No. 860,289. PATENTED JULY 16, 1907.

A. W. FRENCH.

PRESS PLATE.

APPLICATION FILED SEPT. 12, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

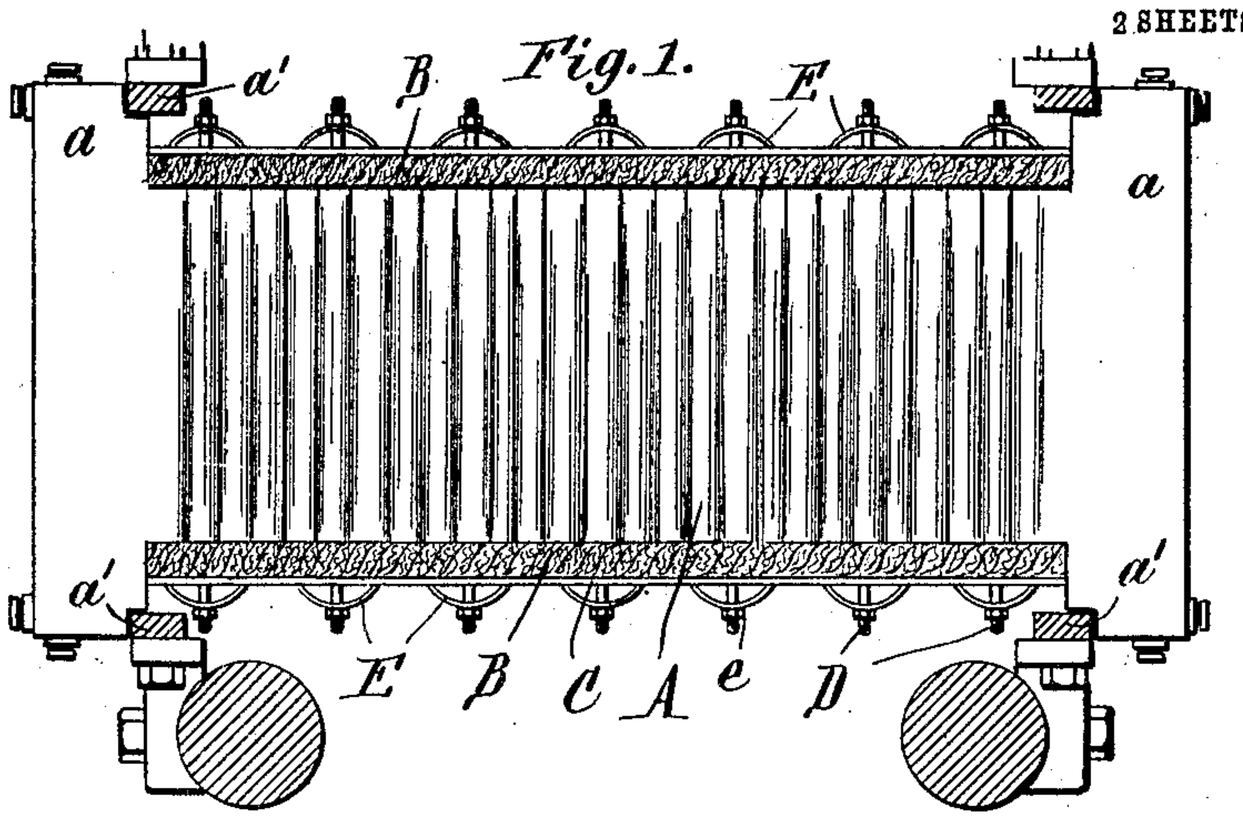


Fig. 2.

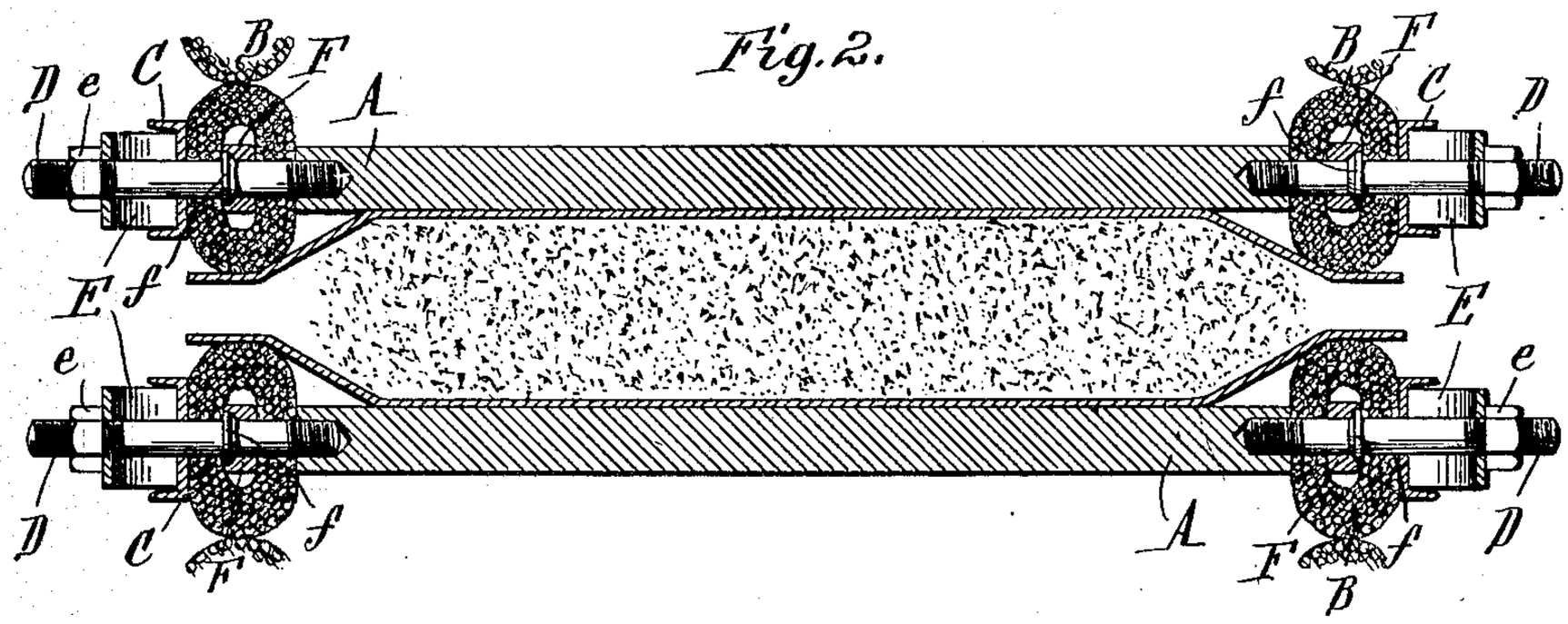
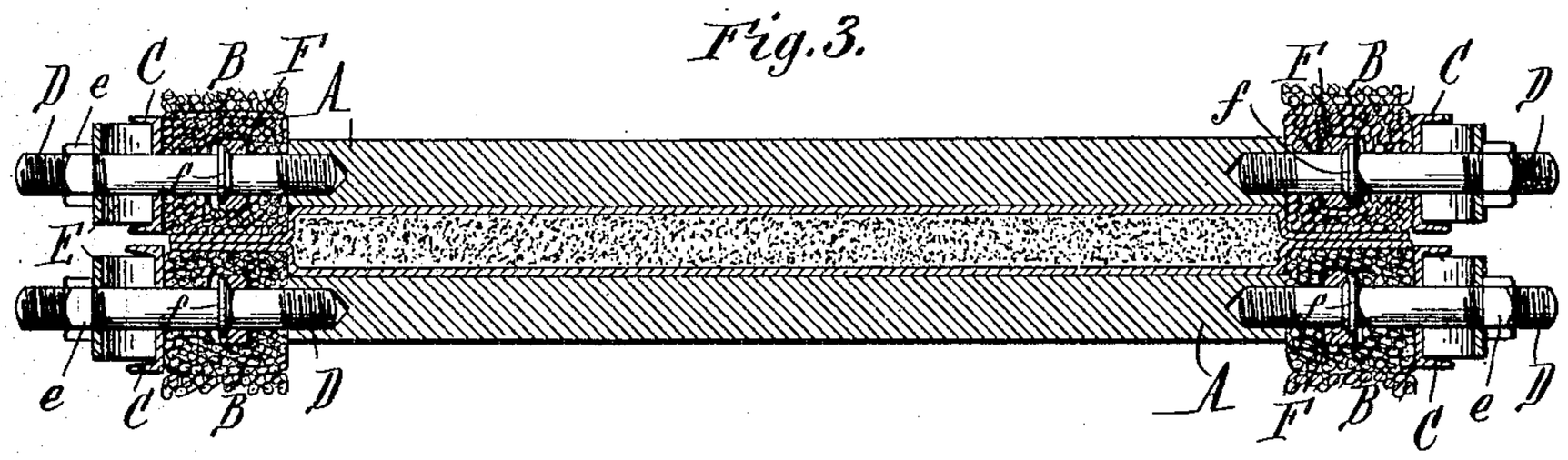


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

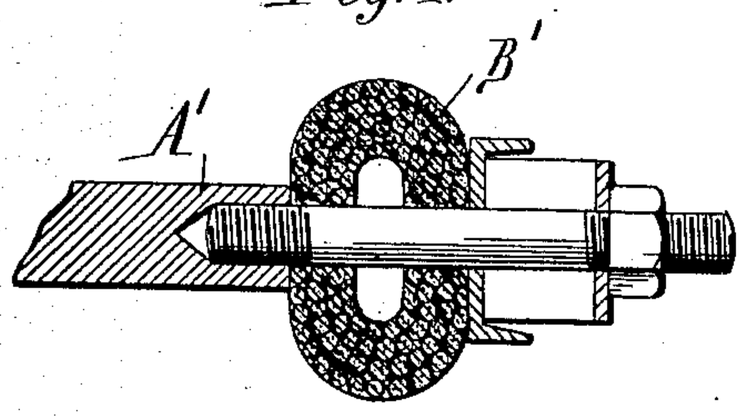


Fig. 5.

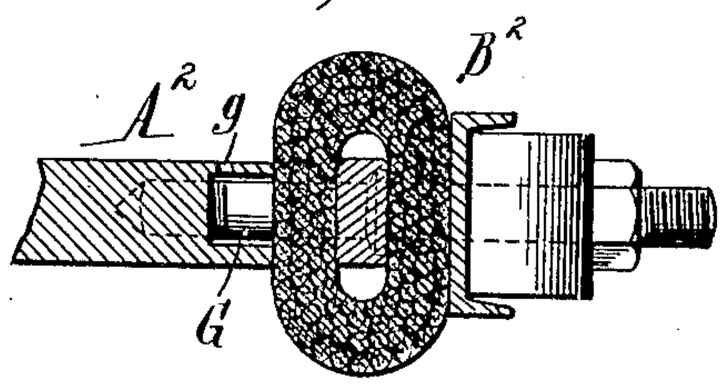


Fig. 6.

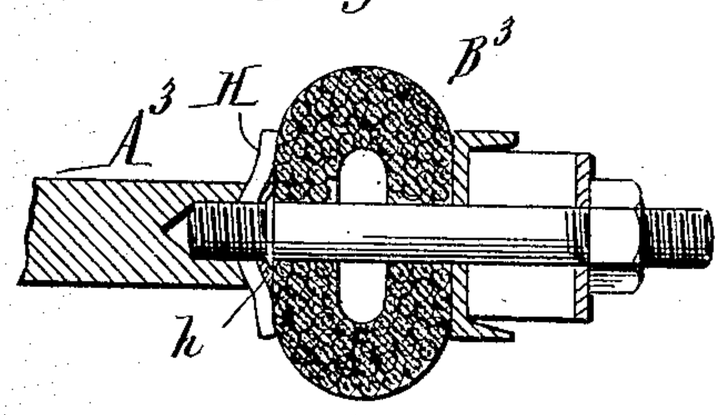


Fig. 8.

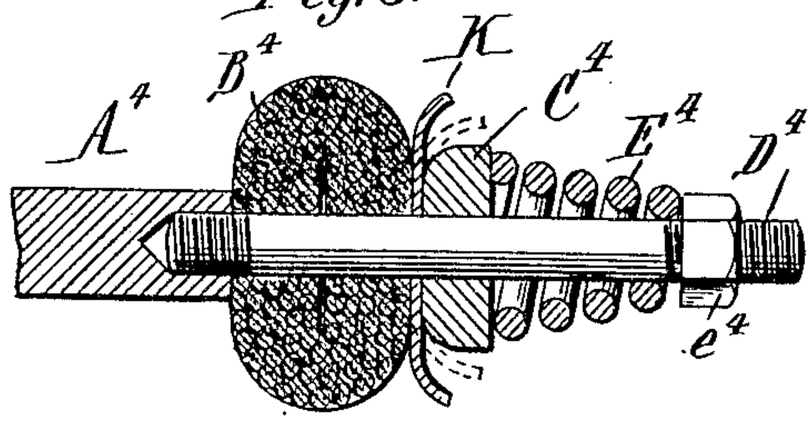
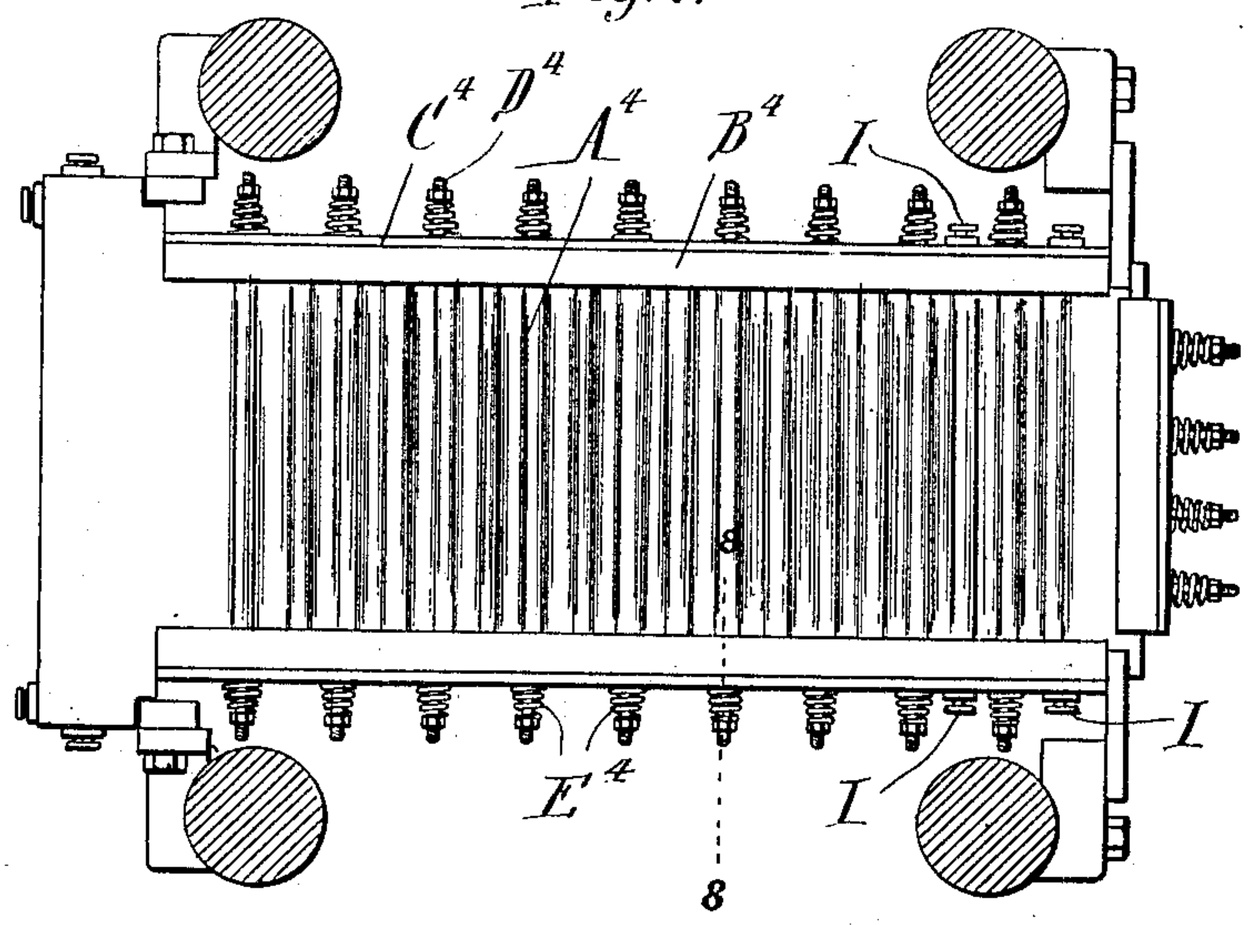


Fig. 7.



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UNITED STATES PATENT OFFICE.

ALFRED W. FRENCH, OF PIQUA, OHIO.

PRESS-PLATE.

No. 860,289. Specification of Letters Patent. Patented July 16, 1907.

Application filed September 12, 1905. Serial No. 278,160.

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 Press-Plates, of which the following is a specification.

This invention relates to press plates of the kind used in presses for expressing oils from meals, and other oleaginous substances, and more particularly to improvements in press plates such as are disclosed in my U. S. Letters Patent No. 784,259, granted March 7, 1905. The plates covered by said patent have yielding lateral extensions or margins of a pervious nature which afford an elastic compression to the edges of the cake, prevent the spreading of the cake in the press and the washing of the meal with the consequent injury to the press cloths, diminish the amount of soft marginal cake, and afford drainage for the oil liberated from the material being pressed.

The primary object of the present invention is to provide a novel elastic, or yielding and pervious margin for the press plates which will give the best attainable results.

The yielding or elastic margin or portion is usually applied to the opposite long edges of the plates, but by a proper construction of the press and arrangement of the plates to enable the insertion and removal of the cake, the plates could be furnished with the yielding margin or portion along three or possibly all four of its edges, and therefore the invention is not limited to the application of the yielding margin to two edges of the plate.

In the accompanying drawings, consisting of two sheets: Figure 1 is a horizontal section, on a reduced scale, of a press and plan of a press plate embodying the invention. Fig. 2 is a section of two of the press plates, showing the same separated to receive the material to be pressed. Fig. 3 is a section of two press plates showing them pressed together. Fig. 4 is a fragmentary section of a press plate of slightly modified construction. Fig. 5 is a similar view of another modification. Fig. 6 is a similar view showing different means for preventing the meal from working in between the plate and the yielding margin. Fig. 7 is a plan view of a press plate provided with the yielding margin on three edges. Fig. 8 is an enlarged section in line 8—8, Fig. 7.

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

Each press plate has a rigid metal body A preferably provided with opposite corrugated or fluted faces to prevent the cake and press cloth from creeping or working endwise between the plates. The yielding or elastic margin or portion B is provided at the opposite long edges of the plate in the construction shown in Figs. 1—3, and the plate is provided with corner extensions *a* which coöperate with vertical guides *a'* on the press to confine and guide the plates in the operation of the press. This illustrates one way of guiding the plates, but the invention is not directed to the means for guiding and supporting the plates in the press and any suitable means for this purpose may be employed.

The yielding margin or portion B of the plate consists of a tube or hollow body made of some suitable material which renders the tube elastic so that it will resume its original form after compression, and which is preferably, though not necessarily, pervious so that the oil expressed from the material can escape through the compressed tube as well as between connecting tubes. Tubes in the nature of a hollow rope or fabric of horse hair, such as employed for the well known press mats, give good results. The elastic tube can be attached to the metal plate in different ways but is preferably fastened as shown in the different figures of the drawings.

In the construction shown in Figs. 1—3, the yielding tube is attached to the edge of the metal body of the plate by a pressure bar C arranged outside of the tube and studs or screws D which are secured to the edge of the press plate and project outwardly therefrom through the tube and through holes in the pressure bar. Springs E of some suitable sort, such as bowed leaf-springs, interposed between the pressure bar and nuts *e* screwed on the threaded outer ends of the studs D press the bar inwardly against the tube and permit the bar to yield outwardly when the tubes are compressed in the operation of the press. The yielding tube is made of substantially circular cross-section but the nuts *e* are tightened up sufficiently for the pressure bar to compress the tube laterally into the substantially oval shape in cross-section shown in Fig. 2, the major axis of the oval being vertical. When the tubes are subjected to pressure in the press they flatten out more or less, as indicated in Fig. 3, forcing the presser bar outwardly against the action of its springs, and when the pressure is relieved the tube, owing to its elasticity and the pressure of the spring pressed bar C, is caused to again assume the oval shape shown in Fig. 2. The spring pressed bar C would similarly act to a greater or less degree to restore the normal oval shape of the tube even though the tube should lose some of its elasticity or be made of a non-elastic but yielding material. The tubes of normally oval cross-section, with their major axes vertical, project above and below the surfaces of the plates far enough to contact with each other before the press plates have approached near enough to each other to cause the oil to run, and they therefore prevent the washing of the meal to the sides of the press plates and prevent injury to the press cloths. The cylindrical tube pressed laterally into oval form projects above and below the surfaces of the plates far-

ther than it would in its original cylindrical form and allows of greater compression without compacting the material forming the tube to such an extent as to destroy its elasticity and prevent the percolation of the oil therethrough, or to prevent the full pressure of the plates on the body of the cake.

The lateral pressure of the cake against the yielding tube has a tendency to force the tube laterally away from the edge of the press plate and if this were allowed crevices would be formed between the tube and the edge of the plate into which the meal could pack so as to prevent the restoration of the tube to its normal condition. To prevent this, core strips F, Figs. 2 and 3, are preferably employed in the tubes, the inner portion of the wall of the tube being clamped firmly between this core strip and the edge of the press plate. The core strip is conveniently secured in place, as by shoulders *f*, on the screw studs D engaging in countersinks in the core strip. The core strip prevents the inner side of the tube from being forced away from the edge of the plate under pressure but does not interfere with the compression and outward movement of the outer portion of the wall of the tube between the core strip and the presser bar. The employment of the core strip in the tube is deemed preferable, but the yielding or elastic tube arranged as described, without the core strip, will also give very good results. Fig. 4 shows a plate A′ provided with the yielding tube or margin B′ without the core strip.

Fig. 5 shows a press plate similar to that already described, but in which the metal body of the plate A^2 is provided along its edge adjacent to the yielding tube B^2 with an oil drain channel G to which small ducts *g* lead from the surface of the plate. The oil can drain from the surface of the plate through the ducts to the channel G and run out of the latter at the ends of the plate. Where the channel and ducts are employed it is not necessary to rely upon the escape of the oil between contacting yielding tubes, or through the pervious material of the tubes. The oil channel and ducts can be used or not, as found desirable, with any of the plates described.

Another means for preventing the meal from being forced into the crevices between the edge of the plate and the yielding margin is shown in Fig. 6. In this construction a strip H of flexible material, such as press cloth fabric, is clamped firmly between the body of the plate A^3 and an edge strip *h* and its free edges which project beyond the surfaces of the plate overhang the securing edge strip and bear against the yielding margin or tube B^3. The free edges of the strip H will be pressed outwardly against the yielding margin or tube in the pressing operation and will prevent the entrance of the meal between the edge of the plate and the yielding margin or tube B^3.

In Fig. 7 is shown a press plate A^4 provided with the yielding tube B^4 along its opposite side and back edges. The tube B^4 is the same as that shown in the other figures and it could be used with the pressure means shown in said figures, but this figure and Fig. 8 show another construction in which the pressure bar C^4 is pressed against the tube by relatively stiff coil or spiral springs E^4 surrounding the attaching studs D^4 between the pressure bar and the nuts e^4. This construction enables the studs to be placed nearer together, gives sufficient spring pressure to press the side walls of the tube together and hold the tube against the edge of the plate with such force as to largely obviate the necessity for the core-strip to prevent the entrance of meal between the edge of the plate and the tube. Where the yielding tube is applied to three sides of the plate, the links I, commonly employed for suspending the plates one from the other, are preferably attached at the rear portion of the plate to the side pressure bar C^4.

Fig. 8 also shows a strip K of spring metal between the yielding tube and the pressure bar. This strip will bend outwardly, as shown by dotted lines in Fig. 8, under pressure, and will assist in returning the upper and lower portions of the tube to their normal position when the pressure is removed. This spring strip could be used in the other construction shown.

I claim as my invention:

1. A press plate provided with a margin or portion consisting of a tube of yielding pervious material, substantially as set forth.

2. A press plate provided with a margin or portion consisting of an elastic tube which projects beyond the opposite surfaces of the plate, substantially as set forth.

3. A press plate provided with a margin or portion consisting of a yielding tube, and means for compressing said tube laterally out of its original shape and yieldingly opposing vertical compression of said tube, substantially as set forth.

4. A press plate provided with a margin or portion consisting of a tube of yielding material, and a spring pressed bar which normally compresses said tube laterally into substantially oval shape in cross-section and opposes the flattening of said tube, substantially as set forth.

5. A press plate provided with a yielding margin or portion, and means coöperating with said yielding portion to prevent the entrance of material between the plate and yielding portion when the latter is distorted under pressure, substantially as set forth.

6. A press plate provided with a margin or portion consisting of a yielding tube, and a core-strip in said tube between which and the plate the wall of the tube is clamped to prevent the tube from being forced away from the edge of the plate under pressure, substantially as set forth.

7. A press plate provided with a margin or portion consisting of a tube of yielding material, a core-strip in said tube between which and the plate the inner portion of the wall of the tube is secured, and a yielding presser bar bearing against the outer portion of the wall of the tube, substantially as set forth.

8. A press plate provided with a margin or portion consisting of a yielding tube, and a drain channel connected by ducts to the surface of the plate, substantially as set forth.

9. A yielding margin strip for the purpose described consisting of a tube of pervious fabric or material, substantially as set forth.

10. A yielding margin strip for the purpose described consisting of a tube of horse hair fabric, substantially as set forth.

11. A press plate provided with a margin or portion consisting of a tube of yielding material, a spring pressed bar which opposes the flattening of said tube, and a resilient metal strip between said tube and said spring pressed bar, substantially as set forth.

12. A press plate provided with a hollow compressible margin portion, substantially as set forth.

13. A press plate provided with a hollow compressible body at or near its edge, and means for yieldingly opposing the compression of said body, substantially as set forth.

Witness my hand, this 4th day of September, 1905.

ALFRED W. FRENCH.

Witnesses:
WM. COOK ROGER,
PAUL G. WEIDNER.