

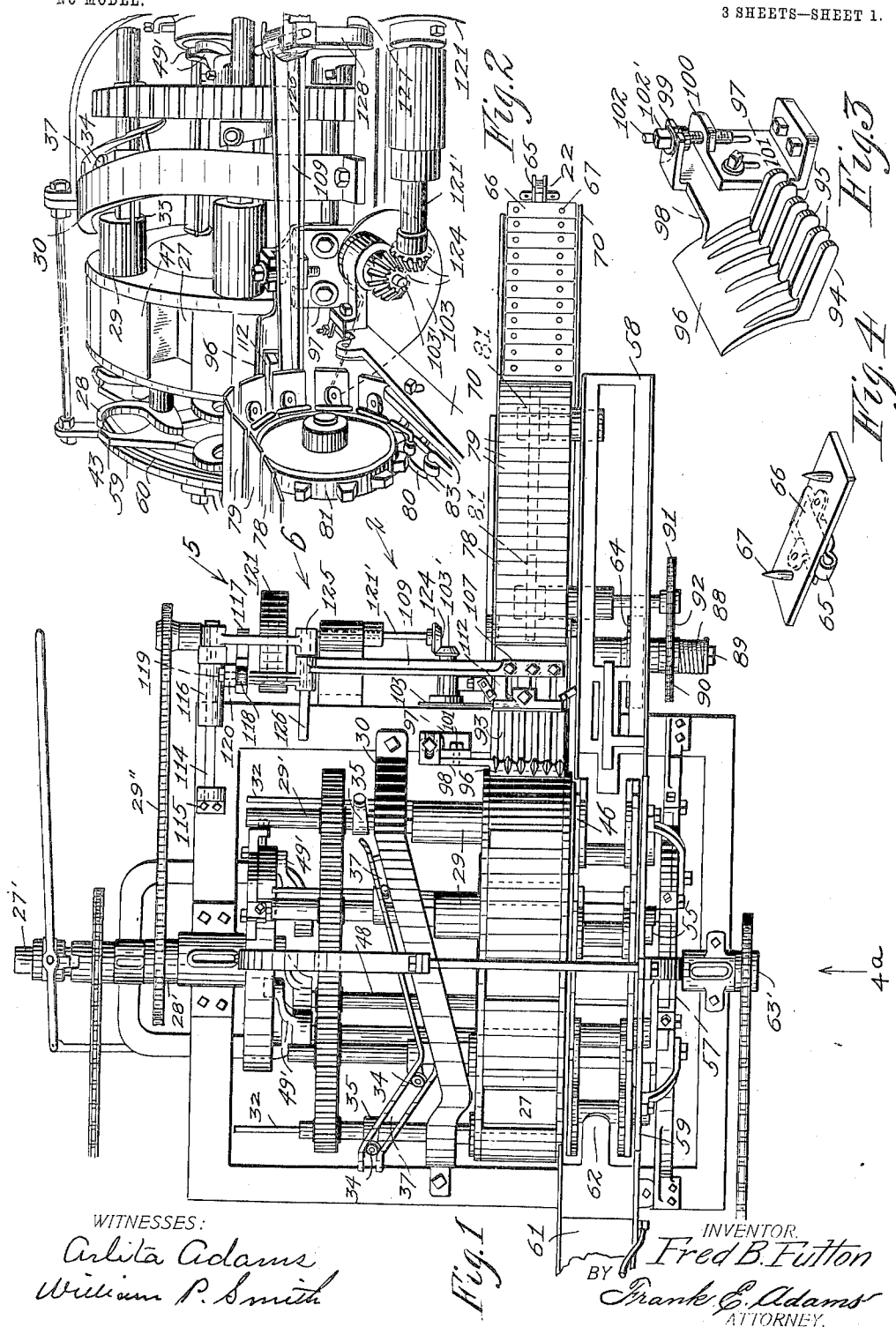
No. 750,760.

PATENTED JAN. 26, 1904.

F. B. FULTON.
CAN FILLING MACHINE.
APPLICATION FILED OCT. 13, 1902.

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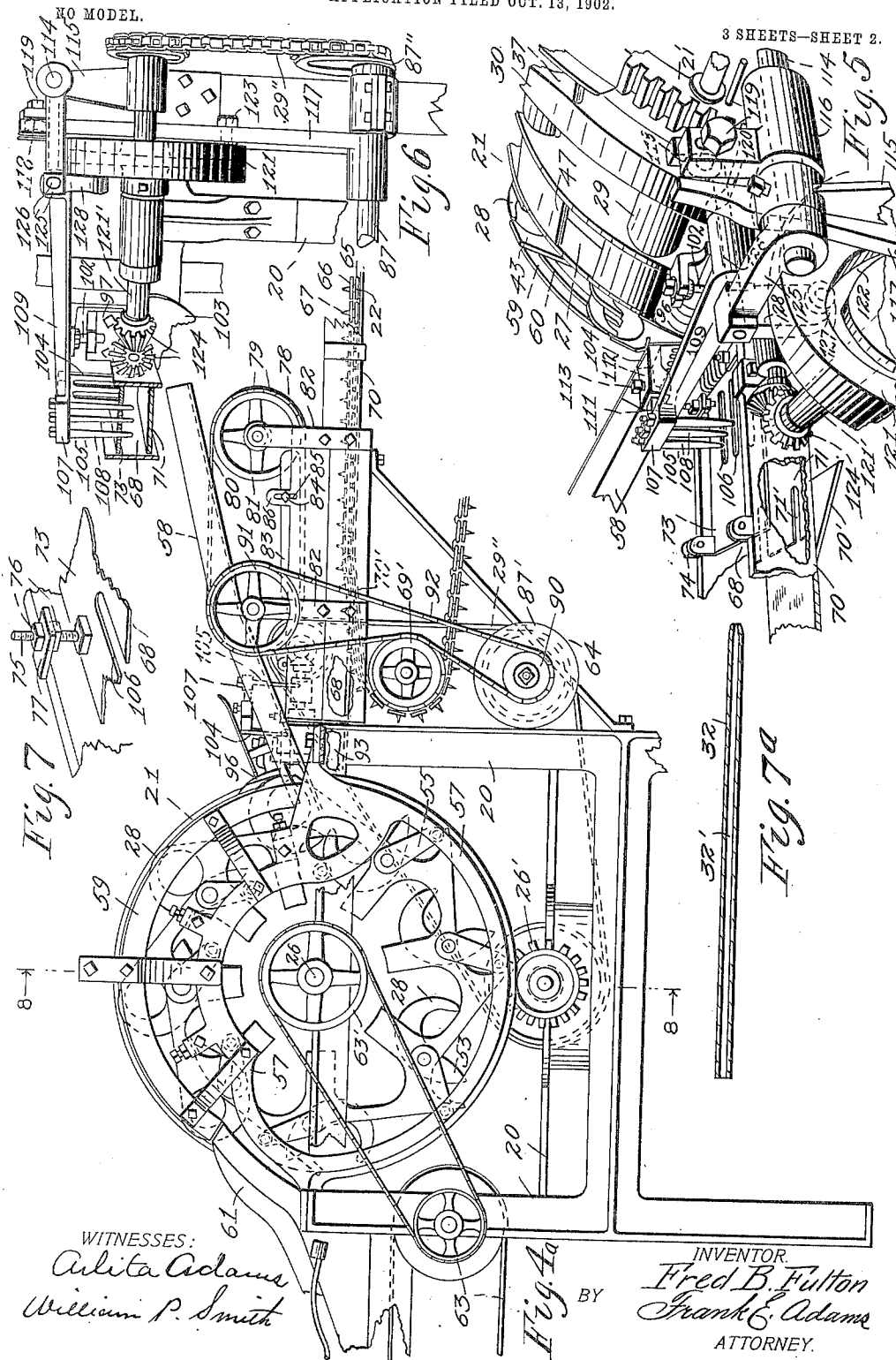
3 SHEETS—SHEET 1.



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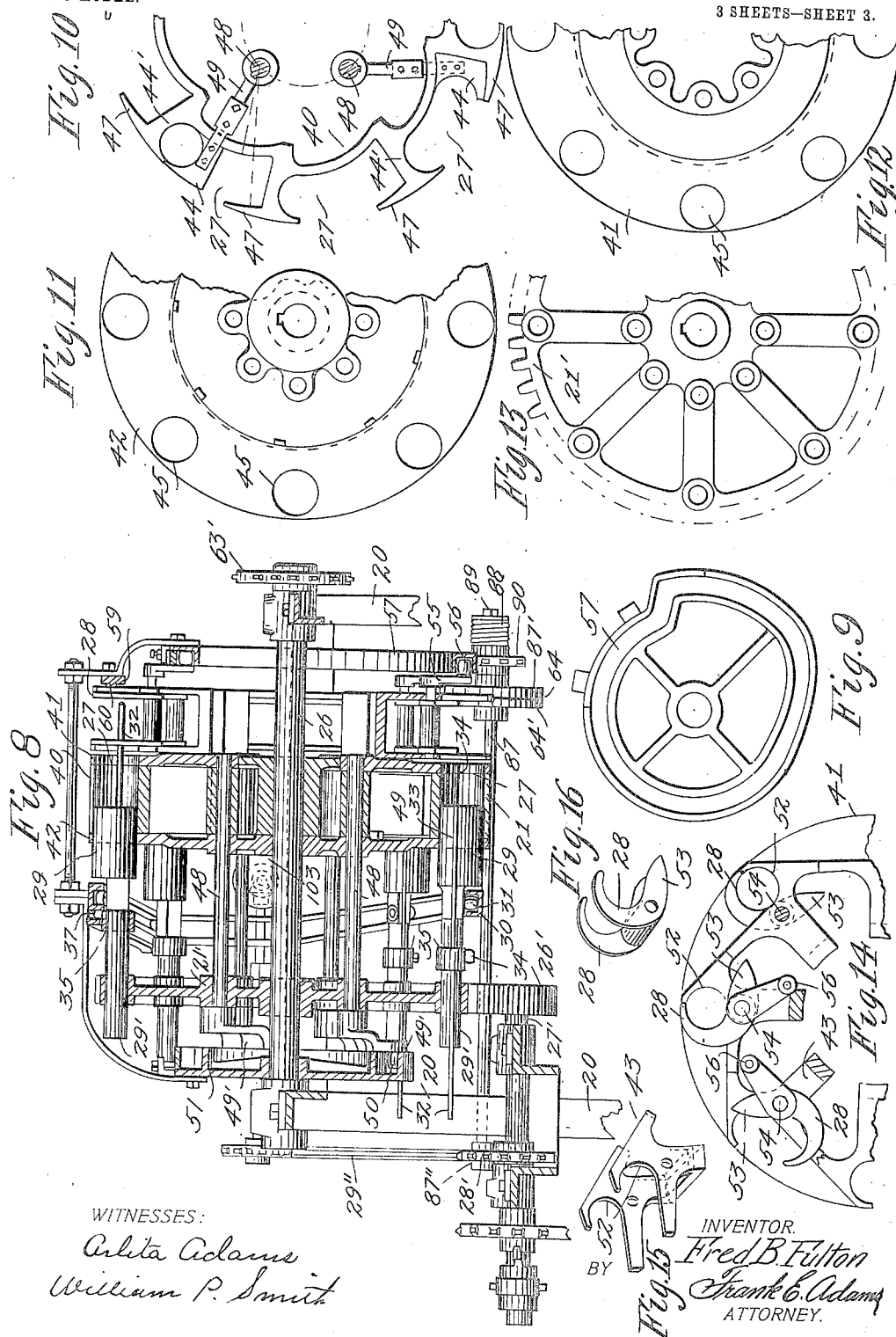
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3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

FRED BROWN FULTON, OF ANACORTES, WASHINGTON, ASSIGNOR OF
ONE-HALF TO LETSON & BURPEE, OF FAIRHAVEN, WASHINGTON,
AND VANCOUVER, CANADA, A FIRM.

CAN-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 750,760, dated January 26, 1904.

Application filed October 13, 1902. Serial No. 127,203. (No model.)

To all whom it may concern:

Be it known that I, FRED BROWN FULTON, a citizen of the Dominion of Canada, and a resident of the town of Anacortes, county of Skagit, and State of Washington, have invented certain new and useful Improvements in Can-Filling Machines, of which the following is a specification.

My invention relates to improvements in machines adapted to automatically fill cans or like receptacles, and has special reference to a device of this class especially useful in canning fish-meat or the like and to improvements in a machine of this nature on which Letters Patent No. 664,142 were granted to me by the United States, December 18, 1900.

Among numerous objects attained by this invention and readily understood from the following specification and accompanying drawings, included as a part thereof, is the production of an automatic device for feeding the filling to the machine in a more perfect manner and which increases the capacity thereof, the embodiment of efficient means for venting receptacles as filled, and simplified structural features throughout which increase the efficiency of the machine, prolong its usefulness, and render it more positive in operation and simple of management.

The above-mentioned and other objects equally as desirable are attained by the constructions, combinations, and arrangements of parts, as disclosed on the accompanying drawings, set forth in this specification, and succinctly pointed out in the appended claims.

With reference to the drawings filed herewith and bearing similar characters of reference for corresponding parts throughout, Figure 1 is a plan view of the machine with the outer end portions of the meat and can conveyers broken away. Fig. 2 is a perspective view of a portion of the upper part of the head end of the machine viewed as the arrow marked 2 in Fig. 1 indicates. Fig. 3 is a perspective view of the top portion of the feed-chamber. Fig. 4 is a perspective view of one unit of the endless meat-conveyer. Fig. 4^a is a side view of the machine looking from the

right of Fig. 1 as indicated by the arrow marked 4^a and shown with portions of the frame and conveyer broken away. Fig. 5 is a perspective view of a portion of the upper part of the head end of the machine viewed as the arrow 5 in Fig. 1 indicates. Fig. 6 is a perspective view of the feeding device viewed as the arrow 6 in Fig. 1 indicates and shows portions of the frame of the machine. Fig. 7 is a perspective view of a portion of the top and one side wall of the packing-chamber, showing the preferred means for adjusting said top. Fig. 7^a is a longitudinal section of the vent-rod. Fig. 8 is a vertical section of the machine on line 8 8 of Fig. 4^a viewed as the arrows indicate and shown with portions of the machine broken away. Fig. 9 is a face view of the cam adapted to operate the movable jaws which mold the filling to fit the cans. Fig. 10 is a side view of one-half of that portion of the composite carrier in which the filling-pockets are formed and shows one of the movable jaws in open position and one in closed position. Fig. 11 is a side view of one side plate of said portion of the carrier with a part thereof broken away. Fig. 12 is a similar view of one-half of the opposite side plate of said portion. Fig. 13 is a side view of one-half of the gear adapted to drive the carrier. Fig. 14 is a side view of one-half of the carrier, showing the fingers adapted to grip the cans. Fig. 15 is a perspective view of one of the can-seats, and Fig. 16 is a perspective view of one pair of the movable can-gripping fingers.

In the present embodiment of my invention a main frame, as 20, is employed and rendered of any suitable or desirable construction adapting it for support of the several parts of the machine, which includes a movable carrier, as 21, in which the cans are filled, a conveyer 22, adapted to transport filling for the carrier, a feeding device to insure proper placement of the conveyed filling in the carrier, a chute 58, in which the empty cans or like receptacles pass to the carrier, and a chute 61, which receives the filled cans therefrom and delivers them to a suitable conveyer, as 63.

As now considered carrier 21 comprises a wheel or drum like structure, which is fixed to a shaft 26, suitably journaled in the frame 20, and the periphery of this carrier is formed with pockets or chambers, as 27, in which the meat or like filling is placed and molded in conformity with the shape and size of the cans or receptacles, which are supported on suitable seats with their open ends in receiving position relatively to these pockets and are held to their seats by suitable gripping devices, as fingers 28, while the molded filling is passed from said pockets to respective receptacles by longitudinally-reciprocal plungers, as 29, which are mounted on said carrier and enter respective pockets at points opposite the cans. These plungers are rendered of equal diameter to the cans and are formed with shanks 29' and operated by and during movements of the carrier through the medium of a suitable stationary cam 30, having an internal groove or cam-track arranged concentric with the carrier and adapted to receive suitable rollers 31, which are rotatably mounted on the shanks of respective plungers 29, and this cam-track is formed with suitable lateral offsets to cause each plunger to enter a respective pocket and force the contents into the can and then return to normal position during a predetermined part of each revolution of the carrier.

In the present embodiment of this machine a device is associated with each plunger 29 to vent the cans as filled, and thus insure the filling from being shifted by air-pressure after the plunger is withdrawn. As now considered this venting device includes a can-entering rod 32, which is preferably formed with a suitable vent-passage 32', extending rearwardly from the forward end, and this rod is conveniently mounted for longitudinal reciprocation in a suitable groove 33, formed in the periphery of the plunger, and has suitable projection from the head end thereof to normally lie across a respective pocket 27, close to the wall, while the meat or like filling is placed and molded therein. This vent-rod preferably consists of a section of tubing, the bore of which acts as the passage 32', and is advanced into the can simultaneously with the molded filling, and passage 32' serves to free the air in the can as the molded filling is passed thereto, and this rod is withdrawn to normal position just prior to retraction of the plunger and leaves a vent-channel in the periphery of the core or filling, which lies in direct alinement with groove 33 of the plunger and serves as auxiliary to passage 32'. The vent-rods are preferably operated by means of rollers 34, mounted on collars 35, to which the rods are fixed and which are conveniently slidably mounted on the shanks 29' of respective plungers 29, and these rollers are arranged to traverse a suitable segmental cam-slot 37 during a portion of each revolu-

tion of the carrier, and are thereby made to advance and retract the vent-rods at the desired times independently of the action of the plungers.

The carrier 21 as now considered comprises a rim 40, in which the pockets 27 are arranged opposite side plates 41 and 42, which are attached to said rim and serve to support the same on shaft 26 and act as side walls for the pockets, and can-seats, as yokes 43, conveniently secured on the outer side face of plate 41 and adapted to support the movable can-holding fingers. The pockets 27 are arranged in a continuous series, and each one is formed with a convex bottom surface eccentric to the periphery of the rim and of considerably less radius and arranged with one end of the pocket closer to said rim than the other, and one end wall of each pocket is suitably formed to act as the fixed member 44' of the molding-jaws, while the opposite end is shaped to receive the movable jaw, as 44, when lying in open or retracted position, whereby peripheral portions, as 47, of the rim 40 are made to act as packing-plates, against the outer surface of which the filling is forced primarily to entering respective pockets, and these plates serve also as shields for the movable jaws when in retracted position. The periphery of the rim of the carrier is cut away over each pocket to form a suitable mouth to receive the filling as the jaws stand open, and suitable apertures 45 are formed in each side plate of the carrier concentric with the fixed jaws to receive the plungers 29 and allow the molded filling to be passed to the cans, and a stationary compression-plate 46 is arranged at a point where the pockets are filled to close said apertures in the plate 41, while the head end of a respective plunger serves to close the opposite apertures as the filling is placed and molded, after which the plunger is advanced as the pocket passes clear of said plate, and the molded material or filling is thereby forced from the pocket into the can.

In the present embodiment carrier 21 is suitably operated through the medium of a spur-gear 21', which is fixed upon shaft 26 and meshes with a pinion 26', secured to a drive-shaft 27', journaled in frame 20 and having a sprocket-wheel 28' fixed thereon and arranged to impart motion to the feeding mechanism of the machine, as will be later understood. This spur-gear is preferably formed with suitable seats arranged in the web to slidably support the ends of the shanks 29' of respective plungers and also other suitable seats to support the vent-rods and rock-shafts adapted to operate the movable molding-jaws.

The molding-jaws 44 are operated through the medium of rock-shafts 48, which are suitably supported in the carrier concentric with the bottom surfaces of respective pockets 27, and are also journaled in the web of gear 21' and carry arms 49, secured to said shafts and

fixed to respective jaws, and rock-arms 49', secured at the opposite ends of the rock-shafts and mounting suitable rollers 50, adapted to traverse a slot or cam-track, suitably
5 arranged in a stationary cam 51, to close and open the said jaws at predetermined times by and during a movement of the carrier.

In the present construction the can-seats 43 are formed of separated plates, each having
10 a segmental can-receiving depression 52 in the outer edge arranged concentric with a respective fixed jaw 44', and the fingers 28 are pivotally mounted in coacting relations to these seats and arranged to swing on their
15 mountings to grip and release the cans at predetermined times. These fingers are also formed with rearwardly-projecting lugs 53 at the base, which come in contact with the can as the fingers swing open and serve to free
20 same from the carrier. As now considered these fingers are secured to pivots 54, journaled in suitable apertures in the plates of the can-seats, and are operated by rock-arms 55, which are fixed to said pivots, and carry rollers 56, which traverse a cam-slot or track
25 arranged in a suitably-fixed cam 57 to operate these fingers at the desired times.

Reference character 58 indicates an inclined can-chute arranged to deliver the empty cans
30 in horizontal position to the seats 43 at the packing-plate 46, with the open ends of the cans opposing the plate, and a suitable guard-rail, as 59, is disposed along the path of travel of said seats to hold the cans from being dis-
35 placed as the filling passes thereto, and this guard is provided with an inwardly-projecting ridge 60 beyond plate 46, which serves to force the cans snugly against the side plate 41 after they clear said packing-plate and
40 hold them so while the filling is passed thereto, and thereby prevent waste.

At the opposite side of the machine from the chute 58 a chute 61 is arranged to receive the filled cans, and an inwardly-projecting
45 tongue 62 serves to take the cans as forced from their seats by the lugs 53 and direct them to this chute, which in turn directs them to a suitable conveyer, as 63, Fig. 4^a, adapted to transport the cans from the ma-
50 chine and driven from shaft 26 by a sprocket 63' fixed thereto and a suitable link belt leading therefrom to the conveyer.

The conveyer 22 is employed to bring filling to the machine, and as now considered
55 consists of a continuous series of detachable units, Fig. 4, comprising links, as 65, and rectangular plates 66, fixed thereto and having upwardly-projecting barbs 67. These plates serve to support the filling, while the
60 barbs penetrate the same and insure the delivery thereof to a suitable packing-chamber, as 68, Fig. 6, arranged at the delivery end of the conveyer and into which the meat portions are crowded. This conveyer is mount-
65 ed on suitable chain-wheels, as 69, (the rear

one of which is not shown,) and the advancing portions of the conveyer run in a suitable trough 70, adapted to keep the conveyer from sagging and prevent portions of the filling from spilling as conveyed, and the side walls 70 of this trough are extended forwardly to the side walls of said packing-chamber.

The forward end 70' of the bottom of trough 70 is inclined downwardly, Fig. 5, and a plate 71 is substituted therefor in the same plane
75 to form the bottom of chamber 68, and this plate is formed with slots 71' in the outer end which permit the barbs on the conveyer to withdraw from the filling as passed to the chamber and as respective units of the con-
80 veyer ride down said incline. The top of the packing-chamber consists of a vertically-adjustable plate 73, conveniently mounted on hinges 74 at the rear end, so that the forward end may be adjusted by suitable means, as
85 vertically-disposed studs 75, Fig. 7, conveniently fixed to said plate and each carrying a pair of nuts 76, adapted to embrace a respective lug 77, fixed to the side wall of the cham-
90 ber, whereby upon proper manipulation of these nuts this end of the plate is adjusted to regulate compression of the filling.

Reference character 78 indicates a movable endless top, arranged at the forward end of
95 trough 70 in the present instance, to keep the succeeding pieces of fish-meat from buckling as the preceding pieces are crowded into the packing-chamber, and this top is preferably formed of suitable slats 79, equal in length to the inside width of the trough and secured to
100 the links of an endless chain, as 80, Fig. 2, which is mounted on rotatable sprockets 81, the axes of which are journaled in stands 82 fixed to the trough. The active portion of this top is suitably held in place by oppo-
105 sitely-disposed adjustable bearing-strips 83, mounted on the inner surface of each side wall of the trough and secured by cap-bolts 84, arranged in suitable vertical slots 85, formed in lugs 86, fixed on said side walls, whereby these
110 strips can be brought to contact the upper surface of the lower rim of said top, and thereby hold same against upward pressure. This endless top is operated through the medium of a suitable double friction-wheel, as 64, Fig. 8, one part, 64', of which is secured to a drive-
115 shaft 87 and the other part, 87', is loose on said shaft and held in yielding contact with the fixed part by a suitable spiral spring 88, confined against the hub of the loose part by a
120 washer and a suitable cap-bolt 89, engaged with the end of said shelf, and said loose part carries a sprocket 90, which is operably coupled to the axis of one of the sprockets 81 by a sprocket 91, fixed to said axis, and a link
125 belt 92, which also engages a suitable sprocket 69', fixed to the forward axis of the conveyer 22, whereby should a congestion of meat occur in the packing-channels said friction parts slip upon each other, and thereby regulate the
130

speed of the conveyer and top, and consequently the feed.

From packing-chamber 68 the compressed meat is passed to a feed-chamber 93, arranged with suitable side and bottom walls and having the delivery end thereof normally closed by the rim portions 47 of the carrier, and the top of this feed-chamber consists of a vertically-adjustable plate 94, Fig. 3, composed of a series of horizontally-disposed fingers 95, secured by one end to a segmental guard-plate 96, having the inner surface formed of equal radius to the rim portions 47 of the carrier and the lower inner corner adapted to act as a scraper therefor, while the plate acts to prevent escape of meat from the pockets 27 as respective jaws 44 close. This guard-plate is preferably mounted on a suitable L-shaped stand 97, which is seated on frame 20, and a wing 98 is conveniently attached to one side edge of the plate and lies in contact with the face of the stem of said stand and is formed with a lug 99, extending over said stand above a similar lug 100, arranged thereon, and a cap-bolt 101 is engaged with the said wing through a vertical slot in the stand, and a collar-bolt 102 is engaged by screw-threads in a suitable aperture in lug 100, with the collar-supporting lug 99 and the nut 102' brought to clamp same, whereby upon proper manipulation of these bolts the plates 94 and 96 can be adjusted as desired.

The packing and feed chambers are suitably separated to permit passage therebetween of a knife having a substantially broad blade, as 103, and rotatably mounted on one side of said chambers on an axis 103', so that the blade thereof is made to pass through the intervening space at each revolution, and suitable vertically-disposed feeding-forks, as 104 and 105, are arranged to act relatively to the knife 103 and carrier 21 to respectively pass the severed portion of the filling from the feed-chamber into a respective pocket 27 and compressed meat from the packing-chamber to the feed-chamber. Suitable slots 106 are formed in the top of the packing-chamber to allow free action of the fork 105, while the interstices or slots occurring between the fingers 95 allow similar action of the fork 104. These forks are conveniently made to travel in a substantially rectangular circuit, whereby they are first depressed to engage the meat, then advanced to feed same, and then elevated free of the meat and retracted to the starting-point, and as now considered they each comprise suitable prongs.

In the present instance the prongs 108 of fork 105 are rendered round and taper downwardly to better engage the meat and are secured at the free end of an arm 109, which is suitably mounted and operated to carry the forks in the desired circuit correlatively to action of carrier 21, and the arm is provided with a forwardly-extending horizontal stem

111, on which a socket-piece 112, carrying the fork 104, is slidably mounted, so as to be adjustable to vary the separation of these forks, and a set-screw 113 serves to secure said socket-piece in adjusted position. The prongs of fork 104 are preferably rendered flat and are depressed directly in line with and immediately following the cut of knife 103, so as to engage the severed portion of meat along the rear edge without penetrating same, whereby these portions can be successively forced into respective pockets by the fork before it is elevated, and thereby give a more perfect feed.

In the present embodiment the arm 109 is formed with a boss 116 at the end opposite the forks and this boss apertured to slidably and rotatively engage a horizontally-disposed pin 114, fixed in suitable stands 115, Fig. 1, mounted on the frame 20, with said boss sliding therebetween, and this arm is reciprocated longitudinally this pin by a vertically-disposed lever 117, which is suitably pivoted at the lower end on an extended portion of the shaft 87 and is formed with a bifurcation at the upper end adapted to embrace a roller 118, rotatably mounted on a stud 119, engaged in a suitable vertical slot formed in an upwardly-projecting lug 120 on said boss, whereby the roller can be adjusted to regulate the throw of said arm. This lever is operated by a rotatable cam 121, fixed to an axis 121', Figs. 5 and 6, and having an irregular slot or cam-track 122 in one side face engaging a suitable roller mounted on a stud 123, carried by said lever, and this cam-slot is suitably formed to cause the lever to advance and retract the arm 109 once during each revolution of the cam, the axis of which is coöperatively coupled to the axis of knife 103' by suitable miter-gears 124, and thus made to act correlatively to cutting action of said knife. This axis 121' is rotatably connected with sprocket 28' on drive-shaft 27' through the medium of a suitable sprocket fixed to said axis and a link belt 29'', which also passes over a sprocket 87'' on shaft 87, whereby the carrier, conveyer, knife, and forks are all driven correlatively. The arm 109 is rotatably reciprocated on the pin 114 by a suitable rock-arm 125, which is conveniently pivoted concentric with the arm on a projecting end of said pin and engaged with the arm by a horizontally-disposed stud 126, fixed at the free end of said rock-arm and on which the arm 109 is slidably mounted as required for its lateral movement. This rock-arm is conveniently operated by the cam 121, which is formed with a suitable slot or cam-track in the opposite side from track 122, arranged to engage a roller 127, mounted on a depending lug 128 of the rock-arm and suitably formed to cause the arm 109 to rise and fall as it reaches advanced and retracted positions, respectively, so that the forks 104 and 105 are elevated and depressed at proper times to effect a perfect feed.

In the present instance, during the rotation of the carrier of the machine, the can-seats receive from the delivery end of the can-chute 58 the cans successively, which are then gripped by the fingers 28; and a predetermined quantity of filling is passed by fork 104 to a respective pocket 27 as the mouth thereof passes the open end of the feed-chamber 93, and the jaw 44 closes immediately following to form the filling. The respective plunger 29 is then forced to enter the pocket as the carrier continues to advance and the vent-rod simultaneously enters the can with the molded filling. After the filling is seated the plunger is withdrawn and the vent-rod likewise retracted, shortly after the plunger, to normal position, after which the fingers 28 swing open as the filled can arrives over the tongue of the delivery-chute 61, and the heels 53 serve to eject the can from the carrier.

The fish is preferably "cross-cut" in pieces equal in length to the width of the trough 70 and placed on the conveyer transversely and forced upon the barbs 67, which serve to force the fish-flesh into packing-chamber 68, and thus compress it between the walls thereof and against the blade of knife 103 as it passes across the end of the chamber. A portion of this compressed filling is advanced to feed-chamber 93 by the fork 105, and knife 103 then passes between said chamber and as said fork is retracted and fork 104 is depressed after the knife engages and passes the severed portion from the feed-chamber to the carrier simultaneously with the depression and advance of fork 105 with a second portion of the compressed meat.

A machine constructed substantially as heretofore described possesses many advantages over other machines of this class, as the arrangement for venting the cans as filled allows the machine to be operated at a high rate of speed, while the feeding apparatus disclosed insures positive, regular, and economical delivery of the filling to the carrier when so operating, and the particular design and construction of the feeding mechanisms renders them simple, durable, and inexpensive.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States of America, is—

1. In a can-filling machine, the combination of a frame, a carrier moving in said frame, of a vent means on said carrier, and means on said frame adapted to be engaged by said vent means for operating said vent means, substantially as and for the purpose set forth.

2. In a can-filling machine, the combination with a plunger, a vent-rod operating therein, means encircling said plunger for operating said vent-rod independent of said plunger, and means for operating said plunger, substantially as and for the purpose set forth.

3. In a can-filling machine, the combination with a filling-pocket, and a can-holding device,

of a plunger operating in said filling-pocket, and a can-venting device adapted to operate in the said filling-pocket and in the can independent of said plunger, substantially as and for the purpose set forth.

4. In a can-filling machine, the combination with a filling-pocket and a can-holding means, of a plunger operating in said filling-pocket, a vent-rod carried by said plunger, said rod adapted to enter the can simultaneously with the entry of said plunger into the said filling-pocket, substantially as and for the purpose set forth.

5. In a machine of the nature indicated; the combination with a movable carrier having a pocket for filling, a can-seat on said carrier and a plunger mounted on said carrier and adapted to pass filling from the pocket to a can; of a can-venting device and means to actuate said device by and during movement of said carrier.

6. In a machine of the nature indicated; the combination with a movable carrier having a pocket for filling and a can-seat thereon, and a can-filling plunger mounted on said carrier and adapted to enter said pocket; of a longitudinally-reciprocating can-entering vent-rod and means to reciprocate same correlatively to actions of said plunger.

7. In a machine of the nature indicated; the combination with a movable carrier having a pocket for filling and a can-seat thereon, and a reciprocating pocket-entering plunger mounted on said carrier; of a longitudinally-reciprocating can-entering vent-rod mounted on said carrier and means to advance and retract said rod by and during movement of the carrier.

8. In a machine of the nature indicated; the combination with a movable carrier having a pocket for filling and a can-seat thereon and a reciprocating pocket-entering plunger mounted on said carrier; of a longitudinally-reciprocating can-entering vent-rod mounted on said carrier with the forward end portion in said pocket and means to operate said rod.

9. In a machine of the nature indicated; the combination with a can-seat, a pocket for filling material and a pocket-entering plunger, having a longitudinally-disposed groove in the periphery; of a vent-rod slidably mounted in said groove and means to reciprocate said rod longitudinally.

10. In a machine of the nature indicated; the combination with a movable carrier having a can-seat and a pocket for filling material, and a pocket-entering plunger mounted on the carrier and having a groove in the periphery; of a can-venting device mounted in said groove with a can-entering portion normally lying in said pocket and means to operate said device to enter and withdraw said portion relatively to a can, by and during movement of the carrier.

11. In a machine of the nature indicated; the

combination with a rotatable carrier having a can-seat and a pocket for filling material, and a pocket-entering plunger mounted on the carrier and having a longitudinally-disposed groove in the periphery; of a can-entering tubular vent-rod slidably mounted in said groove with one end portion normally extending across said pocket and means to advance and retract the rod relatively to said seat, by and during rotation of the carrier.

12. In a machine of the nature indicated; the combination of an endless-belt conveyer having barbs, a conveyer-trough having a downwardly-inclined bottom at the delivery end, an endless-belt trough-top at said end, a packing-chamber over the incline with the bottom arranged in line with the conveyer and having barb-receiving slots in one end and a knife mounted to cut transversely said chamber.

13. In a machine of the nature indicated; a packing-chamber comprising a bottom wall and side walls and a top wall hinged at one end to said side walls and fitting therebetween, a stud on said top at the free end, a lug on one side wall and nuts on the stud embracing said lug.

14. In a can-filling machine, the combination of a packing-chamber, a feed-chamber, a knife arranged to pass between said chambers, means to force filling into the said packing-chamber, and means in vertical alinement with said knife to pass filling from said feed-chamber, substantially as and for the purpose set forth.

15. In a machine of the nature indicated; the combination of a conveyer having barbs arranged to carry filling, a packing-chamber having the outer edge of the bottom wall arranged substantially in the same plane with the conveyer and formed with barb-receiving slots in said edge, a feed-chamber beyond said packing-chamber, a knife having a broad blade arranged to pass intermittently between said chambers, and means to pass the filling from the feed-chamber.

16. In a machine of the nature indicated; the combination of a conveyer-trough, an endless top mounted at the delivery end of said trough, a packing-chamber at said end, a feed-chamber, a knife between said chamber and means to pass filling from the feed-chamber.

17. In a machine of the nature indicated; the combination with a conveyer having fish-penetrating barbs; of a fish-receiving plate with one edge arranged in substantially the same plane as the conveyer and having barb-receiving slots in said edge.

18. In a machine of the nature indicated; the combination with a conveyer having fish-penetrating barbs; a conveyer-trough having the bottom at the delivery end inclined downwardly, a fish-receiving plate over said incline with one edge arranged in substantially the same plane as the conveyer and having barb-receiving slots in said edge.

19. In a machine of the nature indicated; the combination of a conveyer having flesh-engaging parts, a packing-chamber at the delivery end of said conveyer and means to yieldingly drive said conveyer.

20. In a machine of the nature indicated; the combination of a conveyer having flesh-engaging barbs, a conveyer-trough, a trough-top comprising an endless belt and means to yieldingly drive said conveyer and top correlatively.

21. In a machine of the nature indicated; the combination of a conveyer having flesh-engaging barbs, a conveyer-trough, a trough-top comprising an endless belt, adjustable bearing-strips arranged to guide said top, and friction-wheels coöperatively connected with said conveyer and top to yieldingly drive same.

22. In a machine of the nature indicated; the combination of a feeding-fork, an arm carrying said fork, means to support said arm for reciprocation in two directions and means to move the arm in said directions alternately.

23. In a can-filling machine, the combination with a feeding-chamber of a feeding-fork, and pivotal means having a lateral movement on its pivot for operating said fork in said chamber, substantially as and for the purpose set forth.

24. In a machine of the nature indicated; the combination of a pivotally-mounted arm arranged to move in a line parallel to its own axis, a feeding-fork, a reciprocating lever, a rock-arm and means to operate said lever and rock-arm correlatively.

25. In a machine of the nature indicated; the combination of a pivotally-mounted arm arranged to move parallel to its own axis a feeding-fork, a reciprocating lever pivoted to said arm and at right angles thereto, a rock-arm mounted concentric with said axis and carrying a pin parallel thereto on which said arm slides, and a rotatable cam having tracks arranged to operate said lever and rock-arm correlatively.

26. In a can-filling machine, the combination of a packing-chamber, a feed-chamber, an adjustable top for said chambers, forks operating in said chambers, and means for operating said forks, substantially as and for the purpose set forth.

27. In a can-filling machine, the combination of a packing-chamber, a feed-chamber, means provided with forks for moving filling from said packing-chamber into said feed-chamber, and forks on said means for moving the filling from said feed-chamber, substantially as and for the purpose set forth.

28. In a machine of the nature indicated; the combination with a rotatable carrier having a pocket; of a stationary feed-chamber, a packing-chamber, a knife coöperatively related to the carrier and arranged to pass transversely between said chambers and mechanism coöperatively related to said carrier and knife to

pass filling from the packing-chamber to the feed-chamber.

29. In a machine of the nature indicated; the combination with a rotatable carrier having a pocket; of a feed-chamber, a packing-chamber, means to convey filling to the packing-chamber, a rotatable knife having a broad blade co-operatively related to said carrier and arranged to pass transversely between said chambers, a feeding-fork operatively related to said knife and carrier and adapted to pass filling from the feed-chamber to said pocket and a second fork operatively related to the first to advance filling from the packing-chamber.

30. In a machine of the nature indicated; the combination with a rotatable carrier having a pocket; of a feed-chamber and a packing-chamber each formed with prong-receiving slots in the walls, means to convey filling to said packing-chamber, a rotatable knife having a substantially broad blade co-operatively related to said carrier and arranged to pass transversely between said chambers and reciprocal feeding-forks operatively related to said knife and carrier with the prongs received in said slots.

31. In a machine of the nature indicated; a rotatable carrier having a series of pockets formed in the periphery and a rim portion extending over one end of each pocket and adapted as a packing-plate and a movable molding-jaw in each pocket normally lying beneath a respective plate.

32. In a machine of the nature indicated; the combination of a rotatable carrier having a series of pockets formed in the periphery with the bottom surface of each curved eccentrically to the carrier, a jaw fixed in one end of each pocket, a second jaw movably seated on each of said surfaces and means to operate the movable jaws by and during rotation of the carrier.

33. In a machine of the nature indicated; the combination of a rotatable carrier having pockets formed therein and a jaw fixed in one end of each pocket, a movable jaw in each pocket, rock-shafts mounted in the carrier eccentric thereto, arms on said shafts to which said movable jaws are fixed, and means to operate said rock-shafts by and during rotation of the carrier.

34. In a machine of the nature indicated; the combination of a rotatable carrier having a series of pockets formed in the periphery with the bottom surface of each curved eccentrically to the carrier, a jaw fixed in one end of each pocket, a rim portion over the opposite end of each pocket, a movable jaw in each pocket lying when in open position beneath said portion, rock-shafts mounted in the carrier concentric with said bottom surfaces, means to co-operatively connect the shaft to respective movable jaws, and means to oper-

ate said rock-shafts by and during rotation of the carrier.

35. In a can-filling machine, the combination with a carrier having a pocket, of a can-holding device, means to close said pocket, and means to force the can against said carrier after the said first-named means has been passed, substantially as and for the purpose set forth.

36. In a machine of the nature indicated; the combination with a rotatable carrier having a pocket formed in the periphery, molding-jaws in said pocket, and means to feed filling to the pocket; of an adjustable guard-plate arranged at the point of filling and adapted to cover the mouth of said pocket during closing action of the jaws.

37. In a machine of the nature indicated; the combination with a rotatable carrier having a pocket formed in the periphery, a jaw fixed in one end of said pocket and a movable jaw therein, a rim portion over the opposite end of the pocket adapted to shield said movable jaw when open, a stationary guard-plate arranged to cover the mouth of the pocket during closing action of said jaw, rearwardly-extending fingers fixed to the lower edge of said guard and means to pass filling to said pocket beneath said fingers.

38. In a can-filling machine, the combination with packing and filling chambers, of rotary packing-moving means, rotary packing-cutting means, and means on said last-named means for operating said first-named means, substantially as and for the purpose set forth.

39. In a can-filling machine, the combination with a filling-plunger, of a vent-rod, and means to advance said plunger and vent-rod simultaneously and to retract said vent-rod prior to said plunger, substantially as and for the purpose set forth.

40. In a can-filling machine, the combination with a filling-pocket, of a plunger operating therein, a vent-rod, and means to project said vent-rod from said pocket simultaneously with the entry of said plunger into said pocket, substantially as and for the purpose set forth.

41. In a can-filling machine, the combination with a filling-pocket, of a plunger operating therein, a vent-rod, means to project said vent-rod from said pocket simultaneously with the entry of said plunger into said pocket, and means to retract said vent-rod prior to the retraction of the said plunger, substantially as and for the purpose set forth.

Signed at Anacortes this 11th day of August, 1902.

FRED BROWN FULTON.

Witnesses:

A. T. VON ESTINGER,
C. C. BARNETT.