

(No Model.)

4 Sheets—Sheet 1.

E. LAWSON.
STEAM BELL RINGER.

No. 302,917.

Patented Aug. 5, 1884.

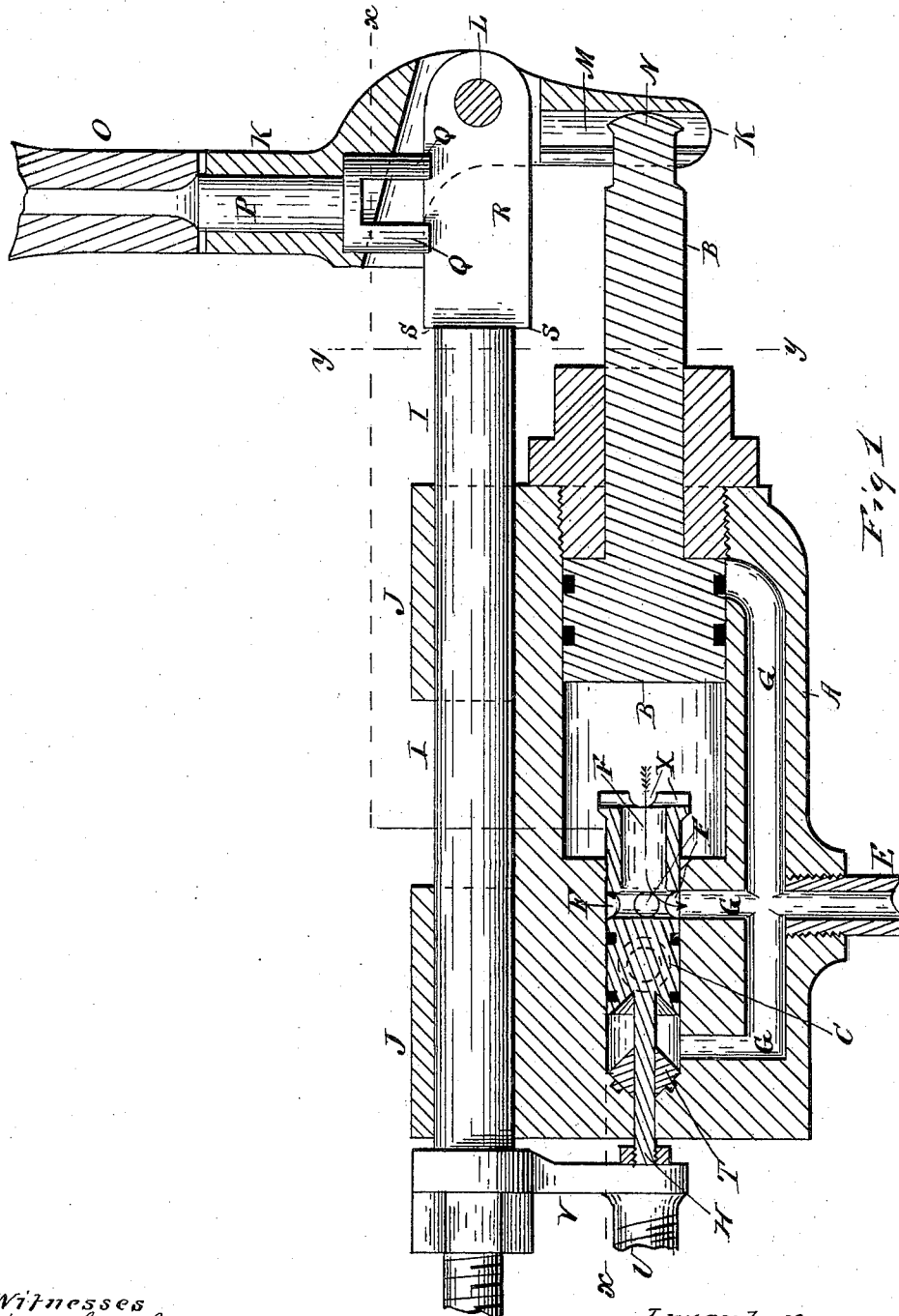


Fig. 1

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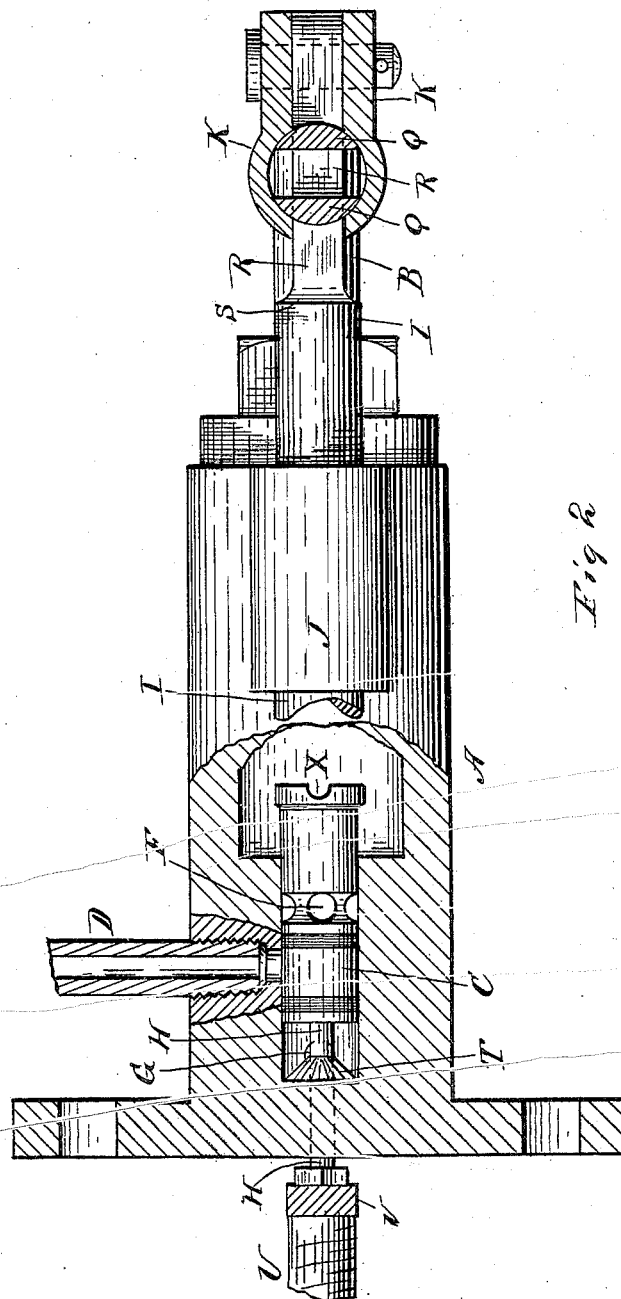


Fig 2

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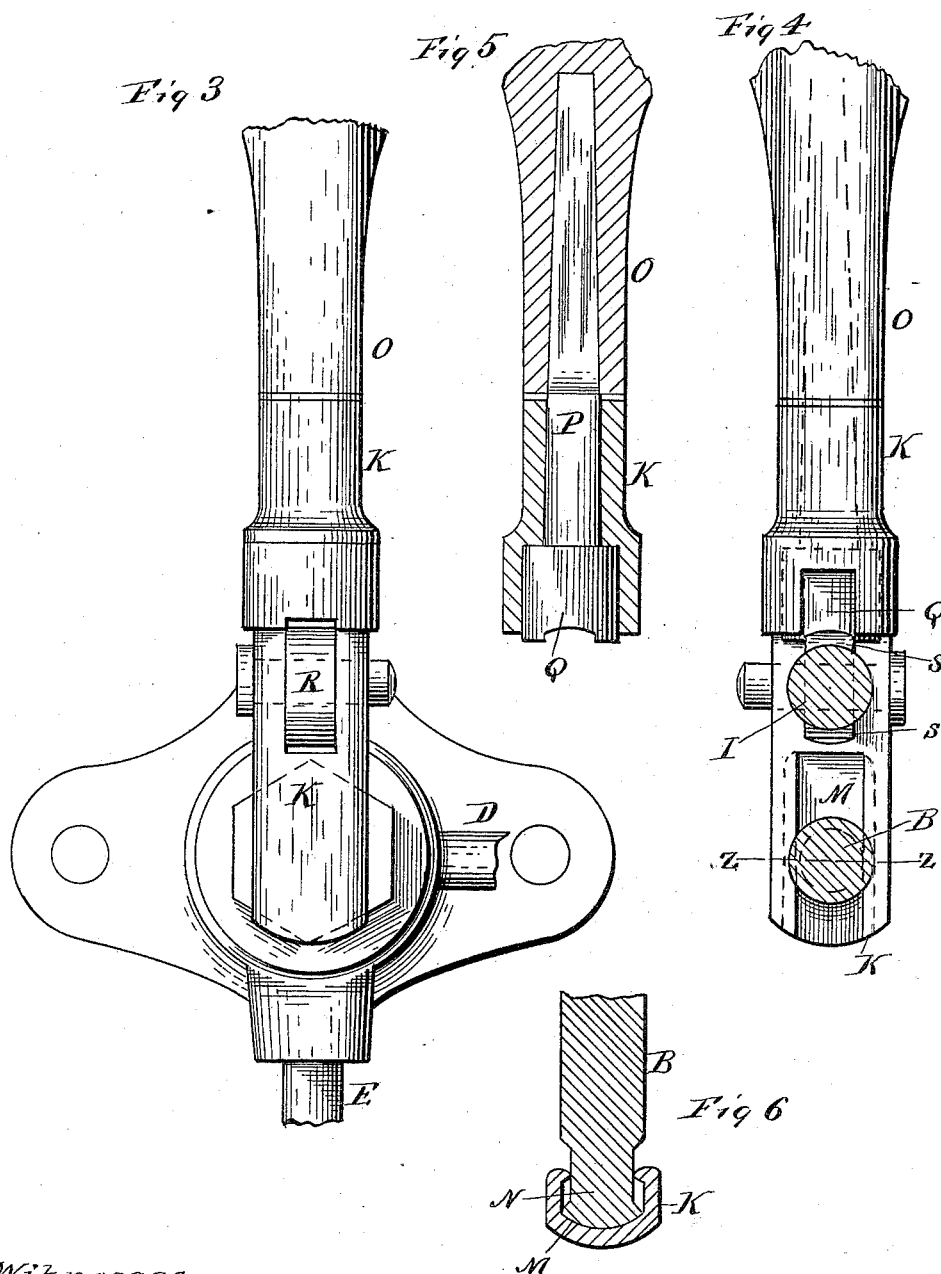
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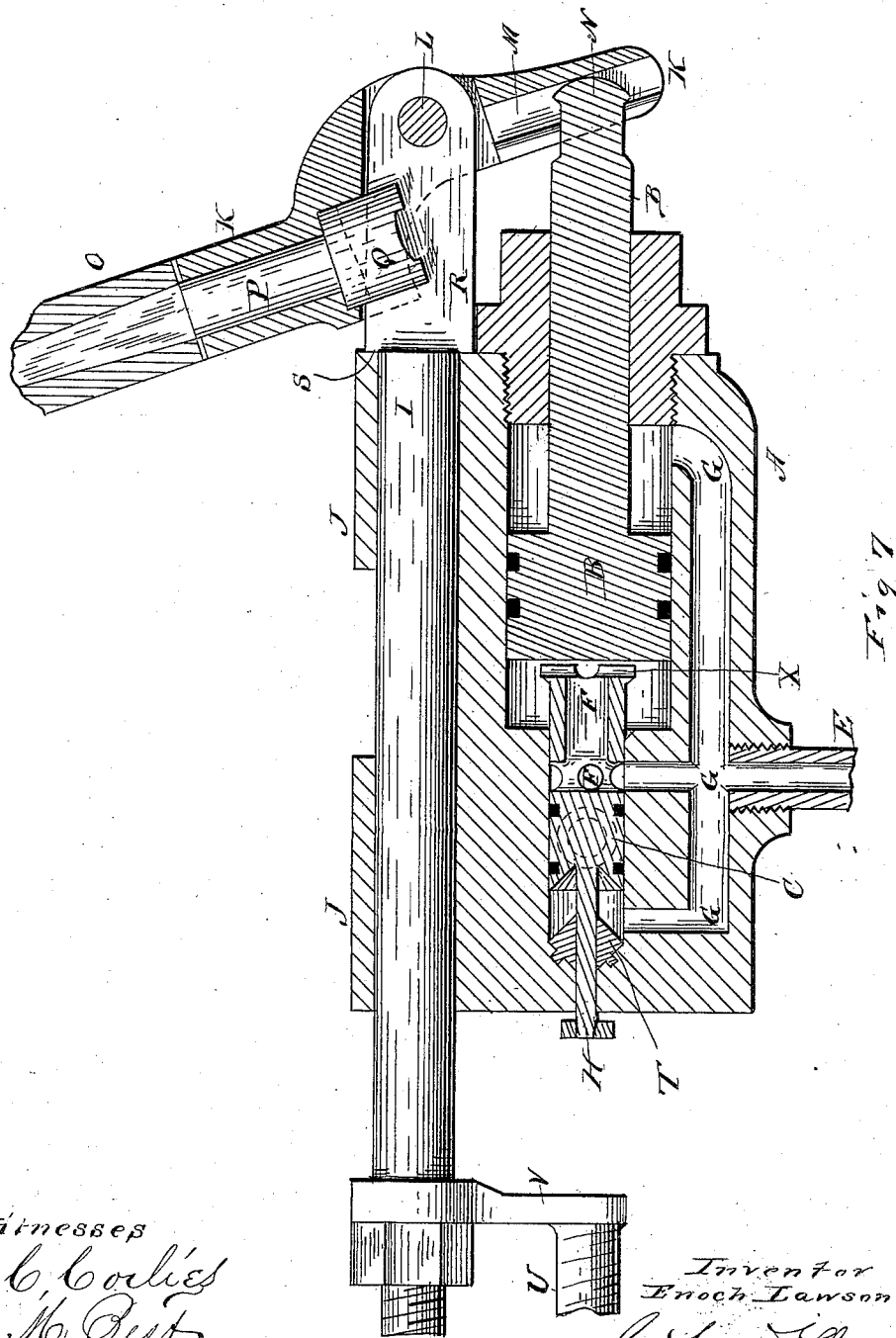
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UNITED STATES PATENT OFFICE.

ENOCH LAWSON, OF GRAND CROSSING, ILLINOIS.

STEAM BELL-RINGER.

SPECIFICATION forming part of Letters Patent No. 302,917, dated August 5, 1884.

Application filed July 26, 1883. (No model.)

To all whom it may concern:

Be it known that I, ENOCH LAWSON, a citizen of the United States, formerly of San Francisco, California, now residing in Grand Crossing, county of Cook, and State of Illinois, have invented an Improved Steam Bell-Ringer, which is fully described in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a central section of my improved steam bell-ringer; Fig. 2, a side elevation, with one part made in section. Fig. 3 shows an end view of the same with a portion of the handle cut away. Fig. 4 shows one side of the handle, or a sectional view of the machine, taken at the line *y y*, Fig. 1. Fig. 5 is a longitudinal section of a portion of the handle. Fig. 6 is a sectional view taken at the line *z z*, Fig. 4; and Fig. 7 is a vertical sectional view with the handle thrown in a position to shut off steam.

My invention relates to devices for mechanically ringing bells on locomotive-engines by steam.

My invention consists in certain novel constructions and mechanisms, hereinafter fully explained and described, being the construction shown in Fig. 4 of my Letters Patent No. 276,185, dated April 24, 1883, and in which I reserved the right to make a separate application for Letters Patent with improvements which I have made therein, and attachments which I have made thereto, all as hereinafter fully described.

In the accompanying drawings, A is a cylinder. B is a piston; C, a valve; D, an inlet steam-port; E, an outlet or exhaust steam-port.

F are ports in the valve C, and G are steam-passages in the cylinder A, leading to the exhaust-port E.

H is a valve-stem extending from the valve C, through the end of the cylinder A, by means of which the valve is actuated in one direction, as hereinafter described.

I is a vibrating rod, with bearings J J on one side of the cylinder.

K is a handle pivoted to one end of the vibrating rod I at L, and projects by the end of the vibrating rod, having in its projecting end a slot or groove, M, which receives the head N of the piston B. The head N so fits into the

groove M that the piston or plunger B is caused to move with the projecting end of the handle K. The handle K has a revolving portion, O, which is firmly secured to the central piece, P, of the handle, which is forked at one end, as clearly shown at Q, Fig. 1. When the revolving portion O of the handle is turned into the position shown in Fig. 1, the forked end Q of the center piece, P, strikes against the flattened end R of the vibrating rod I, and holds the handle relative to the rod and the plunger B in the position shown in Fig. 1 of the drawings. When the portion O of the handle is turned one-quarter around, the fork Q straddles the flattened portion R of the vibrating rod, as shown in Fig. 7, and allows the handle and piston or plunger B to assume the position shown in Fig. 7, relative to the vibrating rod I. The vibrating rod I has a shoulder, S.

T is a Babbitt-metal block placed in the bottom of the valve-chamber to receive the stroke of the valve and relieve it of shock and liability to breakage.

U is the attachment to the bell-cord or bell, which is substantially the same as that shown in my patent before referred to, and is connected to the vibrating rod I by means of the arm V.

X represents grooves in the top of the valve, leading to the central port, F, for the steam to escape when the piston or plunger B rests upon the end of the valve.

The operation of my steam bell-ringer is as follows: When the ports F in the valve are opposite the inlet steam-port D in the cylinder, the steam passes directly up through the ports F in contact with the piston or plunger B, causing it to make a stroke, carrying with it the vibrating rod I. This swings the bell up through the means of the connecting devices with the bell, and the arm V strikes the valve-stem H, and moves the valve C in its chamber till one of the ports F in the valve is opposite one branch of the port G in the cylinder which leads to the exhaust-port E. When this position of the valve is reached, the steam which has actuated the piston or plunger B is immediately allowed to escape, and the weight of the bell pulls the sliding rod I back again, and with it the plunger B, and when the plunger strikes the valve C it is carried back into its chamber till one of the

ports F comes opposite the inlet steam-port D. The moment the two ports meet, the steam, rushing in, throws the valve entirely back in its chamber against the Babbitt metal T, entirely opening the inlet steam-port. The steam then rushes into the cylinder A and throws out the piston B again, as above described. One of the ports G opens into the valve-chamber a short distance from the Babbitt metal T, so that when the valve passes this port there is a small quantity of air retained to form a cushion to assist the Babbitt metal in preventing a shock. The surface of the Babbitt metal against which the valve strikes is conically shaped, making a thin edge around the stem H of the valve, so that the valve causes it to fit tightly around the stem and make it comparatively steam-tight without packing. When the piston is carried to the position shown in Fig. 1, and the valve and one of the ports F are brought opposite one of the ports G, so that the steam can exhaust, the weight of the bell pulls the piston B back again till it strikes the valve C, the remaining steam passing into the valve C through the passage X, between the piston and the end of the valve, to the exhaust. Then the piston moves the valve in its chamber till one of the ports F is carried opposite the inlet steam-port D, and the operation above described is repeated. Thus the bell continues to ring. When it is desired to stop the bell, the operator takes hold of that portion of the handle which I have marked O and turns it one quarter around, so that the fork Q will straddle the flattened part R of the vibrating rod I and carry the handle into the position shown in Fig. 7. It will be observed that this changes the position of the projecting end of the handle, so that when the vibrating rod I makes its return-stroke, caused by the weight of the bell, the shoulder S of said rod will strike the cylinder A, as shown in Fig. 7, just before the piston B strikes the end of the valve to slide it back to the inlet steam-port, as above described, leaving the valve in the position shown in Fig. 7. While the handle remains in that position the vibrating rod I can vibrate back and forth, but not sufficiently far to cause the piston B to carry the valve C into position to receive steam from the inlet-port. This leaves the apparatus, so that the bell can be rung by hand, by a cord or other connections, and the connecting-rods connecting the bell with the vibrating rod I will not let on the steam. When it is desired to use the steam again, the operator throws the handle into the position shown in Fig. 1, turns the part O one-quarter around, and the forked portion rests against the edge of the thin part R of the vibrating rod I, so that the projecting portion of the handle will carry the piston B against the valve C and move it to receive the steam, as above described. By connecting the connecting-rod that leads to the bell to the arm V, directly opposite from where the piston B is connected with the projecting end of the handle in the groove M, I

obviate any side twist or pressure that I would obtain by connecting the connecting-rod directly to the end of the vibrating rod I.

By this improvement in my steam bell-ringer I am able to ring the bell by steam and use the steam only to swing the bell in one direction and utilize the weight of the bell to return the piston and steam-valve into position while the steam is exhausting; and by means of the handle and the devices shown and described for connecting it with the piston, I am enabled to ring the bell by hand and not put in operation the use of steam for that purpose, leaving all the parts connected ready for use, so that by a simple movement of a lever or handle the operator can use steam at will.

Having thus fully described the construction and operation of my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a steam bell-ringer, the cylinder A, provided with steam-ports, in combination with the piston B, valve C, the valve-stem H, projecting through the cylinder-head, the arm V, connected to the projecting end of the valve-stem, and the bell-connection U, substantially as and for the purpose described.

2. The valve C, valve-stem H, and Babbitt metal T at one end of the valve-chamber, substantially as specified and shown.

3. The valve C, Babbitt metal T at one end of the valve-chamber, and port G, opening into the valve-chamber a short distance from the Babbitt metal, substantially as and for the purposes described.

4. The valve C, provided with ports F, and grooves or passages X, and the piston B, to admit of the steam escaping through the hollow valve, as specified and shown.

5. In a steam bell-ringer, the combination of the vibrating rod I and handle K, and piston B, connected together, so that the projecting end of the handle and the piston move together, substantially as specified.

6. The handle V, the vibrating rod I, provided with a shoulder, the piston B, and a mechanism that will lock and unlock the handle K, substantially in the manner above described, for the purpose of enabling the operator to regulate the stroke of the piston in the cylinder and control the use of steam, as specified and shown.

7. The combination of the vibrating rod I, the handle K, and the turning portion O and P, provided with suitable mechanisms for locking the handle, substantially as specified and shown.

8. The vibrating rod I, the projecting arm V, provided with a bell-attachment, the projecting handle, and piston B, the bell-attachment being directly opposite the piston, to obviate side pressure on the vibrating rod, substantially as specified and shown.

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