

E. L. HARPER, JR.
PUMP.

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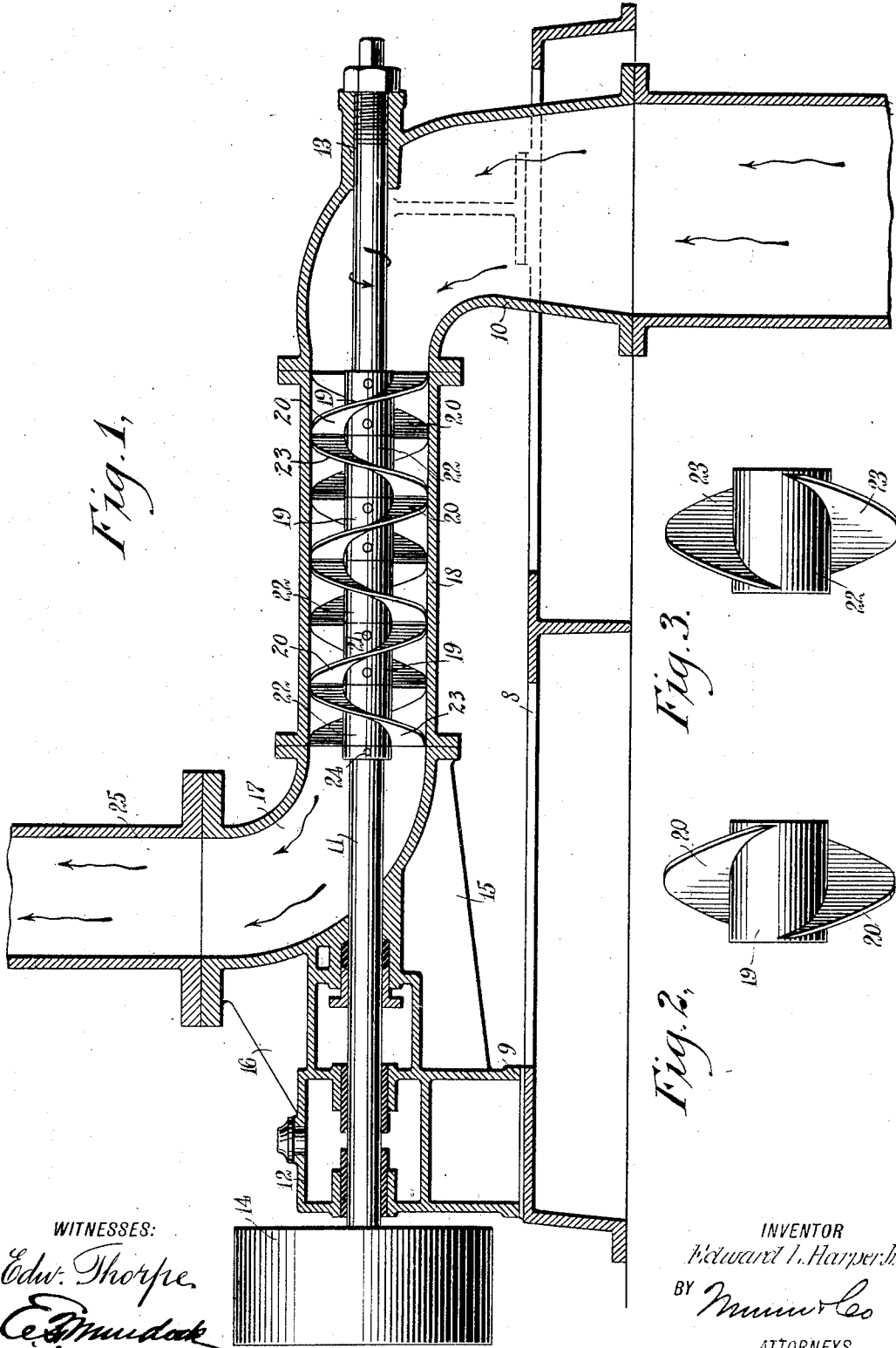


Fig. 1,

Fig. 3.

Fig. 2,

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1,005,204.

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To all whom it may concern:

Be it known that I, EDWARD L. HARPER, Jr., a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Pump, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are: to provide means for correcting the swirling of the water within the barrel of a pump, and in the delivery column thereof; and to provide in a rotary pump devices for correcting the swirling of the water as and when the same is delivered from the various blades or fins.

One embodiment of the present invention is disclosed in the structure illustrated in the accompanying drawings, in which like characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a longitudinal vertical section of a pump constructed and arranged in accordance with the present invention; Fig. 2 is a side view of a propeller blade and hub therefor, constructed in accordance with the present invention; and Fig. 3 is a side view of a swirl preventing device constructed in accordance with the present invention.

The present invention is shown as applied to a pump of usual construction, wherein is employed a bed plate 8. On the bed plate 8 is mounted a bearing pedestal 9 and an inlet head 10. A driving shaft 11 is mounted in bearings 12 and 13, constructed in any approved manner, and as is usual in pumps of this character, and is provided with a driven pulley 14 at one end, suitably connected with any source of power.

Extended from the pedestal 9 are brackets 15 and 16 which support a delivery pipe 17. The delivery pipe 17 and the inlet head 10 are provided with bolting flanges between which is extended a pump barrel 18. It is through the pump barrel 18 that the shaft 11 is extended, and within which it is provided with a series of propeller screw sections 19, 19. The screw sections 19, 19 are provided with semi-circular screw blade sections 20, 20. The pitch of the blade sections 20, 20 is sufficient to extend each blade section from one to the other end of the hub of each of the sections 19. Each of the blade

sections 20 are pitched in the same direction. The sections 19, 19 are fixedly mounted on the shaft 11, any suitable means being employed, that illustrated in the drawings consisting in a series of pins 21, 21 which are driven through the hub of the sections 19 into the shaft 11.

Interposed between each of the sections 19 is a baffling section 22. The baffling sections 22, 22 equal in number the screw sections 19, and are provided with semi-circular screw blades 23, 23. The blades 23, 23 are extended at a pitch directly the opposite of the pitch of the blade sections 20, the pitch in both the blade sections 20 and 23 being equal. The baffling sections 22, 22 are loosely mounted on the shaft 11, being guided and held thereon by the sections 19. The end section 22 is held in position on the shaft 11 by a retaining collar 24.

In the operation of a pump when constructed as shown in the accompanying drawings, and as above described, the water received from the inlet head 10 is advanced by the blade sections 20, 20 of the first of the series of screw sections 19. From the first of the screw sections 19 the water is delivered against the oppositely pitched blade sections 23 of the baffling sections 22. In passing through the first of the baffling sections 22 to the second of the screw sections 19, the swirl or gyration imparted to the column of water by the screw sections is corrected. It is found that the rotary force of the water as delivered by the blade 19 is equal to the force required to rotate the section 22. The gyrative force of the water as delivered from the sections 19 is required to rotate the baffling sections 22. The resistance of the sections 22 is sufficient only to straighten the line of travel of the water through the pump barrel 18. It will be understood that the resultant effect of this action is to straighten the path of travel of the water due to the yielding of the blade sections 23 from the straight path of the water and the resistance thereof to the path of gyration of the said water as delivered from the sections 19. The effect of the delivery of the water by each of the screw sections 19 is to rotate the baffling section directly in front of each of the said screw sections. The retardation of the column of water after delivery from the screw section

19 is very slight by reason of the fact that the friction on the baffling sections is minimized.

It will be understood that as many couples comprising a screw section and a baffling section may be employed in these pumps as the requirements demand. At the end of the barrel 18, without reference to length, the water is delivered past the final baffling section 22 into the delivery pipe 17, to be from thence delivered into a discharge pipe 25.

While I have herein shown the baffling sections as having the same length and pitch of blade sections as is given to the screw sections 19, I do not wish to be understood as limiting myself to such construction. In some forms of pump it becomes necessary to increase the length of the blade sections to efficiently correct or quiet the swirling of the water as delivered from the various sections 19.

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

1. A pump, comprising a driving shaft; a screw propeller section fixedly mounted on said shaft; and a rotatable baffling section loosely mounted on said shaft.

2. A pump, comprising a driving shaft; a screw bladed propeller fixedly mounted on said shaft; and a rotatable baffling section loosely mounted on said shaft on the delivery side of said propeller, said baffling section having deflecting sections pitched at an angle opposed to the angle of pitch of said propeller blades.

3. A pump, comprising a driving shaft; a series of separated propeller sections having spiral flanges extended therefrom, said sections being separated and fixedly mounted on said shaft; and a plurality of rotatable baffling sections interposed between said propeller sections and loosely mounted on said shaft, said baffling sections having deflecting extensions radially disposed and pitched to an angle opposed to the pitch of the blades of said propeller sections.

4. A pump, comprising a driving shaft; a series of rotary propeller sections fixedly mounted on said shaft; and a series of rota-

table baffling sections loosely mounted on said shaft and adapted to be rotated by water delivered from said propeller sections.

5. A pump, comprising a driving shaft; a series of propeller sections fixedly mounted on said shaft and having spiral propeller blades formed thereon; and a series of rotatable baffling sections interposed between each of said propeller sections, said baffling sections being loosely mounted on said shaft and having spiral propeller blades formed thereon equal in pitch to the propeller blades on said propeller sections, the pitch of said propeller blades on said baffling sections being reversed from those on the said propeller sections.

6. A pump, comprising a driving shaft; a cylindrical pump casing having inlet and delivery ends and bearings for said shaft; a plurality of screw propeller sections fixedly mounted on said shaft and in separated relation; and a plurality of rotatable baffling sections loosely mounted on said shaft, one of said sections being disposed on the delivery side of each of said propeller sections.

7. A pump, comprising a driving shaft; a pump casing for said shaft; a screw propeller section fixedly mounted on said shaft; and a rotatable spiral bladed propelled section loosely mounted within said casing and on said shaft, the pitch of said spiral blade being set to deflect the water as delivered from said propeller section toward a path parallel with said shaft.

8. A pump, comprising a cylindrical casing; a driving shaft mounted centrally in said casing; a rotary propeller mounted to move with said shaft and adapted to gyrate the water as delivered therefrom; and a baffling section provided with extended blades inclined at an angle opposed to the gyration of the water as delivered from said propeller, said baffling section being loosely mounted to be rotated by said water.

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

EDWARD L. HARPER, JR.

Witnesses:

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