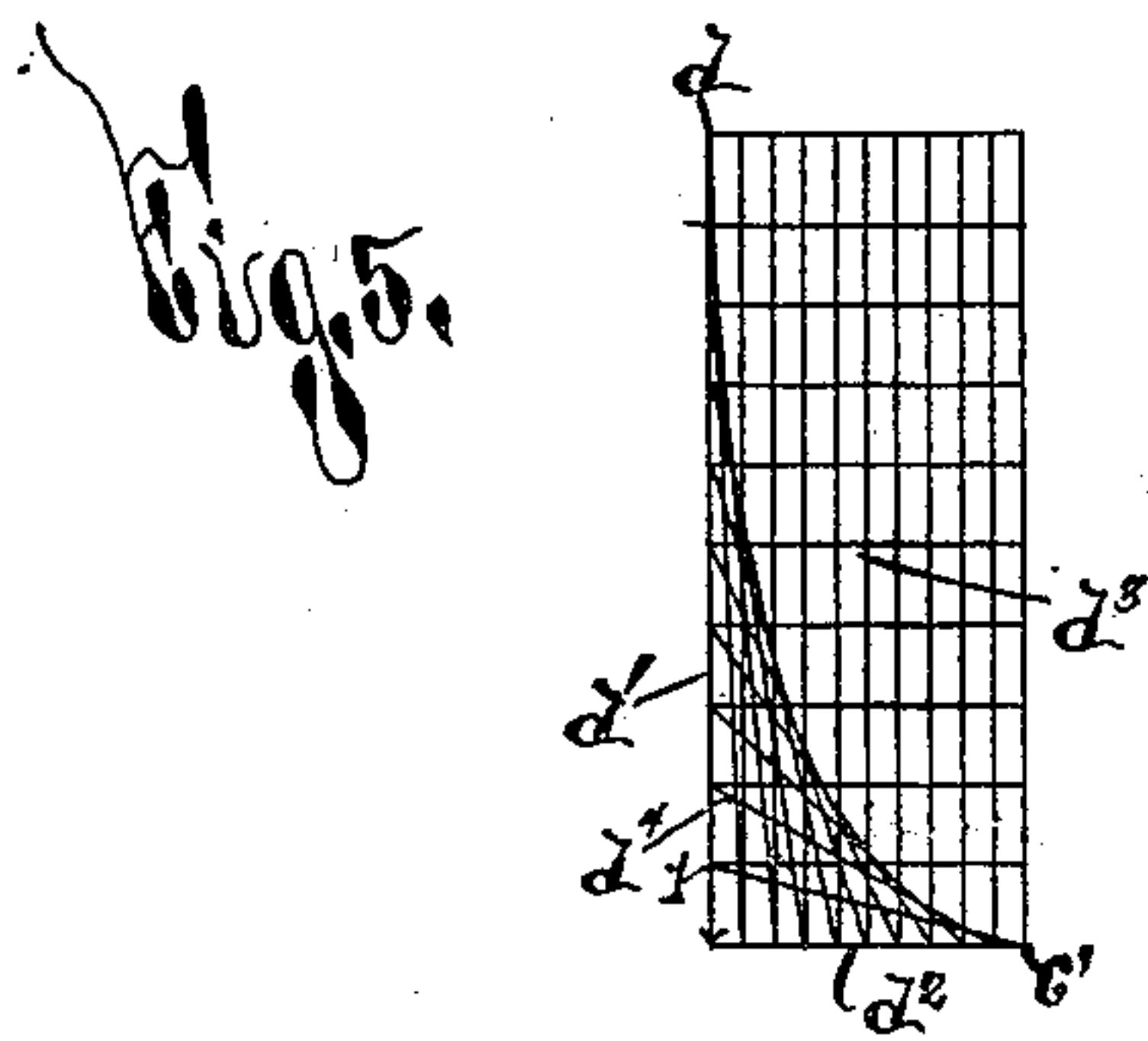
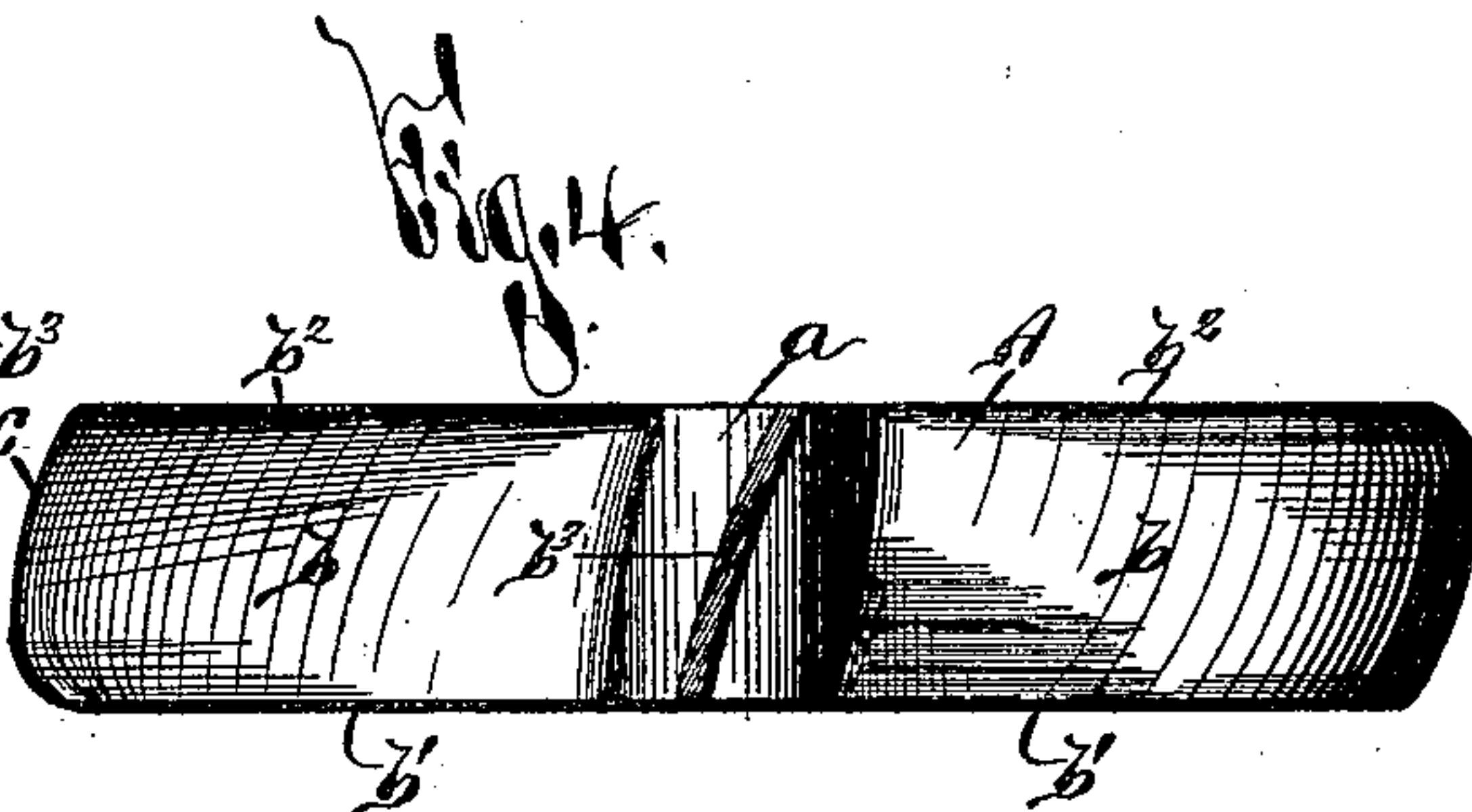
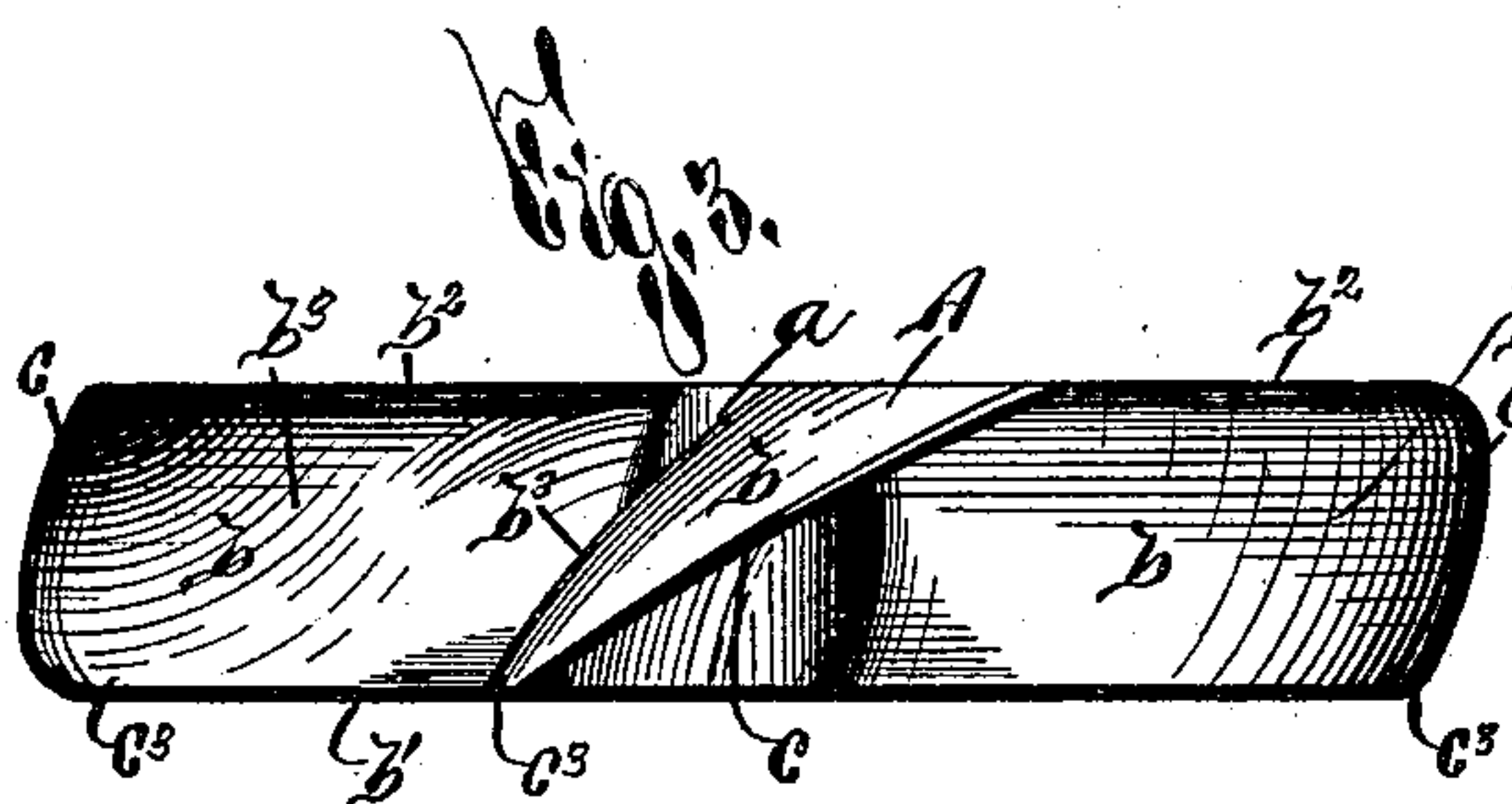
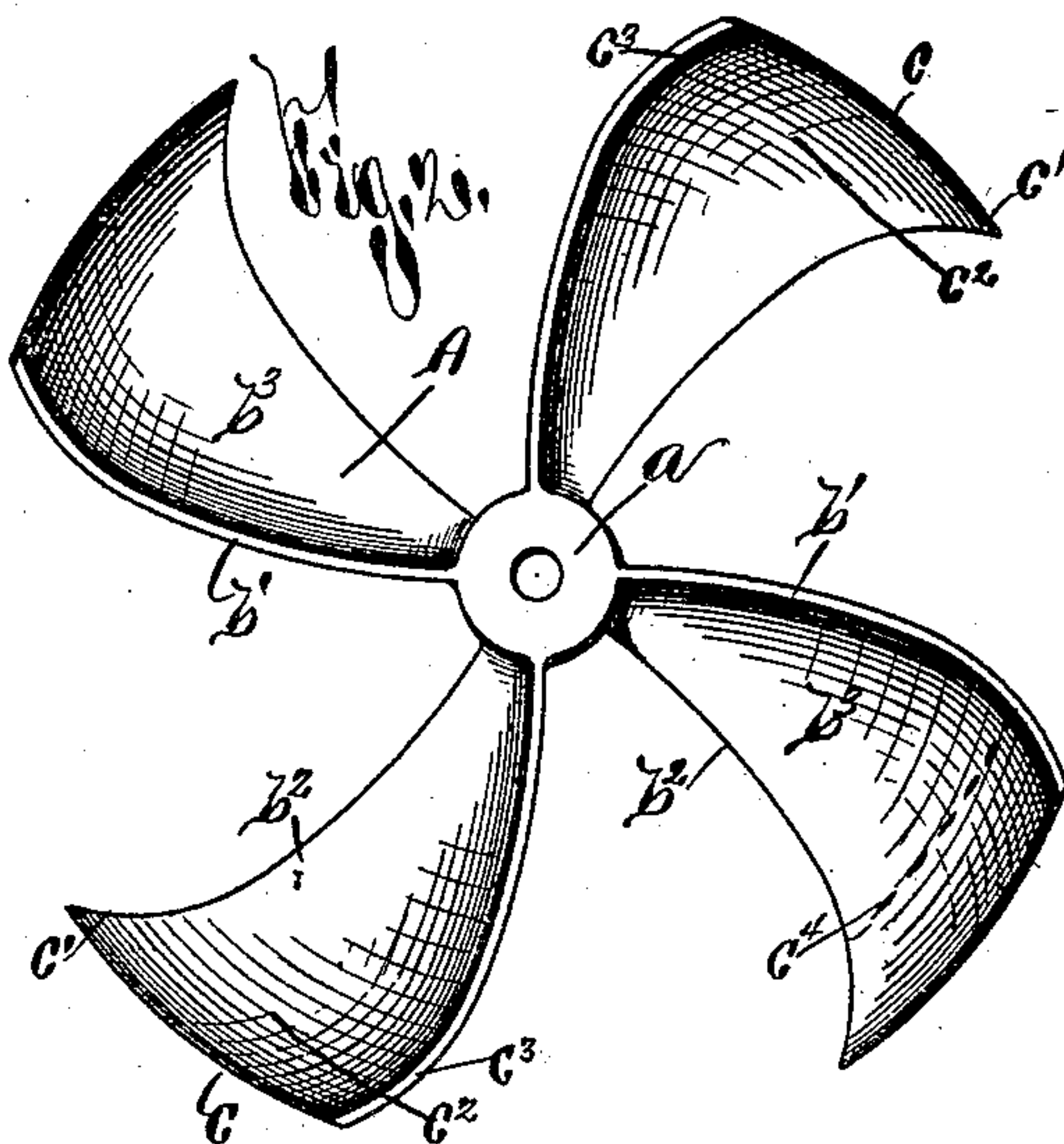
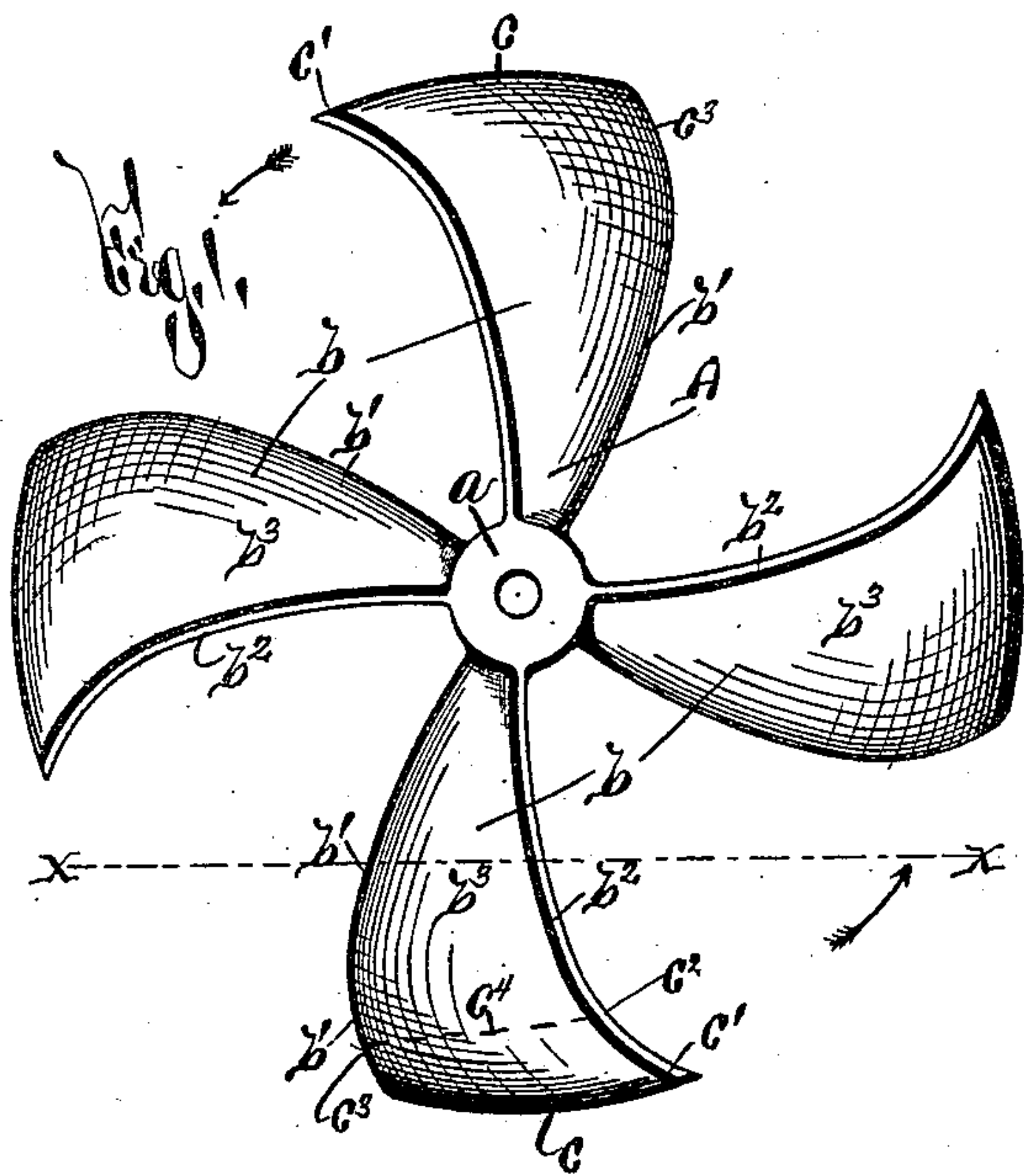


(Model.)

M. G. POOL.
SCREW PROPELLER.

No. 449,862.

Patented Apr. 7, 1891.



WITNESSES:

H. C. Chase,
M. Dexter.

INVENTOR

Munson G. Pool

BY

Wm. Wilkinson & Parsons
ATTORNEY

UNITED STATES PATENT OFFICE.

MUNSON G. POOL, OF THERESA, NEW YORK, ASSIGNOR OF ONE-HALF TO
JOHN E. JONES, OF SAME PLACE.

SCREW-PROPELLER.

SPECIFICATION forming part of Letters Patent No. 449,862, dated April 7, 1891.

Application filed February 25, 1890. Serial No. 341,647. (Model.)

To all whom it may concern:

Be it known that I, MUNSON G. POOL, of Theresa, in the county of Jefferson, in the State of New York, have invented new and
5 useful Improvements in Screw-Propellers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to an improved propeller-wheel, and has for its object the production of a simple and effective device of peculiar form and construction, whereby with a minimum amount of power required to rotate said wheel a maximum amount of efficiency is derived from the water; and to this
15 end my invention consists, essentially, in a water-wheel having a series of blades, one or more of which is formed with its extremity curved backwardly, whereby the water in escaping from said wheel strikes a rounded surface allowing of its escape, but compelling the same to force forward the boat to which the propeller is attached.

The invention also consists in rounding the
25 blades from the back to the front edge and in forming the same so that cross-sections taken at different points between the front and rear edges thereof are the same; and it also consists in the detail, construction, and
30 arrangement of the parts, all as hereinafter more particularly described, and pointed out in the claims.

In describing this invention reference is had to the accompanying drawings, forming
35 a part of the specification, in which like letters indicate corresponding parts in all the views.

Figure 1 is an elevation of my improved propeller-wheel, illustrating the face adjacent to the boat. Fig. 2 is a like elevation to
40 Fig. 1, illustrating the opposite face of said wheel. Fig. 3 is an edge view of the wheel as illustrated in Fig. 1. Fig. 4 represents a vertical sectional view taken on line $x x$, Fig.
45 1; and Fig. 5 represents a diagram view showing the construction of the curve for my improved propeller-wheel.

A represents the propeller-wheel formed of any suitable material and provided with a
50 hub a , adapted to be secured to any desirable construction of rotating spindle or shaft ap-

plicable for the particular style of boat or vessel to which my propeller is applied. Projecting outwardly from the hub a are the blades b , of suitable size and number, also
55 best adapted for the particular style or construction of vessel to which the propeller-wheel is applied.

As seen in the drawings, the main portion of one or more of the blades b is rounded
60 over and forwardly from the rear edge b' to the forward edge b^2 , forming the rounded curved portion b^3 , which rolls against the water, thereby forcing the same from the back edge b' and propelling the wheel forward.
65

In propelling-wheels as heretofore constructed a great quantity of water escapes from the ends of the blades b without imparting any motion to the wheel and effecting a
70 waste of power in driving the boat. To obviate this difficulty there have been devised wheels having vertical flanges disposed in a plane at substantially right angles to the blade; but with this construction the water
75 does not have an easy escape from the extremity of the propeller-wheel blades and has a greater or less liability of being revolved within said wheel and occasioning a further waste of power.
80

The extremity c of the blade of my improved wheel is, as illustrated in the drawings, bent or rolled toward the rear face of the wheel, and is also bent or extended forwardly at c'
85 in the direction of the propeller-wheel's revolution, as indicated by the arrow upon Fig. 1. This construction produces a curved channel-opening c^2 opening at the rear of the wheel at c^3 for allowing of the easy passage of the water toward the rear of the wheel, but causing the same, owing to its peculiar construction and form, to force the wheel forward to a
90 greater extent than would be possible in propellers of this character as previously constructed.
95

Although, as stated, by the peculiar construction of my propeller-wheel I facilitate the backward discharge of the water and compel the same to transmit motion to the boat or vessel, there is more or less water which escapes from the extremity of the blade b by the centrifugal force developed when the
100

wheel is rotated. This escaping water contacts with the portion of the extremity c on the outside of the dotted line c^4 , which portion curves backwardly and compels the water to roll against a backwardly-inclined surface, thus further utilizing the developed power and forcing forward the wheel. Although, as described, this discharge of the water from the extremity of the blade forces forward the propeller-wheel yet the peculiar rounding curve of said extremity enables the water to readily escape therefrom and absolutely prevents it being carried around with the blades, since should any of the water contact with the blade and not escape from its extremity thereof it is permitted to escape by the backwardly-inclining channel c^2 .

As best seen in Figs. 2 and 3 of the drawings, the front and rear edges b^2 and b' of each of the blades are in the same or substantially the same horizontal plane, which further effects an easy operation and a maximum amount of propelling force.

As best seen in Figs. 1 and 2 of the drawings, the front and rear edges b' and b^2 of the blades of my improved propeller-wheel are curved substantially similar, and a horizontal section of said blades taken at two or more points between the front and rear edges thereof is also of similar curve to either of said edges, thus causing the flow of the water from the wheel to be unusually regular and develop an even amount of propelling force.

At Fig. 5 I have illustrated a diagram view showing the method of procuring the curve for my improved blade. d represents the center of the wheel, and d' the radius. d^2 represents the distance between perpendiculars drawn through the center point d and the extreme forward point c' of the wheel. The separate points d and c' are connected by a right angle, the opposite sides of which are divided into a certain number of equal parts, (here illustrated as ten,) and after drawing perpendiculars d^3 to the divisional points of the side d^2 , diagonally-arranged lines d^4 are drawn from the first divisional point l of the side d' to the point c' of the side d^2 , and so on until all the divisional points of the separate sides are connected. After proceeding as described the points where the perpendiculars d^3 are cut by the diagonal lines are connected together, whereupon the preferable curve is produced for the blade of my propeller-wheel. The relative propor-

tion of the said lines and also the transverse distance between the front and rear edges b^2 b' of the blades b differ according to the purpose for which the wheel is designed.

The operation of my invention will be readily perceived from the foregoing, and it will be understood that by the peculiar curved blade a minimum amount of power for driving the wheel produces a maximum amount of power for propelling the boat with a minimum waste of power. It will be understood, however, that the described and preferable form of the blades of my water-wheel might be somewhat varied without departing from the spirit of my invention.

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

1. The herein-described propeller-wheel, having the front and rear edges b^2 b' of one of its blades in horizontal planes substantially parallel with each other, with the inner extremity of said edges of said blade gradually curving forward and the free extremity of said edges curving forward in a greater degree than said inner extremity, and the passage c^2 , formed within the outer edge c and extending backwardly from the front edge b^2 to the rear edge b' for discharging the water backwardly without permitting its escape from the extremity of the blades, substantially as and for the purpose set forth.

2. The herein-described propeller-wheel, having a blade formed with its front and rear edge curving forwardly in substantially the same plane, said edges being formed with a gradual curve at the inner extremity and a greater curve at the outer extremity c , said outer extremity c of the blade having substantially its entire outer edge in the same oblique plane and being formed of greater horizontal width between its front and rear edges than the inner extremity, whereby the escape of water from the extremity of the blade is substantially obviated, substantially as and for the purpose specified.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Theresa, in the county of Jefferson, in the State of New York, this 8th day of February, 1890.

MUNSON G. POOL.

Witnesses:

J. J. MAKEPEACE,
H. O. GARDNER.