

GEORGE B. SNOW.

Improvement in Steam Bell-Ringers.

No. 127,933.

Patented June 11, 1872.

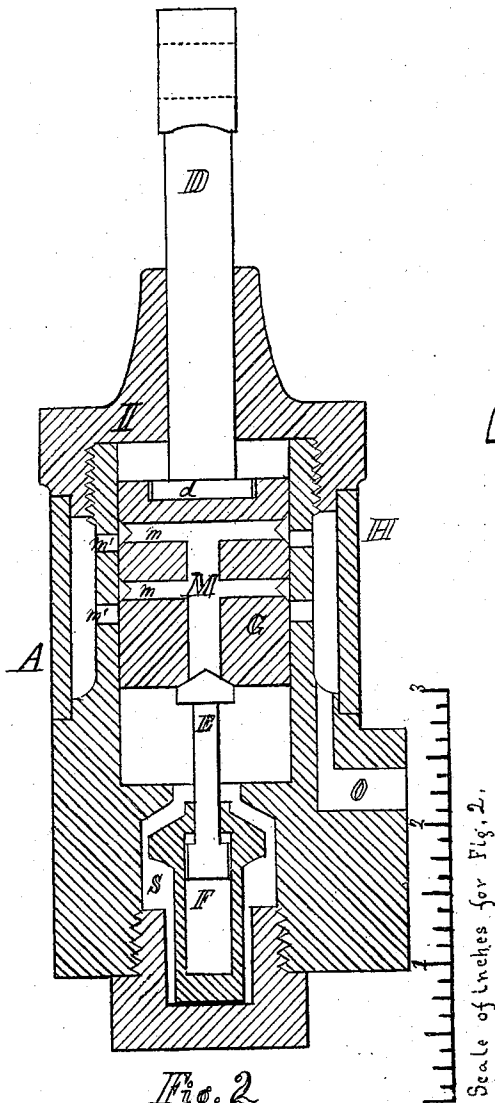


Fig. 2

Witnesses:
 Joseph M. Roke
 James L. Brad

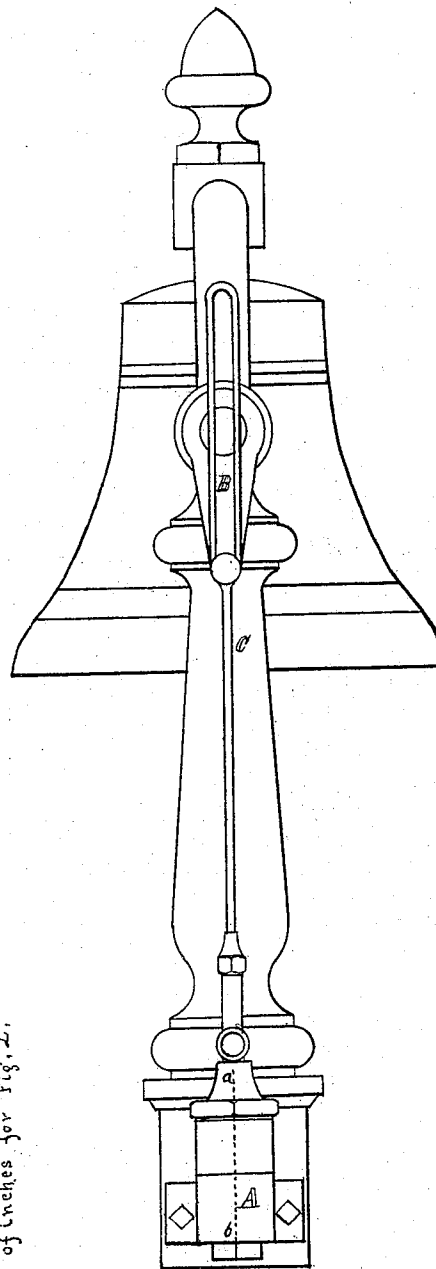


Fig. 1

George B. Snow.

UNITED STATES PATENT OFFICE.

GEORGE B. SNOW, OF BUFFALO, NEW YORK, ASSIGNOR TO BUFFALO DENTAL MANUFACTURING COMPANY, OF SAME PLACE.

IMPROVEMENT IN STEAM BELL-RINGERS.

Specification forming part of Letters Patent No. 127,933, dated June 11, 1872.

Specification describing certain Improvements in Steam Bell-Ringing Apparatus, invented by GEORGE B. SNOW, of Buffalo, in the county of Erie, State of New York.

This invention relates to the construction of a steam bell-ringer in such a manner as to prevent any apparent leakage, either of water or steam, without resorting to the use of stuffing-boxes; and, also, to cause the admission and release of the steam directly by the motion of the piston, and without the use of any intermediate parts between the piston and valves.

Referring to the annexed drawing, Figure 1 is an elevation of the device as applied to the bell of a locomotive. Fig. 2 is a vertical section of the steam-cylinder on the plane *ab*, on an enlarged scale.

A is a single-acting steam-cylinder, connected to the crank B on the bell-yoke by the slotted rod C. This rod should be of such a length that the piston G will be forced to the bottom of the cylinder as the crank B passes its lower center, the slot through which the crank-pin passes being long enough to allow the crank to pass its upper center freely, notwithstanding the disproportion between the throw of the crank B and the length of stroke of the piston-rod D. The piston G is disconnected from its rod D, to prevent any lateral strain being communicated to it, thereby decreasing to some extent the wear of the piston in the cylinder. The piston should be considerably longer than its length of stroke. The piston-rod D passes through a sleeve in the cylinder-cover I, which should be long enough to steady it and act as a guide, and is limited in its upward motion by the collar *d*. E is a conical exhaust-valve, seating upward against the bottom of the piston G. F is the steam-valve, also conical, and seating upward, containing within itself the tail of the exhaust-valve E, such an amount of motion being permitted between the two that the steam-valve F will be raised to its seat and the exhaust-valve E be opened as the piston approaches the upper end of its stroke. Exhaust-passages M *m* are formed in the piston G, which communicate with the holes *m'* in the side of

the cylinder by means of annular grooves turned in the side of the piston, the openings *m'* being of such a number and so disposed as to insure a constant communication with the passage M. The thimble H forms an annular space around the cylinder, from which the steam escapes through the passage O. If the piston is closely fitted, it will wear a long time with very little leakage, and what there may be will be caught in the annular grooves in the side of the piston, and passed at once through the exhaust-passages *m'*, thus preventing any leakage around the piston-rod D. It is advisable to use a packing of a single ring at the lower part of the piston, not so much to avoid leakage as to sustain the piston at the upper end of its stroke by the elasticity of the ring, until it is brought to the bottom of the cylinder by the return swing of the bell.

The bell being set in motion, the crank B drives the piston to the bottom of the cylinder, closing the exhaust-valve and forcing open the steam-valve, admitting steam to the cylinder from the space S. As the piston is driven upward the exhaust-valve is carried with it, and as the piston approaches the end of its stroke the steam-valve is also raised to its seat, after which the exhaust-valve is opened. As the pressure is relieved the exhaust-valve drops, leaving the passage M entirely clear during the return stroke, which is made by the momentum of the bell on its return.

The arrangement of valves shown is not essential, as the exhaust-valve may be placed in a cavity in the body of the cylinder opening into the exhaust-passage, and both the steam and exhaust valves be closed by the direct impulse of the steam, the openings *m'* being made low enough in the cylinder to allow the piston to pass them at the upper end of the stroke; or, by using a piston in the form of an inverted cup, the steam and exhaust may be worked through openings in the side of the piston and cylinder, the expansion of the steam doing the work. The disadvantage of the first of these plans is, that the

valves are closed so violently that they soon wear out; of the second, the difficulty of getting rid of water of condensation.

Having thus fully described my device, I claim as my invention—

1. The combination of the cylinder A, piston G, piston-rod D, slotted rod C, and crank B, when constructed and operated substantially as described.

2. The combination of the valves E and F, both seating upward, with the piston G and passages M *m m'*, for the purpose of admitting steam to and exhausting it from under the piston G, substantially as described.

GEORGE B. SNOW.

Witnesses:

JAMES Q. BRADT,
JOHN E. ROBIE, Jr.