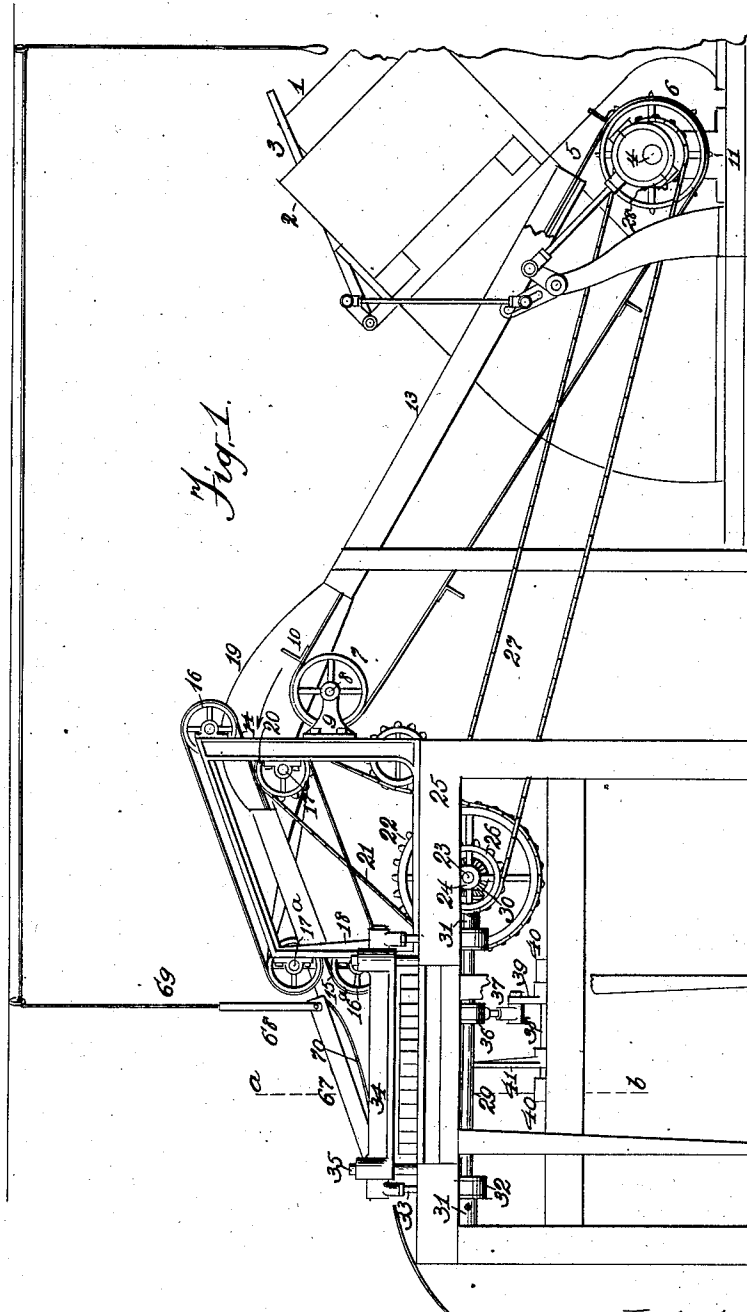


A. W. D. WEIS & J. STARMAN.
CELL CASE INTERLOCKER.
APPLICATION FILED MAR. 27, 1906.

1,021,958.

Patented Apr. 2, 1912.

4 SHEETS-SHEET 1.

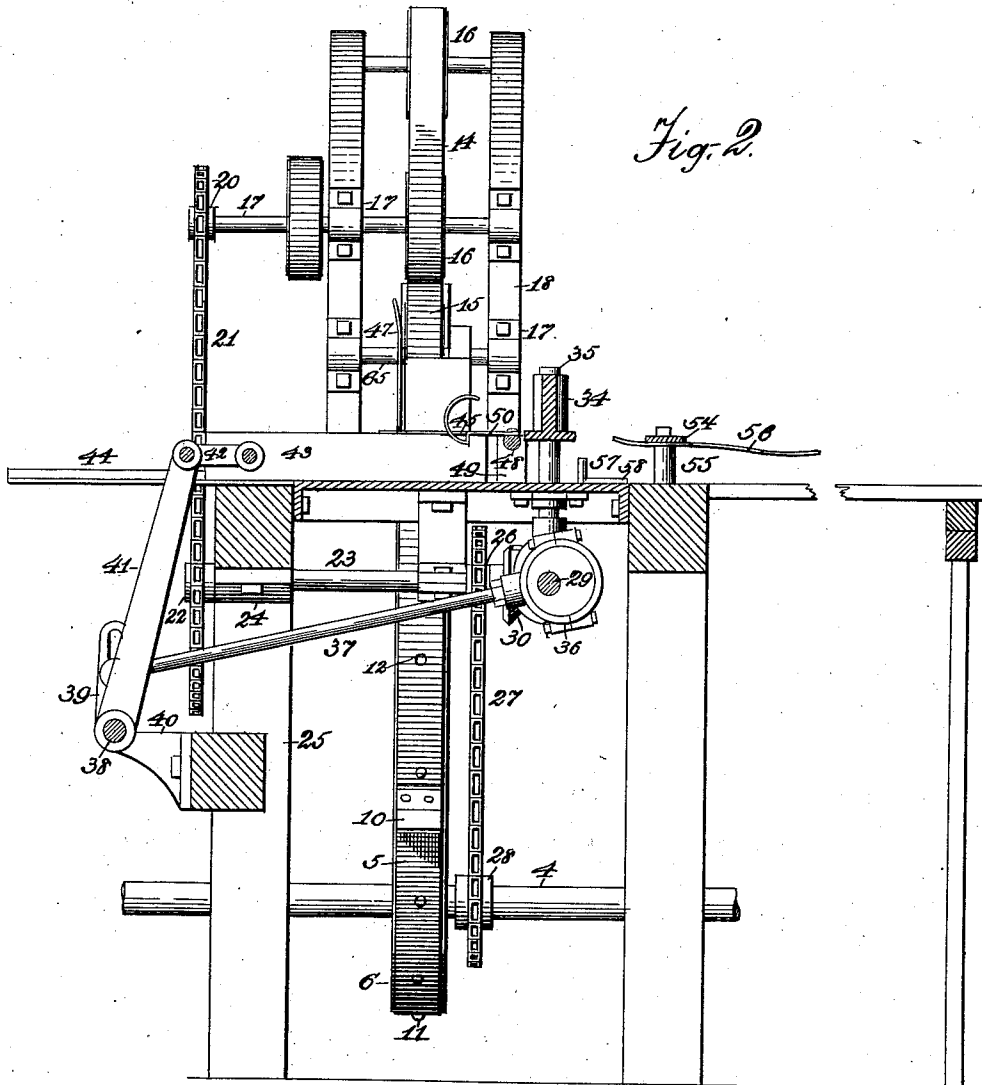


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4 SHEETS-SHEET 2.



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4 SHEETS—SHEET 3.

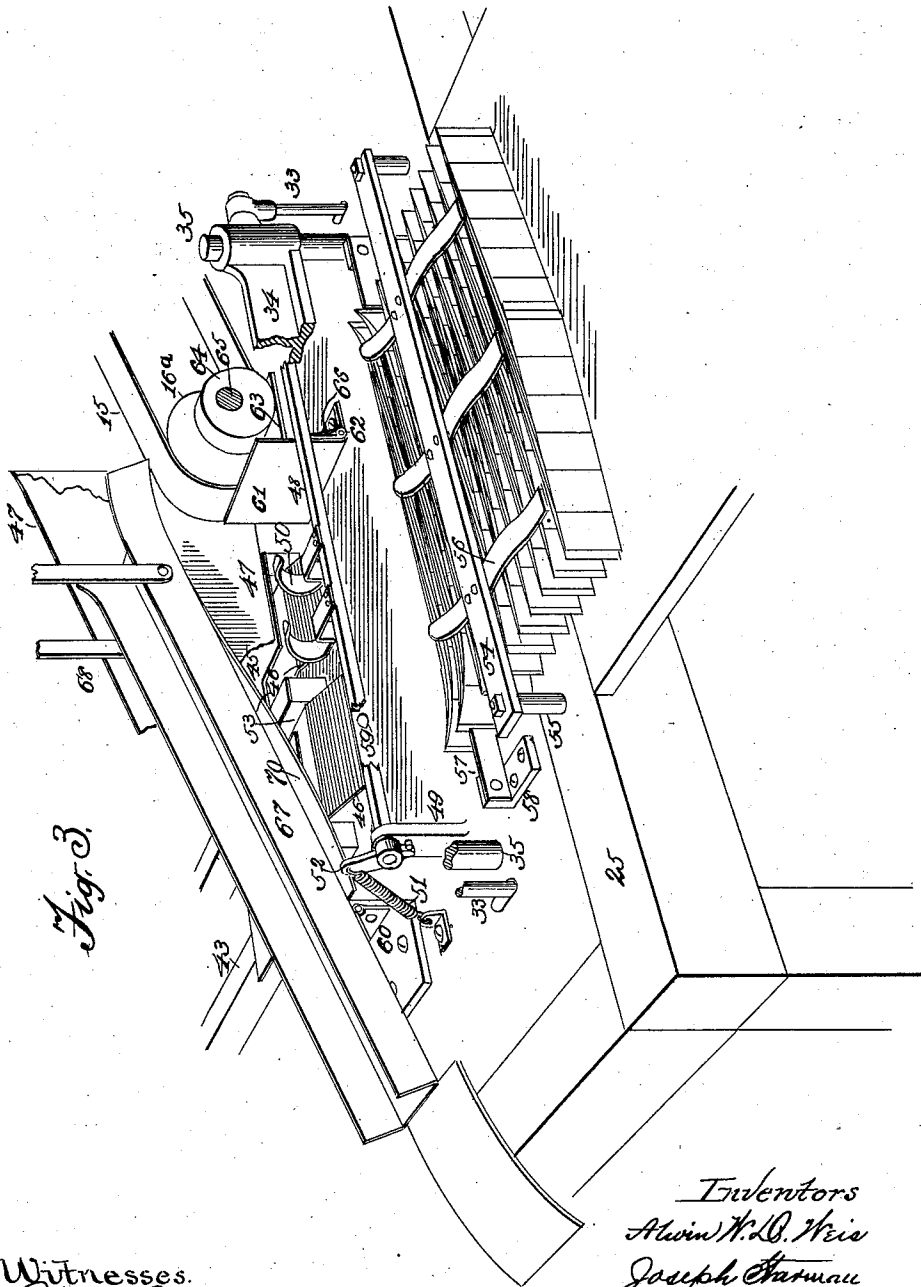


Fig. 3.

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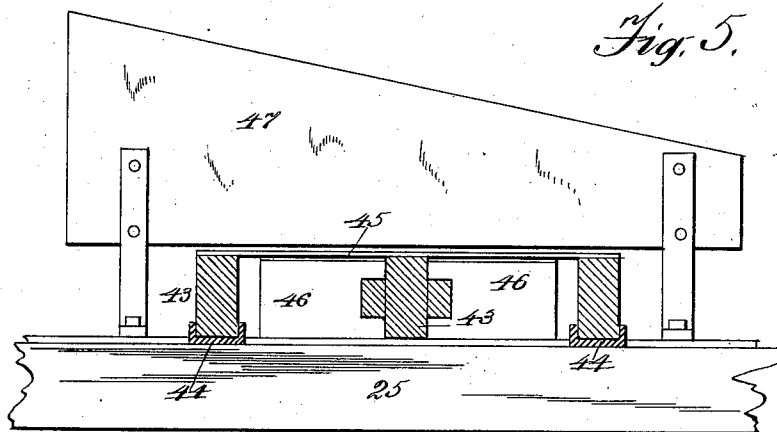
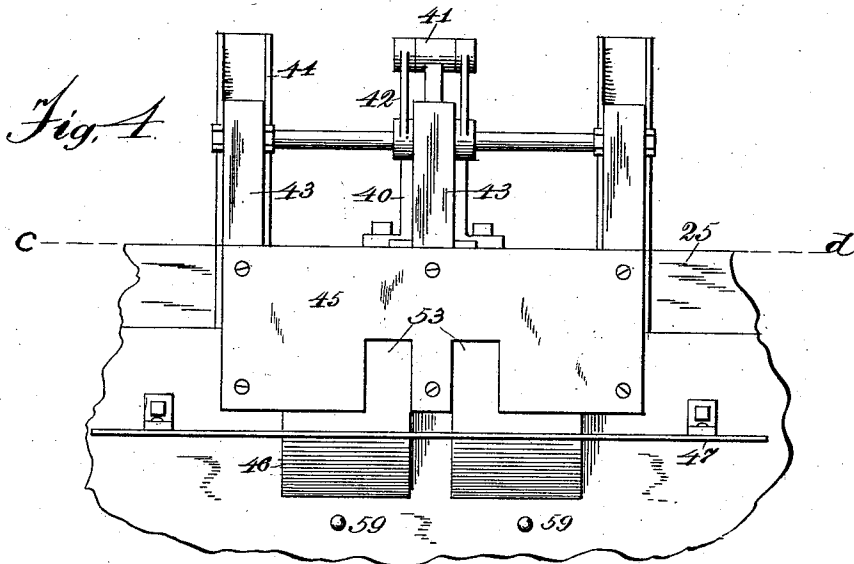
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4 SHEETS—SHEET 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

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

CELL-CASE INTERLOCKER.

1,021,958.

Specification of Letters Patent.

Patented Apr. 2, 1912.

Application filed March 27, 1906. Serial No. 308,344.

To all whom it may concern:

Be it known that we, ALWIN W. D. WEIS and JOSEPH STARMAN, citizens of the United States, residing at Waterloo, in the county of Blackhawk and State of Iowa, and Cedar Rapids, in the county of Linn and State of Iowa, have invented certain new and useful Improvements in Cell-Case Interlockers, of which the following is a specification.

10 This invention relates to machines for forming cell-cases of strawboard and the like, more especially for use in packing and shipping eggs, and has for its object to take from the machine which assembles and inter-
15 matches the cell-case strips, the complete or almost completed cell-case and if incomplete, to press its oppositely disposed strips together into complete interlocking position, and to feed them out on a table in con-
20 venient form to be counted and transferred to the wooden cases in which they are shipped to the consumer.

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

Figure 1 is a front view of the packer, and also shows in outline a part of the assembling machine, with which the packer
30 coöperates. Fig. 2 is a section of Fig. 1 in the line *a b*, looking to the right. Fig. 3 is a fragmentary view in perspective to give a clearer view of the packing mechanism and the way in which the cell-cases
35 are delivered to the attendant. Fig. 4 is a top view, showing the packer plunger, inclines, shield-plate, and related parts. Fig. 5 is a sectional view of parts shown in Fig. 4, as seen from above the line *c—d*,
40 looking downward.

The packer is applicable to various types of cell-case machines, but for the purposes of this application is shown in connection with our own punching and assembling machine as fully illustrated and described in
45 our application for Patent No. 305,420 filed Mch. 10, 1906, to which more particular reference may be had.

In the drawing, 1 denotes one of the inclined frames of the assembler, and 2 its companion frame, between which the cell-case strips are matched, but not completely
50 interlocked, as fully described in the application above referred to. The cell-case as so matched lies in the path of a sweep 3 operated intermittently by mechanism com-

municating with the main shaft 4 of the assembler, and at the proper time this sweep ejects the cell-case downwardly and a little
to the left, in practically the collapsed con-
60 dition shown in Fig. 3. As so discharged, the cell-case falls on an endless conveyer 5 driven by a pulley 6 on said main shaft. The other loop of the conveyer belt is over
65 an idler 7 mounted on a shaft 8 running in bearings 9 on the main frame of the packer, to be described presently. The conveyer is provided with suitable flights 10 to carry the cell-case forward. To insure
70 correct timing of the movement of the cell-case, the pulley 6 is provided with spurs 11 to register with equally spaced holes 12 in said conveyer belt. The cell-case falls
75 into and is guided in its onward course by a trough 13, from which it is discharged between a pair of belts 14 and 15 running
over pulleys 16 and 16^a on short shafts mounted in bearings 17 and 17^a on the upper
80 packer frame 18. In leaping the gap the cell-case takes the direction indicated by the arrow. A single shield 19 at the back side is sufficient to keep the cell-case in line,
and as soon as caught between the belts 14 and 15 it is snatched from the first conveyer,
85 the speed of which is not so great as that of said belts. It is to be noted that the pulleys for these belts are set in staggered position, that is to say, the pulleys 16^a are set
90 forward of the upper pulleys 16 so that the belts may hug the cell-case and yet yield enough to allow it to move freely in its course until discharged therefrom. One
of the shafts is provided with a sprocket 20 communicating by a sprocket chain 21 with
95 a large sprocket 22 on a shaft 23 in bearings 24 of the main frame 25 of the packer. Another sprocket 26 communicates by a chain 27 with a sprocket 28 on the main shaft 4.

The cross-shaft 23 transmits motion to a
100 longitudinal shaft 29 by miter gears 30. The latter shaft is mounted in suitable bearings 31, and provided with eccentrics 32, the rods 33 of which connect with a presser head 34 running on guides 35. Another ec-
105 centric 36, by its rod 37, transmits reciprocating movement to a rock-shaft 38, through a short crank arm 39. This shaft is mounted in bearings 40 at the back side of the main frame. From the shaft a long arm
110 41 extends upwardly and connects by a link 42 with a plunger 43 running at the top of

the frame in guides 44. In practice this plunger is made of three bars, connected at the front end on top by a plate 45 which catches the cell-case as it is discharged from between the belts 14 and 15. Below this plate, and between the bars of the plunger, are inclines 46 suitably secured to the main bed-plate of the machine frame. Just above the said plate, and practically over the upper angles of the inclines, is a shield-plate 47, bracketed to the same bed-plate which acts as a guide for the cell-case as discharged from the belts, and also as a stripper to hold the cell-case as the plunger moves back, after catching the cell-case, and so drops it upon the inclines. This of course turns the cell-case partly over. As the plunger returns its first forward movement tilts the cell-case to an upright position, and in this position it is pushed forward toward the presser-head above mentioned. Just back of the presser-head is a detent to catch the cell-cases and prevent their springing backward. This consists of a rock-shaft 48 in bearings 49, and provided with hooks 50 and a spring 51 connecting with a short arm 52. As the cell-cases pass under these hooks they yield upwardly, springing down and catching the cell-case as soon as it passes the hooks. It will be noted that the top-plate of the plunger is notched at 53 so as to allow the front ends of the plunger bars to pass the catching line of the hooks. In front of the presser-head is a hold-back consisting of a longitudinal bar 54 on posts 55, and provided with a series of spring fingers 56 to press down on the advancing mass of cell-cases, as clearly shown in Fig. 3. This serves to hold the cell-cases compactly together, so that the action of the presser does not tilt the cell-cases, or bend the strips composing them, as it moves up and down to press them into interlocked position. This upright position of the cell-cases is also aided by a pair of deflectors 57, attached to brackets 58. These intercept the ends of the cell-cases as pushed forward, and bend them back, as shown in Fig. 3, so that the cell-cases stand in a curved position when acted upon by the presser, the face of which is wide enough to cover said curve.

It is to be understood that Fig. 3 does not show a complete train of cell-cases, a few at the back of the train being omitted. To prevent the cell-case, as it falls on the inclines, from sliding down flat on the table in front of them, detents 59 are placed near the foot of each incline (one only being shown), to catch the lower edge of the cell-case. This of course also aids in bringing the cell-case to an upright position as the plunger advances. The cell-cases are brought into alinement endwise by abutments between which the cell-case falls as it drops on the plunger plate. One of these, 60, is rigid,

and serves also as a support for a chute and deflector, to be described presently. The other is a flutter-plate, 61, hinged at 62, and provided with a wing 63 to engage an eccentric 64 on a shaft 65 carrying one of the pulleys 16^a. A spring 66 tends to press the flutter-plate toward the end of the cell-case, and holds the wing in contact with the eccentric. The flutter-plate stands in front of the lowermost of the pulleys 16^a, and as the cell-case is discharged its rear end falls in front of said plate, the flutter of which prevents any catching or tardy action on the part of the cell-case, and insures its dropping flatly and in proper position on the plunger-plate above mentioned. To the abutment 60 is hinged a chute 67 provided with a bail 68, and adapted to be drawn up or depressed by any suitable pull 69, within reach of the operator. In case the assembler makes one or more defective cell-cases, the operator lowers this chute, and the defective cell-case passes over the machine, outside the path of the packer, to receive such attention as it may require. In this way the packer is not choked, nor the attendant at the packing table bothered with faulty cell-cases. Normally the chute occupies about the position shown in Fig. 3, and the cell-cases pass under it. To its under side is attached a deflector 70 to partially intercept the cell-case in its movement forward, and to throw it down practically flat and straight on the receiving plate of the plunger. Positive drives are provided, instead of belts and pulleys, as the proper action of the machine depends upon the nicety and accuracy with which the various operations are timed, as well as the nature of the mechanism itself.

In practice the deflector 70 at its lower end lies just enough above the top-plate of the plunger to easily receive the collapsed cell-case between them. This has the effect of keeping the cell-case straight, as well as bringing it down flat on the top-plate, and prevents any tendency that the cell-case would otherwise have, by reason of its momentum, to strike forcibly against the end abutment and bend or break at or near the end.

The operation of the machine may now be briefly described as follows: The cell-case is supposed to be assembled in practically rectangular form in the cell-case machine, or assembler, a fragmentary outline of which appears at the right in Fig. 1. This cell-case, by the revolution of the shaft 4, is caught by the sweep 3 and swept down and out of the assembler and on the conveyer 5, in a collapsed, intermatched, but not completely interlocked condition. It is carried by the conveyer endwise, and delivered between the belts 14 and 15 in the path indicated by the arrow. These belts deliver it under the deflector 70, the curvature of

which is such as to throw it down flatwise on the top-plate 45 of the plunger, or packer proper, which at this moment has reached its extreme forward position. The forward momentum of the cell-case is arrested by the front stop 60, while the flutter-plate 61 at its rear end tends to jog it into exact position with respect to the plunger. As the plunger retreats the cell-case is stripped off it by the shield-plate 47, and slides down the inclines 46, turning partially over. At the bottom it is prevented from sliding down flat on the table by the stops 59, which in practice are nothing more than round screw-heads. On the return stroke of the plunger the inclined cell-case is turned again partially, and takes an upright position, in which position it is pushed forward as far as the plunger travels. This carries it under the hooks 50, which prevent its sliding back as the plunger retreats. Succeeding cell-cases push it forward, and in this forward movement of the mass one or more of the cell-cases is at each revolution of the machine brought under the presser 34, which forces the intermatched strips of the cell-case into completely interlocking position. The finished train of cell-cases is held in compact form for the packing operator, or, more briefly, the handler, by the retarding springs 56.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is:

1. In a cell-case packer, the combination of a conveyer to take the cell-cases on their sides collapsed, tilting and forwarding mechanism to turn them up edgewise and advance them, and mechanism adapted to completely interlock them in this position.

2. In a cell-case packer, the combination of a conveyer to take the cell-cases on their sides collapsed, tilting and forwarding mechanism to turn them up on their sides and advance them, means for curving them as they are advanced, and a presser to close and interlock them.

3. In a cell-case packer, the combination of a conveyer to take the severed and collapsed cell-cases on their sides and carry them endwise, a reciprocating plunger on which they fall in the same position, a stripper, an incline to receive them as stripped from the plunger, and mechanism to actuate said conveyer and plunger to advance the cell-cases transversely and on edge.

4. In a cell-case packer, the combination of a conveyer to take and deliver the severed

and collapsed cell-cases on their sides, a reciprocating plunger having a receiving plate to catch them on their sides, a stripper to remove them as the plunger retreats, an incline to receive them as they fall from the plunger, and detents to catch the lower edges of the cell-cases and hold them in position to be uptilted and advanced by the forward movement of the plunger.

5. In a cell-case packer, the combination of a conveyer to deliver the severed and collapsed cell-cases on their sides, mechanism adapted to tilt the cell-cases a quarter turn and stand them on edge and push them forward in that position, and detents to catch the advanced cell-cases when pushed to the extreme forward position.

6. In a cell-case packer, the combination of mechanism adapted to advance the cell-cases standing on edge, a presser to close and interlock them, and an elastic holder in advance of the presser, to retard their forward movement and keep them in a compact mass.

7. In a cell-case packer, the combination of a conveyer carrying the severed and collapsed cell-cases endwise in a downward direction, and a chute movable in and out of the path of said cell-cases, the under side of said chute having a deflector adapted to impel the cell-cases downwardly as they pass under it.

8. In a cell-case packer, the combination of a conveyer with flights to carry the severed and collapsed cell-cases upwardly, and a faster running conveyer to take the cell-cases from it and deliver them downwardly, the down conveyer comprising a pair of opposing and concurrently running belts and pulleys therefor, the lower pair of pulleys being out of direct opposition to the upper pair.

9. In a cell-case interlocker, the combination of a conveyer to carry the severed and collapsed cell-cases endwise, a transversely moving plunger adapted to receive them, an end abutment to limit their movement, and a deflector lying a little above the plunger, and adapted to hold the cell-cases straight and prevent buckling, substantially as described.

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

ALWIN W. D. WEIS.
JOSEPH STARMAN.

Witnesses:

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F. J. KUBICEK.