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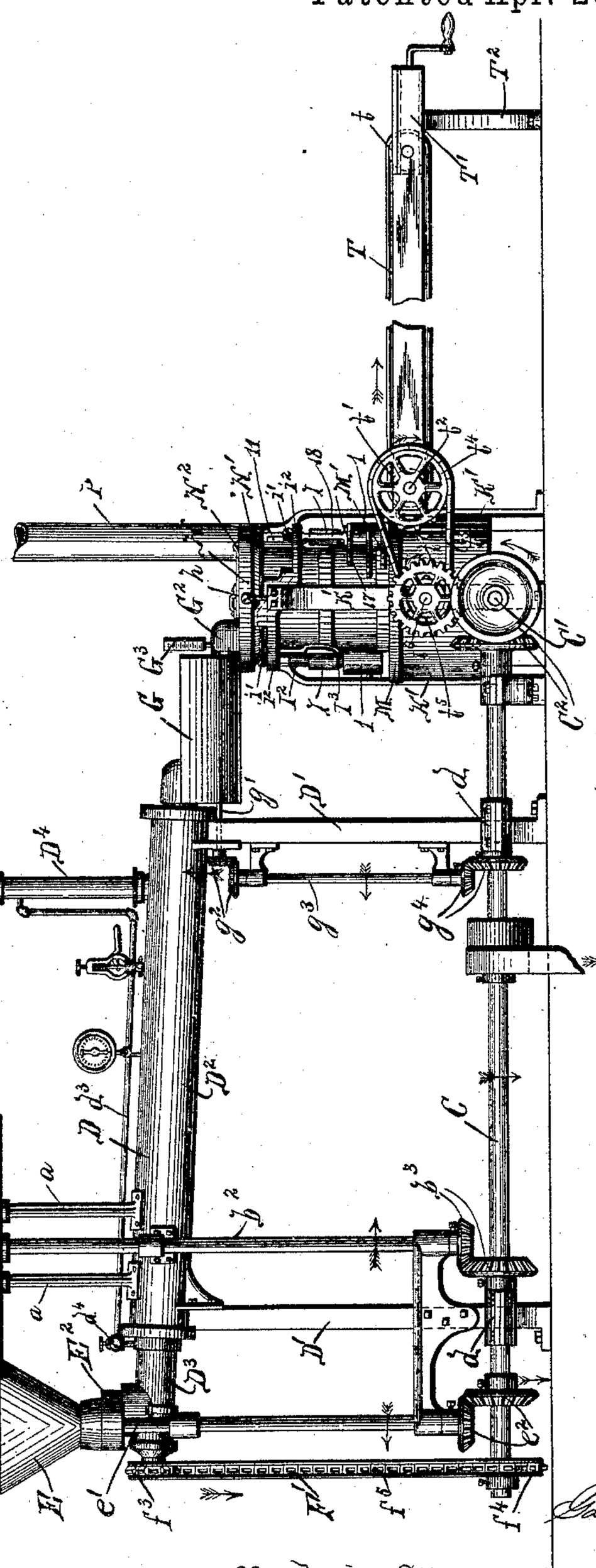
G. L. MERRELL.

APPARATUS FOR CANNING CORN.

No. 473,885. Patented Apr. 26, 1892.



Witnesses
W. H. Randall,
K. E. Chase,

Inventor
Gains L. Merrell
By his Attorneys
Hoyt Wilkinson & Lawrence

(No Model.) 8 Sheets—Sheet 2.

G. L. MERRELL.

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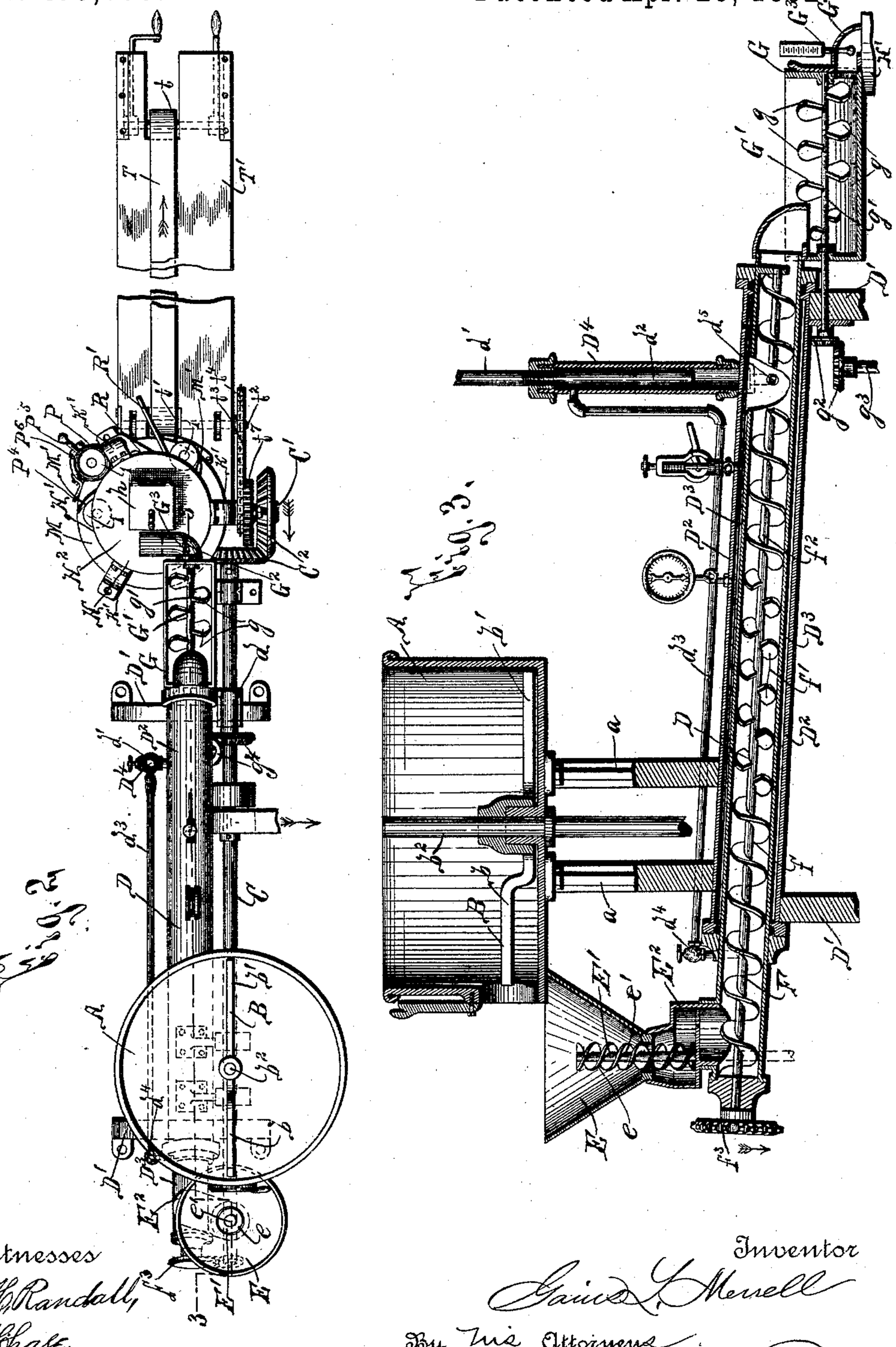

Witnesses
W. H. Randall,
H. E. Chase,

Inventor
Gaius L. Merrell
By his Attorneys.
Hoyt, Wilkinson & Lawrence

(No Model.) 8 Sheets—Sheet 3.

G. L. MERRELL.

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Fig. 4.

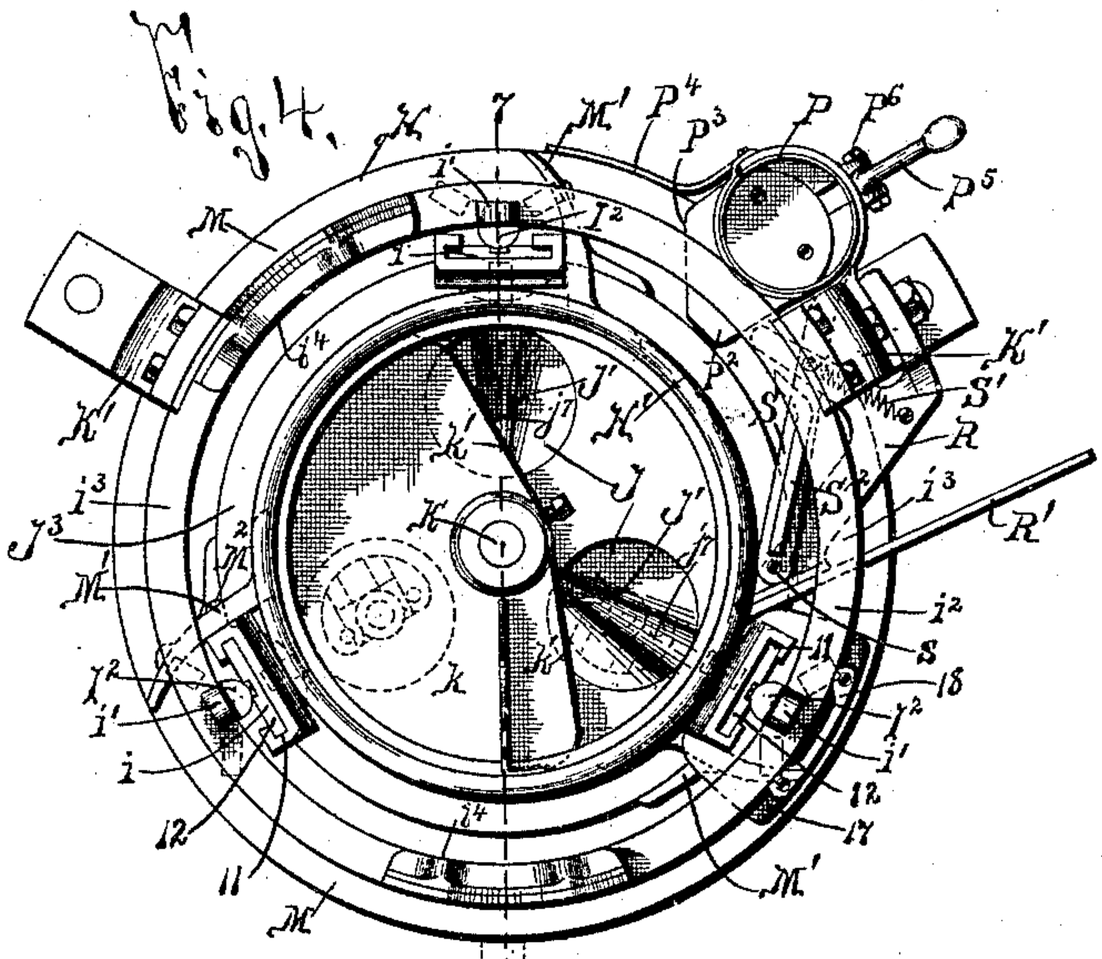
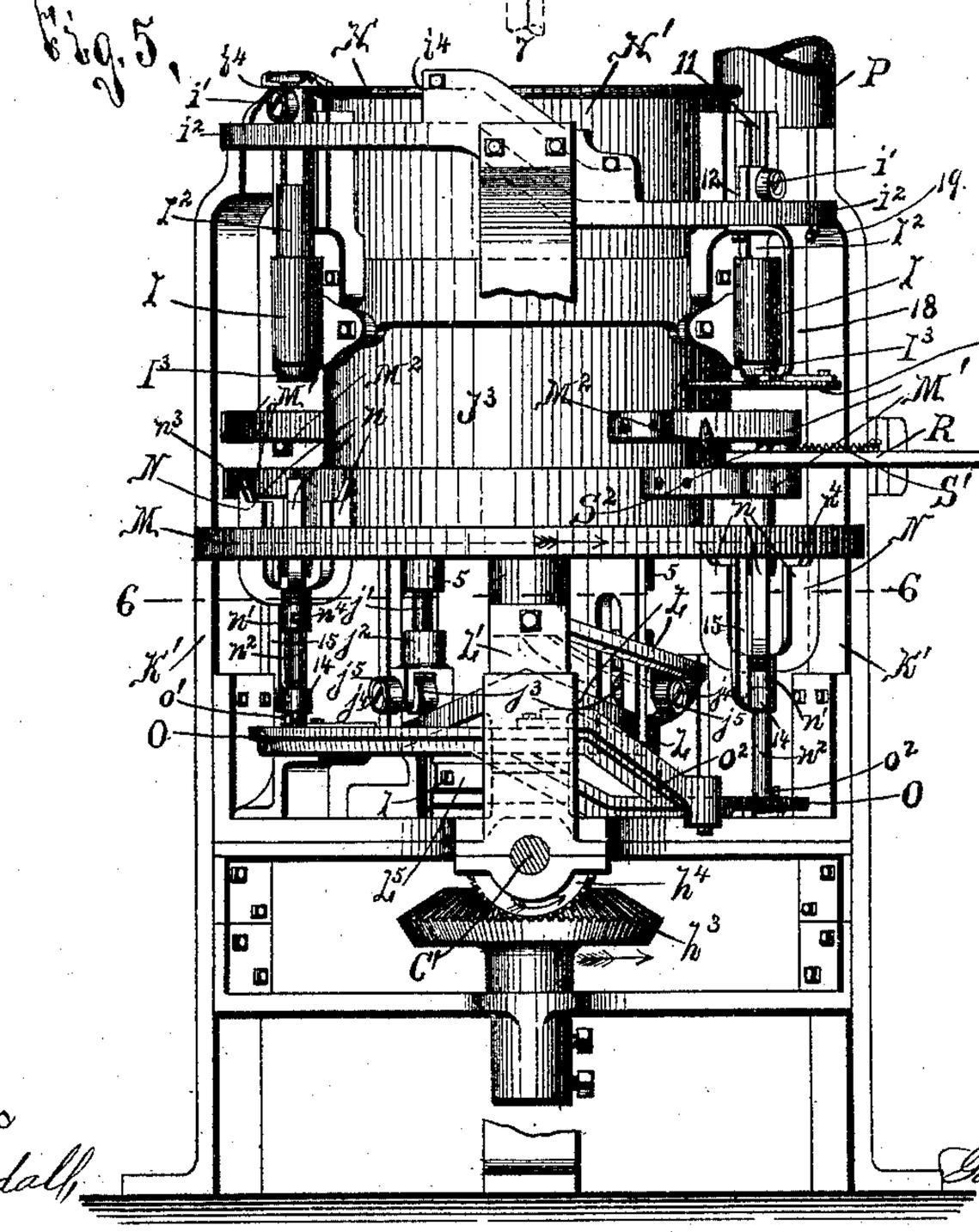


Fig. 5.



Witnesses
W. H. Randall,
H. E. Chase

Inventor
Gains L. Merrell
By his Attorneys
Hoyt Wilkinson & Parsons

(No Model.) 8 Sheets—Sheet 4.

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Fig. 6.

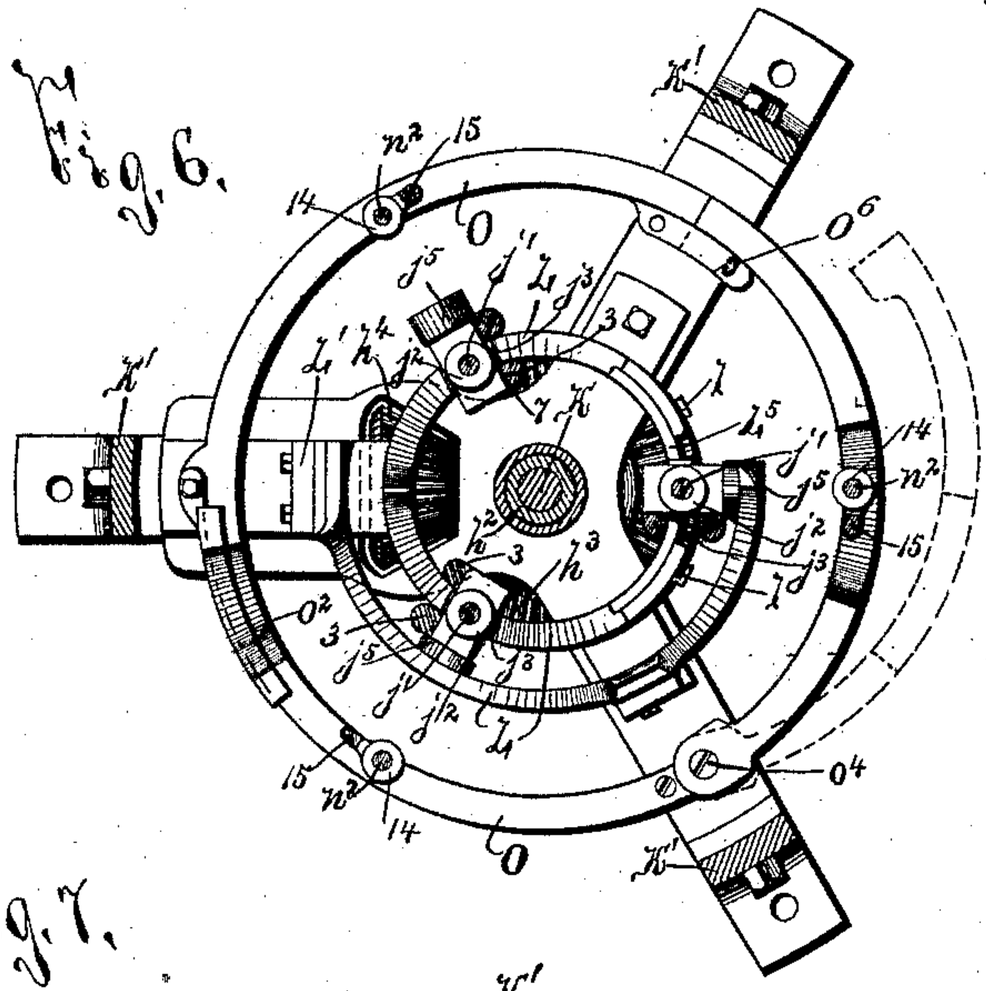
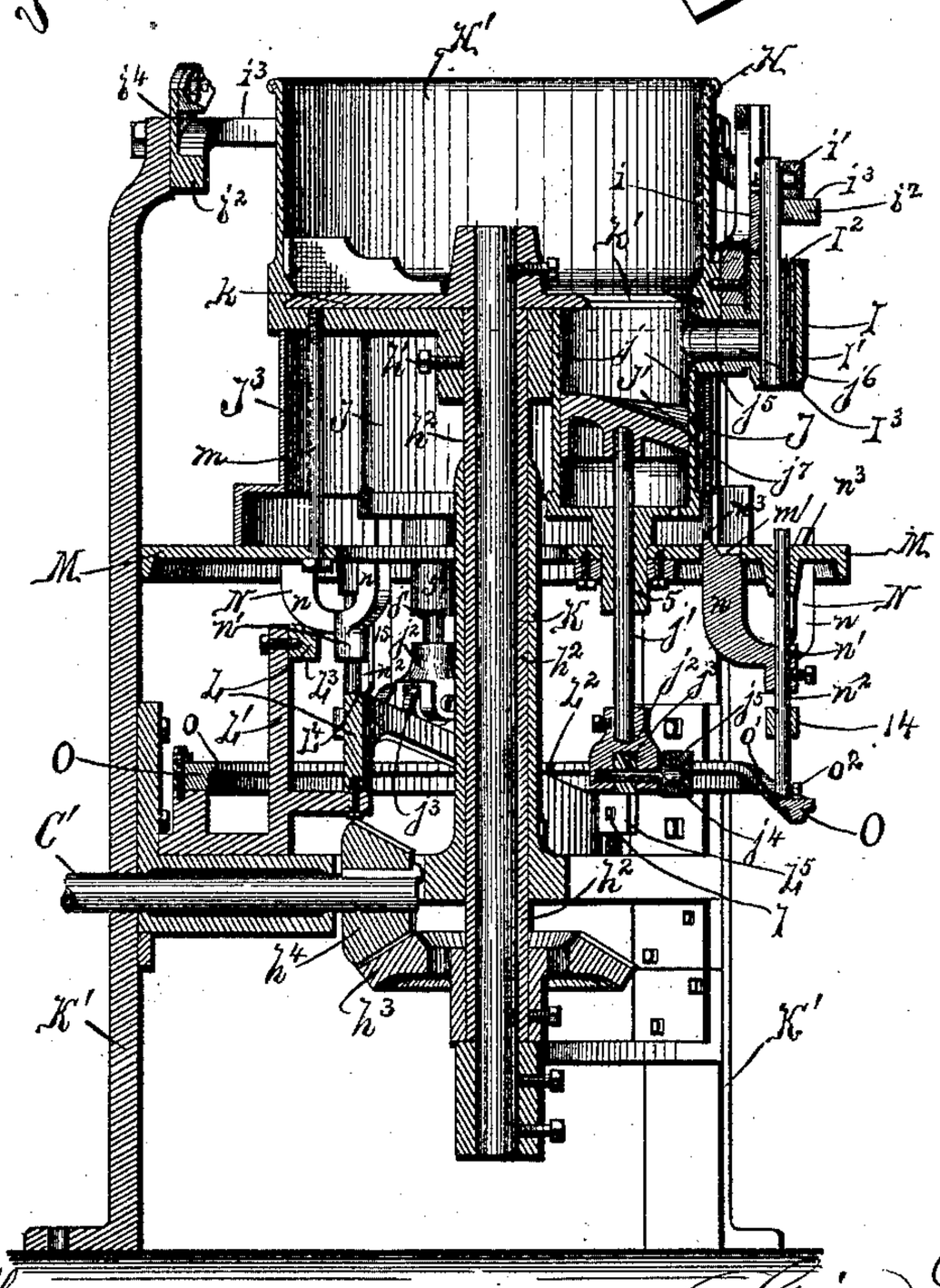


Fig. 7.



Witnesses
W. H. Randall,
H. E. Chase

Inventor
Gaius L. Merrell

By his Attorneys
Hoyt Wilkinson & Parsons

(No Model.) 8 Sheets—Sheet 5.

G. L. MERRELL.

APPARATUS FOR CANNING CORN.

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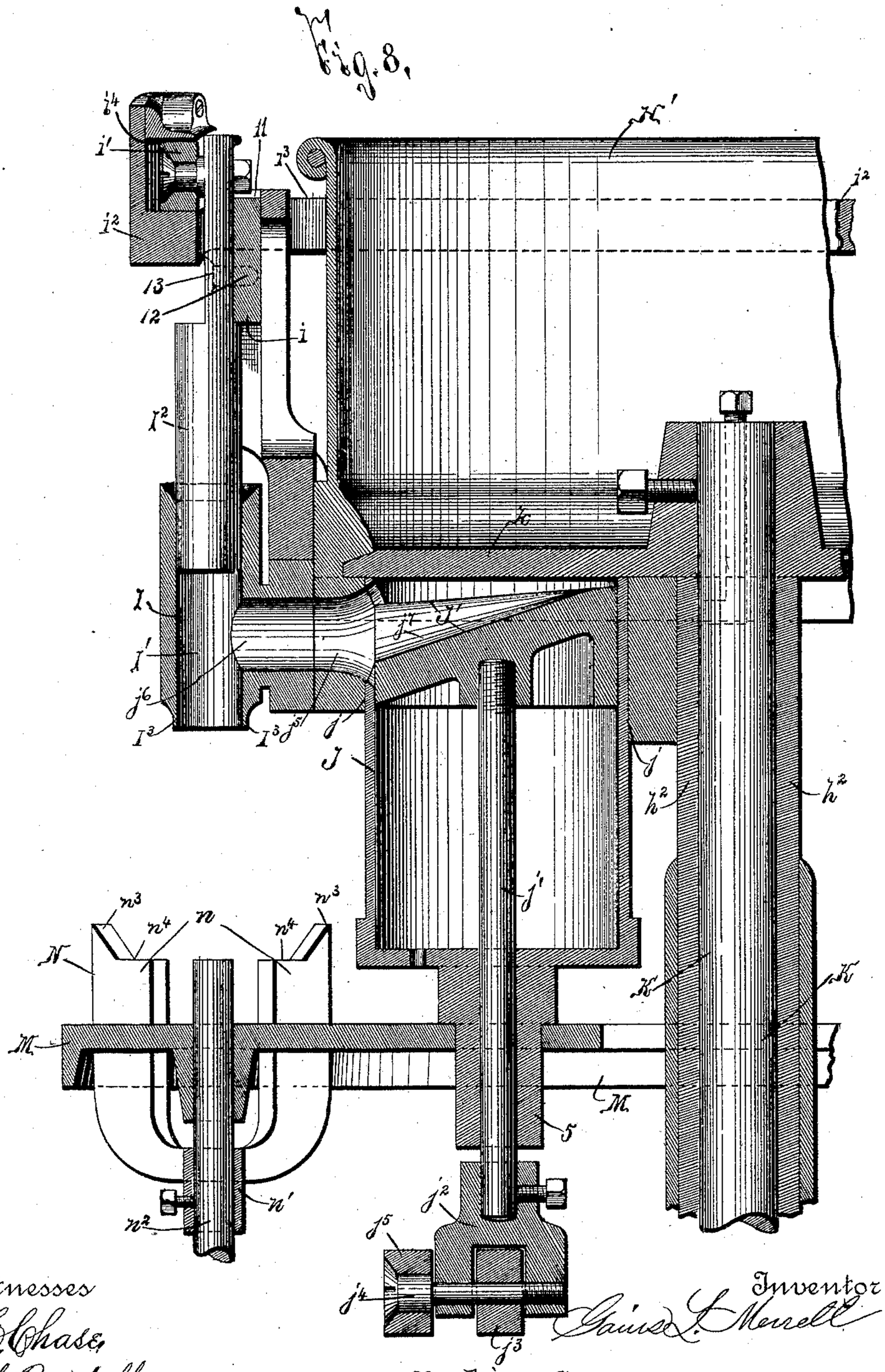
Fig. 8.



Witnesses
H. C. Chase,
W. H. Randall,

Inventor
Gains L. Merrell
By his Attorneys
Hey Wilkinson & Parsons

(No Model.) 8 Sheets—Sheet 6.

G. L. MERRELL.

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Fig. 9.

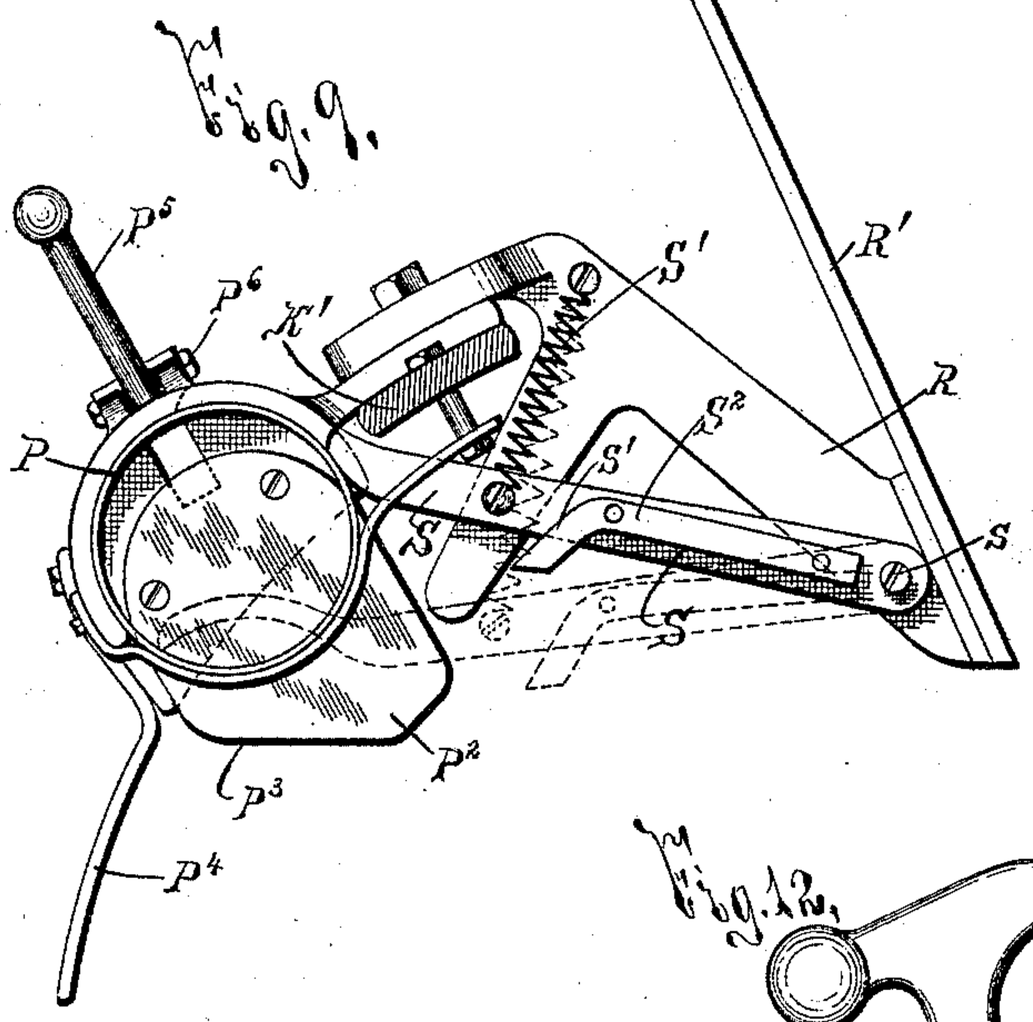


Fig. 11.

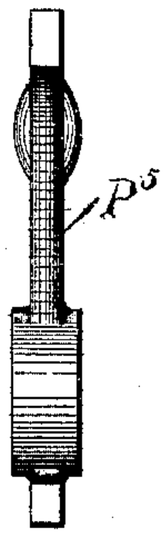
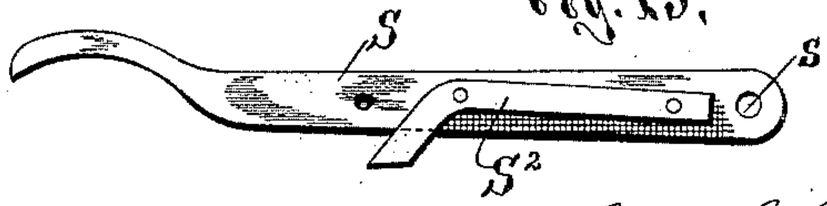


Fig. 10.

Fig. 12.

Fig. 13.



Witnesses
H. E. Chase,
W. H. Randall,

Inventor
Gains L. Merrell
By his Attorneys
Hoyt Wilkinson & Parsons

(No Model.) 8 Sheets—Sheet 7.

G. L. MERRELL.

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Fig. 14.

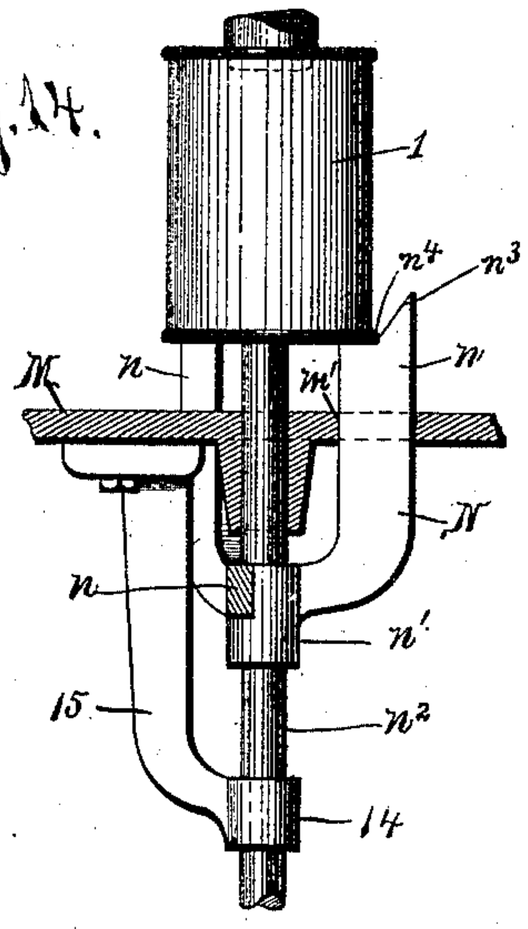


Fig. 15.

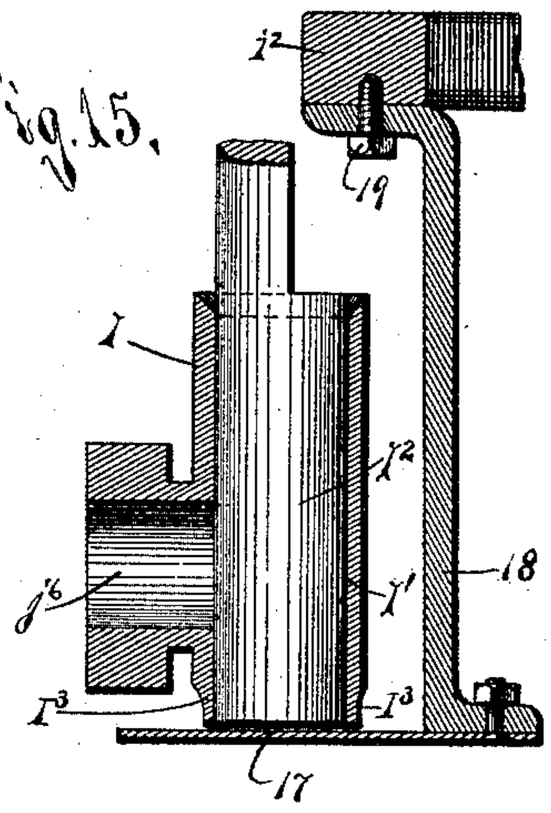


Fig. 16.

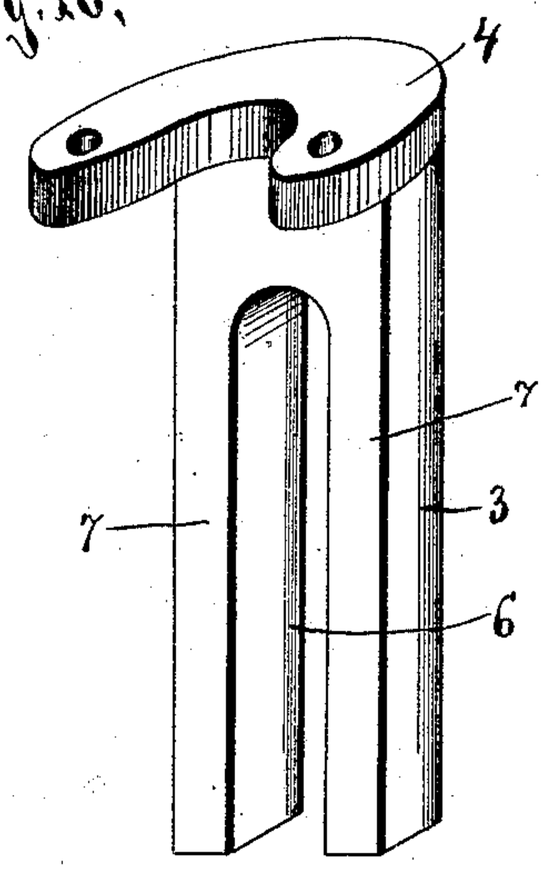
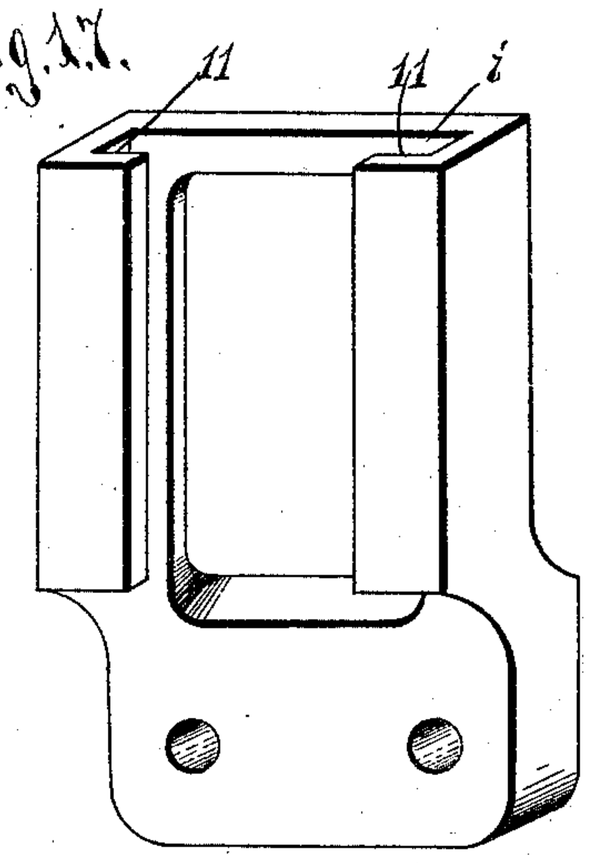


Fig. 17.



Witnesses
W. H. Randall
H. E. Chase

Inventor
Laine L. Merrell
By his Attorneys
Hoyt Wilkinson & Parsons

(No Model.) 8 Sheets—Sheet 8.

G. L. MERRELL.

APPARATUS FOR CANNING CORN.

No. 473,885. Patented Apr. 26, 1892.

Fig. 18.

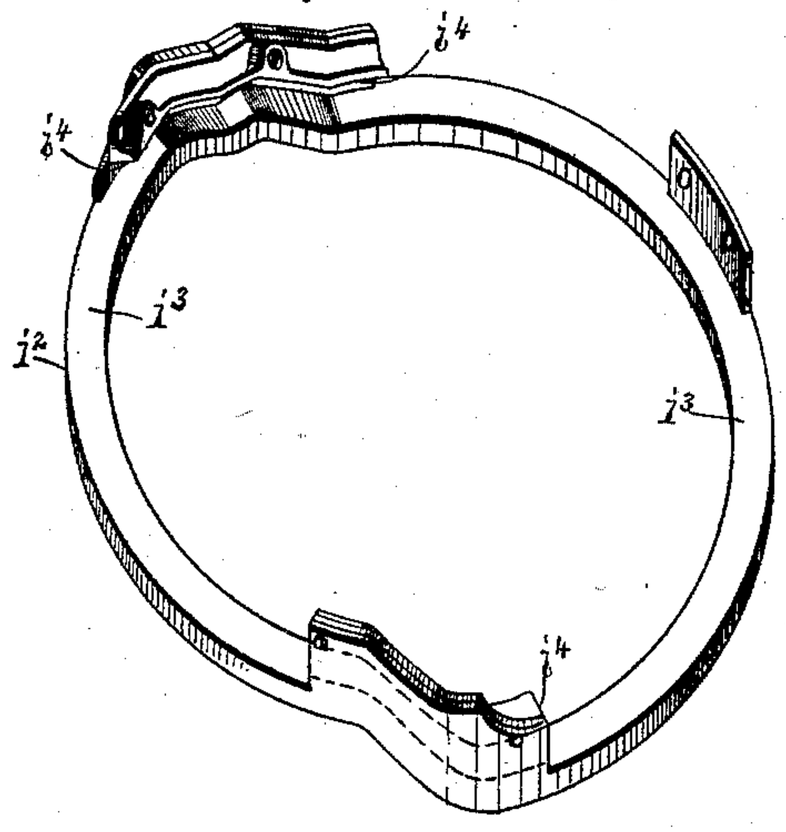


Fig. 19.

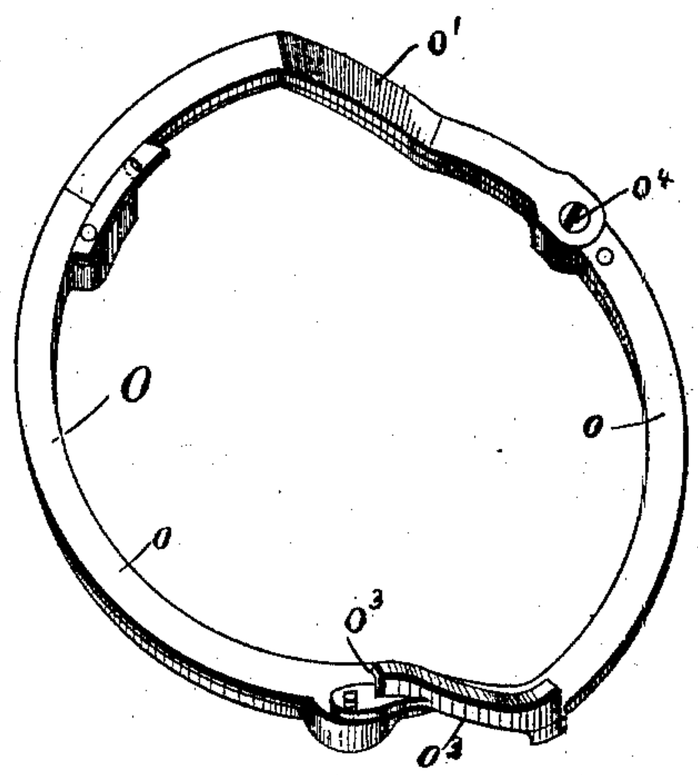


Fig. 20.

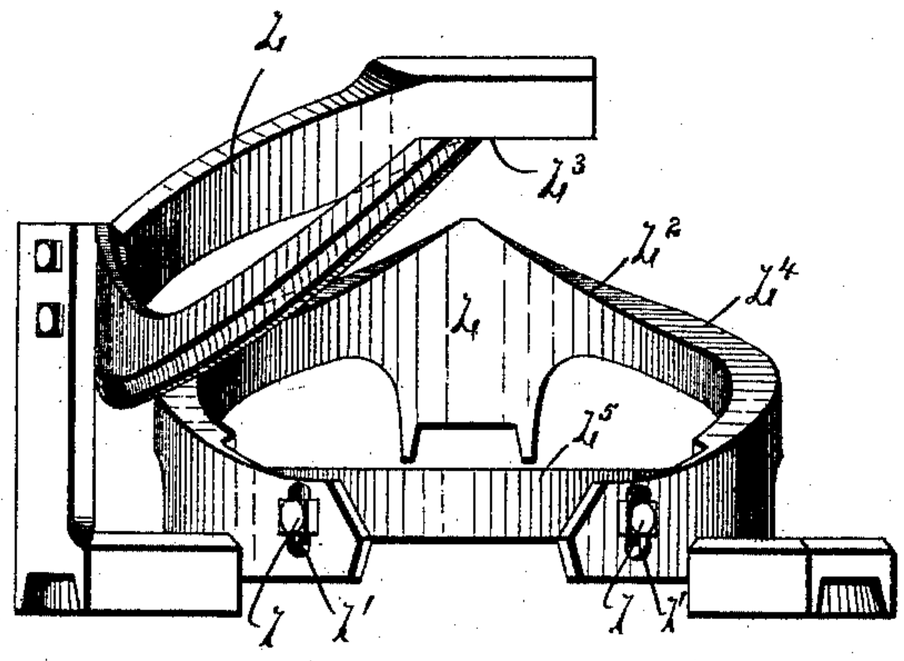
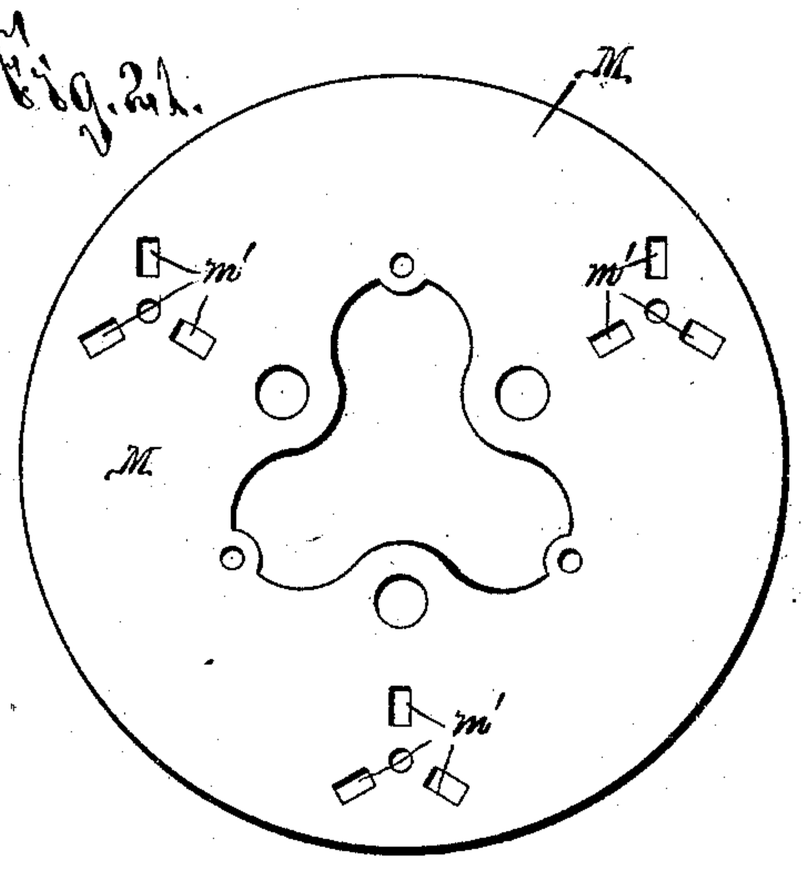


Fig. 21.



Witnesses
W. H. Randall,
H. E. Chase

Inventor
Gaius L. Merrell

By his Attorneys
Hey Wilkinson & Parsons

UNITED STATES PATENT OFFICE.

GAIUS L. MERRELL, OF SYRACUSE, NEW YORK, ASSIGNOR TO HIMSELF, OSCAR F. SOULE, AND FRANK C. SOULE, OF SAME PLACE.

APPARATUS FOR CANNING CORN.

SPECIFICATION forming part of Letters Patent No. 473,885, dated April 26, 1892.

Application filed October 20, 1890. Serial No. 368,709. (No model.)

To all whom it may concern:

Be it known that I, GAIUS LEWIS MERRELL, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful improvements in an Apparatus for Canning Corn, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to an improved canning-machine, and has for its object the production of a simple and effective apparatus for quickly and practically canning corn; and to this end it consists, essentially, in a mixing-chamber for receiving raw corn and sirup or other liquid to be mixed therewith; an agitator for forcibly stirring together the corn and sirup in order to release the imprisoned milk of the corn, churn it into a cream, and thoroughly mix it with the sirup; a cooking-chamber for bringing the corn to the desired cooked condition; a cooling-receptacle in proximity to the cooking-chamber for receiving and cooling the corn discharged from the cooking-chamber and permitting escape of the steam in order to produce the desired result in filling; a filler for inserting the cooled canned material into the cans, and connected mechanism between the foregoing parts for rendering their operation conjoint and automatic.

The invention furthermore consists in a receptacle for receiving the cooked and cooled corn, revoluble measuring-chambers opening from said receptacle, a cut-off between the receptacle and measuring-chambers, revoluble filling chambers or nozzles opening from the measuring-chambers, plungers movable in the measuring and filling chambers, and connections, as stationary cams, for actuating the plungers during the revolution of the measuring and filling chambers.

The invention also consist in the detail construction and arrangement of the filling apparatus, all as hereinafter more particularly described, and pointed out in the claims.

In describing this invention reference is had to the accompanying drawings, forming a part of this specification, in which like letters and figures indicate corresponding parts in all the views.

Figure 1 represents an elevation of my improved machine, a portion of the traveling bed for removing the filled cans being shown as broken away. Fig. 2 is a top plan view of the parts as illustrated in Fig. 1. Fig. 3 is a longitudinal vertical sectional view, taken on line 3 3, Fig. 2, for illustrating the construction of the mixing-chamber, the cooking-chamber, and the cooling-receptacle. Fig. 4 is a top plan view of the detached filling apparatus. Fig. 5 is an elevation of the filling apparatus as illustrated in Fig. 4. Fig. 6 is a horizontal sectional view taken on line 66, Fig. 5. Fig. 7 is a vertical sectional view taken on line 7 7, Fig. 4. Fig. 8 is an enlarged detail view of a portion of the receiving-chamber for the cooked material, the measuring-chamber, and the filling-chamber, illustrating particularly the detail construction and arrangement of the aforesaid parts. Fig. 9 is a plan view of the detail construction of the feed for supplying the cans to the carrier and the discharge for removing the cans when filled. Fig. 10 is an elevation of the parts as illustrated in Fig. 9. Figs. 11, 12, and 13 are detial views of parts illustrated in Figs. 9 and 10. Fig. 14 is a detail view of the movable seat for the can support or carrier. Figs. 15, 16, and 17 are details of the filling mechanism, and Figs. 18, 19, 20, and 21 are details of the actuating-cams for the filling apparatus.

A represents the mixing-chamber, into which are placed the corn and sirup or other liquid to be mixed therewith. Within this chamber is an agitator or mixer B of desirable form, size, and construction to thoroughly and forcibly mix together said corn and sirup until the imprisoned milk of the corn is released and mixed or churned into a creamy-appearing substance, which combines or mixes with the sirup. As illustrated, this mixer consists of movable arms b and b', rotated within the chamber A by a vertically-extending shaft b^2, driven by gearing b^3 from the main shaft C of my machine.

D represents the cooking-chamber, which may be also of desirable form, size, and construction sufficient and suitable for receiving the mixed corn and sirup and cooking the same to the desired degree or condition, whereby the milk of the corn and the sirup are rendered inseparable. This cooking-chamber is mounted on the standards D′ and D′, which are provided with the bearings d and serve

to support the main shaft C, from which power is transmitted to the various parts of my improved apparatus. As here illustrated, the cooking-chamber D is beneath the mixing-chamber A, which is supported thereon by standards *a*, and the corn is conveyed from one to the other by the funnel-shaped chamber E, in which is mounted a conveyer E′ of suitable form and construction. This conveyer E′ is illustrated as a screw *e*, mounted upon and driven by a shaft *e′*, actuated by gearing e^2 from the main shaft C. Connecting the chamber E and the cooking-chamber is the laterally-extending chamber E^2, into the upper extremity of which the corn is constantly fed by the conveyer, whence it passes into the cooking-chamber. It will be understood that the cooking-chamber may be heated by any desirable method; but I prefer to heat said chamber by means of steam.

D^2 represents an outer shell or sleeve surrounding the inner sleeve D^3 of the cooking-chamber.

As preferably constructed, the steam is first admitted to a pipe d^2 in the upper extremity of the stand-tube D^4, the lower extremity of which extends to a point above the base of said tube for preventing the direct entrance of impurities within the cooking-chamber D and its jacket D^2. Steam is conveyed from the upper extremity of the stand-tube D^4 to the cooking-chamber D by a pipe d^3, which is provided with a regulating-valve d^4 and from the lower extremity of said tube to the jacket D^2 by a pipe d^4.

The cooking-chamber D is preferably inclined in order to permit the ready feeding therethrough of the canned corn in the process of cooking; but in order to render this movement more positive I prefer to use a conveyer F of desirable form, size, and construction. As illustrated, the conveyer consists of a spiral *f* and spirally-turned arms *f′*, mounted on a shaft f^2, journaled in the opposite ends of the inner cooking-shell D^3 and driven from the main shaft C by power-transmitting mechanism F′, here illustrated as toothed gears f^3 and f^4, over which runs a chain belt f^5.

Experience has demonstrated that in order to render the corn highly nutritious, healthful, and pleasing in appearance and taste and render the milk and sirup inseparable and creamy in appearance it is necessary to maintain a high degree of heat in the cooking-chamber; but it will be understood that the condition and bulk of the corn will necessarily somewhat affect the intensity of the heat. It is also practically demonstrated that when the corn, having been highly heated, as aforesaid, is filled directly into the can a great amount is forcibly thrown to the outside of the can by the escaping steam, and upon cooling the occasioned contraction causes the can to be but partially filled. Accordingly I heat the corn to the highest required degree for producing the best condition and results, and between the cooking-chamber and filling apparatus interpose a cooling-receptacle G, which may also be of desirable form, size, and construction. I am thus enabled to maintain the required degree of heat in the cooking-chamber and by reducing the temperature of the corn before filling it into the cans obviate its escape therefrom, and thus readily insert just the required amount to afford the desired contraction when the can is sealed. Moreover, experience has demonstrated that when mixed, cooked, and cooled as described the entire mass is uniform and one can contains as much liquid as the other.

As here illustrated, the cooling-receptacle G consists of an open shell, which, if desired, may be provided with a cover. (Not here illustrated.)

Journaled within the shell G is an agitator or stirrer G′, which may also be of desirable form, size, and construction suitable for agitating or mixing the cooked material in order to enable the same to cool as rapidly as possible. As illustrated, this agitator consists of a series of arms *g*, which are preferably of a spiral form, in order to aid the corn in its forward passage to the filling apparatus. These arms are mounted on a shaft *g′* and by means of gearing g^2 are rotated by a vertical countershaft g^3, which in turn by means of gearing g^4 is driven from the main shaft C.

H represents the filling apparatus, having a receiving-chamber H′, into which the canned material is conducted by a pipe G^2 from the cooling-receptacle G.

G^3 represents a thermometer mounted upon the pipe G^2 in order to indicate the temperature of the cooled canned material and the consequent desired rotation of the shaft C.

The chamber H′ is preferably provided with a cover H^2, having one or more doors *h*, which may be either opened or closed in order to further regulate the temperature of the material about to be inserted into the cans by the canning apparatus.

I represents the filler, which is of desirable form, size, and construction. Two or more of these fillers are preferably arranged at intervals around the receiving-chamber H′ and are connected therewith to receive the canned material and discharge it into the cans.

Experience has demonstrated that in order to successfully insert canned material into the cans it is necessary that the material be inserted slowly, as if quickly inserted more or less air is compressed within the same and when bubbling through the material ejects it from the can and spatters the top, thus occasioning loss of material and necessitating cleaning in order that the caps may be soldered in position upon the inlet-opening (not illustrated) of the can 1. (Shown in Fig. 1.) Experience has also demonstrated that in order to produce a practical machine which can operate conjointly with the mechanism for canning the corn it is absolutely necessary that the cans be filled quickly. Accordingly I satisfy these requirements by using several

fillers in my filling apparatus, operating them slowly when inserting the corn, but making up for the slow movement by the number of cans filled at the same time, whereby, although each separate filler operates sufficiently slow to prevent spattering and waste of the material, they all operating together fill the cans very quickly.

J represents a measuring-chamber of desirable size and construction, which is connected to the filler for regulating the amount of material fed to each can. In order to produce the desired rapid operation of my canning apparatus, I preferably rotate the fillers and measuring-chambers and support them upon a stationary cylindrical rod K, which is in turn supported on standards K'. As best seen in Fig. 7, the measuring-chambers J are rigidly secured at j to the frame of the receiving-chamber H', and said chamber H' is secured by a set-screw h' to the sleeve h^2, which turns around the rod K and affords a long bearing. Power is transmitted to this sleeve h^2 from a counter-shaft C' by the gears h^3 and h^4, and said counter-shaft is driven by gearing C^2 from the main shaft.

L, Figs. 5, 6, 7, and 20, represents a cam supported on an arm or arms L', projecting from the standards K'.

J' represents the false bottom or movable plunger of the measuring-receptacle, which by means of the lower and upper faces L^2 and L^3 of the cam or actuator L is operated up and down to receive and discharge the canned material from the measuring-chamber. Depending from this plunger and guided through the lower extremity of the chamber J and a frame or hub depending beneath the same is the rod j', upon the lower extremity of which is secured the yoke j^2, in which is journaled a roller j^3, which rides on the lower face L^2 of the cam L for raising the plunger J'. Journaled on the pin j^4 of the roller j^3 is a second roller j^5, which rests against the under face L^3 of the cam L for lowering the plunger J'.

In order to support the yoke j^2 during its movement and prevent springing thereof during elevation and depression, I provide the guide 3. (Best seen in Figs. 6, 7, and 16.) The upper extremity 4 of the guide embraces the lower hub of the chamber J, as seen in Fig. 7, and is secured by screws 5 to the can support or feed. The lower extremity 6 of said guide is formed with the flat bearing-face 7 for the face 8 of the yoke j^2 and is bifurcated to permit the elevation of the roller j^3. The upper extremity of the rod K extends within the chamber H', and mounted thereon between the receiving-receptacle and the measuring-chambers is a cut-off plate k, which does not extend entirely around said chamber, and thus forms an opening k', with which the upper extremities of the measuring-chambers are adapted to register, as shown in Figs. 4 and 7, in order that said chambers may become filled with the material to be canned. As the rotation of the measuring-chamber continues its upper extremity passes beneath the stationary cut-off plate k, as shown in Figs. 4 and 8, and the incline L^4 of the cam-face L^2 is so timed that immediately after the passage of the measuring-chamber beneath said cut-off plate the plunger J' is actuated upward to discharge the material from the outlet j^5 of the chamber J and into the inlet j^6 of the filling-chamber I' of the filler I, which filling-chamber thus becomes an outlet passage or nozzle for the measuring-chamber.

At Fig. 8 I have shown the plunger as in its extreme upward movement, and it will be noticed that in order to permit the escape of the entire amount of material within the chamber J the upper face of the plunger is provided with a groove j^7, extending toward the outlet j^6. Immediately upon the extreme upward movement, as illustrated in Fig. 8, the plunger is retracted by the cam-face L^3 in order to permit a second operation. It will thus be understood that as the separate measuring-chambers, of which there are preferably three, rotate around the rod K they are each successively opened and closed to the canned material in the manner previously described and that while one chamber is entirely open another is partially closed and the third is being opened.

L^5, Fig. 20, represents an adjustable division of the lower face L^2 of the cam L, whereby the amount of the charge within the measuring-chamber is regulated. The opposite extremities of this portion or plate L^5 are provided with bolts l, which pass through slots l' in the opposite extremities of the main portion of said cam-face. As these bolts are loosened this curved plate L^5 may be either raised or lowered at will, and, since the roller rides upon said plate L^5, when the measuring-chamber is beneath the opening k' of the cut-off k, it is evident that the plunger J' is either raised or lowered to permit the entrance within the measuring-chamber of a less or greater amount of the material to be canned.

I^2 represents a discharge plunger or valve movable in the outlet passage or chamber I' of the filler for discharging the material into the cans. Projecting from the lower extremity of the chamber I' is a flange I^3, which is adapted to enter the inlet-opening of the can during the operation of filling. The upper extremity of the plunger I extends beyond the chamber and is guided in its movement by the guide i, Figs. 8 and 17. The guide i is supported upon the receptacle H and is formed with way 11, in which slides a cross-head 12, secured to the upper extremity of the plunger I^2 by screws 13. Projecting from the plunger is a pin or roller i', which is raised upward and downward by the lower and upper faces i^3 and i^4 of the cam i^2. This cam i^2 is so timed with the previous cam L that immediately after the plunger J' commences its upward movement the plunger I^2 is withdrawn to permit the passage of the canned material and is then retracted to

expel the material and to close the openings j^5, while said measuring-chamber is registered with the opening k' in the cut-off plate k. It will thus be understood that by using two or more measuring and filling chambers, connecting them with the receiving-chamber for the material to be filled, and operating the plungers simultaneously to discharge the measured material into the can, and while one or more of the chambers is being refilled with material the operation of the machine is rendered extremely efficient and its capacity greatly augmented even though the plungers move sufficiently slow to prevent undue spattering of the cans, as previously stated. These features of construction form the essential feature of my invention and differentiate it from those fillers in which the measuring-chamber is stationary.

M represents the movable support for the cans, which is preferably revoluble and is driven at equal speed with the receiving-chamber H′ by means of bolts m, which connect said parts. To a certain extent this support becomes a feed for feeding the cans; but with my filling apparatus, as preferably constructed I do not rely on this as a feed, but provide feeding-arms M′, which are mounted on the revoluble cylinder J^3 above the can-support so as to engage the back of the can and thus become the feed proper of my filling apparatus. N represents movable seats on said support, which are of desirable form, size, and construction. As here illustrated, these seats consist of the projecting ends of three arms $n\ n\ n$, which project from a hub n', secured to a movable rod n^2, which slides through the hub 14 of the bracket 15, which is suitably supported on the can-feed. As seen in Figs. 7 and 8, the upper extremities of these arms project through slots m' in the support M and are provided with the outer shoulders n^3, which project beyond the faces n^4 upon which the can preferably rests.

O represents a cam, Figs. 5, 7, and 19, which raises and lowers said movable can-seats N. The lower face of the rod n^2 preferably rests upon the upper face o of said cam and is raised upward by the incline or tooth o'. Projecting from said rod is a pin o^2, which engages the upper face o^3 of the cam O, and thereby serves to retract the can-seat. In order to permit the withdrawal or adjustment of a can should the occasion occur, the portion of the cam which carries the tooth o' is hinged at o^4, and its extremity o^5 is removably secured in operative position by a pin o^6, as seen in Fig. 6. Upon withdrawal of the pin the cam-tooth o' is swung back, as illustrated by dotted lines in Fig. 7, whereupon the can-seat falls by gravity until the hub n' contacts with the hub 14, and the operator may then either remove one can to insert another, or, if the can is not properly seated on the seat N, may adjust it, as desired. The can-seat is then elevated and the movable portion of the cam swung to operative position. It will be understood that the cam O is so timed in relation to the previously-described cams as to elevate the can and cause the inlet-opening in its upper extremity to receive the down-turned flange I^3 of the filler prior to the inlet within said filler of the canned material, and is also timed to hold the can in its up position until after it is filled. As preferably constructed and timed, the face o^3 of the cam O retracts the movable seat N to lower the can before its release from the can-support, as presently described. As soon as the can is retracted a drip-plate 17, Figs. 5 and 15, is caused to intervene between the filler and can and prevent any of the material from dropping upon the top of the can as the can is withdrawn from the filler. The plate 17 is preferably stationary and is supported upon an arm 18, secured by bolts 19 to the cam i^2 or other suitable stationary portion of the canning apparatus. The cans are preferably supplied to their support M by means of a supply-pipe P, Figs. 1, 2, 5, 9, and 10, into which the cans are deposited from an upper room or depository. (Not illustrated.) The lower extremity of this pipe, as illustrated at Fig. 10, is cut out at P′ to permit the outward passage of the cans to the movable seats N. Projecting beyond the pipe P from the base of the opening P′ is a plate P^2, Figs. 4 and 9, which extends to a point over the can-seat of the can-support. The front edge of this plate is preferably beveled, and the can is, as presently described, pushed therefrom directly upon the can-seat without being pushed along said support to the can-seat.

R represents a bracket having one extremity projecting into the path of the cans and the other secured to one of the legs K′. Pivoted at s to this bracket is the lever S, having its free extremity movable in the opening P′ for forcing the cans therethrough to the seat N. This lever is withdrawn to its normal position (shown in full lines at Fig. 9) by a spring S′, one extremity of which is connected thereto and the other to the bracket R. Mounted on the lever S is the cam S^2, the outer face of which is engaged by a pin M^2, projecting from the outer edge of one of the feeding-arms M′. As these feeding-arms revolve said pin M^2 rides along the outer face of said cam S^2 and rocks the same inwardly, as shown by dotted lines in Fig. 9, and feeds the can to the seat N from the plate P^2. A guide P^4 extends on the outside of the plate P^2 and prevents the can being forced outwardly from the can-support until, as previously described, the can is in operative position upon the seat N. The pin M^2 then passes from the inwardly-extending extremity s' of said cam-face and permits the lever S to return to its normal position and allow another can to pass down the pipe P. In order to prevent further downward supplying of the cans, when desirable, I provide the lever P^5, Figs. 2, 4, 9, 10, 11, and 12, having one extremity hinged at P^6 and the other movable in a slot P^7 in the pipe P^8. The free ex-

tremity of this lever is preferably inclined from its point upwardly, and when forced within the pipe P the cans are forced slightly upward and rest thereon and the can in position to be engaged by the feeding-arms M′ is forced slightly forward in position for ready removal by the operator. In order to discharge the cans from the support M, I utilize the inner end of the bracket R and preferably secure thereto the plate R′. It will be understood, however, that before being registered with said discharge R the removable seat N is lowered, as previously described, and the plate 17 is beneath the exit of the filler. The inner extremity of said discharge-plate R′ projects into the path of the can, and, as it is inclined away from the same, the can when passed to said plate is forced outward along its adjacent inclined discharging face.

T represents a second carrier for removing the filled cans from the filling apparatus. This carrier may be of suitable size and construction, but is here illustrated as an endless belt passing over wheels t and t', which are journaled in the frame T′. One extremity of this frame is supported on one of the standards K′ and the other on a standard T^2. Motion is communicated to the shaft t^2 of the drum t' by the chain t^3, one extremity of which passes over a wheel t^4 on the shaft t^2 and the other over a wheel t^5 on the counter-shaft t^6. The shaft t^6 is driven from the shaft C′ beneath the same by suitable gearing t^7 on the respective shafts. It will be noted that one extremity of the belt or carrier T extends to the discharge-plate R′ and receives the cans which pass along its face and that the other extremity passes through a slot in the frame T. The cans are removed from this carrier by an attendant or any suitable construction of mechanism not necessary to herein illustrate or describe.

The operation of my invention is obvious from the foregoing description and upon reference to the drawings and it will be noted that the corn is, by the continued and conjoint operation of the parts of my improved canning-machine first filled into the mixing-chamber, is then cooked, is afterward cooled to the desired degree to permit successful and practical filling, and is then filled into the cans in condition for sealing.

It will be particularly noted that the parts of this mechanism of my machine operate conjointly or together and that while the agitator is mixing sirup and uncooked corn the cooker is cooking the material previously mixed, the cooler is bringing the cooked material to the required temperature, the filling apparatus is filling the same into cans in such a manner as to prevent waste and obviate subsequent cleaning of the tops of the cans, and as the filler revolves during its operation the can support and feed feed forward during the operation of the filler the can being filled by said filler, thus rendering the operation of canning automatic, continuous, rapid, and extremely easy and cheap. It will also be noted that I lay great stress upon the combination, with a chamber for receiving the material to be canned, of revoluble measuring-chambers opening from said receptacle, a cut-off between the two, whereby each charge of material to be canned is formed equal, revoluble filling-chambers connected to the measuring-chambers, and plungers movably mounted in said chambers and movable during the revolution of the measuring and filling chambers for acting on two or more cans simultaneously. After being filled the cans are sealed in any desired manner and are then preferably heated or steamed in order to kill any germs which would otherwise tend to spoil the contents.

In order that my present invention may be clearly understood, it has been necessary to herein briefly describe the mixing device for receiving the corn and the sirup or liquid to be mixed therewith and for releasing the imprisoned milk of the corn and mixing the same with the sirup, a cooker for cooking the corn and rendering the released milk and the sirup inseparable, and a filler for filling the corn into the cans; but it will be understood that I do not herein claim such elements, broadly, save as combined with the cooling-receptacle or other additional elements, as I wish to reserve for my pending application, Serial No. 422,858, filed February 26, 1892, the broad combination of the aforesaid elements.

It will be understood that I do not herein limit my invention to the precise construction and arrangement of its detail construction, as the same may be considerably changed without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A canning-machine comprising a chamber for receiving the corn or other material to be canned and also the liquid to be mixed therewith, an agitator for forcibly mixing the corn and liquid in order to release its imprisoned milk and mix it with the said liquid, a cooking-chamber for cooking the corn, whereby said milk and liquid are rendered inseparable, a conveyer for feeding the corn from the former into the latter chamber, a filler for inserting said material into the cans, a cooling-receptacle interposed between the cooking-chamber and the filler for receiving and cooling the heated corn, and connections, substantially as described, between the foregoing parts, whereby they operate conjointly, substantially as specified.

2. A canning-machine comprising a chamber for receiving the corn or other material to be canned, a cooking-chamber for cooking the corn and heating the same to a greater heat than the predetermined temperature of the corn when about to be inserted into the can, a cooling-receptacle in proximity to the cook-

ing-chamber for receiving and cooling the corn discharged from the cooking-chamber for bringing the same to the required degree of temperature for insertion into the cans, a a filler for inserting the said material into the cans, and connections, substantially as described, between the foregoing parts, whereby they operate conjointly, substantially as and for the purpose set forth.

3. A canning-machine comprising a chamber for receiving the corn or other material to be canned and also the liquid to be mixed therewith, an agitator for forcibly mixing the corn and liquid in order to release its imprisoned milk and mix it with the said liquid, a cooking-chamber for cooking the corn, whereby said milk and liquid are rendered inseparable, a conveyer for feeding the corn from the former into the latter chamber, a conveyer for feeding the corn through the cooking-chamber, a cooling-receptacle in proximity to the cooking-chamber for receiving and cooling the heated cooked material discharged from the cooking-chamber, an agitator for agitating the material in the cooling-receptacle, a filler for receiving the cooled material and inserting the same into the cans, and connections, substantially as described, between the foregoing parts, whereby they operate conjointly, substantially as set forth.

4. A canning-machine comprising a chamber for receiving the corn or other material to be canned and also the liquid to be mixed therewith, an agitator for forcibly mixing the corn in order to release its imprisoned milk and mix it with said liquid, a cooking-chamber for receiving and cooking said corn, whereby said milk and liquid are rendered inseparable, a receiving-chamber for said cooked material, a filler for feeding said material to the cans, and a feed for feeding the can forward during the operation of the filler and while the can is being filled by said filler, and connections, substantially as described, between the foregoing parts, whereby the parts operate conjointly and the operation of canning the corn is continuous, substantially as described.

5. A canning-machine comprising a chamber for receiving the corn or other material to be canned and also the liquid to be mixed therewith, an agitator for forcibly mixing the corn in order to release its imprisoned milk and mix it with said liquid, a cooking-chamber for receiving and cooking the said corn, whereby said milk and liquid are rendered inseparable, a cooling-receptacle in proximity to the cooking-chamber for receiving the corn discharged from the cooking-chamber, an agitator for stirring the corn within the cooling-receptacle, one or more fillers connected with the cooling-receptacle and having a combined capacity substantially equal to that of the foregoing parts, and connections, substantially as described, between the foregoing parts, whereby the parts operate conjointly and the operation of canning the corn is continuous, substantially as described.

6. A canning-machine comprising a chamber for cooking the corn or other material to be canned, a conveyer for feeding the corn through the cooking-chamber, a cooling-receptacle in proximity to the cooking-chamber for receiving and cooling the heated corn discharged from the cooking-chamber, a filler for feeding said cooked material to the cans, and a feed for feeding the can forward during the operation of the filler and while the can is being filled by said filler, and connections, substantially as described, between the foregoing parts, whereby they operate conjointly, substantially as specified.

7. A canning-machine comprising a chamber for cooking the corn or other material to be canned, a conveyer for feeding the corn through the cooking-chamber, a cooling-receptacle in proximity to the cooking-chamber for receiving and cooling the cooked corn discharged from the cooking-chamber, an agitator within said chamber for stirring the corn, a movable can feed or support, a filler for feeding said cooked material to the cans during the movement of the can feed or support, and connections, substantially as described, between the foregoing parts, whereby they operate conjointly, substantially as specified.

8. A canning-machine comprising a chamber for cooking the corn or other material to be canned, a conveyer for feeding the corn through the cooking-chamber, a cooling-receptacle in proximity to the cooking-chamber for receiving and cooling the cooked corn discharged from the cooking-chamber, a conveyer for feeding the material through said cooling-receptacle, a filler for feeding said cooked material to the cans, and a feed for feeding the can forward during the operation of the filler and while the can is being filled by said filler, and connections, substantially as described, between the foregoing parts, whereby they operate conjointly, substantially as described.

9. In a machine for filling cans, the combination of a receiving-chamber for the material to be filled, a revolving measuring-chamber communicating with the receiving-chamber and provided with an outlet-passage whereby the material passes from the receiving to the measuring chamber and thence through the outlet-passage to the cans, a cut-off between said chambers, and a plunger movably mounted in the measuring-chamber and adapted to be revolved therewith for forcing the material from said chamber through said outlet-passage into the cans, substantially as and for the purpose set forth.

10. In a machine for filling cans, the combination of a receiving-chamber for the material to be filled, two or more measuring-chambers communicating with the receiving-chamber and provided with outlet-passages whereby the material passes from the receiving-chamber to the measuring-chambers and thence through the outlet-passages to the cans, a cut-off between the receiving-cham-

ber and the measuring-chambers, adapted to shut off communication of the receiving-chamber with one of said measuring-chambers and open communication with the other of said measuring-chambers, plungers movably mounted in the respective measuring-chambers and adapted to be revolved therewith, and an actuator for operating said plungers to discharge the measuring-chambers successively, substantially as and for the purpose described.

11. In a machine for filling cans, the combination of a receiving-chamber for the material to be filled, a revoluble measuring-chamber communicating with the receiving-chamber and provided with an outlet-passage whereby the material passes from the receiving-chamber to the measuring-chamber and thence through the outlet-passage to the cans, a cut-off between the receiving and measuring chambers, a discharge-plunger movably mounted in and revoluble with said measuring-chamber for discharging the material from the measuring-chamber through said outlet-passage into the cans, and a can-seat movable toward the end of said outlet-passage for retaining the can in position during the operation of the plunger, substantially as and for the purpose set forth.

12. In a machine for filling cans, the combination of a receiving-chamber for the material to be filled, a substantially vertically-extending measuring-chamber communicating with the receiving-chamber and provided with an outlet-passage whereby said material passes from the receiving to the measuring chamber and thence through said outlet-passage to the cans, a cut-off between said chambers, a plunger beneath said cut-off movable toward the cut-off for forcing the material from the measuring-chamber through said outlet-passage into the cans, and a second plunger movable in said outlet-passage and formed with its end of substantially the same diameter as that of the outer end of the outlet-passage, whereby the plunger end passes to the extreme end of the outlet-passage and ejects all of the material in front of the same into the cans, substantially as and for the purpose described.

13. In a machine for filling cans, the combination of a receiving-chamber for the material to be filled, a revoluble measuring-chamber communicating with the receiving-chamber and provided with an outlet-passage whereby the material passes from the receiving-chamber to the measuring-chamber and thence through the outlet-passage to the cans, a cut-off between the receiving-chamber and said measuring-chamber, a discharge-plunger for discharging the material from the measuring-chamber through said outlet-passage into the cans, and an additional plunger movable in said outlet-passage for further discharging the material into the cans, substantially as and for the purpose set forth.

14. In a machine for filling cans, the combination of a revolving receiving-chamber for the material to be filled, a revolving measuring-chamber communicating with the receiving-chamber, provided with an outlet-passage whereby the material passes from the receiving to the measuring chamber and thence through the outlet-passage to the cans, a cut-off between said chambers, a plunger movably mounted in the measuring-chamber for forcing the material from the measuring-chamber through said outlet-passage to the cans, and an actuator for operating said plunger during the revolution of said measuring-chamber, substantially as and for the purpose set forth.

15. In a machine for filling cans, the combination of a revolving receiving-chamber for the material to be filled, revolving measuring-chambers opening from said receiving-chamber and provided with outlet-passages whereby the material passes from the receiving to the measuring chambers and thence through the outlet-passages to the cans, a cut-off between the receiving-chamber and the measuring-chambers, a revolving can-feed, discharge-plungers for forcing the measured material from the measuring-chambers through the outlet-passages into the cans, plunger-rods on the plungers, and a revolving frame having an opening through which the plunger-rods are guided, substantially as and for the purpose set forth.

16. In a machine for filling cans, the combination of a receiving-chamber for the material to be filled, a revolving measuring-chamber communicating with the receiving-chamber and provided with an outlet-passage whereby said material passes from the receiving to the measuring chamber, and thence through the outlet-passage to the cans, a cut-off between said chambers, a plunger movably mounted in the measuring-chamber and revoluble therewith for forcing the material from said chamber through its outlet-passage into the cans, a plunger-rod projecting from said plunger, a lateral projection on said rod, and opposite cam-faces for engaging said projection and operating the plunger, substantially as and for the purpose set forth.

17. In a machine for filling cans, the combination of a receiving-chamber for the material to be filled, a revolving measuring-chamber leading from the receiving-chamber, a cut-off between the receiving and measuring chambers, a filler-chamber adapted to discharge into the cans, a passage between the measuring and filler chambers for conducting the material from the measuring to the filler chamber, a plunger movably mounted in the measuring-chamber and revoluble therewith for forcing the material from the measuring to the filler chamber, and a second plunger having its extremity of substantially the same diameter as that of the filler-exit, whereby said extremity passes to the extreme end of the filler-chamber for discharging all of the material therefrom into the cans, substantially as specified.

18. In a machine for filling cans, the combination of a receiving-chamber for the material to be filled, a revoluble measuring-chamber leading from the receiving-chamber, a cut-off between the receiving and measuring chambers, a revoluble filler-chamber adapted to discharge into the cans, a passage between the measuring and filler chambers for conducting the material from the measuring to the filler chamber, a plunger movable within and revoluble with the measuring-chamber for forcing the material from the measuring to the filler-chamber, a second plunger movable within and revoluble with the filler-chamber having its extremity of substantially the same diameter as that of the filler-exit, whereby said extremity passes to the extreme end of the filler-chamber for discharging all of the material therefrom into the cans, and a can-seat for registering the cans with the end of the filler-chamber wall when the latter plunger is operated, substantially as and for the purpose specified.

19. In a machine for filling cans, the combination of a revoluble frame, a receiving-chamber for the material to be filled mounted on said frame, a measuring-chamber leading from said receiving-chamber and also mounted on said frame, a stationary cut-off between the receiving and measuring chambers, a filler-chamber also mounted on said frame and adapted to discharge into the cans, a connecting-passage between the measuring and filler chambers for conducting the measured material into the cans, a plunger movable in the measuring-chamber, a second plunger movable in the filler-chamber, and a feed for feeding the cans to the filler-chamber, substantially as and for the purpose set forth.

20. In a machine for filling cans, the combination of a revoluble chamber for receiving the material to be filled, a revoluble measuring-chamber opening from the receiving-chamber and provided with an outlet-passage whereby the material passes from the receiving to the measuring chamber and thence through the outlet-passage to the cans, a cut-off between said receiving and measuring chambers, a plunger movably mounted in and revoluble with said measuring-chamber for discharging the measured material from the measuring-chamber through the outlet-passage into the cans, an adjustable actuator for said plunger whereby its movement is regulated and the size of the charge governed, and a second plunger movable in said outlet passage and revoluble with the measuring-chamber, substantially as and for the purpose set forth.

21. In a machine for filling cans, the combination of a chamber for the material to be filled, two or more revoluble measuring-chambers, a cut-off between said receiving-chamber and the measuring-chambers, discharge-plungers for forcing the material from said measuring-chambers, two or more revoluble filling-chambers opening from the measuring-chambers for conveying the material into the cans, plungers movable in said measuring-chambers for discharging the material therefrom into the filling-chambers, and plungers movable in the filling-chambers for discharging the material into the cans, substantially as and for the purpose set forth.

22. In a machine for filling cans, the combination of a chamber for the material to be filled, a movable measuring-chamber communicating with the receiving-chamber and provided with an outlet-passage whereby the material passes from the receiving to the measuring chamber and thence through the outlet-passage to the cans, a cut-off between said chambers, a plunger movably mounted in the measuring-chamber and movable therewith, and a can feed movable with the measuring-chamber for feeding the can forward during the feeding of the material into the cans, substantially as and for the purpose set forth.

23. In a machine for filling cans, the combination of a receiving-chamber for the material to be filled, a measuring-chamber communicating with the receiving-chamber, a cut-off between the receiving and measuring chambers, a discharge-plunger for forcing the material from the measuring-chamber, a movable filling-chamber opening from the measuring-chamber for conveying the material into the cans, a plunger mounted in the filling-chamber and movable therewith, and a can-feed movable with the movable filling-chamber, whereby the can is fed forward as the material is fed into the same, substantially as and for the purpose described.

24. In a machine for filling cans, the combination of a chamber for the material to be filled, two or more revoluble measuring-chambers leading from said receiving-chamber, a cut-off between the measuring-chambers and the former chamber, two or more filling-chambers at one side of the measuring-chambers for conducting the material into the cans, lateral connecting-passages between the measuring and filling chambers for conducting the material from the measuring to the filling chamber, a discharging-plunger for forcing the material into the cans, and a can-seat also at one side of the measuring-chamber in alignment with the filling-chamber, substantially as described.

25. In a machine for filling cans, the combination of a chamber for receiving the material to be canned, a measuring-chamber opening from the receiving-chamber, a cut-off between the receiving and measuring chambers, a filling-chamber opening from one side of the measuring-chamber, a plunger for discharging said measuring-chamber, said plunger having its upper face provided with a groove leading toward the inlet-opening of the filling-chamber, substantially as and for the purpose specified.

26. In a machine for filling cans, the combination of a chamber for receiving the material to be filled, a measuring-chamber opening

from the receiving-chamber, a cut-off between the receiving and measuring chambers, a filling-chamber opening from one side of the measuring-chamber, a plunger for discharging said measuring-chamber, said plunger having its upper face provided with a groove leading toward the inlet-opening of the filling-chamber, and a plunger movable in said filling-chamber, substantially as set forth.

27. In a machine for filling cans, the combination of a chamber for the material to be canned, a revoluble measuring-chamber opening from said receiving-chamber and provided with an outlet-passage whereby the material passes from the receiving to the measuring chamber and thence through the outlet-passage to the cans, a cut-off between the receiving and measuring chambers, a plunger movably mounted in and revoluble with the measuring-chamber for discharging the measured material into the cans, a stationary cam for reciprocating said plunger, a vertically-movable revoluble can-seat beneath said outlet-passage, and a cam for reciprocating said seat toward and away from the outlet-passage, substantially as and for the purpose described.

28. In a machine for filling cans, the combination of a can-filler, a can-feed, a movable can-seat for the cans, and a cam for actuating said seat having a section of its cam-face removably secured in position, whereby said section may be removed at will from operative position, substantially as and for the purpose specified.

29. In a machine for filling cans, the combination of a movable can-support, a can-feeding tube having a cut-out for permitting egress of the cans, and a stationary plate extending from said tube to a point above the can-support, substantially as described.

30. In a canning-machine, the combination of a movable can-support, a can-feeding tube having a cut-out for permitting egress of the cans, a plate extending from said tube to the point above the can-support for supporting the cans, and a revoluble can-feed having arms adapted to engage said cans when mounted on said plate, substantially as set forth.

31. In a canning-machine, the combination of a can-feed, a can-feeding tube for feeding cans to the can-feed, and a pivoted stop having one extremity movable into and out of said tube, substantially as and for the purpose specified.

32. In a machine for filling cans, the combination of a plate M, upon which the cans are supported, feeding projections M′ for feeding the cans forward, a filler for filling the can, and a discharge-plate R′, having one extremity disposed in a plane at one side of the plane of the projections M′ and adapted to project into the path of the cans for removing the cans from said support, substantially as and for the purpose specified.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 14th day of October, 1890.

GAIUS L. MERRELL.

Witnesses:
CLARK H. NORTON,
M. BAXTER.