(No Model.)

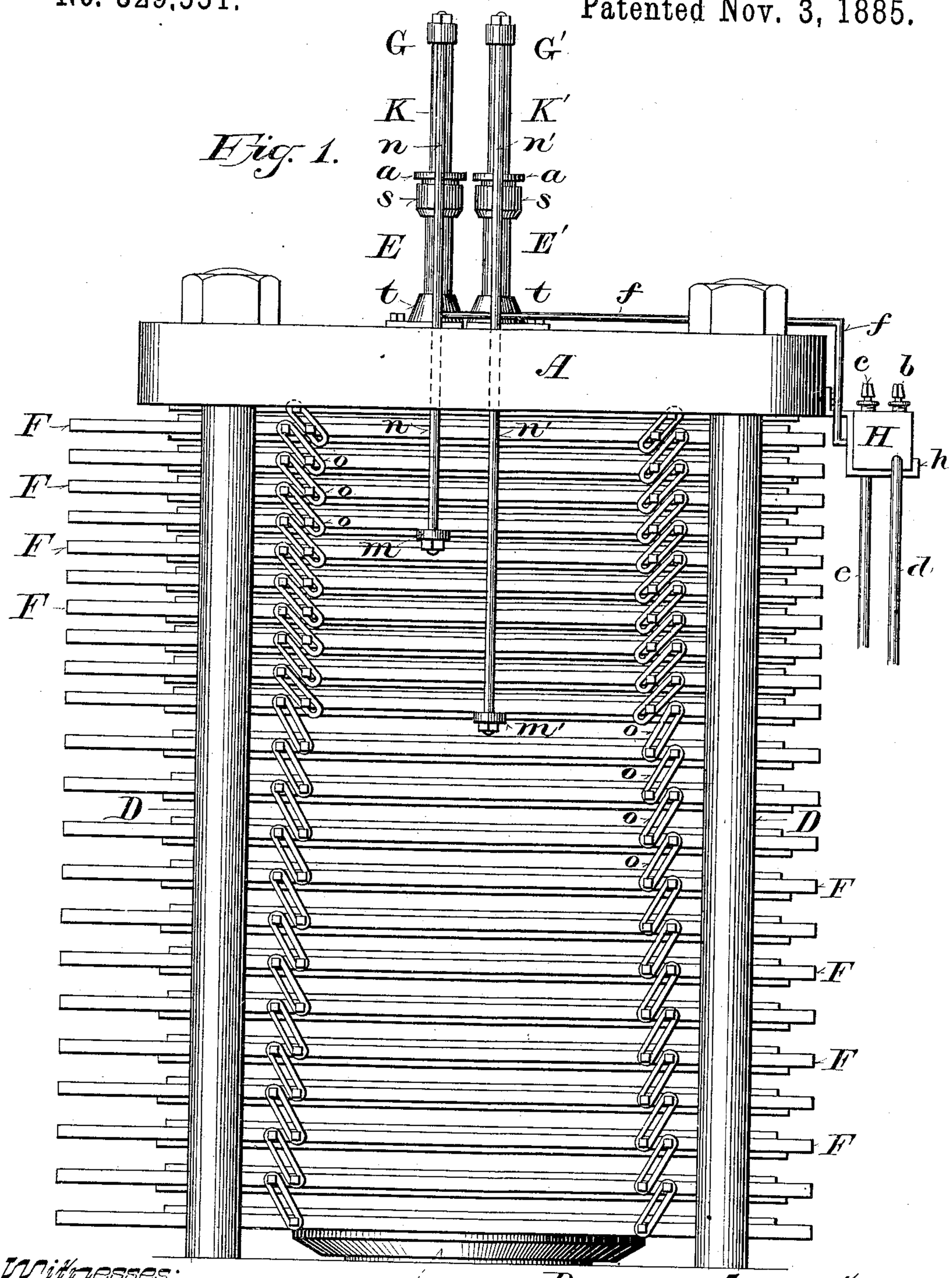
2 Sheets—Sheet 1.

C. S. HAMILTON.

HYDRAULIC PRESS.

No. 329,551. Patented Nov. 3, 1885.

Fig. 1.



Witnesses:
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George Gold.

Inventor:
Charles S. Hamilton,
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(No Model.)

2 Sheets—Sheet 2.

C. S. HAMILTON.

HYDRAULIC PRESS.

No. 329,551. Patented Nov. 3, 1885.

Fig. 2.

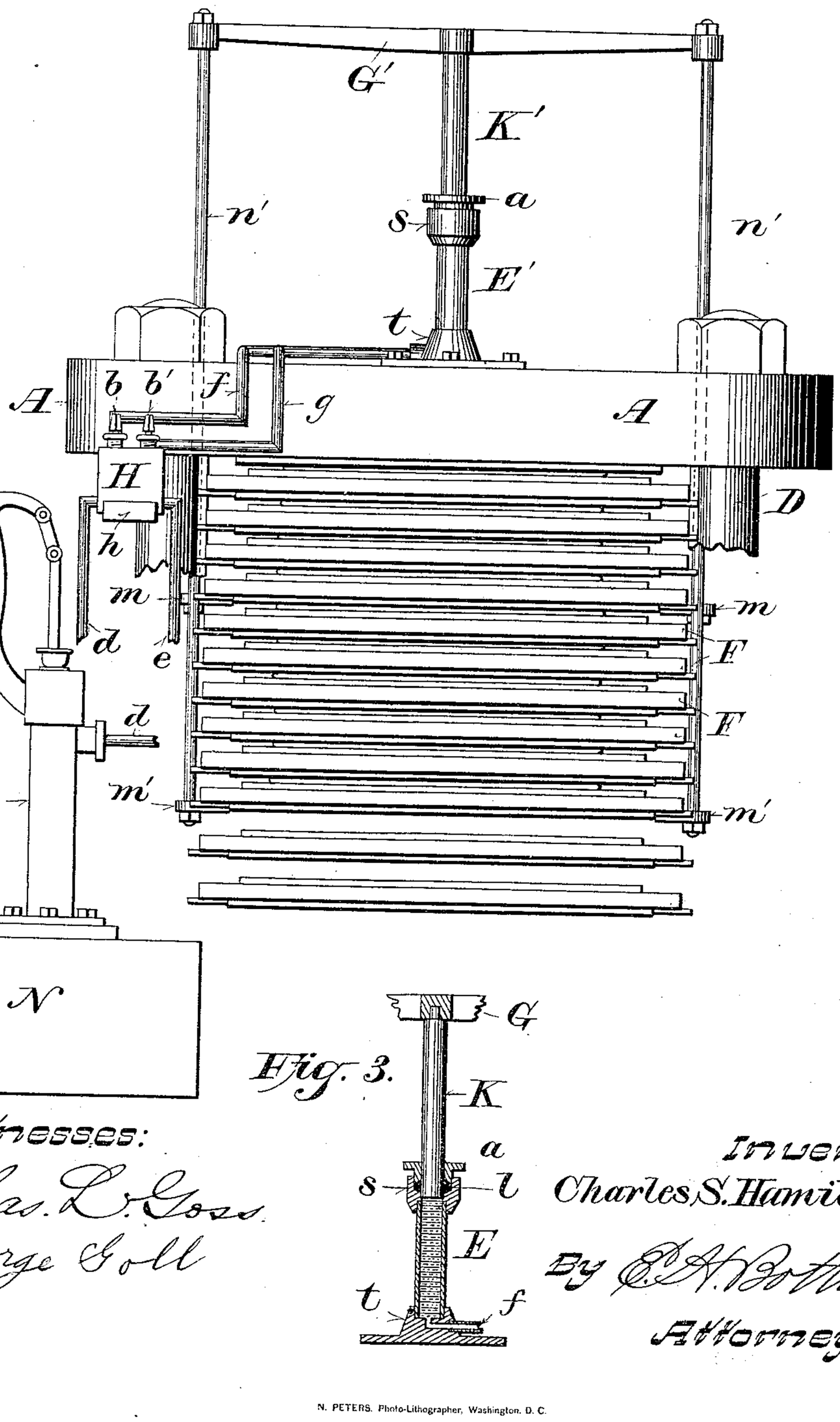

Fig. 3.

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UNITED STATES PATENT OFFICE.

CHARLES S. HAMILTON, OF MILWAUKEE, WISCONSIN.

HYDRAULIC PRESS.

SPECIFICATION forming part of Letters Patent No. 329,551, dated November 3, 1885.

Application filed April 6, 1885. Serial No. 161,263. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. HAMILTON, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Hydraulic Presses; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My improvements relate to that class of hydraulic presses employed for extracting the oil from oil-bearing seeds; and it consists, essentially, of two or more lifting-jacks or supports connected with a like number of division plates or mats in such manner as to sustain the upper portion of the series of mats with which the press is filled in two or more independent groups, while the portion below and the lower group or groups are successively relieved of pressure, separated, and refilled with fresh meal-cakes.

The object of my invention is to increase to its maximum within a given space the capacity of the press and to facilitate its operation.

In the accompanying drawings like letters refer to the same parts in each figure.

Figure 1 is a side elevation of my improved press. Fig. 2 is a front elevation of the upper portion of the same, and Fig. 3 is a vertical medial section of one of the accumulators detached from the press.

A is the cap-plate of the press, B the bed, and C the plunger and platen.

D D are the pillars which support the cap-plate A and tie the same to the bed B.

F F represent metallic division plates or mats, which are suspended in a series from the top of the press and from each other by the elongated links *o o*, so attached thereto as to permit of the free vertical movement of said mats and the opening and closing of the same, whereby the meal-cakes are inserted between them, pressed, and removed.

Eighteen of my improved metallic mats (for which I obtained Letters Patent of the United States May 20, 1884, numbered 298,848,) or fifteen of the kind now in common use have been the greatest numbers that could be employed in single presses of this description.

By the use of the improvements hereinafter more particularly described four of my improved mats can be readily used in addition to the eighteen formerly used in the same press, thereby increasing in connection with said improved mats the capacity of the press from four to seven mats, or from twenty to forty-five per cent.

E E′ are two small upright cylinders attached to the top of cap-plate A, and provided with the pistons or plungers K K′, which support at their upper ends cross heads or yokes G G′.

n n′ are rods secured to and depending from the ends of said yokes G G′, and passing through vertical perforations in cap-plate A, and secured by means of ears *m m′*, one pair to the fourth mat F from the top and the other pair to the sixth mat next below or the tenth from the top. The supporting-rods *n n′* are attached to other than the fourth and tenth mats from the top when applied to presses of various heights and employing more or less mats, in order to secure in each particular case the use of the greatest possible number of division-plates. The perforations in the ears *m m′* are made sufficiently large to permit the free vertical movement of the mats, while the rods *n n′* remain quiescent.

The cylinders E E′ may be formed of ordinary gas-pipe, threaded at the ends and secured in castings *s* and *t*. The castings *s s* have annular grooves or recesses to receive the packing *l* and glands *a a*, by means of which leakage is prevented about the plungers K K′. Castings *t t* are provided at the base with flanges, by means of which the accumulators or cylinders E E′ are bolted to the press, as seen in Figs. 1 and 2, and with passages communicating with the lower ends of said cylinders E E′, and with supply-pipes *f g*, connected therewith, and with double check-block H, supported at the one corner of the press upon the bracket *h*, attached to the front of cap-plate A.

d is the induction or supply pipe-connecting the force-pump L with said check-block H, and *e* is the eduction or discharge pipe leading therefrom.

Where a number of presses are used, their check-blocks H may be connected with a single supply and discharge pipe, each located near the top of the presses, so as not to interfere with the manipulation of the mats.

I may operate the accumulators by means of a hand-pump, L, connected with a suitable tank, as N, which contains a sufficient amount of oil or any other suitable liquid to operate any desired number of accumulators. This pump may be located in any convenient position and connected with the common supply-pipe *d*. When thus arranged, the discharge-pipe *e* may be conveniently connected with the tank N, so as to return the oil from the accumulators E for future use. I prefer, however, to connect the accumulators with the larger power-pump employed in the operation of the main presses.

My device operates as follows: The press having been filled with meal-cakes inserted between the metallic mats F F, the accumulators E E′ being emptied, and their plungers K K′ depressed, pressure is applied by means of the usual pumps to the plunger C, which forces said mats together and expresses the oil from the meal-cakes between them in the usual manner. When the cakes have been sufficiently pressed, the automatic valves *b b′*, controlling supply-pipes *f* and *g*, are released, oil is forced by means of the pump through pipes *d*, *f*, and *g* into each of the accumulators E E′, thereby raising the plungers K K′, which in turn lift the cross-heads G G′ and their depending rods *n n′* till the nuts at their lower ends engage with the ears *m m′*, thereby sustaining the ten upper mats, as shown in the drawings, while the main plunger C is depressed, the lower mats opened, as shown in Fig. 1, the pressed cakes removed, and fresh meal-forms supplied in their places, thus completely filling the press. The accumulator E′ is now emptied through the pipes *g* and *e* by opening the proper valve, *c*. Cross-head G′ is thus allowed to descend, the six mats sustained thereby released, and the fresh meal-cakes between the mats below partially compressed by the superposed weight of said six mats, which are thus permitted to open sufficiently to receive fresh meal-cakes between them. The accumulator E is now emptied through pipes *f* and *e* by opening the proper valve *c* in check-block H. The plunger K, with its cross-head G, being thus allowed to descend, releases the upper four mats, the weight of which, resting on those below, further compresses the meal-cakes between them sufficiently to allow of the refilling of said four mats with fresh cakes. The press being now entirely filled with fresh cakes, pressure is applied thereto through plunger C in the usual way, and the oil expressed therefrom, as before described.

In practice I have found by experience that one lifting-jack or support arranged to sustain the upper portion of the mats of the press in a single group, while the lower portion is relieved of pressure, separated, and refilled, is altogether inadequate to accomplish the end sought, and I make no claim thereto.

I do not claim as my invention the accumulators E E′ of themselves, since they are simply small-sized hydraulic presses, which have been used from time immemorial; nor do I wish to confine myself to the specific construction shown in the drawings and herein described; but

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a hydraulic press, of the mats F F, suspended from the top of said press and from each other in a vertical series, and means whereby the upper mats are sustained, with the compressed meal-cakes between them, in two or more independent sections while pressure is removed from the mats below, permitting them to descend sufficiently to be refilled with fresh cakes, substantially as and for the purposes set forth.

2. The combination, in a hydraulic press, of the mats F F, linked together and suspended from the top of said press, and rods *m m′*, arranged to engage with and sustain at or near the top of the press a number of said mats, with the compressed meal-cakes between them, in two or more independent sections or groups, while pressure is removed from the mats below, allowing them to descend and separate sufficiently to permit of the removal of the compressed cakes between them and the insertion of fresh cakes in their places, substantially as and for the purposes set forth.

3. The combination, in a hydraulic press, of mats or division-plates F F, linked together and suspended from the top of said press in a vertical series, and two or more lifting-jacks, E E′, or any device or devices which are the mechanical equivalents of said lifting-jacks, connected therewith, whereby a number of the upper mats of the press are sustained in two or more groups when pressure is removed from those below, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

C. S. HAMILTON.

Witnesses:
CHAS. L. GOSS,
E. H. BOTTUM.