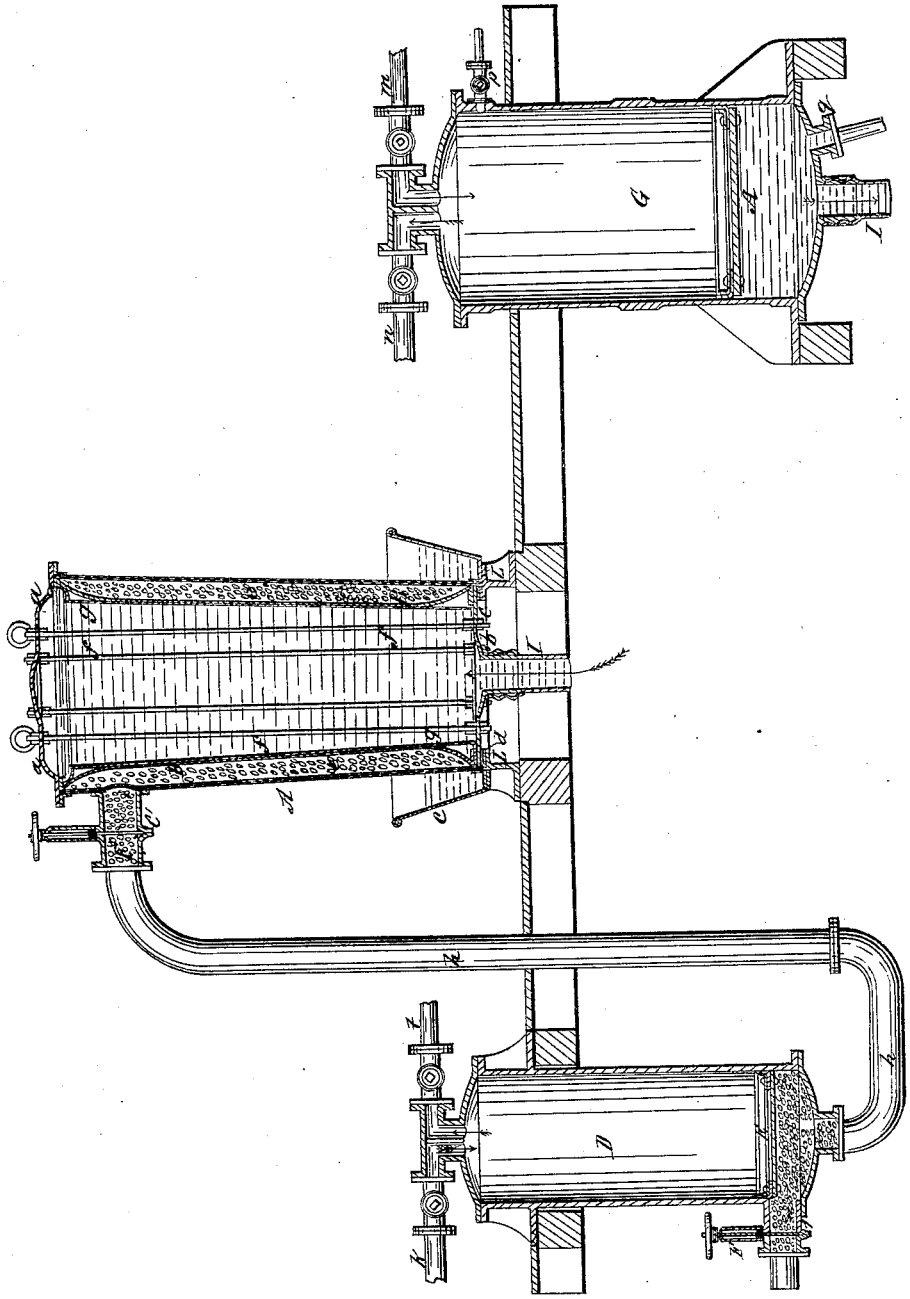
L. P. R. DE MASSY.

Sugar Filter.

No. 51,124. Patented Nov. 21, 1865.



Witnesses:

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UNITED STATES PATENT OFFICE.

L. P. R. DE MASSY, OF PARIS, FRANCE.

IMPROVED FILTERING-PRESS.

Specification forming part of Letters Patent No. **51,124**, dated November 21, 1865.

To all whom it may concern:

Be it known that I, L. P. R. DE MASSY, of Paris, in the Empire of France, have invented a Filtering-Press; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

My invention consists of certain apparatus, fully described hereinafter, for expressing juices with rapidity and efficacy from a variety of substances, the apparatus being of especial utility in the manufacture of sugar.

In order to enable others to make and use my invention, I will now proceed to describe its construction and operation.

The figure in the annexed drawing, which forms a part of this specification, represents a sectional elevation of my improved filtering-press.

A is a perforated metal casing, which I prefer to make of the tapering form represented, and which is secured at its lower end to the foundation-plate L. Round the lower part of the casing extends a reservoir or tank, C, and from the upper end projects a pipe, C′, in which slides a gate, F′.

Within the casing A is an inner casing, B, of caoutchouc or other suitable elastic impervious material, which is secured at the upper end to a circular cap, *a*, connected to the perforated casing A, and at the lower end to a plate, *c*, the latter fitting snugly into the lower end of the said casing A, where it is suitably packed. A perforated metal casing, *g*, extends from the bottom plate, *c*, to an annular plate secured to the cap *a*, the whole being held firmly together by the vertical rods *f f*, two of which have rings on the outside of the cap, so that the inner flexible casing may be readily raised from the outer casing, A.

To a tubular projection on the plate *c* is connected one end of a flexible pipe, I, the other end of which communicates with the lower end of a cylinder, G, and within the latter a piston, H, is arranged to slide freely. With the lower end of this cylinder communicates another pipe, *q*, and with the upper end a steam-pipe, *m*, and an exit pipe, *n*, both being furnished with suitable cocks.

D is a cylinder with the lower end of which communicates a pipe, *h*, the upper end of the latter being connected to the pipe C′, (previously alluded to as projecting from the casing A near the upper end of the same,) and the cylinder D being provided with a piston, E. From the side of the latter cylinder, near the lower end of the same, projects a pipe, *j*, in which is a gate, F, and with the upper end of the cylinder communicate a steam-pipe, *k*, and at outlet-pipe *t* both of which are provided with cocks.

Operation: The gate F is first opened and the gate F′ closed, and the material to be pressed and filtered is allowed to flow from an adjacent reservoir through the pipe *j* into the cylinder D, the piston E being thereby forced upward. After the cylinder D has been filled the gate F is closed, the gate F′ is opened, and steam is admitted through the pipe *k* into the cylinder above the piston, the latter being thereby depressed and the contents of the cylinder consequently forced through the tube *h* into the annular space which intervenes between the perforated casing A and the flexible casing B. While the cylinder D is being filled water is admitted through the pipe *q* into the cylinder G, the piston of which is forced upward. The gate F′ is now closed, steam is admitted into the cylinder G through the pipe *m* above the piston H, and the latter, as it descends, forces the water from the cylinder through the tube I into the interior of the casing B, which is thus forced outward in all directions toward the casing A, the material between the two casings being thereby compressed and the fluid matter in the same flowing through the perforations in the external casing into the tank C. When all the fluid matter has been thus forced and filtered through the casing A the water in the casing B is withdrawn by permitting the steam in the cylinder G to escape through the pipe *n*, and the flexible casing is raised from the casing A, so that the residue can be removed.

When it is desirable a layer of filtering material may be placed within the casing A and adjusted against the inside of the same.

The apparatus illustrated and described is especially adapted for extracting the juices, and other similar operations connected with the manufacture of sugar. It can, however, be used to advantage in other manufactures.

The inner perforated casing, *g*, serves as a

backing for the flexible casing and maintains the same within proper limits when the material to be operated on is forced into the annular space between the outer casing and flexible casing.

It will be evident that compressed air or gases under pressure may be used in place of steam for forcing the pistons downward, and other fluids may be used in place of water for acting against the flexible casing.

Although I prefer the use of the two cylinders D and G in the manner described, the material to be pressed and filtered may be introduced to the space between the two casings by other appliances.

It will also be apparent that the apparatus may be modified as regards form and construction without departing from the main features of my invention.

I claim and desire to secure by Letters Patent—

1. The combination of a perforated casing, A, and flexible casing B, when used for the compression and filtration of substances contained in the space between the two casings by the application of fluids under pressure to the flexible casing, substantially as described.

2. In combination with the above, the cylinder D, its piston E, and the inlet and outlet pipes, with their cocks and gate or the equivalent to the same.

3. The combination of the cylinder G, its piston H, and inlet and outlet pipes, and the cocks or their equivalents with the outer perforated casing, A, and inner flexible casing, B.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

L. P. R. DE MASSY.

Witnesses:
E. RICHARD,
E. SHERMAN GOULD.