

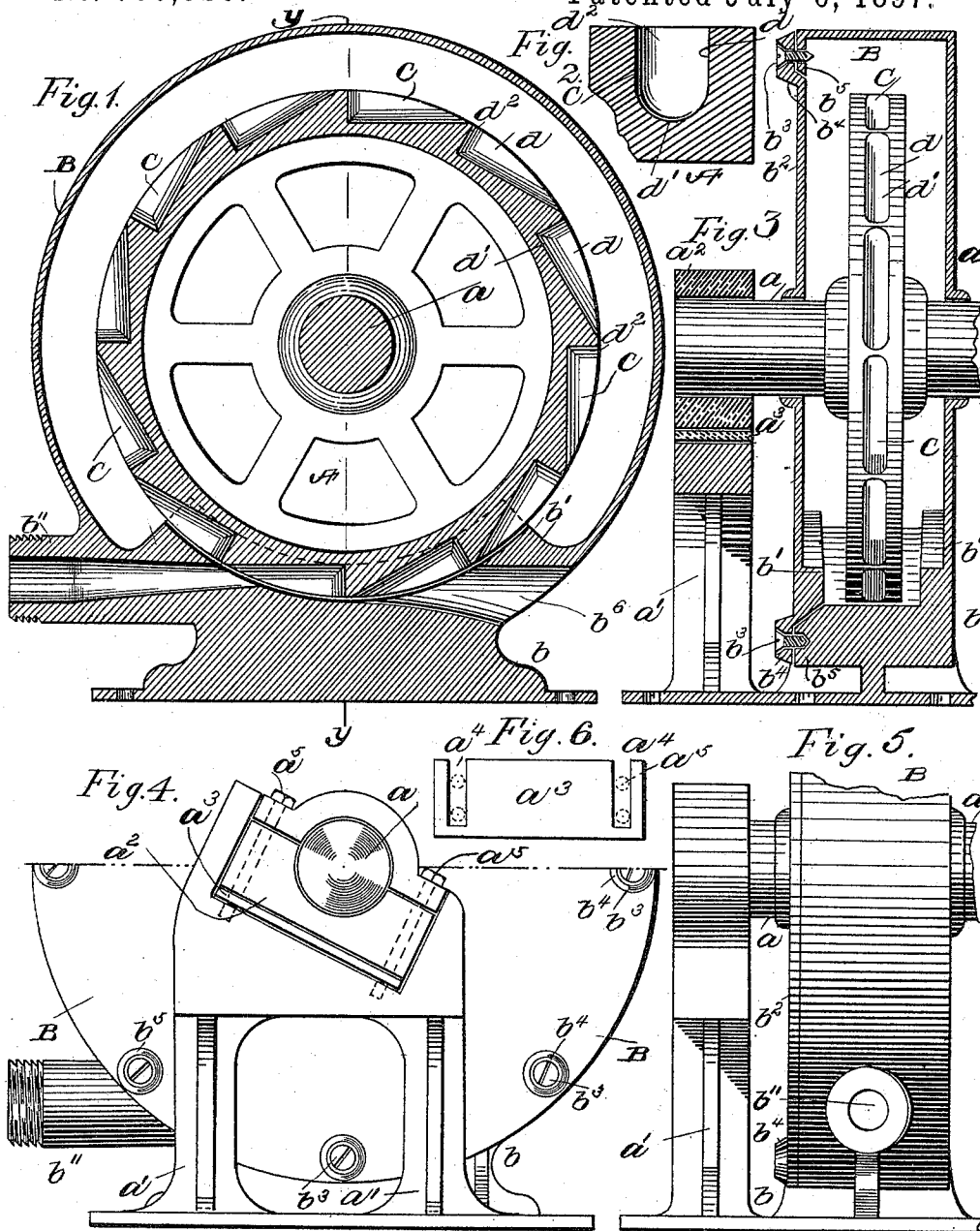
(No Model.)

2 Sheets—Sheet 1.

J. R. DE REMER.
HYDRAULIC MOTOR.

No. 586,059.

Patented July 6, 1897.



Inventor
Jared R. DeRemer

Witnesses:

Theodore Rosenberg
W. Fisher

By *John W. Gill*
Attorney.

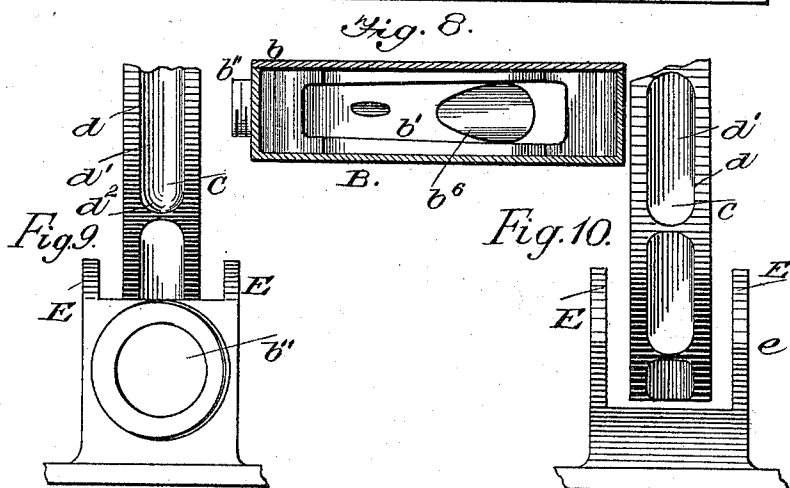
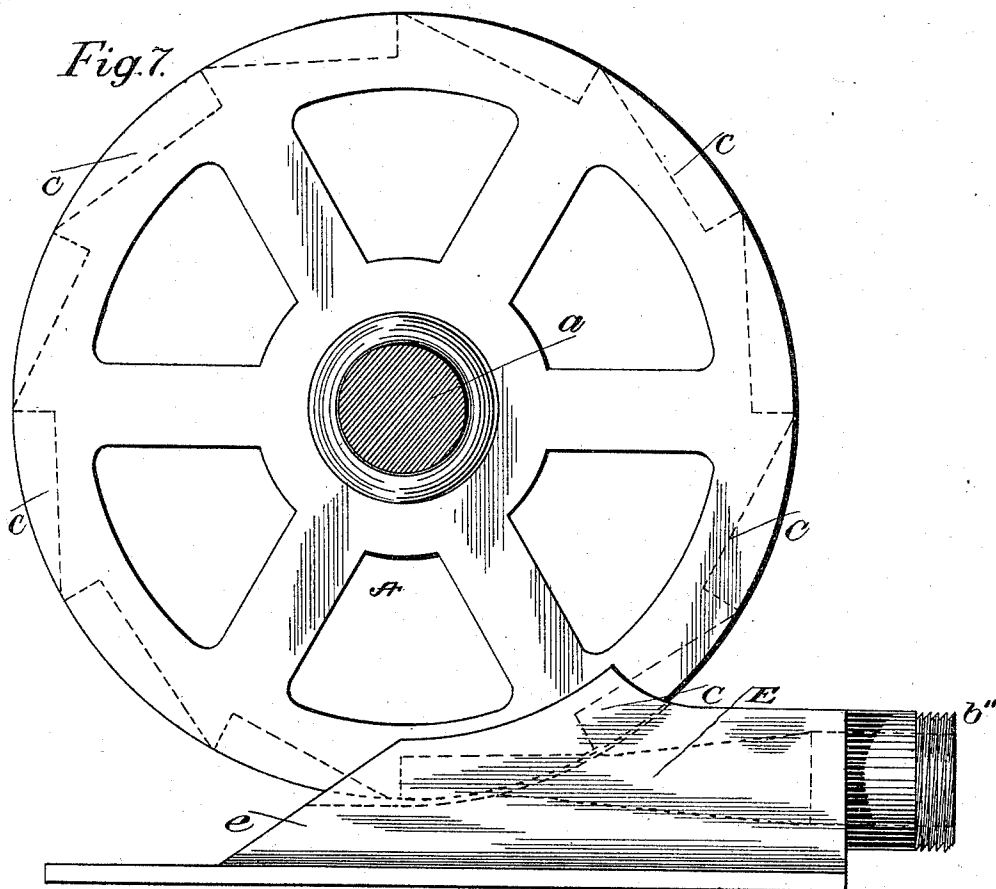
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HYDRAULIC MOTOR.

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Witnesses
Frederick Rosenberg
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UNITED STATES PATENT OFFICE.

JARED R. DE REMER, OF GLENWOOD SPRINGS, COLORADO, ASSIGNOR OF
ONE-HALF TO LOUIS SCHWARZ, OF SAME PLACE.

HYDRAULIC MOTOR.

SPECIFICATION forming part of Letters Patent No. 586,059, dated July 6, 1897.

Application filed June 24, 1895. Serial No. 553,926. (No model.)

To all whom it may concern:

Be it known that I, JARED R. DE REMER, of Glenwood Springs, in the county of Garfield and State of Colorado, have invented certain new and useful Improvements in Hydraulic Motors; 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.

This invention contemplates certain new and useful improvements in hydraulic motors.

The object of the invention is to provide a simple and inexpensive motor of this class which shall be highly efficient in operation and by means of which an accelerated speed will be obtained.

A further object is to so construct the buckets of the motor-wheel that the full force of the water will be utilized and also to so arrange the inclosing guards that the water will be properly directed against the buckets and all back pressure be avoided.

A further object is to simplify the construction of the inclosing casing and also to provide a simple and inexpensive means for adjusting the height of the wheel.

The invention comprises the novel features of construction and also the detail combination and arrangement of parts, substantially as hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical longitudinal sectional view of my improved motor. Fig. 2 is an enlarged transverse sectional view of the wheel-rim. Fig. 3 is a vertical sectional view on the line $y y$, Fig. 1. Fig. 4 is a side elevation of the lower half of the motor. Fig. 5 is an end view thereof with parts broken away. Fig. 6 is a detail. Fig. 7 is a view in side elevation with the inclosing casing removed. Fig. 8 is a plan view of the base and guards with parts in section. Figs. 9 and 10 are opposite end views with parts broken away.

Referring to the drawings, A designates a wheel, a the rotary shaft thereof, and a' one of the supporting-standards for the journal-box a^2 . This box is set at an incline in a correspondingly-formed recess in the standard, and beneath it is a liner-plate a^3 , having

adjacent to its ends parallel slots a^4 , open at one end, so as to allow the plate to be inserted past the adjusting-screws a^5 . By means of this liner-plate, or a series of them, the position of the rotary shaft, and consequently the wheel, may be regulated by raising and lowering.

B is the housing or inclosing casing, b the base thereof, and b' the two guards between which the wheel is located, the periphery of the wheel being in close proximity to the concavity of base b . One side b^2 of this casing is removable and is held in place by screws b^3 , working in openings in overlapping flanges $b^4 b^5$. One of the guards is preferably formed with the removable side and the other with the stationary portion. The guards b' are slightly divergent, and between their convergent ends opens the inlet-nozzle b'' , while the efflux-opening b^6 extends between the divergent ends thereof, said latter opening being slightly flared. The upper surface of the base b from a point in advance of the inlet-nozzle is tangential to the periphery of the wheel or slightly flared, terminating at the efflux-opening. This flaring of the base, together with the divergence of the guards, insures the free discharge of the water, after the expenditure of its power, without impeding the action of said wheel. In this way the water does not react on the wheel, and the efficiency of the latter is greatly enhanced.

In the rim or periphery of wheel B are formed the buckets C. These buckets are so formed that the end of one adjoins that of the other, with but a slight appreciable intervening space. Each bucket has parallel sides d , a concaved portion d' , and an inner concaved end d^2 , the vertex of the concavity d' uniting with that of the end d^2 . This formation of the buckets is such that when one of them is in line with the inlet-nozzle the full force of the water will be directly against the curved end d^2 thereof and will continue to strike against the same until the outer end of the bucket passes beyond said inlet, when the curved end of the next adjacent bucket will be immediately presented for the action of the water. In this way the full force or power of the water is constantly exerted on the wheel. The formation of the inlet-nozzle, the

curvature of the base, the form of the buckets, and the location of the efflux-opening all unite to direct the contact of the water with the buckets. When the stream is in direct contact with one bucket, where the bucket has its depth, so to speak, the nozzle is at a point, and as the bucket comes to a point the nozzle has its depth, the two combined directing the water on the end face of the bucket until the latter passes beyond the line of the stream. When any one of the buckets is in line with the inner end of the inlet-nozzle, it substantially forms a continuation of the latter. The water passes out through the efflux-opening. The guards being divergently arranged and the base flared, the water will readily free itself from the wheel as it reaches the outlet, and the movement of the wheel in consequence is not in the least impeded. It will be noted that the buckets while being acted upon by the water are in close proximity to the concaved surface of the base, and hence the water is confined within said buckets and directed by the parallel sides thereof against the curved ends. Above and beyond the guards the housing or casing is of greater diameter than the wheel, leaving an intervening space whereby any water passing beyond the efflux-opening and guards can fall back to said opening without impeding the movement of the wheel; but this housing or casing is not absolutely essential and may be entirely dispensed with, as shown in Figs. 7, 9, and 10. In this modified form the wheel travels between the divergent guards E, and the length of the latter is somewhat abbreviated, as shown at e, the efflux being between the divergent ends of the guards.

The advantages of my invention are apparent to those skilled in the art. It will be particularly noted that in shaping the buckets in the manner shown and described the full force or power of the water is obtained directly against the inner end of each bucket as the same is in line with the inlet-opening; that by arranging the buckets close together the action of the water on the wheel is continuous, and by forming the guards and base in the manner stated the movement of the wheel is not at any point impeded by the water reacting thereon, an important advantage in wheels of this character. It will also be seen that by means of the liner-plates the position of the wheel can be readily adjusted.

A hydraulic motor constructed in accordance with my invention is extremely simple, and by means thereof a maximum power is obtained.

I claim as my invention—

1. A hydraulic motor having a wheel provided with buckets in its periphery, and di-

vergent guards between which said wheel is designed to rotate, the water supply and efflux being, respectively, at the convergent and divergent ends of said guards, substantially as set forth.

2. A hydraulic motor having a wheel provided with buckets in its periphery, a base having an upper concaved surface slightly flared at one end, divergent guards extending above said base and designed to inclose a portion of the wheel, the water supply and efflux being between said guards and located, respectively, between the convergent and divergent ends thereof, substantially as set forth.

3. A hydraulic motor having a wheel provided with buckets in its periphery, a base having an upper concaved and slightly-flared surface, a water-supply opening at one end above the vertex of said concaved surface, the efflux-opening at the other end of said base on a line with said surface, and the divergent guards extending upwardly from said base, substantially as set forth.

4. In a hydraulic motor, a wheel having buckets, the shaft therefor, the base having a concaved surface and divergent side guards, the standards, the journal-bearings supported by said standards and supporting said shaft, the screws, and the liner-plates having open-end slots, substantially as set forth.

5. In a hydraulic motor having a rotary wheel, a base having a guard projecting from one side thereof, the housing or casing for said wheel formed with said guard, one side of said housing or casing being removable and having a guard formed therewith, said guards being divergently arranged with relation to each other and screws for holding said side to the housing or casing and base, substantially as set forth.

6. The herein-described improved hydraulic motor comprising the base having a concaved and slightly-flared surface, divergent guards extending upwardly therefrom, an inlet-opening between said guards at the convergent ends thereof, its inner end being above the vertex of said concaved surface, the efflux-opening between the divergent ends of said guards, the wheel having buckets in its rim or periphery, the shaft therefor, the standards, the journal-bearings supported by said standards, and the liner-plates having open-end slots, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JARED R. DE REMER.

Witnesses:

J. W. DOLLISON,
Ed. S. HUGHES.