

A. W. FRENCH.
 EXPRESSING PRESS.
 APPLICATION FILED APR. 22, 1909.

942,442.

Patented Dec. 7, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

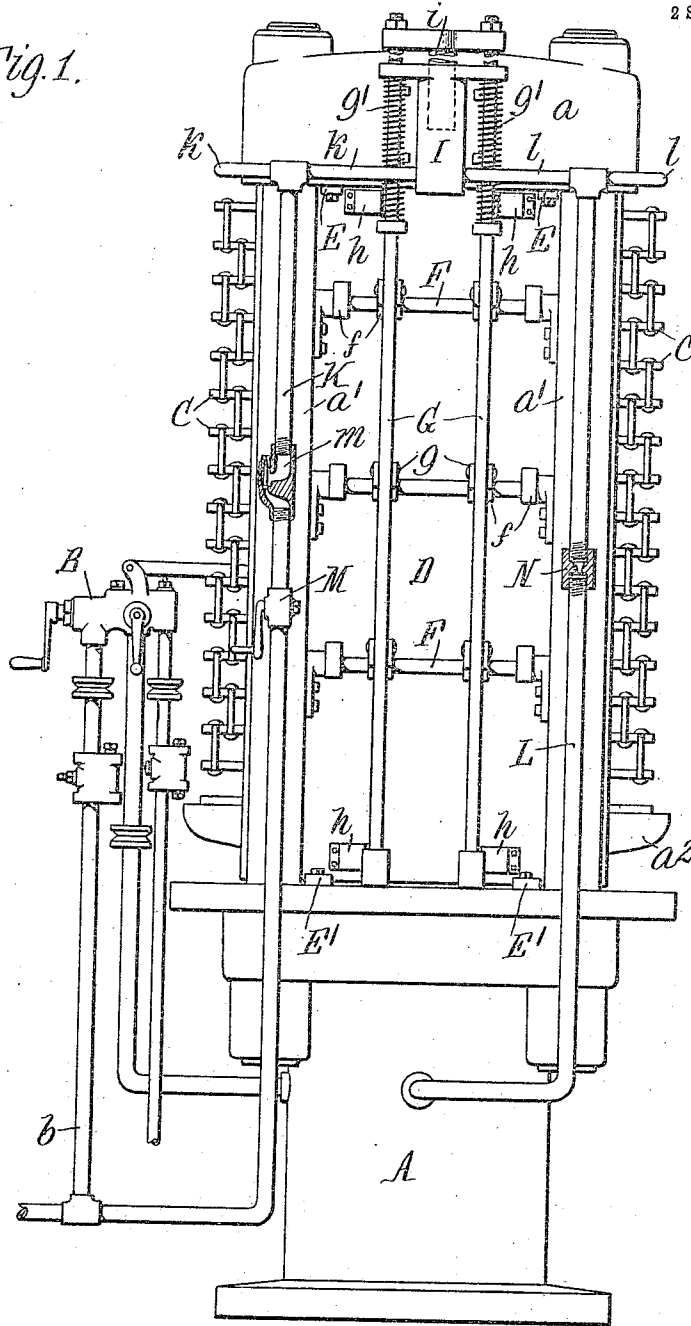
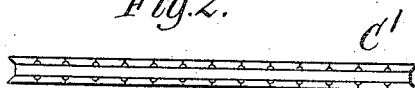


Fig. 2.



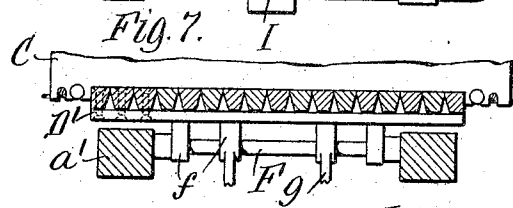
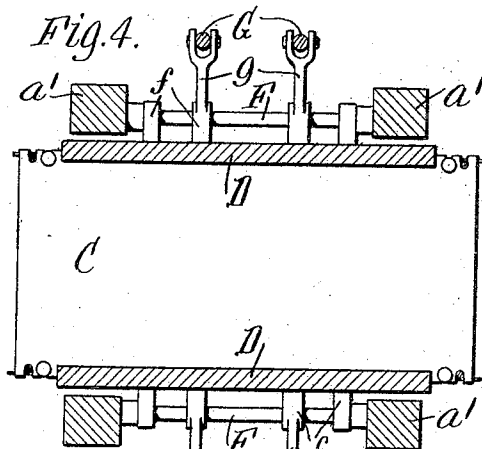
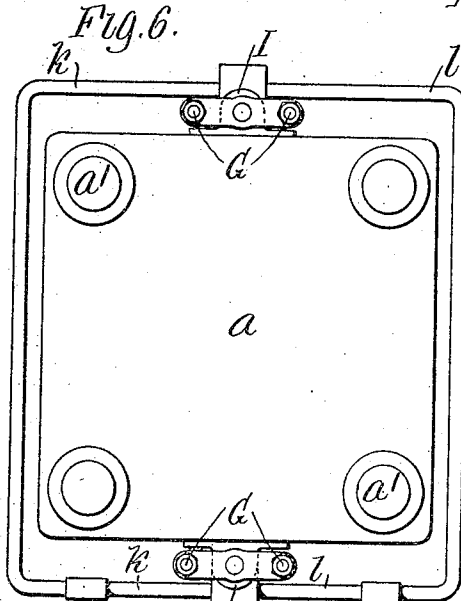
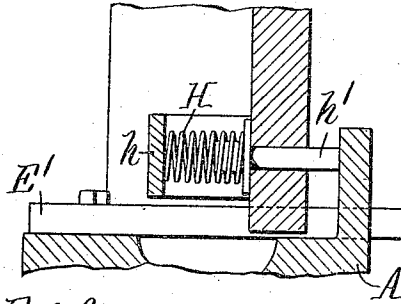
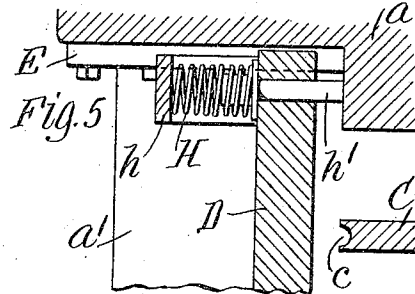
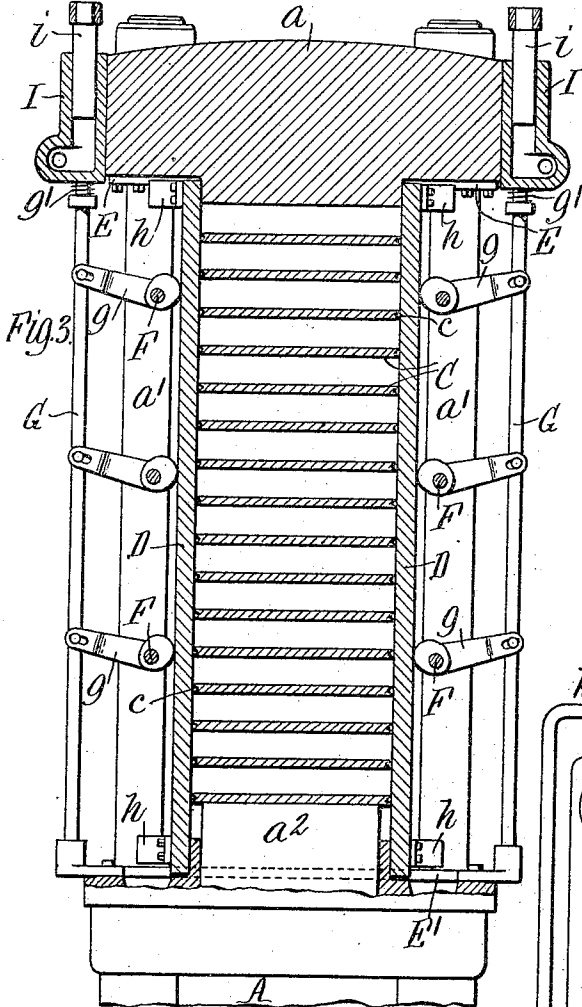
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

ALFRED W. FRENCH, OF PIQUA, OHIO.

EXPRESSING-PRESS.

942,442.

Specification of Letters Patent.

Patented Dec. 7, 1909.

Application filed April 22, 1909. Serial No. 491,454.

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 to improvements in oil expressing presses, and while the improvements are more especially intended for use in cotton seed oil presses, they are not necessarily restricted in application to presses for this purpose. As commonly constructed these presses are provided with parallel movable press plates or boxes having overlapping portions at opposite sides thereof which form side walls for confining the meal in the spaces between the plates. These boxes are of more or less expensive construction, and are bulky, occupying much space in the press, and consequently the possible number of boxes in a press is restricted.

The object of this invention is to produce a press of improved construction providing side walls for the meal spaces which permit the use of press plates of a less bulky and expensive construction, so that a greater number of plates can be used in a press, thus increasing the capacity of the press, while, at the same time, the cost of the press is reduced. This is accomplished by employing plain or flat press plates and providing movable vertical side walls at opposite sides of the press plate, and operating means for moving the side walls inwardly against the opposite edges of the press plates to prevent the escape of the meal laterally from between the press plates when the meal is subjected to pressure, and for spreading the side walls to release the press plates and allow them to descend when the press ram is lowered. The side walls are preferably operated by fluid pressure mechanism in such manner that the pressure with which they are forced against the press plates will be light at first so as not to offer unnecessary resistance to the movement of the press plates in taking up the slack and during the first portion of the expressing operation, while the pressure will increase sufficiently to hold the side walls against the press plates in opposition to the outward pressure of the meal thereon when the meal is subjected to the maximum pressure.

In the accompanying drawings, consisting

of two sheets: Figure 1 is a side elevation, partly in section, of a press embodying the invention. Fig. 2 is a section of one form of the press plates. Fig. 3 is a fragmentary sectional elevation of the press, the press cylinder being shown in elevation. Fig. 4 is a sectional plan view thereof. Fig. 5 is a fragmentary broken sectional elevation thereof, on an enlarged scale, showing one of the side walls and its release springs. Fig. 6 is a plan view of the press. Fig. 7 is a sectional plan view of the side wall of modified construction.

Like letters of reference refer to like parts in the several figures.

A represents the cylinder, *a* the press head, or head block, *a'* the corner posts or columns connecting the cylinder and head block, and *a''* the ram or piston of an oil expressing press. B represents the operating valves for the press and *b* the low pressure oil supply pipe leading from the source of supply to the press valves. These parts are of ordinary construction.

C represents the horizontal spaced press plates between which the cakes of meal are placed. The press plates are arranged between the ram and press head and are suspended one from the other so as to be movable vertically to compress the meal in a well known manner. The press plates can be flat solid plates of metal, as shown in Figs. 3 and 5, or they can be of other construction. For example, each press plate can consist of three plates or thicknesses of metal, as shown at *C'* in Fig. 2, the outer plates having perforations connecting with grooves between the plates for the escape of the oil. The press plates are preferably provided with grooves *c* in their opposite edges, the purpose of which will be explained later.

D D represent the vertical side walls which are arranged at the opposite sides of the press plates and the press ram, and are movable horizontally toward and from the press plates. The side walls can be solid flat-sided metal plates, as shown in Figs. 3 and 5, or, if preferred, they can be composed of metal strips arranged vertically edge to edge and connected by cross bars, as shown at *D'*, Fig. 7. This latter construction provides cracks through which the oil can escape. The cracks preferably increase in width outwardly to prevent the meal from lodging and filling them. The side walls

are guided in their horizontal movements by suitable means, for instance, by horizontal guide bars E and E' on the press head and cylinder entering notches in the upper and lower edges of the side walls. Different mechanism can be employed for moving the side walls toward and away from the press plates. The mechanism shown for this purpose is constructed as follows: F represents horizontal cam shafts which are journaled outside of the side walls D D in suitable bearings on the press columns and are provided with cams or eccentrics *f* which bear against the side walls so that the side walls can be forced inwardly against the edges of the press plates by rocking the cams. Upright operating rods G, which are movable vertically in suitable guide bearings on the press, are connected to arms *g* on the cam shafts for rocking the several cams in unison. Springs *g'* surrounding the operating rods G between collars thereon and the upper bearings for the rods, serve to return the rods and cams to the normal position, thus leaving the side walls free to be spread or moved away from the press plates by suitable releasing devices. The releasing devices shown consist of springs H, Fig. 5, arranged in yokes *h* secured to the side walls near the upper and lower ends thereof and bearing against plungers *h'* which pass through holes in the side walls and bear at their inner ends against the press head and cylinder. When the cams are rocked to release the side walls these springs act to move the side walls out of contact with the press plates.

I I represent cylinders, mounted on the press head at opposite sides thereof, in which are pistons *i* each connected to the upper ends of the operating rods G at the adjacent side of the press and adapted to be lifted by fluid pressure admitted to the cylinders for rocking the cams to force the side walls D D inwardly against the press plates. The cylinders I I are connected by branch pipes *k* to a pipe K which connects with the low pressure oil supply pipe *b* for the press, and by branch pipes *l* with another pipe L which connects with the press cylinder. The pipe K is furnished with a hand-operated controlling valve M and a check valve *m* of any suitable construction, and the other pipe L is provided with a choker N of any suitable construction.

The operation of the press is as follows: Before filling the press the valve M is opened to admit the low pressure oil to the cam operating cylinders I, which lifts the pistons *i* and through the described connections rocks the cams and forces the side walls inwardly against the press plates. The choker N allows a little of the oil to pass to the press cylinder A, but not enough to materially reduce the pressure in the cam

operating cylinders I. The press is then filled and the press valve B is opened to admit oil to the press cylinder to send the press ram up. When the high pressure oil is admitted to the press cylinder and the pressure therein increases sufficiently, the flow is reversed through the choker N and the pressure in the cam operating cylinders rises, the check valve *m* preventing back flow through the pipe K. Thus when the press starts up, the side walls are held against the press plates with only a light pressure, but the pressure increases with the increase of pressure on the meal, so that while the pressure of the side walls on the press plates is not excessive when not necessary at the commencement of the expressing operation, the side walls are held against the press plates with the requisite pressure to properly confine the meal between the press plates when it is subjected to the maximum pressure. The valve M is closed when the press cylinder is discharged and the ram is lowered, and the pressure in the cam operating cylinders I and press cylinder is equalized through the pipe L and choker N. When the pressure in the cam cylinders is thus relieved the springs *g'* lower the operating rods G and return the cams to the initial position, permitting the release devices H to move the side walls outwardly away from the press plates.

The side walls could be operated with the varying pressure by simply connecting the cam operating cylinders I to the press cylinder, but the hand-controlled low pressure connection described is preferably used, as it permits the side walls to be moved inwardly against the press plates before the oil is admitted to the press cylinder, so that the side walls will serve as guides for the cakes when filling the press.

The described mechanism for operating the side walls is practical and desirable, especially so on account of the fact that the pressure of the side walls on the press plates varies in accordance with the opposing pressure of the meal, but the invention is not limited to such mechanism and the movable side walls of the nature described could be moved inwardly against the press plates when the press is operated and spread to allow the press plates to lower after the expressing operation by other means.

The grooves *c* in the side edges of the press plates afford escape passages for the oil which may be forced in between the edges of the plates and the side walls and prevent the fine meal from packing between the plates and side walls.

I claim as my invention:

1. The combination with a press having movable press plates between which the material is pressed, of movable side walls at opposite sides of said press plates, and

means for moving said side walls into and out of engagement with the edges of said press plates, substantially as set forth.

2. The combination with a press having
5 vertically movable horizontal press plates between which the material is pressed, of upright movable side walls at opposite sides of said press plates, and means for moving
10 said side walls into and out of engagement with the edges of said press plates, substantially as set forth.

3. The combination with a press having movable press plates between which the material is pressed, of movable side walls at opposite sides of said press plates, and means
15 for forcing said side walls against the edges of said press plates with a varying pressure depending upon the pressure to which the material is subjected, substantially as set forth.
20

4. The combination with a press having movable press plates between which the material is pressed, of movable side walls at opposite sides of said press plates, means for
25 forcing said side walls against the edges of said press plates with a varying pressure depending upon the pressure to which the material is subjected, and means for moving said side walls away from the press plates
30 when the pressure on the material is relieved, substantially as set forth.

5. The combination with a press having vertically movable horizontal press plates between which the material is pressed, of an
35 upright wall at one side of said press plates, and means for moving said wall laterally toward and from said press plates to bear against the edges of the several press plates and to free the plates, substantially as set
40 forth.

6. The combination with a press having movable press plates between which the material is pressed, of movable side walls at opposite sides of said press plates, and means
45 which are operated by the press operating liquid for moving said side walls against said press plates, substantially as set forth.

7. The combination with a press having a pressure cylinder and movable press plates
50 operated by liquid pressure in said cylinder to press the material between the plates, of

movable side walls at opposite sides of said press plates, and pressure-operated means connected with the press cylinder for moving said side walls against said press plates, 55 substantially as set forth.

8. The combination with a press having a pressure cylinder and movable press plates operated by liquid pressure in said cylinder to press the material between the plates, of
60 movable side walls at opposite sides of said press plates, pressure-operated means connected with the press cylinder for moving said side walls against said press plates, and means for operating said means for moving
65 the side walls independently of the press-operating pressure, substantially as set forth.

9. The combination with a press having vertically movable horizontal press plates
70 between which the material is pressed, of upright movable side walls at opposite sides of said press plates, and means for moving said side walls into and out of engagement with the edges of said press plates, the edges
75 of said press plates against which said side walls bear having longitudinal grooves, substantially as set forth.

10. The combination with a press having movable press plates between which the material is pressed, of movable side walls at opposite sides of said press plates, and means for moving said side walls into and out of engagement with the edges of said
80 press plates, said side walls consisting of connected strips arranged edge to edge, substantially as set forth.
85

11. The combination with a press having vertically movable horizontal press plates between which the material is pressed, of
90 side walls at opposite sides of said press plates, the edges of said press plates adjacent to said side walls having oil escape grooves therein extending substantially from end to end of the press plates, substantially
95 as set forth.

Witness my hand, this 16 day of April, 1909.

ALFRED W. FRENCH.

Witnesses:

GRACE A. FRENCH,

C. B. JAMISON.