S. C. FANCHER.

WATER POWER SYSTEM.

APPLICATION FILED JULY 17, 1908.

914,399.

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Fig I

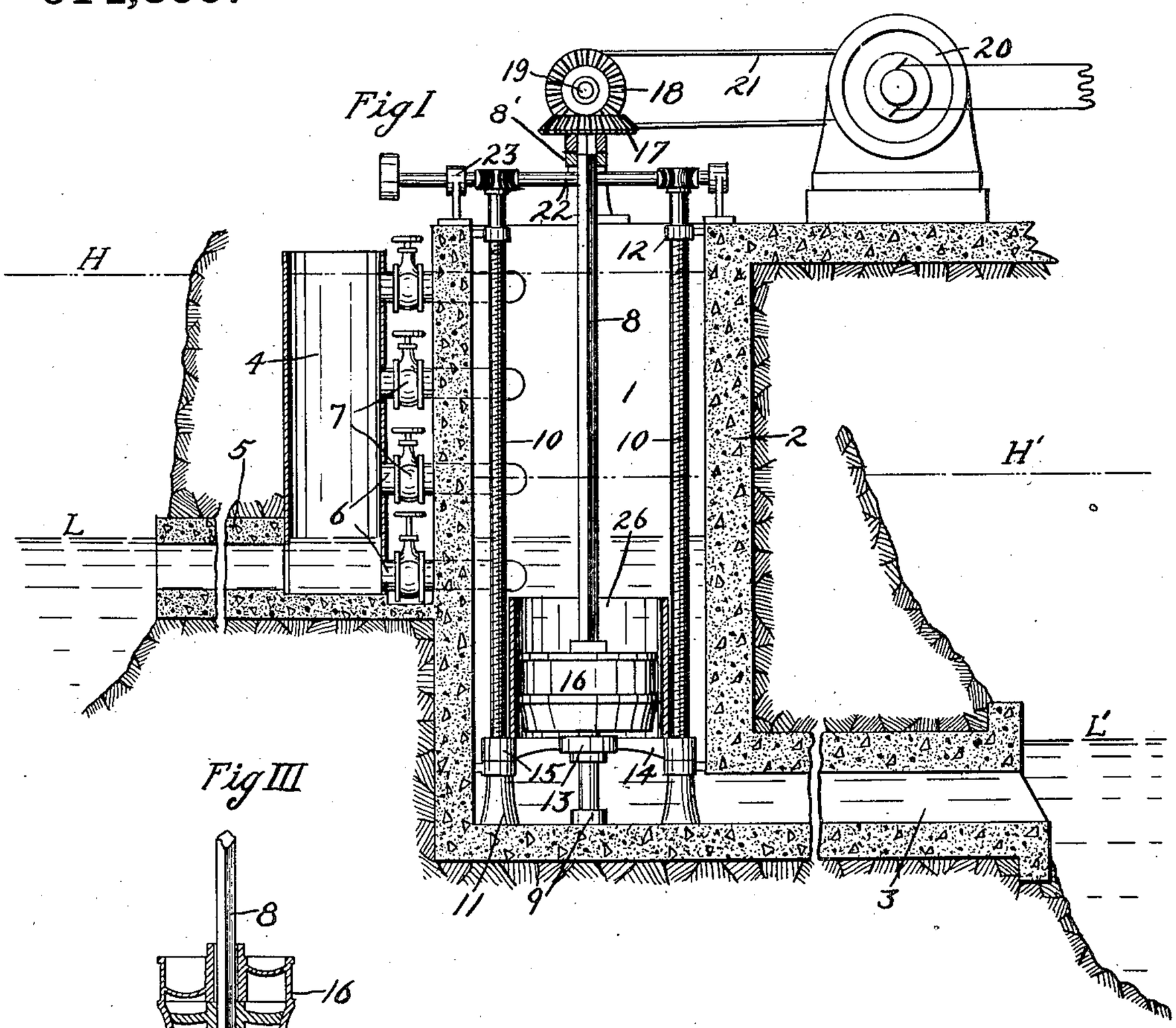
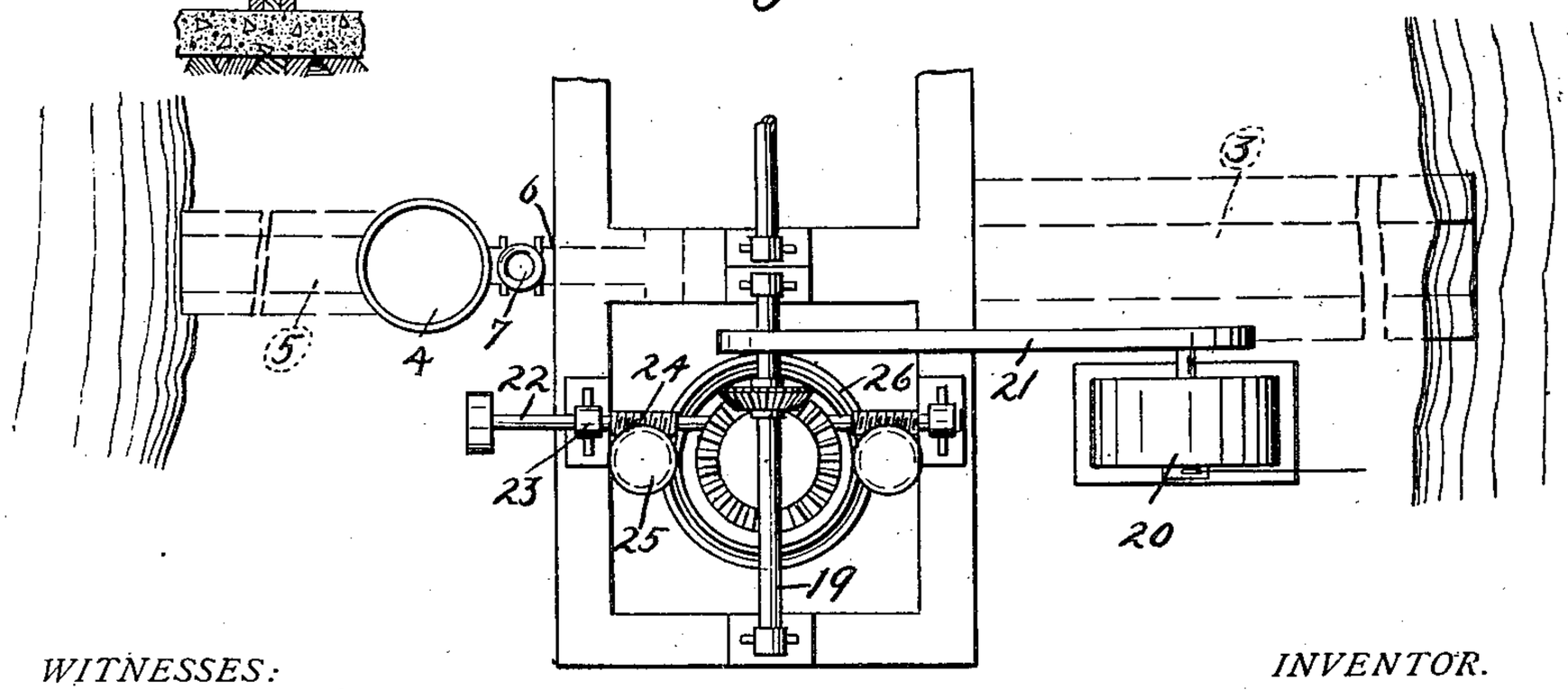


Fig III

Fig II



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WATER-POWER SYSTEM.

No. 914,399. Specification of Letters Patent. Patented March 9, 1909.

Application filed July 17, 1908. Serial No. 444,002.

To all whom it may concern:

Be it known that I, SALATHIEL C. FANCHER, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Water-Power Systems; and I do 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 the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to a water power system, and has for its object to provide a system whereby the fall of a river between two points may be utilized in developing power for operating machinery or for other purposes, and whereby advantage may be taken of the natural fall of a river, to develop power otherwise than by the use of an ordinary dam.

It is a well known fact that a river, in traveling between two points, follows a circuitous path, so that in some instances the distance between the points, when measured by the travel of the stream, is materially greater than the distance measured on a straight line therebetween.

It can readily be seen that, should a well be sunk to a substantial depth below the level of a river and a conduit led from its lowest point to and discharged into the river at a sufficient distance below the intake, a sufficient fall could be secured in the well to operate a water wheel. Should the river follow such a course that after flowing for some distance it should return to near a determined point, the fall of the river for a flow of several miles may be utilized with the aid of a relatively short conduit.

In accomplishing the above stated object, I provide a well and conduit of the kind mentioned, and suitable mechanical parts for actuation by the water power, such mechanical parts comprising novel details of structure and combinations which will presently be fully described and pointed out in the following claims, reference being had to the accompanying drawings, in which:—

Figure I is a vertical sectional view of a water power system constructed according to my invention, illustrating the power wheel and transmission parts, and the water level at the intake and out-take points. Fig. II is a top plan view of same. Fig. III is a vertical sectional view of the water wheel and drive shafts, showing the mounting of the latter.

Referring more in detail to the parts:—L designates the low water level of a river at the point of intake and L′ the low water level at the out-take, in a system constructed according to my invention.

1 designates a well that is sunk a suitable distance below the water level at the intake point and has the walls 2, which extend a desired distance thereabove, preferably above the high water mark of the river (indicated by H—H′).

Connecting with the bottom of well 1 is a conduit 3, which is extended a desired distance from the well and is adapted to empty into the river at a considerably lower level than that at the point where the well is located.

4 designates a distributer well that is located adjacent to the main well 1, and has an intake conduit 5 extending from its lower point and opening to the river near the low water mark, so that, irrespective of the depth of the water in the river, water may flow therefrom into the distributing well and maintain a like level therein.

6 designates intake pipes which connect the main well 1 and distributing well 4 at various points between the low and high water marks and which are provided with the valves 7, by which the flow through each of said pipes may be controlled independently of the others.

8 designates a wheel shaft which is preferably squared throughout the greater part of its length and rounded at its lower end to adapt it for revolution on a bearing 9 that is supported on the bottom of the well; such shaft being provided with guide members 8′ at its upper end to prevent disalinement during its operation.

10 designates the water wheel supporting and adjusting members which are preferably vertically arranged screws, having bearings at their lower ends in the pedestals 11 at the bottom of well 1, and are braced at the top by members 12.

13 designates the wheel supporting bracket, the hub of which surrounds the shaft 8 so that it may have free vertical movement thereover. Projecting laterally from the hub of bracket 13 are the arms 14, the ends

of which are provided with collars 15 which surround and have operative connection with the supporting and adjusting members 10.

16 designates a water wheel, which may be of any well known type, and has a core adapted for vertical sliding movement on the shaft 8, but is adapted to hold same when revolved in order that it may revolve such shaft therewith. Rigidly mounted on the upper end of shaft 8 is a gear wheel 17 which meshes with a similar wheel 18 on a horizontal shaft 19, which is adapted to operate a dynamo 20 with which the shaft is connected through an ordinary belt and pulley connection 21.

22 designates a worm shaft which is revolubly mounted in bearings 23, and has the worms 24 which engage the worm wheels 25 on the screws 10, so that when the shaft is revolved the screws are turned to raise or lower the water wheel through the operation of the supporting bracket 13.

While its use is not essential, I prefer to provide the wheel 16 with a casing 26, by means of which the water may be confined until it pours through the wheel so that the full force of the water may be secured.

In the plan view I show the well 1 comprising a plurality of compartments, each of which may contain a separate power wheel and parts; the intake pipes 6 being branched to lead to adjoining well chambers.

Presuming the parts to be constructed and combined as described, and the river to be at its low water mark, the wheel 16 is located at the lower limit of its travel and the bottom intake pipe 6 opened to permit a flow from the distributer 4 to the well 1.

The intake being open, water flows from the river through the conduit 5 to the distributer and through pipe 6 to the well 1, being discharged over and operating the water wheel. After passing through wheel 16, the water flows through the conduit 3 to the river at a level considerably lower than that at which it entered the system.

Should the river rise, the water at the lower level would back up through conduit 3 into the main well and interfere with the operation of the wheel should the latter remain at its first position. To obviate this, I have provided the mechanism for elevating the wheel, so that it may always remain above the level of the water in the well and be free to operate without interference.

Should the intake remain at the same level after the elevation of the wheel, the fall would be insufficient to operate the wheel, so I have provided the vertical series of intake and provided for their individual control in order that a desired fall may be secured for any elevation of the wheel.

By providing the intake conduit at the bottom of the distributer, a single intake will be sufficient for any level of the river, as the water will rise in the distributer as the river rises.

Having thus described my invention, what I claim as new therein and desire to secure by Letters Patent is:—

1. In a water power system, a conduit for conducting water from an upper to a lower point of a stream, a water wheel located in said conduit and adapted for vertical adjustment therein, and a plurality of intake conduits arranged at different elevations and adapted for individual control for the purpose set forth.

2. In a water power system, a conduit adapted for conducting water from an upper to a lower point of a stream and comprising a well having an intake port and a discharge conduit opening from the bottom of said well, and a water wheel located between said intake port and discharge conduit.

3. In a water power system, a conduit adapted for conducting water from an upper to a lower point of a stream and comprising a well having a plurality of intake ports, one arranged above another, and a discharge conduit opening from the bottom of said well, a water wheel located in said well between the lowest intake port and said discharge conduit, and means for opening or closing each of said ports independently of the others.

4. A water power system comprising a main well having connection with an upper stream and lower discharge conduit opening to the lower point of said stream, a distributer well having an intake from the upper point of said stream, a plurality of pipes connecting said distributer well and said main well at various elevations, means for controlling the flow through each of said pipes independently of the others, and a water wheel located in said main well.

5. In a water power system, a conduit adapted for conducting water from an upper to a lower point of a stream, a vertical shaft adapted for revolution in said conduit, a water wheel operatively connected with said shaft, a bracket located in said conduit and adapted for supporting said wheel, and means for raising and lowering said bracket.

6. In a water power system, a conduit adapted for conducting water from an upper to a lower point of a stream, screws mounted in said conduit, a bracket having threaded connection with said screws, a revoluble shaft located in said conduit, a water wheel supported by said bracket and adapted for vertical, but not for revoluble movement on said shaft, and means for simultaneously actuating said screws for the purpose set forth.

7. In a water power system, a conduit adapted for conducting water from an upper to a lower point of a stream, screws revolubly mounted in said conduit, a bracket carried by and adapted for vertical actuation by

said screws, a vertical shaft revolubly mounted in said conduit, a water wheel carried by said bracket and adapted for vertical, but not for revoluble movement on said shaft, and transmitting parts connected with said shaft for the purpose set forth.

8. In a water power system, a conduit for conducting water from an upper to a lower point of a stream, screws revolubly mounted in said conduit, a bracket carried by and adapted for vertical actuation by said screws, a water wheel carried by said bracket and adapted for vertical, but not for revoluble movement on said shaft, a casing surrounding said wheel, means for simultaneously actuating said screws, and a power transmitting mechanism connected with said shaft, substantially as and for the purpose set forth.

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

SALATHIEL C. FANCHER.

Witnesses:
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