

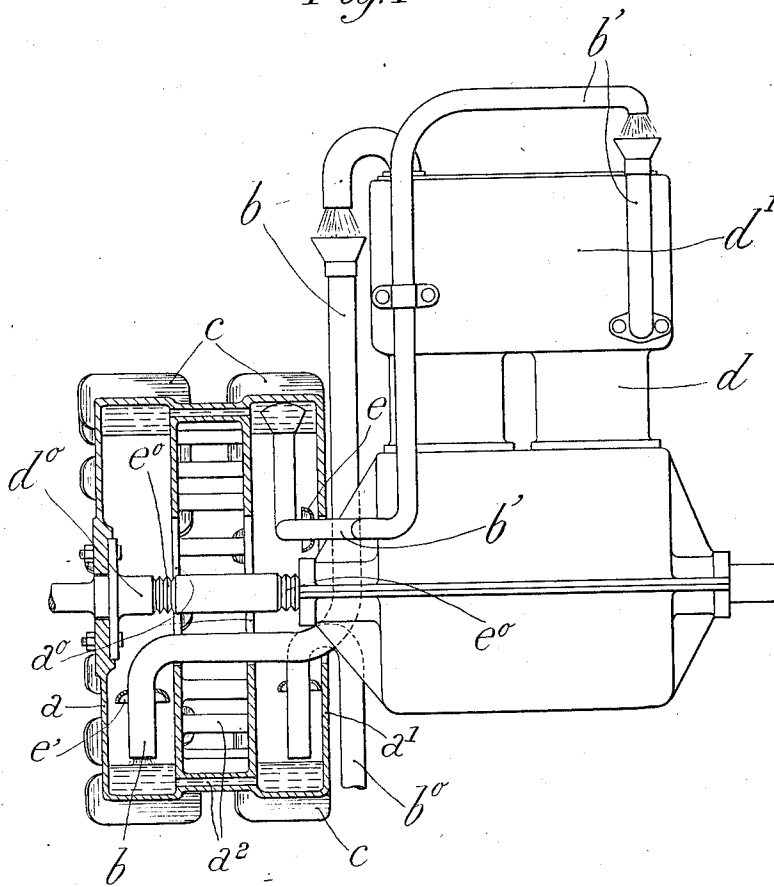
M. GOUDARD & M. MENNESSON.
CENTRIFUGAL HYDRAULIC ENGINE.
APPLICATION FILED JULY 17, 1911.

1,032,892.

Patented July 16, 1912.

2 SHEETS—SHEET 1.

Fig. 1



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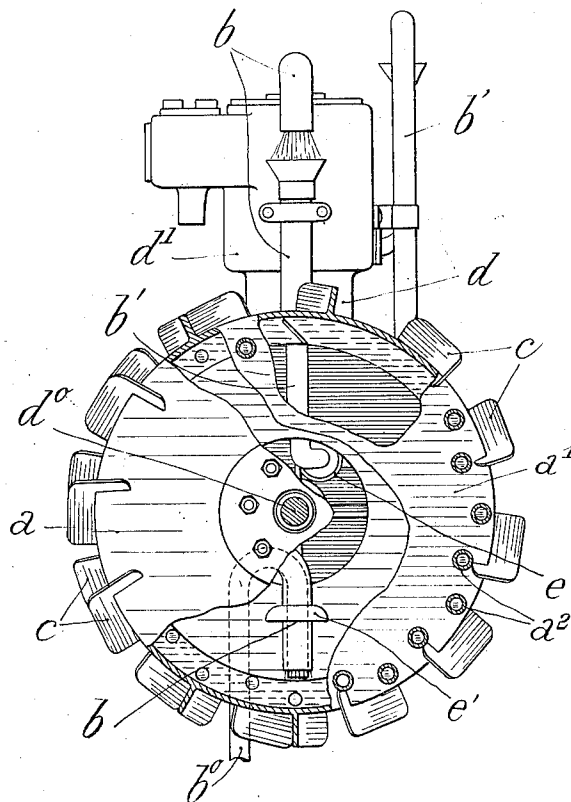
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2 SHEETS—SHEET 2.

Fig. 2



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UNITED STATES PATENT OFFICE.

MAURICE GOUDARD AND MARCEL MENNESSON, OF LEVALLOIS-PERRET, FRANCE.

CENTRIFUGAL HYDRAULIC ENGINE.

1,032,892.

Specification of Letters Patent.

Patented July 16, 1912.

Application filed July 17, 1911. Serial No. 638,984.

To all whom it may concern:

Be it known that we, MAURICE GOUDARD and MARCEL MENNESSON, engineers, citizens of the French Republic, residing at 39 Rue Fouguet, Levallois-Perret, Seine, in the French Republic, have invented certain new and useful Improvements in Centrifugal Hydraulic Engines, of which the following is a specification.

This invention relates to centrifugal hydraulic engines for water and other liquids and has for its principal object to simplify such engines and consequently to facilitate their construction and increase the uses to which they can be applied.

The invention consists essentially in constructing the aforesaid engines with a rotary drum adapted to receive liquid and provided on one at least of its faces with a central aperture, and with a fixed system of pipes extending through said aperture and so located that when liquid is supplied through the pipes this liquid is first conducted into the said drum and then conducted away.

The invention consists moreover in adapting apparatus of the type described to act as radiators or as pumps. It also includes certain methods of carrying out the construction hereinafter described.

It will be clearly understood from the following description and the annexed drawing which are given merely by way of example.

Figure 1 of the drawing is a transverse section of an apparatus constructed according to the invention associated with an internal combustion engine provided with a water jacket, the apparatus being so constructed that it forms at the same time the radiator and the fly wheel of the aforesaid engine. Fig. 2 shows the same parts in side elevation with portions broken away.

According to the invention, in building a centrifugal hydraulic engine, in place of adopting one of the constructions hitherto customary which constructions are more or less complicated, the following method is adopted. A rotary drum is provided and consists of a single drum, such for example as shown at a , and having in one of its faces an aperture a^0 , or else this may consist of a drum such for instance as that shown at a^1 , having an aperture on each of its faces, or again it may consist of a certain number

of drum-like elements each of which elements may be similar to one of those just described. Where two drums are provided they are mounted co-axially and interconnected by means of a series of tubes a^2 which is an advantageous arrangement and shown by way of example at Fig. 1. A system of pipes is provided extending through the aperture or apertures. This system is so arranged that when liquid is supplied, this liquid can pass first into the aforesaid drum and eventually be conducted away therefrom, the series of pipes being preferably subdivided into two branches b and b^1 adapted to be used respectively as inlet and outlet passages.

By reason of this construction the manufacture of apparatus of this kind can be greatly simplified as there is not a single joint to be made while it is possible to adapt the apparatus to various purposes, and in a particularly advantageous manner especially for radiators, in which case the subdivision of the drum and the use of the separate tubes a^2 is especially desirable. In this case moreover it is preferable to embody at the same time one or more of the following features. The aforesaid drum should be constructed of aluminium or some similar material. This renders it possible to rotate apparatus of the class under consideration at a much greater velocity with the same power than ordinary engines on account of the low specific weight of these materials, the consequence being that if such an engine is used as a radiator its efficiency is very greatly increased. It is desirable to adapt to the surface of the aforesaid drum vanes c , and in particular vanes curved inward and so formed that when the drum is rotating they produce the effect of a fan, consequently increasing the power of such engines when used as radiators.

Where an engine d is provided having a water jacket d^1 it is preferable to so mount the drum and locate the system of tubes that the drum in rotating assists the circulation in the said jacket. To effect this object the drum in question may with advantage be mounted directly in connection with the shaft so as to take the place more or less of a fly wheel, a construction especially applicable where the apparatus is fitted to an internal combustion engine with a horizontal shaft d^0 . With this construc-

tion in order to prevent the siphoning of the water from the water jacket, which tends to take place at the stoppage of the motor; the said system of pipes is divided in the neighborhood of the inlet and outlet of the aforesaid jacket. Again to insure an efficient circulation a pump, not shown, may be combined with the system of pipes or else (and this construction is equally feasible when the apparatus in question is only being used as a simple pump) an outlet similar to the inlet *b* in the drum is provided contrary to what is shown, so that when the drum rotates the ejection of the liquid contained therein is facilitated especially when an ejector is combined with the extremity of the aforesaid conducting passage *b* or the conducting pipe may be provided with an outlet similar to the pipe *b*¹ of the said drum so that when the latter rotates the liquid which is therein produces the effect of an injector, or the exit passage may resemble both the inlet passage *b* and the exit passage *b*¹ so that the two effects just mentioned may be obtained concurrently.

It is preferable to combine with a tube or tubes *b* and *b*¹ contained in the interior of the drum *a*, pieces *e* and *e*¹ which resemble gutters used in architecture so that if liquid tends to flow and drip along the exterior of the said tubes below these parts it is obliged to return to the drum. Baffles *e*⁰ are also provided with the same object, on that part of the shaft on the inside of the drum *a*, in the case where drum has a shaft which penetrates inside. The said drum is provided in addition with a supplementary tube *b*⁰ the orifice of which is preferably directed oppositely to the direction of rotation of the drum. This is adapted to act as an overflow pipe, the aforesaid orifice being located at a distance from the periphery of the drum equal to that to which the inner surface of the ring of liquid reaches from the aforesaid periphery so that when the drum is in rotation it contains the exact quantity of liquid necessary for proper working. This addition is especially useful in cases where the drum is provided with a horizontal axle mounted directly in connection with the motor so as to act as a radiator to the latter, as it does away with the necessity of any device for refilling it, this being effected by supplying directly or indirectly to the drum all the liquid that can be stored therein the excess being immediately carried away through the supplementary tube *b*⁰ when the drum is rotating.

As will be readily understood the invention is in no way limited to the methods of carrying it into effect which have been more particularly described but includes all modifications embodying the same principles.

What we claim and desire to secure by

Letters Patent of the United States of America is:—

1. In a centrifugal hydraulic engine of the circulating pump type the combination with a rotary drum one at least of the faces of which comprises a large central aperture and a pair of fixed pipes extending through said aperture one for the admission of liquid which is under pressure and the other for the withdrawal of the liquid, these two pipes being divided before and after the overhead reservoir for the liquid with the special object of preventing the siphoning of the liquid from the reservoir when the rotation of the drum is stopped.

2. In a centrifugal hydraulic engine, the combination of a rotary drum having an outer closed face and an inner face with a central aperture, a shaft extending through the aperture in the inner face and secured to the outer face, and a pair of fixed pipes also extending through the said aperture of the inner face and having reversely outwardly projected extremities, the one pipe coöperating with the outer portion of the drum adjacent to the outer face and serving as a liquid supply to the interior of the drum and its outlet extremity within the drum disposed in opposition to the direction of rotation of the drum, and the other pipe coöperating with the inner portion of the drum adjacent to the inner face and serving to withdraw the liquid from said drum.

3. In a centrifugal hydraulic engine, the combination of a rotary drum having an outer closed face and an inner face with a central aperture, a shaft extending through the aperture in the inner face and secured to the outer face, and a pair of fixed pipes also extending through the said aperture of the inner face and having reversely outwardly projected extremities, the one pipe coöperating with the outer portion of the drum adjacent to the outer face and serving as a liquid supply to the interior of the drum and its outlet extremity within the drum disposed in opposition to the direction of rotation of the drum, and the other pipe coöperating with the inner portion of the drum adjacent to the inner face and serving to withdraw the liquid from said drum, both pipes being provided with gutters surrounding the same within the drum.

4. In a centrifugal hydraulic engine adapted for heating or cooling purposes, the combination of a rotary drum constructed of a metal having high conductivity and having an outer closed face and an inner face with a central aperture, a shaft for the drum extending through the aperture and attached solely to the outer head of the latter, vanes projecting outwardly from the circumferential surface of and extending around the drum to provide fans, and fixed pipes extending directly

through the aperture and projecting at their free extremities in reverse directions toward the inner periphery of the drum, one of the pipes coöperating with the outer portion of the drum and serving as the supply means therefor, and the other pipe coöperating with the inner extremity of the drum and operating to withdraw the liquid from the drum.

5. In a centrifugal hydraulic engine, the combination of a rotary drum having an outer closed face and an inner face with a central aperture, a shaft extending through the aperture in the inner face and secured to the outer face, a pair of fixed pipes also extending through the said aperture of the inner face and having reversely outwardly projected extremities, the one pipe coöperating with the outer portion of the drum adjacent to the outer face and serving as a liquid supply to the interior of the drum and its outlet extremity within the drum disposed in opposition to the direction of rotation of the drum, and the other pipe coöperating with the inner portion of the drum adjacent to the inner face and serving to withdraw the liquid from said drum, and a drain pipe also extending through the aperture in the inner face of the drum and coöperating with the inner portion of the latter and having the orifice in the free end within the drum disposed opposite to the direction of rotation of the drum.

6. In a hydraulic engine of the circulating pump type the combination of a rotary drum one at least of the faces of which comprises a large central aperture a fixed pipe also extending through the said aperture with its extremity located at the distance from the periphery of the drum at which the surface of the ring of liquid

formed within the drum during the rotation thereof is intended to come, so that the drum contains the exact quantity of liquid suitable for correct working and with the object of facilitating the refilling with liquid.

7. In a centrifugal hydraulic engine of the type adapted to produce changes of temperature, the combination of a rotary drum having vanes projecting outwardly from the circumferential surface thereof and extending around the drum to provide fans, the drum having a large central aperture in one of its heads, and fixed pipes extending through the said aperture and projecting into the drum in reverse directions and toward the periphery of the latter.

8. A centrifugal hydraulic engine of the type adapted to produce changes of temperature the combination of a set of rotary drums mounted side by side, at least the first and the last being provided with a large central aperture, a pair of fixed pipes one for the admission of liquid passing through the aperture in one of the outer drums and the other for the withdrawal of liquid passing through the aperture in the other outside drum and a series of tubular passages interconnecting the drums at their peripheries with the particular object of obtaining a greater surface for the transference of heat.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

MAURICE GOUDARD.
MARCEL MENNESSON.

Witnesses:

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PAUL BLUM.