

No. 618,659.

Patented Jan. 31, 1899.

T. C. GOOCH.
CENTRIFUGAL MACHINE.

(Application filed Feb. 4, 1898.)

(No Model.)

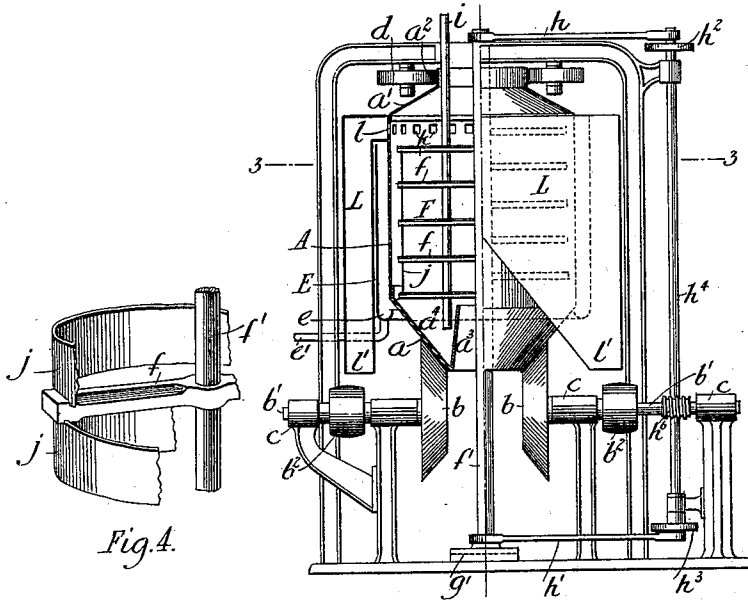


Fig. 1.

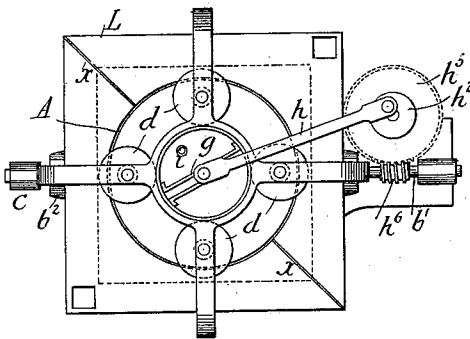


Fig. 2.

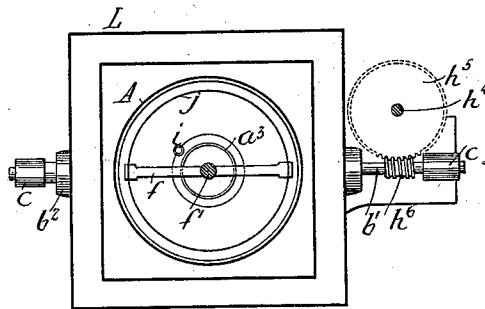


Fig. 3.

WITNESSES
Arthur Blomming
W. J. Norton

INVENTOR
Thomas C. Gooch
By *J. H. Browne*
his Attorney.

UNITED STATES PATENT OFFICE.

THOMAS C. GOOCH, OF CHICAGO, ILLINOIS.

CENTRIFUGAL MACHINE.

SPECIFICATION forming part of Letters Patent No. 618,659, dated January 31, 1899.

Application filed February 4, 1898. Serial No. 669,125. (No model.)

To all whom it may concern:

Be it known that I, THOMAS C. GOOCH, a citizen of the United States of America, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Centrifugal Extractors, of which the following is a specification.

This invention, while relating to centrifugal extractors or separators generally, is directed more especially to improvements in or pertaining to the type of extractor or separator shown and described in Letters Patent No. 574,060, granted to me December 29, 1896. In the said Letters Patent the conveyer through which the filtered or separated material passes away from the extractor is shown and described as located at the lower discharging throat or pipe, the latter revolving freely in the conveyer-flange. In operation the material is fed downward through the extractor and into the conveyer, and from thence to any desired point.

My present invention has for its object the provision of means by which the material which is fed into the base of the extractor is caused to be carried upwardly therein and to be discharged therefrom at a point near the top and afterward conveyed away. The construction by which this result is accomplished is fully described in the following detailed description, which is to be read in connection with the accompanying drawings, in which—

Figure 1 is an elevation, partly in section, of an extractor embodying my invention. Fig. 2 is a top view. Fig. 3 is a sectional view on line 3 3 of Fig. 1. Fig. 4 is a detail perspective view showing a portion of a rake-arm and the manner of mounting the ring-plates.

Referring to the said drawings by letter, A denotes the extractor-drum, the lower conical end a of which is supported on beveled friction-disks $b\ b$, fixed to shafts $b' b'$, journaled in bearings $c\ c$, and on said shafts are pulleys $b^2\ b^2$, having belt connection with a source of power by which the disks are rotated and the drum revolved. The upper conical end a' of the drum is provided with a collar a^2 , which is engaged by guide-rollers $d\ d$, rotatably mounted on the main frame of the extractor, whereby the position of the drum is maintained. The drum is open-ended, and at its

lower end is an inwardly-extending flange a^3 , providing, with the wall of the drum, an annular receptacle a^4 . The wall of the drum between the ends $a\ a'$ is perforated and lined with felt or other similar material through which the separated liquid is filtered. Concentric with the drum is a casing E, having a lower trough-shaped end e to receive the liquid, which is carried off therefrom through a pipe e' .

F denotes a rake composed of a number of arms $f\ f$, secured at their inner ends to a vertical rod f' , which is slidably mounted at its ends in guides $g\ g'$. In practice the rake moves from side to side of the drum, the means for imparting this motion consisting of pitmen $h\ h'$, respectively connected to the rod ends and oppositely connected to crank-disks $h^2\ h^2$, carried by a vertical shaft h^4 , which is rotated, through the engagement of a worm gear-wheel h^5 thereon, with a worm h^6 on one of the shafts b' .

The material is fed to the drum through a pipe i and is deposited therefrom into the receptacle a^4 . The centrifugal action of the rapidly-revolving drum causes the material to be carried against the wall of the drum and to be separated from its liquid contents, which is filtered through the lining and perforations and collected in the casing-trough e , from which it is carried off, as previously stated. The centrifugal action to which the material is subjected has the further effect of carrying the material to the upper end of the drum, and to aid in securing this result the arms of the rake are provided with beveled edges which deflect the material upwardly, or, in other words, produce a result similar to that effected by a screw conveyer. To confine the material to the conveyer-wall and also to prevent the escape of the material from the upper open end of the drum, I employ ring-plates $j\ j$, which are secured to the rake-arms and which provide, with the drum-wall, an annular passage, through which the material is carried. These plates j , which are shown in vertical section in Fig. 1 and in cross-section in Fig. 3, are cylindrical in form and secured to the rake-arms by engaging grooves provided near the outer end of the latter. These plates form practically an unbroken surface and the inner wall of the annular passage.

The material is therefore through the employment of the means stated and also through the centrifugal action of the revolving drum gradually carried to the upper end 5 of the drum and in its ascension is freed from the liquid contents. The separated material finds its way out of the drum through apertures *k k*, which are in register with the annular opening *l* of a conveyer-casing *L*. This 10 casing incloses the drum and is supported by the frame of the extractor, and for convenience of attachment it is constructed in two parts or sections connected together at *x*. The material entering the casing by the opening 15 *l* is carried by gravity to the discharge-outlets *l'*, from which may lead conveying pipes or troughs, as will be understood.

My improved extractor is designed to remove the moisture from sugar and distillers' 20 slops, the oil from cotton-seed, and other liquids from like substances.

The drum, in lieu of being vertically arranged, as shown, may be mounted to assume an angular position or may be horizontally 25 arranged.

I claim as my invention—

1. In a centrifugal extractor or separator,

the combination with a revoluble drum provided with apertures in the upper end, of a reciprocatory rake within the drum the arms 30 of which are provided with beveled edges, and a casing having an annular opening in register with said apertures and having discharging-outlets, substantially as described.

2. In a centrifugal extractor or separator, 35 the combination with a revoluble drum having a lower conical flanged end into which the material is delivered, and having apertures in its upper end, a reciprocatory rake within the drum the arms of which have beveled edges, rings carried by the arms and providing with the drum-wall an annular passage for the material, and a casing constructed in sections and provided with an annular 40 opening registering with the drum-apertures, and provided with discharging-outlets, substantially as described. 45

Signed by me, at Chicago, Illinois, this 17th day of January, 1898.

THOMAS C. GOOCH.

Witnesses:

HIRAM A. GOOCH,
COWLES BRENNER.