No. 826,603. PATENTED JULY 24, 1906.

K. PETER.

APPARATUS FOR TREATING HOP DRAFF AND THE LIKE.

APPLICATION FILED SEPT. 20, 1905.

3 SHEETS—SHEET 1.

Fig. 1.

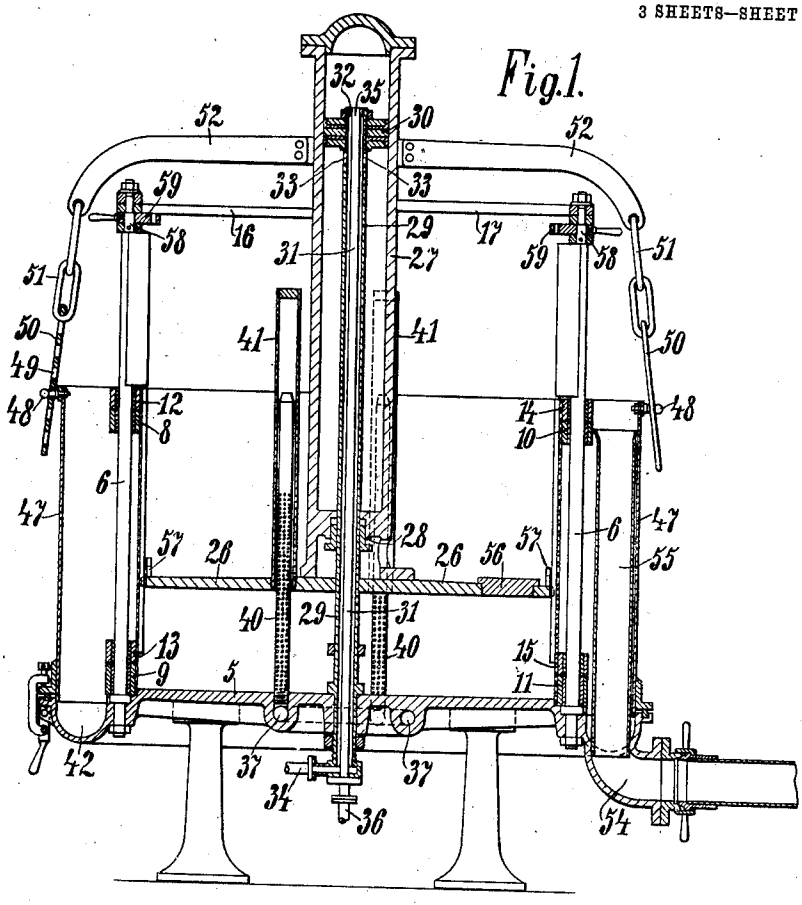
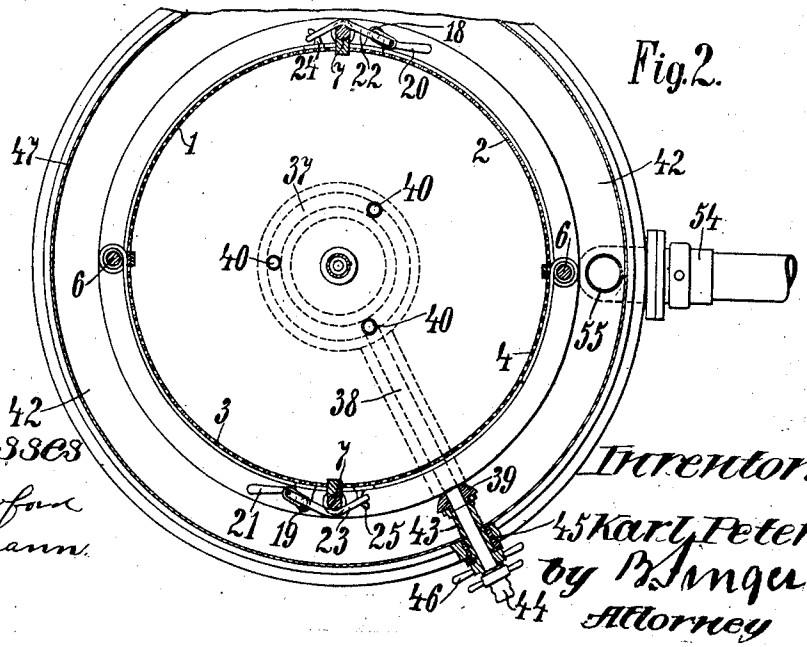


Fig. 2.



Witnesses
C. H. Crawford
C. Heymann.

Inventor:
Karl Peter
by Bonner
Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

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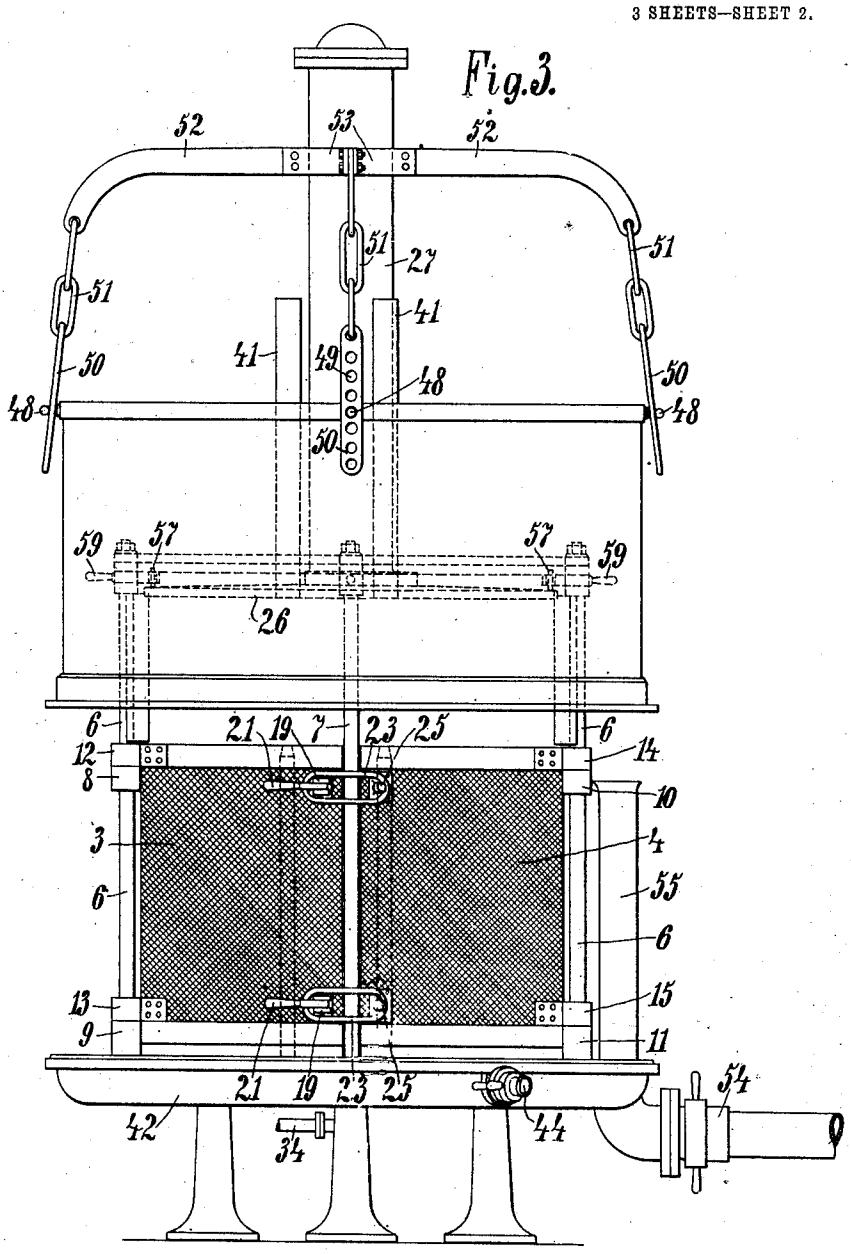
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3 SHEETS—SHEET 2.

Fig. 3.



Witnesses:-
C. St. Crawford
C. Heymann

Inventor:-
Karl Peter
by B. Singer
Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

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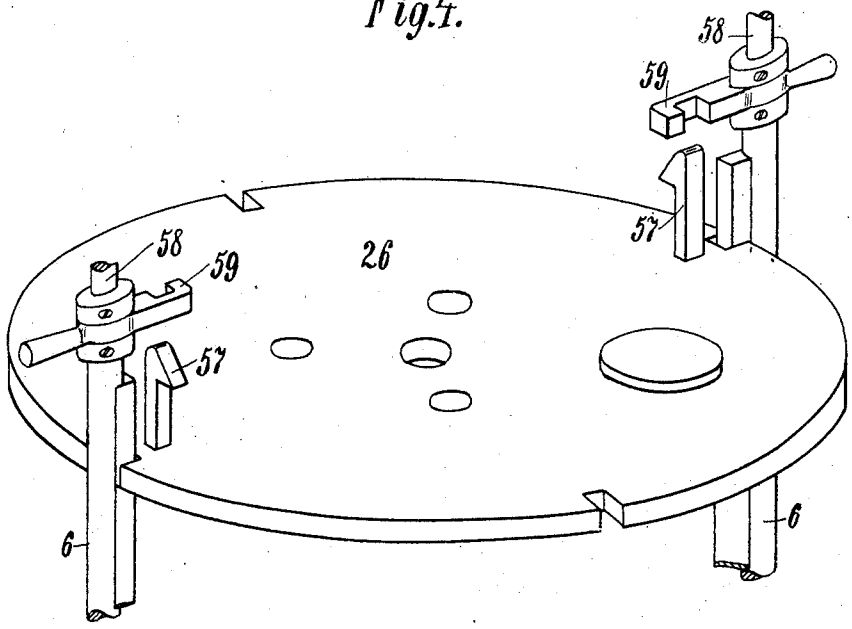
K. PETER.

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APPLICATION FILED SEPT. 20, 1905.

3 SHEETS—SHEET 3.

Fig. 4.



Witnesses:
C. H. Crawford
L. Waldman

Inventor:
Karl Peter
by B. Singer
Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

KARL PETER, OF ACHERN, GERMANY.

APPARATUS FOR TREATING HOP-DRAFF AND THE LIKE.

No. 826,603. Specification of Letters Patent. Patented July 24, 1906.

Application filed September 20, 1905. Serial No. 279,303.

To all whom it may concern:

Be it known that I, KARL PETER, a subject of the German Emperor, residing at Achern, in the Grand Dukedom of Baden and Empire of Germany, have invented certain new and useful Improvements in Apparatus for Treating Hop-Draff and the Like, of which the following is a specification.

This invention relates to an apparatus for pressing and washing out hop-husks and the like and for filtering the liquid pressed out or the matter separated in the cool-bed, &c.

The present apparatus compared with similar devices has the advantage that the pressure-piston is lifted and lowered by means of hydraulic pressure, the capacity of the apparatus being thus increased considerably.

In the annexed drawings one form of construction of the apparatus is represented.

Figure 1 is a vertical section, Fig. 2 a cross-section thereof, and Fig. 3 a side view showing in part the interior of the device. Fig. 4 represents a perspective view of details of the mechanism.

As illustrated in the drawings, the apparatus comprises a perforated case of preferably cylindrical form consisting of one or several parts 1 2 3 4. The bolts 6 6 and 7 7 are fixed to the bed-plate 5 and at the top are connected to each other by means of rods 16 17, so as to have a fixed position with regard to one another. The parts 1 2 3 4 of said case are respectively provided with two lugs 8 and 9, 10 and 11, 12 and 13, 14 and 15 and are pivoted to the bolts 6 by means of said lugs. Suitable device is provided for connecting the four parts 1 2 3 4 to each other. For this purpose each of the two case parts 2 3 carry a lug 18 19. To the latter the levers 20 21 are pivoted, and said levers in their turn are jointly connected to the straps 22 23, which engage the hooks 24 25 of the parts 1 and 4, respectively, thus bringing about a tight connection of the case parts.

Fixed to the press-plate 26, movably journaled between the case parts 1 2 3 4, is the hydraulic cylinder 27, the pipe 29, connected to the base-plate 5, extending through the stuffing-box 28 of said cylinder 27. The piston 30 is attached to the pipe 29, the cylinder 27 being adapted to slide along the piston. In the pipe 29 the pipe 31 is arranged, preferably, concentric to the former. The annular space between the pipes 29 and 31 is shut off from the space above the piston 30 by means of the nut 32, but communicates with the space below the piston by apertures 33. At its bottom this annular space is connected to a supply and discharge pipe 34 for pressure-water. The pipe 31 at its top 35 leads into the space above the piston and at the bottom communicates with the water supply and discharge pipe 36. The base-plate is provided with several—for instance, three—apertures. The latter are connected to the hollow space 37, which is joined by the channel 38 and the valve 39, Fig. 2. Both the latter also communicate with the perforated pipes 40, fixed to the base-plate 5. These pipes 40 extend into the corresponding sockets 41, which are closed at the top and connected to the press-plate 26, so that they are removed with regard to the pipes 40 on the upward movement of the press-plate. The base-plate 5 is provided with an annular space 42. Communication is set up between the latter and the hollow space 37 by means of the channel 38 when the valve-body 39 is removed from its seat. The valve-body 39 is perforated and communicates with the pipe 43, which extends through the exterior wall of the annular channel and is provided with exterior threading.

Screwed onto the pipe 43 is the socket 45, pivoted in the outer wall of the annular channel. It is provided with the handles 46, by which it may be turned. In consequence thereof the valve-body 39 is pressed upon or removed from the orifice of the channel 38, which leads into the space 42. The pipe 43 also may be connected to the hose 44. Arranged concentric to the case parts 1 2 3 4 at a suitable distance therefrom is a casing 47, connected to the base-plate 5 and calked with regard to the same in a suitable manner. The casing 47 is adapted to engage one of the apertures 49 of the straps 50, respectively, by means of the pins 48. The straps 50 are connected to the traverse 52 by means of the chain-links 51, which traverse 52 with its part 53 surrounds the hydraulic cylinder 27, being fixed thereto. The annular space 42 is provided with the discharge-pipe 54, to which the overflow-pipe 55 is joined. Two hooks 57 are fixed to the press-plate 26. The bolts 6 are preferably integral with the pivots 58, to which the parts 59 are pivoted between the two collars, respectively.

The operation of the apparatus is as fol-

lows: The space inclosed by the base-plate 5 and the case parts 1 2 3 4 is filled with the material to be treated, the press-plate 26 being at its top position and the parts 59 pivoted to the pins 58 of the bolts 6, moved below the hooks 57 of the press-plate. For enabling an easy and ready supply of the material to be treated one of the case parts may be placed open in the manner of a door. When the charge is finished, said case part is moved into its end position and the case 1 2 3 4 locked. Then pressure-water is supplied to the pipe 29 by means of the conduit 34, which water enters the space below 30 through the opening 33 and forces the press-plate 26 downward. Thereby the sockets 41 are removed with regard to the perforated pipes 40. During the downward movement of the press-plate 26 the liquid pressed out of the material may escape both from inward outwardly through the perforations of the case parts 1 2 3 4 into the annular space 42 and the discharge-pipe 54, and from outward inwardly through the perforations of the pipes 40, the hollow space 37, and the channel 38 into the annular space 37, and the channel 38 into the annular 42, whence the liquid may be discharged by means of the pipe 54. When the liquid extracted at the lowest position of the press-plate 26 has been entirely discharged, the pipe 43 may be turned in such a manner that the valve-body 39 is pressed against the channel 38. In consequence thereof communication between the channel 38 and annular space 42 is shut off and that between channel 38 and hose 44 put on. Then water of suitable temperature may be supplied to the material pressed out by means of hose 44, pipe 43, channel 38, the hollow space 37, and the perforated pipes 40. Thereby the material pressed out partly moves in a direction opposite to the liquid discharged previously and leaves the apparatus through the perforations of the case parts 1 2 3 4, the annular space 42 and the discharge-pipe 54 carrying along the rest of particles still contained in the material pressed out. When the pressing of the material is finished, the apparatus may be used as filter, this being attained by conducting the liquid to be filtered in the same way as the water through the material pressed out. Thereby the soilings contained in the liquid to be filtered are kept back by the fibers of the material pressed out, so that the liquid discharged by the perforations of the case parts 1 2 3 4 is free of soilings. When the press-plate 26 is to be raised, the water-supply pipe 34 is connected to the water-discharge pipe and pressure-water is led into the pipe 31 and the space above the piston 30 by means of the conduit 36. In consequence thereof the press-plate 26 is raised, and the press-cakes washed out may after the opening of the case parts 1 2 3 4 be easily removed from the apparatus. The construction of the casing 47 renders it possible to use the apparatus as hop-basket also. The finished beer-wort may then be conducted into the press-chamber by means of a pivotable conduit and an opening provided in the press-plate 26, adapted to be closed by a plug. From the apparatus the wort is conducted through the case parts 1 2 3 4, the perforated pipes 40, the hollow space 37, and the channel 38 into the annular space 42 and the space surrounded by the casing 47, filling the latter to the height of the overflow-pipe 55, and then it is transferred through the latter and the discharge-pipe 54 to the cool-bed. (Not shown in the drawings.) If the casing 47 is to be removed, it is only necessary to loosen the connections of the casing and the base-plate to place the pins 48 in one of the apertures 49 of the straps 50, respectively, and to raise the hydraulic cylinder 27 by means of the pressure-water supplied to the pipe 31 from the conduit 36. It is obvious that the casing 47 and the cylinder 27 will in this case be moved upward.

Having now fully described my invention, I declare that what I claim is—

1. In an apparatus for treating hop-draff and the like the combination of a base-plate provided with apertures, upwardly-extending perforated pipes fixed to said base-plate in communication with said apertures, a perforated case consisting of several parts surrounding said perforated pipes, a press-plate provided in said case adapted to be moved up and down, sockets closed at the top fixed to said press-plate, said perforated pipes extending into said sockets, a hydraulic cylinder connected to said press-plate, a piston connected to said base-plate provided in said cylinder, means for moving said cylinder with regard to said piston and means for alternately supplying pressure-water to the space above and below the piston.

2. In an apparatus for treating hop-draff and the like the combination of a base-plate provided with apertures, upwardly-extending perforated pipes fixed to said base-plate in communication with said apertures, a perforated case consisting of several parts surrounding said perforated pipes, a press-plate provided in said case adapted to be moved up and down, hooks provided on said press-plate, bolts 6 connected to said base-plate provided with pivots 58 respectively members pivoted to said pivots adapted to engage said hooks and fix said press-plate in its top position.

3. In an apparatus for treating hop-draff and the like the combination of a base-plate provided with apertures, upwardly-extending perforated pipes fixed to said base-plate in communication with said apertures, a perforated case consisting of several parts surrounding said perforated pipes, a press-plate provided in said case adapted to be

up and down, a casing surrounding said case parts rigidly connected to said base-plate, sockets closed at the top fixed to said press-plate, said perforated pipes extending into said sockets, a hydraulic cylinder connected to said press-plate, a piston connected to said base-plate provided in said cylinder, means for moving said cylinder with regard to said piston and means of setting up communication between said cylinder and casing.

4. In an apparatus for treating hop-draff and the like the combination of a base-plate provided with apertures, upwardly-extending perforated pipes fixed to said base-plate in communication with said apertures, a perforated case consisting of several parts surrounding said perforated pipes, a press-plate provided in said case adapted to be moved up and down, sockets closed at the top fixed to said press-plate, said perforated pipes extending into said sockets, a hydraulic cylinder connected to said press-plate, a vertical pipe fixed to said base-plate extending into said cylinder, a piston fixed to said vertical pipe, a second pipe arranged in said vertical pipe in communication with the space above the piston, means for connecting the exterior pipe with the space below the piston and means for supplying pressure-water to said pipes.

5. In an apparatus for treating hop-draff and the like, the combination of a perforated case, a press-plate adapted to be moved up and down in said case, a cylinder connected to said press-plate, a fixed piston provided in said cylinder and means for alternately supplying pressure-water to the space above and below the piston, respectively.

6. In an apparatus for treating hop-draff and the like, the combination of a base-plate provided with apertures, upwardly-extending perforated pipes fixed to said base-plate in communication with said apertures, a perforated case inclosing said perforated pipes, a press-plate adapted to be moved up and down in said case, a cylinder connected to said press-plate, a fixed piston provided in said cylinder and means for alternately supplying pressure-water to the space above and below the piston, respectively.

In testimony whereof I affix my signature in presence of two witnesses.

KARL PETER.

Witnesses:
J. EIERMANN,
G. SCHUTLER.