C. W. ODERMATT.

PACKING TABLE.

APPLICATION FILED NOV. 26, 1920.

1,395,727.

Patented Nov. 1, 1921.

3 SHEETS—SHEET 1.

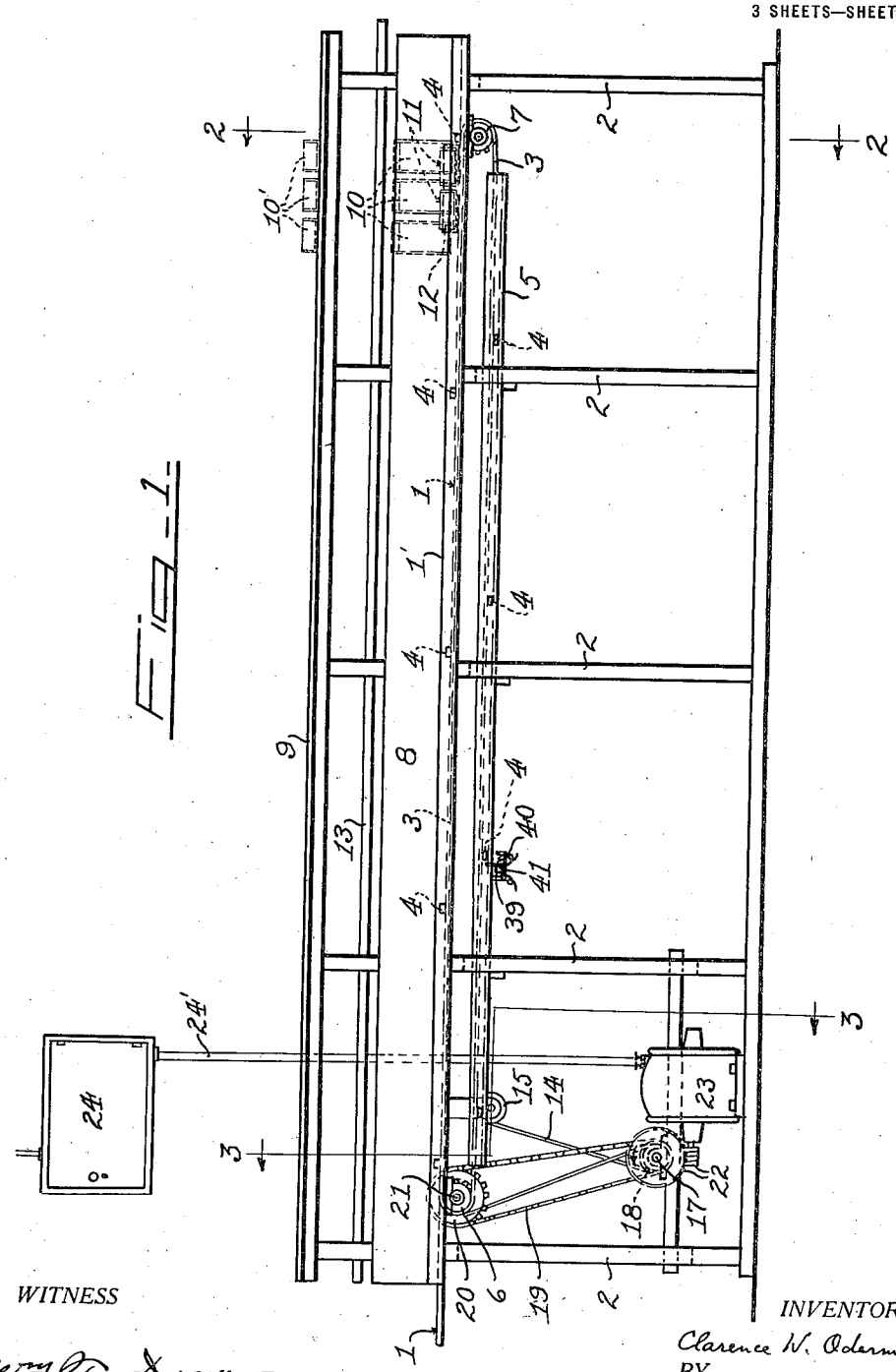


Fig. 1.

WITNESS

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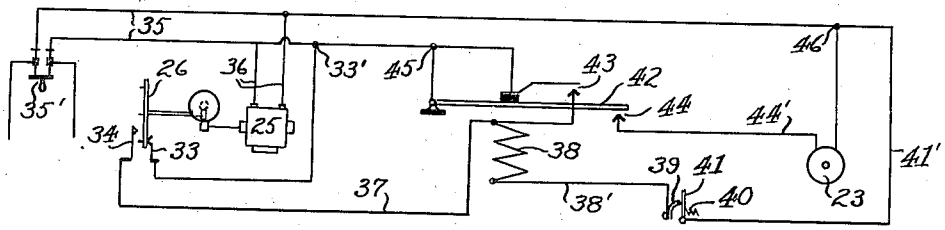


Fig. 7.

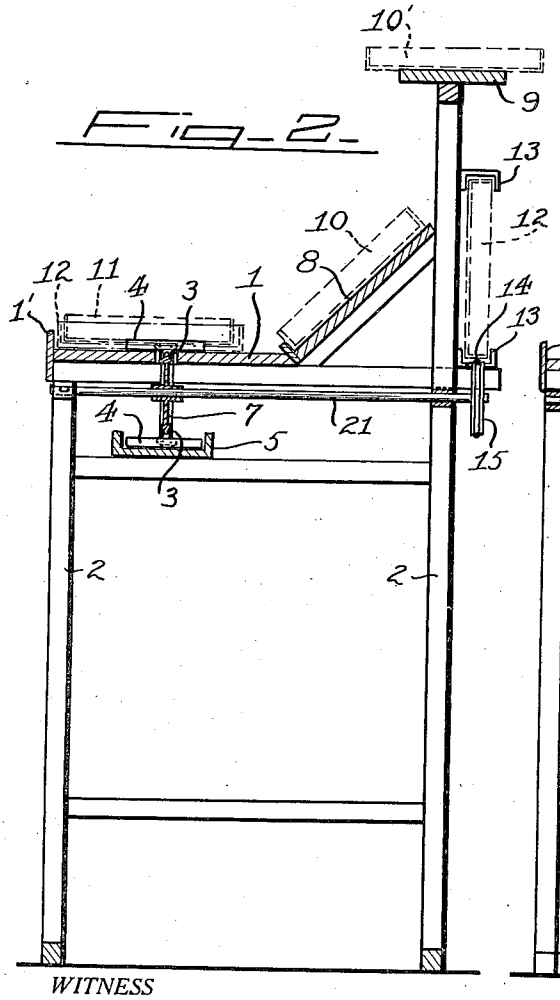


Fig. 2.

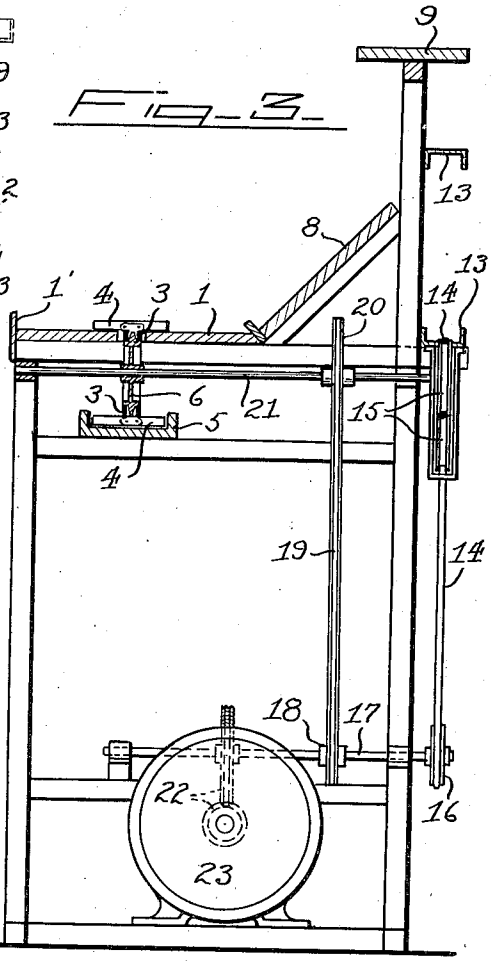


Fig. 3.

WITNESS

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3 SHEETS—SHEET 3.

Fig. 5.

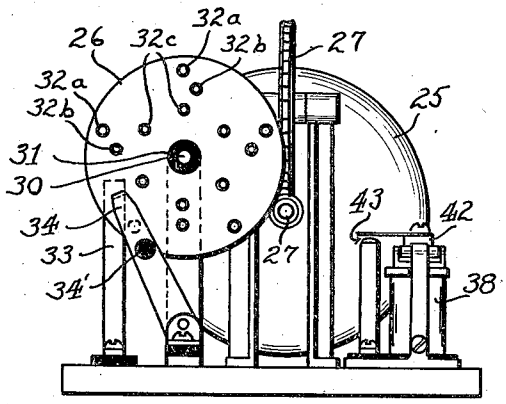


Fig. 6.

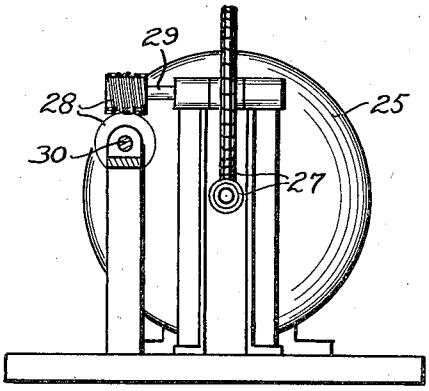
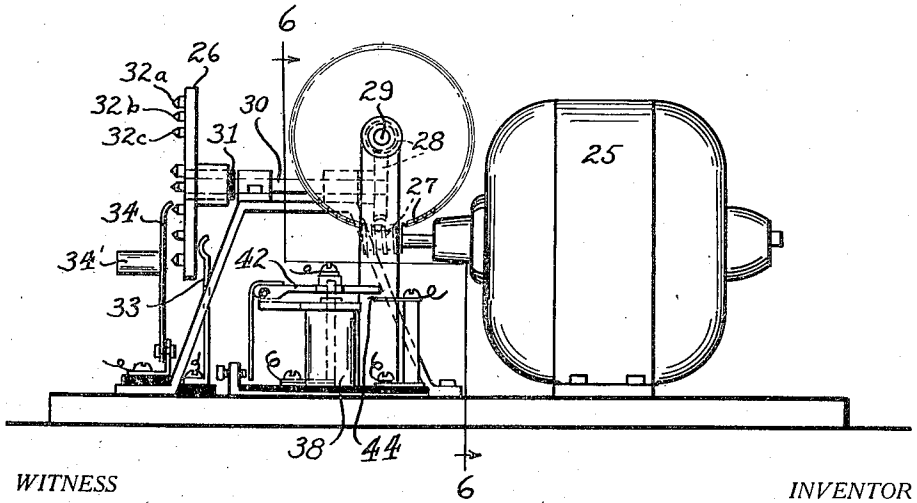


Fig. 4.



WITNESS

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UNITED STATES PATENT OFFICE.

CLARENCE W. ODERMATT, OF SAN FRANCISCO, CALIFORNIA.

PACKING-TABLE.

1,395,727. Specification of Letters Patent. Patented Nov. 1, 1921.

Application filed November 26, 1920. Serial No. 426,461.

To all whom it may concern:

Be it known that I, CLARENCE W. ODERMATT, a citizen of the United States, residing at the city and county of San Francisco and State of California, have invented certain new and useful Improvements in Packing-Tables, of which the following is a specification.

My invention relates to that class of packing-tables in which the containers to be packed are successively advanced to a supply station, at which they are brought to rest for a period sufficient for the packing operation and are then advanced again.

In some arts, as, for example, those in which the packing or other act performed upon or with respect to the containers is complete in one operation such as supplying syrup or oil, a single station only is employed; while in other arts, such, for example, as that of candy packing, where different specimens, in relatively great variety, are to be supplied and placed with uniformity, it is necessary to have a plurality of successive packing stations, before each of which sits an attendant whose duty it is to supply the containers or receptacles, as each comes within her sphere of action, with one or more varieties.

Although my invention is applicable to the packing of any goods which may require successive acts of packing, it is especially intended for candy packing, and consequently, for the sake of illustration, I shall herein describe my table in terms of this particular art.

Turning then to candy packing, the tables used for this purpose, and which are adapted for a plurality of successive packing stations are, as far as I am aware, of three general types, namely; first, one in which the attendants themselves move about a stationary table to the localities of the several varieties of candy placed thereon; a second, one in which the stock receptacles are moved past successive attendants, who select therefrom the specimens required and transfer them to the boxes to be packed, and which they hold; and, third, one in which the stock boxes are stationary before each attendant, and the boxes to be packed move before each attendant successively.

In instances, two and three, just cited, the movement of the stock receptacles, or of the packing boxes, is, as far as I know, invariably a continuous one; and although this movement be made relatively slow, in order to enable the necessary successive operations to be performed, these tables are open to the objection not only of loss of time, but also to the more serious disadvantage of causing confusion, both physical and mental in the attendants, due to their different capacities for action and perception; and, moreover, as these movements are effected in a circular or a continuous closed path, complaints arise of dizziness due to involuntarily watching the parts go around.

My invention overcomes these disadvantages, and is distinguishable both from the single supply stations of the general art, and from the plurality of the packing stations of the special art, by the provision of a table adapted for a plurality of successive packing stations, and in which the packing receptacles are advanced to successive stations, at each of which they are brought to rest for a given period. This period is subject to predetermined variation, to suit individual conditions of capacity and experience, and in the best form of my table, the course of movement of the packing receptacles has end limits, thereby avoiding the confusion of a closed path.

With these, and other objects in view, my invention consists in the novel packing table which I shall now fully describe by reference to the accompanying drawings in which—

Figure 1 is a front elevation of my packing table.

Fig. 2 is an enlarged transverse section taken approximately on the line 2—2 of Fig. 1 and viewed in the direction of the arrows.

Fig. 3 is an enlarged transverse section taken approximately on the line 3—3 of Fig. 1 and viewed in the direction of the arrows.

Fig. 4 is a side elevation of the control mechanism, enlarged.

Fig. 5 is an end elevation of the same, viewed from the left-hand end of Fig. 4.

Fig. 6 is a transverse section of the same taken approximately on the line 6—6 of Fig. 4 and viewed in the direction of the arrows.

Fig. 7 is a diagram of the electrical connections of the complete machine.

In the drawings, and referring particularly to Figs. 1, 2 and 3 thereof, the reference numeral 1 designates the flat working top of a table, which is bordered upon its forward or outer edge by a raised rim 1′.

Said working top is supported upon legs 2, and is longitudinally slotted to receive a conveyer chain 3. The chain 3 carries spaced flights 4 which travel over the top of the table 1 from end to end thereof, and return upon a lower runway 5. End sprockets 6 and 7, the former a driving sprocket and the latter an idler, carry the conveyer chain 3.

Immediately behind the working top 1 of the table is an inclined rest 8, and above this is a shelf 9. Both said rest 8 and said shelf 9 extend the entire length of the working top 1, and are intended for the support of boxes 10 and 10′ respectively, Figs. 1 and 2, adapted to contain stocks of the candy or other product which is to be packed into boxes 11, the latter being placed in transfer trays 12 which rest upon the working top 1 and are moved along said top 1, by the conveyer flights 4.

In the rear of the inclined stock rest 8, and beneath the stock shelf 9, is a return track for the trays 12, formed by two spaced guide members 13, so positioned as to receive the trays 12 on edge, as shown in Fig. 2. A traveling belt 14, Figs. 1, 2 and 3, operating in the lower guide member 13, moves the trays 12 along said track, for a purpose to be hereinafter set forth. Said belt 14 operates over idler pulleys 15, and is driven, in a direction opposite to that of the conveyer chain 3, by a driving pulley 16, Fig. 3, mounted on a transverse horizontal shaft 17, suitably journaled below the working top 1.

The shaft 17 carries a sprocket 18, Figs. 1 and 3, which is connected by a chain 19 with a sprocket 20 mounted on a transverse shaft 21, journaled immediately below the working top 1, and upon which is fixed the driving sprocket 6 of the conveyer chain 3.

The shaft 17 is driven by worm gearing 22 from an electric motor 23 positioned beneath the table. The motor 23 is so controlled as to operate intermittently, so that the conveyer 3 progresses in a series of step movements, the distance covered in each movement being equal to the space between adjacent flights 4.

The mechanism for thus controlling the motor 23 is indicated collectively by the numeral 24 in Fig. 1, and constitutes a separate unit which may be placed in any convenient location, and connected with the motor 23 by a pair of electric wires 24′. This controller, which is illustrated in detail in Figs. 4, 5 and 6 is operated by a separate electric motor 25, which drives a metallic timer disk 26, Figs. 4 and 5, through suitable speed reducing gearing consisting of two sets of worm gearing 27 and 28, respectively, Figs. 4 and 6, a counter-shaft 29, and the timer shaft 30. The timer disk 26 is insulated from the shaft 30 by a suitable bushing 31, Figs. 4 and 5, and has projecting from its face a number of concentric annular series of equally spaced contact points 32^a, 32^b and 32^c, each series having a different number of such points. A stationary brush 33 makes continuous contact with the back of the disk 26, and a movable brush 34 can be shifted by means of its handle 34′, so as to make intermittent contact with any one series of points 32^a, 32^b or 32^c.

The electrical connections for the entire machine are shown in Fig. 7. Electric current for operating both the conveyer driving motor 23 and the controller motor 25 is supplied by wires 35 from any desired source, and may be controlled by a suitable main switch 35′. The controller motor 25 is connected directly with the line 35 by wires 36, and operates continuously.

The stationary timer brush 33 is connected with one line wire at 33′, and the movable timer brush 34 is connected by a wire 37 with the coil of a relay magnet 38, said relay being illustrated in Figs. 4 and 5, and its connections diagrammatically shown in Fig. 7. The other lead from said magnet is connected by a wire 38′, Fig. 7, with the stationary contact 39 of a cut-out or releasing switch. This switch is positioned on the lower runway 5 of the conveyer chain 3, as shown in Fig. 1, and is normally held closed by a spring 40, but is momentarily opened by the conveyer flights 4, which engage the movable contact 41 of said switch. Said contact 41 is connected with the other side of the line by a wire 41′, Fig. 7.

The armature 42 of the relay, Figs. 4, 5 and 7, operates two sets of contacts. One set, 43, is connected in parallel with the timer, and acts as a holding switch to keep the relay magnet 38 energized after the contact at the timer has been broken by the continuous movement of the disk 26, and the other set of contacts, 44, Figs. 4 and 7, form the controlling switch for the driving motor 23, one of said contacts being connected with one side of the line at 45, Fig. 7, and the other being connected by a wire 44′ with one lead of the driving motor 23, the other lead of said motor being connected with the other side of the line at 46.

The operation of the controller may be briefly described as follows. The timer disk 26 rotates continuously, its points 32^a, 32^b or 32^c, as the case may be, successively making momentary contact with the brush 34. As soon as this contact at the timer is made, the relay contacts 43 and 44 are both closed, thereby holding the relay in this position, and energizing the driving motor 23 to cause it to move the conveyer 3. When said conveyer has moved a distance equal to the space between its flights 4, one of said flights actuating the movable contact 41 of the releasing switch, causes the relay circuit to be opened, thereby releasing the relay and

opening the driving motor circuit at the contacts 44. The conveyer thereupon comes to rest, and remains stationary until the relay circuit is again closed by the timer. This period of rest of the conveyer depends upon the position of the brush 34 and the series of timer points 32^a, 32^b and 32^c with which it contacts, each of said series having a different number of points and therefore a different interval. The period of movement of the conveyer is constant, however, being fixed by the distance between the successive flights 4.

The operation of the entire machine can best be understood from a description of one particular process of candy-packing, the specific details of which are to be regarded only as illustrative of the working of the machine, and not as limitations upon the principles of the invention.

In the process about to be described, the boxes 11, Fig. 1, to be packed are of such size that two similar boxes can be placed in each tray 12, both being simultaneously and identically packed. The packers sit in a row facing the working top 1, one at each station of the conveyer 3. In front of each packer, and positioned upon the inclined stock rest 8, are the boxes 10 containing the candy to be packed. There are usually three such boxes in front of each packer, each containing a different variety of candy. On the stock shelf 9 are three similar stock boxes 10′, constituting a reserve supply, so that as soon as a stock box 10 is empty, the packer has only to substitute for it a full box 10′ from the shelf 9. The reserve stock boxes 10′ are preferably placed upon the shelf 9 by an attendant from the rear of the table.

An attendant places a tray 12, in which the empty boxes 11 have been positioned, upon the working top 1 in front of the first packer at the right hand end as viewed in Fig. 1. In this position the tray is immediately to the left of the first conveyer flight 4. The first packer, during the first period of rest of the conveyer, then places one or more pieces, as desired, from each of the stock boxes 10 in each empty box 11. The conveyer 3 then moves the tray 12 to the second packer, who during the second period of rest of the conveyer, places one or more pieces from her stock boxes 10, not shown in the drawings, in the boxes 11. The conveyer then moves the tray 12 to the third packer, and so on, by successive movements alternating with periods of rest in front of the successive packers, until the tray 12 reaches the left hand end of the working top. By this time the boxes 11 are fully packed, and are removed from the tray 12 by an attendant, who also places said tray in the end of the return track formed by the guides 13. The tray is then carried back by the belt 14 to the right hand end of the table to be used again. In Fig. 1 of the drawings I have shown the boxes 10, 10′ and 11, and the tray 12, in dotted lines, only at the first packing station, it being understood that there is a similar arrangement of boxes and tray at each of the succeeding stations.

In the mean time, successive trays 12 with empty boxes 11 therein have been placed in front of the first packer, at the first packing station, and have been carried along by the successive movements of the conveyer 3. Thus during each period of rest of said conveyer, there is a tray at each packer's station and at each movement of said conveyer, a fully packed box is removed from the left hand end of the table; and since each packer has but three kinds of candy to pack, and always places those three kinds in the same positions in each box 11, it follows that the boxes are packed with great speed and uniformity, and with a minimum of variation in regard to weight or arrangement. Moreover, the fact that the boxes 11 remain at rest during each operation of packing conduces toward greater speed and accuracy, for the reason that each operation of any given packer is an exact repetition of the previous operation, and further, that the packer is not confused by any movement of the boxes while she is placing her pieces therein.

The duration of the periods of rest of the conveyer can be varied, in the manner described above, to accommodate varying conditions, such as the degree of skill of the packers, or the number of pieces which each packer places in the boxes at each operation. By this means the speed of output can be regulated to the point of greatest efficiency.

I claim:—

1. A packing-table comprising a frame having a working top with a plurality of successive packing stations; means for advancing packing receptacles to said stations successively; means for driving said advancing means; means controlled by said advancing means for periodically throwing the driving means out of action to arrest the advancing means and stop the packing receptacles at each station; and means for periodically throwing the driving means into action again.

2. A packing-table comprising a frame having a working top with a plurality of successive packing stations; means for advancing packing receptacles to said stations successively; means for driving said advancing means; means controlled by said advancing means for periodically throwing the driving means out of action to arrest the advancing means and stop the packing receptacles at each station; means for peri-

odically throwing the driving means into action again, and means for varying the rest periods of the advancing means.

3. A packing-table comprising a frame having a working top with a plurality of successive packing stations; means for advancing packing receptacles to said stations successively; electric power means for driving said advancing means; an electric switch controlled by said advancing means for periodically throwing the driving means out of action to arrest the advancing means and stop the packing receptacles at each station; and means for periodically throwing the driving means into action again.

4. A packing-table comprising a frame having a working top with a plurality of successive packing stations; means for advancing packing receptacles to said stations successively; electric power means for driving said advancing means; an electric switch controlled by said advancing means for periodically throwing the driving means out of action to arrest the advancing means and stop the packing receptacles at each station; means for periodically throwing the driving means into action again, and means for varying the rest periods of the advancing means.

5. A packing-table comprising a frame having a working top with a plurality of successive packing stations; means for advancing packing receptacles to said stations successively; electric-power means for driving said advancing means; an electric switch controlled by said advancing means, for periodically throwing the driving means out of action to arrest the advancing means and stop the packing receptacles at each station; and an electrically driven timing device for defining the periods of rest and throwing the driving means into action again.

6. A packing-table comprising a frame having a working top with a plurality of successive packing stations; means for advancing packing receptacles to said stations successively; electric-power means for driving said advancing means; an electric switch controlled by said advancing means, for periodically throwing the driving means out of action to arrest the advancing means and stop the packing receptacles at each station; an electrically driven timing device for defining the periods of rest and throwing the driving means into action again, and means for adjusting said device to vary the rest periods.

7. A packing table comprising a frame having a working top with a plurality of successive packing stations, said top having a longitudinal slot; a traveling member underlying the top; a plurality of spaced flights overlying the top and connected with the traveling member through the slot of said top, for advancing packing receptacles upon the top to successive packing stations; an electric motor and connections for driving the traveling member; a switch in the electric motor circuit adapted to be opened by successive flights of the traveling member to periodically cut the motor out, and arrest the traveling member to stop the packing receptacles at each station; and an electrically driven timing device for defining the periods of rest and throwing the driving motor into action again.

8. A packing table comprising a frame having a working top with a plurality of successive packing stations, said top having a longitudinal slot; a traveling member underlying the top; a plurality of spaced flights overlying the top and connected with the traveling member through the slot of said top, for advancing packing receptacles upon the top to successive packing stations; an electric motor and connections for driving the traveling member; a switch in the electric motor circuit adapted to be opened by successive flights of the traveling member to periodically cut the motor out, and arrest the traveling member to stop the packing receptacles at each station; an electrically driven timing device for defining the periods of rest and throwing the driving motor into action again, and means for adjusting said device to vary the rest periods.

9. A packing-table comprising a frame having in its front a horizontal working top with a plurality of successive packing stations; a traveling carrier for advancing packing receptacle-trays upon said top to successive stations; a runway in the back of the frame adapted to receive the trays after being emptied of their packed receptacles at the delivery end of the table top; a traveling carrier associated with said runway for moving the empty trays back therethrough to the receiving end of the table top; an electric motor and connections for driving said carriers; a switch in the motor circuit and a plurality of spaced contacts on the table-top-carrier for successively opening said switch to periodically cut the motor out and arrest said carrier to stop the trays at each station, and a timing device for defining the periods of rest and throwing the carrier driving motor into action again.

10. A packing-table comprising a frame having in its front a horizontal working top with a plurality of successive packing stations; a traveling carrier for advancing packing receptacle-trays upon said top to successive stations; a runway in the back of the frame adapted to receive the trays after being emptied of their packed receptacles at the delivery end of the table top; a traveling carrier associated with said runway for moving the empty trays back therethrough

to the receiving end of the table top; an electric motor and connections for driving said carriers; a switch in the motor circuit and a plurality of spaced contacts on the table-top-carrier for successively opening said switch to periodically cut the motor out and arrest said carrier to stop the trays at each station; a timing device for defining the periods of rest and throwing the carrier driving motor into action again, and means for adjusting said device to vary the rest periods.

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

CLARENCE W. ODERMATT.