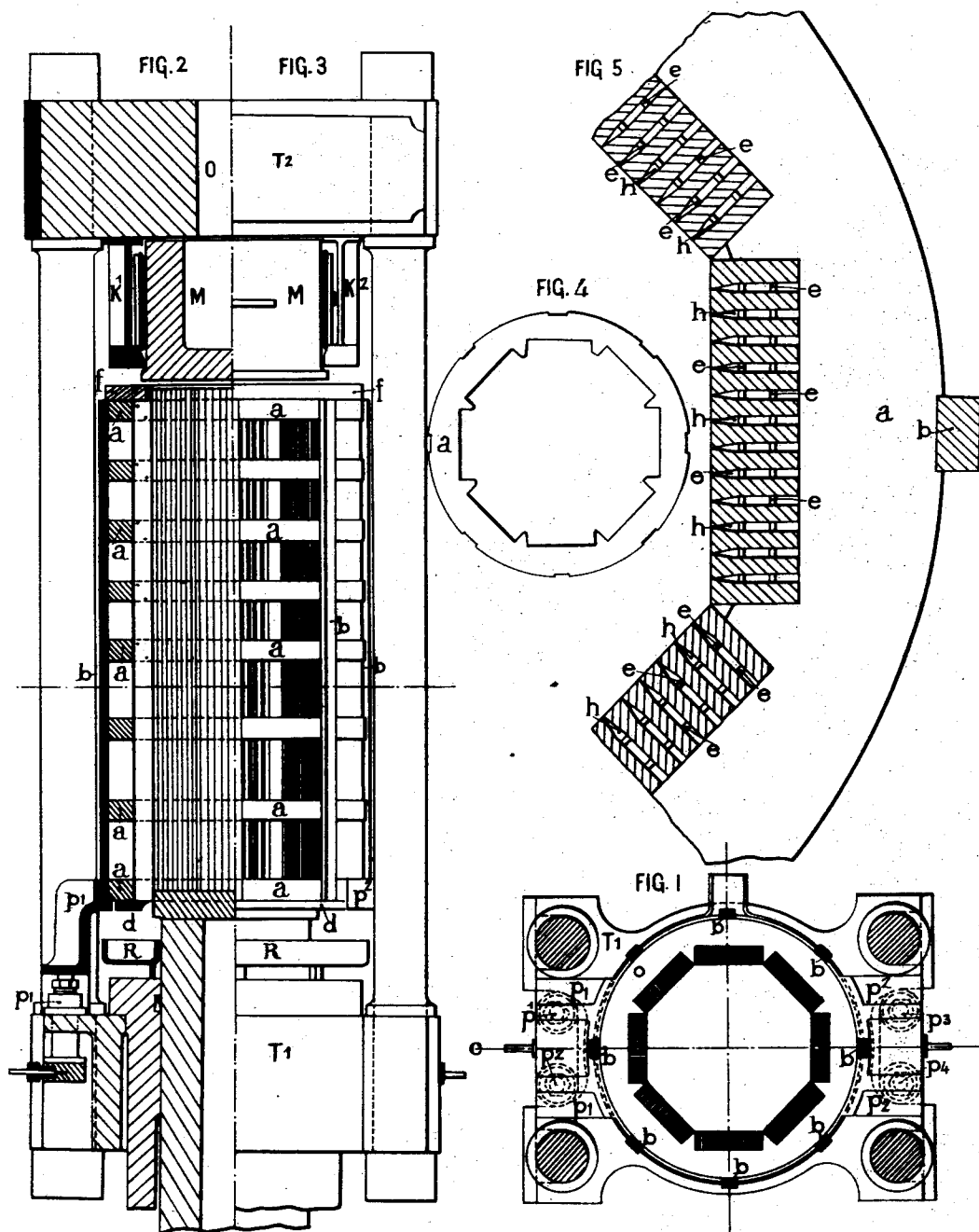


(No Model.)

J. E. DELARUE.
PRESS.

No. 525,647.

Patented Sept. 4, 1894.



Witnesses
G. W. Rea,
Thos. A. Green

Inventor:
Joseph E. Delarue
By James L. Norrie
Attay

UNITED STATES PATENT OFFICE.

JOSEPH E. DELARUE, OF MARSEILLES, FRANCE, ASSIGNOR TO CHARLES GOUNELLE, OF SAME PLACE.

PRESS.

SPECIFICATION forming part of Letters Patent No. 525,647, dated September 4, 1894.

Application filed March 8, 1894. Serial No. 502,867. (No model.) Patented in France November 18, 1892, No. 225,747.

To all whom it may concern:

Be it known that I, JOSEPH E. DELARUE, a citizen of France, and a resident of Marseilles, in the Department of the Bouches-du-Rhône, France, have invented a new and useful Improvement in Oil-Presses, (for which I have obtained a patent in France, No. 225,747, dated November 18, 1892,) of which the following is a specification.

This invention relates to a novel construction of press for pressing oleagenous and other materials in a foraminous case or cage and it has for its object rendering the apparatus highly efficient in its general action and facilitating the operation of clearing out the openings between the bars forming the sides of the case or cage and enabling this operation to be performed without taking the bars apart. With this object the case or cage is made open or uninclosed so as to render the bars visible and accessible from without as hereinafter described.

In order that the said invention may be fully understood I shall now proceed more particularly to describe the same and for that purpose shall refer to the several figures on the annexed sheet of drawings the same letters of reference indicating corresponding parts in all the figures.

Figure 1 of the drawings represents a horizontal section of the press taken along the line A B of Figs. 2 and 3. Fig. 2 is a half vertical section of the same taken along the line C D of Fig. 1 and Fig. 3 is a half side elevation of the apparatus. Fig. 4 is a plan of one of the metal rings or hoops of which the cage is composed and Fig. 5 is a part transverse section of the filtering surface drawn to a larger scale.

A press constructed according to this invention is composed of two heads or end plates T' T² connected together by vertical pillars or columns (Figs. 1, 2 and 3) the heads being made of such a thickness as to provide a sufficiently long bearing for the ends of the columns in order to give the structure the necessary rigidity and maintain the center or axial line always in a truly vertical position when the press is placed in position for working. The lower head T' may be cast in one with the hydraulic cylinder but it is prefer-

ably made separate being recessed for the reception of the end of the said cylinder the axis of which corresponds with the center line of the structure formed by the two heads and the columns.

The lengths of the press cylinder or cage and of the compressing piston which it contains are so regulated that when the piston is at the bottom of its stroke the press plate which it carries projects a few centimeters into the cage (the said cage being then in its lowest position and resting with its two legs upon the lower press head T') and that when the piston is at the top of its stroke the pressing plate has ascended to the top of the cage, the said cage being then in its highest position as hereinafter explained.

The upper head T² may be solid but it is preferable to provide it with a central opening O through which the materials can be introduced into the cage.

The internal form of the cage may be of any suitable shape being preferably in the form of a regular octagon (Fig. 1). The cage is constructed with a number of metal rings or hoops *a* provided internally and externally with projections and recesses (Fig. 4). The number of these rings and the distance between them are regulated according to the nature of the materials to be pressed and the degree of pressure to be obtained. It is evident that by suitably regulating the dimensions and number of the rings the cage may be enabled to resist any required pressure. These rings *a* are connected together at the required distance apart by means of vertical bars *b* engaging with the recesses on the exterior of the rings this combination of rings *a* and bars *b* forming the skeleton of the cage. The interior of the said cage constituting the filtering surface is formed by a series of vertical bars of peculiar form in transverse section (Figs. 1 and 5) the sides being parallel for say about two thirds of the width from the outer edges after which they gradually increase in thickness toward the inner edges so that when placed together side by side they form a species of grating the spaces between the bars being wider at the outer side than at the inner side.

The outer or parallel parts of the bars are

maintained at the required distance apart by suitable studs, blocks or filling pieces *e* (Figs. 2 and 5) preferably in the form of pins riveted in the bars arranged in pairs in a vertical direction the pin nearest to the ring or hook being placed higher than the pin nearest to the interior of the cage (Fig. 2). These distance pieces are placed on a level with the hoops or rings and this arrangement renders it possible to ascertain whether the interstices between the bars are clear even when the press is at work and enabling the said interstices to be cleared out if required without stopping the working of the press.

The bars being arranged vertically in the cage are retained in position by the projections on the interior of the rings and are supported at their lower ends upon a metal plate *d* attached to the bottom ring, being supported at their upper extremity by another plate attached to the upper ring.

The cage is supported upon legs *p'* *p*² resting upon hydraulic pistons in the lower head of the press *T'* and is guided in such a manner that its vertical axis coincides with the main axis or center line of the apparatus by suitable guides attached to the rings of the cage and bearing against the vertical columns on which they slide. These guides are not shown in the drawings.

Below the cage there is provided a receptacle or annular trough *R* for the reception of the liquid exuding at *h* between the bars and the upper head *T*² of the press is provided with rails *K'* *K*² on which the block *M* for closing the upper end of the press travels in a horizontal direction the said rails also acting as stops for limiting the ascent of the cage as will be hereinafter explained.

Between the upper head *T*² and the block *M* which is supported on four wheels, a space of a few millimeters is allowed and between the under side of the block *M* and the cage is a clear space of one to two centimeters, so that when the cage is at the lowest point of its stroke and resting upon the legs on the head *T'* the said block *M* can be easily moved along its rails *K'* *K*² to allow the cage to be completely uncovered. Each leg supporting the cage rests upon two small hydraulic pistons or plungers *P'* *P*² under the leg *p'* and *P*³ *P*⁴ under the leg *p*² and the pipes through which water is supplied to the space below these pistons are connected together in such a manner that one valve controls the supply to all four pistons. These four pistons or plungers being of exactly similar diameters will give an even thrust parallel to the axis of the cage and will insure a vertical lift if the pressure of the water in each is alike. In place of two small pistons under each leg one large piston may be employed but it is preferable to employ two pistons of equal size under each leg.

The cage being in its lowest position and the closing block *M* drawn to one side so as

to clear the charging opening, water under pressure is introduced under the piston of the press and the pressing plate is forced up to a short distance below the upper opening of the cage. The supply of water under pressure to the cylinder of the press is then cut off and the discharge opened so that the piston and the press plate commence a descending movement. The materials to be pressed are now introduced into the cage either in a continuous manner or in successive charges separated by metallic plates or filtering cloths or both (or preferably by the woven wire cloths hereinafter described) according to the nature of the materials to be pressed, this operation being continued until the pressing piston being at the lower extremity of its stroke the cage is completely filled at the same time leaving sufficient room for the introduction of a plate fitting into the upper end of the cage. The closing block *M* is then placed over the cage and water under pressure is admitted to the pistons *P'* *P*² *P*³ *P*⁴ under the legs so as to raise the cage and close the intervals above and below the closing block, after which pressure is applied to the press piston which ascends and compresses the contents of the cage to the required extent. When the pressing operation is completed the valve is opened so as to allow the main piston to descend for a certain distance after which the valve is closed in order to retain the piston in this position. The discharge valve of the four small pistons *P'* *P*² *P*³ *P*⁴ supporting the cage is then opened and the cage is lowered so as to enable the closing block to be drawn away and uncover the opening of the cage. Water under pressure is then again introduced under the pistons *P'* to *P*⁴ supporting the cage which is thereby forced up and bears against the stops *K'* *K*² hereinbefore described. Water under pressure is then again admitted to the main cylinder of the press and the cage being now open at the top the pressed materials are forced out and can be removed. When the pressing piston has reached the upper end of the cage the latter is completely empty and the discharge valve is then opened in order to allow the piston to descend.

The four pistons or plungers supporting the cage are then allowed to descend and the cage resting upon the lower head *T'* of the press the charging operation may be proceeded with as hereinbefore described.

The filtering cloths or plates inserted between the successive charges in the press preferably consist of partitions which provide a free passage for the liquid exuding from the materials and enable the said liquid to flow readily to the discharge openings or interstices provided between the bars of the cage. With this object these plates or partitions are composed of two or more thicknesses of woven wire cut to correspond with the internal form of the cage and arranged

with the wires crossing one another. These woven wire fabrics or cloths are connected together by rivets or otherwise and form a metallic plate or partition presenting numerous hollow spaces or interstices which are not closed by the action of the pressure in the press and through which the liquid is enabled to flow toward the bars at the circumference of the cage thus greatly facilitating the pressing operation and enabling the liquid to be more completely extracted than is possible with the hair or woolen cloths heretofore employed. A single thickness of metallic cloth may be employed by employing wires of sufficient thickness and sufficiently closely woven but it is preferable to employ a number of cloths with finer and more loosely woven wire connected together as hereinbefore described.

I claim—

1. In an oil or other like press, a cage composed of a number of rings or hoops *a* each of which is provided internally and externally with a series of projections and recesses, the vertical rods or bars *b* engaged in the external recesses of said hoops and supporting them at suitable distances apart, a series of vertical filter bars engaged between the internal projections of the spaced apart rings or hoops, the said filter-bars being provided at their outer edges and for about two-thirds their width with parallel sides and then gradually increased in thickness toward their inner edges, and the studs *e* to space apart said

bars so as to provide filtering passages, substantially as described.

2. In an oil or filter press, the combination of the heads *T'*, *T*², a cage composed of the rings *a* and supporting bars *b*, a series of vertical filter bars supported in the said rings and spaced apart by means of studs *e* so as to provide filtering passages, the movable blocks *M* located in upper part of the press, the guide-rails *K'*, *K*² adapted to support said blocks and serve as stops to limit the ascent of the cage, a plunger for lifting the cage and pressing the inclosed material, and the annular trough *R* located below the filter bars of the cage, substantially as described.

3. In an oil or filter press, the combination with the heads *T'*, *T*² and pistons or plungers in the lower head, of an open cage having legs resting on said pistons or plungers, vertical filter bars supported in the cage and spaced apart by studs *e* to provide filtering passages, an annular trough located below the filter bars, the movable blocks *M* in the upper part of the press, above the cage, and the guide-rails *K'*, *K*² adapted to support said blocks and serve as stops to limit the ascent of the cage, substantially as described.

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

J. E. DELARUE.

Witnesses:

P. BROIFAY,
A. ARMUND.