A. W. D. WEIS & J. STARMAN.

CELL CASE MACHINE.

APPLICATION FILED SEPT. 8, 1916.

1,290,816.

Patented Jan. 7, 1919.

2 SHEETS—SHEET 1.

Fig. 2.

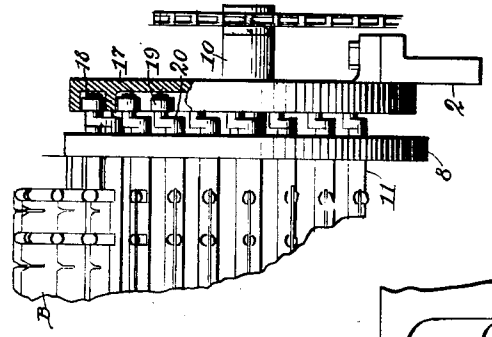
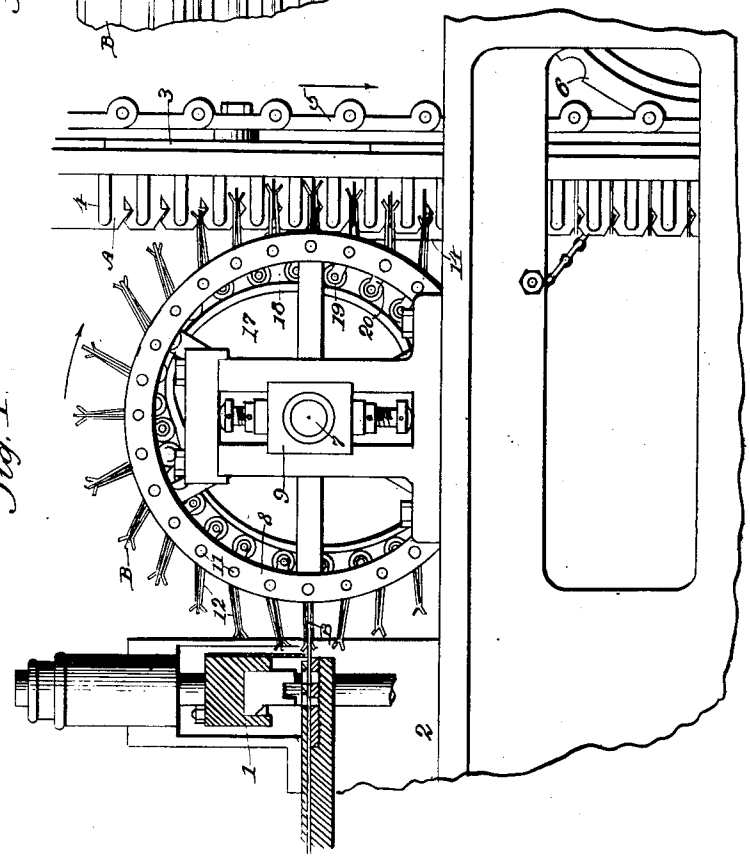


Fig. 1.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

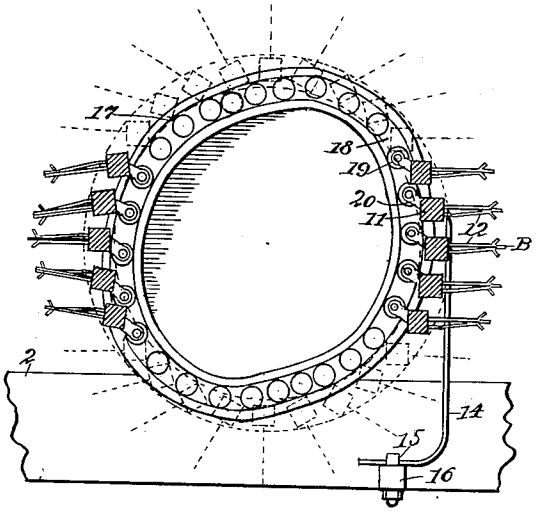


Fig. 4.

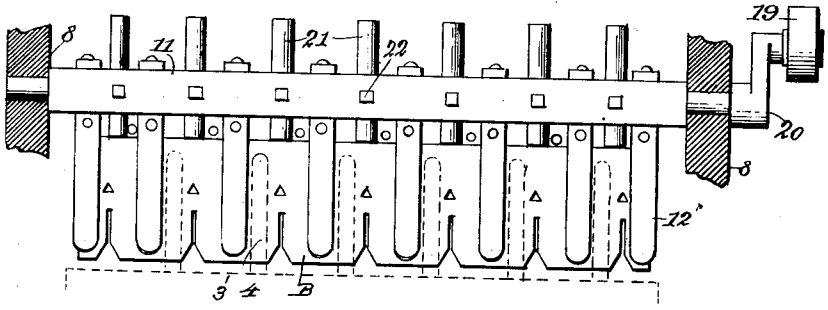
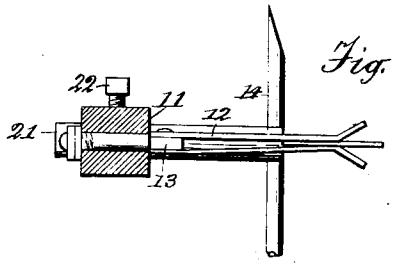


Fig. 5.



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UNITED STATES PATENT OFFICE.

ALWIN W. D. WEIS, OF QUINCY, ILLINOIS, AND JOSEPH STARMAN, OF CEDAR RAPIDS, IOWA.

CELL-CASE MACHINE.

1,290,816. Specification of Letters Patent. Patented Jan. 7, 1919.

Application filed September 8, 1916. Serial No. 119,013.

To all whom it may concern:

Be it known that we, ALWIN W. D. WEIS and JOSEPH STARMAN, citizens of the United States, residing, respectively at Quincy and Cedar Rapids, in the counties of Adams and Linn and States of Illinois and Iowa, have invented certain new and useful Improvements in Cell-Case Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to cell-case machines of the type employed for automatically punching, cutting and assembling the collapsible paper cell-cases commonly known as egg-case fillers, and used for the packing and transportation of eggs.

The invention relates more especially to the assembling parts of the machine, the object being to so improve this portion of the mechanism as to admit of the use of continuous rotary motion in transferring the cut-off filler strips to the strip-carrier, and there assembling them in the intermatched collapsible egg-case filler of commerce.

Mechanism embodying the invention is herein shown as applied to a cell-case machine illustrated and described in a patent to Alwin W. D. Weis, dated April 15, 1913, and numbered 1,059,325, to which reference may be had for details relating to the general machine.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side view of mechanism embodying our improved assembling apparatus, together with related parts of the general machine. Fig. 2 is a fragmentary front view of the same, partly in section. Fig. 3 is a view showing the feed-finger cam, and illustrating, with a few fingers and finger-bars, the action of said cam. The figure shows also one of the stripper fingers. Fig. 4 is a plan view of one of the finger-bars and its connections. Fig. 5 is a cross-section of the same, and illustrates its use in handling narrow filler strips, a fragmentary stripper finger being also shown.

In order to a clear understanding of the present invention it is to be explained that the general cell-case machine embraces mechanism for feeding forward from a roll of strawboard mounted at each side of the machine, and step-by-step, the stock required to form single filler strips, which in practice differ in the style of their punching, and are preferably made interlocking. One of these strips is herein designated as A and the cross-strip with which it interlocks, as B. The punching and cutting mechanism 1, which may be referred to briefly as the punch-head, is suitably mounted on the main frame 2 of the machine, and has a vertical reciprocating motion, coinciding with the intermittent feed of the strawboard stock, through suitable actuating mechanism not herein shown. The movements of these parts are short, and may therefore be as rapid as desired. The assembling mechanism, however, can have but a limited intermittent motion, as considerable masses of mechanism must be moved back and forth through considerable distances. It is therefore desirable that the assembling of the filler be effected, in whole or in part, by continuous rotary motion. In this invention the operation is so effected completely.

The filler-strips are assembled in forms 3 provided with elastic fingers 4, and in a manner so familiar as to need no description. These forms are attached revolubly to a chain 5 running on sprockets 6, the first series of strips being thrust in on the ascending side of the chain, and the finishing cross-strips on the descending side, which is the side herein illustrated. It will be understood that at the top of the machine each form is given a quarter turn, so that the horizontal finishing strips shall intermatch with vertical ones. This chain-gang has a continuous movement in the direction indicated by the arrow. A similar movement is given to the mechanism which transfers the individual strips from the place of cut-off to the assembling forms and there thrusts them between the proper fingers. This mechanism forms the subject matter of this invention, and will now be described in detail.

In suitable bearings attached to the main frame is journaled a shaft 7, carrying near each end a wheel 8 secured thereto. Bearings similar to that shown at 9 are preferred, but for the sake of simplicity the bearing 10 for the other end of the shaft is shown as part of the finger-bar cam, to be described presently.

Journaled in the rims of the wheels 8 is a series of finger-bars 11 bearing elastic fingers 12, similar to those of the forms. In practice they are attached to studs 13 (Fig. 5), and when completely inserted the filler-strip does not reach the bar by a little space, sufficient to receive a gang of fingers 14 extending upwardly from below. They are here shown as adjustably attached by clips 15 to a bar 16 secured to the main frame. These fingers serve as strippers and bottomers for the inserted strips, that is to say, the strips inserted in the carrier forms, which travel close to them. This insertion takes place above (on the opposite side of the machine, below) the points of the stripper fingers, and as the carrier moves onward the fingers strip the strips from the fingers of the rotary conveyer and hold and force them home in the carrier fingers. The spacial travel of the conveyer coincides with that of the carrier. It will be seen that its fingers on one side run close to the cut-off, the unsevered strip being fed directly into them by the intermittent strawboard feed. At the opposite side the fingers are carried in and among the carrier fingers, so that as the carrier moves forward in a straight line, the strips, conveyed in a curve, are accurately placed in the carriers with no interruption in the forward movement of either mechanism. Evidently in so doing the respective fingers must alternate sidewise, as indicated in Fig. 4. It will also be seen that in transferring the strips to the carriers, the conveyer fingers assume positions practically parallel with those of the carrier, since there must necessarily be spacial agreement in order that the strips may be accurately placed. This spacial registration of the fingers is effected by means of a fixed cam 17 suitably attached to some stable part of the machine, as the main frame. Following the groove 18 of this cam are travelers 19 mounted on crank-arms 20 attached to the ends of the finger-bars. The curve of the right side of the cam (Fig. 1) swings the finger-bars to the proper positions at this side. On the other, entering side, the cam is so formed as to impart a different position to the fingers as they pass the line of the entering strip. Here it will be seen that the fingers are made to converge outwardly, by which means the flared lips of the fingers delay at this line long enough to permit the strip to be thrust in and cut off. Between these opposite sides the fingers gradually assume the radial position shown at the top of the rotary conveyer. Throughout its entire course the curves of the cam are so gradual as to admit of any desired speed in the operation of the machine, without undue vibration or any disturbance of strip-registration. It is therefore possible to run the machine as fast as the punch and cut-off will allow, which is equivalent to a very high productiveness in the machine as a whole.

The machine is sometimes adjusted for the making of very narrow, or shallow, fillers, used for "cushions" in the cases. By a simple device the same assembling mechanism may be used for the narrow as for the wider strips. Referring to Fig. 4 it will be seen that the finger-bars are provided with stop-studs 21 adjustably secured by set-screws 22. Normally they are set as shown. When it is desired to assemble narrow strips the studs are set forward, as shown in Fig. 5, with a corresponding adjustment of the stripper fingers, 14, which may be set outwardly or inwardly by loosening and again tightening the clips 15 by which the fingers are secured to the bar 16.

Having thus described our invention, we claim:

1. In a cell-case machine, a train of strip-carrying fingers advancing in a right line, a revolving strip-conveyer having permanently pinching fingers intersecting and interspacing the paths of the carrier fingers, and means for gradually presenting the conveyer fingers alongside the carrier fingers and withdrawing them therefrom in strip-alinement therewith.

2. In a cell-case machine, a train of strip-carrying fingers advancing continuously, a revolving strip-conveyer having permanently pinching fingers intersecting and interspacing those of the carrier through an arc of their movement, and means adapted to parallel the conveyer fingers with those of the carrier while describing said arc.

3. In a cell-case machine, a train of uniformly spaced strip-carrying fingers advancing regularly in a right line and perpendicular to the length of the fingers, a revolving strip-conveyer having approximately radial fingers advancing in unison with those of the carrier, but lateral thereto, and through a curve intersecting the path of the carrier fingers, a movable support for the conveyer fingers, and means adapted to control the movement of said support, whereby the receiving fingers of the carrier and the discharging fingers of the conveyer are in practical alinement throughout said curve.

4. In a cell-case machine having a train of continuously advancing strip-carriers, a revolving strip-conveyer having fingers adapted to intersect the path of the carrier during a part of such revolution, and a series of interposed stripper fingers with inclined free ends passing behind the strips during such intersection, and adapted to strip them from the conveyer as it and the carrier advance.

5. In a cell-case machine having suitable punching and cutting mechanism, and

means to feed forward the punched sheet, a revolving strip-conveyer provided with gangs of alined, tangentially movable fingers, supporting rock-bars therefor, connecting levers, and means, as a cam with a slow, unbroken curve, adapted to carry each gang of fingers past the line of the punched sheet with a gradually changing angle of presentation, whereby the receiving lips of the fingers are delayed in passing said line, and with no abrupt movement of any of the moving parts.

6. In a cell-case machine having a suitable feeding, punching and cutting mechanism, and an oppositely disposed strip-carrier continuously moving, a strip-conveyer provided with gangs of alined fingers, supporting bars therefor, connecting levers, and means, as a substantially elliptical cam engaging said levers and adapted to present the gangs of fingers to the punched strips in gradually converging order thereto in approaching, passing and retreating from the presentation level of said strip, and at the opposite side to present the gangs of fingers in alinement with intersecting fingers of the strip-carriers, throughout the curve described in said intersection.

7. In a cell-case machine, a strip-conveyer having gangs of strip-holding fingers, supporting rock-bars therefor, stopstuds set movably in said bars, and fastening set-screws therefor, whereby the conveyer is adapted for strips of varying width, as set forth.

8. In a cell-case machine, a strip-conveyer having gangs of strip-holding fingers, supporting rock-bars therefor, adjustable stop-studs set movably in said bars, fastening set-screws therefor, strippers intersecting the paths of the fingers, and means for adjusting the strippers inwardly or outwardly according to the widths of the strips.

In testimony whereof we affix our signatures in presence of two witnesses.

ALWIN W. D. WEIS.
JOSEPH STARMAN.

Witnesses:
EMMA G. SUFFICOOL,
J. M. ST. JOHN.