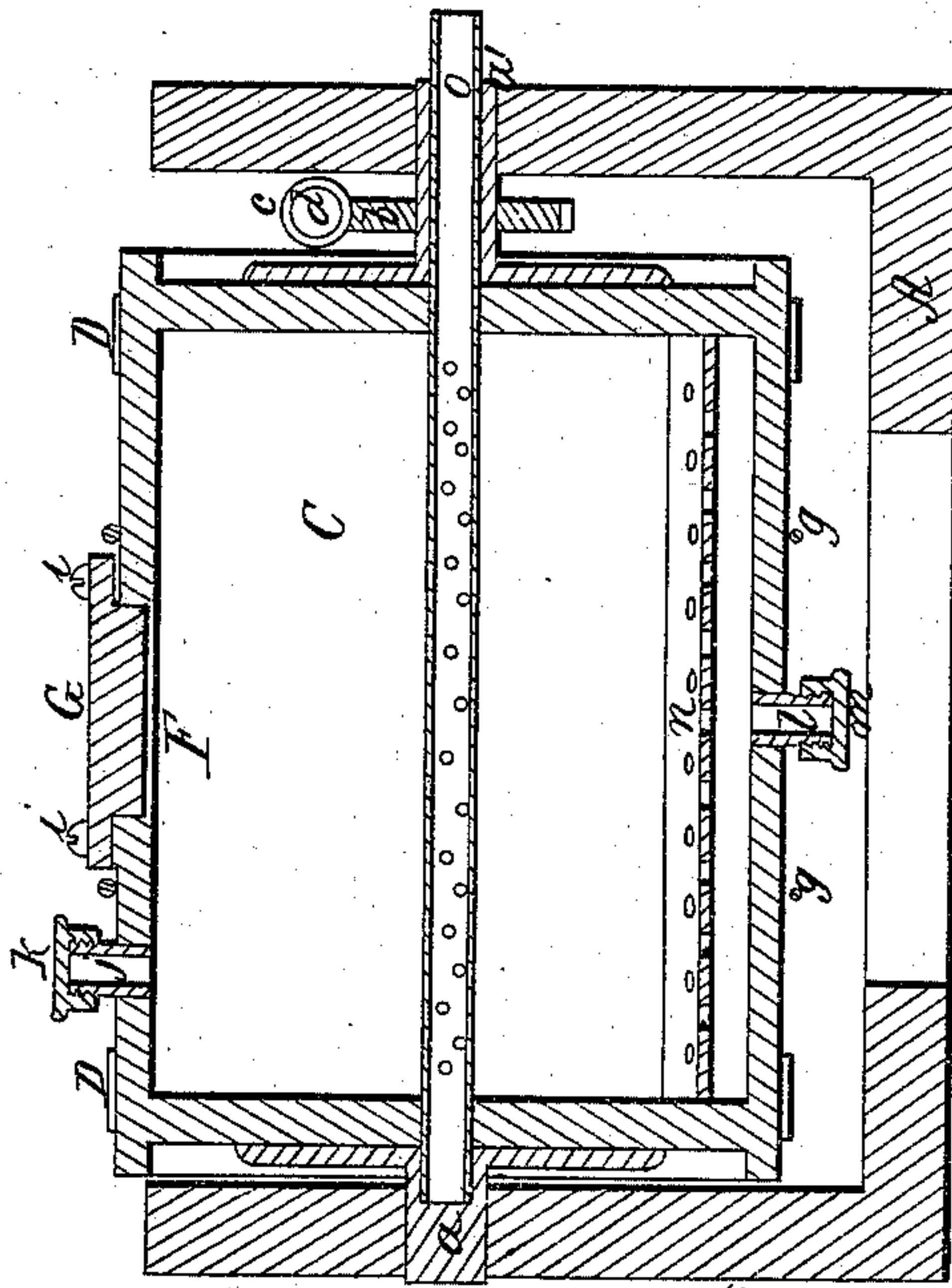
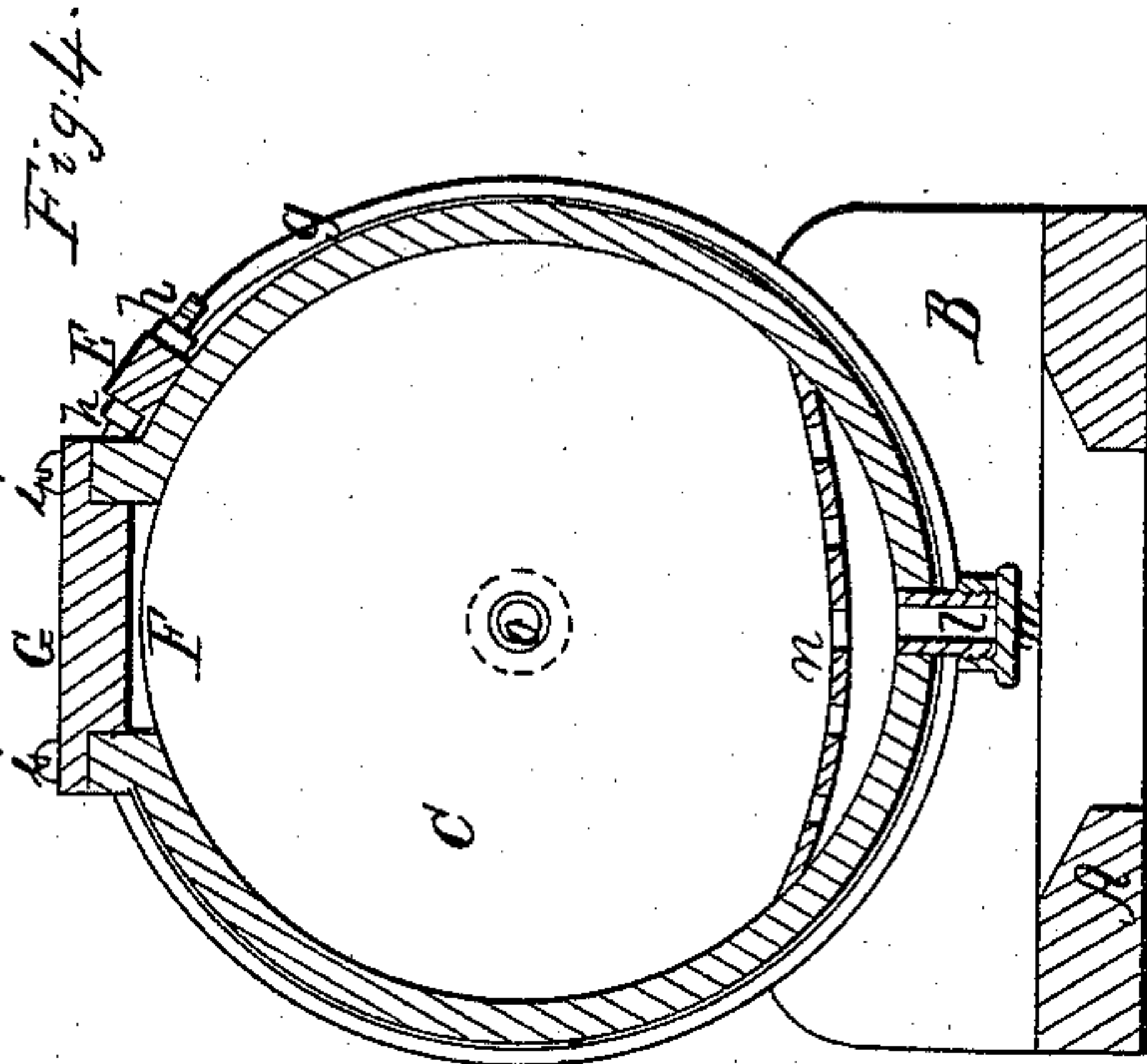


Patented May 22, 1866.



Inventors;
Francis W. Perry
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UNITED STATES PATENT OFFICE.

FRANCIS W. PERRY AND JOHN H. PIERCE, OF WOBURN, MASS.

IMPROVED APPARATUS FOR MAKING EXTRACTS FROM BARK, &c.

Specification forming part of Letters Patent No. 54,945, dated May 22, 1866.

To all whom it may concern:

Be it known that we, FRANCIS W. PERRY and JOHN H. PIERCE, of Woburn, in the county of Middlesex and Commonwealth of Massachusetts, have invented new and useful Improvements on a Leach for Extracting or Displacing Tannic Acid from Bark; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a plan of a leach constructed according to the invention. Fig. 2 is an end elevation. Fig. 3 is a longitudinal section, and Fig. 4 is a vertical transverse section.

Similar letters of reference indicate corresponding parts in the several figures.

The nature of our invention and in what manner the same is to be performed are particularly described and ascertained in and by the following statement thereof—that is to say, this invention has for its object new and useful improvements in the mode of constructing and operating a leach for extracting or displacing tannic acid from bark, whereby a greater percentage of the strength is obtained in much less time and with less steam than in the ordinary way of leaching bark. For this purpose we construct our leach in the form of a cylinder; and make it steam-tight, and provide it with journals at each end, on which it is made to revolve. The bark from which the tannic acid is to be extracted is placed in this cylinder and subjected to a pressure of steam introduced through the axis of the cylinder, and as the cylinder revolves the bark is kept constantly in motion, thereby preventing it from settling down in a solid mass, as it does in all other leaches now in use.

In emptying the leaches now in common use the tan has to be shoveled out when it is hot, which is a very unpleasant job; but our revolving leach will empty itself.

By experiments which we have made with our revolving and self-emptying leach we can safely say that we can obtain twenty per cent. more tannic acid from the same amount of bark than can be obtained by any other leach now in use, and this we can do in twenty-four hours, while the common leaches require three or four days.

By an experiment in releaching bark that had been leached three days in one of the most approved leaches now in use, and thrown away as waste tan, we obtained a five-degree liquor, or twenty per cent. of the whole strength of the bark. This was done in two hours in our leach.

In our revolving leach the bark is constantly agitated, which allows the steam to mix with and penetrate the particles of bark more freely. By this process we are able to extract a greater percentage of the tannic acid with less steam and in a much shorter space of time than in the ordinary leach.

Having thus stated the nature of our invention, we will proceed more fully to describe the manner of performing the same.

In the drawings, A represents a horizontal framing, on which two uprights, B B, are placed, one at each end.

The cylindrical leach C is provided with journals *a a'*, one at each end. These journals are fitted to revolve in boxes formed in or attached to uprights B B. On one of these journals is fixed a worm-gear, *b*, and directly over the gear there is an endless screw or worm, *c*, fixed on a horizontal shaft, *d*, running transversely to the axis of the cylinder, and fitted to revolve in boxes *e e*, attached to one of the uprights B. On one end of the worm-shaft there is a pulley or crank, *f*, to which power may be applied to revolve the worm-shaft, together with the worm thereon. This worm is fitted to work in the teeth of the worm-gear *b* for the purpose of revolving the leach C. This leach is hooped with strong metallic hoops D D and *g g*. The hoops *g g* are made of round rods, and both ends of them pass through the yoke E, with screw-nuts *h* fitted thereon, by which they are tightened or strained up, as clearly represented in Fig. 1.

In one side of this leach there is a large hole or opening, F, at or near the center of its length, of a suitable size, for the convenience of filling and emptying the leach. This opening is closed by a cover, G, which is fitted steam-tight and held firmly by bolts *i*.

For the purpose of introducing water or other fluid to this leach there is an induction-pipe, *j*, inserted at the top near the cover G. This pipe is closed by a cap, *k*, which screws onto the end of the pipe.

For drawing the liquor from the leach there is an eduction-pipe, *l*, inserted at the bottom. This pipe is also provided with a cap, *m*, which screws onto the end of it for the purpose of closing it.

Inside of the leach, directly over the eduction-pipe, there is a strainer, *n*, which prevents the bark from running out through the eduction-pipe while drawing off the liquor.

There is a steam-pipe, *o*, running longitudinally through the center or axis of the leach. One end of this pipe is made fast to the inner end of the leach. The other end extends entirely through the journal *a'* and projects out far enough to receive a stuffing-box for the purpose of connecting another pipe thereto. That part of the pipe extending along inside of the leach is perforated for the purpose of distributing the steam evenly through the contents of the leach.

In operating our leach we first close the eduction and induction pipes by screwing on the caps. The leach is then turned so as to bring the opening on the uppermost side and held in that position. The cover *G* is then removed and the leach filled by means of a spout leading from a loft overhead or by shoveling in the bark, as may be most convenient. When a sufficient quantity of bark has been introduced to the leach the cover *G* is again put on and firmly bolted in its place. Steam is then introduced to the interior of the leach through the steam-pipe *o*. Power is then applied to the worm-shaft by means of a pulley or crank attached thereto, which causes the shaft, to-

gether with the worm, to revolve, and as the worm-gear *b* is actuated by the revolving of the worm, a moderate revolving motion is imparted to the leach.

When the bark has been thoroughly leached the liquor is drawn off through the eduction-pipe *l*, and a second leaching may then be performed, if necessary.

Water may be introduced to the interior of the leach, when desired, through the induction-pipe *j*.

When it is desired to empty the leach by removing the tan therefrom the cover *G* is taken off and the leach turned till the opening is down. The tan will then run out freely, thus emptying the leach without the necessity of shoveling.

Having thus fully described the construction and operation of our invention, we will now proceed to point out the parts which we claim and desire to secure by Letters Patent:

1. A revolving and self-emptying leach for extracting or displacing tannic acid from bark, substantially as herein described.

2. The combined arrangement, substantially as herein described, for revolving the leach and introducing steam thereto, or any analogous device to produce the same results, when used for extracting tannic acid from bark for tanner's use.

FRANCIS W. PERRY.
JOHN H. PIERCE.

Witnesses:

CHAS. W. HAWKES,
M. M. HAWKES.