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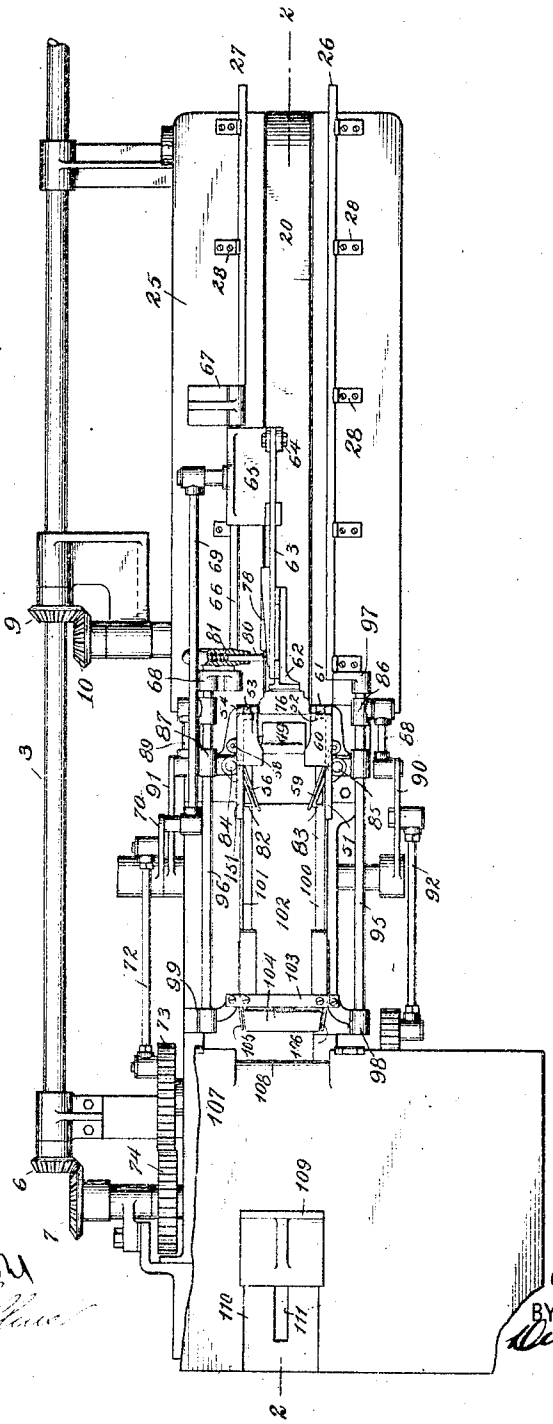
J. A. KEYES.

PACKING MACHINE.

APPLICATION FILED AUG. 18, 1905.

5 SHEETS—SHEET 1.

Fig. 1.



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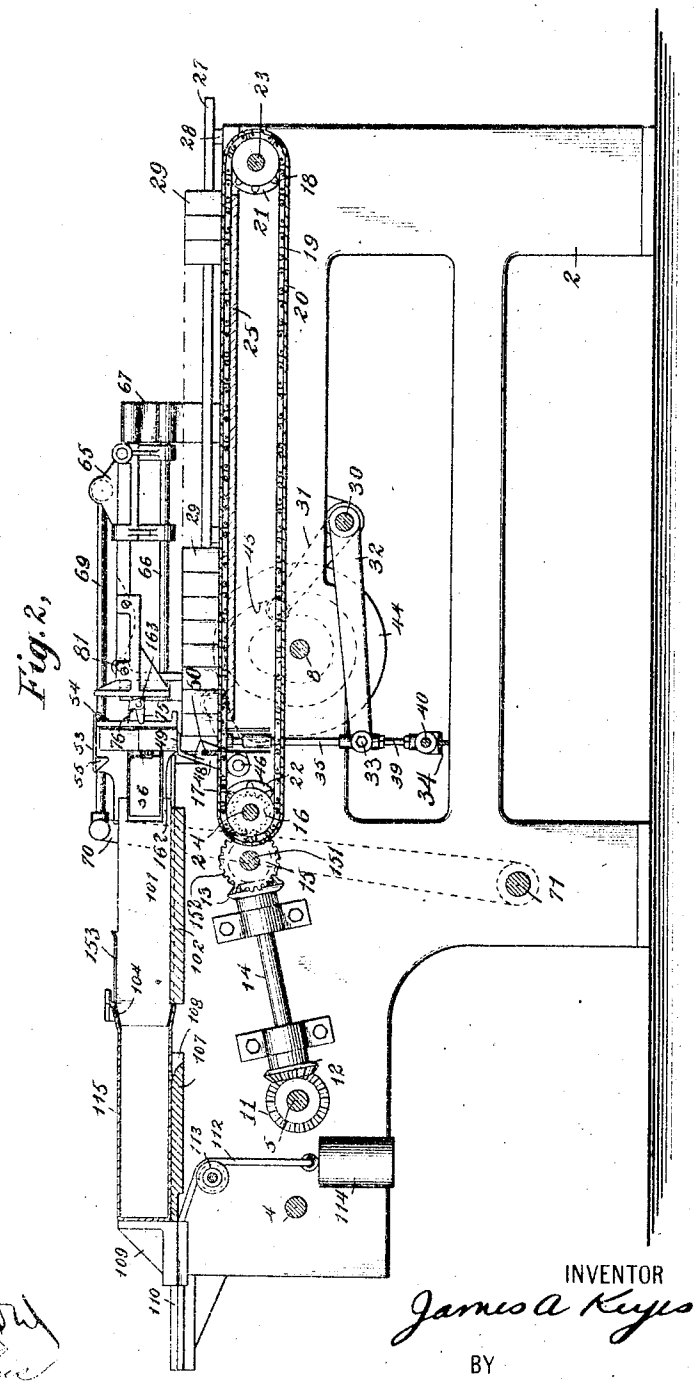
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Fig. 2.



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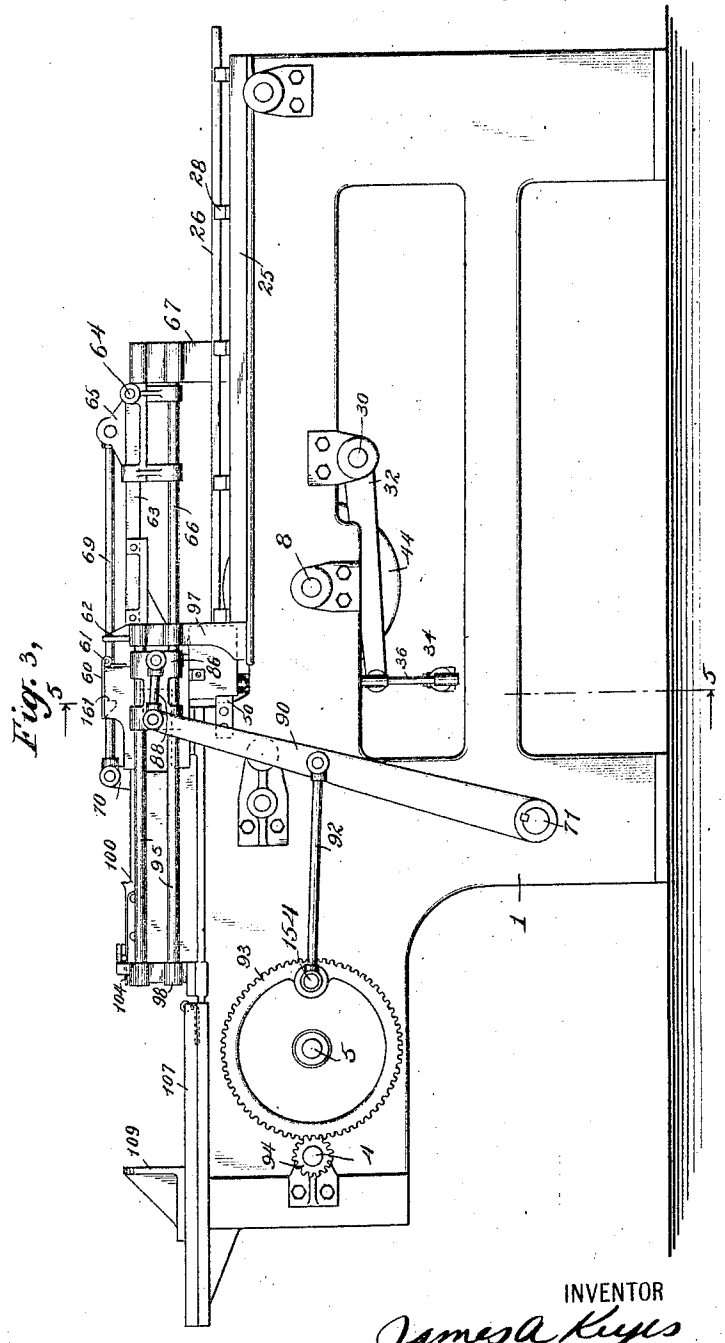
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Fig. 3.



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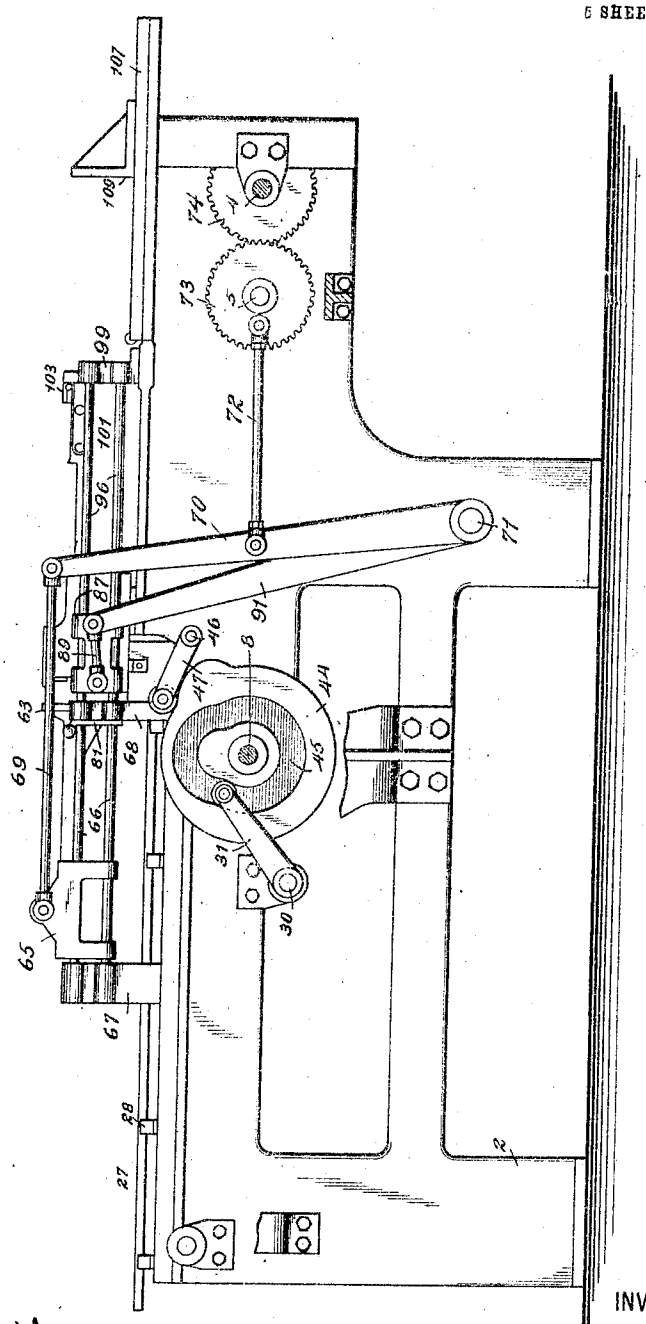
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APPLICATION FILED AUG. 13, 1905.

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Fig. 4.



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No. 823,051 PATENTED JUNE 12, 1906.

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PACKING MACHINE.

APPLICATION FILED AUG. 18, 1905.

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Fig. 7.

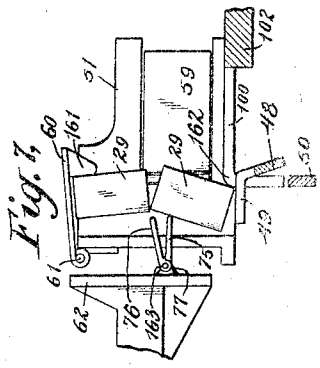


Fig. 6.

Fig. 5.

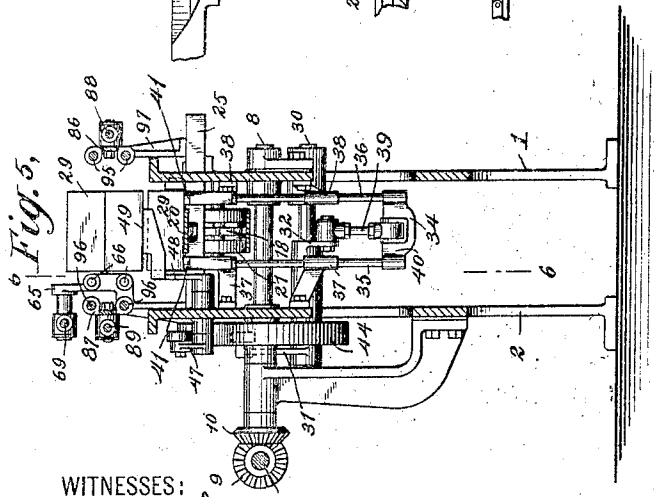
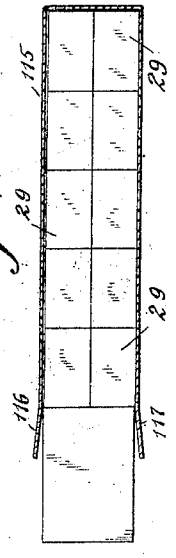


Fig. 8.



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UNITED STATES PATENT OFFICE.

JAMES A. KEYES, OF NEW YORK, N. Y.

PACKING-MACHINE.

No. 823,051. Specification of Letters Patent. Patented June 12, 1906.

Application filed August 18, 1905. Serial No. 274,703.

To all whom it may concern:

Be it known that I, JAMES A. KEYES, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Packing-Machines, of which the following is a specification, taken in connection with the accompanying drawings.

This invention relates to packing-machines, and relates especially to machines for arranging articles in a plurality of layers and packing the same in boxes or cartons.

In the accompanying drawings, which show an illustrative embodiment of this invention, Figure 1 is a plan view. Fig. 2 is a vertical sectional view taken along the line 2 2 of Fig. 1. Fig. 3 is a side elevation. Fig. 4 is an elevation on the other side of the machine. Fig. 5 is a transverse section taken substantially along the line 5 5 of Fig. 3. Fig. 6 is an enlarged sectional view taken substantially along the line 6 6 of Fig. 5. Fig. 7 is a similar partial sectional view showing the parts in different position, and Fig. 8 shows a filled box or carton.

In the illustrative embodiment of this invention shown in the drawings the rigid frame of the machine comprises the similar side pieces 1 and 2, to which the table 25 is secured and which form a rigid support for the working parts of the machine. The two shafts 23 24 are mounted in this frame and carry the sprocket-wheels 17 18, on which the sprocket-chain 19 operates. Upon these shafts are also secured suitable belt-wheels 21 22, upon which the belt 20 operates and is driven substantially in unison with the sprocket-chain, with which it may be connected, if desired. Suitable side guides 27 for the articles may be located on either side of the belt and supported upon suitable brackets 28 or otherwise, so as to form side pieces to properly guide the articles 29, which may be, for instance, cakes or blocks of material inclosed in suitable paper wrappers. (See Figs. 1 and 2.) These articles are moved along by the supply-belt, so that the front article is brought into engagement with the stop 50. The drive-shaft 3 is shown as mounted in suitable brackets at the side of the machine and carries the bevel-gears 6 and 9, which are in mesh with the corresponding bevel-gears 7 and 10 on the shafts 4 and 8, respectively. As seen in Fig. 3, the shaft 4 carries the spur-pinion 94, which meshes with the spur-gear 93 on the insert-wheel mounted on the shaft 5. A suitable bevel-gear 11 on this shaft 5 meshes with the bevel-gear 12 on the shaft 14, (indicated in Fig. 2,) which has a bevel-gear 13 at its other end. This gear meshes with the gear 15 on the shaft 151. This shaft also carries a spur-gear 152 in mesh with the gear 16 on the shaft 4, so as to operate the supply-belt.

The packing-table 107 is formed adjacent one end of the machine and close to the end of the table 102, which forms a runway in connection with the guiding members 100 and 101, which may be mounted at the proper distance apart. Suitable top members 153 may be mounted adjacent the discharge end of this runway and may be formed of such width as to provide a completely-closed channel at this point, if desired. A series of movable guiding members 104, which may take the form of spring-pressed flaps, are preferably mounted at the end of this runway for the convenient engagement of the box or carton 115. This box may be readily placed in position, the relieved portion 108 of the packing table 107 being formed to assist in this operation, and, if desired, a movable holder 109 may be mounted in the guides 110 at the end of the machine and held with the desired pressure against the box end by a weight 114, attached to the cord 112, which runs over a suitable pulley 113 and is attached to the holder.

One or more suitable lifters 41 may be mounted to operate on the articles when they are adjacent the stop 50. Each lifter 41 may have the depending side plates 42 43, as indicated in Figs. 2, 5, and 6, and the lifters may be mounted on suitable rods 35 36, running in bearings 37 38, attached to the frame, and the rods may be operated by a suitable yoke 34 at their lower ends. As indicated in Fig. 2, the link 39 is connected by the pin 40 with this yoke and at its other end by the pin 33 with the outer end of the lifter-lever 32. This lever is secured to the shaft 30, which also carries the lever 31, having a suitable roll or follower which operates in the cam-groove 45 of the cam 44, as indicated in Figs. 2 and 4. The retainer 49 is mounted upon the arm 48, secured to the shaft 46, (see Fig. 2,) and this shaft, as indicated in Fig. 4, also carries the lever 47, having at its outer end a suitable roll or follower to coöperate with the external part of the cam 44 on the cam-shaft 8. In this way the articles when brought into engagement with the stop 50

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are periodically raised by the lifters through the mechanism described, and when in the raised position the retainer 49 moves into its normal position, (indicated in Fig. 6,) so as to hold the article 29 in elevated position, this retainer of course being withdrawn for an instant between the plates 100 101 at the time the lifter rises and engaging the side plate 42 of each lifter during its descent or preferably being narrow enough to pass between them. In this way two articles 29 are successively raised from the row of articles supplied and are piled edgewise on one another, as indicated in Fig. 6, between the two side plates 51 at the end of the runway. Suitable tripper-plates 53 and 60 are preferably pivoted on these side plates by the pins 52 and 54 and may be held down in the position indicated in Fig. 6 with the desired pressure by suitable springs 58. (See Fig. 1.) On the under side of these plates the trippers 55 and 161 may be mounted. Suitable projections 162 may also be formed at the ends of the plates 100 101 on either side of the runway to coöperate with the trippers. The holding-plates 56 59 may be mounted on either side of the runway to move about the pivots 58, and suitable springs 57 may be used to normally press these holding-plates 59 out into the position indicated in Fig. 1. Suitable rods 95 may be mounted in the end pieces 97 98, and similar rods 96 may be mounted in the end pieces 68 99 on the other side of the runway, and these rods serve to guide the insert-supports 86 87. The insert-pawls 82 83 are pivoted by the pins 84 85 to these supports and are reciprocated through the links 88 89, which connect the supports with the insert-levers 90 91, secured to the shaft 71. (See Fig. 3.) The link 92 connects the lever 91 with a suitable crank-pin 154 on the gear-wheel 93, so as to reciprocate these levers and the insert-pawls at the proper time to insert a row of articles into the box 115, and thereby fill the same.

Suitable guide-rods 66 are mounted in the end pieces 67 68 and guide the pusher-carriage 65, which is reciprocated by the link 69, connected to the push-lever 70, which is loosely mounted at its lower end on the shaft 71 and reciprocated by the link 72, which connects this lever with a suitable crank on the gear 73. This gear, which is loosely mounted on the shaft 5, is driven by the gear 74, secured to the shaft 4. The pusher-arm 63 is pivoted by the pin 64 to the carriage 65 and carries at its outer end the pusher 62. As indicated in Fig. 6, the pusher-arm may be provided with a suitable cam-track adjacent its free end to coöperate with a spring-pressed cam-pin 80, forced forward by the spring 81. (Shown in Fig. 1.) During the forward movement of the pusher the pin rides up the inclined portion 78 of this track and then slips down over the edge, so that on the rearward movement the pin engages the curved lower portion 79 of this track, and thereby raises the pusher 62 while it is retracted, so as to lift it clear of any articles on the runway. The pusher is preferably provided with a rigid lug 75 and with a pivoted spring-pressed shelf 76, held in position by the pivot 163 and lightly spring pressed upward into the position indicated in Fig. 6 by the spring 77.

During the forward movement of the pusher the lug and shelf engage the two articles 29 at the point where they come together and force the central portions of this pair of articles forward, while the upper edges of this pair of articles are held back by the trippers 55 161, and the lower edges are also held back by the tripping projections 162, (see Fig. 7,) the tripper-plates rising under these conditions as indicated. The articles in this pair acted upon are thus buckled together, and their forward portions being engaged frictionally by the holding-plates 56 59, they finally fall with their flat faces together, the upper one of the articles falling upon the shelf 76, which may yield with it, so that the pair of articles 29 are finally left on the table 102, as indicated in Fig. 6. The lifter and retainer thereupon operate to raise another pair of articles arranged edgewise into position in front of the pusher, which acts upon them in a similar manner, buckling them together, so that they lie flatwise and also push the first pair of articles 29 one step along the runway. When a sufficient number of these articles are in place on the runway, the insert mechanism operates and the insert-pawls 82 83 move into engagement with the rearmost part of these articles and push the whole row or charge into the box 115, so that they assume the position indicated in Fig. 8. The filled box may thereupon be removed from the end of the runway and the flaps 116 117 closed by hand in the ordinary way.

Having thus described this invention in connection with the illustrative embodiment thereof shown in the drawings, to the details of which I do not desire to be limited, what I claim as new, and what I desire to secure by Letters Patent, is set forth in the appended claims.

I claim—

1. In packing-machines, a supply-belt to feed forward a series of articles, a stop adjacent said belt to aline the foremost article of said series, lifter operating adjacent said stop to act upon an article and lift it transversely into a runway, a retainer coöperating with said lifter to hold the lifted articles in position to form pairs of articles arranged edgewise in said runway, tripping projections coöperating with each pair of articles including yieldingly-mounted trippers, yielding holding-plates to engage said articles, a pusher provided with a lug, and yieldingly-

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mounted shelf and means to operate said pusher to engage each pair of articles adjacent the center of the same and buckle them together to lie flatwise on said runway, means to support a box at the end of said runway and insert mechanism to insert the articles in said runway into said box.

2. In packing-machines, means to feed a series of articles, a lifter, and coöperating retainer to form pairs of said articles arranged edgewise, tripping projections to engage said articles, holding-plates to engage said articles, a pusher provided with a lug and movable shelf and means to operate said pusher to engage each pair of said articles adjacent the center line of the same to buckle said articles together and feed them forward arranged flatwise and insert mechanism to feed said articles into a box.

3. In packing-machines, means to feed forward a row of articles, means to feed articles transversely from said row to form pairs of articles arranged edgewise, tripping projections to coöperate with each of said pairs of articles, a pusher provided with a lug and a movable shelf and means to operate said pusher to engage each pair of articles adjacent the center line of the same to buckle said articles together and arrange them flatwise.

4. In packing-machines, means to feed forward a row of articles, means to feed articles from said row to form pairs of articles arranged edgewise, tripping projections adjacent said pairs of articles and a pusher to engage said pairs of articles adjacent the center line of the same to buckle each pair of articles together and arrange them flatwise.

5. In packing-machines, means to feed articles in pairs arranged edgewise, tripping projections adjacent said pairs of articles and a pusher to engage each pair of said articles adjacent the center line of the same to buckle each pair of said articles together and arrange them flatwise.

6. In packing-machines, means to feed pairs of articles arranged edgewise and a pusher to engage each pair of said articles to buckle the same together and arrange said articles flatwise.

7. In packing-machines, means to feed forward a row of articles, a lifter and coöperating retainer to feed said articles from said row and arrange said articles in pairs edgewise, tripping projections coöperating with each pair of said articles and a pusher to engage each pair of articles and buckle the same together to arrange said articles flatwise.

8. In packing-machines, means to feed articles in pairs arranged edgewise, a runway, tripping projections in said runway coöperating with each pair of said articles and a pusher to engage each pair of articles adjacent the center line of the same to buckle said articles together and arrange them flatwise in said runway.

9. In packing-machines, a runway, means to feed pairs of articles arranged edgewise into said runway, yieldingly-mounted tripping projections coöperating with each pair of said articles, holding-plates in said runway, means to receive a box at the end of said runway, a pusher to engage each pair of said articles, buckle the same together and arrange them flatwise in said runway and insert means coöperating with said runway to engage a series of said articles and insert the same into said box.

10. In packing-machines, a runway, means to feed pairs of articles arranged edgewise into said runway, means to engage each pair of said articles, buckle the same together and feed them forward flatwise along said runway, and means to discharge a plurality of said pairs of articles simultaneously from said runway.

11. In packing-machines, a runway, means to feed articles in pairs arranged edgewise into said runway, means to engage each pair of said articles to buckle the same together and feed them along said runway arranged flatwise, box-receiving means at the end of said runway, including movable guiding members to receive a box and insert means to feed a plurality of said pairs of articles simultaneously into said box.

12. In packing-machines, a runway, a holding member adjacent said runway to coöperate with articles in the same, means to feed pairs of articles arranged edgewise into said runway, tripping projections coöperating with each pair of said articles in said runway and means to engage each pair of said articles adjacent the center line of the same to buckle the same together and feed them along said runway arranged flatwise.

13. In packing-machines, a supply-belt to feed forward a row of articles, an alining stop coöperating with said belt, a pair of lifters operating on either side of said belt to engage each article and move the same transversely from said belt, and a centrally-located movable retainer coöperating with said lifter to engage the articles fed by said lifter.

14. In packing-machines, a pusher to engage a pair of articles to buckle the same together and arrange said articles flatwise and means for actuating the pusher.

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