

No. 686,917.

Patented Nov. 19, 1901.

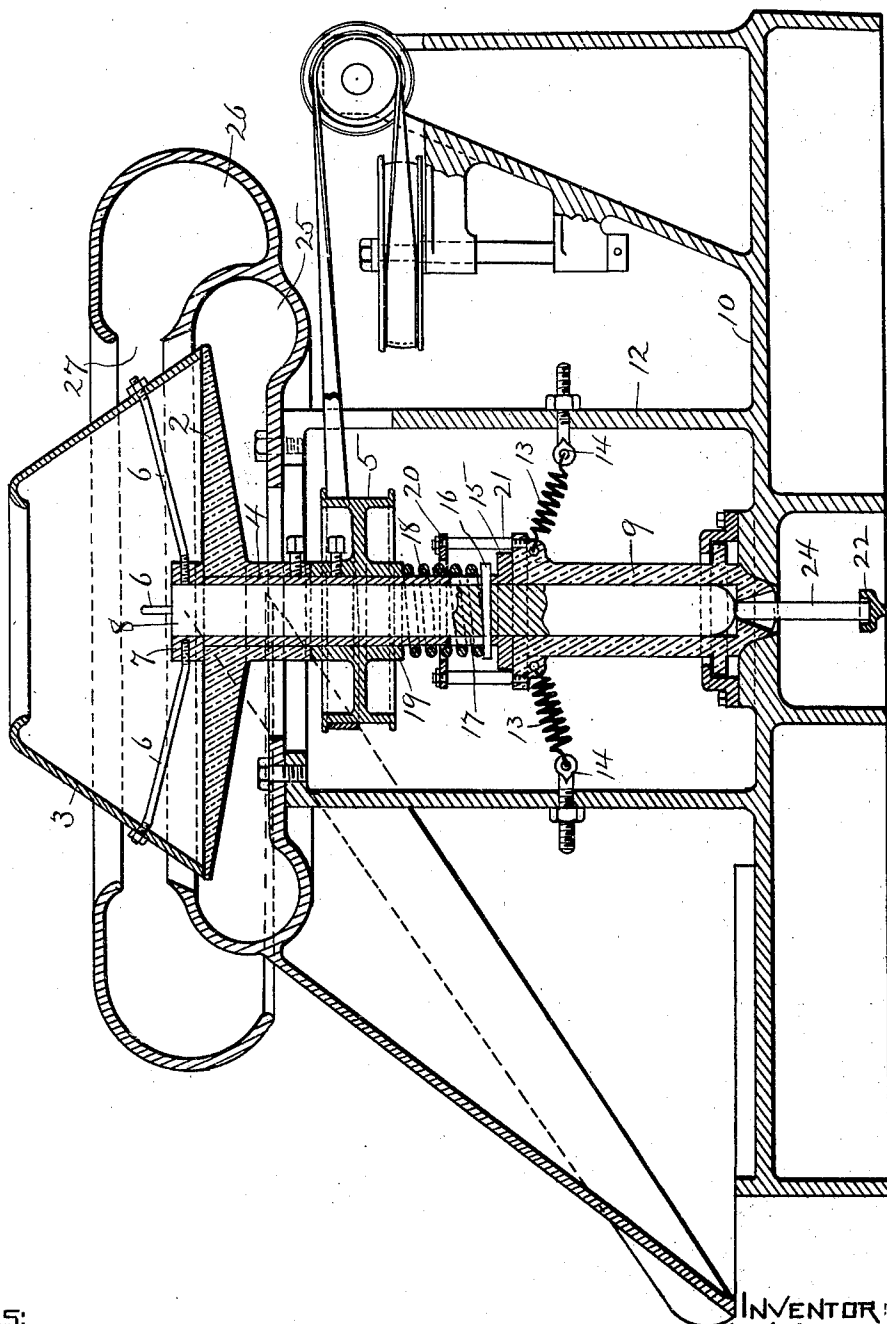
S. A. BAKER.
CENTRIFUGAL MACHINE.

(Application filed Sept. 5, 1901.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



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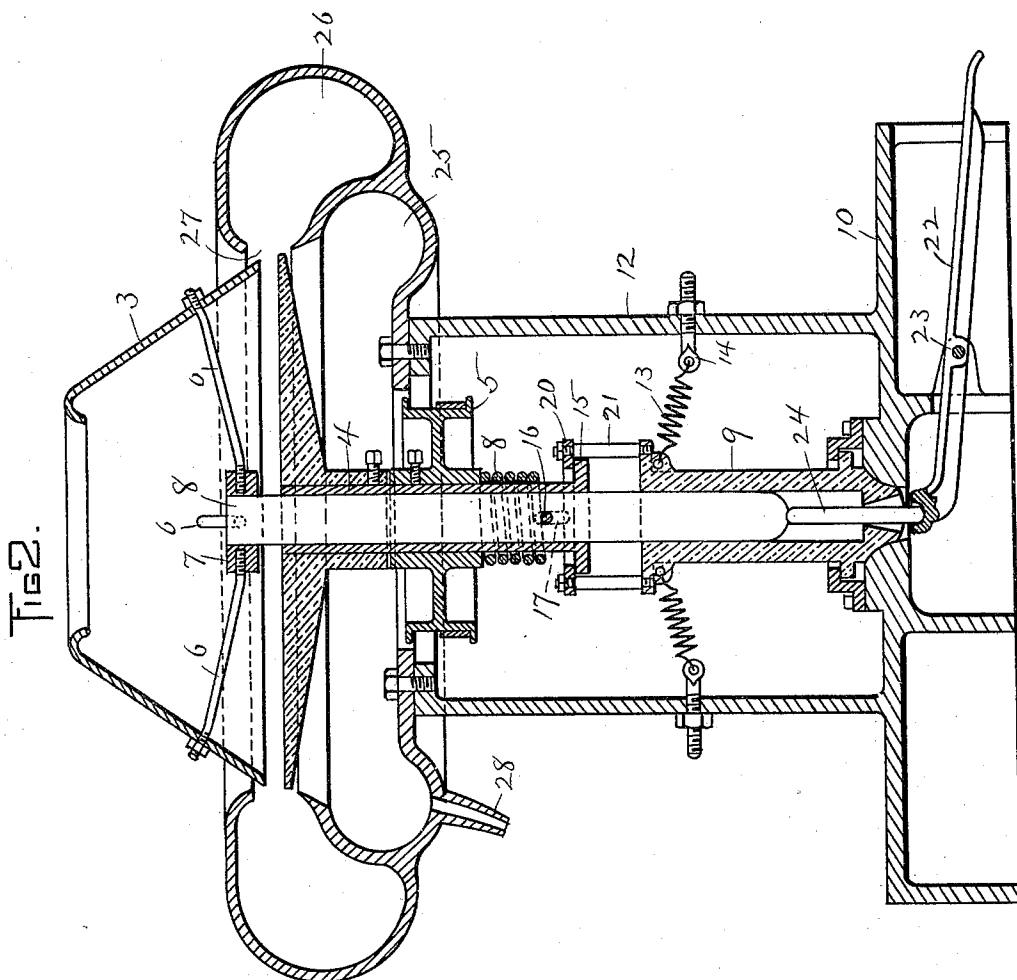
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3 Sheets—Sheet 2.



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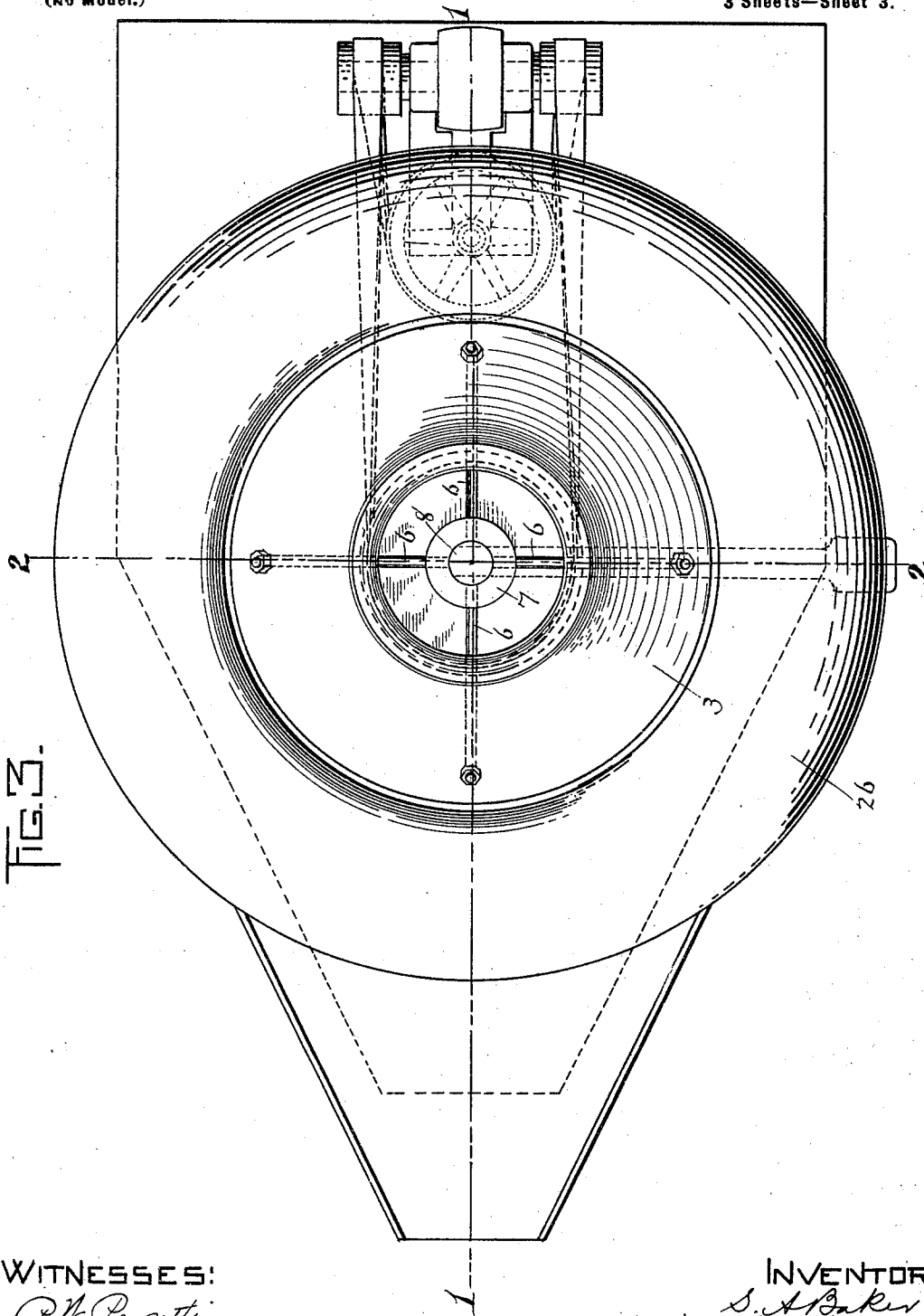
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

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TO M. F. COLBY, OF SPRINGFIELD, VERMONT.

CENTRIFUGAL MACHINE.

SPECIFICATION forming part of Letters Patent No. 686,917, dated November 19, 1901.

Application filed September 5, 1901. Serial No. 74,372. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL A. BAKER, of Springfield, in the county of Windsor and State of Vermont, have invented certain new and useful Improvements in Centrifugal Separators, of which the following is a specification.

This invention relates to centrifugal separators adapted to separate a liquid, such as oil, from residual matter, such as metal borings or turnings mixed with the oil.

The invention has for its object to provide an improved machine whereby the liquid can be readily separated from the residual matter and after such separation the residual matter may be discharged from the machine by centrifugal action without again coming into contact with the liquid matter separated from it.

The invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a vertical sectional view of a centrifugal separator embodying my invention. Fig. 2 represents a view similar to Fig. 1, showing the rotary receptacle in position to discharge the residual matter. Fig. 3 represents a top plan view.

The same reference characters indicate the same parts in all the figures.

In the drawings, 2 represents the bottom, and 3 the wall or body, of a rotary receptacle adapted to contain a mixture of oil and metal fragments or particles. The bottom 2 is a disk of metal affixed to a tubular shaft or sleeve 4, which is rotatively supported, as hereinafter described, and is adapted to be rotated by a belt running on a pulley 5, affixed to the sleeve 4. The wall or body portion 3 of the rotary receptacle is preferably formed as an inverted cone-frustum, its larger end resting loosely upon the bottom 2, which has a flat upper surface. A crevice is therefore formed between the wall 3 and bottom 2, said crevice permitting the escape of the liquid portion of the mixture inserted in the receptacle by centrifugal action when the latter is rapidly rotated, the crevice being too narrow to permit the escape of the residual

matter. The wall portion 3 is attached by means of arms 6 to a collar 7, which is affixed to a vertical shaft or spindle 8. The spindle 8 is journaled in a step-bearing 9, which has a rocking connection with the base 10 of the frame of the machine and is normally held in a central position relatively to the tubular standard 12 of the said frame by means of springs 13, which radiate from the bearing, and are connected with the latter and with eyebolts 14, affixed to the standard 12. The lower end of the sleeve 4, to which the bottom 2 of the rotary receptacle is affixed, has an outwardly-projecting flange 15, which normally bears upon or is in close proximity to the upper end of the bearing 9. The shaft or spindle 8 is provided with a transverse pin 16, the ends of which project through slots 17 in the sleeve 4. The lower end of the spiral spring 18 rests upon the projecting ends of the pin 16, the upper end of said spring resting against a collar 19, secured to the sleeve 4.

20 is a ring or annular stop to limit the upward movement of the sleeve 4 by coming in contact with the flange 15, the said ring or stop 20 being affixed by studs 21 to the upper end of the bearing 9. The internal diameter of the ring 20 is less than the external diameter of the flange 15, so that when said flange reaches the ring its upward movement is arrested.

22 represents a lever which is fulcrumed at 23 to the frame of the machine, its shorter arm being engaged with a strut 24, which is interposed between the said shorter arm and the lower end of the stud or shaft 8.

25 represents an annular receptacle for the liquid that is thrown outwardly from the rotary receptacle above described, and 26 represents an annular receptacle connected with the receptacle 25 and having its receiving-mouth 27 located above the receptacle 25, the receptacle 26 being intended to receive the residual matter, as hereinafter described.

The operation is as follows: The parts being in the position shown in Fig. 1 and the rotary receptacle containing a mixture of oil and metal borings or fragments being set in rapid rotation, the oil is thrown outwardly by centrifugal action through the crevice between the bottom 2 and body 3 of the rotary

receptacle into the receptacle 25, from which it escapes through an outlet 28. When practically all the liquid has been thrown out from the rotary receptacle, the attendant depresses the longer arm of the lever 22, thus causing the strut 24 to raise the shaft or stud 8. The upward movement of said shaft causes the pin 16 to first act through the spring 18 on the sleeve 4, raising the latter until the flange 15 comes in contact with the ring 20, the upward movement of the sleeve 4 and of the bottom 2 of the rotary receptacle being thus arrested. A continuation of the upward movement of the shaft 8 causes the wall or body 3 of the rotary receptacle to be elevated above the bottom 2, the latter being now about flush with or slightly elevated above the lower edge of the mouth 27 of the receptacle 26, as shown in Fig. 2. The elevation of the body 3 above the bottom 2 causes a large opening between the said bottom and body, this opening being sufficient to permit the residuum previously confined on the bottom 2 by the body 3 to escape into the receptacle 26, from which the said residuum may pass through a suitable outlet.

Having thus explained the nature of my invention and described a way of constructing and using the same, although without having attempted to set forth all the forms in which it may be embodied or all the modes of its use, I declare that what I claim is—

1. A centrifugal separator comprising two annular receptacles, one having its receiving-mouth located above the receiving-mouth of the other, a rotary receptacle surrounded by said annular receptacles and having an outlet which is normally contracted to discharge liquid matter only, means for changing the relative positions of the annular and rotary receptacles to cause the latter to discharge into either of the annular receptacles, and means for increasing the width of said outlet to permit the discharge of residual matter.

2. A centrifugal separator comprising two fixed annular receptacles, one having its receiving-mouth located above the receiving-mouth of the other, a rotary receptacle surrounded by said fixed receptacles and having an outlet which is normally contracted to discharge liquid matter only and prevent the escape of residual matter, means for supporting said rotary receptacle with its outlet in position to discharge into one of said fixed receptacles, means for changing the position of the rotary receptacle to bring its outlet into position to discharge into the other fixed receptacle, and means for increasing the width of said outlet to permit the discharge of residual matter.

3. A centrifugal separator comprising two

fixed annular receptacles, one having its receiving-mouth located above the receiving-mouth of the other, a rotary receptacle surrounded by said fixed receptacles and having a bottom portion and a body portion which is separable from the bottom portion, the meeting surfaces of said portions forming a contracted liquid-discharging outlet, means for supporting said rotary receptacle with its outlet in position to discharge into the lower fixed receptacle, means for raising the rotary receptacle, said means having provisions for giving the said body portion an independent upward movement to separate it from the said bottom portion, and a stop for arresting the upward movement of the bottom portion before the completion of the upward movement of the body portion.

4. A centrifugal separator comprising a rotary receptacle having a bottom portion and a body portion separable from the bottom portion, a sleeve affixed to the bottom portion, a spindle affixed to the body portion and movable longitudinally in said sleeve, the spindle having a projection which enters a slot in the sleeve, whereby the spindle and sleeve are rotatively engaged, a bearing for said spindle, means for raising the spindle in its bearing, a yielding connection between the spindle and sleeve, whereby an upward movement is imparted from the spindle to the sleeve, and means for arresting the upward movement of the sleeve, whereby a continuation of the upward movement of the spindle is caused to separate the body portion of the rotary receptacle from the bottom portion thereof.

5. A centrifugal separator comprising two fixed annular receptacles, one having its receiving-mouth located above the receiving-mouth of the other, a bearing located below said receptacles, a vertical spindle journaled in said bearing and movable vertically therein, a sleeve mounted on the spindle and rotatively engaged therewith, means for rotating the sleeve and spindle, a yielding connection between the spindle and sleeve, whereby a yielding upward movement is imparted from the spindle to the sleeve, a stop for arresting the upward movement of the sleeve, a rotary receptacle composed of a bottom portion affixed to the sleeve and a body portion affixed to the spindle, a spindle-raising step or strut movable in said bearing, and means for raising said step.

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

SAMUEL A. BAKER.

Witnesses:

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