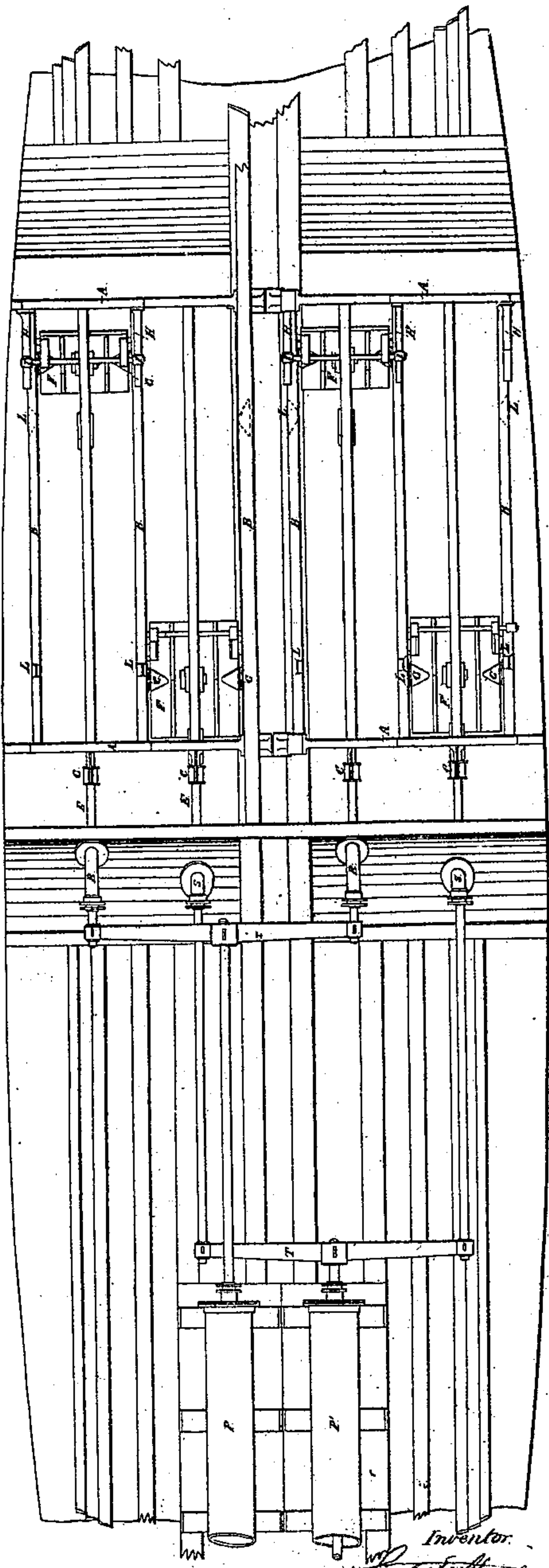
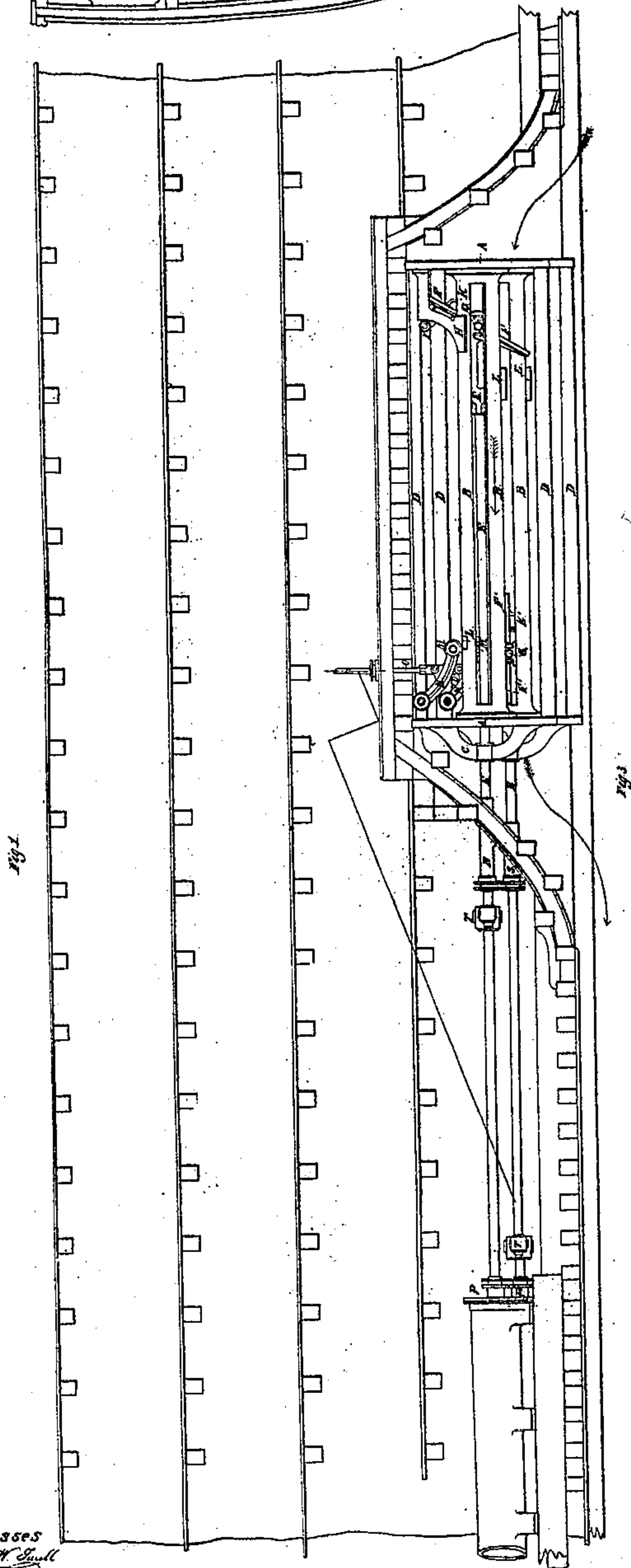
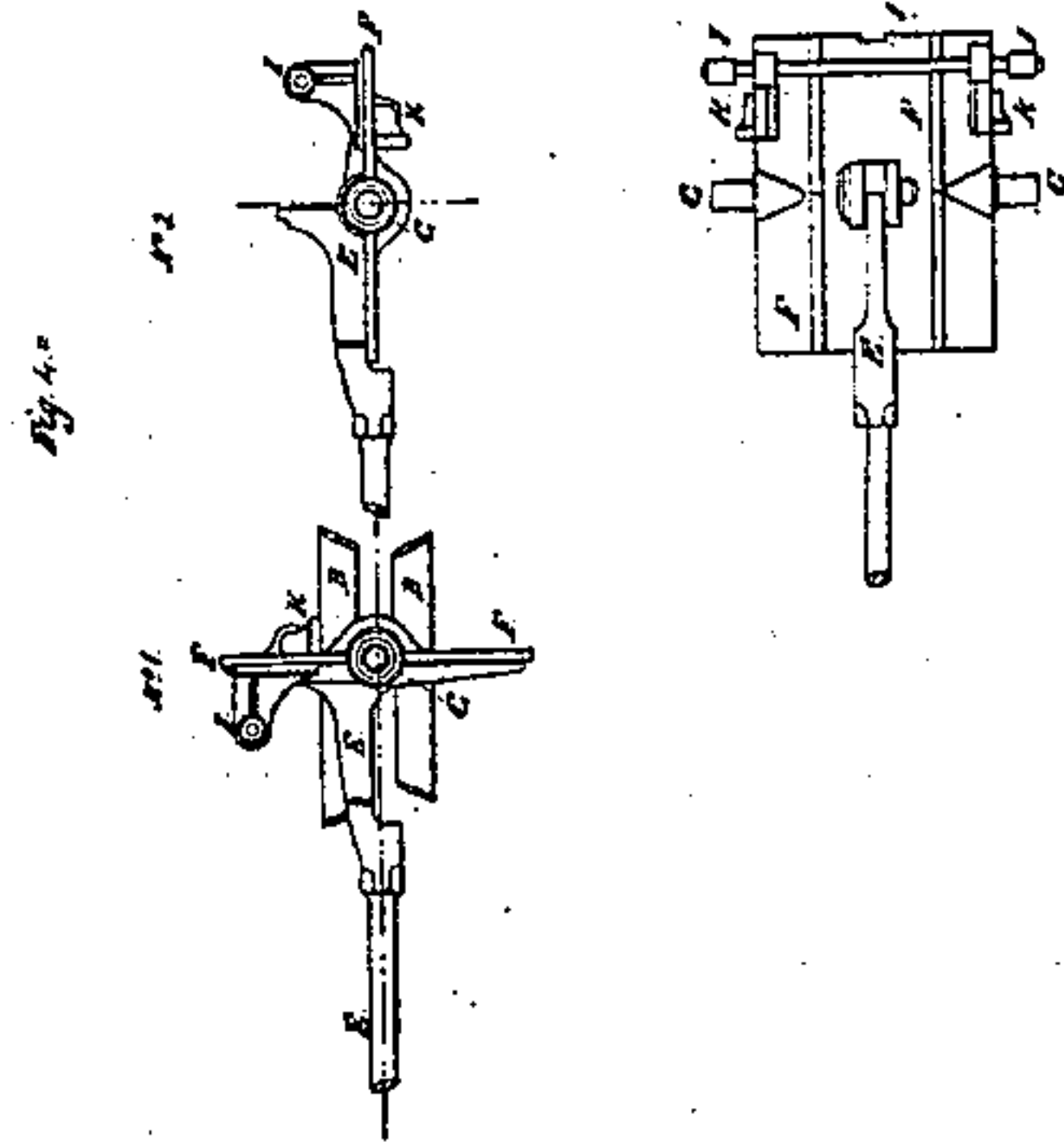
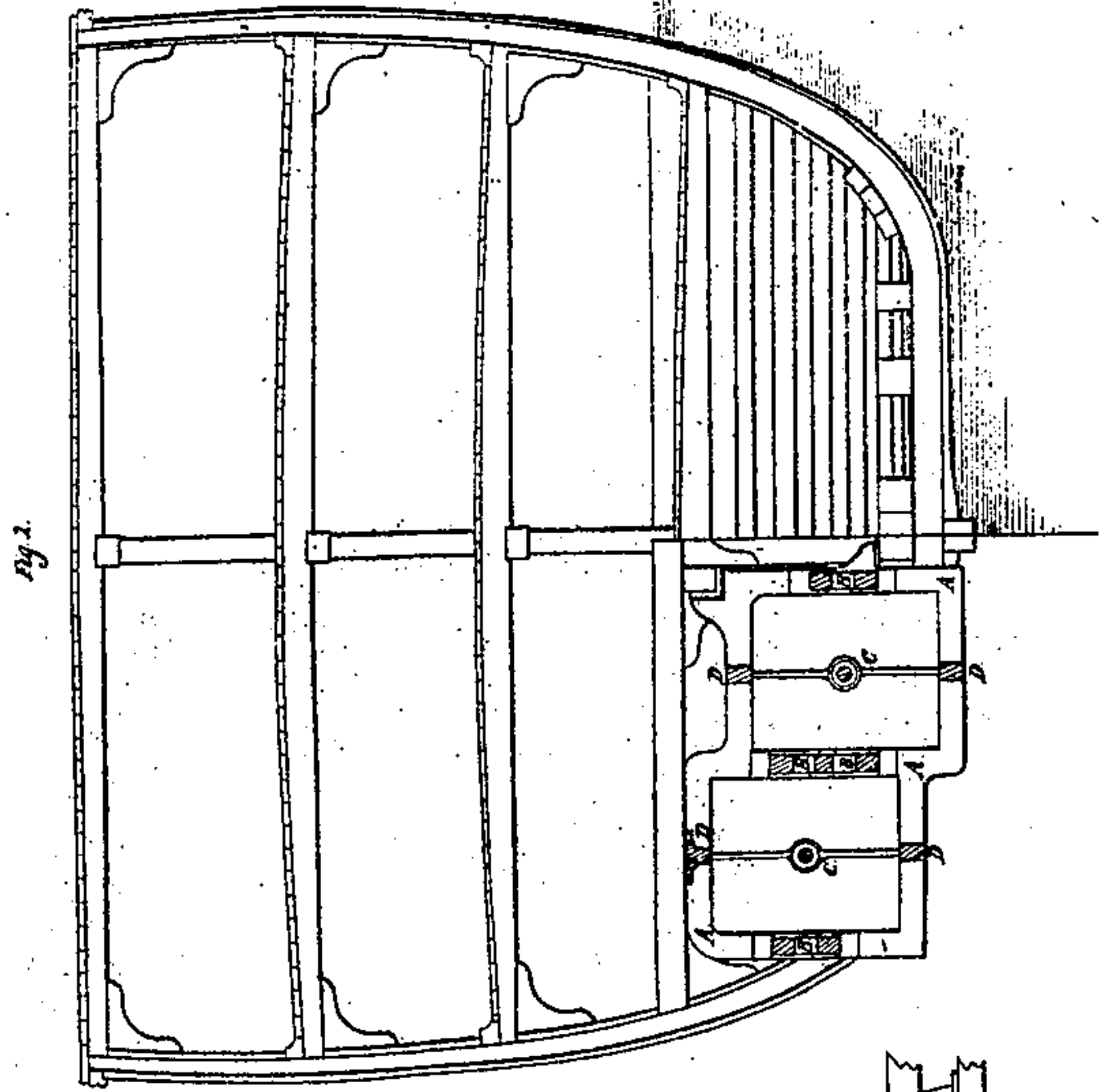


*L. Alexander.*  
*Vibrating Propeller.*

*Nº 14,487.*

*Patented Mar. 25, 1856.*



Witnesses  
*Samuel H. Smith*  
*Thomas J. Harold*

Inventor  
*L. Alexander*



# UNITED STATES PATENT OFFICE.

LAMBERT ALEXANDRE, OF NEW YORK, N. Y.

## PROPELLING VESSELS.

Specification of Letters Patent No. 14,487, dated March 25, 1856.

*To all whom it may concern:*

Be it known that I, LAMBERT ALEXANDRE, of the city, county, and State of New York, have invented and made a new and useful  
5 Invention for Propelling Vessels; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, making  
10 part of this specification, wherein—

Figure 1, is a partial longitudinal section of a vessel with the propelling apparatus in its hold. Fig. 2, is a cross section of the same. Fig. 3, is a plan of the parts, and  
15 Fig. 4 represents the propelling bucket in different positions.

Similar marks of reference indicate the same parts.

The nature of my said invention consists  
20 in the construction of certain parts which regulate the motion of buckets which perform the duty of propelling or carrying a vessel forward in the direction of its length without introducing the deficiencies and im-  
25 perfections hitherto experienced by the use of paddle wheels screws or other known devices for that purpose—viz, the great amount of friction, resistance and loss of power caused by the paddles &c. when  
30 emerging from the water.

To accomplish the object to the greatest possible extent and to remove the impediments above mentioned, my improvement proposes the employment of a system of  
35 submerged buckets placed within and under the vessel and made to slide lengthwise between suitable frames and slides; an alternative reciprocating motion being imparted to said buckets by a direct acting or other  
40 suitable engine. Each bucket is moreover of such a construction and so connected to the rod or rods by which it is moved that it can revolve one quarter of a circle upon  
45 trunnions set in the before mentioned slides, for the purpose of allowing said bucket to move through the water edgewise and horizontally presenting very little surface to the water, or vertically exhibiting the whole  
50 available area to the water in moving in the opposite direction to that of the vessel thereby drawing or forcing the vessel forward; the object being to combine within each bucket and within the whole mechanism the  
55 the greatest propelling surface in the other

and to produce such changes regularly and automatically by simple mechanical means to which my invention relates.

In the drawing I have represented four buckets two acting on each side of the ves- 60 sel's keel in recesses provided for them in the vessel; and one bucket in each of these recesses is to go in one direction while the other moves in the opposite direction.

A, A, are metallic end frames to the ap- 65 paratus.

B, B, are slides or guide rods fastened to each end frame A. To the front end frame A, is attached the eye or bush C, to receive the piston or other rod E. 70

T, T, are cross heads joining the respective pairs of rods E, E, and to these the power is communicated either direct or by any suitable connection to a steam or other engine (P, P'.) 75

D, D, are cross bars at the top and bottom of the frames A, connecting the same together.

The bucket F, is shown in Fig. 4, No. 1, being the upright position when working 80 against the water in the act of propelling, and moving in the direction of the arrows Fig. 1.

No. 2, Fig. 4, shows the bucket when in a horizontal position and in Fig. 1, the bucket 85 is represented in a similar position at F', F'. The buckets are guided and kept in their positions by means of the trunnions and sliding blocks G G, and are connected to the rods E, at their center in such a manner as 90 to admit of a partial rotary motion.

When the bucket is going in the opposite direction to the arrows (Fig. 1.) it lies horizontally during the length of the stroke until it arrives at the inclines H, H, when the 95 rollers I, I, attached firmly to the buckets F, coming in contact with said inclines the bucket is brought into a vertical position as the stroke is completed, at the same time the spring blocks K, K, becoming free will pro- 100 ject over the slides B, and insure the buckets moving in a vertical position until the stroke is nearly completed in the opposite direction when the inclines L, taking the blocks K, K force the same inward as the 105 back of the bucket F, allowing it again to be turned down horizontally by passing beneath the rollers M on the adjustable levers N, N'. It will thus be seen the whole area of the bucket is presented to the water when 110



acting to propel the vessel, and then that only the edge of said bucket is presented to the water on the return stroke and these motions are produced by very simple means, 5 and such as are not liable to get out of repair. A rod O connected to the levers N, N', may be made use of to lift the same and the rollers M when it is desired to back the engines in stopping the vessel.

0 R and S are stuffing boxes through which the rods to the buckets pass, at the bulkheads in the vessel.

It will be seen by my arrangement of the parts actuating the buckets, that the said 15 buckets being hung near their center, turn into either a horizontal or vertical position with great facility and that by the use of the spring blocks K forced in by the inclines L at the ends of the stroke at the time of 20 turning the buckets and then springing out and taking the slides B, the said buckets are

held in either a vertical or horizontal position by said spring blocks K.

I do not limit myself to the use of my propeller in any particular part of the vessel nor to the size or shape of the buckets themselves, nor to any particular character of motive power, but 25

What I claim and desire to secure by Letters Patent is— 30

Regulating the motion of the propelling buckets by the combined action of the spring blocks K, inclines L, rollers I, I, and M and inclines H H substantially as specified.

In witness whereof I have hereunto set my signature this twenty-eighth day of January 1856. 35

LAMBERT ALEXANDRE.

Witnesses:

LEMUEL W. SERRELL,  
THOMAS G. HAROLD.