

(No Model.)

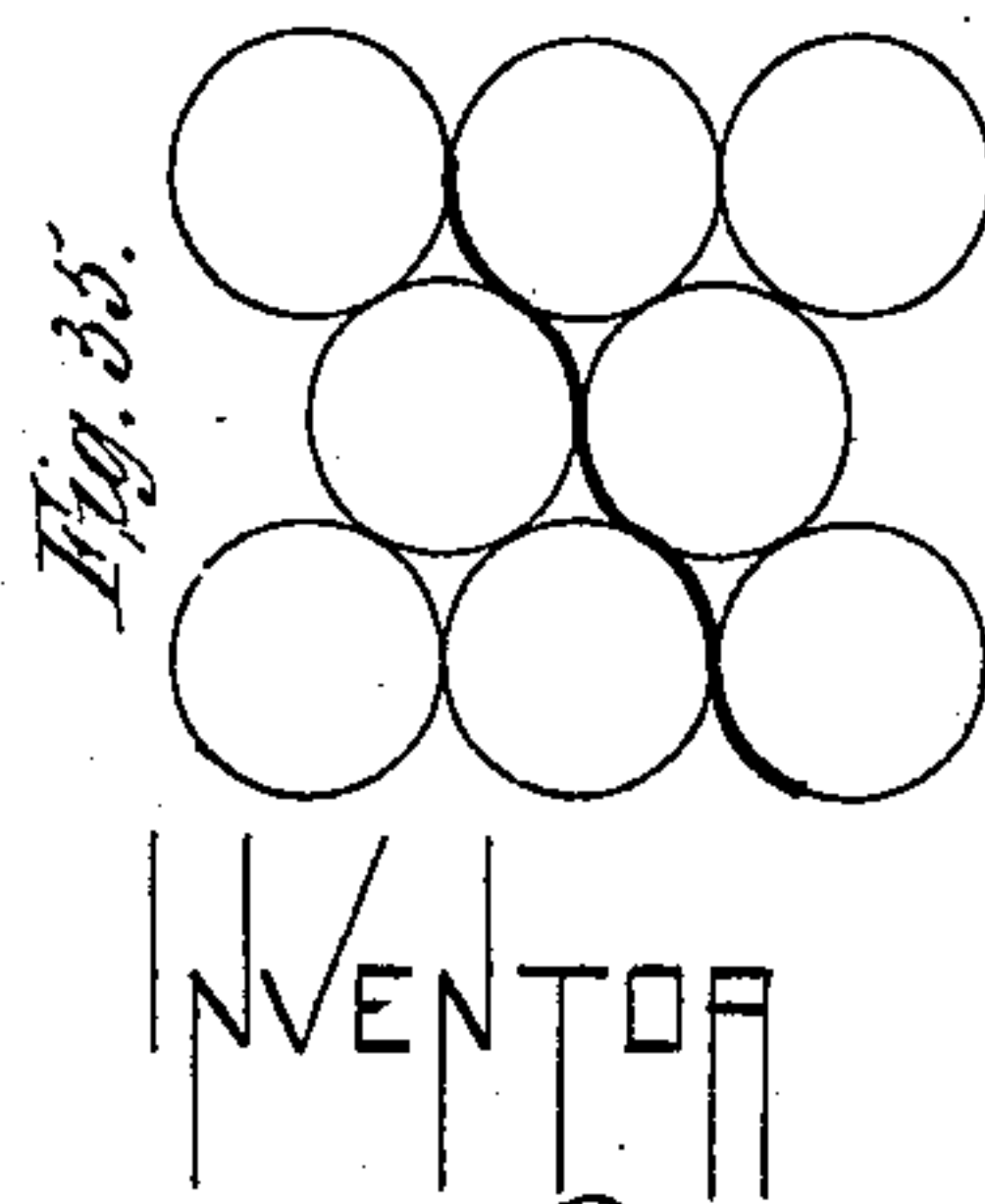
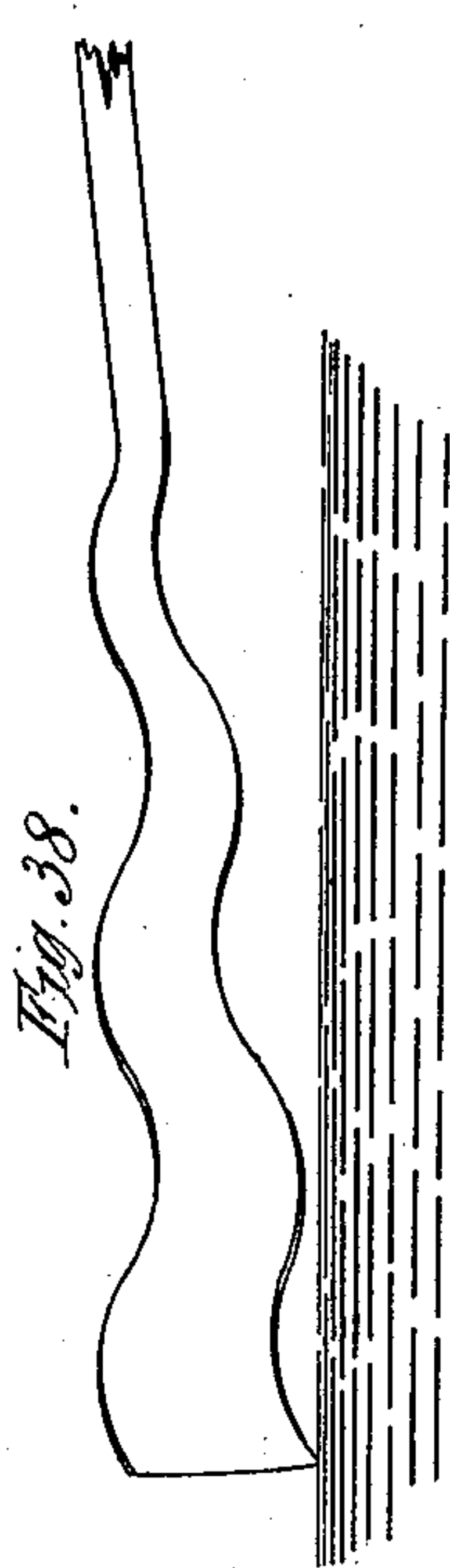
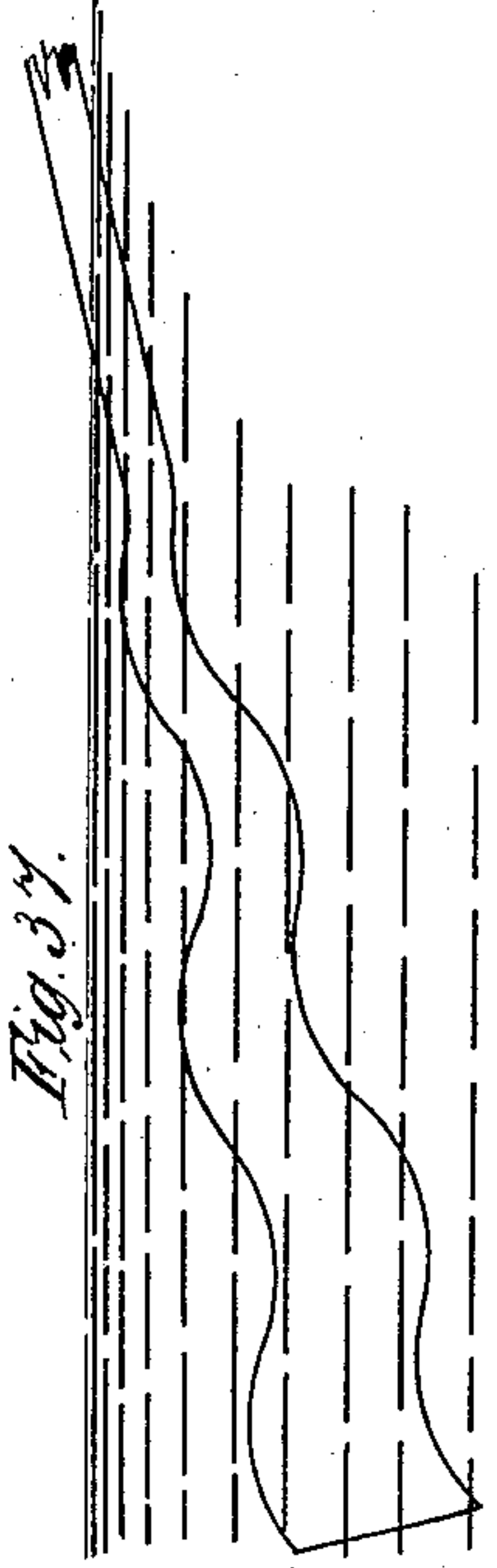
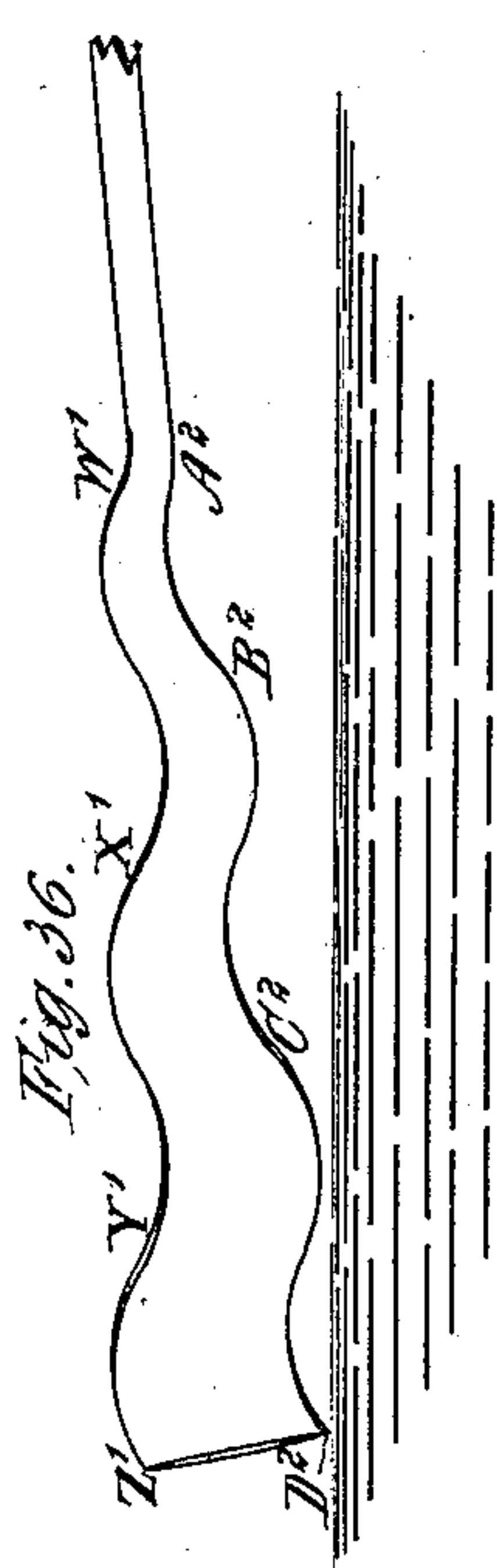
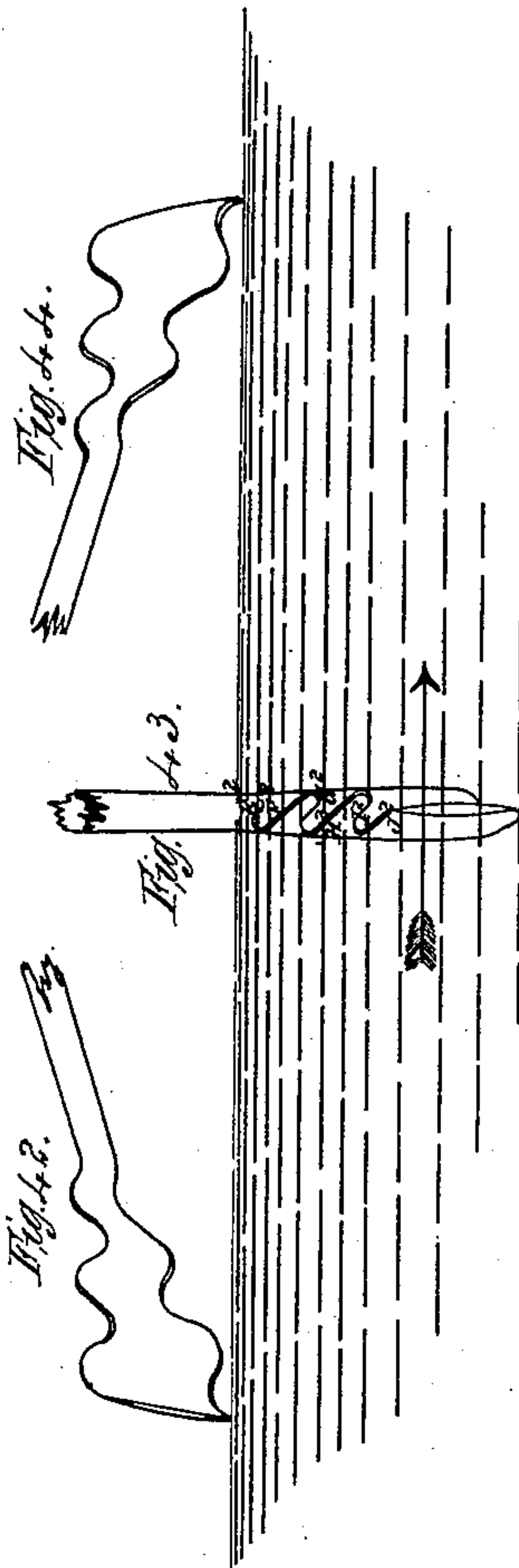
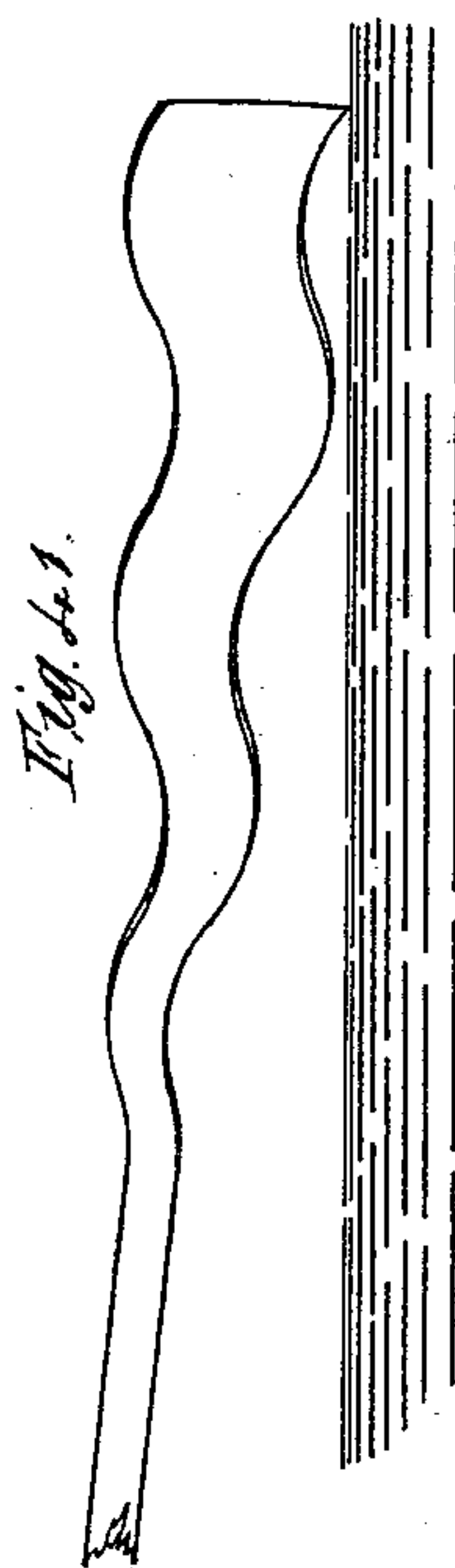
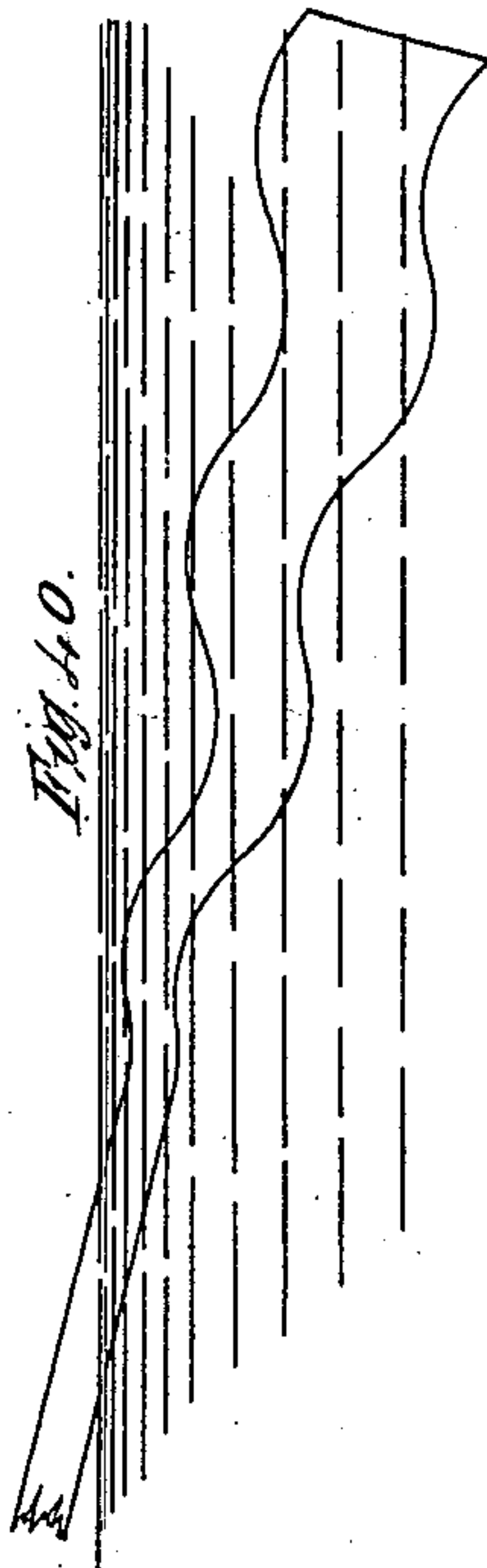
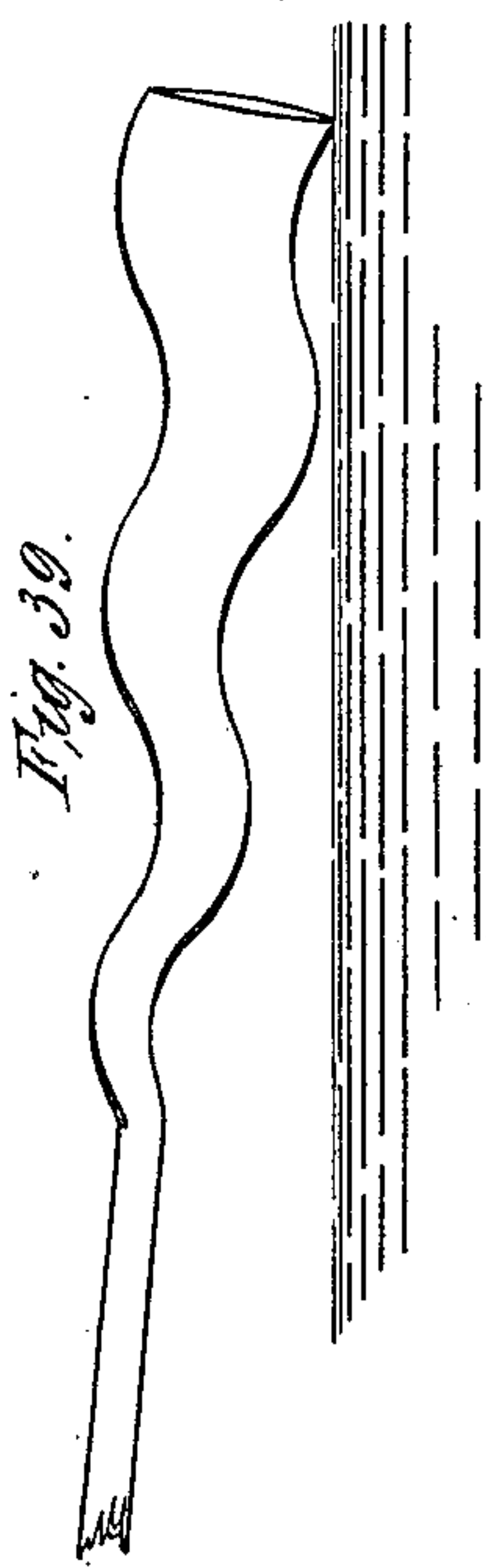
2 Sheets—Sheet 1.

H. HIRSCH.

OAR.

No. 245,378.

Patented Aug. 9, 1881.



WITNESSES  
Charles R. Seale.  
O. E. D. Stafford

Inventor  
Hermann Hirsch  
by his attorney  
M. J. Stetson

(No Model.)

2 Sheets—Sheet 2.

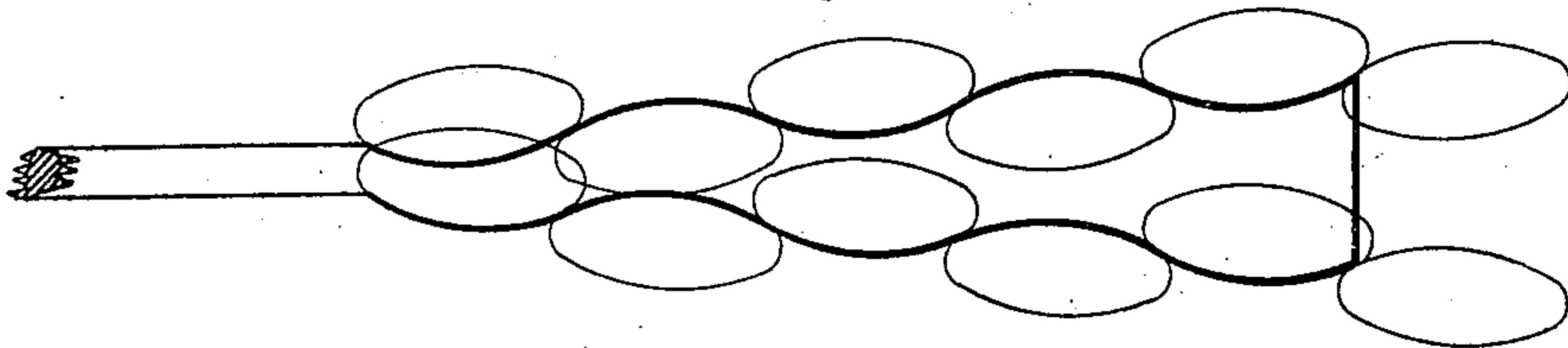
H. HIRSCH.

OAR.

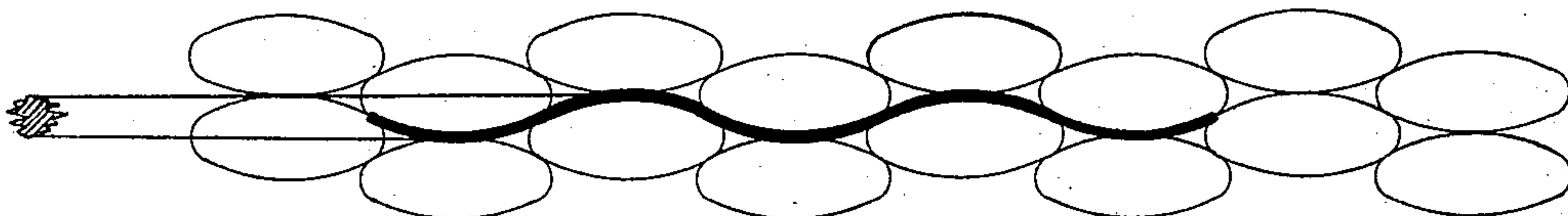
No. 245,378.

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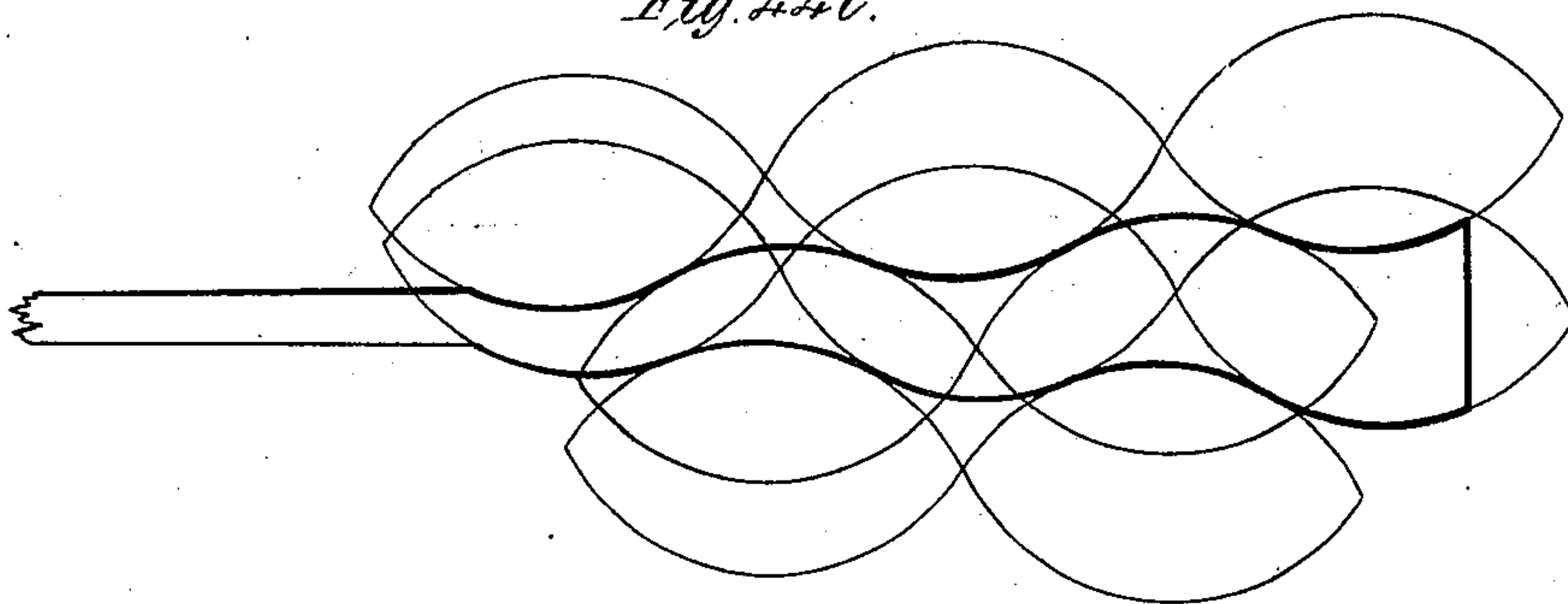
*Fig. 44 A.*



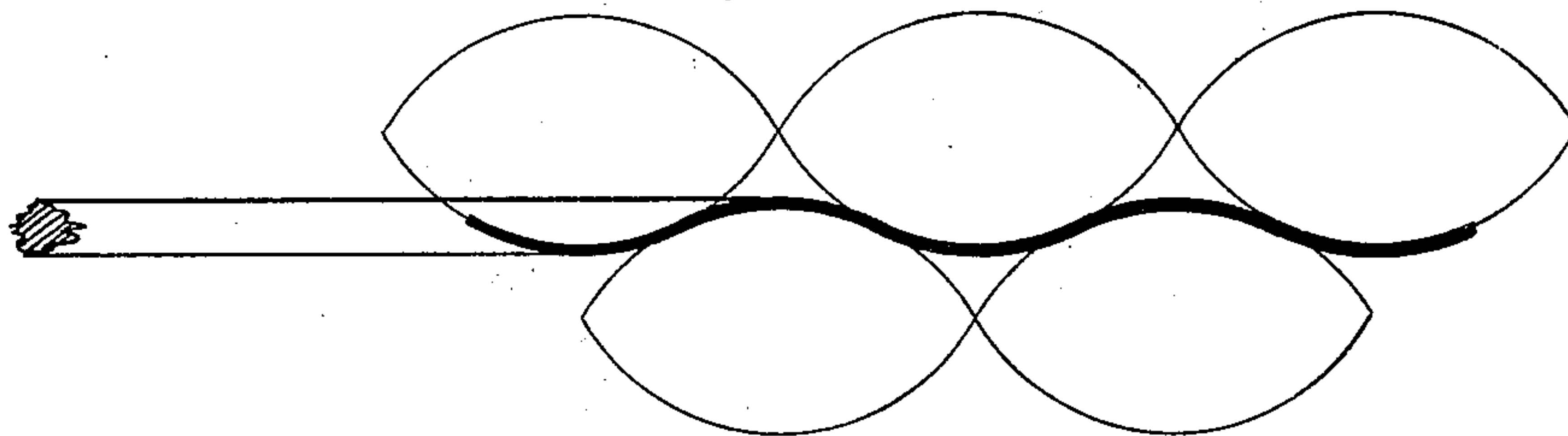
*Fig. 44 B.*



*Fig. 44 C.*



*Fig. 44 D.*



WITNESSES

Charles R. Searle,  
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INVENTOR

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J. L. S. S. S.



# UNITED STATES PATENT OFFICE.

HERMANN HIRSCH, OF 4, 5, AND 6, GREAT SAINT HELENS, COUNTY OF MIDDLESEX, ENGLAND.

## OAR.

SPECIFICATION forming part of Letters Patent No. 245,378, dated August 9, 1881.

Application filed May 24, 1881. (No model.) Patented in England June 19 1880, in Belgium December 17, 1880, and in France December 18, 1880.

*To all whom it may concern:*

Be it known that I, HERMANN HIRSCH, a subject of the Emperor of Germany, residing at 4, 5, and 6, Great Saint Helens, in the county of Middlesex, Kingdom of Great Britain and Ireland, have invented new and useful Improvements in Oars or Sculls, (for which I have obtained a patent in Great Britain, No. 2,498, bearing date June 19, 1880,) of which the following is a specification.

This is a division of an application for Patent filed February 11, 1881, serial No. 25,897, which embraced the same subject-matter.

My invention relates to improvements in the shaping and constructing of oars or sculls; and it consists in giving thereto alternately-curved lines or undulated formations—such as hereinafter described, and which are designed to afford harmony of contact between the water and the oars or sculls therein immersed, to allow the water to be displaced with ease and to diminish friction.

Figure 35 is a diagram of eight circles disposed in three vertical rows of three, two, and three rows, respectively. The two circles composing the central row are in mutual contact with each other, (as are also those of the two outer rows,) and also in contact with the three circles of each outer row, as shown. The thick black line, which six of these eight circles severally have contributed to form, furnishes the germinal curve upon which I design the blade of an oar or scull, according to my invention.

Figs. 36, 37, 38, show respectively the entrance, the full immersion, and the exit from the water of the starboard oar or scull, as seen from the bows of a boat, Figs. 39, 40, and 41 being similar views of the port oar or scull, Figs. 42, 43, 44 being side views of such port oar or scull under similar conditions.

The blade has a curvature in the direction of its length from the shaft to the tip analogous to that depicted by the thick line on Fig. 35,

and such curvature is imparted both to its upper and lower edges,  $W' X' Y' Z' A^2 B^2 C^2 D^2$ , Fig. 36, as also to its edge  $E^2 F^2 G^2 H^2 I^2 J^2$ , Fig. 43.

I do not confine myself to any precise proportions as between the length and breadth of blade, or to the proportion subsisting between the breadth of the blade at its junction with the shaft and the breadth at its outward extremity.

Having described the nature of my said invention and explained in what manner the same is to be or may be performed or carried into practical effect, I would have it understood that although I have described and shown the undulated surfaces and edges as being composed of arcs of circles in compliance with the normal diagram shown, yet other curves of approximate contour (including, for example, portions of ellipses) may in some cases be adopted for any or all of the constituent elements of such undulated surfaces, (see, for example, Figs. 44A, 44B, 44C, 44D,) according to my invention, the object being, as I have already stated, to afford harmony of contact with the water; also, I would remark that the number of undulations may be varied to suit the circumstances of particular applications without departure from the essential characteristics of my invention, as respects which—

What I claim as novel and original is as follows:

1. An oar or scull blade having its faces waved or bent alternately in opposite directions, as herein specified.

2. The oar or scull blade bent alternately in opposite directions, both facewise and edgewise, as set forth.

HERMANN HIRSCH.

Witnesses:

GEORGE WALKER,  
PHILIP WALKER.