Jan. 2, 1945. K. HANSEN 2,366,615

ROTARY TRANSFER ASSEMBLY

Filed Oct. 28, 1942

Fig. 1

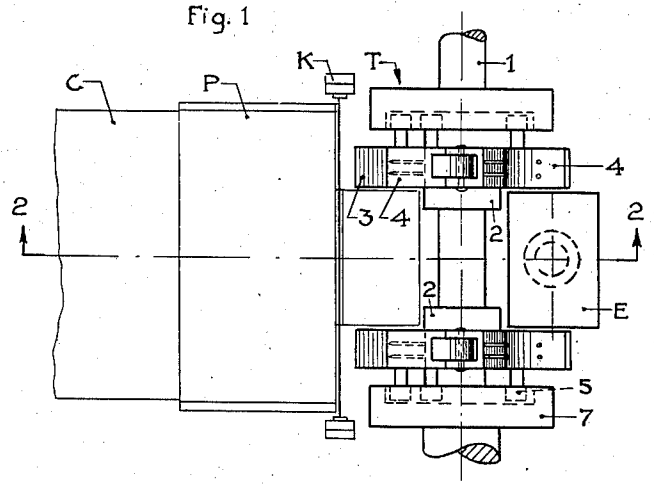


Fig. 2

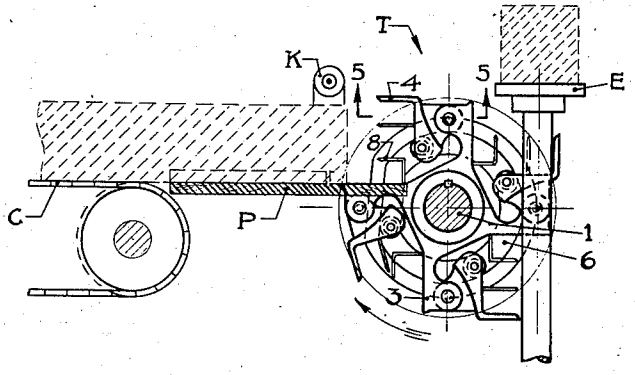


Fig. 4

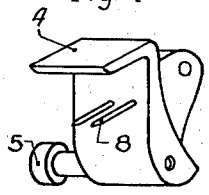


Fig. 3

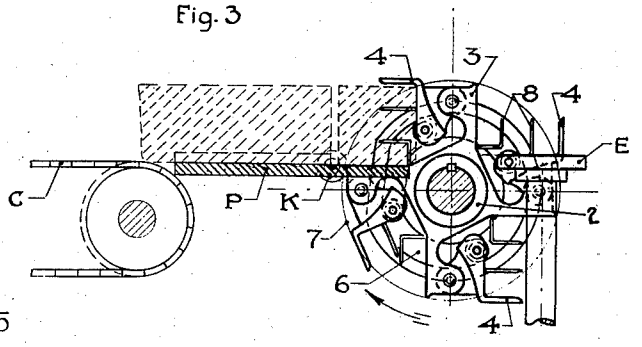
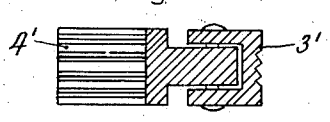


Fig. 5



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ROTARY TRANSFER ASSEMBLY

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7 Claims. (Cl. 198—211)

In one well known form of device for cutting and packaging prints of butter, a conveyor feeds one end of a ribbon-like slab of butter over the stationary platform of a cutter and into a momentarily stationary transfer assembly. When a portion of the moving slab, equalling a quarter pound print, is deposited on the transfer assembly, the cutter operates to sever that print from the slab. Immediately thereafter the transfer assembly quickly rotates 90° and then stops. In so doing, it carries the first or severed print through a quarter revolution into the path of an elevator and, at the same time, positions itself to receive the next print. While the second print moves onto the transfer assembly, the first print is lifted by the elevator into a packaging unit which wraps and cartons the butter, the elevator thereupon returning to its original position. This invention relates to improvements in transfer assemblies of this general character.

Ordinary machines of this general character have an efficiency approximating 75%, that is to say that if they have a rated capacity for handling say 1500 pounds or 6000 quarter pound prints per hour, they will produce approximately 1125 satisfactory pounds or 4500 prints per hour when operated at rated capacity. The failure to produce 6000 prints is due to various causes including imperfect operation of the transfer assembly. The transfer assembly must hold the print in one more or less exact position if the print is to be handled properly by the elevator. Ordinarily the print is properly deposited on the transfer assembly. However, in rotating the print 90° it is sometimes thrown out of the exact position. When this occurs the elevator does not move into the necessary flush engagement with the print. As a result, the print is either mutilated or improperly delivered to and wrapped by the packaging unit or both necessitating, after the entire pound containing that print is wrapped, a stoppage of the machine to permit the removal of that pound and the cleaning of the machine if necessary. Necessarily, those operating difficulties are magnified when the machine is operated above its rated capacity.

The principal object of the present invention is to eliminate, or at least substantially reduce, the tendency of the transfer assembly to "throw" the print out of its proper position and thereby substantially increase the efficiency of the machine and reduce its operating cost.

Another important object is to provide an improved transfer assembly which holds the print in its proper position so effectively that it not only substantially increases the overall efficiency of the machine, when it is operating at its rated capacity, but makes possible a very substantial increase in the capacity rating without sacrificing any appreciable part of the newly won gain in efficiency.

Another important object of the invention is to provide a simple and inexpensive improvement which may be easily incorporated in new machines at the factory or on old machines in the field without requiring any change in the design of the machine.

An embodiment of the invention is illustrated in the accompanying drawing wherein:

Figure 1 is a top plan view of a transfer assembly, embodying the invention, in relation to the conveyor, cutter and elevator at a time when the butter is moving into the assembly and before the print is severed;

Figure 2 is a section on line 2—2 of Figure 1 but showing the conveyor and elevator in elevation;

Figure 3 corresponds to Figure 2 but shows the relation of the parts at the moment a print is severed but before the assembly rotates, the cam wheels being omitted for the sake of clearness;

Figure 4 is a perspective view of one part of the transfer assembly in which the invention is embodied; and

Figure 5 is a sectional view of a modification of the holding fingers taken on a line corresponding to line 5—5 of Fig. 2.

The structure illustrated is of the type disclosed in U. S. Patent #2,302,371 granted Nov. 17, 1942, and, as illustrated, conventionally includes a conveyor C, cutter platform P, cutter K, transfer assembly T and elevator E. A presently marketed device of this type functions to cut and package quarter pound prints of butter dimensioned 1¼ x 1¼ x 4¾".

The transfer assembly T conventionally comprises: a rotary support in the form of a drive shaft 1 carrying a pair of transfer wheels 2 which are spaced axially along the shaft a distance (between centers) slightly less than the length of a print; a succession of (four) print holders carried by, and forming a part of, each wheel 2, with their radial centers angularly spaced 90° apart, each holder being in the form of a pair of fingers 3 and 4 on one transfer wheel 2 and a corresponding pair on the other wheel and each pair of fingers being arranged to define a peripherally-open print-receiving space and to engage opposite sides of a print in said space, each of the fingers 4 being pivotally mounted on the

finger 3 of the next adjacent pair for movement from the print-engaging position inwardly to a clearance position; and a cam-controlled finger-moving mechanism along the outer side of each transfer wheel 2, each mechanism being in the form of a cam roller 5 extending laterally outward from the outer side of each finger 4 into the cam guideway 6 of the adjacent stationary cam member 7 which extends around this shaft 1 but does not rotate with it.

In operation, the conveyor C, which carries the ribbon-like slab of butter (dimensioned 1¼" thick by 4¾" wide and of indeterminate length) continuously feeds one end of the slab over the stationary platform P of the cutter K and horizontally into the peripherally-open print-receiving space of a momentarily stationary print holder. As a result, when the slab is cut, the resulting print is held near both of its ends by corresponding pairs of fingers 3 and 4 on the transfer wheels 2. The slab is quickly cut by the cutter K when the amount of butter thus fed to and deposited in one print holder equals a quarter pound. As soon as the slab is cut, the transfer assembly is rapidly operated to rotate each holder a quarter of a revolution. In this manner the severed or first print is positioned along the upward path of the continuously reciprocating elevator E and, at the same time, the next print holder is positioned to receive the next print. As this last mentioned print holder moves toward the print-receiving position, the cam mechanisms momentarily retract the fingers 4 inwardly sufficiently to clear the end of the butter slab and the adjacent cutting unit but, as soon as they are cleared, the fingers 4 are quickly returned to their normal outer position. The transfer assembly stops when the next print holder reaches the print-receiving position and remains stationary for an interval long enough to permit the conveyor C to feed the second print to it. During this interval the elevator E lifts the first print upwardly from the transfer assembly and delivers it to a packaging unit, which wraps and cartons the butter, and then returns to its original lowered position from which it will move to repeat its cycle of operation.

If, during the rotation of a print holder from the print-receiving to the print-releasing position, a print on that holder remains in its deposited position, such print normally will be properly engaged by the elevator E. On the other hand, if the print is thrown or moved one way or another during such rotation, it is almost certain to be engaged improperly by the elevator E and, as a consequence, either mutilated or improperly delivered to the packaging unit or both necessitating in any such event a shut-down to effect its removal. At the present time it may be said that the equivalent of 1 out of ever 16 prints handled by the machine is thrown by the transfer assembly.

Actually under normal operating conditions less than 1 print in 16 is thrown by the assembly. The lesser number of prints thrown is considered the equivalent of 1 in 16 for at least two reasons. In the first place, the rated capacity of 6000 prints per hour is based on continuous operation but the stoppages occasioned by the throwing of prints prevents the machine from handling 6000 prints per hour. As a result of these stoppages, its actual capacity is reduced to a figure between 4500 and 6000 prints. In the second place, when 1 print is thrown, the machine must nevertheless be operated to wrap the entire pound containing that print and then that pound must be discarded even though it contains 3 prints which were not thrown. The net effect of throwing only 1 print in 1 pound is, so far as the loss of butter is concerned, the same as if all 4 prints were thrown. This further reduces the actual capacity approximately to the 4500 prints or 1125 pound figure above stated.

I have discovered that the tendency of the transfer assembly to throw prints may be successfully resisted by mounting, on the assembly, projections positioned to engage a print carried by the assembly and indent its surface without at the same time seriously mutilating the print. Accordingly, in carrying out one embodiment of the invention, the transfer assembly is provided with rod-like projections or pins 8 positioned to impale the prints by piercing them as they enter the print holders. Any suitable number of pins 8 may be employed. In the embodiment shown in Figures 1–4, three pins are arranged at each end of each print holder, two of the pins being mounted directly on the finger 4 and one on the transfer wheel 2, the latter pin being arranged adjacent the finger 4.

The effectiveness of my invention may be demonstrated by reference to the operation of a machine having a manufacturer's rated capacity of 6000 quarter pound prints per hour. As stated previously, such a machine, operated at full capacity without the invention, will normally have an efficiency of 75% so that it produces 4500 satisfactory prints per hour. With my invention applied, I have found that the same machine, operating at rated capacity, will have an efficiency of 94 to 96%, producing between 5600 and 5800 satisfactory prints per hour. With two pins mounted on each finger 4, the rated capacity may be raised to as much as 9000 prints per hour with the efficiency remaining at 94 to 96%. When a third pin is mounted directly on the transfer wheel as shown, the rated capacity may be increased to at least 9600 prints per hour and possibly more with the efficiency still remaining at 94 to 96%.

Excellent results have been obtained with the modified form of the invention illustrated in Fig. 5 wherein the pins are eliminated and the opposed print engaging surfaces of the fingers 3' and 4' provided with ridges 9 positioned to indent opposite sides of the print. With this embodiment the rated capacity of the same machine may be raised to 8800 prints per hour with an efficiency of 94 to 96%. There appears to be a tendency however, in this embodiment for butter to collect on the fingers which tendency does not noticeably appear in embodiments using the pins 8.

Since my invention raises the efficiency of the machine from 75% to 94–96% and since that same efficiency is obtained at capacities ranging substantially above the present rated capacity, it would appear that the inefficiency of the transfer assembly is entirely corrected by my invention and that the remaining inefficiency of the machine is due to the improper functioning of its other parts.

While the invention has been described and illustrated as applied to an assembly for transferring prints of butter from one unit to another, it will be understood that it may be applied to assemblies for transferring other like commodities.

Having described my invention I claim:

1. A rotary transfer assembly for transferring

prints of butter and the like comprising: a rotatable support; and print holding means mounted on said support for print transferring movement, when the support is rotated, from a print receiving position to a print removal position, said means having projections positioned to indent the surface of a print in order to resist the tendency of the assembly to throw the print during the print transferring movement.

2. A rotary assembly for transferring prints of butter and the like comprising: a rotatable support; print holders mounted on said support for print transferring movement, when the support is rotated, from a print receiving position to a print removal position; and print indenting means carried by said support and associated with said holders, said means having projections positioned to indent the surface of a print on a holder in order to resist the tendency of the assembly to throw the print during the print transfer movement.

3. The assembly defined in claim 2 wherein said indenting means include pins which impale the print by piercing it.

4. The assembly defined in claim 2 wherein said indenting means include ridge-like projections positioned on said holders to engage opposite sides of a print thereon.

5. A rotary assembly for transferring prints of butter and the like comprising: a rotatable support; print holders mounted on said support for print transferring movement, when the support is rotated, from a print receiving position to a print removal position; and pins carried by said support in position to impale a print by piercing it in order to resist the tendency of the assembly to throw the print during the print transfer movement.

6. A rotatable transfer assembly for receiving a print of butter and the like severed from a horizontally approaching slab and rotationally transferring it into the path of an upwardly moving elevator which removes the print from the holder comprising: a rotatable support; a U-shaped print holder mounted on said support for print transferring movement, when the support is rotated, from a horizontally-open print-receiving position to an upwardly-open print-removal position; and print indenting means carried by said support and associated with said holders, said means presenting projections which extend into the print-receiving space, embraced by the holder, in a direction parallel to the path of movement of a print entering and leaving the holder so as to indent the surface of a print on the holder in order to resist the tendency of the assembly to throw the print during the print transferring movement.

7. The assembly of claim 6 wherein said indenting means include pins which project into the print-receiving space of the holder and toward its open end so as to impale the print by piercing it.

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