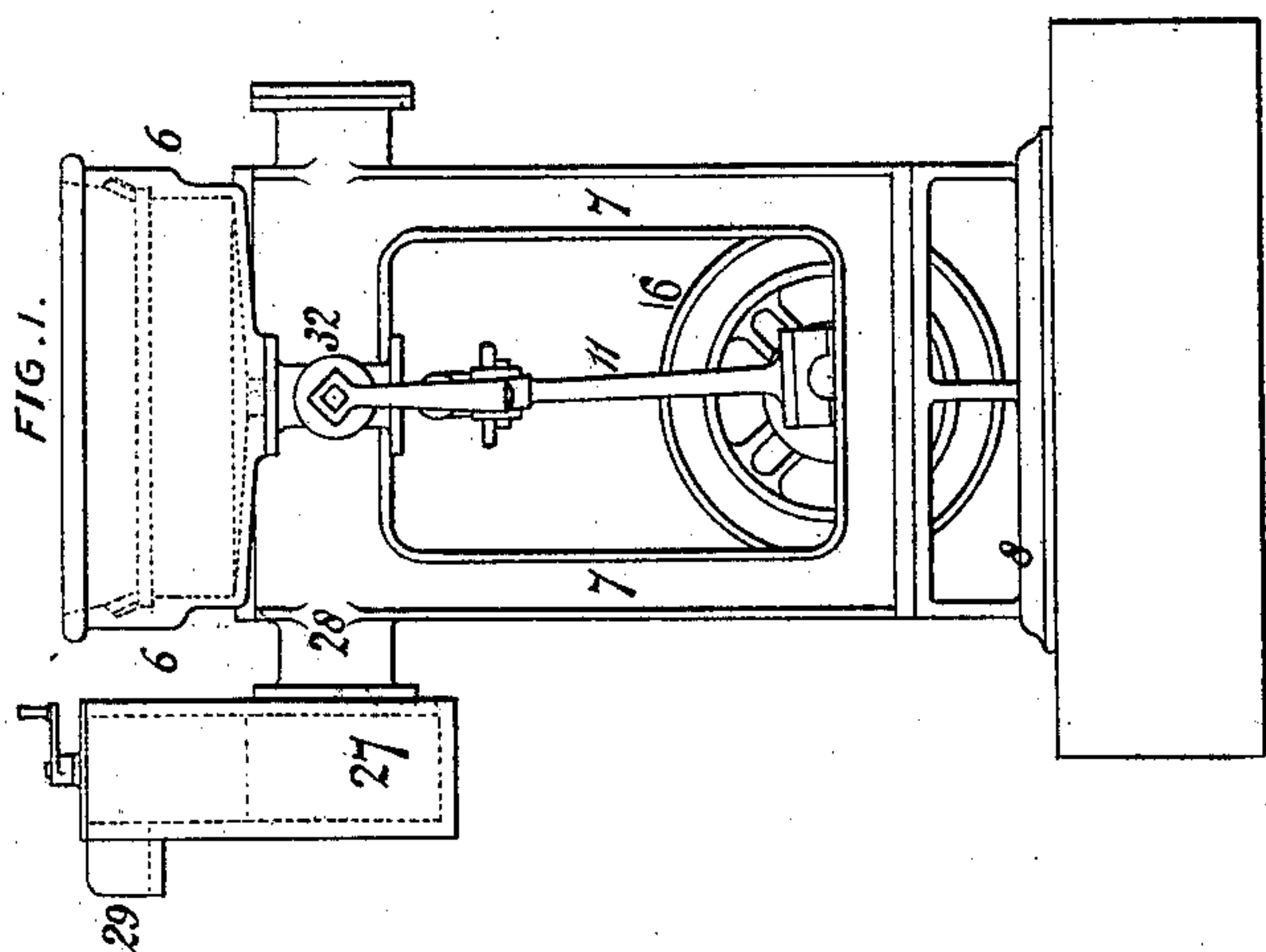
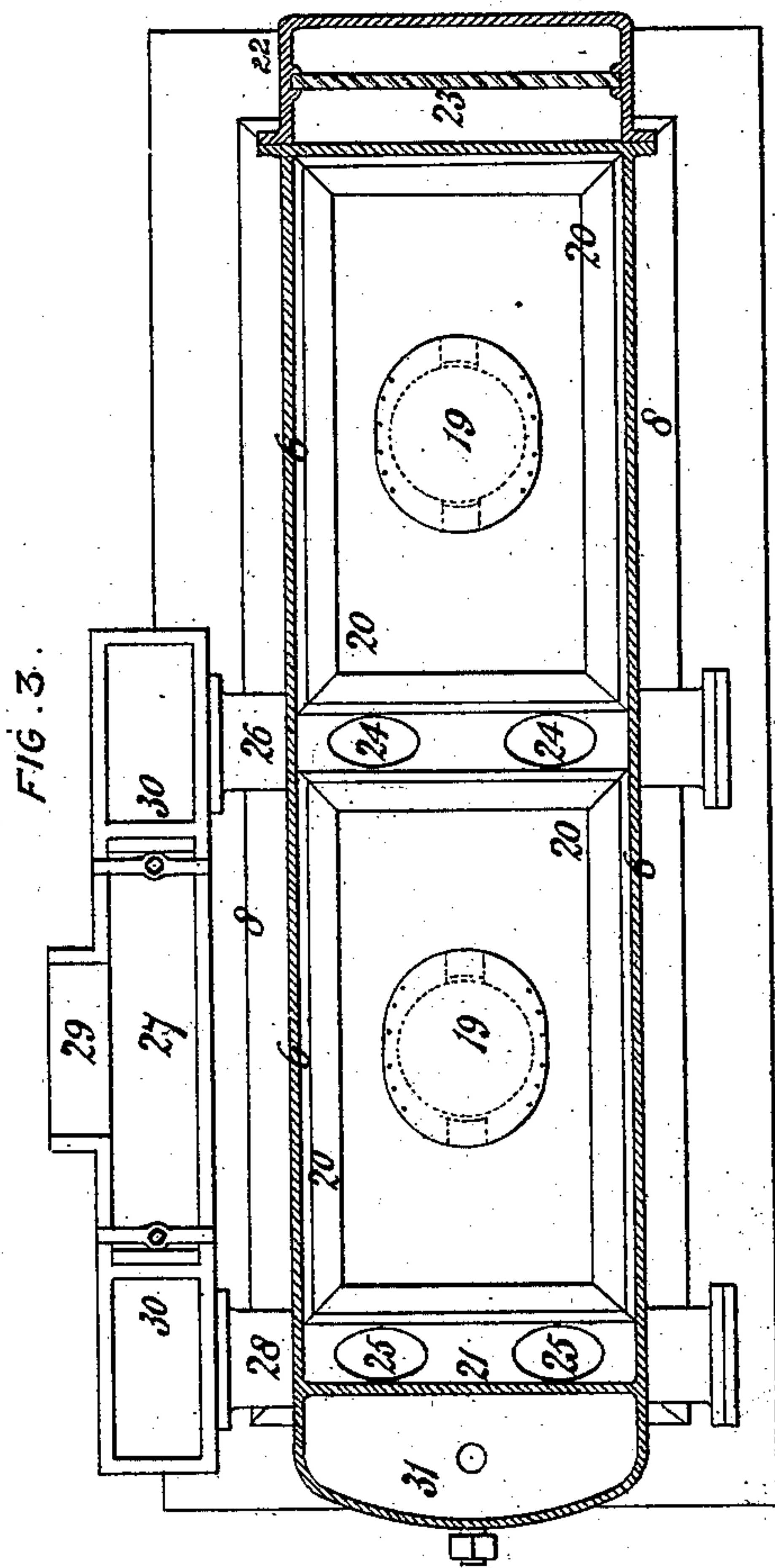
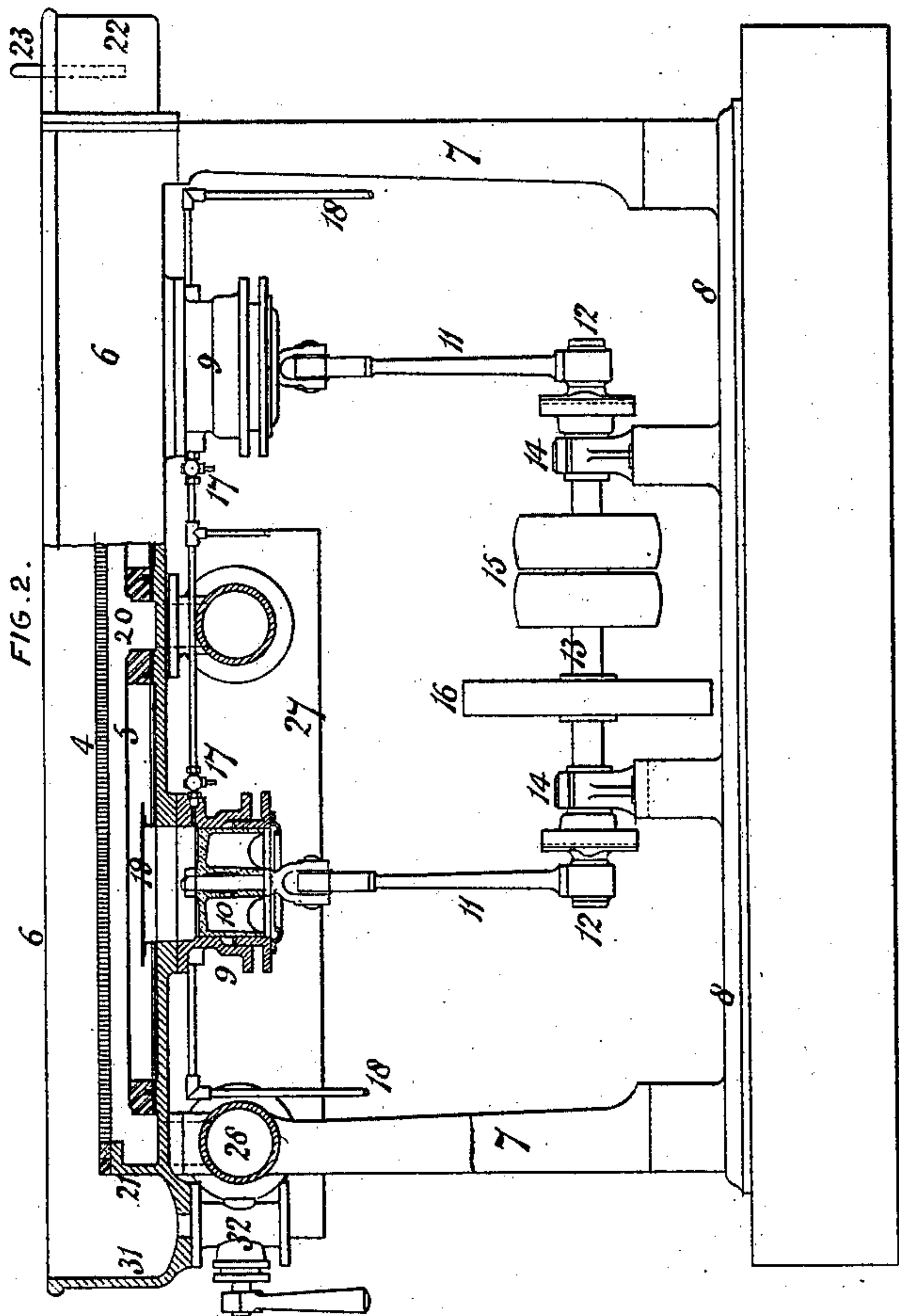


(No Model.)

J. & R. WOOD.
PULP STRAINER.

No. 361,107.

Patented Apr. 12, 1887.



Witnesses:
John E. Parker
William D. Conner.

Inventors
John Wood & Robert Wood
by their Attorneys
Harrison & Sons

UNITED STATES PATENT OFFICE.

JOHN WOOD AND ROBERT WOOD, OF LEITH, COUNTY OF MID-LOTHIAN,
SCOTLAND.

PULP-STRAINER.

SPECIFICATION forming part of Letters Patent No. 361,107, dated April 12, 1887.

Application filed September 1, 1886. Serial No. 212,384. (No model.)

To all whom it may concern:

Be it known that we, JOHN WOOD and ROBERT WOOD, subjects of the Queen of Great Britain, and residing at Leith, in the county of Mid-Lothian, Scotland, have invented Improvements in Pulp-Strainers, of which the following is a specification.

Our invention relates to pulp-straining apparatus of the kind in which a pulsating action is imparted to the pulp in a manner to draw it through the strainer-plates by means of pumps acting on air or other suitable fluid, which is separated from the pulp by a diaphragm of a suitable flexible but impermeable material, such as sheet rubber. By our present invention we improve the construction and arrangement of the parts of the apparatus with the object of obtaining a better action, and more particularly so as to render the pulsating action more uniformly distributed over the extent of the strainer-plates.

In carrying out our invention the strainer-plates are fixed horizontally in an oblong vat, at one end of which the pulp to be operated on is admitted, and the length of which is suitable for sufficiently treating the pulp as it flows from one end to the other. Two pulsating flexible diaphragms are placed below the strainer-plates, and air or other fluid beneath these diaphragms is acted on by two pumps fixed to the bottom of the vat, one below the center of each diaphragm.

On the accompanying sheet of drawings, Figure 1 is an end elevation. Fig. 2 is a sectional side elevation, and Fig. 3 is a horizontal section. In Fig. 3 the strainer-plates and flexible diaphragms 4 5, Fig. 2, are absent.

The vat 6, which is in the form of a shallow open-topped cast-iron box, is supported by end frames, 7, fixed on a base-plate, 8. The bottom of the vat is formed with openings communicating directly with the upper ends of two cylinders, 9, bolted to the vat-bottom. These cylinders are fitted with plungers or deep pistons 10, which work through stuffing-boxes and have jointed to them the upper ends of connecting-rods 11, the lower ends of which are jointed upon crank-pins 12 at the ends of a horizontal shaft, 13, carried in pedestal-bearings 14, fixed on the sole-plate 8. The shaft

13 carries fast and loose pulleys 15 for a driving-belt, and has fixed on it a fly-wheel, 16. The crank-pins 12 are adjustable upon the ends of the shaft 13, so that the stroke of the pistons 10 may be varied to suit different qualities of pulp. The pistons 10 are lubricated by water admitted through regulating-cocks 17, and any surplus water is led off by overflow-pipes 18, entering the cylinders 9 at a slightly higher level than the water-inlets.

Above each of the cylinder-openings in the bottom of the vat 6 there is placed a baffling-plate, 19, supported at two opposite points, and having a few holes made through it. These baffling-plates are for the purpose of preventing the impulses caused by the pistons from acting too directly on the middles of the flexible diaphragms 5, and for rendering the pulsating action approximately uniform over the whole of each diaphragm. Each flexible diaphragm 5 is fixed by its edges to a wooden frame, 20, which is itself fixed in a water-tight manner on an iron frame made with a rib fitting in a groove formed in the bottom of the wood frame 20, this iron frame being itself bolted to the vat-bottom and the joint made water-tight. The strainer-plates 4, which are of a kind now commonly used, are fixed in a usual manner upon a ledge formed for them across the entering end of the vat (the right-hand end in Fig. 2) along the sides and along the top of a low transverse partition, 21, near the opposite end. The pulp to be operated on is led by a pipe into a feed-box, 22, at the entering end, and, passing under an adjustable dipping-board, 23, in that box, flows thence over the strainer-plates 4. The pulp, which passes through the strainer-plates 4, leaves the vat by four openings—two, 24, at the middle and two, 25, at the end opposite the inlet end. The two middle outlets, 24, communicate by a transverse pipe, 26, beneath the vat with one end of a service-box, 27, and the two end outlets, 25, communicate with the other end of the service-box 27 through a pipe-like passage, 28, formed in the end frame, 7. The service-box 27 is made with three compartments, the pipes 26 28 being connected to the end compartments, while the middle compartment is made with a delivery-spout, 29. The

strained pulp flows from the end compartments over partitions or weirs 30, the heights of which are adjustable by screw-spindles acting on movable boards, and their use is to prevent
5 air from getting into the space between the strainer-plates 4 and the flexible diaphragms 5. The fibrous or other ingredients which do not pass through the strainer-plates 4 pass over them to a trough, 31, at the end of the
10 vat, and are discharged therefrom through a cock, 32.

What we claim as our invention in pulp-straining apparatus is—

1. In combination, an oblong vat with inlet
15 at one end, horizontal strainer-plates fixed across the vat, two flexible diaphragms fixed horizontally below the strainer-plates, cylinders fixed to the bottom of the vat and in direct communication with the spaces under the
20 flexible diaphragms, and pistons in the cylinders, such pistons being connected to cranks on a rotating shaft below the vat, all arranged and operating substantially as and for the purposes herein set forth.

25 2. In combination, cylinders with their pis-

tons, the cylinders communicating directly through openings in the bottom of a pulp-strainer vat with spaces under flexible diaphragms, and baffling-plates over the said openings, substantially as and for the purposes
30 herein set forth.

3. In combination, an oblong arrangement of strainer-plates, an inlet at one end for the pulp to be operated on, two pulsating flexible diaphragms below the strainer-plates, outlets
35 for the strained pulp at the middle and at the end opposite to the inlet end, and a trough at the extreme end for fibrous or other ingredients which do not pass through the strainer-plates, all arranged and operating substan-
40 tially as herein set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN WOOD.

ROBERT WOOD.

Witnesses:

OSCAR MALMROS,

HUGH C. PEACOCK.