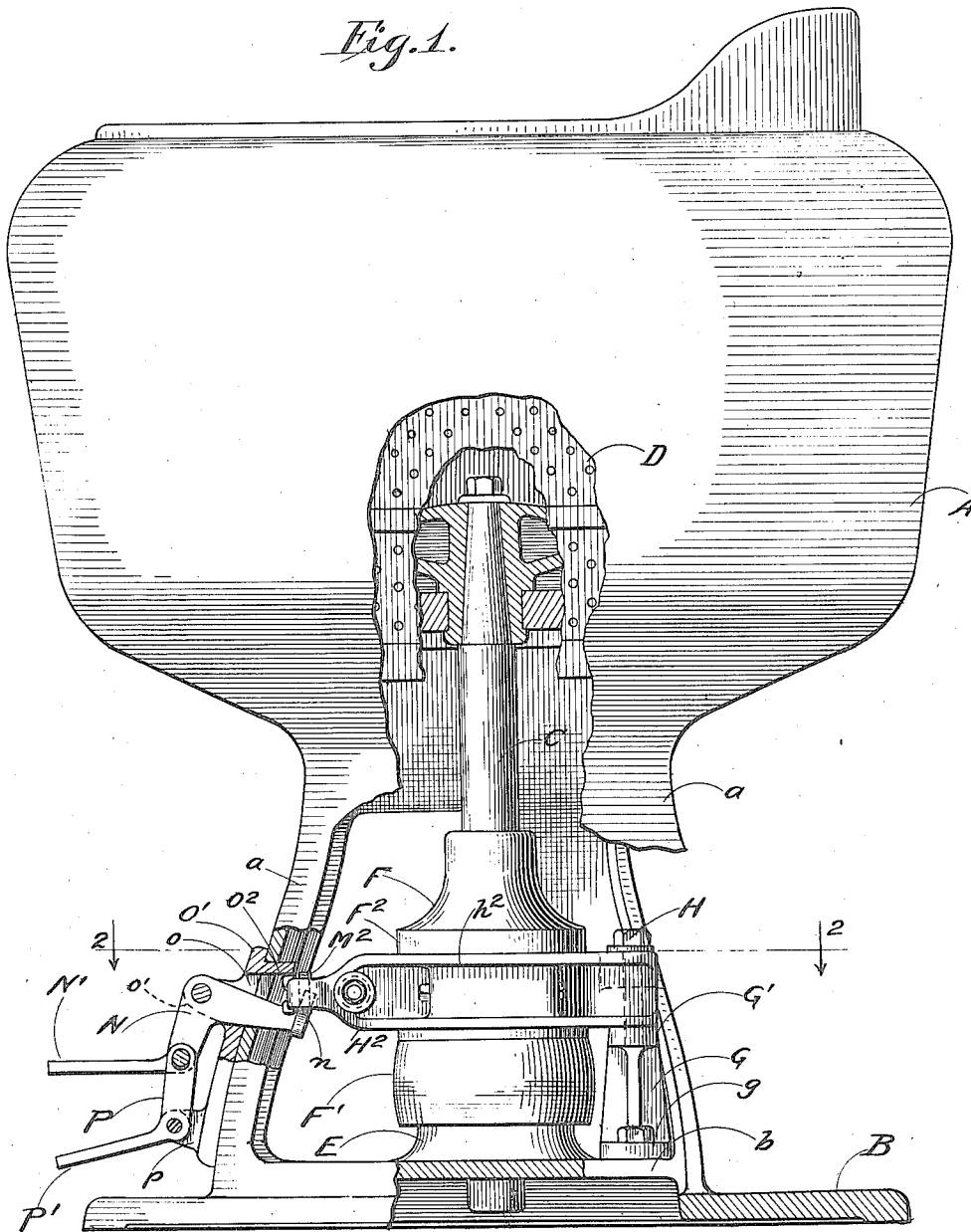


1,188,098.

2 SHEETS—SHEET 1.

Fig. 1.



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BRAKE FOR CENTRIFUGAL EXTRACTORS.
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2 SHEETS—SHEET 2.

Fig. 2.

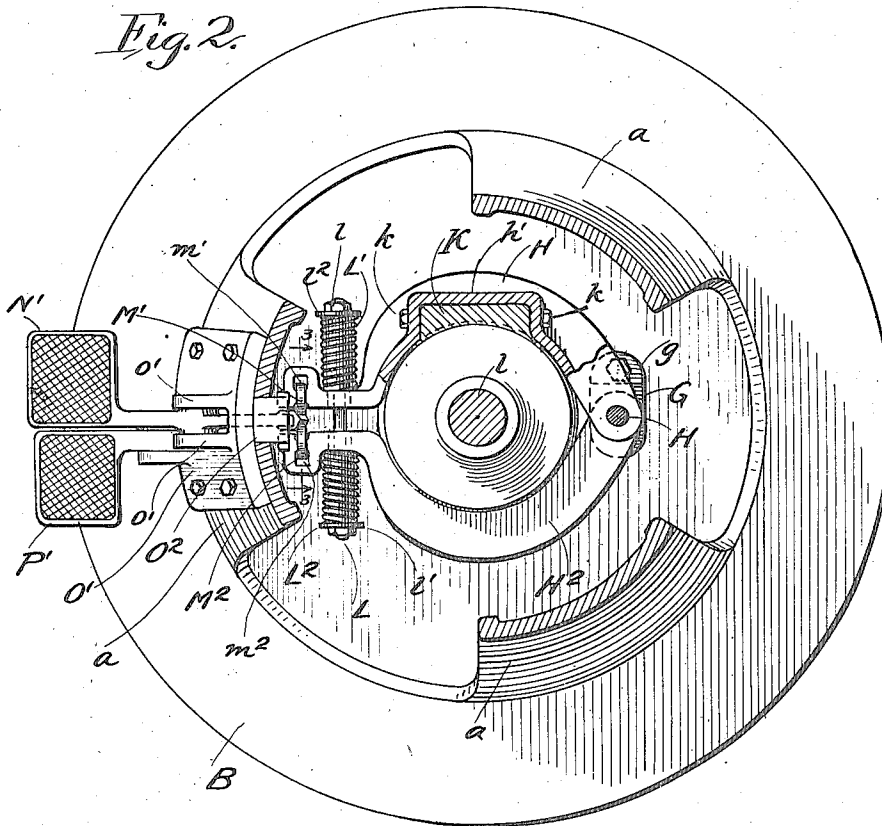
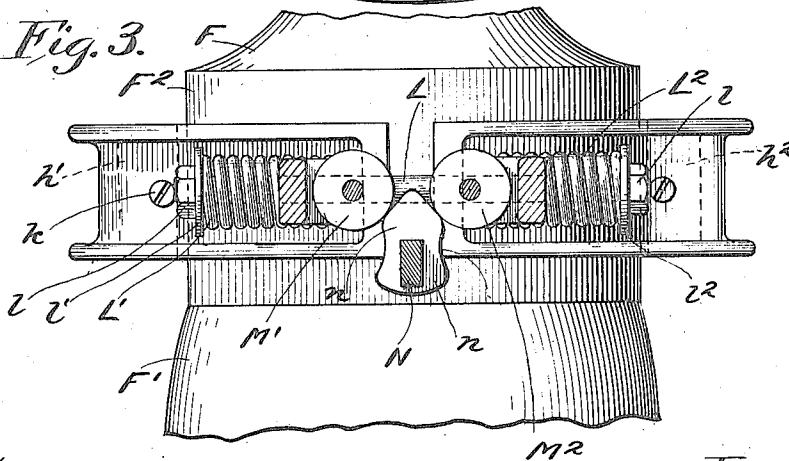


Fig. 3.



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BRAKE FOR CENTRIFUGAL EXTRACTORS.

1,188,098.

Specification of Letters Patent. Patented June 20, 1916.

Application filed February 8, 1915. Serial No. 6,916.

To all whom it may concern:

Be it known that I, DAVID J. PHILLIPS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Brakes for Centrifugal Extractors, of which the following is a specification.

My invention relates in general to centrifugal extractors, and more particularly to brakes for such machines.

It is desirable that the rotating basket of a power-driven centrifugal machine should be quickly stopped when the power is disconnected, in order that the articles which have been treated may be removed and other articles placed therein, without loss of time to the operator. It has been usual heretofore to provide centrifugal extractors with brakes comprising a shoe adapted to frictionally engage one side of a drum fixed to the spindle which supports the basket. This type of brake has proven objectionable, as it exerts a pressure upon one side only of the spindle, which results in excessive wear upon the bearings of the spindle. This objection is increased by the practice of the operators of such machines in standing upon the treadle which operates the brake, in an endeavor to stop the rotation of the basket as quickly as possible.

The primary object of my invention is to provide a brake for stopping the rotation of the basket of a centrifugal extractor, the operation of which will not increase the wear upon the bearings of the spindle which supports the basket.

A further object of my invention is to provide a brake for baskets of centrifugal machines which in operation will exert a uniform pressure upon opposite sides of the spindle so as not to disturb the concentric position of the spindle in its bearings.

A still further object of my invention is to provide a brake for centrifugal extractors, and for similar machines, which will be simple in construction, efficient in operation, and durable in use.

My invention will be more fully disclosed hereinafter with reference to the accompany-

ing drawings, in which the same is illustrated as embodied in a convenient and practical form, and, in which,—

Figure 1 is an elevational view of a centrifugal extractor provided with my improved brake, parts of the extractor casing being broken away for the purpose of clearer illustration; Fig. 2 is a sectional view on the line 2—2 of Fig. 1; and, Fig. 3 is an enlarged sectional view on the line 3—3 of Fig. 2.

Similar reference characters are used to designate similar parts in the several figures of the drawings.

Reference letter A designates the casing or curb of the extractor, which is mounted upon a plurality of legs *a*, supported upon a base B. The casing, legs, and base are preferably formed in an integral casting.

C designates a vertical spindle, upon the upper end of which is supported a perforated basket D, which is inclosed within the casing and is adapted to contain the articles to be treated. The spindle is supported upon a bearing E, which is mounted upon a horizontal plate *b*, located within the lower ends of the legs *a* and preferably formed as an integral part of the casting. Fixed to the spindle C is a drum F, open at its bottom and surrounding the upwardly projecting portion of the bearing E. The lower portion F¹ of the drum forms a pulley to be engaged by a driving belt (not shown) for imparting rotary movement to the basket. The portion F² of the drum immediately above the pulley F¹ forms a cylindrical braking surface.

G designates a post mounted upon the base plate *b* in any suitable manner, as by means of screws *g* extending through oppositely projecting feet at the bottom of the post into engagement with the base plate. The upper end of the post G is provided with a laterally projecting lug G¹, upon which are pivotally supported the overlapped ends of two brake levers H¹ and H², extending around opposite sides of the cylindrical braking surface F². Any suitable means is provided for pivotally connecting the brake levers with the post, such for instance as a

vertical screw H, which extends through vertically alined holes in the overlapped ends of the brake levers and engages a screw threaded opening in the lug G¹ on the post. 5 The brake levers are provided with pockets h¹ and h², respectively, in which are seated brake shoes K made of any suitable material; such for instance as wood. The brake shoes are retained within the pockets in the brake 10 levers by any suitable fastening device, such for instance as screws k. The inner surfaces of the brake shoes are curved to conform to the curvature of the cylindrical braking surface F². The brake shoes are 15 located at diametrically opposite sides of the spindle C. A rod L extends loosely through horizontally alining holes in the brake levers in the opposite sides of the cylindrical braking surfaces from the post G. Springs L¹ 20 and L² surround the rod L on opposite sides of the brake levers against which they respectively bear. The outer ends of the springs engage washers l¹ and l², surrounding the opposite ends of the rod L and retained thereon by the nuts l. The free ends 25 of the brake levers are provided with opposed recesses m¹ and m², in which are supported alined friction rollers M¹ and M².

N designates a bell crank lever fulcrumed 30 between a pair of ears o¹ on a plate O¹, fixed to the outer surface of the leg a opposite the post G. One arm of the bell crank lever projects through a hole o in the plate O, and through a registering hole in the leg a 35 upon which the plate is mounted. On the inner end of the said arm of the bell crank lever is mounted a wedge n vertically alining with the space between the antifriction rollers M¹ and M². The arm of the bell 40 crank lever N, which depends outside of the plate O¹, is provided with a laterally projecting treadle N¹.

P designates a second bell crank lever fulcrumed between the pair of ears p on the 45 plate O¹, below the bell crank lever N. The upwardly projecting arm of the bell crank lever P is loosely connected with the depending arm of the bell crank lever N. The other arm of the bell crank lever P projects 50 outwardly from its fulcrum in the form of a treadle P¹. A lug O² is carried by the inner surface of the plate O¹ adjacent the top thereof, and projects through the opening in the leg a to a position above the free ends 55 of the brake levers H¹ and H², and serves as a stop to resist the tendency of the free ends of the brake levers to be forced upwardly by the wedge when it moves upwardly between the opposed antifriction 60 rollers M¹ and M².

The operation of my improved brake is as follows: When the parts are in the position shown in the drawings, the springs L¹ and L² retain the opposed brake shoes K in fric-

tional contact with the opposite sides of the 65 cylindrical braking surface F². When it is desired to release the brakes in order to let the basket rotate, a downward pressure is applied to the lever N¹, which oscillates the bell crank lever N and forces the wedge n 70 upwardly between the opposed antifriction rollers M¹ and M², thereby separating the free ends of the brake levers and moving the brake shoes away from each other and out of contact with the braking surfaces. The 75 opposite sides of the wedge n are recessed, as shown in Fig. 3, so that the wedge will be retained between the antifriction rollers by the tension of the springs L¹ and L². 80 When it is desired to stop the rotation of the basket, downward pressure is applied to the treadle P¹, which through its connection with the bell crank lever N oscillates the 85 latter in a direction to move the wedge n downwardly from between the antifriction 90 rollers, thereby permitting the springs L¹ and L² to move the free ends of the brake levers toward each other and apply the brake shoes against the cylindrical braking surface F².

From the foregoing description it will be observed that in the operation of my improved brake pressure is applied uniformly to opposite sides of the spindle, thereby 95 maintaining the spindle concentrically within its bearing and avoiding any wear on the bearing, which would occur if the braking pressure were applied only at one side of the spindle. It will be further seen that the tension of the springs determine the braking 100 action, so that a too great braking action cannot be exerted by the operator. The braking action may be adjusted as desired, by adjusting the tension of the springs L¹ and L², by means of nuts on the ends of the 105 rod L.

While I have described my invention with more or less minuteness and as being embodied in certain precise forms, yet it will be understood that I do not wish to limit myself thereto unduly, or any more than is 110 pointed out in the claims. On the contrary, I contemplate all proper changes in form, construction and arrangement, the omission of immaterial parts, and the substitution of 115 equivalents, as circumstances may suggest or necessity render expedient.

I claim:—

1. In a centrifugal extractor, the combination with a rotary basket, of a spindle upon 120 which said basket is supported, a braking drum fixed to said spindle, a brake shoe movably supported in coöperative relation to said drum, a spring operatively connected with said brake shoe to force the same 125 against said drum, mechanism for moving said shoe against the tension of said spring away from said drum and retaining it in

such position, a treadle for actuating said mechanism, and a second treadle for releasing said spring and permitting it to force the brake shoe against the drum and for simultaneously effecting the movement of said first treadle into position to again actuate said mechanism.

2. In a centrifugal extractor, the combination with a rotary basket and a supporting spindle therefor, of brake shoes on opposite sides of said spindle, springs operatively connected with said shoes for moving the same toward each other to stop the rotation of said spindle, a wedge for forcing said shoes away from each other, a lever carrying said wedge, a treadle for oscillating said lever in a direction to actuate said wedge to separate the shoes, and a second treadle operatively connected to said lever to move said wedge into a position to permit said springs to move the brake shoes toward each other.

3. In a centrifugal extractor, the combination with a rotary basket, of a spindle upon which said basket is supported, a braking drum carried concentrically around said spindle, a brake shoe movably supported in coöperative relation to said drum, a lever for moving said shoe away from said drum, a spring operatively connected with said lever to oscillate the same in a direction to disengage the brake shoe from said drum, a foot treadle for oscillating said lever in a direction to compress said spring, means for retaining said lever in a position to hold said shoe out of contact with said drum, and a second foot treadle to release said spring and permit the said spring to force said shoe against said drum.

4. In a centrifugal extractor, the combination with a rotary basket, of a spindle upon which said basket is supported, a braking drum fixed to said spindle, a brake shoe movably supported in coöperative relation to said drum, a lever to which said brake shoe is secured, a spring operatively connected with said lever to move the same in a direction to disengage said shoe from said drum, and mechanism comprising alternately operable treadles to respectively move said lever against the tension of said spring into brake releasing position and to release said lever to permit said spring to move the same into brake-applying position.

5. In a centrifugal extractor, the combination with a rotary basket and a supporting spindle therefor, of a cylindrical braking surface on said spindle, levers on opposite sides of said spindle, brake shoes carried by said levers, means for moving said levers toward each other to force said shoes against said braking surface, a wedge for engaging the free ends of said levers to

move and retain them apart and thereby disengage said shoes from said braking surface, a lever carrying said wedge, a treadle for oscillating said lever in a direction to force said wedge between said brake levers, and a second treadle operatively connected to said wedge supporting lever for oscillating the same and for withdrawing said wedge from between said brake levers.

6. In a centrifugal extractor, the combination with a rotary basket and a supporting spindle therefor, of a cylindrical braking surface on said spindle, curved levers extending around opposite sides of said spindle, a fulcrum upon which one end of each of said levers is pivotally supported, brake shoes carried by said levers, springs engaging said levers on the opposite sides of said spindle from said fulcrum for forcing said levers toward each other, a bell crank lever having a path of movement at right angle to the path of movement of said brake levers, a wedge carried by said bell crank lever and adapted to be forced between the free ends of said brake levers to separate the same against the tension of said springs, and a treadle for oscillating said bell crank lever.

7. In a centrifugal extractor, the combination with a casing comprising supporting legs and projecting upwardly from a base, of a rotary basket within said casing, a spindle upon which said basket is supported, a pair of levers extending around opposite sides of said spindle, brake shoes carried by said levers, a braking surface carried by said spindle intermediate of the brake shoes on said levers, means for automatically forcing said brake levers toward each other to apply said brake shoes against said braking surface, a bell crank lever fulcrumed upon the outer surface of one of the supporting legs of said casing and having one arm thereof projecting inwardly below the free ends of said brake levers, a wedge carried by the end of said inwardly projecting arm of said bell crank lever, and means for oscillating said bell crank lever to force said wedge upwardly between said brake levers to separate the same and disengage said brake shoes from the intermediate braking surface.

8. In a centrifugal extractor, the combination with a casing comprising legs projecting upwardly from a base, of a rotary basket within said casing, a spindle for supporting said basket, a cylindrical braking surface on said spindle, a pair of brake levers extending around opposite sides of said spindle, brake shoes carried by said levers to engage opposite sides of said braking surface, springs engaging the free ends of said brake levers to force the same toward each other and thereby engage said shoes

with said braking surface, a plate mounted upon the outer surface of one of the supporting legs of said casing and having a projection thereon extending through said
5 leg to a position above the free ends of said brake levers, a lever fulcrumed on said plate and extending therethrough, a wedge supported by the inner end of said lever below the free ends of said brake levers,

and means for oscillating said lever to 10 move said wedge upwardly between the free ends of said brake levers.

In testimony whereof, I have subscribed my name.

DAVID J. PHILLIPS.

Witnesses:

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J. J. HOERGER.