The United States of America.

To all to whom these Letters Patent shall come:

Whereas John Stevens, a Citizen of in the United States, hath alleged that he has invented a new and useful improvement in the Construction of Steam Engines and Boilers, & a new mode of working Floats or Paddles for propelling Boats —

which improvement has not been known or used before his application; has made oath — that he does verily believe that he is the true inventor or discoverer of the said improvement,

has paid into the Treasury of the United States, the sum of thirty dollars, delivered a receipt for the same, and presented a petition to the Secretary of State, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose: **These are therefore** to grant, according to law, to the said John Stevens his heirs, administrators, or assigns, for the term of fourteen years, from the Third day of January 1810 the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said John Stevens himself, in the schedule hereto annexed, and is made a part of these presents.

In testimony whereof, I have caused these Letters to be made Patent, and the Seal of the United States be hereunto affixed.

GIVEN under my hand, at the city of Washington, this third day of January in the year of our Lord, one thousand eight hundred & ten and of the independence of the United States of America, the thirty fourth —

James Madison

BY THE PRESIDENT,

R. Smith

Secretary of State.

City of Washington, To :

I DO HEREBY CERTIFY, That the foregoing Letters Patent, were delivered to me on the first day of January in the year of our Lord, one thousand eight hundred & ten to be examined; that I have examined the same, and find them conformable to law. And I do hereby return the same to the Secretary of State, within fifteen days from the date aforesaid, to wit:—On this first day of January in the year aforesaid.

C. A. Rodney Attorney General of the United States.

The Schedule referr'd to in these Letters Patent & making part of the same, containing a Description in the Words of the said John Stevens himself, of his "Improvements in the Construction of Steam Engines, and Boilers, & 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 air pump 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 thro' 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 abovementioned wheels work in teeth of two wheels of one half their diameter on the axis of these small wheels is 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 there lower ends to triangular beams. The other extremity of these triangular beams are attached to a curling 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 the 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 extracting the air separately 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 the office of opening and shutting the valves by means of a rectilineal alternating movement the operation is here performed by means of a rotary movement — The extremities of certain levers connected with the stems of the valves are raised by 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 five principal metal cylinders lying horizontally and contiguous to each other and extending lengthwise the boat about sixteen feet, these five cylinders are to be kept half full of water, a smaller cylinder full a full of water passes between the large cylinders in the rivets 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 dimentions 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 her flues in the heads of the cylinders and returning thro these flues to the front ends of the cylinders passes thro' the front heads thereof and enters the chimney — — — — — — — — — — — — — — — —

The heads are fixed into the ends of the cylinders and also the flues in those heads in the following manner. The heads are composed of [illegible] concaved having a rim or collar of about four or five inches when as

made to fit the inner circumference of the cylinders in the ends of which they are in-
serted and securely fastened by rivets or screws and to preserve lightness iron ce-
ment is corked in between the rim and the cylinder. The ends of the flues are in
like manner to be fitted into the heads. The main flue which passes from the
furnace under the cylinders to the further ends thereof is constructed in the
following manner At the back part of the furnace is formed a breast work of
soap stone or fire brick which is elevated to within eight or ten inches of the bot-
toms of the cylinders rising on each side with the curve thereof. The bottom of
the flue is then formed of plate iron supported on iron standards 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 the boat are constructed in the follow-
ing manner. -

The axis of the fly wheel is prolonged on each side to the outside of the gun-
wale of the boat Half cranks three feet long are then fixed on the ends of the axis
at the distance of eight or ten feet from these towards the bow of the boat are
fixed similar half cranks. On the ends of these half cranks is then suspended a
kind of trough in a horizontal position 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
cranks 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 ma-
king 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 systems of floats or paddles 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 forward by her sails only- - - - - - - - - - - - - - - - - -

It is presumed too that these floats disposed in the manner above described 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 immense importance as the weight and bulk of the machinery on board of Steam boats have hitherto gone nearly to loading them. ——

Witneſs

John Stevens

E Boudinot Stockton

James A Stevens