

F. W. BARHOFF.

PULP PRESS.

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Fig. 1

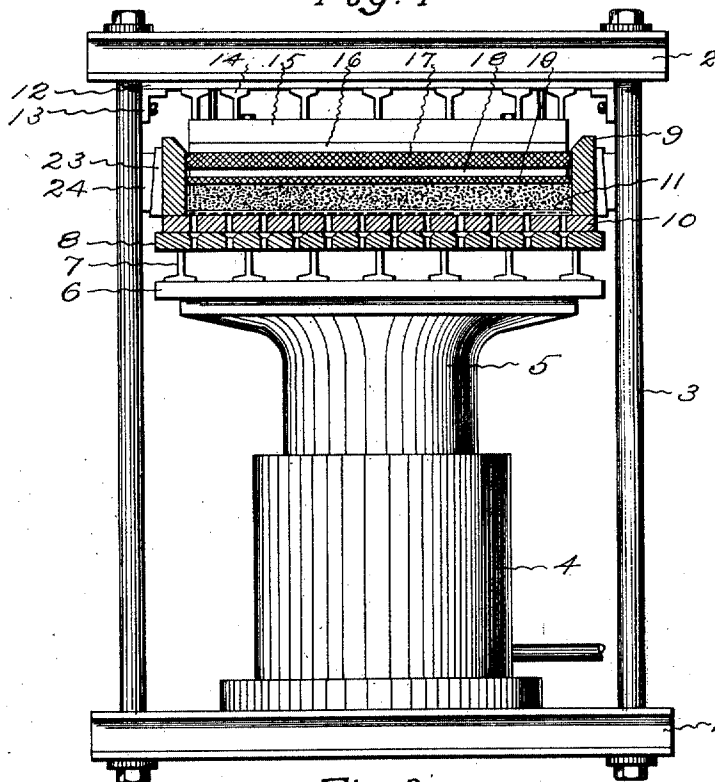
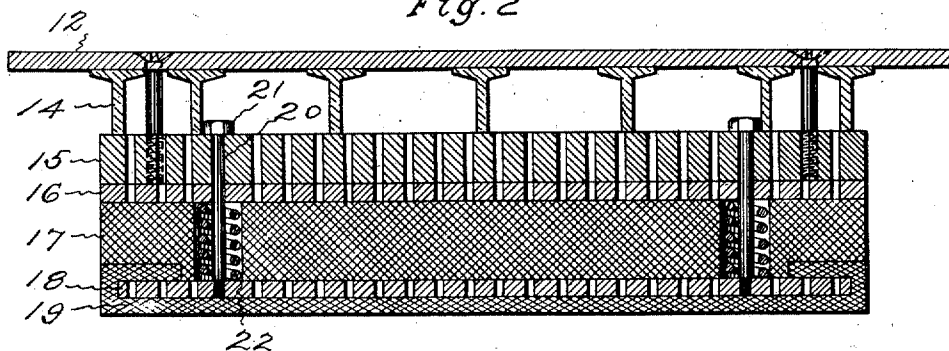


Fig. 2



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PULP-PRESS.

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To all whom it may concern:

Be it known that I, FRED W. BARHOFF, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement in Pulp-Presses, of which the following is a specification.

This invention relates more especially to the platen and mold holder of a press which is designed for compressing and solidifying pulp into sheets.

In pressing pulp into sheets, particularly pulp having a body of leather fiber, it is particularly desirable that all of the liquid which is expressed be drained off or taken up so that the sheets when removed will be uniformly dry. To effect this the bottoms of the molds are perforated and the top plates of the press beds are either channeled or perforated in a manner which allows the liquid to drain off as it is forced from the pulp. Various expedients have been employed to remove the liquid which exudes from the tops of the sheets as the pulp is compressed. The platens have been perforated to permit the liquid to flow up and escape, and suction apparatus has been applied to assist the upward outflow of liquid. It is, however, impossible to remove all of the liquid from the upper surfaces of the sheets by merely providing a perforated platen and allowing the liquid to flow off through the perforations, or to suck the liquid up by a vacuum or other means. More or less liquid will remain in the perforations and at the edges of the plates around the walls of the mold, and when the platen and mold are separated, this liquid will drip and collect on the tops of the sheets soaking in and forming soft spots.

The object of this invention is to provide a press with a platen which will absorb and take up all of the liquid that escapes upwardly from the pulp as the sheets are being formed, so that no liquid will be left on, or will run back to, the tops of the sheets when the mold and platen are separated.

Figure 1 of the accompanying drawings shows a side elevation of a hydraulic pulp press that is constructed according to this invention, with the mold and top plate of the press bed cut in central section, and the front mold-holding bar omitted, in order to better illustrate the construction. Fig. 2 shows on larger scale a central section of the platen provided for this press.

The press which is shown, has a frame formed of a base of metal I-beams 1 and a head of metal I-beams 2, which beams are held together by bolt rods 3. Mounted on the base is a hydraulic cylinder 4, movable vertically in which, in the usual manner, is a ram or plunger 5. On the top of the ram is a plate 6 supporting a number of T-irons 7. Located on the upper edges of these T-irons is a perforated metal plate 8. This plate forms the top plate of the press bed upon which the mold is placed.

The mold which is shown, is formed of a rectangular frame having wooden side walls 9, a perforated metal plate 10 at the bottom, and a screen 11 on the bottom inside of the mold. This mold is designed to receive a sufficient quantity of stuff, either leather, wood, paper or cloth pulp, as the case may be, to form the desired sheet.

The platen which is shaped to enter the mold as the mold is lifted by the ram, has a head plate 12 that is designed to be removably held up to the under side of the head beams by brackets 13. Attached to the head plate are T-irons 14, and secured to these in any suitable manner is a perforated block 15, preferably of wood. On the under side of the block is a metal plate 16 with perforations coinciding with the perforations through the wooden filling block. Beneath this plate is a mass 17 of felt or similar porous absorbent material. Below this mass of absorbent material is a perforated metal plate 18, the lower surface of which is covered with a sheet 19 of felt or like porous absorbent material. It is desirable to hold these parts together by means of stud bolts 20, which are threaded into the lower plate 18, and have heads 21 between the T-irons 14 above the filling block 15. These bolts extend loosely through the felt, the upper metal plate and wooden filling block above, and it is desirable to place springs 22 upon the bolts between the two metal plates for the purpose of keeping the plates separated and allowing the felt to expand when there is no pressure on the platen.

When a press having a platen of this nature is in use, and a mold is raised for the purpose of compressing and forming a sheet of the wet pulp therein, as the platen enters the mold and compresses the pulp, the greater amount of liquid expressed therefrom drains downwardly through the per-

forations in the bottom of the mold and in the top of the mold bed on the ram. Some of the liquid, however, escapes upwardly, and as great pressure is exerted, usually several tons to the square inch, this liquid which exudes from the pulp at the top, passes through the fibrous felt or other porous absorbent material to the perforated plates and filling block, which form the platen, and flowing between the T-irons escapes over the sides of the mold. When the platen and mold are forced together for compressing the pulp, the felt or other absorbent substance which forms the cushion between the platen plates, is compressed and expands edgewise so as to fill the mold and pack the platen. This prevents the pulp from squirting or oozing up about the edges of the platen and prevents any liquid which escapes from the top through the perforations in the platen parts, from running or dripping back onto the pulp sheet formed in the mold.

It is desirable to arrange wedge-blocks 23 on the exterior of the four side walls of the mold in such manner that they will enter and engage with wedge-bars 24 secured to the tie-rods of the frame, when the mold is lifted. These parts will hold the side walls of the mold from expanding or springing out when the platen and mold are in such positions that the greatest outward strain results as the sheets are being pressed. This allows the mold frame to be made light in weight in order that it may be easily handled and keeps the walls of the mold rigid so the felt will make a tight packing.

When the mold and platen are separated, after a sheet has been formed, all free liquid remaining on the upper surface of the sheet and all liquid remaining around the edges of the mold and in the perforations of the platen parts is absorbed and retained by the felt as it expands after the pressure has been relieved. Thus the upper surface of the sheet which has been formed is left free of liquid so that it will dry uniformly and without soft spots. At the next compression, the liquid which is absorbed by the felt or other absorbent material, is squeezed out and escapes through the perforations in the platen. Whenever the covering for the

lower surface of the bottom plate of the platen becomes filled with fibers, size or other matter from the pulp, so that it does not permit the free passage of liquid through it, it is removed by loosening the bolts, and either cleaned and returned, or another sheet of felt substituted in place thereof.

The invention claimed is:

1. A platen or head for a press, having a perforated body, a perforated face plate yieldingly connected with the body, and a cushion of porous absorbent material arranged between the body and the face plate.
2. A platen or head for a press, having a perforated body, a perforated face plate yieldingly connected with the body, cushion of porous absorbent material between the face plate and the body, and a sheet of porous absorbent material covering the lower surface of the face plate.
3. A platen or head for a press, having a head plate, T-irons attached to the head plate, a perforated filling block below the T-irons, a pair of perforated plates below the filling block, a cushion formed of porous absorbent material arranged between said pair of perforated plates, and a porous absorbent covering for the lower perforated plate.
4. A platen or head for a press, having a perforated filling block, a pair of perforated plates connected with the filling block, a cushion formed of porous absorbent material arranged between said plates, springs arranged to keep said plates apart and the cushion expanded, and a porous absorbent covering for the lower perforated plate.
5. In a pulp press, the combination of a ram, a mold located upon the ram, a frame adapted to receive and hold the side walls of the mold when the pulp therein is being pressed, and a platen having a perforated body and an absorbent compressible cushion attached to the body of the platen for the purpose of packing the platen in the mold and absorbing the moisture which exudes from the upper surface of the pulp when the platen is forming the pulp into a sheet.

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Witnesses:

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