(No Model.) 2 Sheets—Sheet 1.

T. C. GOOCH.

CENTRIFUGAL EXTRACTOR.

No. 574,060. Patented Dec. 29, 1896.

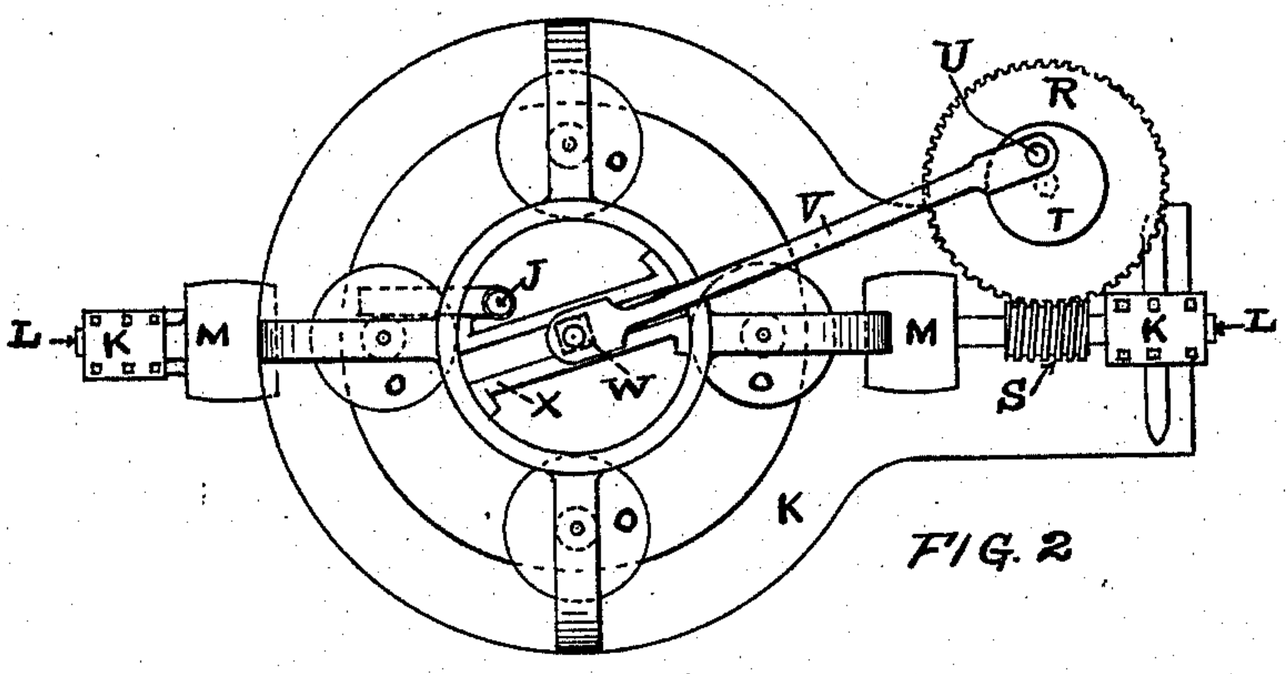

FIG. 2

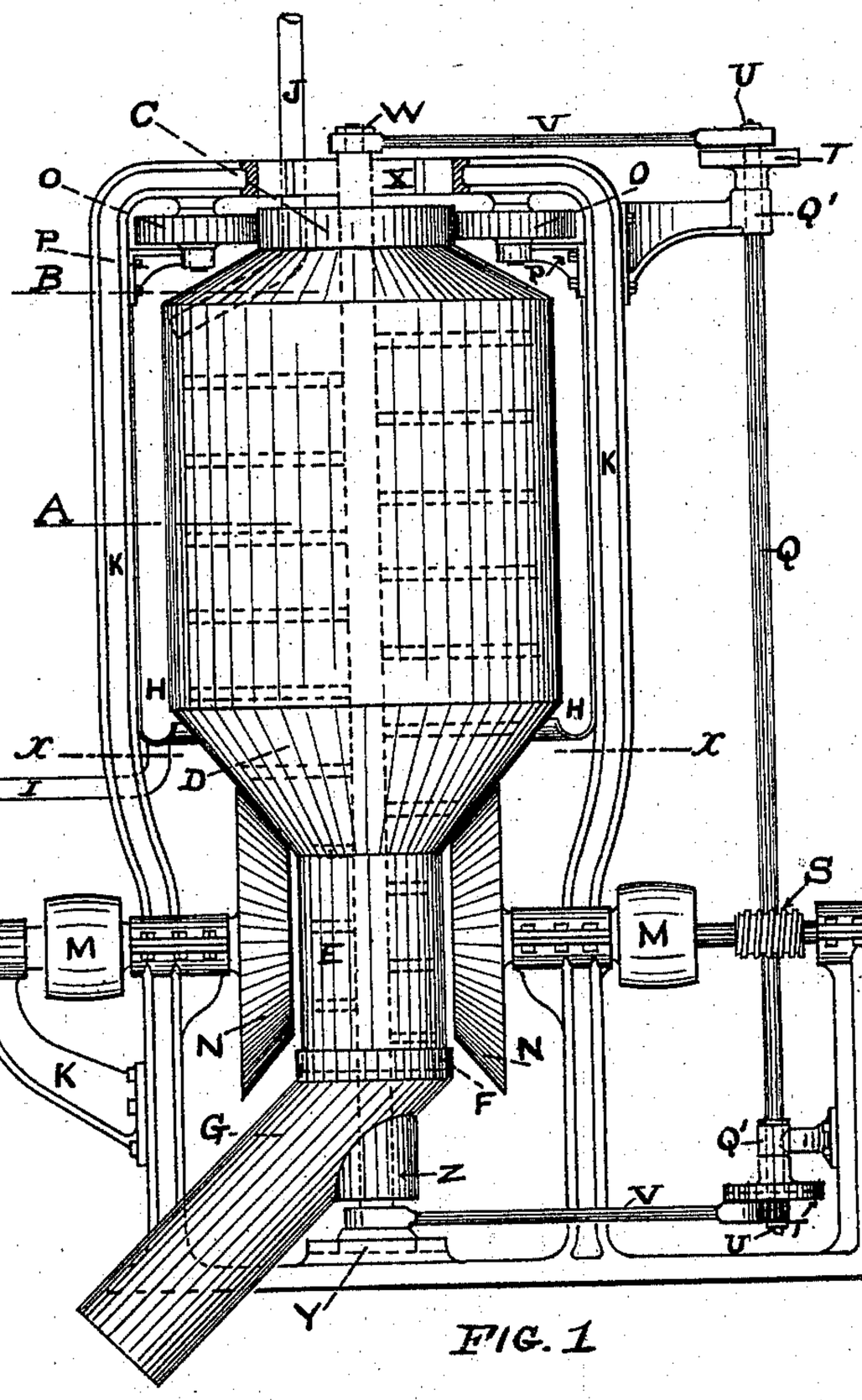

FIG. 1

FIG. 4

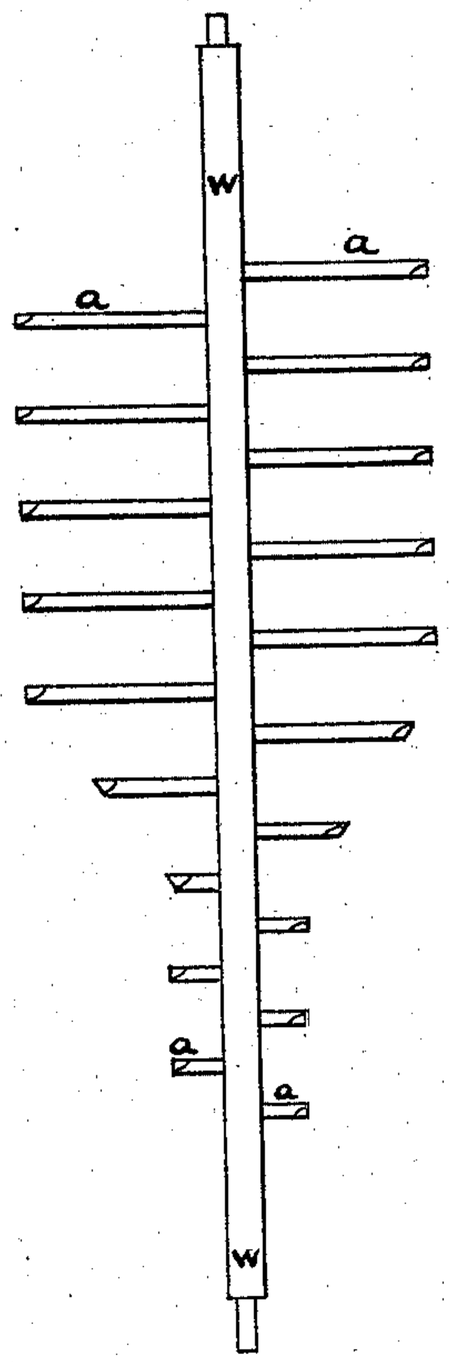

FIG. 3

WITNESSES:

Aaron Ellison.

James H. Beattie.

INVENTOR.

Thomas C. Gooch.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 5.

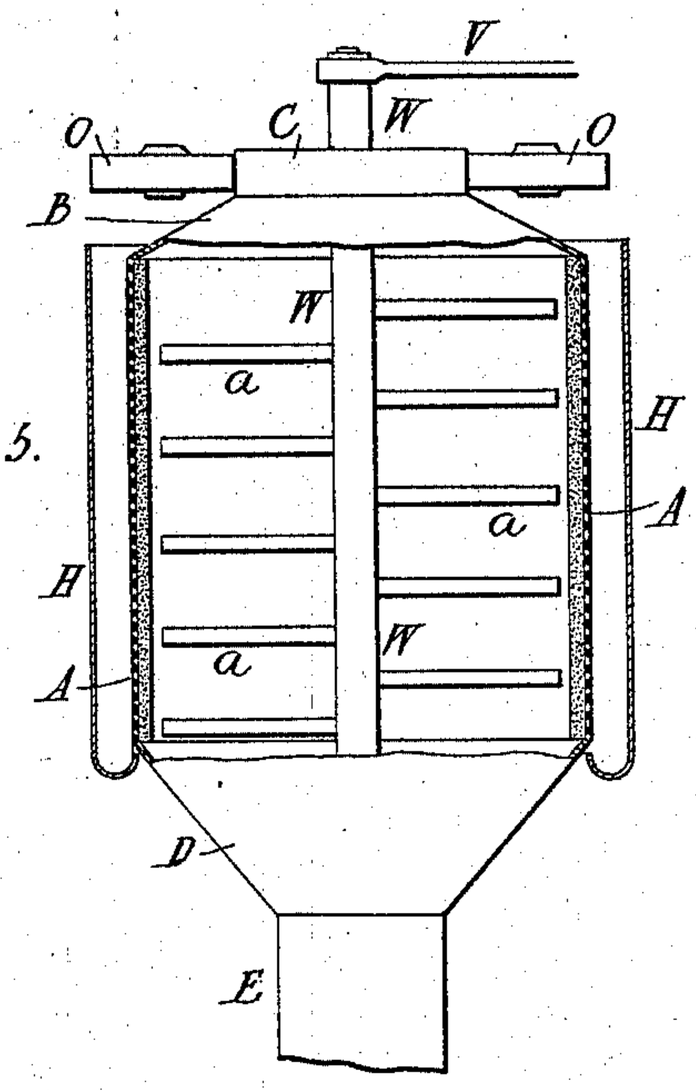
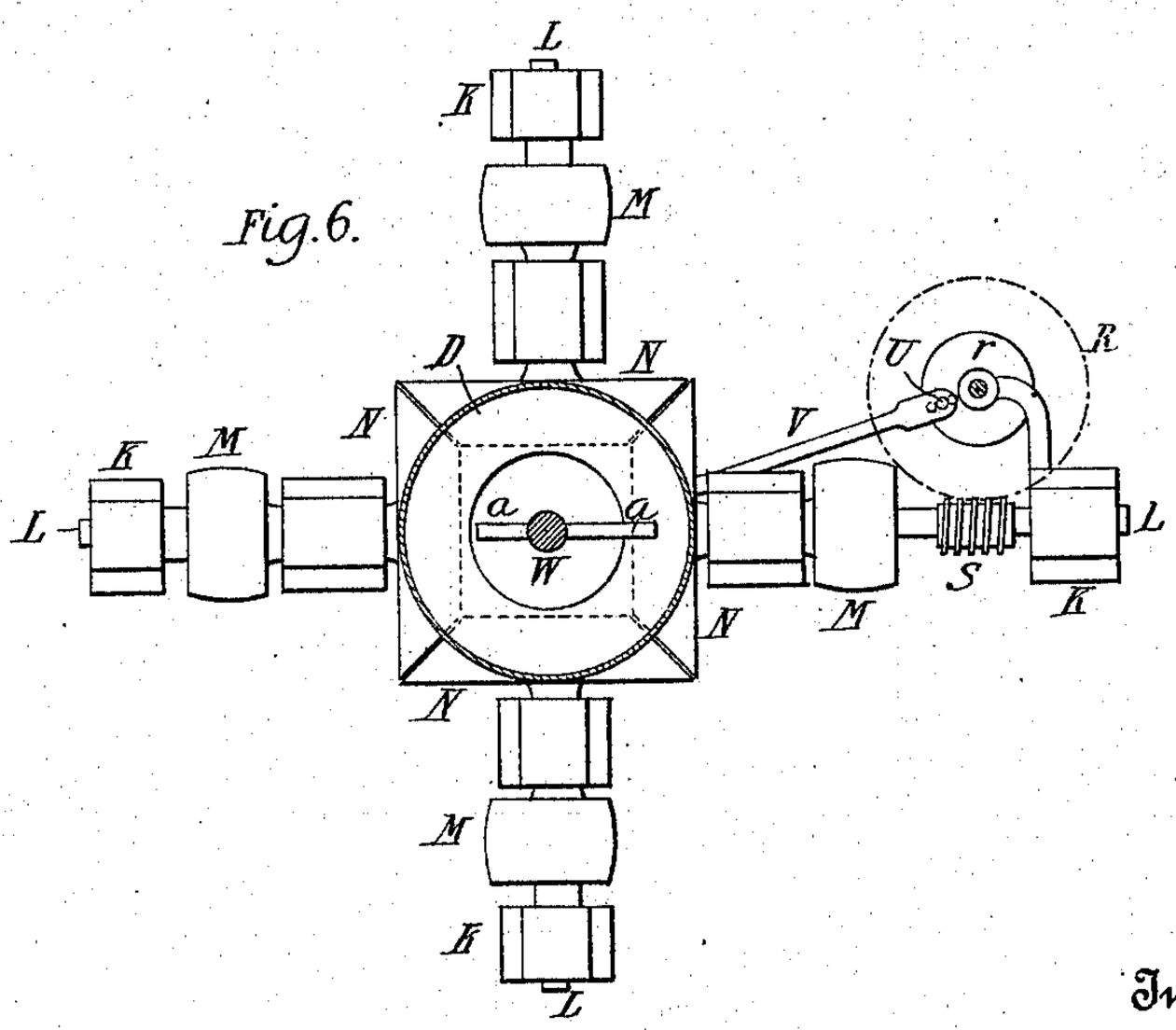


Fig. 6.



Witnesses

S. E. Zimmerman

W. J. Norton

Inventor

Thomas C. Gooch

By F. F. Lemmon

Assoc. Attorney

UNITED STATES PATENT OFFICE.

THOMAS C. GOOCH, OF LOUISVILLE, KENTUCKY.

CENTRIFUGAL EXTRACTOR.

SPECIFICATION forming part of Letters Patent No. 574,060, dated December 29, 1896.

Application filed August 27, 1895. Serial No. 560,664. (No model.)

To all whom it may concern:

Be it known that I, THOMAS C. GOOCH, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Centrifugal Extractors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a centrifugal extractor or separator designed to remove the moisture from sugar and distillers' slops, the oil from cotton-seed, and other fluids from such like substances.

It consists generally of a revolving extractor having a perforated drum lined with a suitable filtering material, into which the material to be filtered or separated is fed at the top and automatically removed therefrom through a discharging throat or pipe at the lower part of the extractor by a shifting rake, the moisture being separated from the material by centrifugal force.

In the accompanying drawings, Figure 1 is an elevation of my extractor. Fig. 2 is a top view or plan of the same. Fig. 3 is an elevation of the automatic rake, and Fig. 4 is a top view of the same. Fig. 5 is a vertical section of my extractor, and Fig. 6 is a horizontal section thereof on the line *x x* of Fig. 1.

The same letters indicate like parts in the different figures.

The revolving portion of my extractor consists of a drum A, which is perforated and lined with felt or some other suitable filtering material, of its top B, having the vertical collar C, of its funnel-shaped bottom D, and of the discharging throat or pipe E, all of which are joined together so as to form one piece. The discharging throat or pipe E revolves in the flange F of the conveyer G, through which the filtered or separated material passes away from the extractor. The casing H has its lower edge curved inward to retain fluids and entirely surrounds the drum.

I is a drain-pipe which carries off the fluids thrown into the casing from the material in the drum by centrifugal force.

J is a feed-pipe through which the material to be filtered or separated passes into the drum.

The frame K of the extractor supports the shafts L, bearing the driving-pulleys M, by which power is communicated to the moving parts, and the beveled-edge friction-disks N, upon which the funnel-shaped bottom D rests, and which is so shaped as to form a close contact with the beveled edges of the friction-disks. There are two other shafts (not shown in the drawings) placed upon the same level and at right angles to the shafts L, each bearing a beveled-edge friction-disk and preferably having no driving-pulley. These shafts and disks are used to retain the bottom D in the proper position between the friction-disks N.

O are guide-pulleys supported by the brackets P, secured to the upper part of the frame K. The guide-pulleys O rest against and retain in position the collar C.

I do not wish to confine myself to any certain number of beveled-edge disks N and guide-pulleys O, for as many may be used as is required by the size of the extractor.

Q is a vertical shaft supported by the brackets Q' and bearing the cog-wheel R, Fig. 2, which is driven by the worm S, attached to one of the shafts L. At each end of the vertical shaft Q are wrist-pin disks T, having the adjustable wrist-pins U, which, for adjustment, may be inserted in holes placed at varying distances from the center of the disks T, or may be secured in the desired position in slots cut in one end of the pitman-rods V. The other ends of the pitman-rods are connected with the rounded extremities of the shifting rake W, which is preferably square in cross-section.

X and Y are slotted guides in which the extremities of the rake move from side to side. The guide X receives the square portion of the rake W and prevents it from revolving.

Z is a shield sliding upon the lower part of the conveyer G, which allows the rake W to move from side to side and at the same time prevents the escape of the filtered or separated material at this point.

a are two series of arms placed alternately on opposite sides of the rake W, as shown in Figs. 1 and 3. The arms *a* are of such length

as to allow the rake to be moved from side to side and not come in contact with the revolving parts of the extractor. The ends of the arms *a* are beveled diagonally at such an angle that if their edges were continuous they would form a spiral. These edges of the arms *a* tend to cause a gradual downward movement of the material which is being filtered or separated, so that it passes from the drum and throat of the extractor into the conveyer and is carried away.

In practice with my invention the drum of the extractor is run by the action of the friction-disks N upon its bottom D at from fifteen hundred to three thousand revolutions per minute, so that a large amount of centrifugal force is generated. The number and size of the perforations in the drum and the kind of lining therein are determined by the material to be filtered or separated. The length and rapidity of movement of the rake from side to side are regulated so as to allow the material to remain in the drum until it is sufficiently filtered or separated. Different sizes of cog-wheels may be substituted for the wheel R, so as to perfectly regulate the number of movements per minute of the rake.

In operation the material to be filtered or separated is fed into the drum through the feed-pipe J, where it is thrown against the lining by centrifugal force, which drives the fluids contained in the material through the lining and the perforations in the drum into the casing II, where it collects in the curved portion of its lower edge and passes away through the drain-pipe I. As the rake W does not revolve, when the beveled edges of the arms, in shifting, come in contact with the material held by centrifugal force against the inner sides of the revolving parts of the extractor, it is moved gradually downward and into the conveyer G, through which it passes away.

Among the advantages of my invention are that the discharging throat or pipe is one of the revolving parts of my extractor, being a continuation of the drum; that the bottom D rests upon the friction-disks driving the drum, which obviates the use of fixed bearings, as the revolving parts of the extractor are kept in place by the friction-disks and the guide-pulleys; that the shifting rake automatically works downward the material which is being filtered or separated, so that the process is carried on continuously and it is not necessary to stop the machine to empty the drum, as is the case in many of the filtering or separating devices now in use; that the rapidity of movement and length of shift of the rake can be readily adjusted so as to give the proper downward motion to the material which is being filtered or separated, and that these movements of the rake can be varied by the use of different sizes of cog-wheels without changing the rate of movement of the drum of the extractor.

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

1. In a centrifugal extractor, the combination of a revolving perforated drum having arranged on the frame above its upper end a shiftable grooved guide, and a rake arranged in said drum with its shaft passing through said guide and means for automatically oscillating said rake substantially as set forth.

2. In a centrifugal extractor a perforated drum, with a funnel-shaped bottom, which forms close contact with the beveled edges of the friction-disks, and guide-pulleys which together with the friction-disks retain the drum in position, substantially as and for the purpose set forth.

3. In a centrifugal extractor an adjustable rake shifting automatically, in grooved guides and having two series of arms placed alternately on the sides, with ends beveled diagonally, so as to gradually move downward in the revolving drum and throat the material which is being filtered or separated substantially as and for the purpose set forth.

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

THOMAS C. GOOCH.

Witnesses :
JAMES W. BEATTIE,
ANDRO ELLISON.