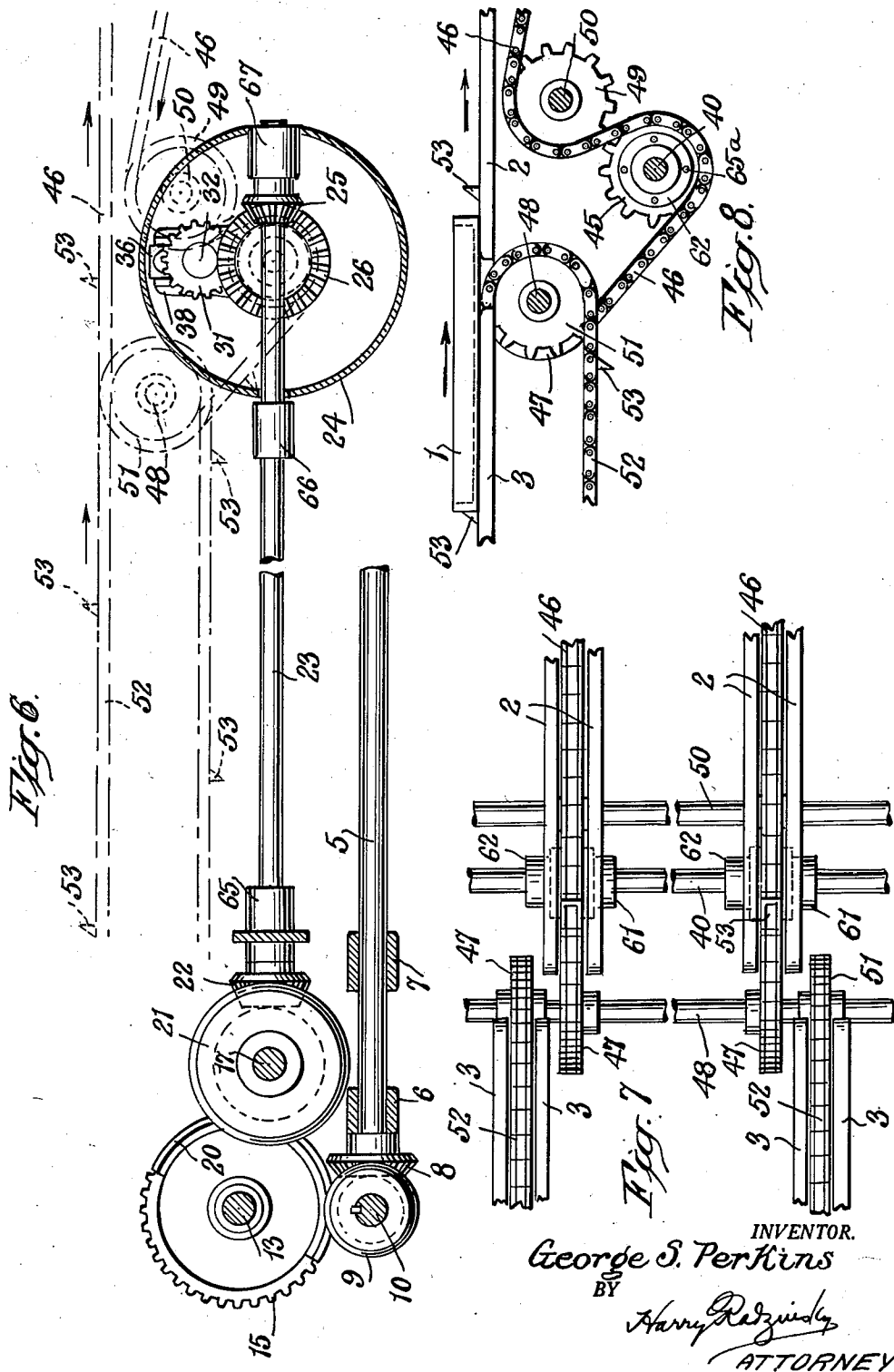
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2 SHEETS—SHEET 2



UNITED STATES PATENT OFFICE

2,585,829

CONVEYER MECHANISM FOR
CONFECTIONERY MACHINESGeorge S. Perkins, New York, N. Y., assignor to
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Application February 16, 1949, Serial No. 76,691

2 Claims. (Cl. 198—135)

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This invention relates to confectionery-making machines, and more particularly to conveyor means by which trays containing the goods are intermittently moved from one operating station to another.

An object of the invention is to provide a conveyor mechanism of this character in which the conveyor chains carry lugs engageable with trays to move the trays along on supporting rails, the chains being movable with variable speed to facilitate proper and accurate engagement of the trays by the propelling lugs. An object of the invention is to provide means by which an equal spacing of the co-operating lugs on several chains will be maintained. Another object of the invention is to provide adjusting means by which the required adjustment and spacing of the lugs can be secured as required.

Still another object of the invention is to provide a variable speed drive for the shaft which controls the movement of the conveyor chains to thereby enable the lugs on the several chains to equalize the engagement of the trays and smoothly urge the trays forward to proper positioning at the several stations of the machine.

These and other objects are attained by the structure hereinafter described and more particularly set forth in the claims appended hereto.

In the accompanying drawings, wherein an illustrative embodiment of the invention is disclosed, Fig. 1 is a vertical sectional view taken through the variable speed driving mechanism for the conveyor chains; Fig. 2 is a sectional view, taken on the line 2—2 of Fig. 1, looking in the direction of the arrows; Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1, looking in the direction of the arrows; Fig. 4 is a top plan view of the intermittent driving mechanism; Fig. 5 is a sectional view taken on the line 5—5 of Fig. 4, looking in the direction of the arrows; Fig. 6 is a side elevation, with parts in section, of the intermittent drive and variable speed mechanisms; Fig. 7 is a top plan view of the two conveyor chain groups, and Fig. 8 is a side view, with parts in section, of the mechanism shown in Fig. 7.

The apparatus of which the structure of the present invention forms a part, consists generally of a lengthy machine in which trays, one of which is indicated at 1 in Fig. 8, are moved along supporting rails 2 and 3 from one station to the next. The machine includes various mechanisms for forming or operating on the goods and which mechanisms constitute no part of the present invention. Hence the description which follows is limited to those conveyor elements of the machine

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which are considered new and which co-operate in a manner to be hereinafter set forth.

At 5 is indicated a driving shaft which in certain types of machines extends longitudinally of the machine and may be driven at a constant speed either directly from a motor or by any desired intermediate driving means. Said rotative shaft 5, shown rotatably supported in the elements or bearings 6 and 7 forming part of the frame structure of the machine, carries at one end a bevel gear 8 meshing with and driving a bevel gear 9 secured on the transversely-extending shaft 10. The shaft 10 carries a small gear 11 (Fig. 5) located below and in mesh with a larger gear 12, (Fig. 4) secured on a transverse shaft 13 located above the transverse shaft 10. Shaft 13 is rotative in the frame bearings 14 and it carries an interrupted gear 15, the teeth of which mesh with a small gear 16 (Fig. 6) secured on a transverse shaft 17 that is rotative in the frame bearings 18 and extends parallel to the shafts 10 and 13. Gear 16 carries a shoe 19 operative against the arcuate surface 20 of the interrupted gear 15 when the teeth of said gear 15 and the gear 16 are not in meshing position, or are as shown in Fig. 5.

Secured on the shaft 17 is a bevel gear 21 which meshes with a bevel gear 22 secured on a longitudinally extending shaft 23 suitably rotatively supported in bearings 65, 66 and 67. Said shaft 23 extends lengthwise of the machine, and at a point remote from gear 22 it enters into a gear housing 24 containing a variable drive mechanism to be presently described. It will be apparent that by means of the drive mechanism thus far described, shaft 17 will be intermittently rotated due to the intermittent drive of its gear 16 by the interrupted gear 15, and hence shaft 23, driven from shaft 17 by the bevel gears 21 and 22, will also be intermittently rotated.

Within the housing 24, the longitudinal, intermittently rotated shaft 23 is mounted in the bearing 67 and it carries a bevel gear 25 in mesh with a bevel gear 26 having a short shaft 27 rotative within a bearing 28 forming part of a frame structure extending across the inside of the housing 24. Fixedly attached to the frame structure 28 by means of the screws 29 is a fixed ring gear 30, and in mesh therewith and rotative about the fixed gear 30 is a gear 31 attached at one end of a pin 32 rotative in one end of an arm 33 having its opposite end secured on the bevel-gear shaft 27. At its end remote from the gear 31, the pin 32 carries a crank arm 43 which has its outer end pivotally attached at 35 to a block 36 which is

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slidably mounted in a slot 37 formed in a bifurcated arm 38 which has its hub 39 keyed upon a shaft 40 extending transversely of the machine. Said shaft 40 drives the conveyor chains and is rotatively supported in a bearing block 41 secured to the side frame 42 of the machine, and said block also receives the housing 24 which is secured to it by the screws 43a. The shaft 40 is formed with a reduced-diameter end portion 44 which is rotative within the shaft 27.

From the arrangement described, it will be apparent that when the parts of the variable-speed drive mechanism above described are in the positions shown in Fig. 1, wherein the slidable block 36 is located near the outer or open end of the slot 37 in the arm 38, and when the bevel gear 26 is rotated, the shaft 40 will be driven at a relatively low speed due to the ratio of the drive then developed through the crank and gear engagement between shaft 27 and shaft 40. As revolution of shaft 27 continues, rotation of the gear 31 will cause the block 36 to move inwardly in slot 37 in a direction toward the axis of shaft 40 and as such movement of the block continues it is obvious that the speed of shaft 40 will be accelerated. The advantages of this arrangement will be pointed out in connection with the conveyor means to be described.

The shaft 40 carries a pair of sprockets 45 around which extend the conveyor chains 46. Said chains also extend around sprocket 47 on a cross shaft 48 and also over sprockets 49 on shaft 50. At a remote point on the machine, the chains 46 extend over sprockets secured on another shaft there located, so that the chains are of the conventional endless type. Shaft 43 carries sprockets 51 which engage conveyor chains 52 operative to move the trays 1 along the rails 3 as shown in Fig. 8. It will be noted that the chains 46 and 52 are provided with lugs 53 which engage behind the trays 1 and slide the same along the rails 2 and 3 in the direction indicated by the arrows in Fig. 8.

In the operation of the machine, the trays 1 which extend across the machine and are supported on the rails 2 and 3 are moved along the rails by the engagement of the lugs 53 behind the trays. The conveying movement of the trays is intermittent since the shaft 40 is intermittently driven in the manner heretofore described. Since said shaft starts at a relatively slow speed due to the variable drive means shown in Figs. 1 to 3 inclusive and then increases its speed, the lugs 23 are moved up behind the trays at low speed to gently engage and align the trays and then as the speed increases they move the trays forward to the next position of halt. As the trays leave the rails 3, the lugs on the chains 46 will be brought up behind the trays and urge them forwardly onto the rails 2 and along the same to the next operating station of the machine.

Through the arrangement described, the lugs will maintain their spaced relation; the trays will be halted where desired without skid or disalignment and will be picked up by the following set of lugs and smoothly moved forwardly.

I have found it desirable to provide means for readily adjusting lug positions, and the arrangement for this purpose is shown in Fig. 1, wherein it will be noted that each of the sprockets 45 is

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provided with a conical or tapered hub 60 that is held by a clamp composed of the two halves indicated respectively at 61 and 62. The two halves of the clamp are interiorly tapered and thus as they are brought toward one another they grip the hub of the sprocket between them. The halves of the clamps are drawn toward one another by the rings 63 and 64 which receive the clamping screws 65a. The two halves 61 and 62 are secured on the shaft 40 by the set screws 66a.

It will be apparent that by loosening and partially removing the clamping screws 65a, the grip of the clamp halves 61 and 62 will be sufficiently freed to permit the sprocket 45 to be adjusted relatively to the shaft 40 to thus position the lugs 53 thereon at the desired location.

While I have herein described one embodiment of the invention, it is obvious that the same is not to be restricted thereto, but is broad enough to come within the scope of the annexed claims.

What I claim is:

1. In a conveying mechanism for confectionery machines, conveyor chains for moving trays, an intermittently-rotated conveyor shaft provided with sprockets over which said chains extend, a stud shaft axially aligned with respect to the conveyor shaft, an arm carried by and extending radially from the stud shaft, a crank rotatively mounted at the end of the arm, a gear for rotating the crank, a fixed gear surrounding the stud shaft and in mesh with the first-mentioned gear, a block carried by one end of the crank, a slotted arm carried by the conveyor shaft, the block being slidably mounted in the slot in said slotted arm and movable in said slot when the crank is rotated.

2. In a conveying mechanism for confectionery machines, conveyor chains for moving trays, an intermittently-rotated conveyor shaft provided with sprockets over which said chains extend, a stud shaft axially aligned with the conveyor shaft, an arm carried by and extending radially from the stud shaft, a pin rotative at the end of the arm, a crank mounted on and rotative with said pin, a gear for rotating the pin, a fixed gear surrounding the stud shaft and within which said stud shaft is rotative, said fixed gear being in mesh with the gear carried by the pin, a block carried by the outer end of the crank, a slotted arm carried by and extending radially from the conveyor shaft, the block being slidably mounted in said slotted arm and movable back and forth in said slot when the crank is rotated, and a housing in which the stud shaft, gears, arms and crank are mounted.

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