S. B. GOFF.

WAVE POWER.

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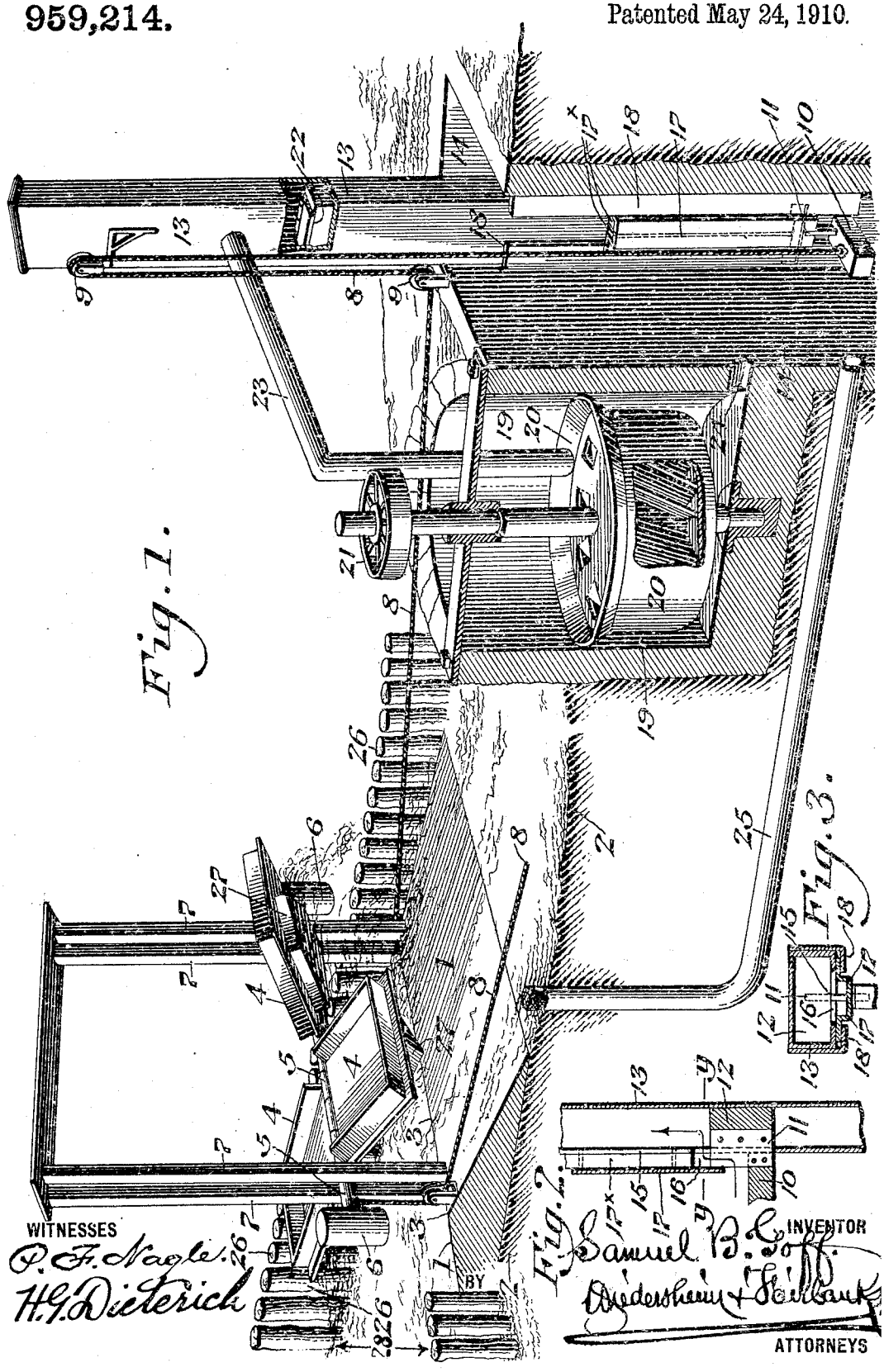

Fig. 1.

Fig. 2.

Fig. 3.

WITNESSES

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WAVE-POWER.

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To all whom it may concern:

Be it known that I, SAMUEL B. GOFF, a citizen of the United States, residing at Camden, county of Camden, State of New Jersey, have invented a new and useful Wave-Power, of which the following is a specification.

My invention relates to a device adapted to obtain power from the waves of the ocean or sea and consists of certain instrumentalities including a float member, a pump operated thereby, a turbine or other wheel adapted to receive a supply of water from said pump, and a water receiving well or chamber in communication with said house or casing of said wheel and the barrel of said pump, together with details the novel features of all of which will be pointed out in the claims that follow the specification.

For the purpose of explaining the invention, the accompanying drawing illustrates a satisfactory reduction of the same to practice, but the important instrumentalities thereof may be varied, and so it is to be understood that the invention is not limited to the specific arrangement and organization shown and described.

Figure 1 represents a perspective view of a wave power embodying my invention. Fig. 2 represents a vertical section of a portion of a pump and connecting parts employed on an enlarged scale. Fig. 3 represents a horizontal section thereof on line *y—y*.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings:—1 designates a floor or foundation which is formed of cement, stone or other material laid on the bed 2 of the ocean or sea, some distance from the shore before the swells or waves break, the upper face of said floor being formed with upwardly inclined faces so as to ascend to and descend from a given point 3 by which provision, the waves will be elevated to a great extent as they flow up and over one side of said floor and then fall more rapidly as they roll down and over the other side of said floor. This action is communicated to a number of floats of which the floats 4 are hinged to the main portion of the shaft 5, and the floats 6 are fixed to or stationarily connected with end portions of said shaft, the latter being guided by the columns or uprights 7, which are anchored in the bed 2, in any suitable manner. Connected with said shaft 5 are the ropes or chains 8 which are passed around suitably supported pulleys 9 and attached on their outer ends to the beam 10, which by means of the bar 11 is connected with the piston 12 of a pump whose barrel 13 is suitably supported in the well 14 located on the shore, said barrel having in its side a vertically extending slot 15, to permit the plate 11 to pass therethrough in the ascent and descent of said piston, said barrel having therein also a supply opening 16, so that the water in the well 14 may enter the barrel above the piston as per arrow Fig. 2.

The slot 15 is covered in advance of the bar 11, and consequently of the piston by means of the channeled plate 17 which, guided on the barrel 13 by the flanges 18 on the latter is connected with the bar 11 and moves therewith over said slot so that as the piston is lifting the water in the barrel, the water will not escape through said slot. The channeled plate 17 is furthermore guided on the separated cleats $17^{\times}$ which are secured to the barrel, the opening between the cleats being in register with the slot 15, so that the bar 11 may ride through both opening and slot in the ascent and descent of the piston 12, while said opening is covered also by the plate to prevent the escape of the water from the side of the barrel.

The under side of the plate 11 is open to the water in the well 14 and set-out from the opening 16 so that the water from the well will pass under said plate and be directed to said opening 16, from whence it enters the barrel 13 above the piston.

Supported adjacent the well 14 is the house or chamber 19 of the turbine or other water wheel 20 which has its bearing in said chamber and carries on its shaft a pulley 21 by which the power of said wheel may be communicated to a place of service by a belt, gearing or other suitable means.

The pump is provided with check-valves 22 therein and has connected with its barrel above said valves, the pipe 23, which is adapted to convey the water in the pump to the wheel-house or casing 19, when as is evident the wheel 19 will be operated.

The spent water of the wheel may pass from the house or chamber 19 into the well 14 by any suitable outlet or conduit 24 so as to supply said well and consequently the barrel with its requirements of water and said well may be supplied furthermore by

the pipe 25, which is supplied with water from the ocean or sea and discharge the same into said well, but if desired, the well may receive a supply of water from any source on the shore or land.

It will be seen that as the waves reach the floor 1 and rise thereon, they strike the floats 4 and 6 and lift the same, thus elevating the shaft 5, when the ropes 8 follow the latter causing the ascent of the beam 10 and consequently the piston 12, thus operating the pump in one direction. When the waves roll over the descending portion of the floor 1, the floats are permitted to lower with the same. When the ropes 8 are relieved, and the piston which is properly weighted of itself and by the beam 10 is permitted to drop, and so the operation continue, whereby as water is pumped into the pipe 23, it is directed by the same to the wheel 20, the power derived therefrom being communicated to the pulley 21, by which it may be directed to the place of service.

The floor 1 and adjacent portions of the bed 2 may be guarded against wash by the piling 26 which is driven into said bed, or otherwise secured in position.

The number of pumps, wells, water wheels, casings and other appurtenances may be increased in number and the beam 10 may be extended to be connected with adjacent pump pistons and the rope or chain 8 may be doubled as shown for connection with said beam.

The floats 4 have cork or other material 27 connected therewith to increase their buoyancy and they may be hinged on the rod 5 so as to be more sensitive in their rising and falling motions due to the corresponding actions of the waves thereon.

The piling in advance of the floor 1 is separated on opposite sides forming a flaring or tapering flume 28, the northwest end whereof is adjacent to the floats or approximately so, whereby the waves are prevented from spreading as they approach the floats and so exert power on the latter so as to lift the same to greater extent and cause a larger throw of the pump piston.

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

1. In a wave power, a pump-operating float composed of hinged members, a rising and falling shaft carrying the same, an auxiliary float member, the latter being stationarily connectible with said shaft, and an inclined plane floor on the bed of the water below said several members.

2. In a wave power, a float, a pump, a flexible connection for said float and pump, a water supplying chamber in which said pump is seated, and means for directing water into said chamber.

3. In a wave power, a float, a pump, a flexible connection for said float and pump, a water supplying chamber in which said pump is seated, a water wheel, and a house therefor, said chamber being in communication with said house.

4. In a wave power, a float, a pump, a bar connected with the piston thereof, a beam attached to said bar and adapted to be operated through the medium of said float, the barrel of said pump having a vertically extending slot in the side thereof for the passage of said bar, therethrough in the movement of the piston, and means attached to said bar adapted to cover said slot.

5. In a wave power, a float, a pump, a projecting member on the piston of said pump, an attachment for said member with said float whereby said piston is operated by the latter, the barrel of said pump having a vertical slot in the side thereof for the passage of said member therethrough in the operation of the pump, a plate on the exterior of said barrel connectible with said attachment and movable therewith over said slot, and means on the barrel for guiding said plate and retaining it in position.

6. In a wave power, a float, a pump adapted to be operated by the same, a well in which said pump is seated, a water wheel, a house in which said wheel is contained, said house and well being in communication, and an auxiliary supply pipe for said well extending from the water that operates said float.

7. In a wave power, a pump-operating float composed of hinged members, a rising and falling shaft carrying the same, and an auxiliary float member, the latter being stationarily connectible with said shaft.

8. In a wave power, a bed, a float above the same, a pump, a connection for said pump and float, and a flume on said bed in advance of said float, said flume being of tapering form, the narrow end of which is at or about said float.

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Witnesses:

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