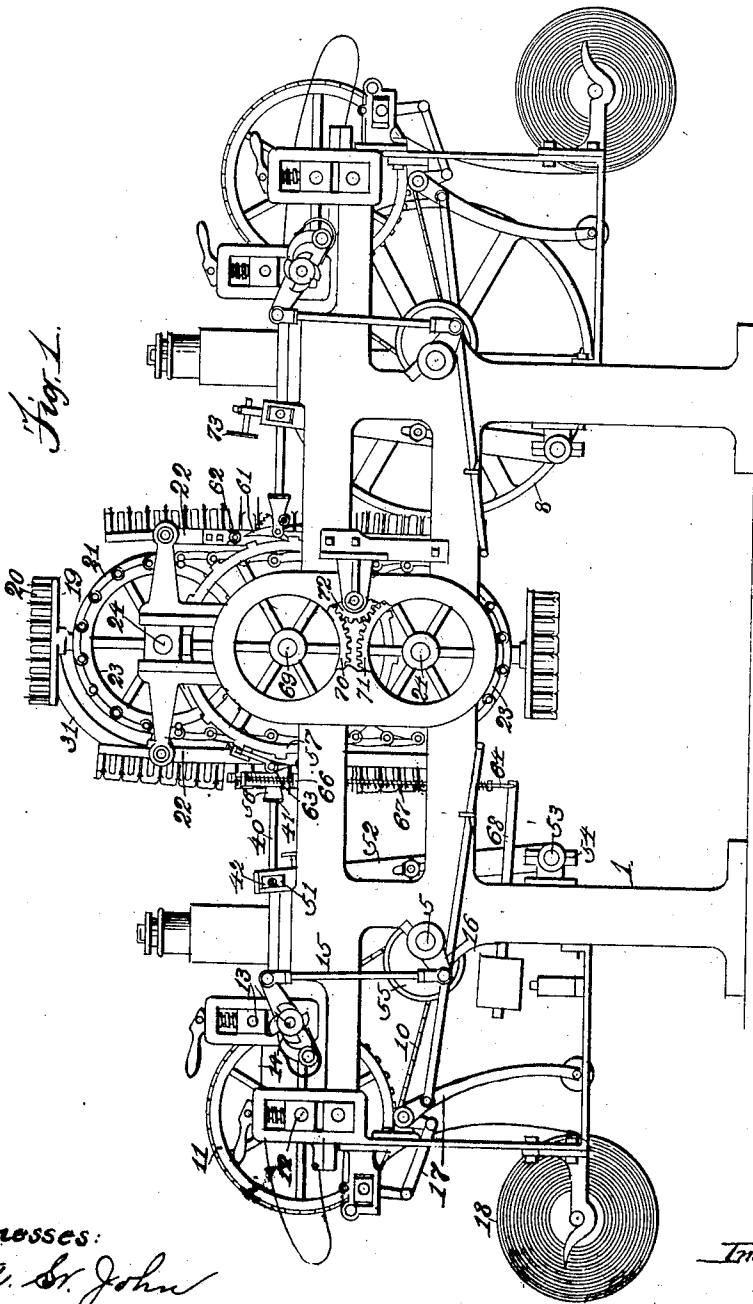


A. W. D. WEIS.
CELL CASE MACHINE.
APPLICATION FILED SEPT. 16, 1910.

1,059,325.

Patented Apr. 15, 1913.

4 SHEETS—SHEET 1.



Witnesses:
L. A. Sr. John
Ira Andie.

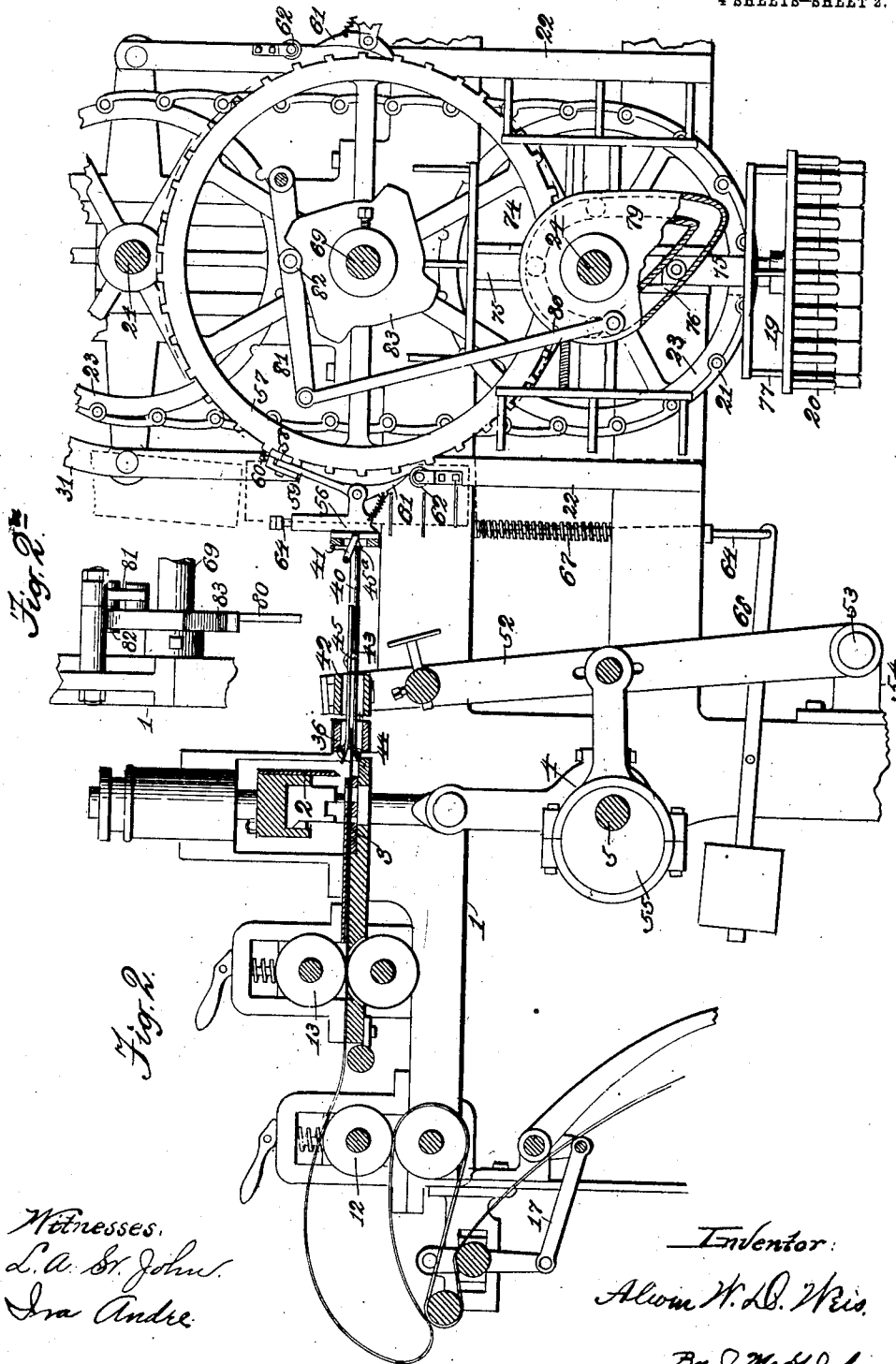
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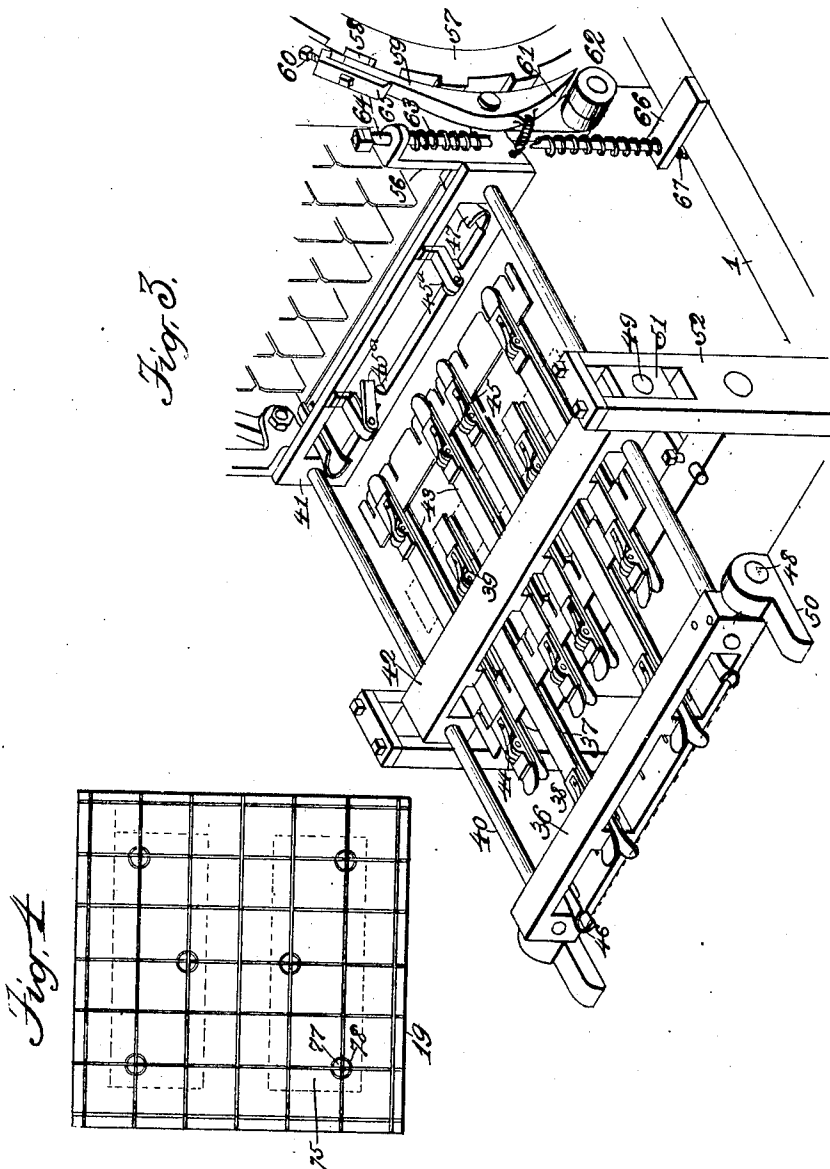
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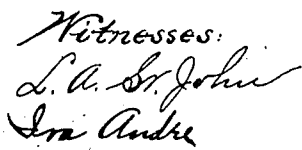


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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

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CELL-CASE MACHINE.

1,059,325.

Specification of Letters Patent.

Patented Apr. 15, 1913.

Application filed September 16, 1910. Serial No. 582,416.

To all whom it may concern:

Be it known that I, ALWIN W. D. WEIS, a citizen of the United States, residing at Waterloo, in the county of Blackhawk and State of Iowa, have invented certain new and useful Improvements in Cell-Case Machines, of which the following is a specification.

This invention relates to cell-case machines, and more particularly that class of machines used in the manufacture of egg-case fillers.

The type of machine herein shown is what is known as the two-roll type, and the main objects of the invention are: to provide mechanism whereby the cut and punched filled strips may be fed intermittently into suitable strip-carriers arranged in a chain or gang having a steady and continuous forward movement, to improve such strip-carriers, and more particularly the strip-holding fingers.

The full nature of the invention will clearly appear in the description and claims following, reference being had to the accompanying drawings, in which:—

Figure 1 is a general side view of a machine embodying my improvements. Fig. 2 is a fragmentary longitudinal section, showing more particularly the ejector mechanism. Fig. 2^a is a fragment, showing the attachment of the ejector lever to the main frame. Fig. 3 is a perspective view, showing the strip-conveyer and related mechanism. Fig. 4 is a plan view of an inter-matched cell-case, and shows the position of the ejector and its push-pins in relation thereto. Fig. 5 is a fragmentary side view illustrating the main driving gear and the quarter-turn device. Fig. 6 is a plan view of the latter. Fig. 7 is a detail illustrating the improved strip-holding fingers, and also the natural curvature of said strip as taken from near the core of the roll.

In the main the machine is of a familiar type and needs but to be briefly described, in order to a full understanding of the improvements involved in this invention. For the most part a description of one half will suffice, since the two ends of the machine are almost exact duplicates.

On suitable main frames 1 are mounted the punches and cutters 2, cooperating with suitable dies 3, the punching and cutting head being reciprocated by eccentrics 4 on a cross-shaft 5. These cross-shafts, of which

there is one near each end of the machine, are provided with bevel gearing 6 having concurrent motion through a longitudinal shaft 7. On one of the cross-shafts is mounted the main driving pulley 8. The cross-shafts are also provided with small sprockets 9 communicating by chain-belts 10 with large sprockets 11 on one of a pair of roll-shafts 12, which are thus given a slow but continuous rotation. These rolls run at a suitable surface speed to supply slack paper to the intermittent rolls 13, driven by the usual ratchet and pawl mechanism 14, rods 15 and cranks 16 on the shafts 5. Back of the continuous feed-rolls is a tension device 17, forming no essential feature of this invention. From the foregoing it will be seen that paper from the rolls 18 will be fed under the punches intermittently, and there punched and cut off in the usual way.

In the middle of the main frame is mounted the gang of strip carriers 19, provided with the usual strip-holding clips 20, and mounted revolvably each on a link of a sprocket chain 21. Throughout the most of their course these strip-carriers run between guides 22, which serve to keep them in exact position at all times. The carrier chains are mounted on large sprockets 23 on shafts 24, one of which is provided with a worm-gear 25 engaging a worm 26 on a shaft 27 driven by spur gears 28, one of which is fixed to the longitudinal shaft 7. The gearing is so calculated as to impart continuous motion to the strip-carriers, and at such a speed that at each cut-off of a strip the carriers have advanced exactly the distance of the space between strip centers in the finished cell-case. By means of strip-transferring mechanism to be described presently the carriers at one side of the machine are successively filled with horizontal rows of strips, after which each carrier is turned one quarter around, and on the other side of the machine is filled with intermatching strips in the same manner. The quarter-turning device is best shown in Figs. 5 and 6. It comprises an arm 29 pivoted at 30 on a curved extension 31 of one of the guides 22, and provided with a roller 32 lying normally in the path of the advancing carrier near one side. A spring 33 on a curved rod 34 engages a lug 35, and yields enough to permit the carrier to turn properly, as clearly shown in Fig. 6.

The cut-off strips are transferred from the point of cut-off to the strip-carriers by a device of the type shown in the patent to Starman No. 658,930 dated Oct. 2, 1900, to which reference may be had as to details relating to the strip-engaging dogs, etc. For the purposes of this application the device may be briefly described as follows: between the bars of a yoke 36 are attached fingers 37 adapted to receive between them the severed strip. The strips as cut off are first held by dogs at 38, and again, when advanced part way to the strip-carriers, by other dogs at 39. Near the ends of the yoke 36 are attached guide-rods 40, secured at their other ends to another yoke 41. On the guide-rods is mounted a crosshead 42 similar to the yoke 36, and to it are attached pairs of fingers 43 in the same manner. These are provided with dogs at 44 and 45 adapted to engage the strips as shown. The former, in the reciprocating movement of the crosshead, engage the strip at its initial position, and from there convey it to the dogs at 39. At this point the strip is caught by the dogs 45 and carried forward and thrust between the spring fingers of the strip carriers, and in the secondary operation, into engagement with the rows of slotted strips in said carriers. In Fig. 3 the spring fingers are not shown, but the engagement of the strips is clearly illustrated. In this figure the strips are supposed to be about half way advanced toward intermatching position. Suitable flaring guides are provided at 46 and 47 to keep the ends of the strips in proper position. Detent pawls 45^a prevent the strips from slipping back from the carriers.

Since the gang of strip carriers has a continuous forward movement, provision is made for imparting a correlative movement to the strip-conveying device. Both the yoke 36 and the crosshead are provided with trunnions 48 and 49, respectively. The former are mounted in suitable bearings 50 attached to some fixed portion of the machine. This allows the whole frame to rock. The trunnions of the crosshead are mounted in bearings 51 slidably mounted in levers 52 attached to a rock-shaft 53 journaled at 54. These levers connect suitably with eccentrics 55, and are thus given a reciprocating movement at each impulse of the machine. To the front (inner) yoke of the conveyer frame is attached a pair of brackets 56, each carrying a pawl adapted to engage a special ratchet-wheel 57, the movement of whose teeth exactly coincides with the movement of the carriers. It will be noted that the pawl shown in Fig. 3 is adapted to be carried downwardly by the ratchet-wheel, while that shown at the right in Fig. 1 is adapted to be carried in the opposite direction. For the sake of nice adjustment the tooth-engaging block 58 of the pawl 59 may be moved by

means of a temper screw 60. Each dog has a curved extension at 61 to engage a roller 62 mounted in the path of the pawl on one of the carrier guides. This releases the pawl when the strip has been inserted in the carrier, and permits the conveyer frame to return to initial position, when the pawl engages another tooth of the ratchet-wheel. The frame is returned by springs 63 on rods 64 passing through a lug 65 and a plate 66, the latter attached to the main frame. Below this plate is another spring 67, which, in connection with a weighted lever 68 absorbs the shock of the rebound. As the transfer frame needs to move in unison with the carriers during but a short interval the frame has plenty of time in which to return to initial position.

It is to be understood that the ratchet-wheel so provided is mounted on a shaft 69 driven by gears 70, 71 and 72. This feed device tends to impart a very smooth and perfect action to the machine, and admits of its being run at a higher rate of speed than is possible when the carriers are advanced intermittently. This will be evident from the fact that the transfer devices are comparatively light, and their inertia is easily overcome, while the contrary is of course true of the train of strip-carriers and their actuating mechanism.

To insure the complete bottoming of the strips, beaters 73 are attached to the arms that move the strips to the carriers. These are mounted respectively above and below the strip as entered, on opposite sides of the machine, and as they strike the edge of the previously inserted strip drive it to complete intermatching position.

The completed cell-case is ejected downwardly, as indicated in Fig. 2. The mechanism for this purpose is described as follows: On each side of the lower main sprocket is mounted a four-arm spider 74, each arm provided with a movable plunger 75. Each plunger has outwardly projecting push-pins 77 registering with holes 78 in the bottom-plate of each strip-carrier. These pins, as will appear by reference to Fig. 4, coincide with intersections of strips in the cell-case. To the shaft of each plunger is mounted a roller adapted to travel along a groove 76 in one face of a cam 79 mounted loosely on the shaft 24. The cam connects with a rod 80, and this with a lever 81 pivoted at some fixed point, as to a part of the main frame, as shown in Fig. 2^a. The lever carries a roller 82 traveling on the face of a four-point cam 83 fixed to the central shaft 69. The action of the ejector is indicated in Fig. 2. The carrier and ejectors move downwardly in unison, and as the latter follows the lower cam the push-pins are of course forced outwardly and into the holes in the carrier plate. During a good part of this movement

the lower cam remains stationary and in practically the position shown. The forward movement of the carriers is, however, comparatively slow, and it is desirable to eject the completed cell-case rather quickly, to avoid possible catching and dragging. This is effected by the sudden action of the rather abrupt upper cam, which, at the proper time throws up the lever 81, and this brings the lower cam back with a jerk, forcing the cell-case out of the carrier cleanly and quickly.

Since the construction described permits of high speed in the machine, it is very important that in match strips the intersecting slots come into pretty accurate register. This depends largely upon the strip-holding fingers, and in practice the fingers shown in Fig. 7 have been found to serve the purpose very perfectly. They consist of a practically stiff finger A, bent outwardly at A¹, and a spring finger B curved as shown, so that its bulge strikes about midway of the width of the strip when in intermatching position. This pressing against the convex side of the strip C brings the strip up flat against the straight side of the stiff finger, and holds the strip accurately in position. It is to be noted that this is done with comparatively little surface contact of the spring finger with the strip, so that while the strip is held firmly enough for intermatching the grip of the fingers is not so great as to prevent the ejector from discharging the finished filler without bending or mutilating it.

Having thus described our invention, we claim:

1. In a cell-case machine, the combination of a train of continuously moving strip-carriers, a reciprocating feed device adapted to transfer the strips to said carriers, and mechanism adapted to rock said feed device in unison with the forward movement of the carriers.

2. In a cell-case machine, the combination of continuously moving strip-carriers and a

reciprocating strip-conveyer adapted to transfer the strips to the carriers, said conveyer having a rocking movement during the insertion of the strips in the carriers.

3. In a cell-case machine, the combination of continuously moving strip-carriers, transversely moving strip-conveyers adapted to insert the strips in said carriers, and mechanism adapted to move said strip-conveyers practically parallel and in unison with the carriers during the insertion of the strips.

4. In a cell-case machine, the combination of a continuously moving train of strip-carriers, and strip-conveyers adapted to transfer the strips to said carriers in successive stages, said conveyers having a reciprocating movement transverse to the movement of the carriers, and a rocking movement in unison therewith.

5. In a cell-case machine provided with a suitable carrier-plate, strip-holding fingers adapted to hold in accurate position either flat or slightly curved strips, said fingers comprising a straight-sided stiff finger, flared near its outer end, to receive the concave side of the strip, and a curved, flexible finger facing it, and normally bearing against it near the middle, whereby an inserted curved strip is flattened and held straight, and parallel with the stiff finger.

6. In a cell-case machine, the combination of a train of continuously moving strip-carriers, a transversely moving strip-conveyer, a guiding frame therefor adapted to rock in unison with the movement of the carriers, rocking levers having a yielding connection with said conveyers, and mechanism adapted to impart an uninterrupted reciprocating movement to said levers and an intermittent rocking movement to said conveyer.

In testimony whereof I affix my signature in presence of two witnesses.

ALWIN W. D. WEIS.

Witnesses:

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ANNA M. DECKER.