

No. 614,039.

Patented Nov. 8, 1898.

F. N. TURNEY.
APPARATUS FOR EXTRACTING OIL.

(Application filed Nov. 22, 1897.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 3.

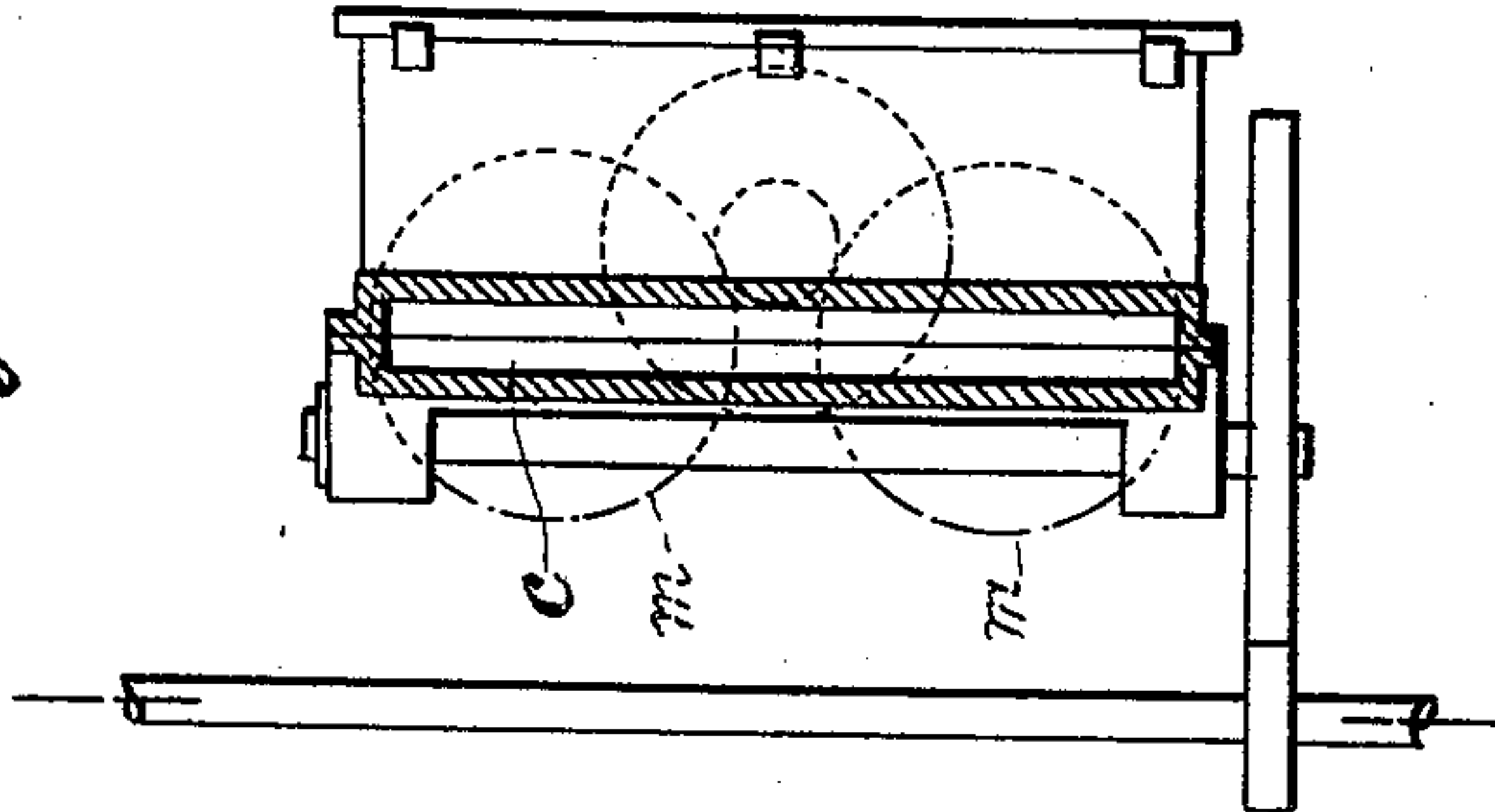
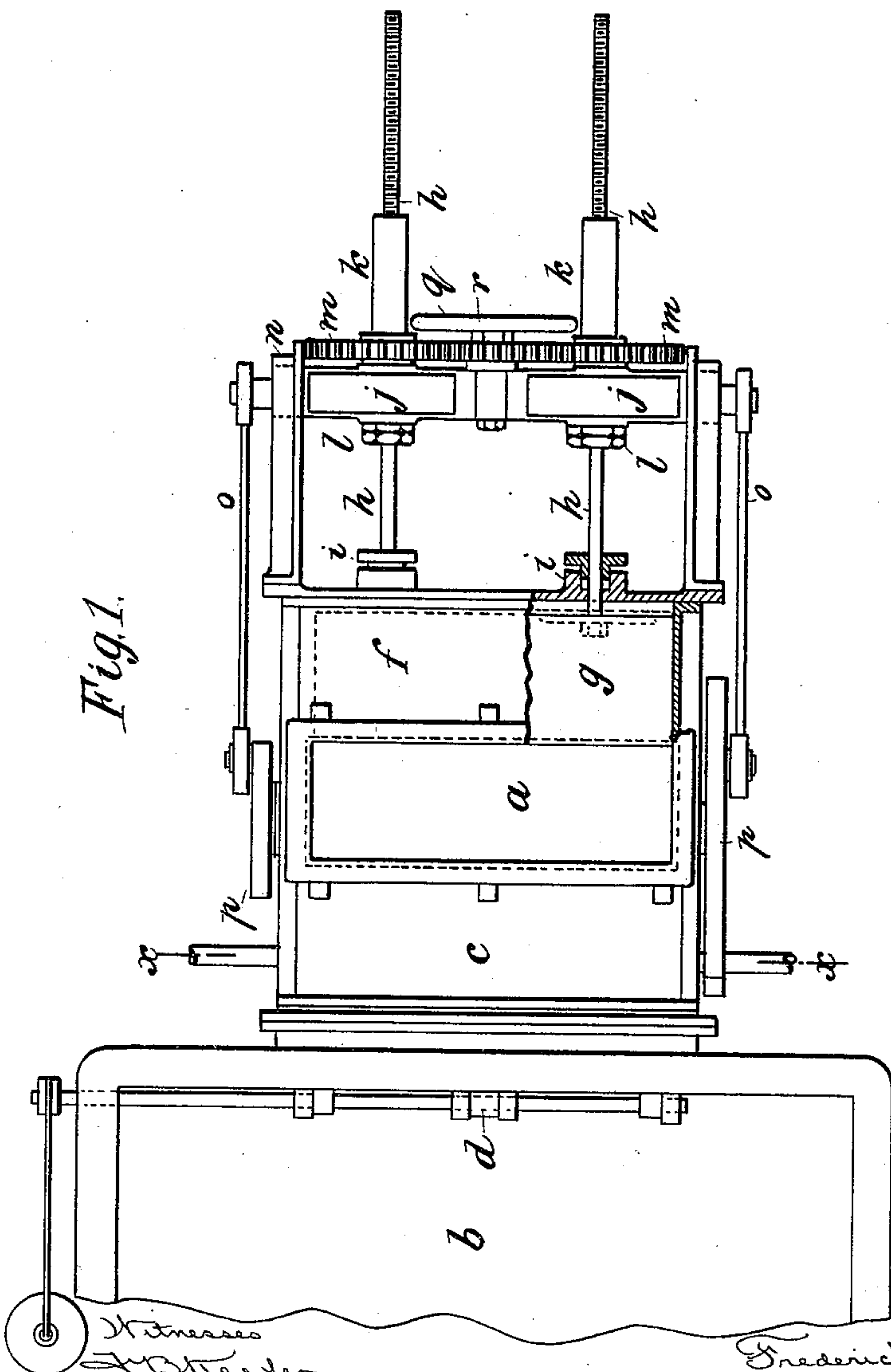


Fig. 1.



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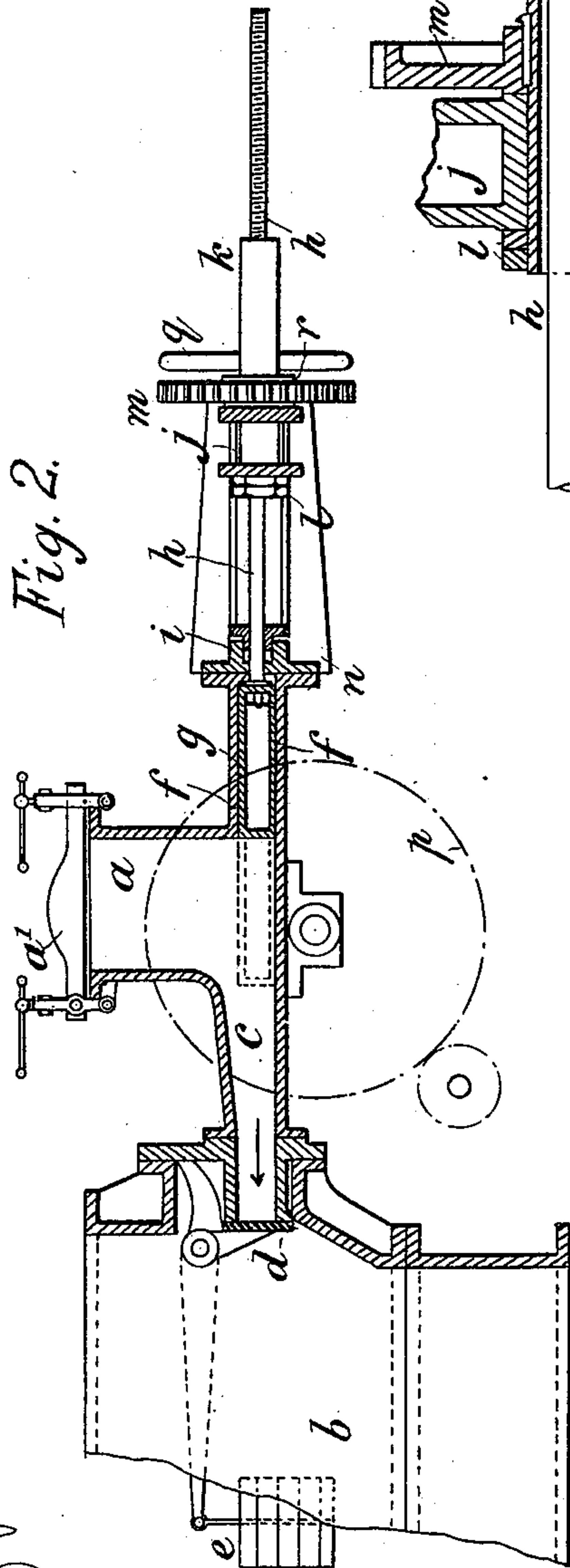
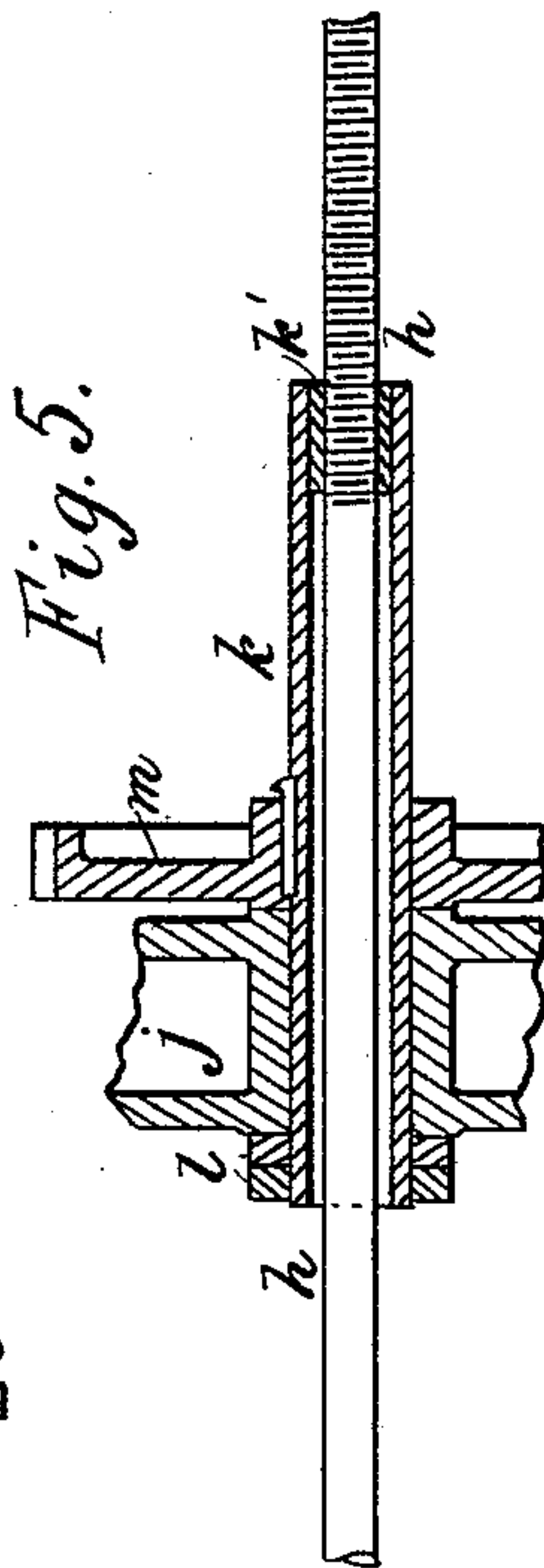
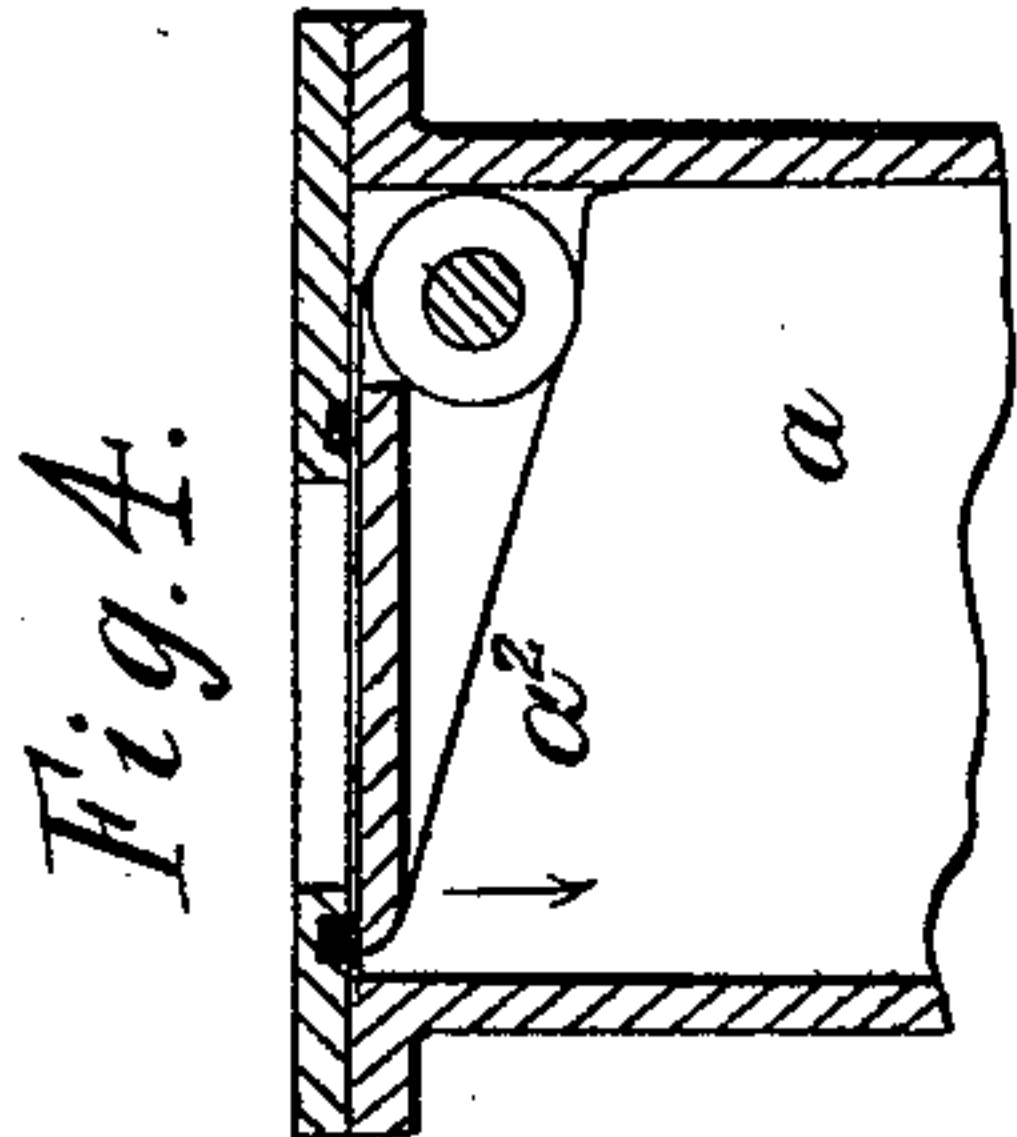
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2 Sheets—Sheet 2.



Witnesses

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UNITED STATES PATENT OFFICE.

FREDERICK NICHOLSON TURNEY, OF NOTTINGHAM, ENGLAND.

APPARATUS FOR EXTRACTING OIL.

SPECIFICATION forming part of Letters Patent No. 614,039, dated November 8, 1898.

Application filed November 22, 1897. Serial No. 659,494. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK NICHOLSON TURNEY, a subject of the Queen of Great Britain and Ireland, residing at Nottingham, England, have invented new and useful Improvements in Apparatus for Degreasing Wool, Cotton-Waste, and other Fibrous Materials, (for which Letters Patent have been granted in Great Britain, No. 18,360, dated August 19, 1896; in Belgium, No. 128,597, dated May 31, 1897, and in France, No. 267,447, dated May 31, 1897,) of which the following is a specification.

This invention relates to improvements in apparatus for degreasing wool, cotton-waste, and other fibrous materials by volatile solvents, and it has reference more particularly to improved means for continuously feeding said materials to and withdrawing them from such apparatus without admitting air and without permitting loss of vapor of the solvent employed, the said means forming an effective entrance or exit air-lock.

The means about to be described are specially applicable to wool-degreasing apparatus of the type described in the specification of my United States Letters Patent dated December 22, 1896, and numbered 573,727.

To render my invention readily understood, I will describe the same fully with reference to the accompanying drawings, in which—

Figure 1 is a plan of the improved means or feeding device. Fig. 2 is a longitudinal sectional elevation of the same, and Fig. 3 is a cross-section on the line $x x$ of Fig. 1. Fig. 4 is a detail of the receiving-chamber at the exit end of the apparatus. Fig. 5 is a detail view, drawn to a larger scale than are Figs. 1, 2, and 3, of the means for completely emptying the receiving-chamber at the entrance end of the apparatus.

In carrying out my invention I arrange between the receiving-chamber a and the degreasing-chamber b a flat tube, channel, or passage c of the requisite length and of a width corresponding approximately to that of the degreasing-chamber. In the arrangement shown in the drawings the flat tube forms a continuation of the receiving-chamber, and by preference it tapers toward the degreasing-chamber, as clearly seen in Fig. 2. At its outlet end it is fitted with a valve or

flap d , held on its seat by a counterbalance-weight e . The receiving-chamber a is further provided at its other end and in line with the flat tube with a guide-box f , in which a reciprocating plunger g is adapted to work. This plunger is connected to rods h , passing through stuffing-boxes i at the outer end of the guide-box f . The plunger-rods h in their turn are connected to a cross-head j and are provided with means for adjusting the position of the plunger g in the guide-box f . These means may advantageously consist of tubes k , fitted with nuts k' , into which the ends of the plunger-rods are screwed, while the other ends of said tubes are secured in the cross-head j by lock-nuts l and spur-wheels m in such a manner that while they are capable of rotating therein they are prevented from longitudinal movement. The cross-head slides in guide-brackets n and is coupled to connecting-rods o , driven from wheels or crank-disks p or in any other suitable manner.

The receiving-chamber a is provided with a vapor-tight lid a' , which is left open during the feeding operation, and the material is fed to said chamber either by hand, by an endless traveling belt, (not shown,) or by other appropriate means. On the material being introduced it falls to the bottom of the chamber and is pushed forward by the reciprocating plunger g into the flat tube c , wherein it is compressed. When a sufficient quantity of material has accumulated and has been compressed in said tube c , its pressure on the flap or valve d becomes so great that it forces this latter open and then passes out of the flat tube into the degreasing-chamber b in a continuous, or practically continuous, layer of approximately the thickness to which it had been compressed in the flat tube through the action of the plunger. Material being continuously fed into the receiving-chamber a to take the place of that which passes into the degreasing-chamber b , the compressed material in the tube c forms an effective vapor-tight seal, which prevents the entry of air into or the escape of volatile vapor from the degreasing-chamber, no valve being necessary therefor. When the material to be degreased has passed into the degreasing-chamber, with the exception of the plug, which re-

mains in the flat tube, this latter is cleared out in the following manner and conveniently by the means shown in Fig. 5: The lid *a'* of the receiving-chamber having been previously closed, the rods *i* are screwed through the nuts *k'* by turning the hand-wheel *q*, which carries a pinion *r*, in gear with the wheels *m* on the tubes *k*. This causes the plunger *g* to advance to the extreme end of the flat tube *c* and completely empty it by pushing all the remaining material into the degreasing-chamber. The rods or spindles *h* are then restored to their original position by means of the hand-wheel *q*. From the degreasing-chamber the material passes into a drying-chamber, as usual, and thence out into a receiving-chamber similar to *a*, but having a valve *a''*, Fig. 4, instead of a lid *a'*. At the exit end of the drying-chamber the tubes *k* may be dispensed with and the rods *h* be secured directly in the cross-head *j*. In such case the flat tube *c* would be cleared by means of a rake or in any other convenient manner. In some cases I may use two plungers arranged side by side and adapted to work simultaneously.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

30 1. In a degreasing apparatus, the combination with the receiving and degreasing chambers, and a communicating passage between said chambers, of a plunger, moving in said passage, means for reciprocating said plunger, and mechanism for moving the plunger independent of the reciprocating means.

40 2. In a degreasing apparatus, the combination with the degreasing and receiving chambers and the intermediate passage communicating with said chambers, of a plunger moving in said passage, means for reciprocating said plunger, a cross-head, an internally-threaded nut carried by said cross-head, a threaded rod having one end secured to the plunger and its opposite portion passed through the threaded nut and means for rotating said nut, for the purpose specified.

50 3. In a degreasing apparatus, the combination with the degreasing and receiving chambers and the intermediate passage communi-

cating with said chambers, of a plunger moving in said passage, means for reciprocating said plunger, and mechanism for moving the plunger independent of the reciprocating means, consisting of a cross-head, an internally-threaded nut journaled in the cross-head, a threaded rod attached at one end to the plunger and having its opposite end passed through the said nut, a gear-wheel fixed to said nut, a similar gear-wheel meshing with the gear on the nut, and a handle for rotating said gear-wheels, for the purpose specified.

4. In a degreasing apparatus, the combination with the degreasing and receiving chambers and the intermediate passage communicating with said chambers, of a plunger moving in said passage, means for reciprocating said plunger, and mechanism for moving the plunger independent of the reciprocating means, consisting of a movable cross-head having two internally-threaded nuts journaled therein, threaded rods attached at one end to the plunger and having their opposite ends passed through said nuts, a gear-wheel fixed to each nut, an intermediate gear-wheel carried by the cross-head and meshing with the aforesaid gears, and a hand-wheel fixed to the said intermediate gear, substantially as and for the purpose described.

5. In a degreasing apparatus, the combination with the receiving-chamber *a*, having an air-tight closure *a'*, of the degreasing-chamber *b*, communicating by passage *c*, with the receiving-chamber, a horizontal rod journaled in bearings in the degreasing-chamber, and provided with a weight on its outer end, a valve *d*, fixed upon said rod within the latter-named chamber and arranged to close the passage *c*, a plunger *g*, moving in said passage, means for reciprocating said plunger, and mechanism for moving the plunger independent of the reciprocating means.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

FREDERICK NICHOLSON TURNEY.

Witnesses:

C. P. HEARN, Jr.,

THOS. H. COOK.