(12) **United States Patent**
Hale

(10) **Patent No.: X4120**
(45) **Date of Patent: May 20, 1825**

(54) **STEAM ENGINE, ROTARY**

(76) Inventor: **Elisha Hale**

Elisha Disbrow

Letters Patent

To all to whom these Letters Patent shall come, I Elisha Disbrow of the City of New York in the State of New York have invented a new and improved Rotary Steam Engine which I call the Rotary Steam Engine and I do hereby declare that the following is a full and exact description of the principle and construction of the same reference being had to the annexed drawings making part of this specification.

The Rotary Steam Engine consists of a cylinder in which a shaft revolves on the principle of the Rotary Pump. The cylinder is cast with a steam chest on the top of it and a steam chest on the bottom of it. The steam chest on the top of the cylinder is divided into two parts by a partition which is cast with the cylinder. The steam chest on the bottom of the cylinder is divided into two parts by a partition which is cast with the cylinder. The steam chest on the top of the cylinder is divided into two parts by a partition which is cast with the cylinder. The steam chest on the bottom of the cylinder is divided into two parts by a partition which is cast with the cylinder.

The above mentioned Machine or Invention consists of the machine constructed and operating as follows viz. A Key is made to the exact form of a Wedge with a straight edge on the outside, the edge of each part meeting closely in the center, the edge of each part meeting closely in the center, the edge of each part meeting closely in the center, the edge of each part meeting closely in the center.

The outer part of the key as far as from the edge of the shaft to the outer part of the diameter of the circumference of the key is made in such a manner that when the two parts of the key are put together they form a complete circle. The outer part of the key is made in such a manner that when the two parts of the key are put together they form a complete circle. The outer part of the key is made in such a manner that when the two parts of the key are put together they form a complete circle. The outer part of the key is made in such a manner that when the two parts of the key are put together they form a complete circle.

the number of cells in the wheel so that he may be in operation at a time, so as the water will not run from the propelling float buckets at the receiving the water shall be, may be diminished at any time, and the less effective in performing its function as the wheel is operating, whilst the channel across the back of the entire cavity has formed in each part of the box. A channel is also made and would about equal to five twenty-fifths of the diameter of the wheel, but may be varied as to the distance of the channel from the center of the wheel, and the less or more effective the channel shall be made larger or smaller as the less or more channel is to be. The inside of the channel must be made slanting or sloping so as to cause the water to flow away from the center of the wheel. At the outside of the channel is a groove half inch in each side of the box to depth and width about one fifth of the depth of the channel, to admit and receive the projecting edge of the wheel, and the edge of the partition inside of the channel must be made so as to form a close fit with the groove and channel made in the edge of each side to receive it and to form a perfect covering.

The ends and sides of each channel and cavity as will fit the groove and form the edges of the partition inside of the channel and on each side of the box a channel is made round as before mentioned, each channel as before to be inside of the cavity, which partition is about an inch and a half thick as the channels of the cavity within the box. In the box are five or more apertures as the tubes are by and corresponding to the former under the same circumstances, and so many less as to be sufficient for the purpose and the size of the box and the size of the wheel

which are fastened to the circle carry of the log directly under the arms of the latter and secured to the under part of the log. When the wheel is to be set the bars must be of such width as to exactly to fit between the circles when they are placed in a line parallel with the rim of the wheel. The second bar commences at the point opposite the center of the radius to which the first bar extends and continues round in circle to about the center of the first bar when it ends. The ends being nearly five degrees of the distance around the circle of the first hanging bar is placed a little nearer the center of the log directly under the middle of the arm joining the space left by the ends of the bars and each end resting on the ends of the bar being secured in a strap corresponding with the length of the latter and forming a circle terminating at a point near to the circle of the log to which strap are secured each of the ends being moved in a little more than to make them conform to the circle at large and so exactly to meet the end of the arm projecting to the float of the log.

A channel between the upper and under surfaces of the water wheel that which conducts the water to the buckets but of a greater width than the edge of the partition each end forming a gentle slope to turn the water steadily without a break, leaving between the two slopes only so much of the rim of the wheel which contains the holes to which the buckets are placed level or flat to the rim of the wheel. In the center of the slope may be placed a weak spring so that the water will gently pass to the circumference of the wheel so that no water will pass

A axle is to move in the center of the log and to shoulders rest against each plate of it. It must be made round in the log with rings on the ends and the wheel be either closely attached or left a little loose so that as it turns the wheel may move a little to prevent friction. The ends of the axle must be square or flat to fit the mortising to which they are to be attached. The wheel must work between the two plates of the log and be secured by pins through the axle to the wheel as they pass between the buckets in the channel and by one or more arms

moved by a cog wheel of suitable size thereon & applied on or attached to the end of the pump shaft and working into the pinion shaft in which the leaves are placed [illegible] by [illegible] By the assembly of parts shown & described in the annexed drawings & specification the water will be projected to the top of the pump chamber & enter the air vessel from whence it will be forced in the best manner under the pressure of the atmosphere to any required distance & in any direction for the purpose of raising water from canals mines deep wells &c.

The forcing machine above described is suitable to raise water and the height of any kind of mines or other buildings &c. may be determined by the number of the chambers and the position of the channel & the air vessel may be placed at such a distance from the pump as may be found necessary for the due & safe working of the machine but there must be a partition for the discharge pipe to be connected with that there will be the operation of one wheel with its leaves to it operating alternately in each chamber & the distinct & separate currents of water by which from the suction & forcing the second partition or current may be produced by another forcing.

The pump or ventilator may be operated upon by an additional forcing applied to the shaft or by having the partitions in the chambers above set forth. Where water or air may be applied as an operating power to one side of the wheel forcing in one of those chambers while the other side of part of the wheel with its leaves operates either by suction or forcing and produces a current of air either up or down according to the situation and manner of applying it. Or by the same mode of operation the chamber being divided into separate ones, both sides of the wheel will operate at the same time forcing water by machinery at the outlet the two apertures, the air or water to be discharged in one pipe. In the same manner the operation may be applied in suction.

The machine at first described may be used as a bellows for any purpose where a pressure of air is wanted and a regular current required. It may be made of sheet metal and may be so fitted to limit the application and also to stand in any desired position. By dividing a second partition in the chamber & inside it into the same part and adding to the number of valves so that there shall be an equal in the wheel and two more apertures in the top of the

side opposite the first named the separate currents pass in opposite directions each other meeting at opposite points. The edge of the inclosed shall be secured with leather or other elastic substance and shall be large enough to form a thimble or flange for a screw to work in.

The machine described is to pass in a vertical direction between vertical and fluted rollers horizontally and thus inclosed the water must be conducted to it in a close inclosed pipe and passed through two or more sheets of the said described. The cylinder in the water sheet should be provided with a screw or other means by which the sheets may be placed in the cylinder at a distance

Dated April 15 1823

Witnesses

Richd Peters Jr

Edwd R Hale

J Evans

Wm H Haymond

Hendrick Williams

Elisha Cole

Exd

W.G.

DRAFTSMAN'S DIVISION.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

2—328 *a*.

DEPARTMENT OF THE INTERIOR,

United States Patent Office,

Washington, D. C., ... *189*....

SIR:

The printed copies ..... *of Patent No.* E Hale

..... are ..... *exhausted.*

May 20 1825

As soon as printed a copy will be mailed you to complete your order.

By direction of the Commissioner:

Very respectfully,

Chief Clerk.

3143\6-97-5m

United States Patent

Patent No.: X4120