(No Model.)

H. GEYER.

HYDRAULIC SAUSAGE STUFFING MACHINE.

No. 400,323. Patented Mar. 26, 1889.

Fig. 3.

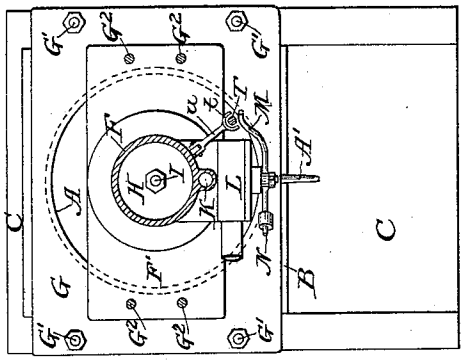


Fig. 4.

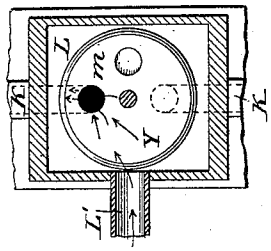


Fig. 2.

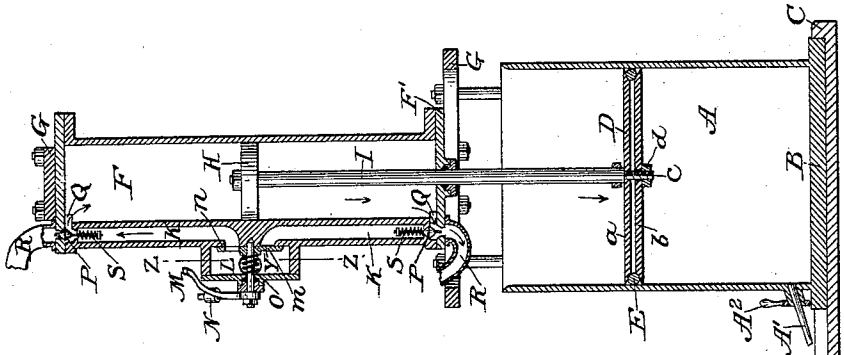
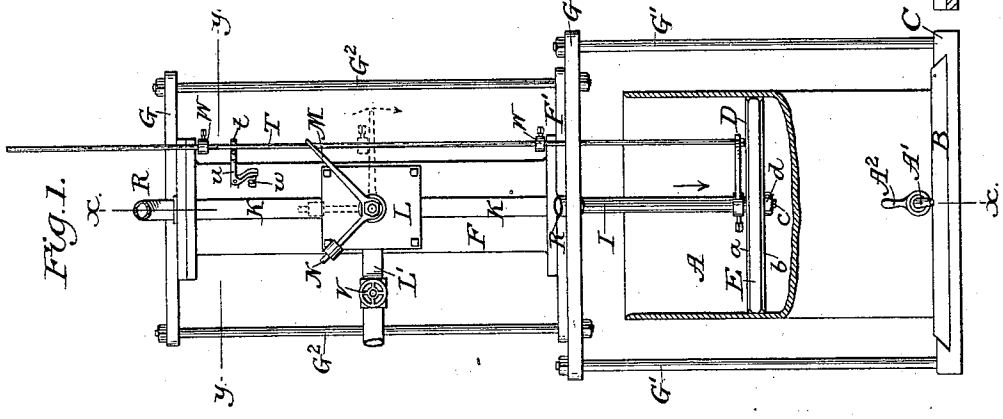


Fig. 1.



Attest:

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UNITED STATES PATENT OFFICE.

HENRY GEYER, OF BROOKLYN, NEW YORK.

HYDRAULIC SAUSAGE-STUFFING MACHINE.

SPECIFICATION forming part of Letters Patent No. 400,323, dated March 26, 1889.

Application filed December 20, 1888. Serial No. 294,139. (No model.)

To all whom it may concern:

Be it known that I, HENRY GEYER, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Apparatus for Stuffing Sausages and for Pressing Various Materials; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, making a part of this specification.

My invention relates to machines for stuffing sausages or pressing lard or fruits, &c., and has for its object to provide a simple apparatus for the purpose, which may be worked by water-pressure with rapidity and economy.

It consists in the combination in a compact form of an improved hydraulic engine with a forcing or pressing cylinder, the whole being constructed and arranged substantially as is hereinafter described and claimed.

In the accompanying drawings, Figure 1 is an elevation of my improved apparatus with the forcing or pressing cylinder partly in section; Fig. 2, a central vertical section in line *x x* of Fig. 1; Fig. 3, a transverse section in line *y y* of Fig. 1, and Fig. 4 a sectional detail of the supply-valve on an enlarged scale in line *z z* of Fig. 2.

Similar letters indicate like parts in all of the figures.

A represents the open-top forcing or pressing cylinder having a base, B, adapted to slide into a dovetailed seat or recess in the bed-plate C of the apparatus. This open cylinder A is fitted with a stuffing-nozzle, A′, governed in the usual manner by a gate or valve, A^2, and is adapted to receive a piston, D, provided with a peripheral packing-ring, E, as hereinafter described, whereby a close joint is made between the piston and the inner periphery of the cylinder under pressure.

F is a hydraulic cylinder mounted centrally over the pressing-cylinder, so that the axis of the two shall coincide. It is supported in position between two transverse plates, G G, which are mounted parallel with the base B upon vertical rods or standards G′ G′ G^2 G^2, the rods G^2 G^2 being made to pass through apertures in the projecting rim of the lower head-plate, F′, of the cylinder to confine the same, and fitted with nuts by which the plates G G are clamped together, as shown in Fig. 1. The cylinder F is fitted with a piston, H, and the two pistons D and H are joined by a connecting piston-rod, I. (See Fig. 2.) Sufficient space is allowed between the top of the pressing-cylinder A and the superimposed cross-plate G, supporting the hydraulic cylinder, to allow the piston D of the pressing-cylinder to be lifted up entirely clear of said cylinder, so as to permit of a ready removal of the latter for refilling and replacement. Said pressing-piston D is constructed of a disk, *a*, made fast to the piston-rod, and a second corresponding disk, *b*, fitted to play loosely to and from the first upon a central axial pin, *c*, forming an extension of the piston-rod, the disk being prevented from slipping off of the pin by a terminal nut, *d*. The outer rim of each plate is inwardly beveled, so that a seat is thereby formed between the two, in which is fitted a ring, E, of rubber or other elastic material. When the disk *b* is free from pressure, so as to hang loosely, as is the case when the piston moves upward, the ring E will automatically contract within its seat and not project peripherally beyond the edge of the disks, so that the piston will move upward freely without friction against the sides of the cylinder; but when the piston, moving downward, is brought into contact with the contents of the cylinder and made to bear thereon the pressure of the loose disk *b* upon the ring E, as the disk is forced upward in bearing upon said contents, will, by compressing the ring, cause it to expand and closely pack the joint between the piston and cylinder.

The piston H in the working-cylinder F is driven alternately in opposite directions by means of the pressure of a column of water admitted alternately to the opposite sides thereof through suitable inlet-pipes, K K, by the operation of a rotating valve, Y, in a suitable valve-chamber, L, connected with a water-supply pipe, L′. This valve is constructed of a rotating disk, *m*, having two ports therein at equal distances from its center and separated by an arc of about ninety degrees. The disk is mounted on a central spindle within the valve-chamber, (see Fig. 2,) to revolve over the face of a valve-seat, *n*, having corresponding ports formed therein at the same radial

distance from the center as the ports in the superimposed disk *m*, but which are formed at diametrically-opposite points, (see Fig. 4,) so that a half-turn of the disk in either direction will close one of the ports in the seat *n* and open the other, by reason of the registry therewith of the one port or the other in the disk *m*. The disk *m* is held closely upon its seat to form a water-tight joint by means of a coiled spring, *o*, encircling its spindle. The valve-spindle is made to project out through a stuffing-box in the cover of the valve-chamber L, and is fitted at its outer end with an arm or lever, M, by which it is actuated, and with a second weighted counterbalancing-arm, N, extending radially therefrom at an angle of ninety degrees with the actuating-arm M. The two arms are so adjusted with regard to the valve as that the weight of the arm M shall operate automatically to open one or other of the valve-ports.

Water is admitted under pressure to the valve-chamber L through the supply-pipe L′, which is governed by a controlling-valve, V, and flows free through the open port of the valve into the corresponding end of the working-cylinder F, so as to force the piston H therein to the opposite end.

The exhaust of the fluid in front of the piston is provided for by means of a discharge-pipe, R, fitted to each inlet-pipe K to form a connection through it with the inlet-port Q of the cylinder, so that the exhaust may take place through said port. A valve, P, is seated in the discharge-pipe beyond said port to be closed by the pressure of water thereon in the inlet-pipe. The valve is automatically drawn back from its seat to open the discharge-pipe, when it is released from the pressure of a water column in the inlet-pipe, by means of a spring, S, so that the discharge-port remains normally open whenever the water-supply is cut off by the valve Y from said inlet-pipe. The valve Y is turned automatically, so as to open the one port and close the other as the connected pistons approach the end of their stroke in either direction by means of a rod, T, made fast to the piston-rod I, to move parallel therewith outside of the hydraulic piston-cylinder, as shown in Fig. 1, and which is fitted with tripping collars or tappets W W, adjustable thereon, and adapted to engage the end of the lever-arm M of the valve, the arm being so proportioned in length and bent as to facilitate said engagement. As the pistons approach the end of their stroke, one of said collars will bear upon the end of the lever-arm M and move it until the weighted arm N is brought to a vertical position and the open port of the valve thereby closed, while the slight further movement of the pistons due to their momentum will carry the weighted arm over the center, so that it will drop automatically on the opposite side, and in so dropping will open wide the other supply-port and admit the water to the opposite end of the piston. So soon as the water is thus admitted under pressure into either induction-pipe K it will overcome the stress of the spring S, governing the valve P, at the corresponding induction-port of the cylinder and force said valve against its seat in the discharge-pipe to close it and simultaneously open a free passage for the inflowing water from the pipe K into the cylinder through the port Q. Conversely, so soon the pressure in the opposite induction-pipe is cut off the spring S, governing the valve P in that pipe, will cause the valve to lift from the exhaust-port and thereby open a free passage from the discharge of water from that end of the cylinder through the port Q. The apparatus is thus automatic in its action, and the pistons will alternately rise and fall with a power due to the pressure of the water upon the piston H, its movement being arrested at will at any point in its stroke by cutting off the water-supply by means of the controlling-valve V.

The upper end of the actuating-rod T is supported and its vibration prevented by means of an embracing-fork, *t*, upon the end of a bent lever, *u*, pivoted to the side of the cylinder, so that one arm thereof shall extend out horizontally to carry the fork into engagement with the rod, while its second arm projects downward and rests against a coiled spring, *w*. The horizontal arm is thus left free to yield downward sufficiently to allow the tappet W to pass it as it moves downward, and is also free to swing upward and clear the tappet as it moves upward, after which it will drop again, by reason of its weight, to embrace the rod below the collar.

When the piston D is lifted out of the pressing-cylinder A, the cylinder can be readily removed and replaced. The downward descent of the piston D, under the pressure of the water upon the piston H, will cause the meat in the pressing-cylinder to be expelled with a steady uniform movement through the stuffing-nozzle A′.

This apparatus is adapted for use in connection with the water-service in towns and cities, it being only necessary to connect the supply-pipe L′ with a supply-faucet and the exhaust-pipes R R with a sink by means of detachable rubber hose in order to obtain the necessary power to run it.

I claim as my invention—

1. The combination of the hydraulic cylinder, the piston working therein, the inlet-pipes communicating with either end of said cylinder, the rotating two-way valve controlling said pipes, the counterbalanced lever actuating said valve, and the spring-actuated valves governing the exhaust-port at each end of the cylinder, said valves being fitted within the inlet-pipes, each to be closed by the pressure of water admitted thereto and be automatically opened by its spring when the pressure ceases, substantially in the manner and for the purpose herein set forth.

2. The combination of the hydraulic cylinder, the piston working therein, the inlet-

pipes communicating with either end of said cylinder, the rotating two-way valve controlling said pipes, the counterbalanced lever actuating said valve, the spring-actuated valves governing the exhaust-port at each end of the cylinder and fitted within the inlet-pipes, each to be closed by the pressure of water admitted thereto and be automatically opened by its spring when the pressure ceases, the pressing-cylinder mounted beneath the hydraulic cylinder, the piston therein connected with the piston of said hydraulic cylinder, the valve-actuating rod moving in unison with the piston, the lever projecting from the spindle of the rotating inlet-valve for the hydraulic cylinder, the tappets fitted on the valve-actuating rod to engage said lever, and the counterbalancing-lever projecting radially from said valve-spindle, whereby when said lever is carried by the movement of the actuating-rod to and by its center of gravity above the valve to close one inlet-port it will automatically drop to open the other port and thereby reverse the movement of the piston, substantially in the manner and for the purpose herein set forth.

3. The combination, with the inlet pipe and port of the hydraulic piston-cylinder, as described, of a discharge-pipe connected directly with said inlet-pipe beyond said port, a valve closing said discharge-pipe and subjected to the pressure within the inlet-pipe, and a spring actuating the valve to open it automatically when it is relieved from said pressure, substantially in the manner and for the purpose herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY GEYER.

Witnesses:
A. N. JESBERA,
E. M. WATSON.