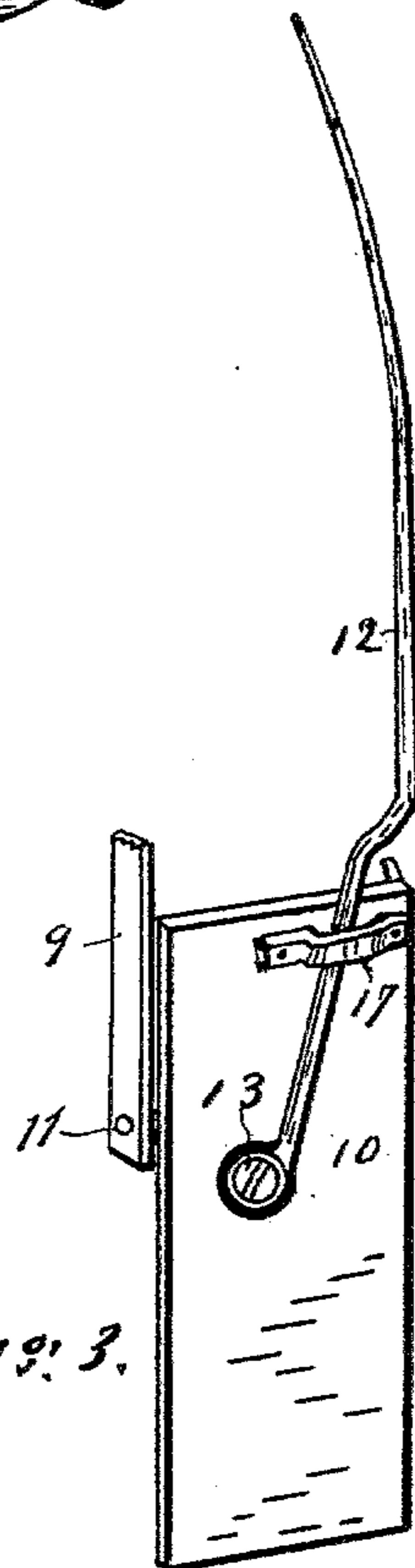
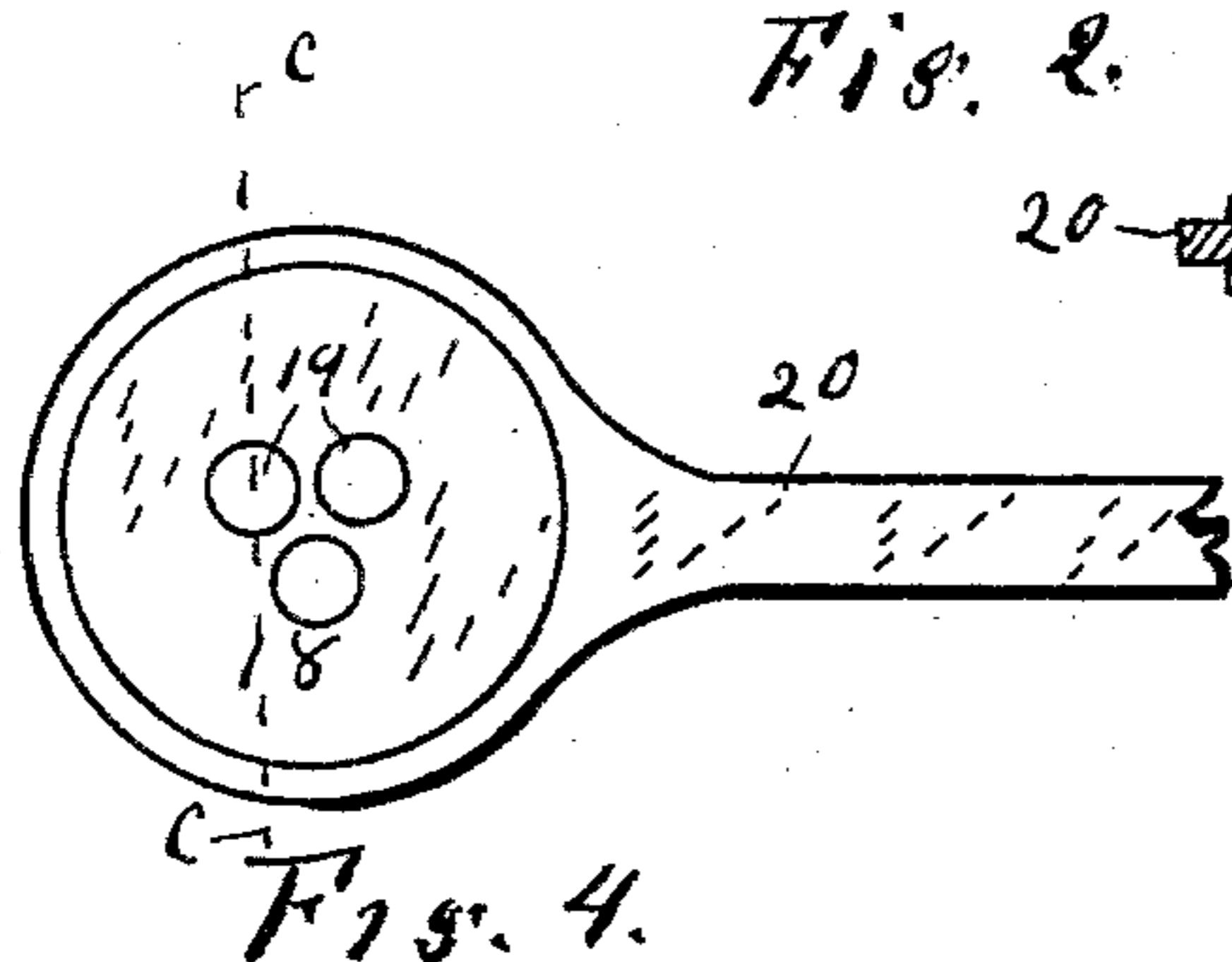
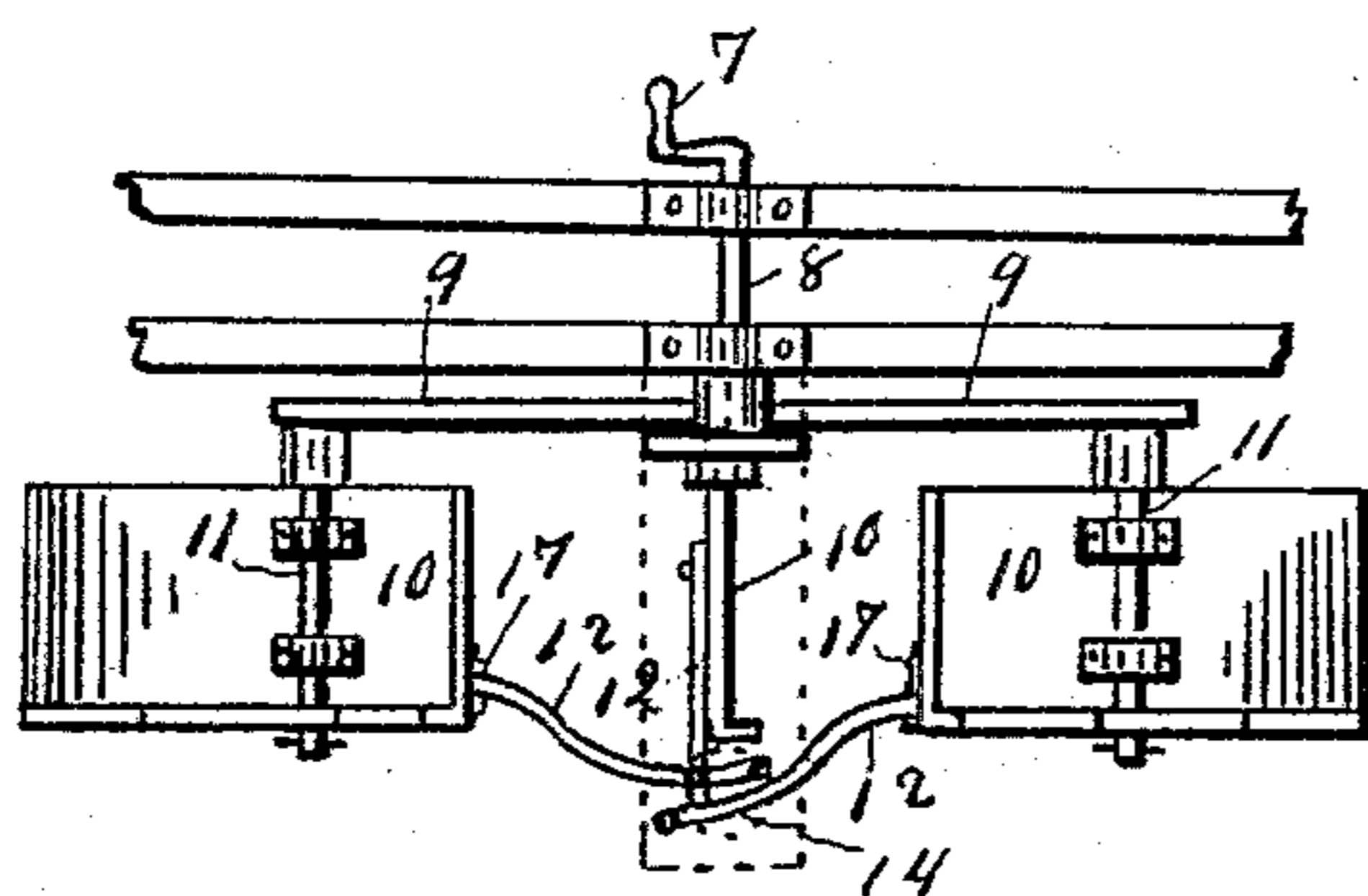
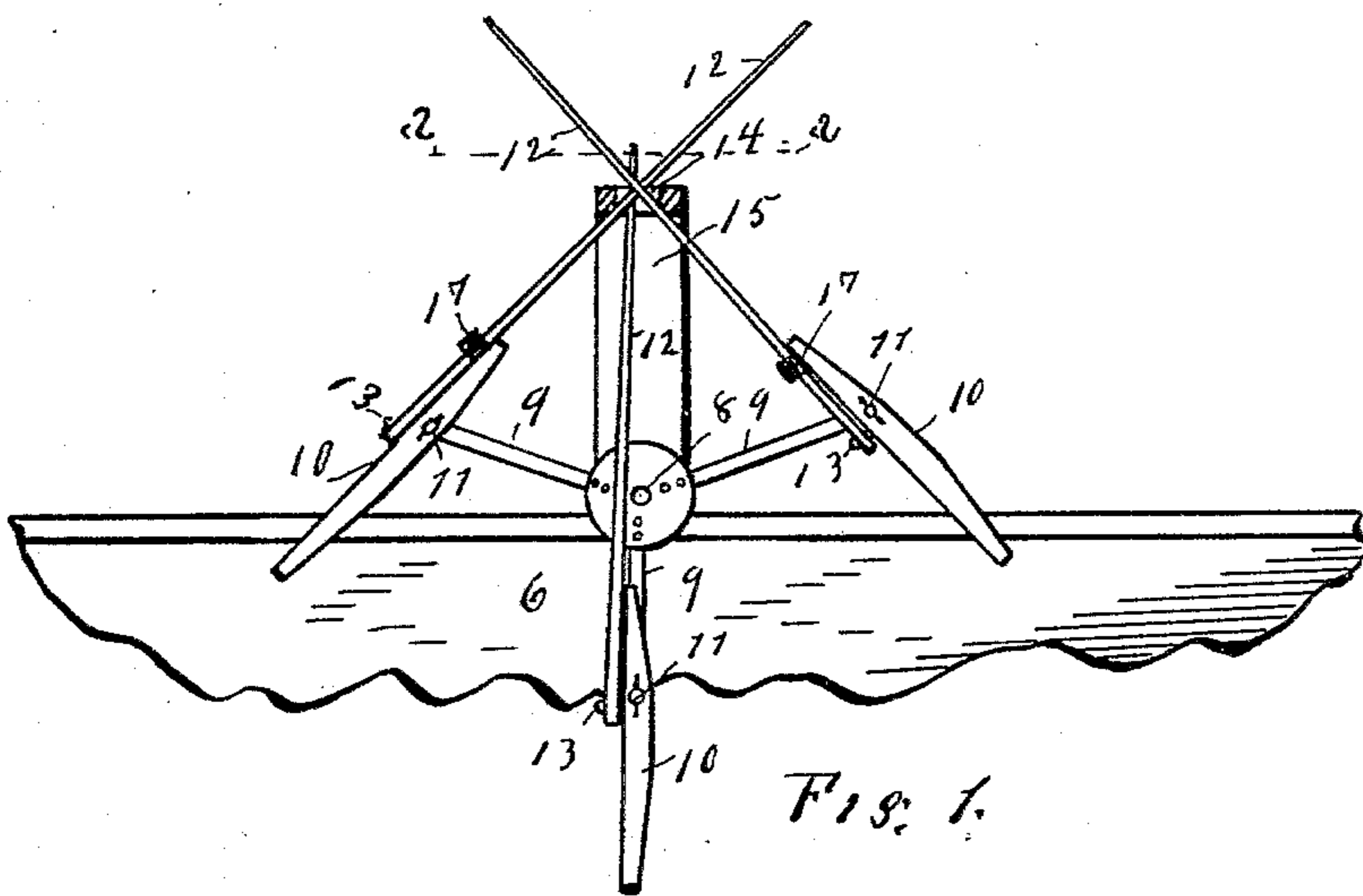


(No Model.)

W. H. KNAPP.  
BOAT PROPELLER.

No. 596,754.

Patented Jan. 4, 1898.



Witnesses:  
Thomas W. Stewart.  
Levi F. Boy

Inventor:  
William H. Knapp  
By his Attorney Lucius C. West

# UNITED STATES PATENT OFFICE.

WILLIAM H. KNAPP, OF GALESBURG, MICHIGAN.

## BOAT-PROPELLER.

SPECIFICATION forming part of Letters Patent No. 596,754, dated January 4, 1898.

Application filed June 1, 1897. Serial No. 638,910. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. KNAPP, a citizen of the United States, residing at Galesburg, in the county of Kalamazoo, State of Michigan, have invented a new and useful Boat-Propeller, of which the following is a specification.

The object of this invention is to construct a propeller for a boat in which the paddles act in the water in the natural manner, as by hand-propelling or paddling, and in which the paddles are operated either by hand or power by rotating a shaft.

In the drawings forming a part of this specification, Figure 1 is a side elevation of my propeller attached to the side of a boat, the boat being shown broken away; Fig. 2, a plan view of Fig. 1 with portions in section on line *a a* in Fig. 1; Fig. 3, an enlarged view of one of the paddles in perspective as though looking from a rear left-hand point against the lower paddle in Fig. 1; Fig. 4, a broken plan of a modification below described; and Fig. 5 is a section on line *c c* in Fig. 4, looking from a point at the left.

Referring to the parts of the drawings pointed out by numerals, 6 shows a broken part of a boat. As here shown, the design is to attach the propellers to an ordinary row-boat, one propeller being attached to each opposite side of a boat, so that the operator will sit between the propellers and operate the cranks 7, only one being here shown; but this propeller can be operated by power, and one or more may be employed.

In suitable bearings is attached to the boat a shaft 8, to which shaft is attached radiating arms 9. As many of these arms may be employed as it is desired to employ paddles in a single propeller. Three arms are here shown, and likewise three paddles 10, pivotally attached to the arms 9 at 11. To the paddles are pivoted an upwardly-extending rod 12, and the point of said pivoting, as here shown, is just below the point of the pivotal attachment of the arms 9 at 13, but they may be attached at any other suitable point. These rods 12 are bowed at the upper end, as in Fig. 3, and converge and cross each other above and pass through a hole 14 in the upper part of a support 15. This support projects upward from the boat 6 and has a horizontal portion at upper end, as in dotted lines in Fig. 2. The rods 12 are more plainly shown in Fig. 3.

They extend upward, preferably through an elongated loop 17, thus giving them proper strength and needed lateral play when the paddles move into and out of the water when the crank 7 is turned. In Fig. 3 the arm 9 is shown broken away, but its connection with the paddle and crank shaft will be understood by Figs. 1 and 2.

In lieu of passing the rod 12 through a single hole 14 in the support 15 a rotatable wheel 18 may be employed, Fig. 4, having as many holes 19 as there are rods 12, and each rod may pass through an individual hole. This wheel 18 has rotatable bearings in the arm 20, as in Fig. 5, and when this plan is adopted this arm 20 would take the place of the upper part of the support 15, which bears the hole 14.

In the operation the paddles 10 go into the water in the oblique angle shown in Fig. 1 and pass through the water in the position of the lower paddle in Fig. 1 and raise out of the water at an oblique angle shown by the paddle at left of Fig. 1, and during this operation the rods attached to the paddles raise and lower through the hole 14, in which they are focused, and this gives to the paddles during the operation their oblique angle into and out of the water. This is the old natural way of paddling a boat by hand, in which case, since the paddles go into and out of the water at an oblique angle, the movement of the boat forward does not cause the paddles to draw water, as would be the case if the paddles went into the water at a vertical angle.

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

The combination of a rotatable shaft, arms radiating from said shaft, paddles pivoted between their two ends to the outer ends of said arms, bowed rods crossing each other near their upper ends and having their lower ends pivoted to the side of the paddles and having a lateral movement, and a support for the crossing upper ends of the bowed rods, substantially as set forth.

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

WILLIAM H. KNAPP.

Witnesses:

THOMAS M. STEWART,  
LEVI F. COX.