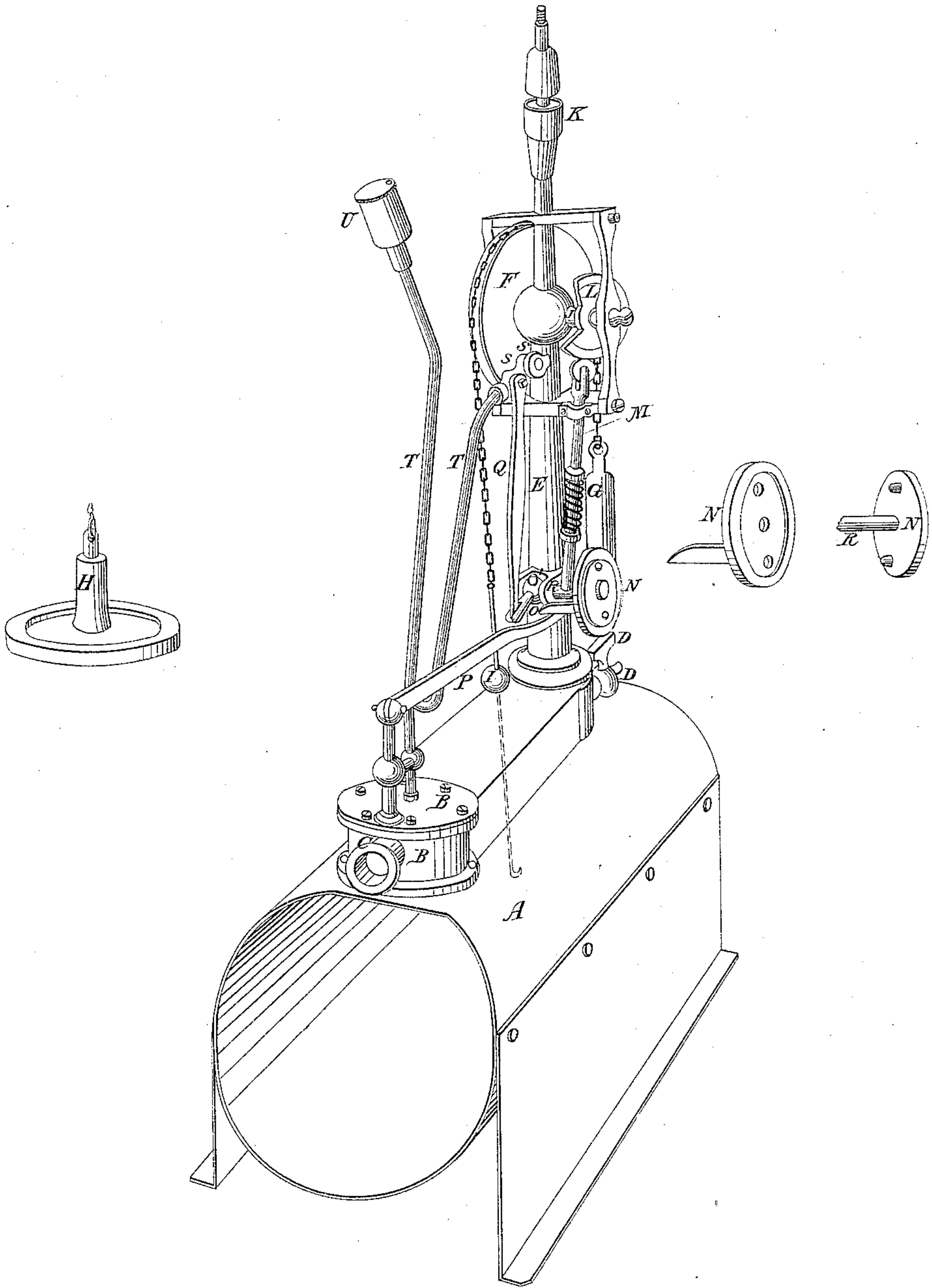


J. & J. G. Collins,
Steam Safety Valve.

N^o 8,543.

Patented Nov. 25, 1851.



UNITED STATES PATENT OFFICE.

J. COLLINS AND J. J. G. COLLINS, OF CHESTER, PENNSYLVANIA.

SAFETY APPARATUS FOR STEAM-BOILERS.

Specification of Letters Patent No. 8,543, dated November 25, 1851.

To all whom it may concern:

Be it known that we, JONATHAN COLLINS and JOHN J. G. COLLINS, of Chester, Delaware county, in the State of Pennsylvania, have invented a new and useful Machine for the Prevention of Explosions, Collapses, and Bursting of Steam-Boilers, called the "Self-Acting Protective Safety-Valve," of which the following, in connection with the accompanying drawing, is a full and exact description.

Letter A as on the drawing represents a section of a steam boiler, on which is affixed the whole of the apparatus.

Letter B represents a steam box and inside of said steam box is a valve.

Letter C represents a pipe for the escape of steam, or gases when the steam valve opens.

Letter D represents a cock for to let out condensed steam from the steam pillar.

Letter E, represents a hollow pillar for the admission of steam from the boiler for the supply of the mercurial gage and whistle.

Letter F, represents a pulley for the chain to pass over to the weight lettered G. The said weight acts as a balance to the buoy or float inside the boiler.

Letter H, on side drawing represents the buoy or float, said buoy or float floating on the surface of the water and thereby causing the pulley F, to move as the water rises or falls in the boiler.

Letter J, represents a shaft which is made to act as a cock, and by the pulley F, being fast on the shaft J, as the water lowers in the boiler, the float H lowers with it, and the float or buoy H being attached to a wire, said wire passing through the top of the boiler, and through the ball I, said ball I acts as a stuffing box, and there attached to a chain passing over the pulley F, causes the cock to open or shut as the water rises or falls, and when open causes the whistle lettered K, to whistle, by steam being admitted to it through the pillar E, from the boiler, thereby giving an alarm that the water is getting too low.

Letter L, represents a part of a pulley, which is fast on the shaft J, said part of a pulley is to hold down the rod, lettered M, with the spiral spring upon it so long as a proper quantity of water is in the boiler, but should the water get too low in the boiler, and the float or buoy lowering with

it, then the pulley lettered F, and the part of pulley lettered L, being fast on the shaft I, move together, so that when the part of the pulley that is cut away comes opposite the rod lettered M, then the rod ascends, by the force of the spiral spring which is around it, and thereby sets the catch box at liberty. The catch box being set at liberty, will then fly open by the force of pressure of steam acting on the valve inside the boiler, and when it opens, it sets the lever at liberty, thereby allowing all steam or gases to escape through the pipe C, and thereby preventing all danger of explosions, collapsings or bursting of steam boilers, arising from the want of water. The side drawings lettered N.

N, and R, represents the catch box when apart, and the part of the shaft R.

Letter N, on the full drawing represents a catch box, which is made by having one side with two conical holes in it, and the other side with two conical pins, and the use of them being conical, is for them to slip apart easy, when the rod M, gives them liberty.

Letter O, represents a projecture on one side of the catch box N. Said projecture O, is to hold down the lever P, and said lever P, is to hold down the safety valve, by the valve spindle being directly under it.

Letter S, S, represents a swivel for the admission of steam from the pillar E, to the gage or tube lettered T, T, and U, said gage or tube being to hold mercury, said mercury being used as a weight, for weighting the valve. The mercury being near the bottom of the gage or tube, when the steam is at its proper height, and thereby forming the weight required to hold down the valve. By the connections and combinations of the gage T, T, having a stud for one end of the connecting rod, lettered Q, to fit on, and the other end of the connecting rod lettered Q, jointed to the small lever O, I, with a pin. The catch box being held together by the rod M, the projecture O, then bearing down the lever P, by the weight of the mercury, or when the steam gets too high, and causes too much pressure on the boiler, then the mercury ascends up to the top side of the tube or gauge T, and U. The ball lettered W, at the top of the gage or tube T, T, represents a hollow ball or chamber to receive the mercury, to prevent loss of the

said mercury so by its leaving the bottom of the gage or tube, and ascending toward the chamber lettered U, the weight diminishes upon the lever, and allows the steam or gases to escape through the pipe C, and thereby doing away with all explosions of steam boilers by the over pressure of steam.

We claim as our invention and desire to secure by Letters Patent—

10 1. The bent tube formed and arranged substantially as described to contain mercury in combination with the lever of the safety valve or its equivalent and connected with the steam boiler by means of a swivel
15 and a pillar connection or its equivalent whereby the varying pressure of steam varies the actual weight upon the valve.

2. We also claim the combination of the connecting rod Q and the lever O, I and
20 the shaft R for connecting the mercurial gage T T and U with the catch box N and projecture O on the catch box, whereby the mercury in the gage T T being the weight holds down the safety valve or sets it at

liberty by the pressure of steam from the 25 pillar E and swivel S S said pillar being supplied with steam from the boiler or boilers as described in the specification.

3. We also claim the combination of the rod M with the spiral spring upon it and 30 small pulley at the top of it with the notched pulley L for holding the catch box together so long as the full part of the pulley L is on the small pulley or setting it at liberty 35 when that part of the pulley that is cut out comes opposite the small pulley and thereby allowing it to ascend as described in the specifications.

In witness hereof we have hereunto subscribed our names this fourth day of No- 40 vember one thousand eight hundred and fifty one.

JONATHAN COLLINS.
JOHN J. G. COLLINS.

In the presence of—

JAMES SCHOLFIELD,
JAMES SMITH.