W. N. BELL.

BOAT.

APPLICATION FILED DEC. 23, 1908.

931,177. Patented Aug. 17, 1909.

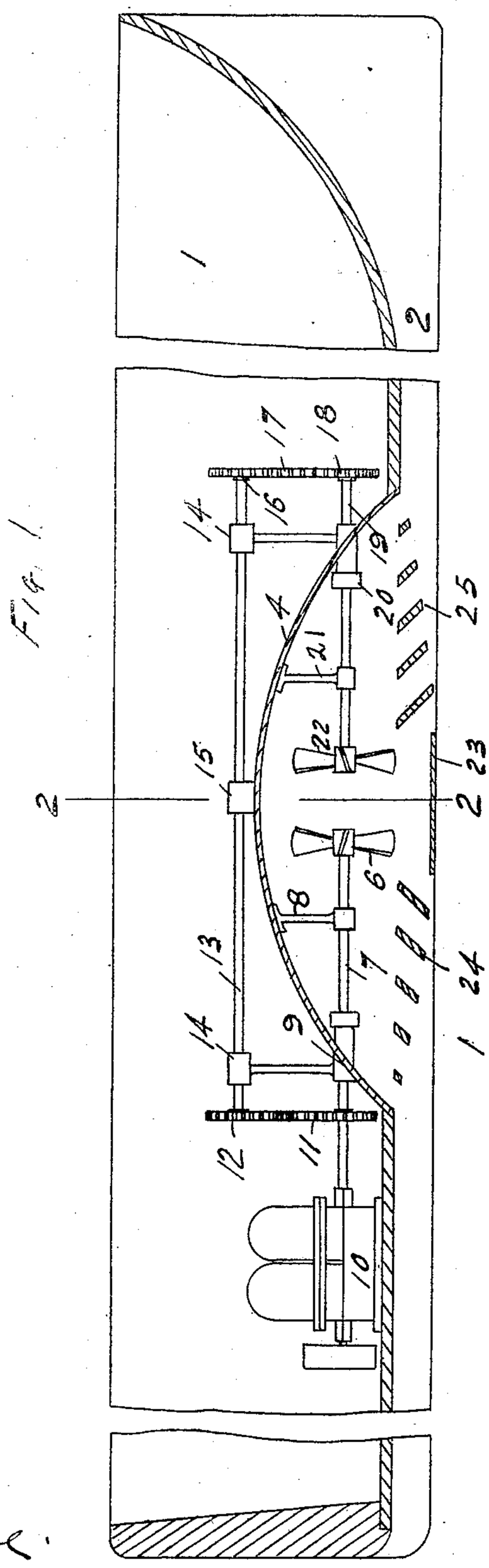

Fig. 1.

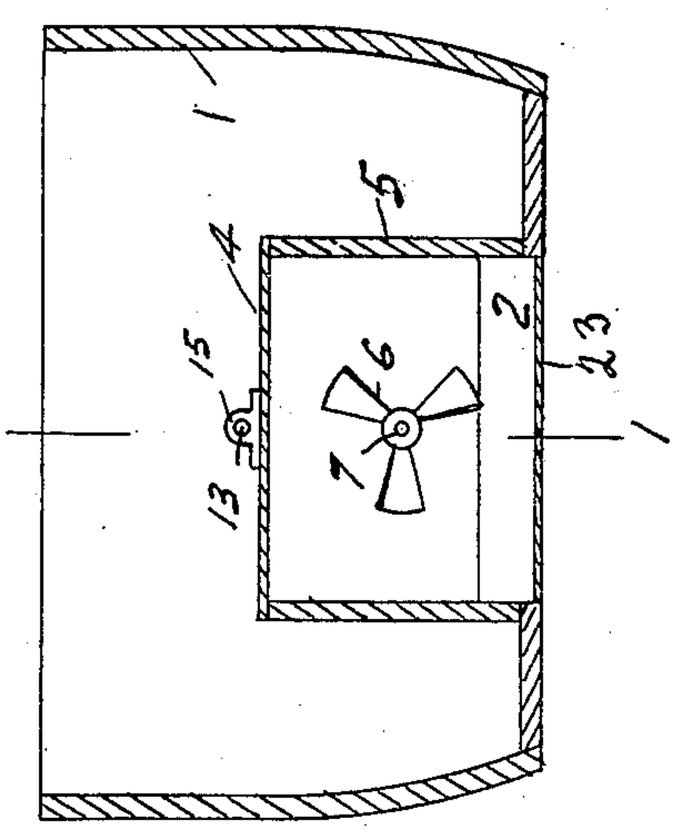

Fig. 2.

Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM N. BELL, OF PITTSBURG, PENNSYLVANIA.

BOAT.

No. 931,177. Specification of Letters Patent. Patented Aug. 17, 1909.

Application filed December 23, 1908. Serial No. 469,005.

To all whom it may concern:

Be it known that I, WILLIAM N. BELL, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Boats, of which the following is a specification.

This invention relates to boats and consists in certain improvements in the construction thereof as will be hereafter fully described and pointed out in the claims.

The object of the invention is to provide a power boat with an efficient propelling mechanism and in the preferred form with an efficient propelling mechanism for boats of light draft.

The invention is illustrated in the accompanying drawings as follows:

Figure 1 shows a section on the line 1—1 in Fig. 2. Fig. 2 is a section on the line 2—2 in Fig. 1.

1 marks the boat body. The bottom of the body is provided with a channel 2 which extends the whole length of the boat. A tunnel 3 extends upwardly in the bottom of the boat and is formed by plate 4 and sides 5.

A propeller wheel 6 is arranged slightly to the rear of the center of the tunnel. It is mounted on the shaft 7. This shaft has a bearing in a bracket 8 and a bearing 9 in the plate 4. The shaft 7 is driven directly from the motor 10.

A gear 11 is fixed on the shaft 7 within the boat and meshes a gear 12. The gear 12 is fixed on a shaft 13, the shaft 13 is journaled in the bearings 14 and 15. The gears 11 and 12 are of sufficient size to carry the shaft 13 above the tunnel 3. A sprocket 16 is fixed on the end of the shaft 13 opposite the gear 12; a chain 17 runs from the sprocket 16 to the sprocket 18. The sprocket 18 is fixed on the shaft 19; the shaft 19 extends through a bearing 20 in the plate 4 and a bearing in the bracket 21. A propeller wheel 22 is fixed on the end of the shaft 19 and is adjacent to the propeller wheel 6 and slightly in front of it. The propeller wheels 6 and 22 are oppositely pitched and the gears and sprockets heretofore described drive the shaft 19 in a direction opposite to that of the shaft 7. The wheel 22 which first strikes the water gives to it a rearward movement and also deflects it so as to give it a movement in a direction around the axis of the shaft or tangential to the path of the blades. The wheel 6 being oppositely pitched gets the force of this impact and consequently has an added efficiency, the water leaving the wheel 6 with this rotary motion somewhat neutralized so that it has a general direction toward the rear of the boat. It is preferable to confine the water at points adjacent to the wheels so as to increase this impact on the second wheel. I provide the plate 23 which bridges the channel 2 below the wheel for this purpose, the plate also forms a protection for the wheel. Where tunnels of this character are used and the boat is of light draft it sometimes happens that the tunnel is not entirely filled with water and the wheels do not deliver their full thrust. To obviate this I provide deflecting plates 25 at the inlet side of the tunnel, the effect of which is to deflect the water from the channel 2 in sufficient quantities to keep the tunnel full. The action of the deflectors 25 tends to draw down the front of the boat and to neutralize this I prefer to provide similar deflectors 24 at the rear, the deflectors being oppositely pitched to deflect the water downwardly.

What I claim as new is:

1. In a boat the combination of a boat body having a tunnel in its bottom; a motor; a motor shaft extending from the motor into the tunnel; a propeller wheel on the motor shaft; a transmission shaft above the tunnel; a second propeller shaft extending from the tunnel to within the boat; a propeller wheel on said second propeller shaft oppositely pitched from the first mentioned wheel; a gearing connecting the motor shaft with the transmission shaft and the transmission shaft with the second propeller shaft arranged to drive the second propeller shaft in a direction opposite to that of the motor shaft.

2. In combination in a boat, a boat body having a channel extending under its bottom and a tunnel extending upwardly from the channel; a closure below the tunnel leaving an inlet and outlet from the tunnel; and a propeller wheel in the tunnel above the closure.

3. In combination in a boat, a boat body having a channel extending along its bottom and a tunnel extending upwardly from the channel; a closure below the tunnel leaving an inlet and outlet from the tunnel; two propeller wheels arranged in the tunnel and op-

positely pitched; and means for driving said wheels in opposite directions.

4. In a boat the combination of a boat body having a tunnel therein; a propeller wheel in the tunnel; and deflectors at the front of the tunnel for deflecting the water upwardly into the tunnel.

5. In a boat the combination of a boat body having a tunnel therein; a propeller wheel in the tunnel; deflectors at the front of the tunnel for deflecting the water upwardly into the tunnel; and deflectors arranged at the rear of the tunnel for deflecting the water downwardly for the purpose described.

6. In a boat the combination of a boat body having a channel in its body from front to rear and a tunnel extending upwardly from a channel; a propeller wheel arranged in the tunnel; and a closure across the channel and below the wheel.

7. In a boat the combination of a boat body having a channel in its bottom from front to rear; the tunnel extending upwardly from a channel; a propeller wheel arranged in the tunnel; a closure across the channel and below the wheel; and deflectors at the front and rear of the tunnel, the deflectors at the front deflecting the water upwardly and the deflectors at the rear deflecting the water downwardly.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM N. BELL.

Witnesses:

JOHN K. DE TUERK,

W. B. WASHABAUGH.