

E. L. COLLON & G. TABARD.
AUTOMATICALLY OPERATED STOPPING DEVICE.
APPLICATION FILED SEPT. 16, 1907.

994,443.

Patented June 6, 1911.

3 SHEETS—SHEET 1.

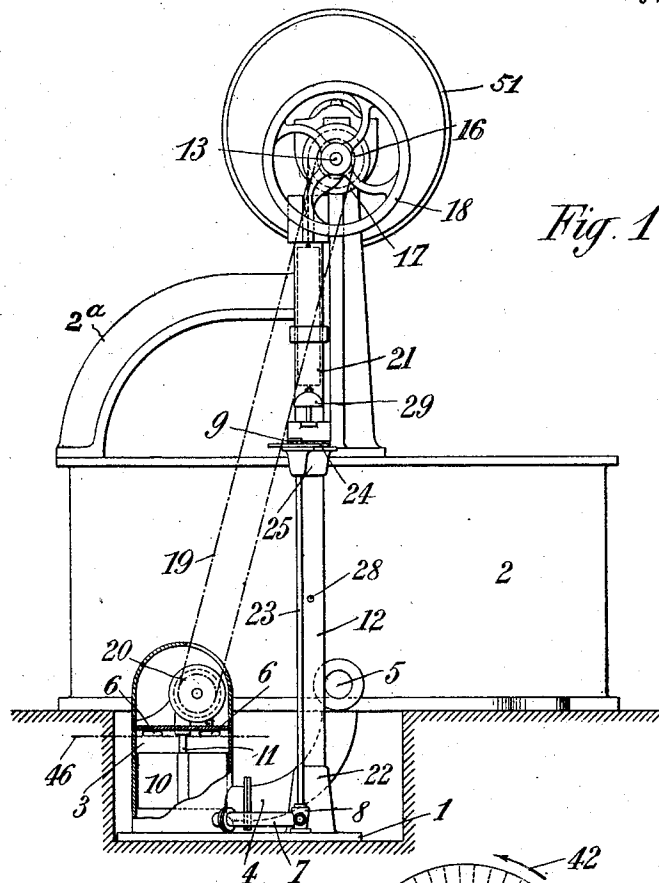


Fig. 1

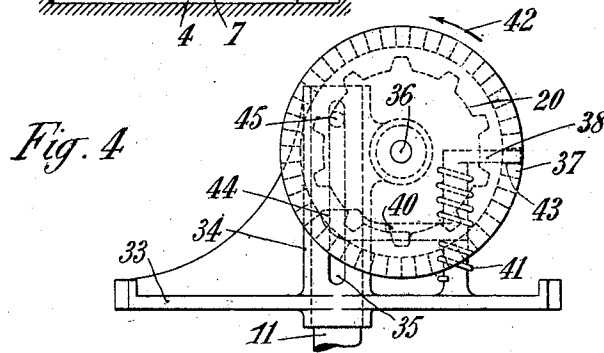


Fig. 4

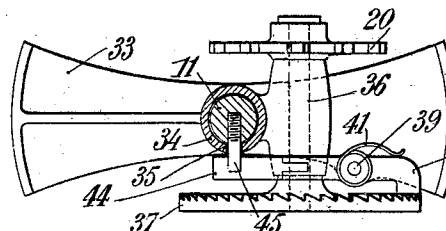


Fig. 5

Witnesses:
Jesse N. Lutton
R. W. Belff

Inventors
Eugene Louis Collon
and
George Tabard
by Henry Orth

E. L. COLLON & G. TABARD.
AUTOMATICALLY OPERATED STOPPING DEVICE.
APPLICATION FILED SEPT. 16, 1907.

994,443.

Patented June 6, 1911.

3 SHEETS—SHEET 3.

Fig. 6

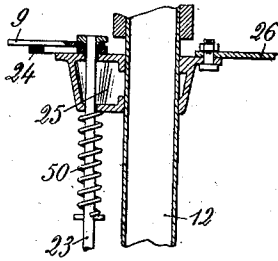


Fig. 8

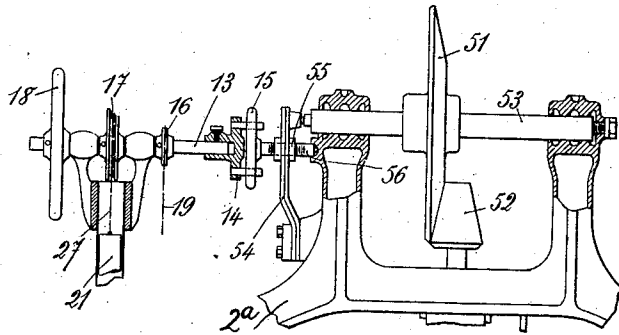


Fig. 7

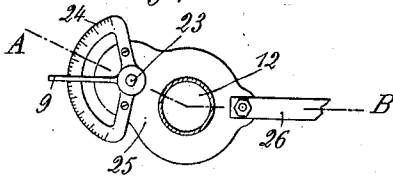


Fig. 9

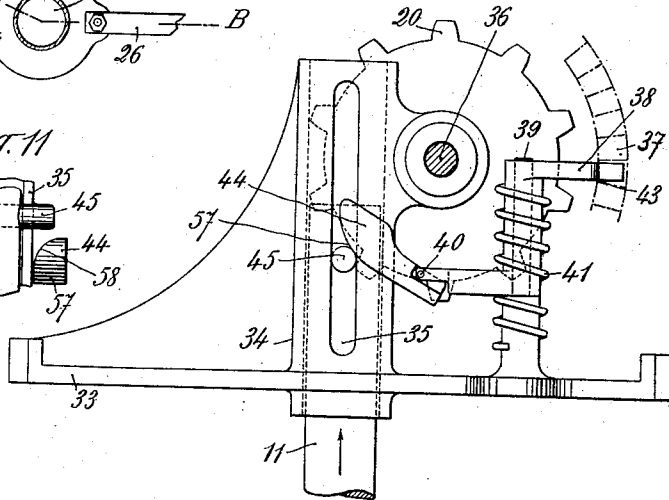


Fig. 11

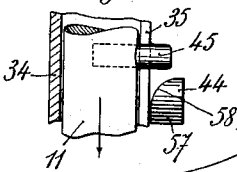
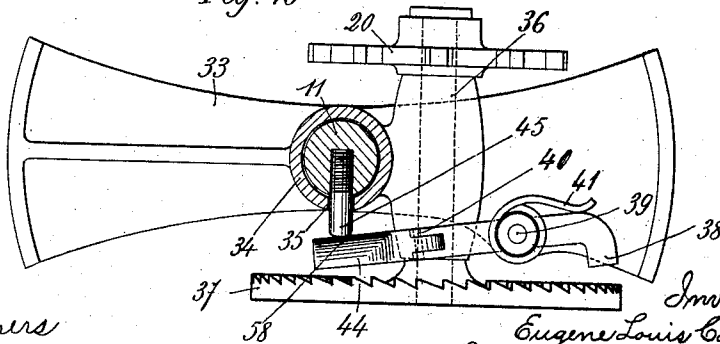


Fig. 10



Witnesses
B. Rommers
May Ellis.

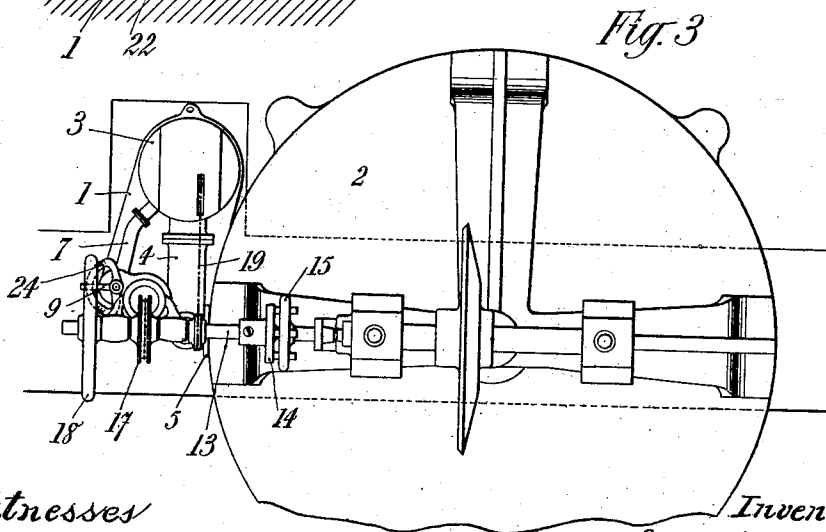
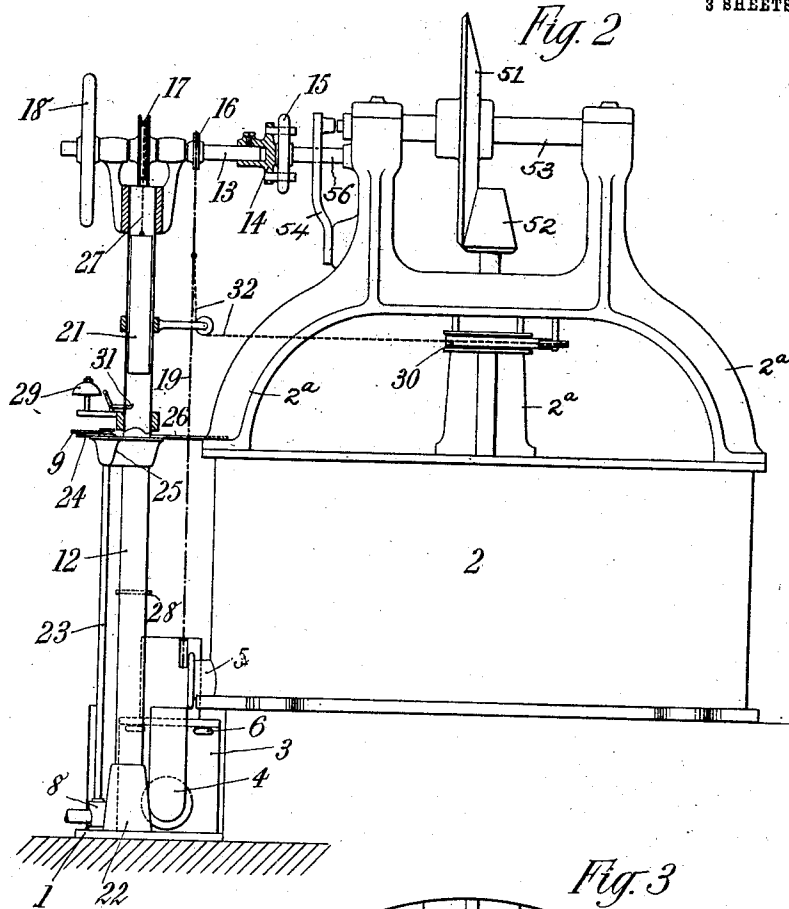
Inventors
Eugene Louis Collon
George Tabard
By Henry Orth Attys

E. L. COLLON & G. TABARD.
AUTOMATICALLY OPERATED STOPPING DEVICE.
APPLICATION FILED SEPT. 16, 1907.

994,443.

Patented June 6, 1911.

3 SHEETS-SHEET 2.



Witnesses
Jesse N. Lutton
R. W. Haff

Inventors
Eugene Louis Collon
and Georges Tabard
by Henry Orth

UNITED STATES PATENT OFFICE.

EUGÈNE LOUIS COLLON, OF CANNES, AND GEORGES TABARD, OF LYON, FRANCE.

AUTOMATICALLY-OPERATED STOPPING DEVICE.

994,443.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed September 16, 1907. Serial No. 393,176.

To all whom it may concern:

Be it known that we, EUGÈNE LOUIS COLLON and GEORGES TABARD, both citizens of the Republic of France, residing, respectively, at 13 Rue de Cronstadt, Cannes, Alpes-Maritimes, France, and 16 Rue de la Cité, Lyon, Rhône, France, engineers, have invented certain new and useful Improvements in Automatically-Operated Stopping Devices; and we 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in automatically operated stopping devices particularly adapted to be connected with hydro-extractors and like apparatus for automatically stopping the operation thereof as soon as the outflow of water from such apparatus falls below a given limit, which latter is easily regulated corresponding to the degree of hydro-extraction it is desired to obtain. The throwing out of gear and the arrest of the apparatus are to this end governed by the falling of a counterweight, or the rebound of a spring, caused by a disengagement brought about by the reduced flow of the current of water from the extractor.

The water flowing from the extractor is received in an exterior reservoir from which it escapes by an orifice of variable cross-section and by overflow orifices. This water should then take a certain level in the reservoir so that the flow through the reduced orifice and through the overflow orifices becomes equal to the outflow from the extractor which level remains therefore dependent upon the outflow. When the latter falls beneath a determined limit a float arranged in the reservoir releases, by any appropriate mechanism, a counterweight or spring and the falling of the weight or the flexure of the spring produces the throwing out of the gear of the apparatus and if desired, the application of a brake in such manner as to produce the rapid stoppage of the machine. The weight or the spring may at the same time operate

an indicator or annunciator for informing the attendant of the stoppage, and if desired a registering apparatus which will show the number of extractions performed in a given length of time.

The accompanying drawings illustrate by way of example one construction of apparatus for carrying out this invention, in which the throwing out of gear of the hydro-extractor is accomplished by a counterweight falling freely in a chute.

Figure 1 is a front elevation partly in section of such a machine. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view of the same. Figs. 4 and 5 are respectively an elevation and a plan of the details of the releasing mechanism. Figs. 6 and 7 are respectively a vertical section and plan of the controlling means for the reservoir valve, Fig. 6 being taken on line A—B of Fig. 7. Fig. 8 is a detail side view, partly in section of the mechanism for operating the hydro-extractor. Fig. 9 is an enlarged view of Fig. 4 with the ratchet wheel 37 removed. Fig. 10 is an enlarged view of Fig. 5 showing the parts in different positions, and Fig. 11 is a detail view of certain of the parts seen from the left of Fig. 9.

Referring more particularly to the drawings 1 designates a base plate placed in the ground below the base of the hydro-extractor as 2. Upon the plate is mounted a reservoir 3 which receives through a conduit 4, which communicates with the reservoir near its bottom, the water escaping from the hydro-extractor through a pipe 5 at the bottom of the latter. The over flow from the reservoir escapes through orifices 6 at the top and water containing the soluble matter of the material treated in the hydro-extractor flows through a pipe 7 at the bottom of the reservoir, which pipe is customarily connected with a sewer and the outflow of water through said pipe is controlled by a valve 8 which is operated by a rod 23 arranged longitudinally of a vertical column 12 and terminated by a pointer 9 (Figs. 6 and 7), movable over a graduated sector 24. The sector and the upper guide for the rod 23 may be formed integral with a collar 25 adjustable upon the column 12 and capable of being fixed at any desired height. By preference the height of the

collar coincides with the base of the framing 2^a mounted upon the hydro-extractor in order that the column may be connected to the latter by means of one or two stays 5 26, connected by the bolts used for attaching such framing to the extractor. This arrangement has the advantage of augmenting the stability of the whole mechanism, positioned at the foot of the hydro-extractor. A spring 50 is advantageously 10 mounted on the rod 23 in such a manner as to insure the maintenance of the valve in the position in which it has been placed by means of the pointer 9.

15 The column 12 forms a bearing for a shaft 13 which carries at one extremity a peg clutch-plate 14 which engages with the arms of a wheel 15 which forms a cooperating clutch-member to throw the driving mem- 20 bers, hereinafter described, of the hydro-extractor into and out of gear; the shaft 13 carries moreover a sprocket wheel 16, a drum 17 and a hand operated wheel 18. All of these parts may be adjustably connected 25 to the shaft 13 by bolts to permit of their application to different sizes or forms of extractors. The sprocket 16 is connected by a chain 19 with a sprocket 20, Fig. 1, forming part of the releasing mechanism; the 30 drum 17 serves to wind up a cable 27 carrying at its extremity within the column 12 a counterweight 21.

The column 12 is adjustable in height and is fixed by clamping it in a socket 22 on the 35 base plate 1. By sliding the column in this socket it is possible to cause the axis of the shaft 13 to coincide with the axis of a screw 56 and if there exists a defect in the alignment of the axes this defect is compensated 40 for by the play allowed the pegs of the plate 14 between the arms of the controlling wheel 15.

The driving mechanism for the extractor consists, as customary, of two friction wheels 45 51 and 52, which are controlled, for example, by means of a pulley (not shown) carried on shaft 53, and to which the friction wheel 51 is secured. The proper degree of friction between the two friction wheels is produced by a laminated spring 54 whose free 50 end presses on one end of shaft 53 in such a manner as to force the friction wheel 51, secured to said shaft 53, against the friction wheel 52. A nut 55, carried by the spring 55 54 and through which passes a screw 56, is under the control of the wheel 15, and permits the regulation of the pressure of the spring. It is thus understood that the rotation to the right of the shaft 13, which 60 rotation is accomplished by hand with the aid of the hand wheel 18, produces at the same time that the counterweight 21 ascends an application of force on the spring 54 at the end of the shaft 53, and consequently 65 the pressure of the wheel 51 against the cone

52. On the contrary, the descent of the counterweight, which causes the shaft 13 to turn to the left, pulls out the nut 55 and produces a cessation of the pressure of wheel 51 on the cone 52. The plate 14 is always in 70 engagement with the hand wheel 15 by means of the pins.

The fall of the weight 21 is advantageously limited by a stop, formed for example by a bolt or pin 28, which weight trav- 75 erses the column 12 and as above stated turns the shaft 13 sufficiently for producing the throwing out of gear of the hydro-extractor. The fall of the weight can moreover, if desired, be utilized for actuating 80 an audible signal such as a bell 29 indicating the completion of the extraction and for causing, also automatically, the operation of a brake band 30, for assuring the stoppage of the hydro-extractor. To this end the coun- 85 ter-weight 21, during its descent acts upon a finger 31 which sounds the bell 29 and also effects directly, by means of an auxiliary cable 32 attached to the chain 19, the contraction of the brake band 30. The length 90 of the cable 32 will be determined in such a manner as to arrest the fall of the counterweight at the desired point that is to say against the pin 28, taking advantage for this purpose of the resistance of the brake 95 in its braking position.

The releasing apparatus as it may be properly called, Figs. 4, 5, 9, 10 and 11 is 100 mounted upon a support 33 on the reservoir 3, the support being provided at its center with a sleeve 34, serving as a guide for the rod 11 of a float 10 arranged in the interior of the reservoir. Perpendicularly to the sleeve 34 in a bearing thereon is mounted 105 an axle 36 carrying the sprocket 20 and a ratchet wheel 37. In contact with the latter is a pawl 38 which is mounted upon a vertical pivot 39 and maintained in engagement with the ratchet wheel by a spring 110 41. The ratchet wheel 37 under the action of the weight 21, tends to turn in the direction of the arrow 42, and its teeth take against the lower face 43 of the pawl 38. The left hand extremity 44 of this pawl is articulated by a pivot 40, Fig. 9, and can 115 only, owing to the form of the articulation, move above the body of the pawl and cannot become inclined below the same; said extremity being formed moreover with an inclined surface 57. The float rod 11 carries 120 a tappet 45 which projects through a longitudinal slot 35 formed in the sleeve 34 and which is adapted to come into engagement with the inclined surface 57 formed on the extremity 44 of the pawl 38. 125

The operation of the apparatus is as follows:—The different parts occupy the positions shown in the drawings, that is to say the counterweight 21 raised to its highest position, the ratchet wheel 37 engaged by 130

the pawl 38, as shown in Fig. 5, and at the same time the valve 8 is turned into a position corresponding to a predetermined degree of hydro-extraction. When the extraction 5 commences the water flows copiously through the conduit 4 and the level rises in the reservoir 3. The area left open or free by the cock 8 causes the water to take a certain level, as indicated by the line 46, Fig. 1, in the reservoir so that the flow through the reduced port of the conduit 7 and the orifices 6 becomes equal to the outflow from the pipe 5 of the hydro-extractor; the valve 8 allows, then, a quantity of water to pass 10 which is smaller than that supplied by the extractor during its operation. The float 10 is now in its highest position and the tappet 45 which is carried by the rod 11 is above the articulated extremity 44 of the pawl 38 as shown in Fig. 4. When the extractor nears the end of its operation the valve 8 allows more liquid to run off than is supplied by the extractor, the level falls in the reservoir 3, and with it the float 10, the rod 11 of which actuates by means of the 15 tappet 45, the releasing mechanism placed above the reservoir. It can easily be understood that by conveniently regulating the opening of the cock 8, the release can be brought about more or less quickly and in consequence the hydro-extractor is automatically arrested when any particular degree of dryness, which it is desired to obtain, is reached. To accomplish this it is 20 only necessary to place the index of the pointer 9 upon one division of the sector 24 corresponding to the degree of extraction desired. As the rod 11 of the float descends the tappet 45 which projects out of the slot 35, meets the inclined surface 58, Figs. 9 and 10, the movable extremity 44 of the pawl 38, pushes over the latter and causes the pawl to swing about the vertical pivot 39. The pawl 38 then disengages the teeth 25 of the wheel 37, Fig. 10, which, thus freed, allows the counterweight 21 to fall thus bringing about the rotation to the left of the shaft 13 and consequently throws the gears 51, 52 out of contact. The fall of the weight 30 causes the chain 19 to pull up the end of cable 32 connected thereto and to cause the brake 30 to act, arresting the rotation of the extractor; it produces also by means of the finger 31 the sounding of the bell 29 35 which announces to the attendant the end of the operation and stoppage of the machine. As the stoppage of the hydro-extractor is never sudden the water contained in the reservoir 3 at the moment of release continues to flow out and the float continues to descend. At the moment of complete stoppage the float has fallen below the level where the tappet 45 is in contact with the extremity 44 of the pawl. The latter can then again move into engagement

with the ratchet wheel 37, Fig. 5, in order to effect the arrest thereof when the machine is thrown into gear again by means of the wheel 18. When the water of a fresh operation of the hydro-extractor arrives in the reservoir 3 the float 10 and its rod 11 rise 70 again and the tappet 45 passes the pawl 38 without causing the latter to disengage the wheel 37 as the movable extremity of the pawl simply swings about its axis 40 and then falls again immediately the tappet has passed. The float 10 being returned to the highest point the whole of the mechanism is again ready to operate because the operation of the wheel 18 to place the machine in gear has also had the effect of raising the weight 21 a distance precisely equal to that through which it should fall in order to produce the throwing out of gear; this movement of the weight 21 is moreover determined exactly by the position of the pin 28 75 and it is limited also by the acting of the brake 30 which by the cable 32 arrests the movement of the chain 19.

The mode of operation of the wheel 15 of the hydro-extractor by means of a peg clutch plate 14 (the pegs passing between the arms of the wheel) facilitates greatly the mounting of the device because it adapts itself to all hydro-extractors without any preparation and without the necessity of being assured of the exact alinement of the axes to be connected. 85

As is apparent, the present disposition of parts is absolutely independent of the hydro-extractor with which it is connected, and it can adapt itself to all machines of this kind without previous preparation other than the digging of a hole in which to place the base plate 1 at the desired level. 90 105

Various details of construction, such as the mode of actuating the brake of the extractor and the annunciating signal, can evidently be modified or dispensed with; also the arrangement of the counterweight can be replaced by an arrangement of springs or analogous arrangement, the flexure of which should cause the automatic throwing out of gear of the apparatus. All these arrangements, essentially variable in the method of carrying them out, depend upon the kind of clutch and brake possessed by the machine and can naturally be varied without changing the principle of the invention. 110 115 120

What we claim and desire to secure by Letters Patent of the United States is:—

1. A device of the character described comprising means capable of receiving a store of energy and of subsequently expending said energy, operative connection between said means and said device, a vertical adjustment adapted to bring said operative connection to the level of said device, a lock for said means, a water receptacle having 125 130

an outlet, and means governed by the water level in said receptacle for releasing said lock, substantially as set forth.

2. A device of the character described comprising means capable of receiving a store of energy and of subsequently expending said energy, a lock for said means, a closed water receptacle having an outlet in its lower part and overflow orifices, and means governed by the water level in said receptacle for releasing said lock substantially as set forth.

3. A device of the character described comprising means capable of receiving a store of energy and of subsequently expending part of said energy, an annunciator in operative relation with said means and adapted to be operated by part of said energy, a lock for said means, a water receptacle having an outlet and means governed by the water level in said receptacle for releasing said lock, substantially as set forth.

4. A device of the character described comprising means capable of receiving a store of energy and of subsequently expending part of said energy, a brake, operative connection between the brake and means, whereby said brake is operated by the expenditure of part of said energy, a lock for said means, a water receptacle and means governed by the water level in said receptacle for releasing said lock substantially as set forth.

5. A device of the character described comprising means capable of receiving a store of energy and of subsequently expending said energy, a lock for said means, a water receptacle having an outlet, adjustable means for varying the capacity of said outlet, an indicator connected with the last named means for showing the adjustment effected, and means governed by the water level in said receptacle for releasing said lock substantially as set forth.

6. A device of the character described comprising means capable of receiving a store of energy and of subsequently expending part of said energy, an annunciator in operative relation with said means and adapted to be operated by part of said energy, a brake, operative connection between said brake and said means whereby said brake is operated by the expenditure of part of said energy, a lock for said means, a water receptacle having an outlet, adjustable means for varying the capacity of said outlet, an indicator connected with the last named means for showing the adjustment effected, and means governed by the water level in said receptacle for releasing said lock substantially as set forth.

7. A device of the character described comprising a shaft, a drum on said shaft, a weight, suspension means for the latter connected with the drum, a ratchet wheel

driven from the shaft, a locking pawl for the ratchet, a water reservoir having a restricted outlet, a float in said reservoir, a valve for varying the restriction of said outlet, and operative connection between the float and pawl for releasing the latter to permit the weight to fall and operate said device, substantially as set forth.

8. A device of the character described comprising a shaft to drive in both directions, a drum on the shaft, a weight, suspension means for the latter connected with the drum, a ratchet wheel driven from the shaft, a locking pawl for the ratchet, a water reservoir having a restricted outlet, a float in the reservoir, means for normally maintaining the pawl in locking position, and operative connection between the float and pawl for releasing the latter to permit the weight to fall and operate said device, substantially as set forth.

9. In a device of the character described, a shaft, a drum on said shaft, a weight, suspension means for the latter, connected with the drum, an audible signaling device, a trigger in the path of the weight adapted to sound said signaling device, a ratchet wheel driven from said shaft, a locking pawl for said ratchet, a water reservoir having a restricted outlet, a float in said reservoir, and operative connection between said float and said pawl for releasing the latter to permit said weight to fall, substantially as set forth.

10. In a device of the character described, a shaft, a drum on said shaft, a weight, suspension means for the latter connected with the drum, a brake, operative connection between said shaft and brake, a ratchet wheel driven from said shaft, a locking pawl for said ratchet, a water reservoir having a restricted outlet, a float in said reservoir, and operative connection between said float and said pawl for releasing the latter to permit said weight to fall and operate said device, substantially as set forth.

11. In a device of the character described, a shaft, a drum on said shaft, a weight, suspension means for the latter connected with the drum, a ratchet wheel driven from said shaft, a locking pawl for said ratchet, a water reservoir having a restricted outlet, a float in said reservoir, a valve for varying the restriction of said outlet, a vertical rod controlling said valve, a pointer connected with said rod, a graduated sector in indicative relationship with said pointer, and operative connection between said float and pawl for releasing the latter to permit said weight to fall, substantially as set forth.

12. In a device of the character described, a shaft, a drum on said shaft, a weight, suspension means for the latter connected with said drum, an audible signaling device, a trigger in the path of said weight adapted

to sound said signaling device, a brake on
said hydro-extractor, operative connection
between said shaft and said brake, a ratchet
wheel driven from said shaft, a locking pawl
5 for said ratchet, a water reservoir having a
restricted outlet, a float in said reservoir, a
valve for varying the restriction of said out-
let, a vertical rod controlling said valve,
a pointer connected with said rod, a gradu-
10 ated sector in indicative relationship with
said pointer, and operative connection be-

tween said float and said pawl for releasing
the latter to permit said weight to fall, sub-
stantially as set forth.

In testimony that we claim the foregoing 15
as our invention, we have signed our names
in presence of two subscribing witnesses.

EUGÈNE LOUIS COLLON.
GEORGES TABARD.

Witnesses:

MARIN VACHON,
EUGÈNE LAURIOD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
