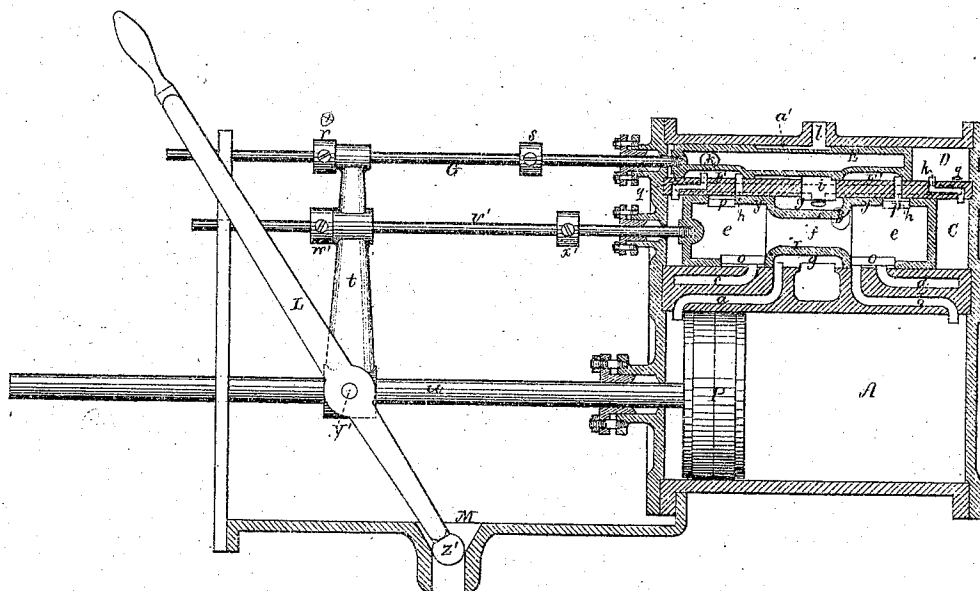


Elting Post's Impt. in Steam Engines.

117458

PATENTED JUL 25 1871



Witnesses:

S. W. Piper.

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by his attorney

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UNITED STATES PATENT OFFICE.

ELTING POST, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN STEAM-ENGINES.

Specification forming part of Letters Patent No. 117,458, dated July 25, 1871.

To all whom it may concern:

Be it known that I, ELTING POST, of Boston, of the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Steam-Engines; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawing, which denotes a longitudinal section of a steam-engine cylinder, with its piston, valves, and valve-chest, and their ports or passages, as combined and arranged in accordance with my invention.

In such drawing, A denotes the said cylinder as furnished with the piston P and having ports or passages *a b*, for conducting steam to opposite ends of the cylinder, and also having exhaust-ports or passages *c d*, such being arranged as represented. Over the cylinder is another or auxiliary cylinder or cylindrical chamber, C, into which the inner ends of the ports *a b* open. Within the chamber C is a hollow or double-headed balanced valve or piston, B, having two chambers, *e e*, disposed in its heads, and connected or made to communicate with each other by means of a passage, *f*, leading lengthwise through the connection-rod *k* of the two heads *y y*, such connection-rod being surrounded by a space, *g*. There is an opening, *o*, leading out of the lower part of each chamber *e*, and arranged in manner as represented. There is also another opening, *p*, leading out of the upper part of such chamber, and being arranged as shown. Furthermore, over the cylinder C is a cylindrical valve-chest, D, containing a duplex-balanced valve, E, provided with two chambers or recesses, *F F'*, a stem, G, being extended from one end of such valve and through the head of the chest D, as shown. This stem is provided with two shoulders or projections, *r s*, arranged on it in manner as exhibited in the drawing. These shoulders are to operate with an arm, *t*, which extends upward from the rod *u* of the main piston P. There is a space, *a'*, in and encompassing the duplex-balanced valve, and from the chest of such valve there is led into the auxiliary cylinder C passages *k h i h k*, they being arranged with reference to the duplex-balanced valve, the cylinder C, and its valve-piston B in manner as represented. The chest D is also provided with an induct-passage, *l*, for reception of steam for its supply to the said chest. Furthermore, two lateral passages, *q q*, lead from the

middle of the cylinder C into the chest D at or near each end thereof, such passages being exhibited by dotted lines in the drawing. From the cylindrical piston-valve B a stem, *v'*, extends through the end of the case C and carries two shoulders or collars, *w' x'*, to operate with the arm *t*, such stem being extended through the said arm. There is projected from the arm *t* a pivot, *y'*, for support of a lever, L, whose foot is provided with a ball, *z'*, to enter and play in a stationary tunnel-shaped pocket, M, arranged and formed as shown. By means of the ball and the cup or tunnel-socket M the lever may be easily applied to or removed from the pivot *y'* and be worked back and forth in order to move the piston and the valves, as occasion may require, when it may be desirable to operate such by manual power. The purpose of the stem *v'* and its collars *w' x'*, applied to the valve B in conjunction with the stem G and collars *r s* of the duplex-balanced valve, is to insure the movement or starting of the valve B at the proper times, such being effected by the pressure of the steam on the piston P, as will be readily understood by engineers.

The mechanism hereinbefore described in many particulars is like what is shown and explained in the United States Patent No. 107,098, dated September 6, 1870, and granted to me, the differences being as follows: Instead of a duplex flat valve in the valve-chest D, composed of two valves, E F, to work on a plane-surface seat, as shown in the drawing of such patent, I now make use of a duplex-balanced valve, E, as described, operating in a cylindrical chest, D, provided with the lateral ducts *q q* leading from the middle of the valve-cylinder C into the chest D at or near its ends.

By this arrangement or construction of the parts I am enabled to avoid the friction and pressure incident to the flat slide-valve, and thereby enable the arm *t* to work the valve-rod G with much less expenditure of power. I have also added to the main valve B the rod or stem *v'*, with its two collars, *w' x'*, to operate with the arm *t*, for the purpose hereinbefore mentioned. I have also added to the mechanism the lever L with its spherical foot or ball, the pivot for it to work on, and the cup or tunnel-shaped socket M, the said ball and socket being to admit of the ready application of the lever to its pivot, or the

separation of the two and the working of the lever, as circumstances may require.

I herein make no claim to the subject of my said patent; but

I claim—

1. In combination with the cylinder A, its piston, and the main balanced valve B and its chest C, the auxiliary duplex-balanced valve E, its chest D, and the lateral ducts *q q*, the said main and auxiliary balanced valves and their chests being made and arranged with ports and passages of communication, and the valve-stem G being fur-

nished with the collars to operate with the arm *t*, all being substantially as described.

2. The combination of the auxiliary valve-stem *v'* and its collars *w' x'* with the main balanced valve B, the chest C, the piston P, cylinder A, arm *t*, the auxiliary balanced valve and chest, the rod G, and its collars *r s*, all arranged and combined or applied together in manner and to operate as set forth.

Witnesses:

ELTING POST.

R. H. EDDY,
S. N. PIPER.