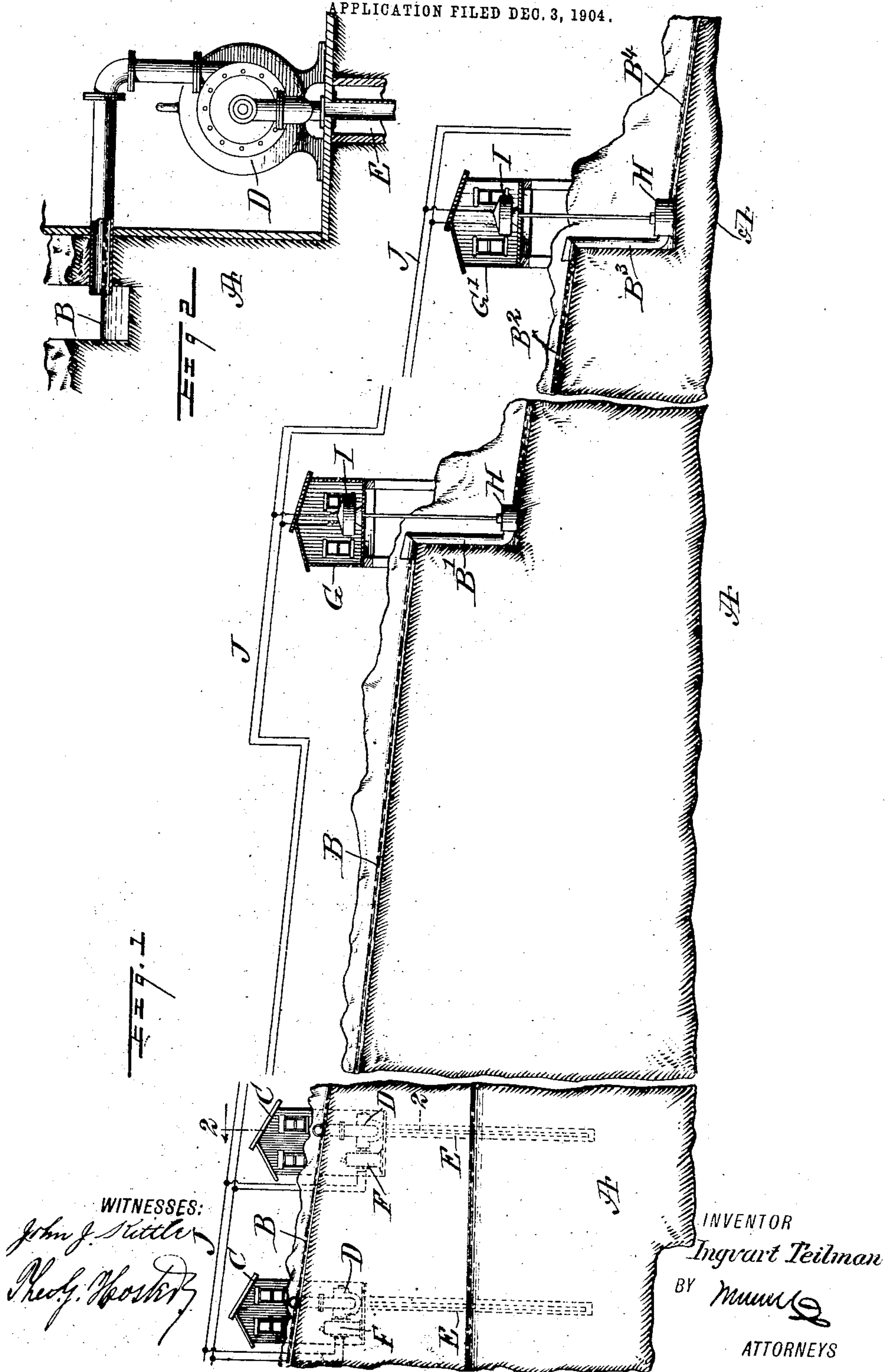


No. 818,204.

PATENTED APR. 17, 1906.

I. TEILMAN.
METHOD AND MEANS FOR PROCURING WATER FOR IRRIGATING AND
OTHER PURPOSES.

APPLICATION FILED DEC. 3, 1904.



UNITED STATES PATENT OFFICE.

INGVART TEILMAN, OF FRESNO, CALIFORNIA.

METHOD AND MEANS FOR PROCURING WATER FOR IRRIGATING AND OTHER PURPOSES.

No. 818,204.

Specification of Letters Patent.

Patented April 17, 1908.

Application filed December 3, 1904. Serial No. 235,340.

To all whom it may concern:

Be it known that I, INGVART TEILMAN, a citizen of the United States, and a resident of Fresno, in the county of Fresno and State of California, have invented a new and Improved Method of and Means for Procuring Water for Irrigating and other Purposes, of which the following is a full, clear, and exact description.

The invention relates to hydraulic engineering; and its object is to provide a new and improved means arranged to utilize the fall of water in a waterway for operating pumps employed to lift the water from a well to the head of the waterway, the water discharged at the foot of the waterway being utilized for irrigating and other purposes.

The invention consists, essentially, in a method whereby the water is lifted from a well to the head of an inclined waterway to develop power in its downflow in the said waterway and utilize this developed power for lifting the water from the well to the head of the inclined waterway.

The invention further consists in the means for carrying the above method into effect.

Reference is had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both views.

Figure 1 is a sectional side elevation of the improvement; and Fig. 2 is an enlarged cross-section of one of the pumping-stations, the section being on the line 2 2 of Fig. 1.

On the ground A, shown in the drawings, is arranged a race, ditch, flume, or like inclined waterway B, and at the head of the said waterway is arranged one or more pumping-stations C, having pumps D of any improved construction driven by electric motors F for pumping water from wells E into the head of the inclined waterway B. The waterway in its lower portion is provided with a penstock B', arranged in a power-station G, containing a turbine or other water-motor H, driving an electric generator I, connected by a line J with the electric motor F in a pumping-station C to actuate the corresponding pump D, as previously explained.

The water discharged from the water-motor in the first power-station G continues its downflow in the following section B² of the waterway, and the lower end of this section terminates in a penstock B³, arranged within another power-house G', equipped similarly to the power-house G and likewise connected

by a line J with a pumping-station C at the head of the waterway. The water discharged at this power-house G' flows down the next section B⁴ of the inclined waterway to another power-house, and this may be repeated as many times as deemed necessary within the limit of the waterway, the water finally discharged from the last power-house being utilized for irrigating or other purposes.

It is understood that in practice the water-bearing ground may be many miles away from the land to be irrigated, and the number of pumps depends on the amount of water needed; but in all cases the height to which the water in the wells E is to be lifted must be less than the fall or the combined falls of the water in the waterway before the water is used for irrigating purposes.

As an illustration, it is assumed that the country up a river-bottom affords plenty of ground-water at a depth of from fifteen to twenty feet and the lands to be irrigated are, say, about eight or ten miles down the valley and seventy-five feet lower than the water-ground, so that by the use of, say, forty wells and centrifugal pumps of a capacity of two cubic feet each eighty cubic feet of water per second are produced, and allowing twenty feet for any possible seepage and evaporation there is left about sixty cubic feet for power at the water-wheels in the power-houses, thus obtaining ample power and some to spare.

From the foregoing it will be seen that according to the conditions of the ground various arrangements have to be made; but in all cases the power developed by the fall of the water in the waterway is utilized to generate power, such as electricity, and which can be conducted back to the head of the waterway to utilize the power there for actuating pumps to raise the water from the wells to the head of the waterway, it being understood that the pumps are first started in any suitable way. It will also be seen that by the arrangement described a sufficient supply of water for irrigating purposes can be obtained at a comparatively small expense—that is, the expense of installation and maintenance of the system.

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

1. The herein-described method of procuring water for irrigating or other purposes, consisting in lifting water from one level to

another, then conducting such water to still another and lower level to develop power, and finally applying such power to lift the water from the first to the second level.

- 5 2. The combination with an inclined waterway, of pumps for lifting water from wells into the said waterway at the head thereof, electric motors for driving the said pumps, water-motors driven by the water in the said
10 waterway, and located in a plane lower than the head of the water in the wells and elec-

tric generators driven by the said water-motors and connected with the said electric motors.

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

INGVART TELLMAN.

Witnesses:

W. SCOTT SMITH,
EUGENE ANDERSON.