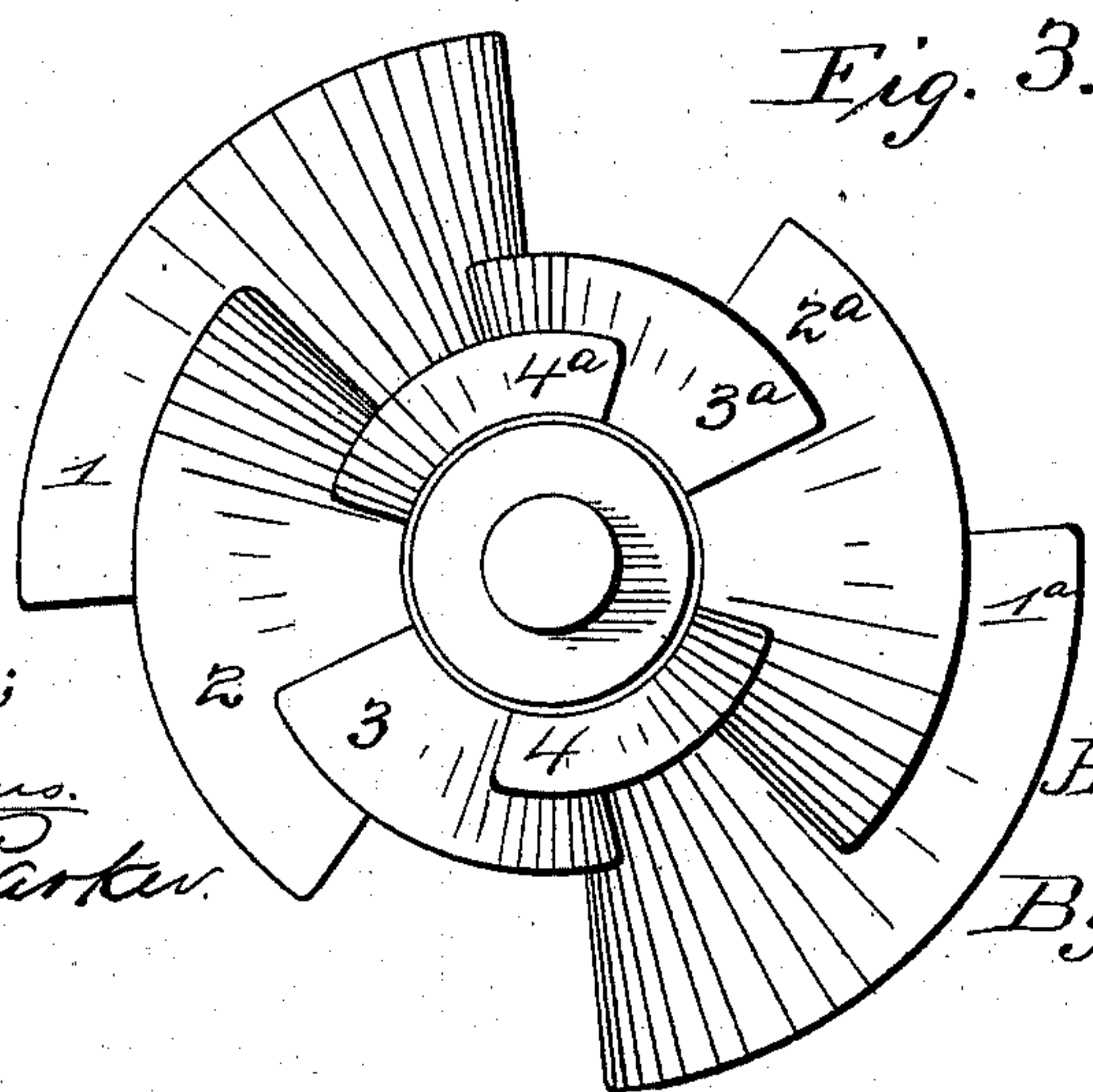
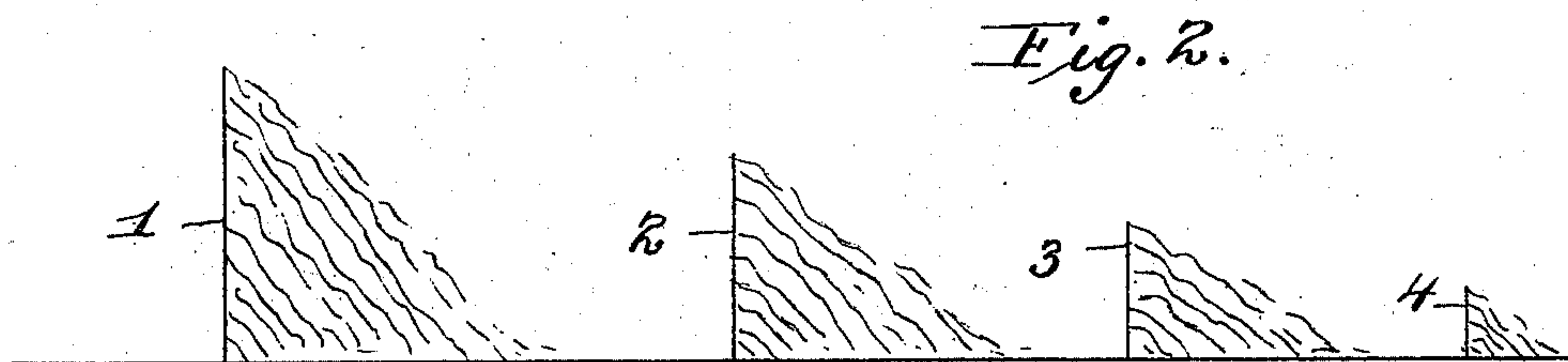
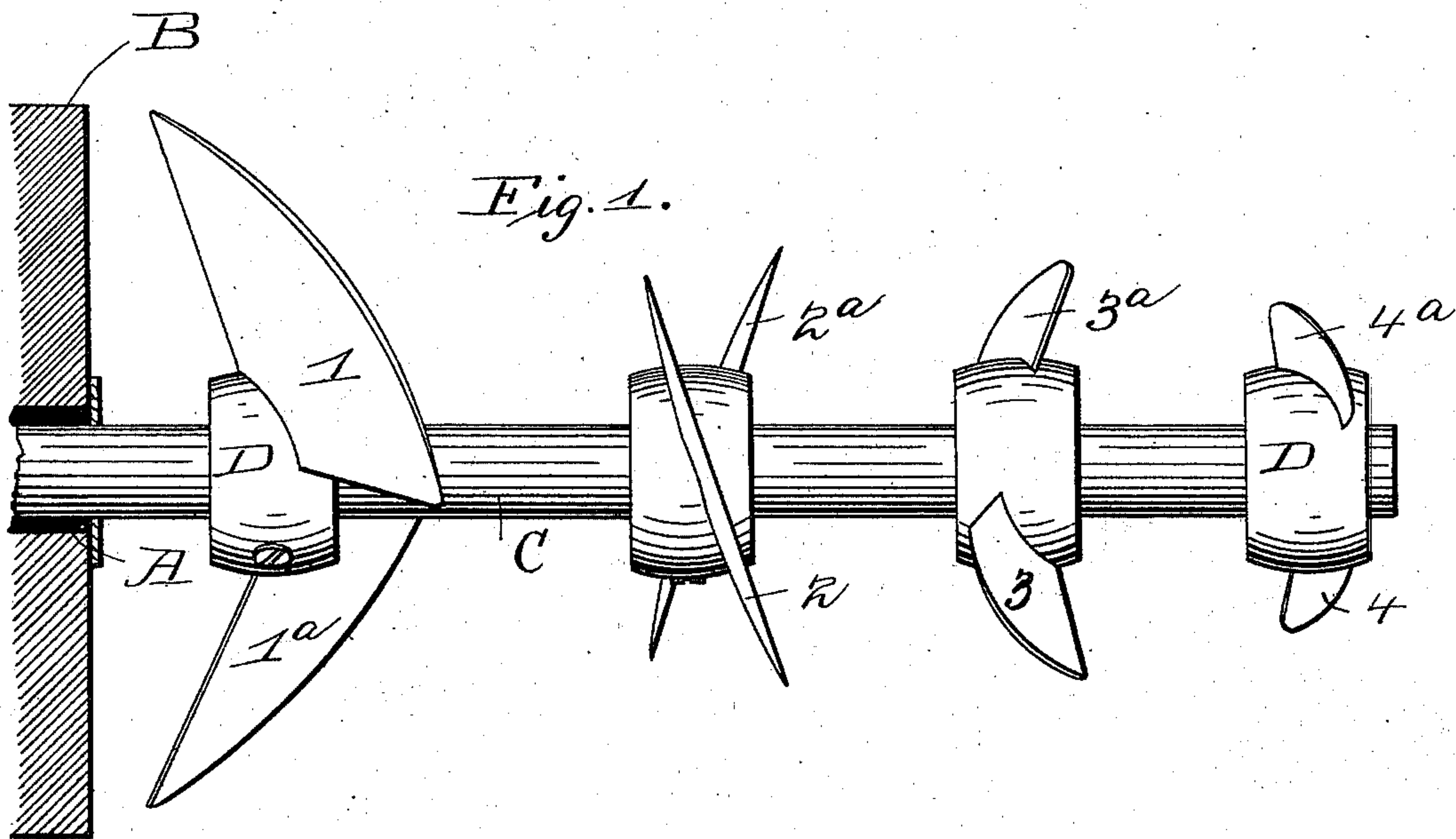


(No Model.)

A. L. KRAUS.
PROPELLER.

No. 574,096.

Patented Dec. 29, 1896.



Witnesses;
Jos. A. Milans.
Chas. W. Parker.

Inventor;
Albert L. Kraus,
By R. A. Bacon
Att'y.

UNITED STATES PATENT OFFICE.

ALBERT L. KRAUS, OF PEABODY, MASSACHUSETTS.

PROPELLER.

SPECIFICATION forming part of Letters Patent No. 574,096, dated December 29, 1896.

Application filed April 6, 1896. Serial No. 586,313. (No model.)

To all whom it may concern:

Be it known that I, ALBERT L. KRAUS, a citizen of the United States, residing at Peabody, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Propellers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improvement in screw-propellers, and more especially to that class of screw-propellers wherein a series of blades are employed, the screw-blades being arranged in a spiral around the shaft.

The invention contemplates the employment of a series of sets of blades of varying sizes, the larger members being arranged in advance of the smaller members, and the construction of the smaller or outer blades in a manner to increase their surface area.

The invention is embodied in the construction illustrated in the accompanying drawings, wherein like letters and figures of reference designate corresponding parts in the several views, and in which—

Figure 1 is an elevation of the improvement. Fig. 2 is a diagram showing the relative lengths of the blades, and Fig. 3 is an end elevation.

In the construction and arrangement of propellers of this class heretofore it has been customary to arrange the greater or larger blades at the rear and the smaller blades at the front adjacent the bearing. This arrangement necessitates the employment of an outer or rear support or journal-box and, as is obvious, places the greater strain on the outer end of the shaft at a point considerably beyond the main bearing. The larger blades being so arranged would tend to twist or bend the shaft. By my construction I have overcome these defects and at the same time increased the power of the screw.

In the drawings, A designates the stuffing-box or journal-bearing in the stern of the vessel, which latter is designated by the letter B.

The shaft is represented at C and is supported wholly by the box or bearing A, its outer end being free or without an independent support. On shaft C are the blades 1 1^a,

2 2^a, 3 3^a, and 4 4^a. The respective blades are arranged in pairs or sets, one blade of each set being diametrically opposite the other and each set carried by a collar D, made fast to the shaft in any convenient manner. The blades of each set are properly inclined to secure the desirable screw effect and each is tapered, as is usual, at its end. The blades 2 2^a are shorter than the larger blades 1 1^a and are arranged to extend beyond the plane of the edge of the larger blades, while the blades 3 3^a are proportionally smaller and arranged in the same relation to the blades 2 2^a as the latter are to the blades 1 1^a, a spiral arrangement being thus secured. The outer or smaller blades 4 4^a are of a width greater than the relative width of the other blades, as is clearly shown in Fig. 3.

By the special arrangement of blades and their graduated sizes it will be seen that two lines of tapered spirals are formed.

In arranging the sets of blades they are spaced apart a sufficient distance to permit a wall or body of water to occupy the space in the immediate rear of each blade, which will be of sufficient volume to furnish full and ample resistance to the next succeeding screw or blade. In fact I have found that the power of the screw in the order above described is much greater than in the reverse order, and by the arrangement of blades relative to each other in the manner shown the full force and effect of each blade is secured. The larger or master set, it will be seen, has the full effect of the resistance, while the smaller blades act with proportionate effect owing to their spiral arrangement, and the distance between which is occupied practically by a stationary body of water. The outer short blades, as stated, are of a transverse length or breadth greater in proportion than that of the other blades. By this means a larger area is secured and the leverage or strain on the shaft is not materially increased.

It is to be understood that the special arrangement of the blades in pairs is the preferred form, although the invention is not necessarily limited to such an arrangement, as any convenient number of blades in the different sets can be employed.

In the diagram Fig. 2 I have shown the relative length of the blades.

Having thus described my invention, what is claimed as new, and desired to be secured by Letters Patent, is—

5 The combination with a shaft, of the graduated series of sets of blades spaced apart and secured on the shaft, the blades of the outer set being proportionately of greater width from side edge to side edge than those of the other sets, and the set of larger blades

being in advance of the others, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT L. KRAUS.

Witnesses:

CHAS. W. PARKER,
L. S. BACON.