

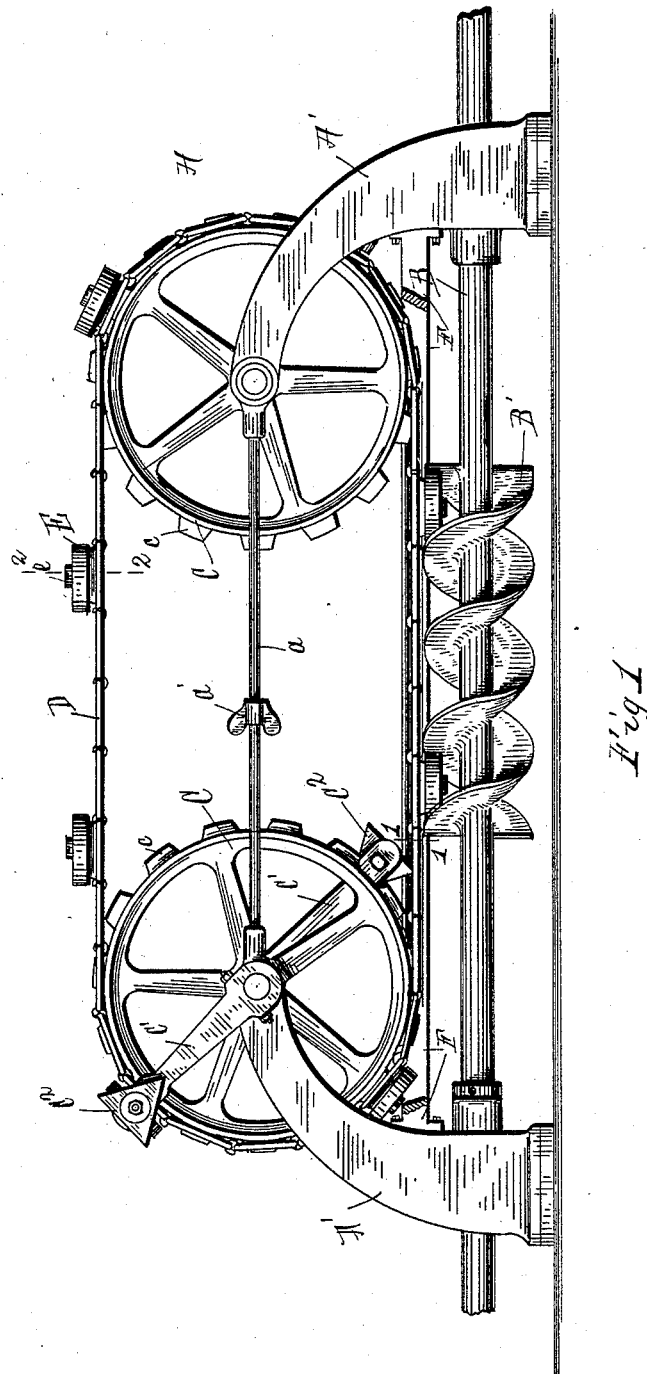
(No Model.)

2 Sheets—Sheet 1.

G. WILLETT.
MOTOR FOR BOATS.

No. 418,328.

Patented Dec. 31, 1889.



Witnesses
Matson Hurlburt
A. M. Best

Inventor
George Willett
By Leburn Haskin
Atty's

(No Model.)

2 Sheets—Sheet 2.

G. WILLETT.
MOTOR FOR BOATS.

No. 418,328.

Patented Dec. 31, 1889.

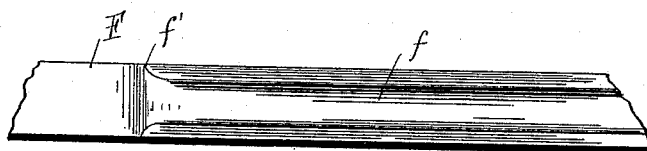
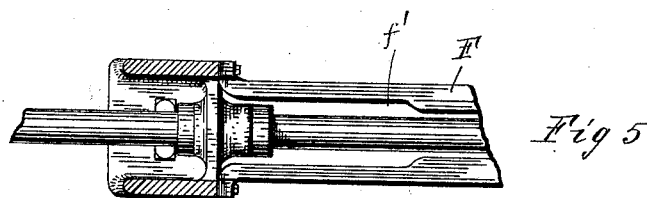
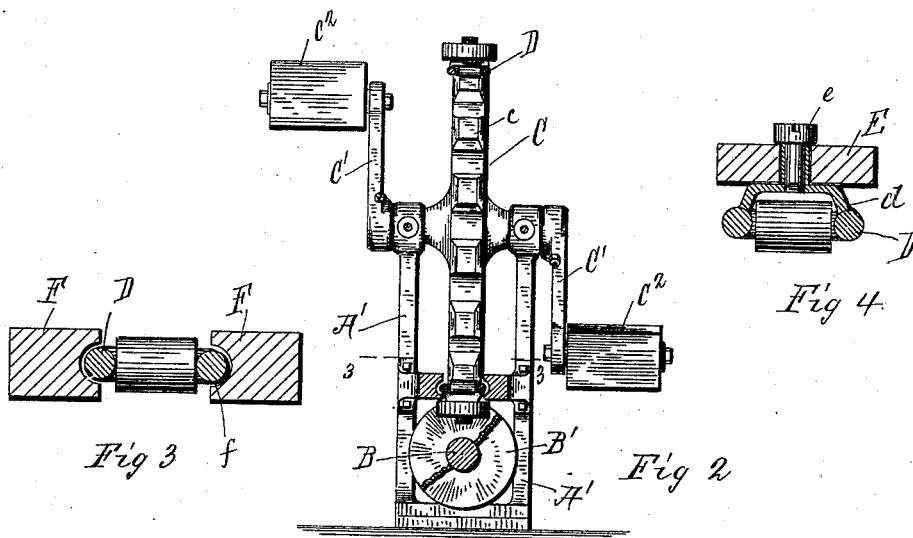


Fig 6

Witnesses

Morton Hurlburt
A. M. Best

Inventor

George Willett
By Leoburn & Thacher
Attys.

UNITED STATES PATENT OFFICE.

GEORGE WILLETT, OF ENGLEWOOD, ILLINOIS.

MOTOR FOR BOATS.

SPECIFICATION forming part of Letters Patent No. 418,328, dated December 31, 1889.

Application filed May 6, 1889. Serial No. 309,789. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WILLETT, a citizen of the United States, residing at Englewood, in the county of Cook and State

of Illinois, have invented a certain new and useful Improvement in Motors for Boats, &c., which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a motor embodying my invention; Fig. 2, an end elevation of the same; Fig. 3, an enlarged detail sectional view taken on the line 1 1 of Fig. 1; Fig. 4, an enlarged detail sectional view taken on the line 2 2 of Fig. 1; Fig. 5, a detail plan section taken on the line 3 3 of Fig. 2, and Fig. 6 a detail elevation of the inner face of one of the guides.

Like letters refer to like parts in all the figures of the drawings.

My invention relates to mechanical motors, and is in the nature of an improvement upon the invention set forth in Letters Patent No. 395,099, granted to me December 25, 1888, its object being to simplify and cheapen the construction and provide a more compact and efficient apparatus at a less expense.

To these ends my invention consists in certain novel features, which I will proceed to describe, and will then particularly point out in the claims.

In the drawings, A represents a suitable frame composed of standards A', adapted to be secured to any suitable base, said standards being connected by means of right and left threaded tension-rods *a*, the ends of which screw into the standard-heads, which are correspondingly threaded to receive them, the rods being provided with thumb-nuts *a'*, or other similar devices, by means of which they may be readily turned.

B represents the shaft, to which rotary motion is to be imparted, said shaft being mounted in suitable bearings in the standards A', being provided with a spiral B', formed upon its central portion. In each of the standards A', above the shaft B, there is mounted a sprocket-wheel C, the shaft of one of the sprocket-wheels being extended outward beyond the standard A', in which it is mounted, on each side thereof, and being provided with

a crank-arm C' at each end. These crank-arms are provided with pedals C² of any suitable construction.

D represents a sprocket-chain, which passes around the sprocket-wheel C, the lower portion of said chain extending parallel to the shaft B and immediately above the spiral B' thereon. This sprocket-chain may be of any suitable construction, and is provided at suitable intervals of its length with projections adapted to engage with and actuate the spiral B'. In the construction shown, which is one which I have devised and which I prefer for this purpose, these projections are constructed in the following manner: Certain links of the sprocket-chain are provided with a recessed body *d* of sufficient depth to receive the sprockets *c* of the sprocket-wheels C, and there is mounted upon this body a roller E, connected to the body by a pivot-screw *e*, which forms the axis around which said roller may rotate. These roller-bearing links are preferably arranged at distances apart less than the length of the spiral B', so that one of said rollers will always be in engagement with the spiral and thereby render the motion of the shaft B a continuous one. In order to prevent lateral deflection of the sprocket-chain B while in engagement with the spiral, I employ fixed guides F, arranged on each side of said chain immediately above the spiral B', these guides being provided with grooves *f*, in which the edges of the chain fit. The end portions of these guides are cut away, as shown at *f'*, so as to enlarge the space between said guides to permit the passage of the rollers E.

The apparatus thus organized operates in the following manner: The operator seats himself in proper position and places his feet upon the pedals C². Rotary motion is thereby imparted to the sprocket-wheels C, thereby producing a continuous rectilinear motion of the sprocket-chain D above the spiral B'. The rollers attached to the sprocket-chain engage successively with the spiral, and as they advance while in engagement with the same impart to the said spiral and to the shaft B a rotary motion. The resistance of the spiral tends to slightly deflect the sprocket-chain laterally; but the guides serve to effectually

prevent any such deflection. As a second roller engages with the spiral before the first one has passed clear of the same, the rotary motion imparted to the shaft B is continuous, and, owing to the proportion and arrangement of the parts, the speed at which the shaft B is rotated is much higher than the speed of the sprocket-wheel C. The tension of the sprocket-chain may be readily adjusted through the medium of the rods *a* in an obvious manner.

The motor may be employed in various connections, that for which it is more particularly devised being as a motor for small boats, in which case a suitable propeller may be either attached directly to the shaft B or connected thereto by suitable gearing. Hand-power may be substituted for foot-power to impart motion to the sprocket-wheels.

Various other modifications will readily suggest themselves, and I therefore do not wish to be understood as limiting myself strictly to the precise details hereinbefore described and shown in the drawings.

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

1. The combination, with the driven shaft provided with a spiral, of sprocket-wheels and means for actuating the same, and a sprocket-chain passing over said wheels arranged to travel parallel to said shaft and provided with projections to engage the spiral thereon, substantially as and for the purposes specified.

2. The combination, with the driven shaft B, having spiral B', of the sprocket-wheels D, one of which is provided with crank-arms hav-

ing pedals, and the sprocket-chain D, passing over said sprocket-wheel, traveling parallel to the shaft B, and provided with projections to engage the spiral thereon, substantially as and for the purposes specified.

3. The combination, with the shaft B, provided with a spiral B', the sprocket-wheels C, and the sprocket-chain D, provided with projections to engage said spiral, of guides to steady that portion of the chain adjacent to the spiral, substantially as and for the purposes specified.

4. The combination, with the shaft B, provided with spiral B', of the sprocket-wheels C and the sprocket-chain D, provided with rollers E mounted thereon and adapted to engage the said spiral, substantially as and for the purposes specified.

5. The combination, with the shaft B, provided with spiral B', of the sprocket-wheels C, and the sprocket-chain D, provided at intervals with links having recessed bodies *d*, the rollers E mounted on said links, and the pivot-screws *e*, substantially as and for the purposes specified.

6. The combination, with the shaft B, having spiral B', of the sprocket-wheels C, the sprocket-chain D, provided with projections to engage said spiral, the standards A', supporting said sprocket-wheels, and the threaded tension-rods *a*, connecting said standards, substantially as and for the purposes specified.

GEORGE WILLETT.

Witnesses:

W. W. WHITEHILL,
J. K. URIE.