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PATENTED MAY 26, 1908.

E. J. HALLAHAN.
SAUSAGE STUFFING MACHINE.

APPLICATION FILED JAN. 9, 1907.

2 SHEETS—SHEET 1.

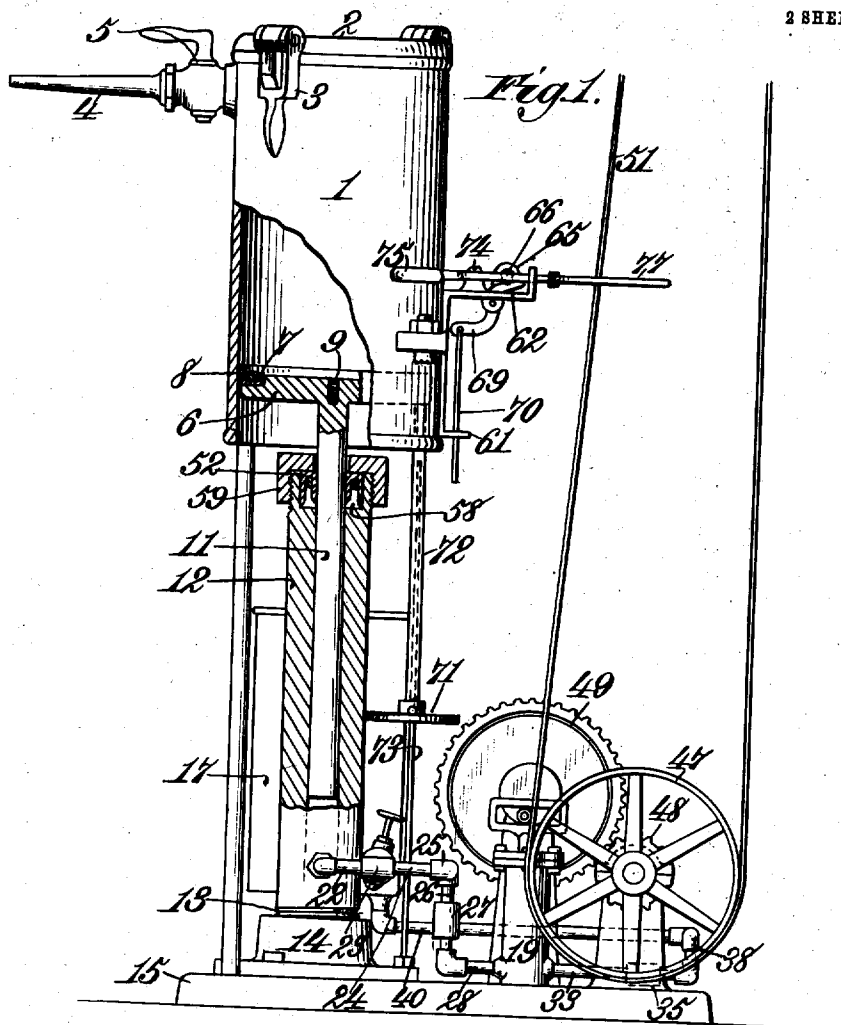
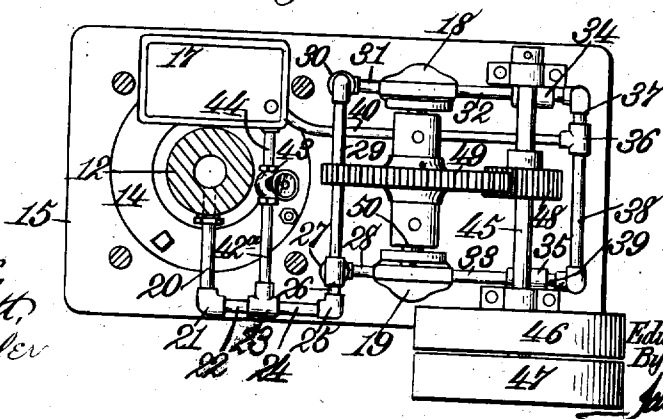


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

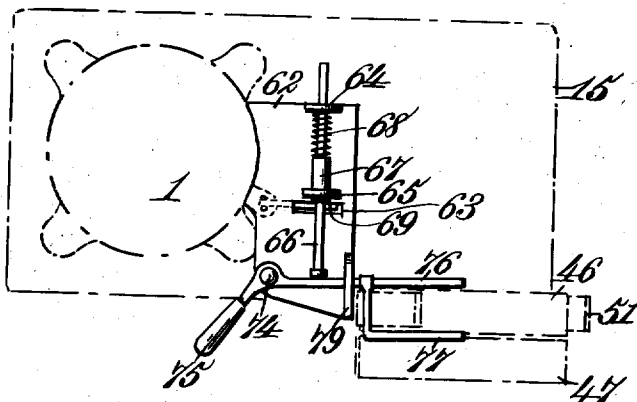


Fig. 4.

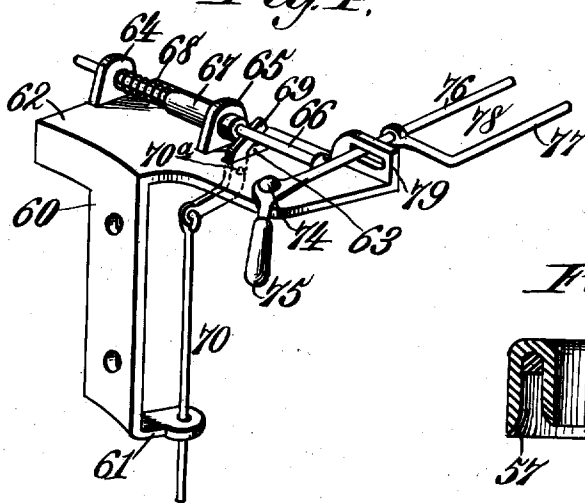


Fig. 5.

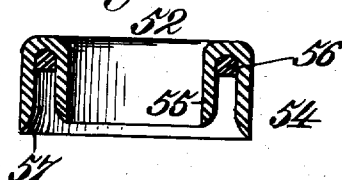


Fig. 6.

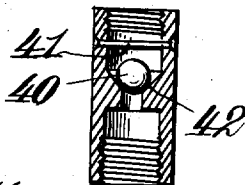


Fig. 7.



Fig. 8.



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UNITED STATES PATENT OFFICE.

EDWARD J. HALLAHAN, OF AUGUSTA, GEORGIA, ASSIGNOR OF ONE-THIRD TO WILLIAM H. KESSLER AND ONE-THIRD TO J. RIPLEY GOOD, OF AUGUSTA, GEORGIA.

SAUSAGE-STUFFING MACHINE.

No. 889,122.

Specification of Letters Patent.

Patented May 26, 1908.

Application filed January 9, 1907. Serial No. 351,498.

To all whom it may concern:

Be it known that I, EDWARD J. HALLAHAN, a citizen of the United States, residing at Augusta, in the county of Richmond and State of Georgia, have invented new and useful Improvements in Sausage-Stuffing Machines, of which the following is a specification.

This invention relates to a sausage stuffing machine, and aims to provide a machine of such class with means hereinafter set forth to permit of the automatic return of the forcing piston and head by gravity when occasion so requires.

A further object of the invention is to provide a machine of such class with means for automatically discontinuing the operation thereof when the forcing piston and head have arrived at the limit of their stroke in one direction.

A further object of the invention is to provide a machine of such class with means to prevent leaking of the motive fluid from around the piston during the operation of the forcing piston and head.

A further object of the invention is to provide the forcing piston head in a machine of such class with a packing whereby the tight fit between the inner face of the material containing cylinder and the piston head is above the top of the piston head thereby enabling the packing to remove any matter adhering to the inner face of the cylinder.

A further object of the invention is to provide a forcing piston and head in a machine of this class with means whereby said piston and head can be readily removed when occasion so requires.

A further object of the invention consists in providing a sausage stuffing machine which shall be simple in its construction, operated by motive fluid, preferably water, strong, durable, efficient in its use, conveniently operated, having its operation automatically stopped when occasion so requires, readily set up, and comparatively inexpensive to manufacture.

With the foregoing and other objects in view, the invention consists in the novel construction, combination, and arrangement of parts hereinafter more specifically described and illustrated in the accompanying drawings, wherein is shown the preferred embodiment

of the invention, but it is to be understood that changes, variations, and modifications can be resorted to which come within the scope of the claims hereunto appended.

In describing the invention in detail reference is had to the accompanying drawings, wherein like reference characters denote corresponding parts throughout the several views, and in which

Figure 1 is a vertical sectional view of a sausage stuffing machine in accordance with this invention. Fig. 2 is a plan with the material containing cylinder removed. Fig. 3 is a plan of the automatic stop mechanism with certain portions of the machine shown in dotted lines. Fig. 4 is a perspective view of the automatic stop mechanism. Fig. 5 is a sectional view of the piston packing. Fig. 6 is a sectional detail of one of the check valves. Fig. 7 is a plan of one of the check valves, and Fig. 8 is a detail showing the handle for removing the forcing piston and head.

Referring to the drawings by reference characters, 1 denotes the material containing cylinder which is open at its bottom and provided at its top with a cover 2 detachably secured in position by the holdfast device 3. Communicating with the top of the cylinder 1 is a discharge spout 4 to which the sausage casing is attached, and the said spout 4 is provided with a suitable cut-off 5.

Within the cylinder is arranged a reciprocating forcing piston to which is secured by the plate 7 a leather packing cup 8 which projects forwardly of the piston head 6 so that the joint between the cylinder 1 and the piston head will be had above the upper face thereof. The projecting portion of the cup 8 acts as a means to clean the inner face of the cylinder from any material adhering thereto when the piston is reciprocated in one direction, that is, during the forcing stroke of the piston. The head 6 is formed with a screw-threaded opening 9 in which can be secured the handle 10 (Fig. 8) so that, when occasion requires, the piston can be removed from the cylinder. Depending from the head 6 is a piston 11 which extends into a hollow cylindrical member 12 provided at its lower end with peripheral screw-threads 13 for engagement in a coupling piece 14 for securing the member 12 to the base 15 as well as acting

as a closure for the lower end of said hollow cylindrical member 12. The cylinder 1 is supported upon the base 15 by the uprights 16 which are fixedly secured at their lower ends to the base and at their upper ends to the cylinder.

Mounted upon the base 15 is a water reservoir 17 which is adapted to communicate with a pair of forcing pumps 18, 19 operated in alternate directions. The reservoir 17 further communicates with the interior of the hollow member 12. The pumps 18 and 19 also communicate with the hollow member 12 for supplying a motive fluid thereto thereby elevating the piston 11, the latter in turn carrying the head 6 therewith and forcing the material from the cylinder 1 through the spout 4, that is, if the cut-off 5 is open. The communication between the member 12 and the pumps 18 and 19 consists of a pipe 20 which opens at one end into said member 12 and at its other end is connected by the coupling 21 to a pipe 22, the latter being attached to a three-way coupling 23 which in turn is connected to a pipe section 24. The pipe section 24 is connected by the coupling 25 to a pipe section 26 which communicates with a check-valve casing 27, the latter being in communication, by means of the pipe section 28, with the pump 19. The check valve casing 27 is connected by a pipe section 29 to a check valve casing 30 and communication between the latter and the pump 18 is had by the pipe section 31. Communicating with the pumps 18 and 19 are respectively the pipe sections 32 and 33 which open into the check valve casings 34 and 35, respectively. The check valve casing 34 communicates with a three-way coupling 36 through the medium of the pipe section 37, and the three-way coupling 36 is connected with the check valve casing 35 by the pipe sections 38 and 39. Connected to the three-way coupling 36 is a pipe 40 which communicates with the reservoir 17. Within the check valve casings 27, 30, 34, and 35 is positioned a check valve 40 (Fig. 6), and a stop 41 consisting of a bar which extends across the casing is provided to arrest the movement of the valve 40 when shifted from off its seat 42. The valves 40 in the casings 30 and 34 operate alternately with respect to the valves in the casings 27 and 35. This is owing to the fact that when the pump 18 is forcing the pump 19 is sucking, or vice versa. The three-way coupling 23 has connected thereto one end of a pipe 42* which communicates with a cut-off 43, the latter being in communication with the reservoir 17 through the medium of the pipe section 44.

From the foregoing arrangement of piping it will be evident that, when the cut-off 43 is closed, the motive fluid will be sucked from the reservoir 17 and forced into the member 12 and consequently elevate the piston 11,

which in turn will carry the head 6 therewith and force the material from the cylinder. If it be desired to lower the piston, the cover 2 is removed, the cut-off 43 opened, and the piston will then lower by gravity and at the same time force the motive fluid out of the member 12 and into the reservoir. This will be evident owing to the fact that the check valve 40 (Fig. 6) in check valve casing 27 will be closed and the water will pass through the pipe sections 20, 22, 42*, and 44 from the member 12 into the reservoir 17. If the cut-off 43 is closed and the pump started the water will be drawn from the reservoir through pipe sections 40, 36, 37, 38, 39, 32 and 33, into the pumps and from the pumps forced through the pipe sections 31, 29, 28, 24, 22 and 20 into the member 12, thereby elevating the piston, which in turn will carry the piston head therewith.

The means for operating the pumps consists of a driven shaft 45 carrying a fixed and a loose pulley 46, 47, respectively, and provided with a gear 48 which meshes with a gear 49 carried by the pump shaft 50, the latter being suitably connected to the pumps so as to cause them to alternately operate with respect to each other. Any suitable connection for this purpose may be employed. The pulley 46 is driven by a belt 51 connected to a prime mover, not shown.

A means is provided to prevent the motive fluid from leaking past the piston, and such means consists of a double collar 52 through which the piston 11 extends, and in the channel formed by the outer and inner portions 54, 55, respectively, of the collar an expanding ring 56 is positioned for retaining the portions 54 and 55 (Fig. 5) of the collar separated. The lower ends of the portions 54, 55 of the collar are beveled, as at 57. The collar is formed of suitable flexible material, preferably leather, and is mounted within a recess 58 formed in the member 12 near the top thereof. The double collar or what may be termed packing 52 is retained in the recess 58 through the medium of a screw-threaded cap 59 which engages with the periphery of the member 12 at the top thereof and is provided with an opening through which the piston 11 passes. If the motive fluid should pass upwardly around the piston it would enter the recess, and, consequently, expand the collar 52 and cause the portion 55 of the collar to snugly fit the piston so that leakage would be prevented.

The means for automatically discontinuing the operation of the machine when the forcing piston has arrived at the limit of its stroke in one direction consists of an automatically operable belt shifting device for moving the belt 51 from off the fixed pulley 46 upon the loose pulley 47 so that the operation of the driven shaft 45 will be discontinued. The said means consists of a bracket

60 which is secured to the periphery of the cylinder 1 and at its lower end is formed with an apertured lug 61, and at its upper end is provided with a laterally extending supporting plate 62 which is apertured, as at 63. The upper face of the plate 62 is provided with a pair of vertically extending apertured protuberances 64, 65, the opening in the protuberance 64 being of less diameter than the opening in the protuberance 65. Extending through the protuberances 64, 65 is an actuating bar 66 having an enlarged portion 67 which extends through the enlarged opening in the protuberance 65. Mounted upon the bar 66 and interposed between the enlarged portion 67 and the protuberance 64 is an expansive spring 68 which when tension thereof is released is adapted to shift the bar 66 in one direction for a function to be hereinafter referred to. The bar 66 is retained in normal position so as to store tension in the spring 68 through the medium of a trigger 69 pivoted, as at 70^a to the plate 62, and extending in the path of the enlarged portion 67 of the rod 66. The lower end of the trigger 69 is pivotally connected to a vertically movable shifting bar 70 therefor. The latter extends through the lug 61 and is adapted to be engaged by a trip member 71 carried on the lower end of a hollow rod 72 projecting from the lower face of the piston 6 and traveling upon a guide 73 which consists of an upright fixed to the base 15.

Pivoted upon the plate 62, as at 74, is a belt shifter formed of a handle portion 75 and a pair of bars 76, 77, the latter being substantially L-shaped and having one portion thereof secured to the former so as to form the belt shifter with a yoke-shaped portion 78 which is adapted to straddle the belt 51. The bar 76 is adapted to be engaged by the actuating rod 66 when the spring 68 is released, which will cause the actuation of the belt shifter so that the belt will be moved from the fixed pulley 46 and upon the loose pulley 47. The movement of the arm 76 is limited in either direction through the medium of a stop 79 formed by a slotted member integral with the upper face of the plate 62 at one corner thereof. From the foregoing construction and arrangement of parts it is evident that, when the piston arrives at the limit of its stroke in one direction, the trip member 71 will engage the rod 70 and shift the trigger 69 upon its pivot so that the nose of the trigger will be moved out of the path of the enlarged portion 67 of the actuating bar 66 thereby freeing said bar to the action of the spring 68 so that the said bar 66 will be actuated and thereby move the belt shifter so as to shift the belt and discontinue the operation of the machine. The return of the belt shifter is had manually which also cocks the trigger. The belt shifter also provides a means for discontin-

uing the operation of the machine at any time when occasion so requires irrespective of its operation by the trip.

What I claim is—

1. A sausage stuffing machine comprising a cylinder adapted to contain the material, a fluid operated piston head arranged therein for forcing the material therefrom, a member arranged below the cylinder and provided with a motive fluid receiving chamber, a piston arranged within said chamber and connected to said head, a pump communicating with said chamber for supplying motive fluid thereto, operating means for the pump, a belt for transmitting motion to said operating means, a normally locked spring actuated belt shifting mechanism engaging with the belt for shifting the same out of operative engagement with the operating mechanism, a trip mechanism for releasing said shifting mechanism, and means depending from the piston head and adapted to engage said trip mechanism to actuate it, thereby releasing said belt shifting mechanism and discontinuing the operation of the piston head.

2. A sausage stuffing machine comprising a cylinder adapted to contain the material, a member arranged below the cylinder and having a motive fluid receiving chamber, a piston mounted in said chamber and operated by fluid pressure, a piston head operating in the cylinder and connected with said piston, said member at its upper end formed with a recess, an expansible means mounted in said recess and surrounding said piston for preventing the leakage of motive fluid during the operation of the piston in one direction, means for retaining said expansible means normally in an expanded position, a cap mounted upon said member for retaining said expansible means therein, a pipe communicating with said chamber at the lower end thereof, means communicating with said pipe for supplying motive fluid to said chamber, means actuated by the piston head for automatically discontinuing the operation of said supply means when the piston head reaches the limit of its stroke in one direction, means for exhausting the motive fluid in said chamber to allow said piston head and piston to return to normal position by gravity, and means for discontinuing the operation of the supply means before the piston head reaches the limit of its stroke in one direction.

3. A sausage stuffing machine comprising a cylinder adapted to contain the material, a member arranged below the cylinder and having a motive fluid receiving chamber, a motive fluid reservoir arranged in close proximity to said member, a piston mounted in said chamber and operated by fluid pressure, a piston head operating in the cylinder and connected with said piston, said member at its upper end formed with a recess, an

expansible means mounted in said recess and surrounding said piston for preventing the leakage of the motive fluid during the operation of the piston in one direction, means for
5 retaining said expansible means normally in an expanded condition, a cap mounted upon said member for retaining said expansible means therein, a cup-shaped beveled edge packing secured to said piston head and projecting from and above the upper face thereof,
10 thereby constituting means to pack the piston head and clean any matter adhering to the inner face of the cylinder during the operation of the piston head in one direction,
15 a pipe communicating with said chamber at the lower end thereof, means communicating with said reservoir and with said pipe for supplying motive fluid to said chamber, means actuated by the piston head for auto-

20 matically discontinuing the operation of said supply means and when the piston head reaches the limit of its stroke in one direction, means adapted to communicate with said pipe and with said reservoir whereby the motive fluid in said chamber can be ex-
25 hausted to allow of said piston head and piston to return to normal position by gravity, and means for discontinuing the operation of the supply means before the piston head reaches the limit of its stroke in
30 one direction.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

EDWARD J. HALLAHAN.

Witnesses:

W. L. BOGAN,
CHAS. S. HYER.