To all to whom these presents shall come, GREETING:

I CERTIFY, That the annexed are true Copies of the petition Specification Oath and References in the Office of the Secretary of State, "of Improvements in the Construction of Steam Engines and boilers, and a new mode of working Floats or paddles, for propelling boats" for which a patent has been granted to John Stevens of the City and State of New York the 3d day of January 1810 Viz

IN FAITH WHEREOF, I Robert Smith Secretary for the Department of State of the United States of America, have signed these presents, and caused the seal of my office to be affixed hereto, at the City of Washington, this Eighteenth day of August — A. D. 181 and in the thirty fifth — year of the Independence of the said States.

R Smith

To the Honorable Robert Smith Secretary of State of the United States —

The petition of John Stevens of the City of New York, in the State of New York, a Citizen of the United States —

Respectfully represents

That your petitioner has invented certain improvements in the construction of Steam engines generally but more particularly in adapting them to the purpose of propelling Vessels, including certain improvements in boilers, and a new mode of working Floats or paddles.

And Whereas your petitioner is desireous of obtaining an exclusive property in his said Inventions and improvements, he prays that Letters patent may be granted for that purpose to him his heirs Administrators and Assigns for the term of 14 years, for the full exclusive right and liberty of making constructing using and vending to others to be used the said improvements which are setforth in the Schedule hereunto annexed, with drawings and discriptions of the same, and your petitioner as in duty bound &c.

John Stevens

New York Dec. 26th 1809

Specification of Improvements in the Construction of Steam Engines and Boilers and a new mode of working floats or paddles for propelling boats.

The improvement in the Construction of Steam Engines consist of Various particulars as.—

1st. The Cylinder condenser and airpump are all firmly bedded upon a single plate of cast iron, and the power of the Engine is communicated by two rods, on each side of the Cylinder connected to a beam fixed on the top of the piston Rod, the lower ends of these rods are connected each to a pin called a Shackle pin fixed into two wheels, forming half Cranks. The Axis of each of these wheels extends through the sides of the boat, and the water Wheels for driving the boat are fixed thereon—

By this mode of construction the power of the Engine is communicated immediately to the water wheels without causing any Strains whatever to any part of the boat—

2nd.— The Cogs of the above mentioned wheels work in the teeth of two Wheels of one half their diameter on the Axis of these small wheels are fixed a fly wheel—

3rd.— The air pump is worked by means of two rods the upper ends of which are attached to the main beam and their lower ends to triangular beams. The other extremity of these triangular beams are attached to a curbing or deck beam of the Vessel—

The piston rod of the air pump is suspended from a beam fixed across these triangular beams, at such a distance from the fulcrum thereof as to give to the piston of the air pump a proper length of stroke. The vertical position of the piston rod of the air pump is preserved by means of a parallel motion.—

4th An improvement is made in the construction of the air pump, not merely by giving it a double stroke but by causing the piston to pump out the injection water from the bottom of the Condenser, when the piston rises, and by exhausting the Air seperately from the water from the top of the same when the piston descends. —

5th Instead of the usual plug frame and working gear which performs its office of opening and shutting the valves by means of a Rectilinear — Alternating movement the operation is here performed by means of the Rotary movement. The extremities of certain levers connected with the Stems of the Valves are raised by ~~being~~ being made to pass over projections fixed on the circumference of wheels which revolve in equal times with each stroke of the piston of the main cylinder. By this mode of working the valves, the steam can be shut off from the Cylinder at any part of the Stroke of the piston. —

6th The communication between the bottom of the Condenser and the air pump. is effected under the above mentioned cast iron plate, in which valves are fixed by means of which the water is discharged.

The boiler is formed by two principal metal cylinders lying horizontally and contiguous to each other and extending lengthwise. The Boat about 16 feet, these two cylinders are to be kept half full of Water, a smaller cylinder fill'd full of water passes between the large cylinders in the recess below their diameters where they touch each other; a communication between the small cylinder and the large ones is made thro' the front heads thereof. A furnace of due dimention is constructed under the front ends of these cylinders.

And from the back of the furnace a flue extends under the Cylinders to the further ends thereof. The smoke and flame then passing round the same enters two flues in the heads of the cylinders and returning thro' these flues to the front heads thereof and enters the chimney. The heads are

are fixed into the ends of the cylinders, and also the flues into those heads in the following manner. The heads are composed of cast iron concaved having a rim or collar of about four or five inches which is made to fit the inner circumference of the cylinders in the ends of which they are inserted and securely fastened by revits or screws, and to preserve tightness iron cement is corked between the rim and the cylinder. The ends of the flues are ~~to be fitted~~ to be fitted into the heads. The main flew which passes from the furnace under the cylinders to the farther ends thereof is constructed in the following manner. At the back part of the furnace is formed a brest work of soap-stone or fire brick which is elevated to within 8 or 10 In.s with the curve thereof the bottom of the flue is then formed of plate iron supported on iron standards of the bottoms of the cylinders rising on each side and curved on each side so as to suit the Cylinders, a coat of powdered charcoal mixed up with a due proportion of clay is then laid on it, and on this a course of bricks. The floats or paddles for propelling vessels are constructed in the following manner.—

The Axis of the fly wheel is prolonged on each side to the outside of the gunwale of the boat. Half cranks 3 Feet long are then fixed on the ends of the axis at the distance of 8 or 10 feet from these towards the bow of the boat are fixed similar half cranks. On the ends of these half cranks, is then suspended in a horizontal position, a kind of trough open at top and bottom with a Number of partitions, which serve as floats or paddles, on the opposite side of the large Cog wheels, small wheels, similar to those on the axis of the fly wheel, also work; half crank and a system of floats or paddles are fixed on each side of the boat, to the axis of these wheels in the manner above described. There will then be two systems of floats or paddles on each side of the boat each of them making

making a stroke in equal times with each single stroke of the piston. If then the cranks are placed in succession at an angle of 90 degrees one from the other, and the floats or paddles are made to dip about one foot deep in the water; there will always be one of these system of floats in operation except for a short interval while the piston is near, or at, the top or bottom of the cylinder. As the system of floats or paddles above described need not be more than 18 Inches wide they will occasion little or no inconvenience in bringing the Vessel to, to the wharf, and she may always easily be kept fendered so as no damage can happen to the floats. The frames containing the floats may indeed be readily unshipt should it ever be necessary. And should the weather be occasionally too rough to drive the boat by the engine and paddles, they can all of them be instantly placed in a situation not to obstruct the way of the Vessel, whilst she continues to be driven forwards by her sails only.

It is presumed too that these floats, disposed in the manner above discribed will be more powerful, that is, make more resistance in the Water, than the same area in the buckets of a wheel.

One important advantage, among the many others attending the above described improvements of the Steam Engine and Boiler, is the contraction of the Volume and consequent diminution of the weight of the Machinery.

This alone is an object of immence importance as the weight and bulk of the Machinery on board of Steam Boats have hitherto gone nearly to load them.—

John Stevens

Witness
E. Bordin
James A. Stevens

City of Philadelphia ss.

Personally appeared before me Michael Keppele an Alderman of the City aforesaid John Stevens who being duly sworn according to Law doth depose that he verily believes that he is the true inventor of the several improvements described in the specification hereunto annexed —

John Stevens

Sworn to before me
26 Decr 1809

Mich.e Keppele Ald.n