A. W. FRENCH.

EXPRESSING PRESS.

APPLICATION FILED APR. 12, 1919.

1,387,700.

Patented Aug. 16, 1921.

2 SHEETS—SHEET 1.

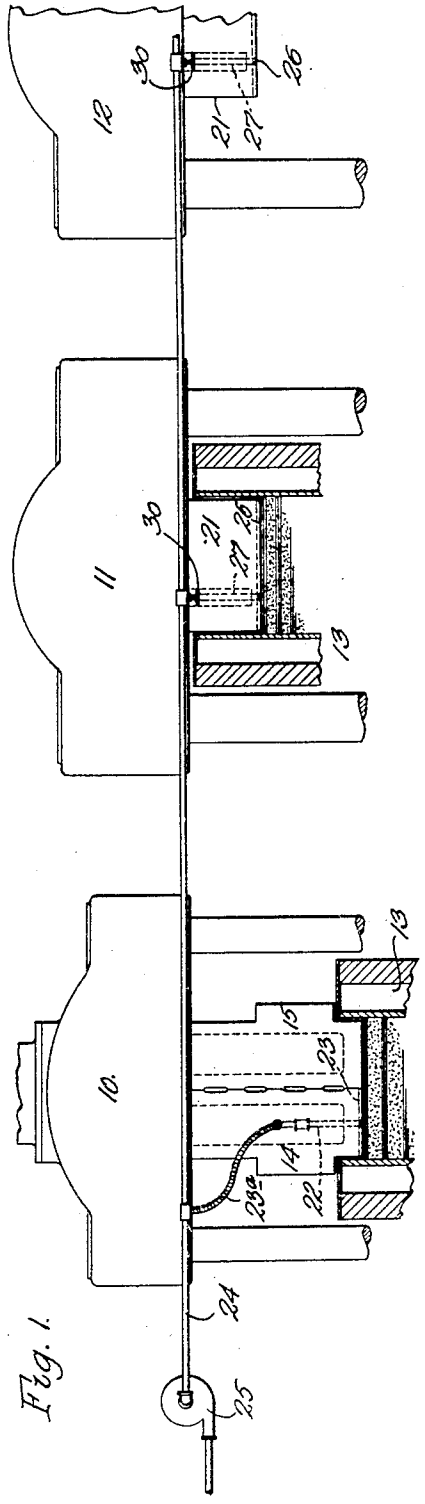


Fig. 1.

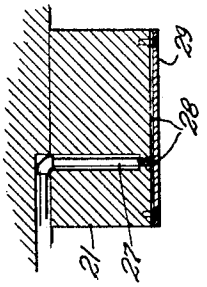


Fig. 4.

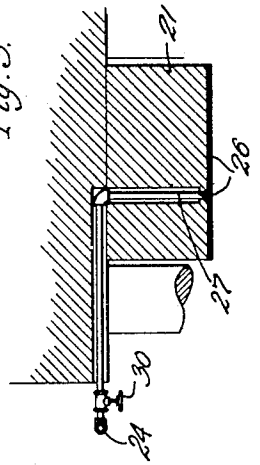


Fig. 3.

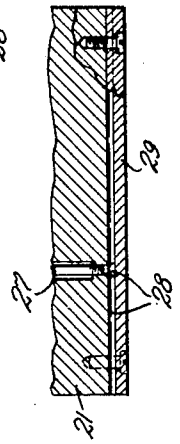


Fig. 5.

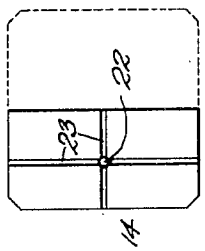


Fig. 2.

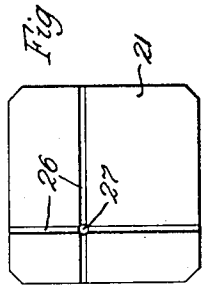


Fig. 6.

INVENTOR.

Alfred W. French.

By Wilhelm & Parker.

ATTORNEYS.

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2 SHEETS—SHEET 2.

Fig. 7.

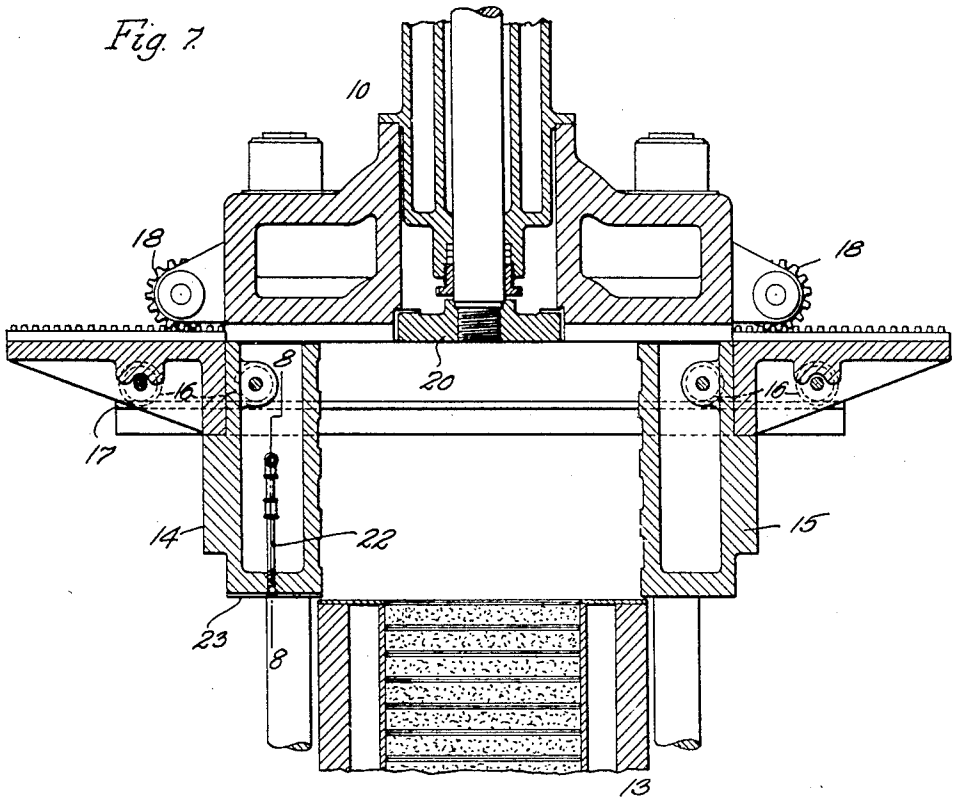
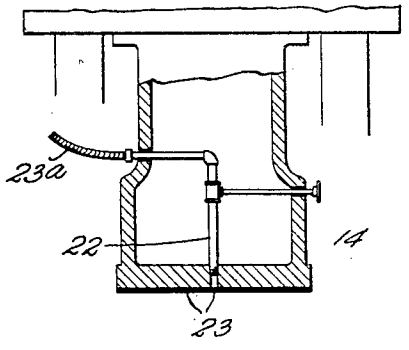


Fig. 8.



INVENTOR.

Alfred W. French,

By Wilhelm Parker.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

ALFRED W. FRENCH, OF PIQUA, OHIO.

EXPRESSING-PRESS.

1,387,700. Specification of Letters Patent. Patented Aug. 16, 1921.

Application filed April 12, 1919. Serial No. 289,689.

To all whom it may concern:

Be it known that I, ALFRED W. FRENCH, a citizen of the United States, residing at Piqua, in the county of Miami and State of Ohio, have invented a new and useful Improvement in Expressing-Presses, of which the following is a specification.

This invention relates more particularly to improvements in oil expressing presses of the type known as "cage presses" in which superimposed charges of meal or material separated by press plates and cloths are subjected to pressure between opposing rams or pressure devices in an open-ended press cage which has orifices in its side walls for the escape of the expressed oil. In some presses of this type the upper ram, head block or pressure device is caused to enter the upper end of the cage during the pressing operation, whether by reason of the ascent of the cage relative to the pressure device or by the descent of the latter into the cage, thus depressing the material in the cage and forming a space in the upper end of the cage which is not occupied by the material. It has been found in practice that more or less oil collects in this space and overflows the top of the cage, or when the pressure is relieved or the pressure device is withdrawn preparatory to discharging the pressed cakes from the cage, this oil soaks back into the material in the upper portion of the cage. This is objectionable, both because the cake is left soft and unfit for use and because there is a loss of oil unless the soft cake is again pressed to recover this oil.

The object of this invention is to provide efficient means of simple and practical construction for removing or carrying off this oil from the upper end of the press cage and preventing it from flowing over the top of the cage or soaking back into the meal or material when the pressure is relieved.

The invention is applicable to cage presses of various types of construction or intended for different purposes, such for instance as filling presses which are used for filling the press cages with the charges of material, and finishing or expressing presses in which the material is subjected to pressure for extracting the oil. Such filling and finishing presses are sometimes used in combination, the filled cages from the filling press being transferred to the finishing presses for the final pressure on the material. The invention is herein shown in connection with both kinds of presses.

In the accompanying drawings:

Figure 1 is a side elevation partly in section, showing the upper portions of a filling press and two finishing presses provided with oil removing means embodying the invention.

Fig. 2 is a bottom face view of one of the halves of the upper head block or pressure device.

Fig. 3 is a sectional elevation of the head block or upper pressure device of one of the finishing presses.

Fig. 4 is a similar view of a modified form of pressure block for a finishing press.

Fig. 5 is a fragmentary section, on an enlarged scale, of the head block shown in Fig. 4.

Fig. 6 is a bottom plan view of the head block shown in Fig. 3.

Fig. 7 is an enlarged sectional elevation of the upper portion of a filling press showing the two parts of the head block or upper pressure device separated for the introduction of the charges into the press cage.

Fig. 8 is a section on line 8—8, Fig. 7, of one of the head block sections.

10, 11 and 12, Fig. 1, represent respectively a filling press and two finishing or expressing presses, and 13 represents the open-ended press cages in the filling and finishing presses 10 and 11 respectively. These presses may be of any usual or suitable construction, the filling press 10, shown in Fig. 1, being for the purpose of filling the cages, each of which, after being filled with the charges of material in the filling press, is removed to one of the finishing presses for subjecting the material to the final pressure. The cages, as usual, are open at their upper and lower ends and have upright side walls with suitable orifices or openings for the escape of the oil from the material.

In the filling press shown in the drawings, the head block or upper pressure device consists of two halves or sections 14 and 15 which are movable horizontally toward and from each other. When these sections are in contact with each other, as shown in Fig. 1, they register with and are adapted to enter the upper end of the press cage. By separating the head block sections as shown in Fig. 7, an open space is provided between

them above the press cage into which a charging or filling device (not shown) is adapted to enter for depositing the successive charges of material into the press cage. The construction of the filling press forms no part of this invention and only enough of the upper portion of this press is illustrated in the drawings to give an understanding of its use. The two sections 14 and 15 of the head block are supported by wheels 16 adapted to travel on horizontal tracks 17 and the sections are moved in and out by pinions 18 engaging toothed racks secured to the head block sections. 20 indicates a plunger or ram at the upper end of the press adapted, when the head block sections are separated, to be moved down into the press cage for shoving or packing the charges therein.

In each of the finishing presses shown, the head block or upper pressure device consists of a block 21 stationarily secured on the press head in line with the press cage so as to enter the same for pressing the material. In both the filling and finishing presses shown, the head block or upper pressure device is caused to enter more or less the upper end of the press cage by the upward movement of the press cage caused by the ascent of the lower ram of the press during the usual operation of the press. This presses the material down in the cage and forms a space in the upper end of the cage, unoccupied by the material, in which oil expressed from the material can collect.

For removing such oil, the head block or upper pressure device for each press is preferably provided in its lower portion with an oil escape duct or passage which connects in any suitable way with the space in the upper end of the press cage and is connected with a pump or device for drawing off the oil from this space. In the filling press shown, a pipe 22 in one section of the head block connects at its lower end with cross grooves 23 in the bottom face of said head block section, and connects at its upper end by a flexible pipe 23^a with a main suction pipe 24 leading to a suitable pump or suction device 25. The flexible pipe 23^a permits the above described movement of the head block. Any other suitable kind of connection permitting the movement of the head block could be employed. The head block or pressure device 21 of the finishing press, as shown in Fig. 1, is similarly provided in its bottom face with cross grooves 26 connecting with a pipe 27 which extends up through the head block and is connected to the main suction pipe 24. Since this head block is stationary, the flexible or movable connection between the head block pipe and the main suction pipe is unnecessary and the pipe 27 is connected directly to the suction pipe. The suction pipe or passage of the head block or pressure device, whether in a filling press or finishing press, can be connected with escape grooves or passages formed or arranged in the head block in any suitable way adapted to form passages for the oil from the space in the upper part of the press cage to the suction pipe or passage connecting with the head. For instance, as shown in Figs. 4 and 5, the cross grooves or passages 28 leading from the suction pipe to the side edges of the press block or pressure device, are formed in the lower portion of the block or pressure device, preferably between the lower end thereof and a bottom plate 29 which is fixed by screws or otherwise on the end of the head block or pressure device. The particular arrangement, formation or disposition of the grooves or passages in the head block or pressure device and the suction pipe may be greatly varied, the purpose being to connect a suction pipe or passage to the surface or edge portions of the head block or part at the upper end of the cage in any way suitable for withdrawing the oil to the best advantage from the space in the upper end of the press cage. The pump 25 can deliver the oil to any desired point.

In the use of the apparatus, the pump is set in operation when the pressure is on the material in the press or presses, and withdraws the oil from the spaces in the upper ends of the cages, thus preventing the oil from accumulating in these spaces and overflowing or soaking into the material again when the pressure is removed.

Where more than one press is connected to a common suction device, as shown in Fig. 1, a suitable valve 30 is provided in the branch pipe or passage for each press so that the valve for any press which is not in operation can be closed to prevent the entrance of air which would destroy the suction.

I claim as my invention:

1. In a press, the combination of a cage in which the material is confined, a pressure device at one end of the cage provided with an oil escape passage communicating with the adjacent portion of the cage, and suction means connected with said escape passage for withdrawing oil from the portion of the cage adjacent said pressure device.

2. In a press, the combination with a cage in which the material is confined, and a pressure device adapted to enter the upper end of the cage, of suction means including a passage above the material confining portion of said cage communicating with said upper portion of the cage for withdrawing oil therefrom.

3. In a press, the combination with a cage in which the material is confined, and a pressure device adapted to enter the upper end of the cage, thereby forming a space in the upper end of the cage unoccupied by

material, of suction means in communication with said pressure device and connecting with said space for withdrawing oil therefrom.

4. In a press, the combination of a cage in which the material is confined, and a pressure device adapted to enter the upper end of the cage, thereby forming a space in the upper end of the cage unoccupied by material, the portion of said pressure device which enters the cage having an oil escape passage connecting with said space, and suction means connecting with said passage for withdrawing oil from said space.

5. In a press, the combination of a cage in which the material is confined, and a pressure device adapted to enter the upper end of the cage and having an oil escape passage in its lower portion extending to the side edge thereof, and suction means connecting with said passage for withdrawing oil from the upper portion of the cage.

6. In a press, the combination with a cage in which the material is subjected to pressure, of an escape passage for oil from the upper portion of the cage exteriorly of material confined in the cage, and a device connected with said passage for withdrawing oil from the upper portion of the cage.

7. In a press, the combination of a cage in which the material is confined, and a pressure device adapted to enter the upper end of the cage and having an oil passage therethrough, of oil receiving grooves in the lower face of said pressure device and in communication with said oil passage, and suction means connecting with said passage for withdrawing oil from the upper portion of said cage.

8. In a press, the combination of a cage in which the material is confined, and a pressure device movable to enter the upper end of the cage to compress material in the cage, of an oil escape duct movable with said pressure device for withdrawing oil from the upper portion of said cage.

Witness my hand, this 5 day of April, 1919.

ALFRED W. FRENCH.

Witnesses:

MARGIE WHITLOCK,

R. M. DONOVAN.