March 9, 1937. N. J. DZIEDZIC ET AL 2,073,097

SLICE SPACER

Original Filed Feb. 24, 1934 2 Sheets-Sheet 1

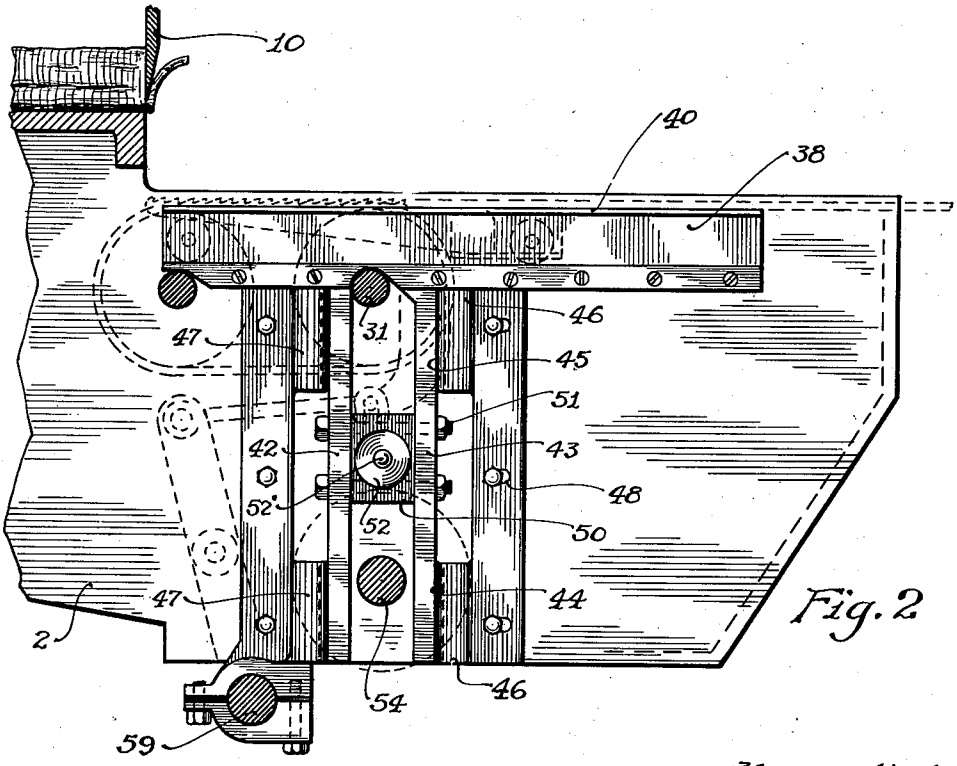


Fig. 2

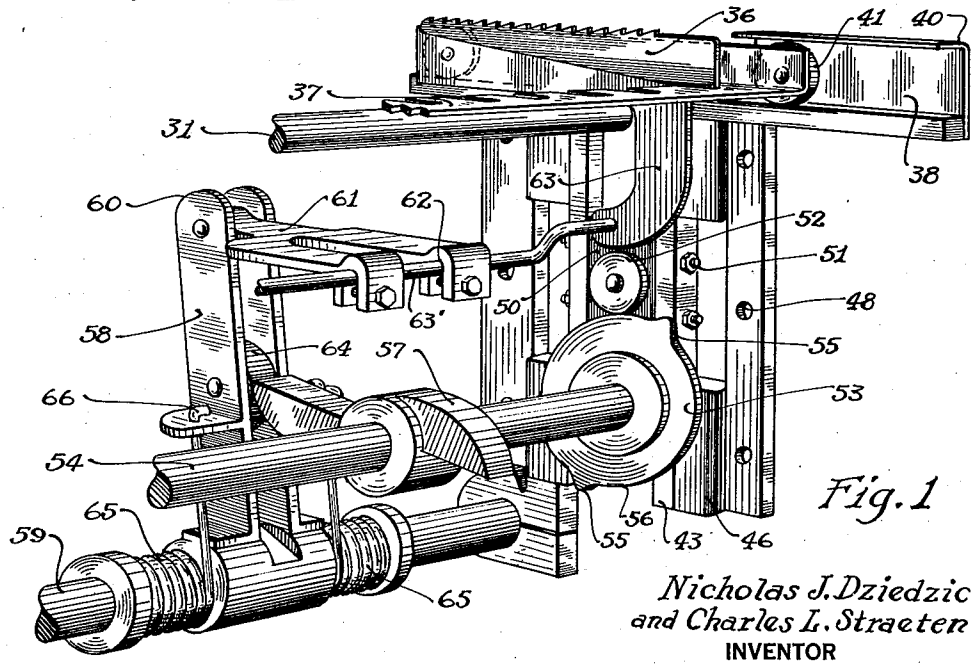


Fig. 1

Nicholas J. Dziedzic
and Charles L. Straeten
INVENTOR

BY Fay W. Johns
ATTORNEY

WITNESS-
Wm P. Meiser

March 9, 1937. N. J. DZIEDZIC ET AL 2,073,097

SLICE SPACER

Original Filed Feb. 24, 1934 2 Sheets-Sheet 2

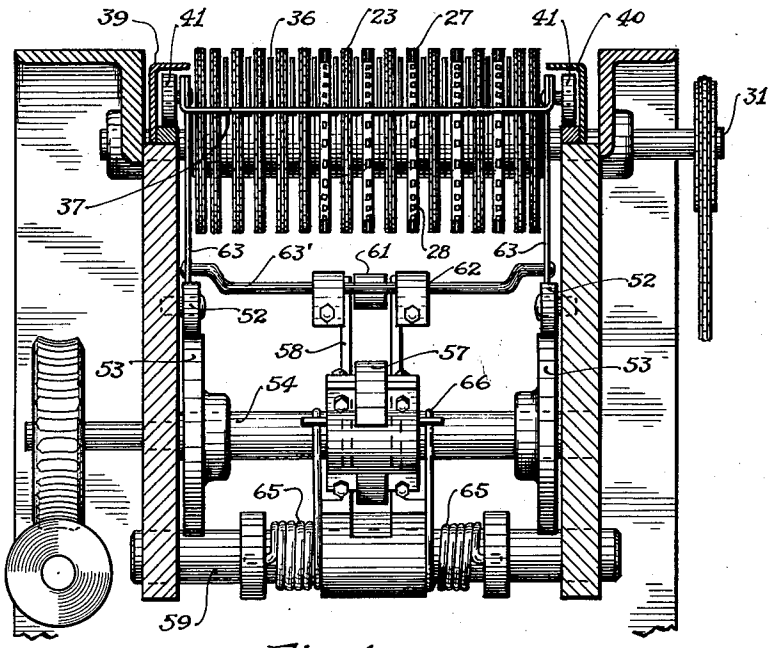


Fig. 4

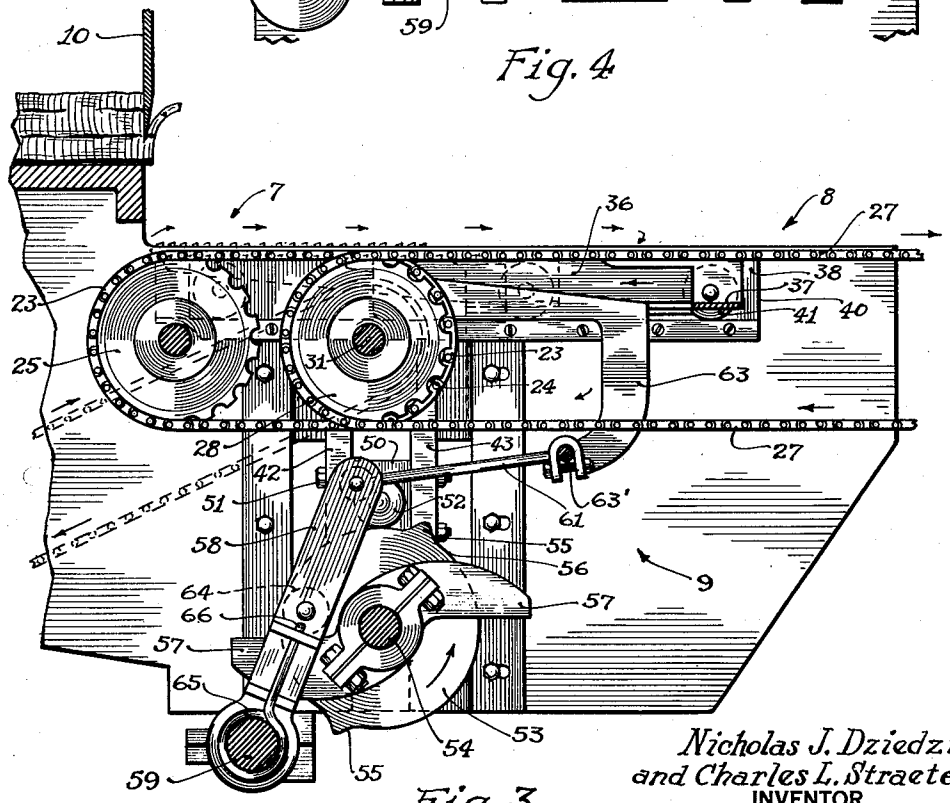


Fig. 3

Nicholas J. Dziedzic
and Charles L. Straeten
INVENTOR

BY Story W. Johns
ATTORNEY

WITNESS -
Wm C. Meiser

Patented Mar. 9, 1937 2,073,097

UNITED STATES PATENT OFFICE

2,073,097

SLICE SPACER

Nicholas J. Dziedzic and Charles L. Straeten, Chicago, Ill., assignors to Industrial Patents Corporation, Chicago, Ill., a corporation of Delaware

Continuation of application Serial No. 712,728, February 24, 1934. This application July 12, 1935, Serial No. 31,062

9 Claims. (Cl. 198—34)

This invention relates to means for spacing slices received from a slicing machine.

This application is a continuation of our application entitled Slice spacer, Serial No. 712,728, filed February 24, 1934.

One of the objects of the invention is to provide means for spacing groups of slices received on a continuously moving conveyor from a slicing machine.

Another object of the invention is to provide transfer means for transferring objects from a slow moving to a fast moving conveyor in order to space the objects.

Other objects of the invention will be apparent from the description and claims which follow.

The present invention is especially adapted for use in combination with bacon slicing machines and is an improved transfer means which may be used in a machine such as is disclosed in the joint application Serial No. 554,628, filed August 3, 1931, entitled Slicing machine, by Harry H. McKee and Nicholas J. Dziedzic, the latter of which is one of the joint inventors of the present invention.

In one operative combination the arrangement of the parts is such that in the lower rearmost position of the transfer elements forming a part of the apparatus, said transfer elements are located under a group of slices particularly at a time when a group of a desired number of slices has been completed. When the proper group has been completed a platform support and transfer platform are lifted. This lifting movement is followed by a forward movement during which the transfer elements transfer the group of slices from a slow moving conveyor on which the slices have been received forwardly to and upon a fast moving take away conveyor. The platform support is then lowered and the transfer platform is returned in a relatively slow manner to its rearmost lower position, the forward movement of the transfer platform having been effected by a relatively quick movement under the influence of suitable spring operated mechanism.

The present invention according to one aspect thereof involves the employment of a cam construction which effects periodic lifting, for a short period of time only, of the platform support, with spring mechanism for effecting a quick forward movement of the transfer platform and thereby of the transfer elements and with a cam mechanism for effecting a slow gradual return of the transfer platform during relatively long regular periods during which the platform support is in its lowermost position.

Figure 1 is a detailed perspective view of the cam mechanism.

Figure 2 is a side view.

Figure 3 is a side view partly in section.

Figure 4 is an end view.

Framework 2 serves to carry the receiving mechanism 7, a portion of the take away conveyor 8 and the operative elements of the transfer mechanism 9. The slices which fall upon receiving mechanism 7 are severed by knife 10.

The receiving mechanism 7 comprises a series of spaced endless conveyor elements 23 which are carried upon sprocket or sheave wheels 25 driven by the shaft 31 which in turn is preferably indirectly driven by suitable chain and sprocket mechanism from the mechanism which feeds product to knife 10.

The several conveying elements 23 of the receiving mechanism provide a table receiving surface which may be described as having a slow forward movement and it is arranged with the rear portion thereof below the cutter and in such a manner that as the endless conveying elements thereof move forwardly the slices as delivered from and by the cutter, as the result of the cutting operations, drop in relatively uniform arrangement upon this receiving table and in overlapping relationship in respect to each other. The take away conveyor 8 may be relatively long.

From the figures referred to, it will be seen that the take away conveyor comprises a number of endless conveying elements 27, the rear ends of which are supported on sheaves or sprocket wheels 28.

As has been previously indicated, the present machine has been designed to deliver the overlapping slices in groups having a predetermined number of slices in each group and to that end there is employed the transfer mechanism, collectively designated as 9, which functions to lift a group as formed with the proper number of slices and to forthwith transfer the group thus lifted from the receiving mechanism 7 to and upon the take away conveyor 8. This transfer mechanism 9 comprises a series of transversely spaced, longitudinally extending transfer elements 36. These transfer elements 36 are preferably serrated along the supporting surface portions thereof so as to effect longitudinal transfer of a group of slices when thereupon and the forward ends of these transfer elements 36 are secured to and carried by a transfer platform 37 which is mounted so as to permit longitudinal sliding movement along longitudinally extending guideways 38 which are provided in spaced side members 39 and 40 constituting a vertically movable platform support.

It will be seen that this transfer platform 37 is provided with anti-friction rollers 41 at the sides thereof, whereby said platform is readily moved, without undue friction, in a horizontal longitudinal direction. It will be noted that the transfer elements 36 are longitudinally movable

in spaces which are provided between the conveyor elements and supporting sprockets therefor of both the receiving conveyor 7 and the take away conveyor 8. The side frame members 39 and 40 which collectively constitute the vertically movable support for the transfer platform are preferably T-shaped, by which is provided the longitudinally extending guideways 38 at and along the upper portions thereof and spaced depending members 42 and 43 having guide sections 44 and 45 at the top and bottom thereof. The guide sections 44 and 45 engage vertically extending guideway members 46 and 47 that are in turn carried and secured to the main frame 2 of the slicing machine by bolting. One of these guideway members, to wit, guideway 46, is preferably provided with elongated openings 48 thus permitting a means of adjusting the guideways as desired.

The depending members 42 and 43 are suitably connected at the upper portions thereof to the member providing the upper part of the T and they are spaced by a roller carrying block 50 which is held in place by suitable bolts as 51. Anti-friction rollers 52 are mounted on suitable pins 52' which extend into this block 50 and the anti-friction roller 52 of each frame rests upon a cam 53 corresponding thereto which functions to control the raising and lowering of the support, or in other words, the side frames 39 and 40 constituting the support, for the transfer platform 37. Each side frame constructed as described provides a space for the shaft 31 previously mentioned and also a space for the transversely extending shaft 54 upon which the cams 53 are mounted. The cam 53 has two high points 55 of relatively short duration and two dwells or low point sections 56 of relatively long duration. The cams 53 constitute a mechanism which is sometimes herein referred to as the cam mechanism for controlling and positioning the vertically movable platform support. The shaft 54 also carries another cam, to wit, the double cam 57. This cam 57 cooperates with a lever 58 pivotally mounted on a transversely extending shaft 59 which is offset in respect to the shaft 54. The upper or free end 60 of this lever 58 has a link 61 pivotally connected thereto which is in turn pivotally connected at 62 to a transversely extending rod 63' that is carried in depending brackets or ears 63 of the transfer platform 37.

The lever 58 carries an anti-friction roller 64 that engages and is engaged by the cam 57. The lever 58 is continuously pressed forwardly towards the cam 57 through the medium of springs 65, each of which has a portion that surrounds the shaft 59. One end of each of these springs is fixed to the shaft 59 while the other end 66 is connected to a portion of the lever 58, whereby the resulting effect of these springs is to continuously urge the lever 58 towards the axis of the cam 57.

The cams 53 and 57 are timed and arranged so that when the high point 55 comes under the roller 52 there is a disengagement as between the outer end portion of the cam 57 and the anti-friction roller 64. At this time the transfer platform support occupies its uppermost position and the transfer elements 36 on the transfer platform occupy the elevated position indicated by dotted lines in Figure 3 and the force of the springs 65 immediately comes into play to effect a quick forward feeding action and consequent transfer of a group of slices from the receiving table 7 to and over the take away conveyor 8. In fact this spring movement as imparted to the transfer elements 36 causes a movement of the transfer elements 36 substantially faster than that of the receiving conveyor or than that of the take away conveyor.

Upon the high point 55 of the cam 53 moving from under the roller 52 the cam portion 57 immediately comes into play to gradually force the lever 58 in a rearward position thereby returning the transfer elements 36 which have been lowered by roller 52 dropping onto the dwell portion 56 of the cam. In this way the transfer elements 36 are returned along a lower path from the full forward position to the rearmost position ready for the next cycle of operations. The coils of the springs 65 are wound about the shaft 59 in such a manner that they effect a dampening or slowing down of the transfer platform as it reaches the forward end of its movement. This slowing down is caused by the tightening of the coil portion of the spring or springs about the shaft 59. The cam 57 is sometimes referred to herein as the platform controlling and positioning cam.

We claim:

1. A slice spacer adapted to transfer slices of material from a slow moving to a fast moving conveyor, said slice spacer comprising a series of lifting and transferring elements located normally beneath the receiving surface of the slow moving conveyor and adapted to pass between strands comprising the said conveyors, a platform for support of the transferring elements, the platform having spaced depending ears, vertically moving depending side members connected to said platform, spaced cams mounted on a shaft adjacent the depending side members of the platform, each cam having high points and dwells between the high points, a second shaft mounted in offset relationship with respect to the cam shaft, said second shaft carrying a spring controlled lever, a rod connecting the depending ears of the platform, means connecting the lever and the rod, rollers journalled in each side member of the platform between each of said depending ears and the respective cams whereby upon rotation of the cams the platform is raised and lowered, said spring controlled lever being adapted to force the platform from a receiving position with respect to the slow moving conveyor to a depositing position with respect to the fast moving conveyor when the platform is raised by the high points of the cams, and a cam on the second shaft in operative relationship with the said lever whereby the force of the spring is opposed and the platform returned to operative position with respect to the slow moving conveyor.

2. A transfer device for transferring material from one strand conveyor to another, comprising a plurality of transferring fingers arranged in the form of a platform and adapted to pass between the strands of the conveyors, said transfer fingers being mounted to form a unitary platform, rollers carried by said platform, cams rotatably mounted upon a shaft upon which said rollers ride whereby the platform is forced upwardly by the high points of the cams, a spring operated lever pivotally mounted intermediate the sides of said frame adapted to move the platform from a receiving position with respect to the first conveyor to a depositing

position with respect to the second conveyor when the platform has been raised by the high points of the cam, and cam means mounted upon a shaft independent of the first cam shaft, said last mentioned cam being in operative engagement with said spring controlled lever to return said platform from the depositing position to the receiving position.

3. A transfer device for transferring meat slices from a slice receiving means to a slice conveying means, comprising a frame, a platform vertically slidable on the frame and having depending side members and depending ears, spaced cam mechanisms coacting with the ears of the platform to raise the platform vertically relative to the receiving means and to lower the platform relative to the conveying means, and means for forcing the platform forwardly from the receiving means, when raised, to a position over the conveying means, including a shaft mounted in the frame, a lever on said shaft and operatively connected with the platform, a spring on the shaft engaging said lever to force the latter normally forwardly to force the platform forwardly from the receiving means to operative position over the conveying means, and means for acting upon said lever to return the latter and the platform to normal operative position relative to the receiving means.

4. In a device for transferring material from a receiving means to a conveying means including a frame and a platform vertically and horizontally slidable in said frame, a shaft rotatably mounted in said frame, spaced cams mounted on said shaft for engagement with said platform to periodically raise and lower said platform relative to said receiving and conveying means, a spring actuated lever pivotally mounted intermediate the sides of said frame and operatively connected with said platform to move said platform forwardly from the receiving means when raised by said spaced cams and a cam mounted on said shaft and engageable with said lever to return said platform rearwardly to said receiving means when lowered by said spaced cams.

5. In a device for transferring material from a receiving means to a conveying means including a frame and a platform having spaced depending ears vertically and horizontally slidable in said frame, rollers mounted on each of said ears, spaced cams operatively engageable with said rollers to periodically raise and lower said platform relative to said receiving and conveying means, a spring actuated lever pivotally mounted intermediate the sides of said frame and operatively connected with said platform to move said platform forwardly from the receiving means when raised by said spaced cams and a cam engageable with said lever to return said platform rearwardly to said receiving means when lowered by said spaced cams.

6. In a device for transferring material from a spaced strand receiving means to a spaced strand conveying means including a frame and a platform vertically and horizontally slidable in said frame and provided with spaced transfer plates operable between the spaced strands of the receiving means and conveying means, a shaft rotatably mounted in said frame, spaced cams mounted on said shaft for engagement with said platform to periodically raise and lower said platform relative to said receiving and conveying means, a spring actuated lever pivotally mounted intermediate the sides of said frame and operatively connected with said platform to move said platform forwardly from the receiving means when raised by said spaced cams, a roller mounted on said lever and a cam mounted on said shaft and engageable with said roller to operate said lever to return said platform rearwardly to said receiving means when lowered by said spaced cams.

7. In a device for transferring material from a receiving means to a conveying means including a frame and a platform having spaced depending ears vertically and horizontally slidable in said frame, rollers mounted on each of said ears, a shaft rotatably mounted in said frame, spaced cams mounted on said shaft for engagement with said rollers to periodically raise and lower said platform relative to said receiving and conveying means, a spring actuated lever pivotally mounted intermediate the sides of said frame and operatively connected with said platform to move said platform forwardly from the receiving means when raised by said spaced cams relative to the receiving means, a roller mounted on said lever and a cam mounted on said shaft and engageable with said lever roller to operate said lever to return said platform rearwardly to said receiving means when lowered by said spaced cams relative to said receiving means.

8. In a device for transferring material from a receiving means to a conveying means comprising a frame, spaced horizontal trackways vertically slidable in said frame, a platform provided with spaced rollers adapted for horizontal movement in said trackways, ears rigidly secured to said platform and depending therefrom, cams operatively engageable with said ears to periodically raise and lower said trackways and platform relative to said receiving and conveying means, a spring actuated lever pivotally mounted intermediate the sides of said frame and operatively connected with said platform to move said platform in said trackways forwardly from the receiving means when raised by said cams and a cam engageable with said lever to return said trackways rearwardly to said receiving means when lowered by said first mentioned cams.

9. A device for transferring material from a receiving means to a conveying means comprising a frame, spaced horizontal trackways vertically slidable in said frame, a platform provided with spaced rollers adapted for horizontal movement in said trackways, spaced ears rigidly secured to said platform and depending therefrom, rollers secured to each of said ears, spaced cams operatively engageable with said last mentioned rollers to periodically raise and lower said trackways and platform relative to said receiving and conveying means, a spring actuated lever pivotally mounted intermediate the sides of said frame and operatively connected with said platform to move said platform in said trackways forwardly from said receiving means when raised by said spaced cams relative to said receiving means, a roller mounted on said lever and a cam engageable with said lever roller to return said platform in said trackways rearwardly to said receiving means when lowered by said spaced cams relative to said conveying means.

NICHOLAS J. DZIEDZIC.
CHARLES L. STRAETEN.

CERTIFICATE OF CORRECTION.

Patent No. 2,073,097. March 9, 1937.

NICHOLAS J. DZIEDZIC, ET AL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, second column, line 31, claim 8, for the words "In a" read A; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 16th day of November, A. D. 1937.

Henry Van Arsdale,
Acting Commissioner of Patents.

(Seal)