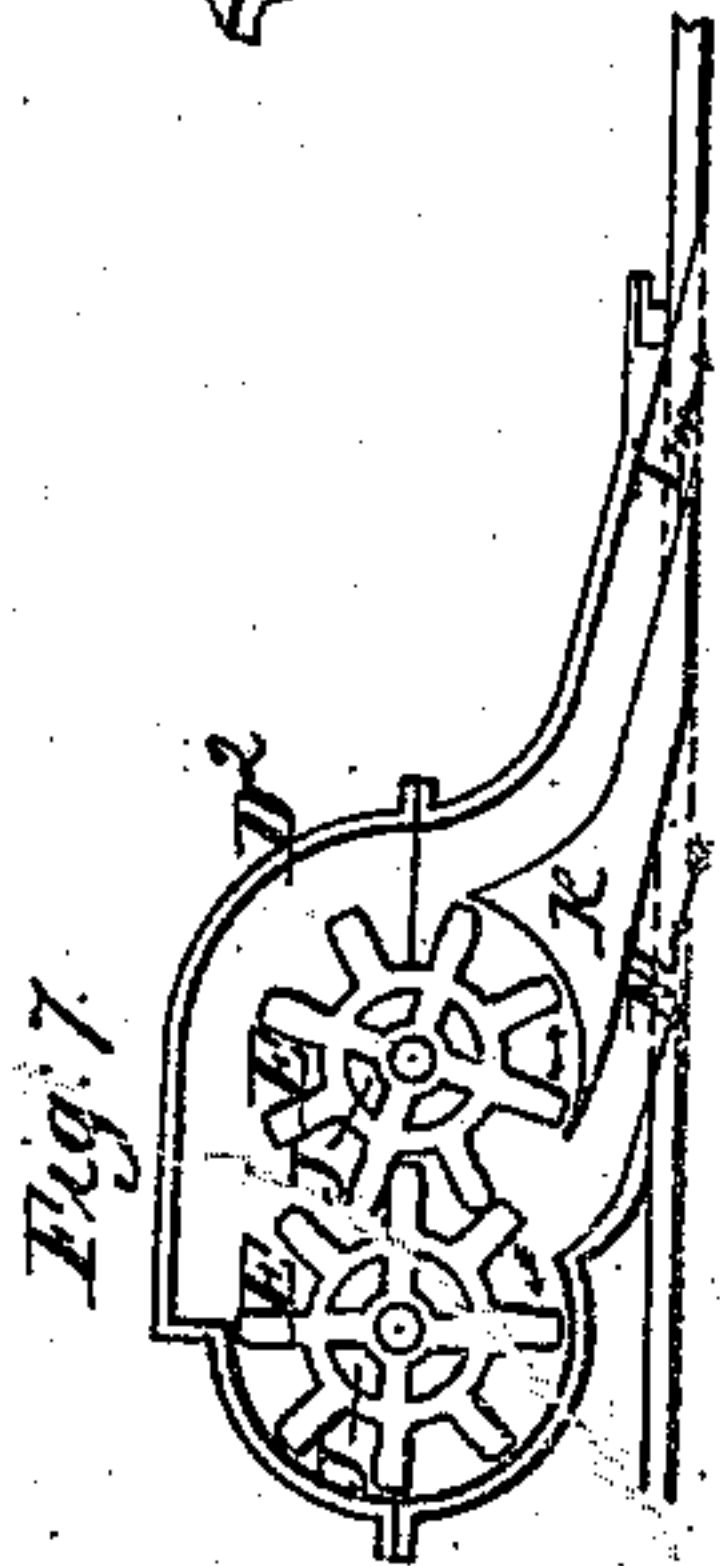
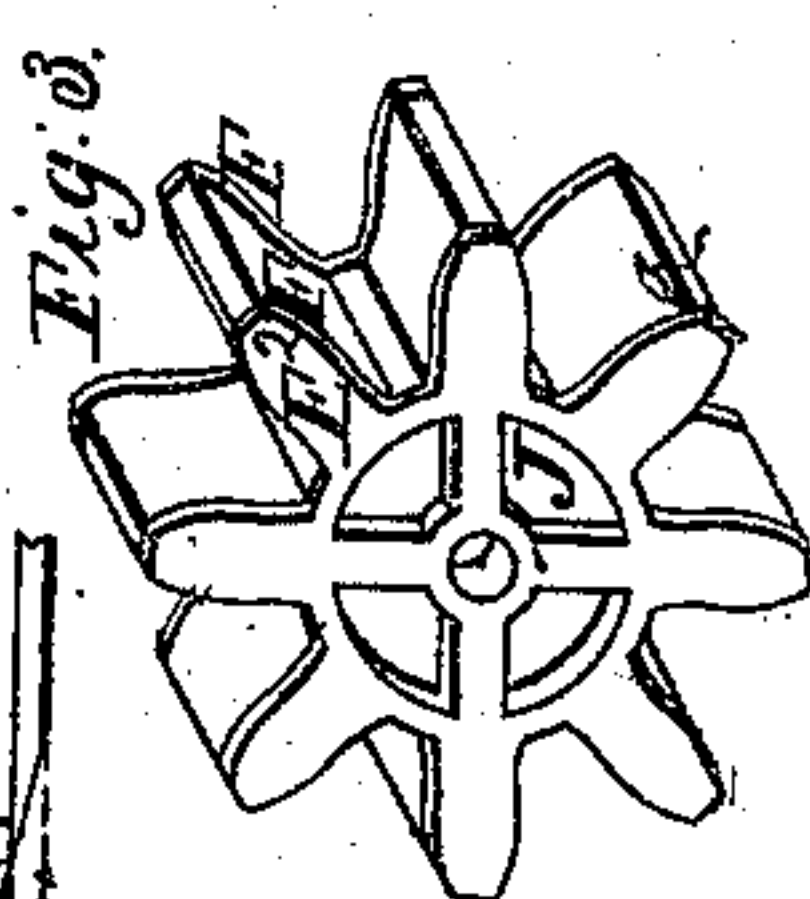
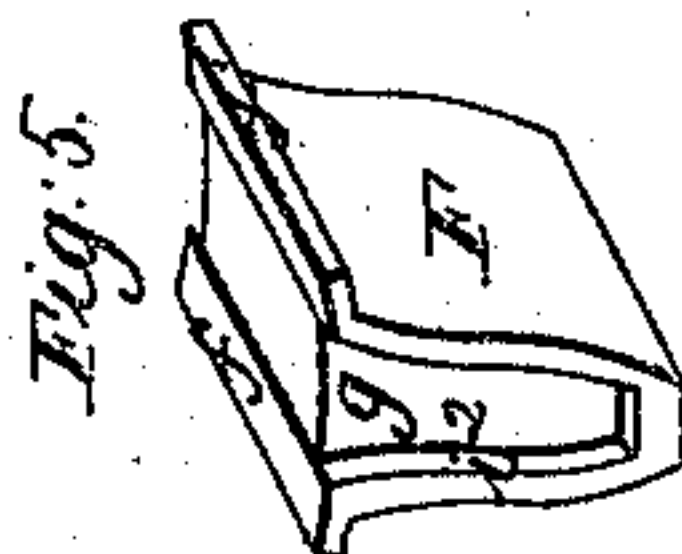
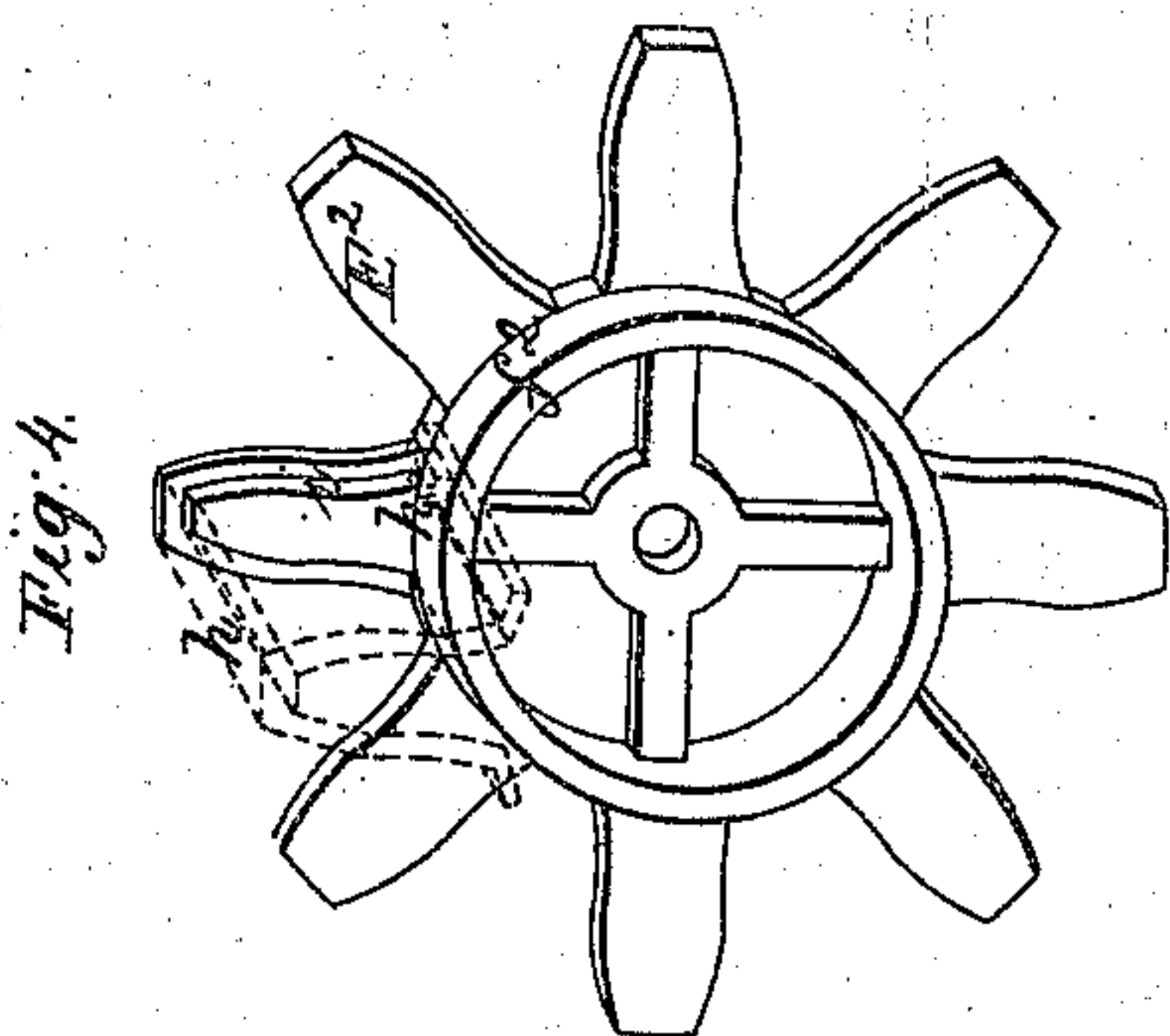
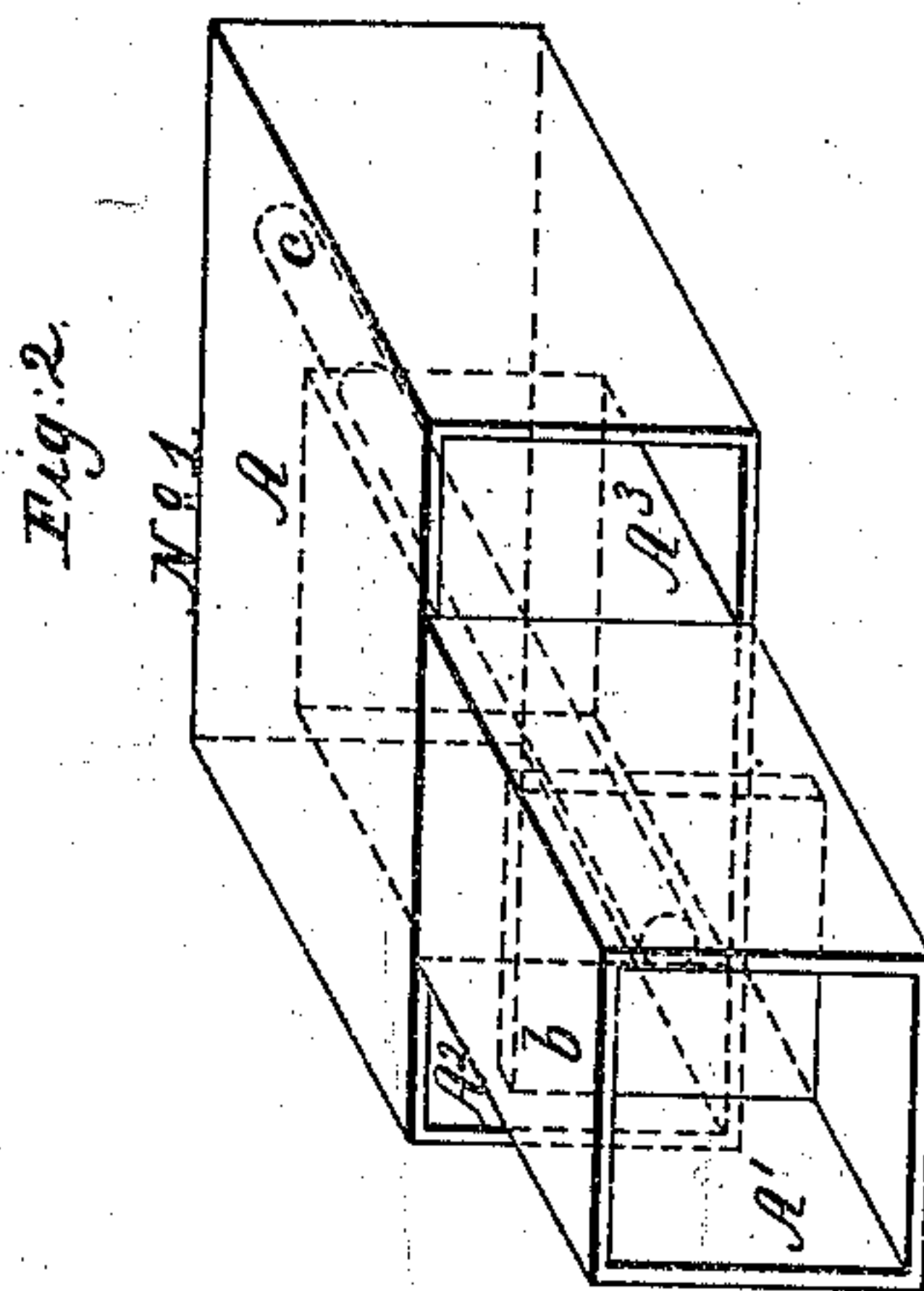
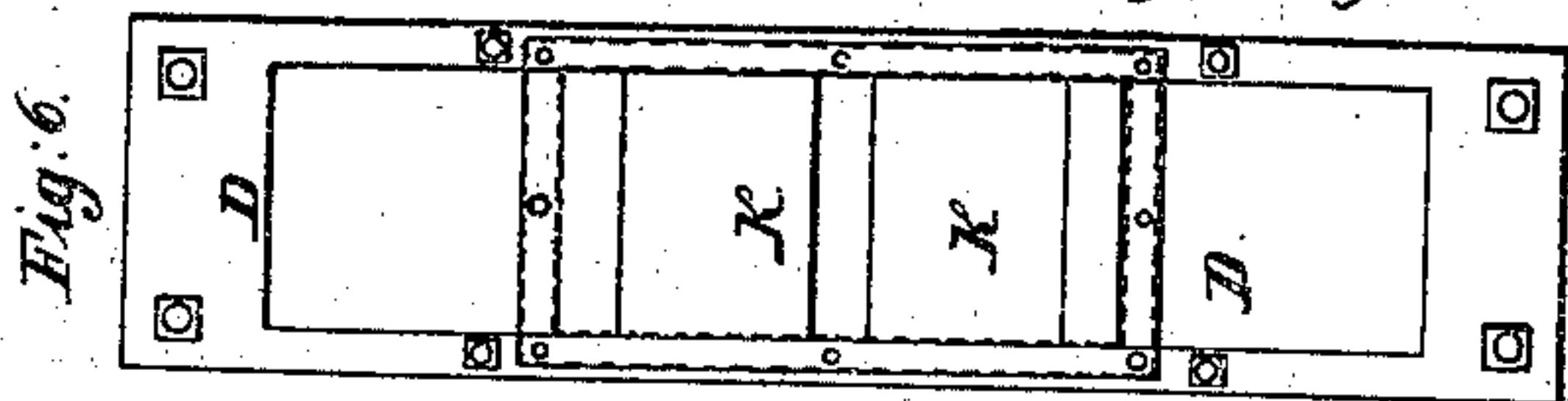
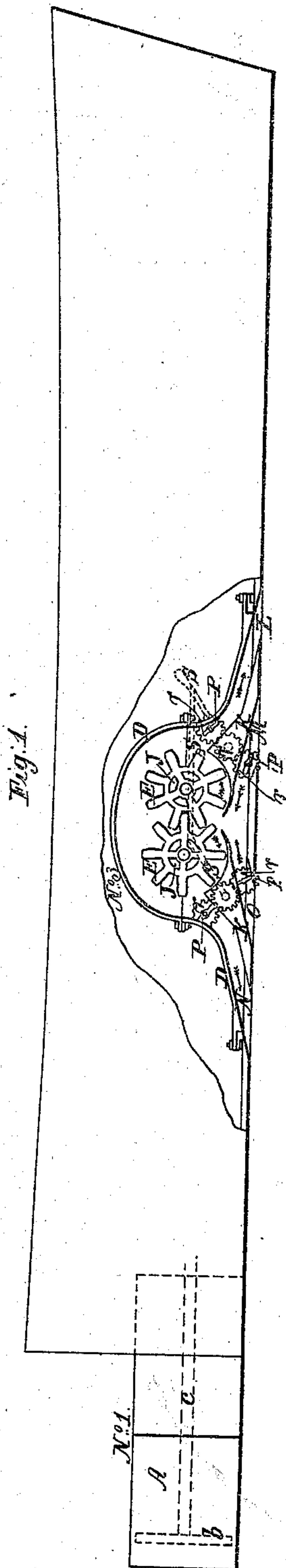


L. C. St. John
Propelling Boats

Nº 21,378.

Patented Aug. 31, 1858.



Witnesses;
E. B. Forbush
George Hinson

Inventor;
Leland C. St. John

UNITED STATES PATENT OFFICE.

LE GRAND C. ST. JOHN, OF BUFFALO, NEW YORK.

IMPROVED PROPELLER FOR BOATS.

Specification forming part of Letters Patent No. 21,378, dated August 31, 1858.

To all whom it may concern:

Be it known that I, LE GRAND C. ST. JOHN, of the city of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements Relating to Boat-Propulsion; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists, first, in the construction of a propeller-case having three conduits arranged on parallel lines, the water being received through the two outside conduits at the same stroke of the piston that water is being discharged at the middle conduit, and vice versa; second, in the combination of the said propeller-case having three parallel conduits with a boat, and the arrangement of a piston to operate longitudinally in the middle conduit; third, in the combination and arrangement of two revolving pistons with respect to an inclosing case and a boat, so that in the act of propelling the water will be received into the case at one orifice and discharged at another orifice through the bottom of the boat, and, fourth, in the construction of my revolving pistons partly of wood and partly of iron, as hereinafter set forth.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

Figure I is a longitudinal section of the propeller No. 3 and a side elevation of the boat and propeller No. 1. Fig. II is a perspective view of my propeller-case, having three conduits arranged on parallel lines. Fig. III is a perspective of my revolving piston, made partly of wood and partly of iron. Fig. IV is a perspective of the metal cog-plate to which the cogs represented in Fig. V are fastened. Fig. V represents a cog made partly of wood and partly of iron. Fig. VI is a plan view of the case which incloses the revolving pistons, a longitudinal section of which is given in No. 3, Fig. I. Fig. VII is a side elevation of a propeller having a single case for propelling the boat in one direction.

This device is intended to be used for propelling the boat aft in connection with the propeller No. 1, represented in perspective by

Fig. II for propelling the boat forward. Neither propeller No. 1 nor No. 2 can be used for propelling the boat in both directions. They should be used in combination, No. 1 being placed in the stern for propelling the boat forward and No. 2 being placed in the boat forward of No. 1 for propelling the boat aft.

The propeller No. 3 has a double case or, more properly, two sets of openings or channels for receiving and discharging the water. It is made like No. 2, with the exception of the duplicate channels. When this case is used the boat may be propelled in either direction.

Letters of like name and kind refer to like parts in each of the figures.

No. 1, Fig. II, is the piston-case, having three conduits parallel with each other. A' is the middle conduit, in which the piston works, and A^2 and A^3 are the outside conduits.

b , dotted lines, represents the piston-head.

c , dotted lines, represents the piston-rod.

The piston is worked by steam-power in a common manner.

The middle conduit projects forward of the two outside conduits. When the stroke of the piston is inwardly, the water will follow the piston-head into the middle conduit, and at the same stroke of the piston the water will be forced out through the two outside conduits. As the piston takes its outward stroke the water is forced out of the middle conduit and drawn into the two outside conduits, and thus at either stroke of the piston propelling-power is obtained. This case is made of metal.

D^2 , Fig. VII, represents an inclosing case for my revolving pistons.

$E E$ represent my revolving pistons as arranged in the case.

F , Fig. V, represents a single cog, cast hollow and filled in with wood, as shown at g . It has flanges $f f$ for the purpose of being bolted or made fast to the rim f^2 of the cog-plate, Fig. IV. It is shown as connected with the plate by the dotted lines h and bolt h' .

i represents a ledge raised on the cog-plate. A corresponding rabbet i^2 is sunk in the cog, so that the cog will slide down over the ledge and thus give additional strength to the connections. A duplicate of the cog-plate must

of course be used in order to make the piston (or wheel) complete, as represented in Fig. III.

J represents wood which is fitted in between the arms or spokes of the piston.

K represents a partition made of wood for the purpose of dividing the current of water passing into the case from that which is passing out. This partition is a part of the case, and serves to form an inlet and outlet channel for the water, in connection with the outside portion of the case. In ordinary constructions it may be made of metal.

M represents an inlet orifice or opening for the water to pass through the bottom of the boat into the case.

L represents an outlet orifice or passage, through which the water is expelled from the case. The pistons are revolved in the direction to draw the water in at M and force it out at L, and by this action the boat will be propelled in the opposite direction to the course of the water in its passage out of the case.

The arrows indicate the direction of the water.

I have above set forth that the propeller No. 3 has duplicate inlet and outlet channels for the water. The inlet-channel is shown at O and the outlet-channel at N. The partition J is also duplicated. The case D is enlarged, so as to conform to the duplicate channels. This case (and also No. 2) is made in two parts, the two parts coming together on the horizontal plane of the axles (or shafts) of the pistons. For ordinary purposes these cases will be made of iron, and when either of them is used it is so arranged and connected to the boat as to receive and discharge the water through the bottom of the boat.

I have represented in the drawings at P P P two sets of valves to be used in connection with the propeller No. 3.

r r r are gear-wheels for working the valves.

s s s are a series of levers, so connected with the gear and arranged that by a slight movement thereof one set of valves will be opened at the same time the other set is closed.

The set in the channels N and O are shown as being closed, while the set in L and M are represented as open. If power is now applied and the pistons revolved, water will pass in at M and out at L. This action will give the boat sternway. Now by a slight movement of the levers the valves of M and L will be closed, while those of N and O will be opened, and the boat will then be propelled forward. The boat can thus be propelled in either direction, as circumstances may require. When the single case (represented by Fig. VII) is used, no valves are required, for the reason that the single case is used only for propelling in one direction and must be used in connection with propeller No. 1. The pistons and the mode of operation are the same whether the single or double case is used. In practice two of the propellers No. 3 will be used, one being placed on each side of the keelson.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The construction and use of a propeller-case having three conduits arranged on parallel lines, so that water will be received into the case through the two outside conduits at the same stroke of the piston that water is discharged through the middle conduit, and vice versa, as herein set forth.

2. The arrangement of two revolving pistons E E with respect to an inclosing case, whether said case is made single, as represented in Fig. VII, (No. 2,) or double, as represented by No. 3, Fig. I, and the combination thereof with a boat, so that in the act of propelling water will be received into the case at one orifice (or channel) and discharged at another orifice (or channel) through the bottom of the boat for the purposes, and substantially as herein set forth.

3. The construction of my revolving pistons partly of wood and partly of iron, substantially as herein described.

LE GRAND C. ST. JOHN.

Witnesses:

E. B. FORBUSH,
GEORGE HINSON.