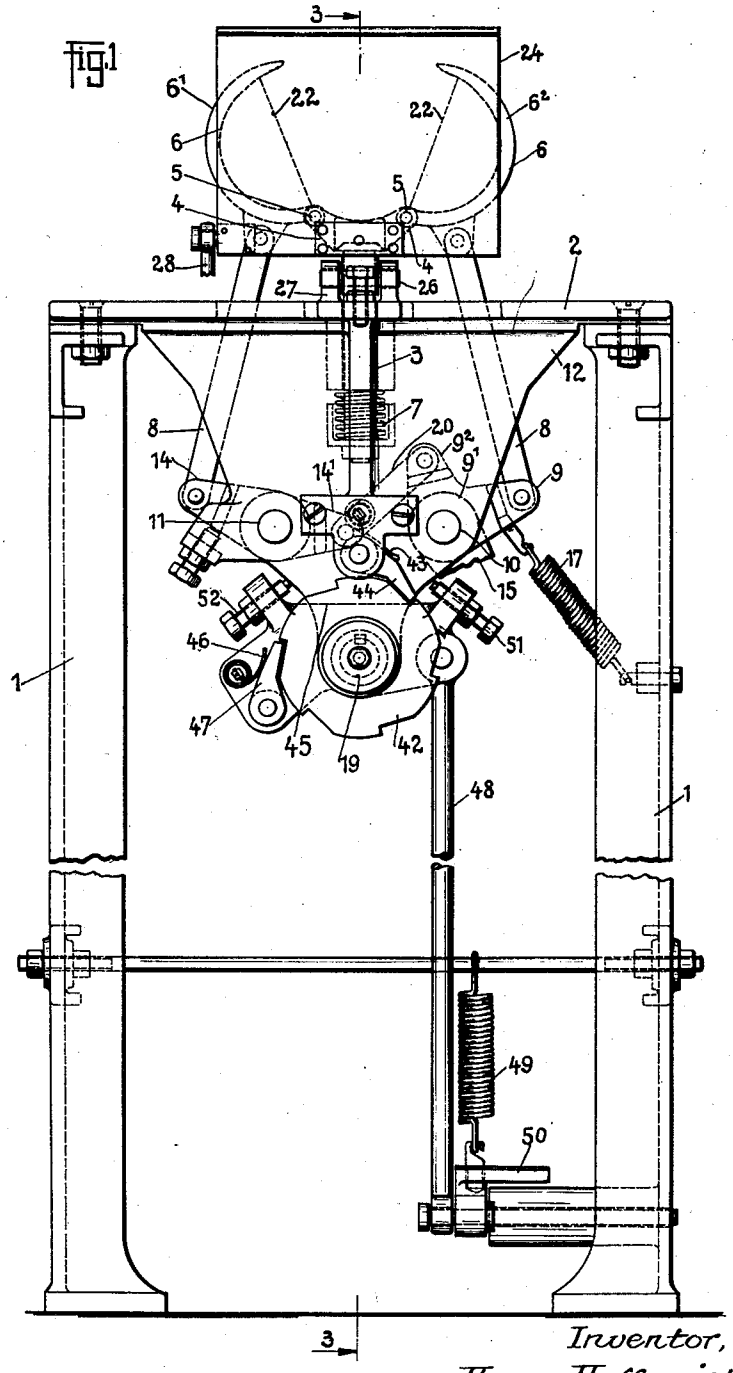
April 26, 1932. H. HOFFMEISTER 1,855,675

CAN FILLING APPARATUS

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Fig. 1



Inventor,
Hans Hoffmeister,
by A. V. Davis,
Attorney.

April 26, 1932. H. HOFFMEISTER 1,855,675

CAN FILLING APPARATUS

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Fig. 2

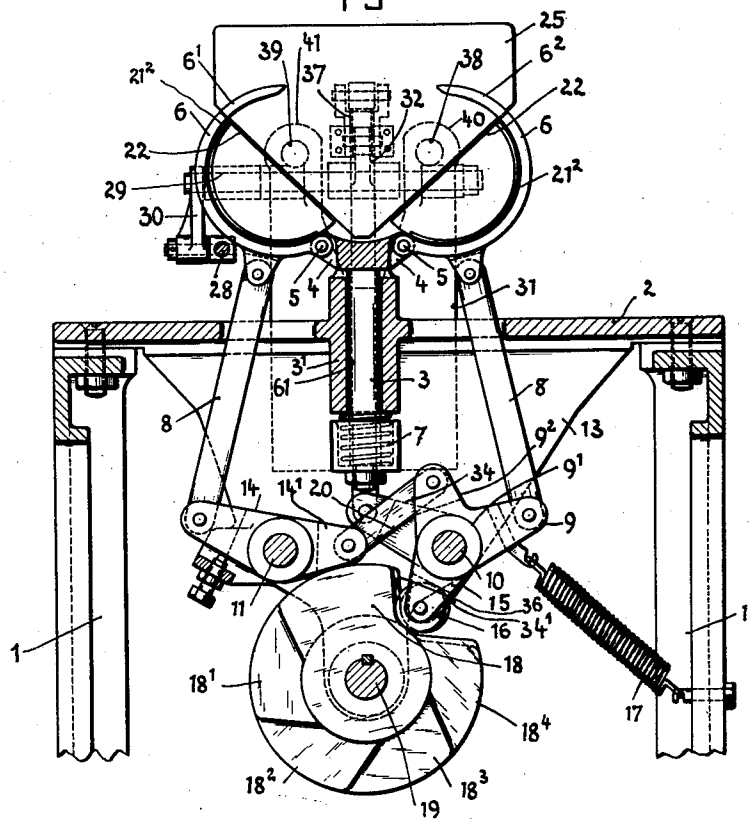
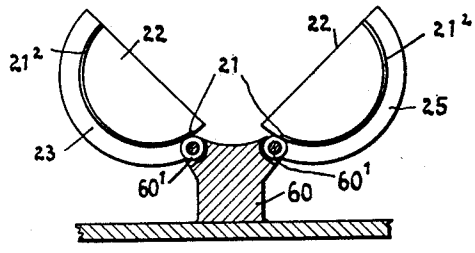


Fig. 4



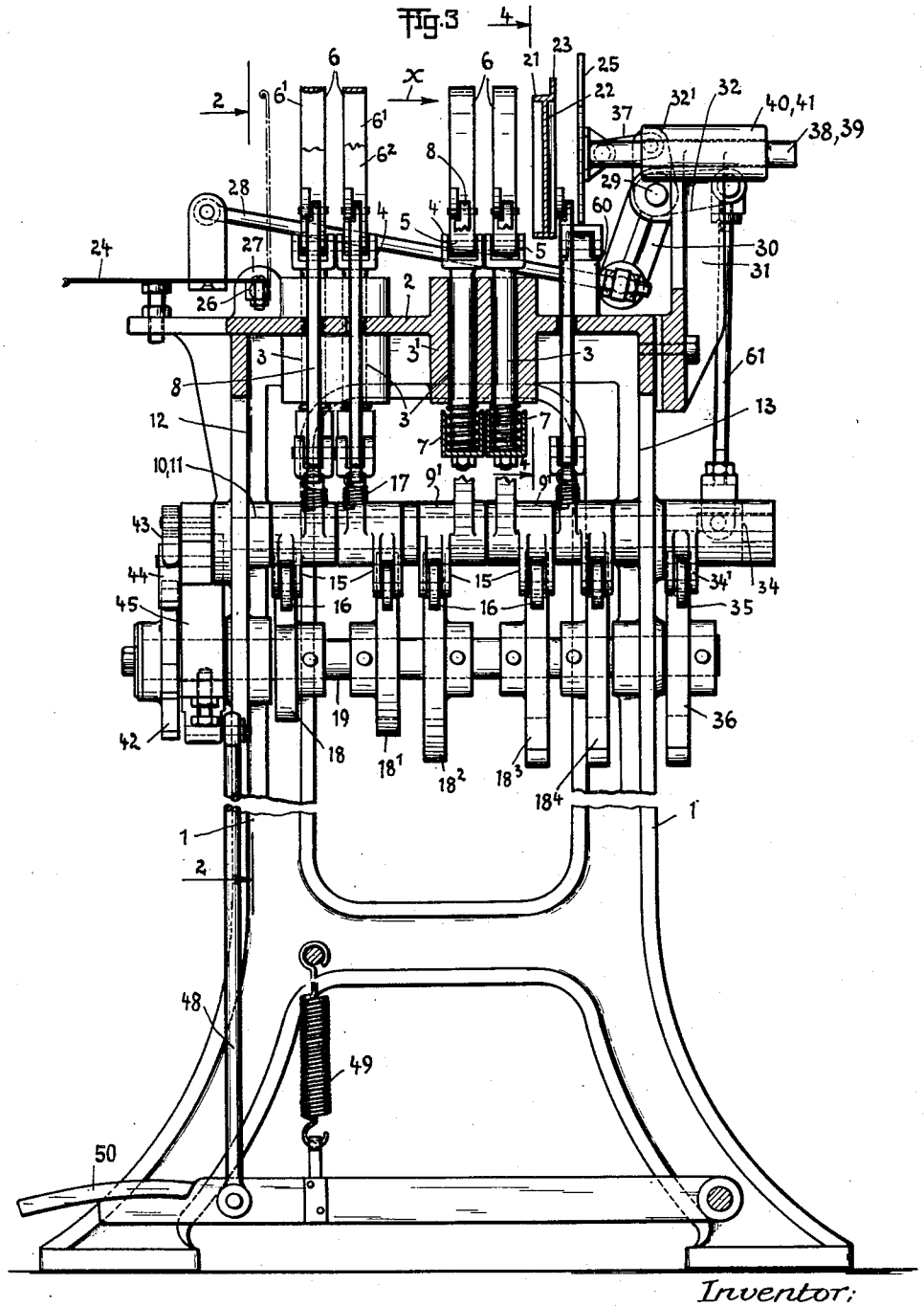
Inventor,
Hans Hoffmeister,
by J. W. Darby,
Attorney.

April 26, 1932. H. HOFFMEISTER 1,855,675

CAN FILLING APPARATUS

Filed Aug. 8, 1931 3 Sheets-Sheet 3

Fig. 3



Inventor:
Hans Hoffmeister,
by H. W. Dahm,
Attorney.

Patented Apr. 26, 1932 1,855,675

UNITED STATES PATENT OFFICE

HANS HOFFMEISTER, OF BRUNSWICK, GERMANY, ASSIGNOR TO HANNA-GERDA HOFFMEISTER, MAIDEN NAME DE VRIES, OF BRUNSWICK, GERMANY

CAN FILLING APPARATUS

Application filed August 8, 1931, Serial No. 555,993, and in Germany August 28, 1930.

My invention relates to improvements in can filling apparatus and more particularly in apparatus for filling stem-shaped material such as asparagus, and the object of the improvements is to provide an apparatus by means of which the said material, and more particularly asparagus, may be placed into cans without being injured by the pressure of the feeding device. With this object in view my invention consists in providing a filling device comprising a plurality of gripping members adapted to be successively opened and removed from the material contained therein for placing the same into the can.

For the purpose of explaining the invention an example embodying the same has been shown in the accompanying drawings, in which the same letters of reference have been used in all the views to indicate corresponding parts. In said drawings,

Fig. 1 is an elevation of the apparatus,

Fig. 2 is a sectional elevation taken on the line 2—2 of Fig. 3 and showing the mechanism for operating the gripping members and the plate for determining the position of the material at its rear end,

Fig. 3 is a sectional elevation taken on the line 3—3 of Fig. 1, and

Fig. 4 is a detail view.

In the example shown in the drawings the apparatus comprises a frame composed of uprights 1 and a top plate 2. The said top plate is made integral with two blocks 3^1 each formed with two vertical bores providing guides for plungers 3 formed at their top ends with pairs of eyes 4. On pivot bolts 5 mounted in the pairs of eyes grippers 6 are rockingly mounted, each of which comprises two semi-circular arms 6^1 and 6^2. When the said grippers are closed they provide circular rings the inner diameter of which is slightly smaller than that of the can. The plunger 3 are acted upon by springs 7 tending to pull the same downwardly. Each arm 6^1 and 6^2 of the grippers 6 is connected by a link 8 with a bell crank lever 9 and 14 respectively loosely mounted on an axis 10, 11 mounted in brackets 12, 13 depending from the plate 2. The hubs 9^1 of the bell crank levers 9 are made integral with crank arms 15 having anti-friction rollers 16 mounted thereon, the said rollers 16 bearing on the circumferences of cam disks 18, 18^1, 18^2, 18^3 spaced from each other in accordance with the distances between the bell crank levers 9 and keyed to a shaft 19 mounted on the brackets 12, 13. Springs 17 connected respectively to the frame 1 and to the bell crank levers 9 tend to hold the rollers 16 in engagement with the cam disks 18, 18^1, 18^2, 18^3. At their leading ends the cam faces of the cam disks 18, 18^1, 18^2, 18^3 are located one behind the other in the direction of the axis of the shaft 19, while the circumferential lengths of the cam faces are successively enlarged from one end to the other. The free arms 9^2, 14^1 of the bell crank levers 9, 14 are connected with each other by links 20, so that the levers 14 are carried along when the bell crank levers 9 are rocked by means of the cam disks 18, 18^1, 18^2, 18^3.

At the rear of the gripping members 6, viewed in the direction of the arrow x shown in Fig. 3, a block 60 rises from the plate 2 of the frame, which block is formed with two eyes 60^1 in which a gripper 21 comprising two arms 21^1 and 21^2 is rockingly mounted, the arms 21^1 and 21^2 being made integral with semi-circular walls 22 which, when viewed in the direction of the movement of the can being filled or from the left in Fig. 3, slightly project from the flanges 23 of the arms 21^1, 21^2, and which provide an abutment for the material held by the grippers and prevent longitudinal displacement thereof. The gripping member 21 is operated from a cam disk 18^4 secured to the shaft 19. The flanges 23 of the arms 21^1, 21^2 are provided for arresting the can advancing in the direction of the arow x shown in Fig. 3. The outer diameter of the arms 21^1, 21^2 of the last gripping member 21 is, in the closed position of the gripping member, smaller than the inner diameter of the can. The length of the apparatus between the front plate 24 and the flange 23 of the last gripping member 21 corresponds to the depth of the can being filled. In order that the material to be filled into the can, such for example as asparagus, be placed

between the open gripping members so that the ends are located at both sides in planes, before the first and behind the last gripping members end plates 24 and 25 respectively are provided. The end plate 24 located at the left hand side of the apparatus is rockingly mounted on a pivot bolt 26 disposed in bearings 27 rising from the plate 2, and it is connected by a link 28 with a crank arm 30 keyed to a shaft 29 mounted on a bearing block 31 secured to the plate 2. The said shaft carries a bell crank lever 32 one arm of which is connected by a link 61 with one arm of a lever 34 loosely mounted on the shaft 10 and having a roller 35 mounted on the other arm 34^1, the said roller bearing on a cam disk 36 secured to the shaft 19. The other arm 32^1 of the bell crank lever 32 is connected by a link 37 with the rear plate 25, which plate is guided by means of two rods 38 and 39 in bores of two eyes 40, 41 carried by the block 31.

The shaft 19 on which the cam disks 18, 18^1, 18^2, 18^3, 18^4, 36 are mounted carries at its front end a ratchet wheel 42 engaged by a latch 44 mounted on the block 12 and acted upon by a spring 43. Further, on the said shaft an operating lever 45 is loosely mounted which has a pawl 47 acted upon by a spring 46 and engaging in the teeth of the ratchet wheel 42 mounted on one arm. The opposite arm of the said lever 45 is connected by a link 48 with a pedal lever 50 supported by a spring 49. Adjustable stops such as screws 51 and 52 are located in position for engagement with the block 12 of the machine, and they are adapted to be adjusted in position for varying the rocking movement of the ratchet mechanism 45, 47, 48, 50.

If it is desired to fill for example asparagus into a can, the desired amount of the said asparagus is placed, by hand or by suitable mechanism, into the grippers 6 and 21 which before have been opened. While the material is thus placed into the gripping members the end plate 24 is set in the elevated position shown in Fig. 3 in broken lines, and the plate 25 is located in the plane of the plates 22 of the gripping member 21. After the material has thus been placed into the gripping members the pedal lever 50 is rocked downwardly, so that the link 48 imparts rocking movement to the lever 45 on the shaft 19. Now the pawl 47 of the lever 45 advances the ratchet wheel 42 in clockwise direction through an angle corresponding to the distance between two consecutive teeth, until the pawl 44 engages at the rear of the next tooth of the wheel 42 and thus locks the said wheel against being turned rearwardly. The rocking movement of the lever 45 and the rotary movement of the wheel 42 are limited by the stop 52 engaging the block 12. By the rotary movement of the wheel 42 the shaft 19 and all the cam disks 18, 18^1, 18^2, 18^3, 18^4 and 36 carried thereby are rocked through an angle corresponding to the said distance between consecutive teeth of the wheel 42. The leading cam faces of the cam disks 18, 18^1, 18^2, 18^3 first rock outwardly the crank arms 15, and thereafter the cam disks 18^4 and 36 rock outwardly the last crank arms 18 and 34 respectively. The bell crank levers 9 and the bell crank levers 14 connected therewith by the links 20 are rocked in a direction for closing the gripping members 6 and 21 through the intermediary of the link 8, the springs 7 being put under tension and the plungers 3 moved upwardly. Simultaneously by the movement of the lever 34 the bell crank lever 32 and the shaft 29 are rocked through the intermediary of the link 61, the said shaft 29 moving the end plate 24 into the position shown in full lines and shifting the end plate 25 from the plane of the flanges 23 rearwardly or to the right in Fig. 3.

Now the can to be filled is placed on the ends of the asparagus which slightly project from the first gripping member 6, and it is moved in the direction of the arrow x, shown in Fig. 3 until it engages the first gripping member. Now the first gripping member 6 is opened by again depressing the pedal lever 50 and imparting a second intermittent movement to the ratchet wheel 42, the roller 16 of the crank arm 15 of the first gripping member 6 rolling inwardly from the cam face 18. Now the first spring 17 pulls the said crank arm and the first bell crank levers 8, 14 into initial positions, thus opening the first gripping member 6. Since the circumferential cam faces of the following cam disks 18^1, 18^2, 18^3, 18^4 and that of the disk 36 are larger than that of the first disk, the parts controlled thereby remain in position during the second step of the rocking movement of the ratchet wheel 42. Now the can is further advanced to the right until it engages the next gripper. In a similar way the pedal lever 50 is again moved three times for imparting a third, fourth and fifth intermittent movement to the ratchet wheel 42 and returning the crank arms 15 and the parts of the second, third and fourth gripping members 6 into initial positions, the can being intermittently advanced from one gripping member to the next one, until its right hand margin engages the flange 23 of the gripping member 21, which is still closed. If now the pedal lever 50 is operated a sixth time also the gripping member 21 is opened after the can had first been removed. During the last downward movement of the pedal lever 50 the roller 35 of the lever 34 releases the descending portion of the cam face of its cam disk 36, and the end plates 24, 25 are again set into the initial positions for limiting the space included between the gripping members at its ends. When the gripping members 6 are opened the plungers 3 and the

gripping members 6 are forced downwardly by the spring 7, so that the can may be advanced without engaging, with its front margin, the gripping members or the heads of the plungers.

Now the filling of the can has been completed, and the apparatus has been returned into initial position in which a new supply of asparagus may be placed between the grippers.

While in describing the invention reference has been made to a particular example embodying the same I wish it to be understood that my invention is not limited to the construction shown in the drawings, and that various changes may be made in the general arrangement of the apparatus and the construction of its parts without departing from the invention. For example I do not limit myself to the mechanism such as the pedal lever 50 for driving the apparatus by human power. In some cases power operated mechanism may be provided. Further, I do not limit myself to the construction of the ratchet wheel 42 provided with six teeth. The said number may be smaller or larger, in which case the circumferential faces of the cam disks are shaped accordingly.

I claim:

1. The herein described apparatus for filling elongated bodies into cans, comprising a plurality of gripping members adapted to hold the bodies, and means to remove said gripping members from said bodies successively from one end to the other.

2. The herein described apparatus for filling elongated bodies into cans, comprising a plurality of gripping members each comprising two rockingly mounted arms adapted to hold the bodies, and means to rock the arms of said gripping members away from said bodies successively from one end thereof to the other.

3. The herein described apparatus for filling elongated bodies into cans, comprising a plurality of gripping members each comprising two rockingly mounted arms adapted to hold the bodies, gearings intermediate the arms of each gripping member insuring simultaneous movement of said arms, and cams one for each of said gripping members constructed for removing said arms away from said bodies successively from one end to the other.

4. The herein described apparatus for filling elongated bodies into cans, comprising a plurality of gripping members each comprising two rockingly mounted arms adapted to hold the bodies, gearings intermediate the arms of each gripping member insuring simultaneous movement of said arms, and cams one of each of said gripping members constructed for removing said arms away from said bodies successively from one end to the other and for simultaneously moving the same towards said bodies.

5. The herein described apparatus for filling elongated bodies into cans, comprising a plurality of gripping members each comprising two rockingly mounted arms adapted to hold the bodies, gearings intermediate the arms of each gripping member insuring simultaneous movement of said arms, cams one for each of said gripping members constructed for removing said arms away from said bodies successively from one end to the other and for simultaneously moving the same towards said bodies, a shaft to which said cams are secured, and pawl and ratchet mechanism for intermittently rotating said shaft.

6. The herein described apparatus for filling elongated bodies into cans, comprising a plurality of gripping members adapted to hold the bodies, means for removing said gripping members from said bodies successively from one end to the other, end plates provided at opposite ends of said gripping members, and means for moving said end plates towards and away from said gripping members.

7. The herein described apparatus for filling elongated bodies into cans, comprising a plurality of gripping members each comprising two rockingly mounted arms adapted to hold the bodies, gearings intermediate the arms of each gripping member insuring simultaneous movement of said arms, cams one for each of said gripping members constructed for removing said arms away from said bodies successively from one end to the other and for simultaneously moving the same towards said bodies, end plates provided at opposite ends of said gripping members, a cam and gearing controlled thereby for moving said end plates away from said gripping members, a shaft to which all of said cams are secured, and pawl and ratchet mechanism for intermittently rotating said shaft.

8. The herein described apparatus for filling elongated bodies into cans, comprising a plurality of gripping members each comprising two rockingly mounted arms adapted to hold the bodies, and means for rocking the arms of said gripping members away from said bodies successively from one end thereof to the other, the arms of the gripping members which are adapted to be last moved away from said bodies being formed with plates and a flange providing stops respectively for the bodies placed into the gripping members and the margin of the can to be filled.

9. The herein described apparatus for filling elongated bodies into cans, comprising a frame, a plurality of bodily movable parallel grippers each comprising a pair of rockable arms, a gripper at one end of said first-named grippers comprising a pair of rockable arms each connected with a plate and a flange and

rockingly supported on stationary pivot bolts, means for bodily moving said first-named grippers and opening all of said grippers successively from the end remote from the gripper connected with plates towards said gripper connected with plates.

10. The herein described apparatus for filling elongated bodies into cans, comprising a frame, a plurality of parallel spring-pressed plungers disposed with their axes in a plane, grippers each comprising a pair of arms rockingly mounted on said plungers, a gripper at one end of said first-named grippers comprising a pair of rockable arms each connected with a plate and a flange and rockingly supported on stationary pivot bolts, means for opening said grippers successively from the end remote from the gripper connected with plates towards said gripper connected with plates and for moving said plungers in opposition to the springs acting thereon.

In testimony whereof I have affixed my signature.

HANS HOFFMEISTER.