(No Model.)

G. J. GOLLMAR.

MECHANICAL BELL RINGER.

No. 449,904. Patented Apr. 7, 1891.

Fig. 1.

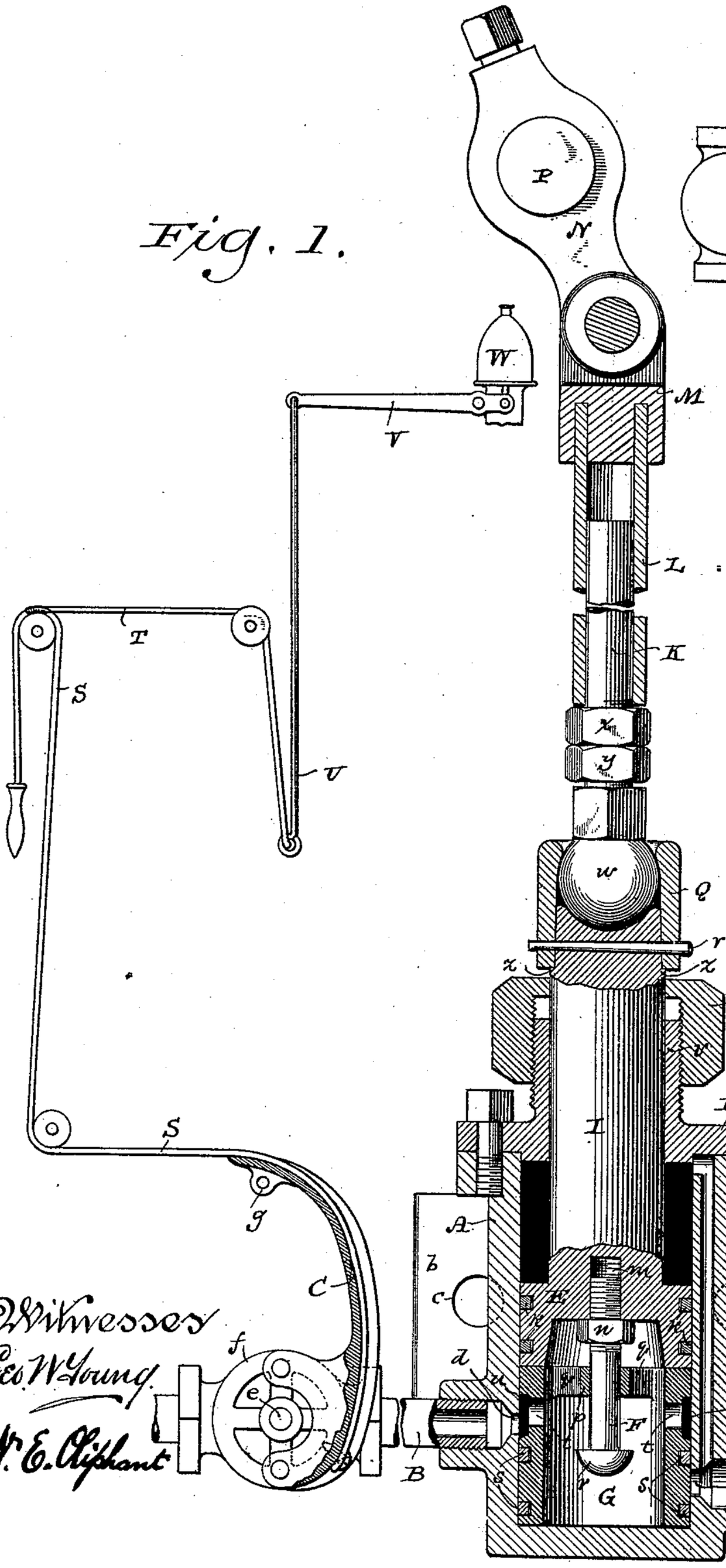


Fig. 3.

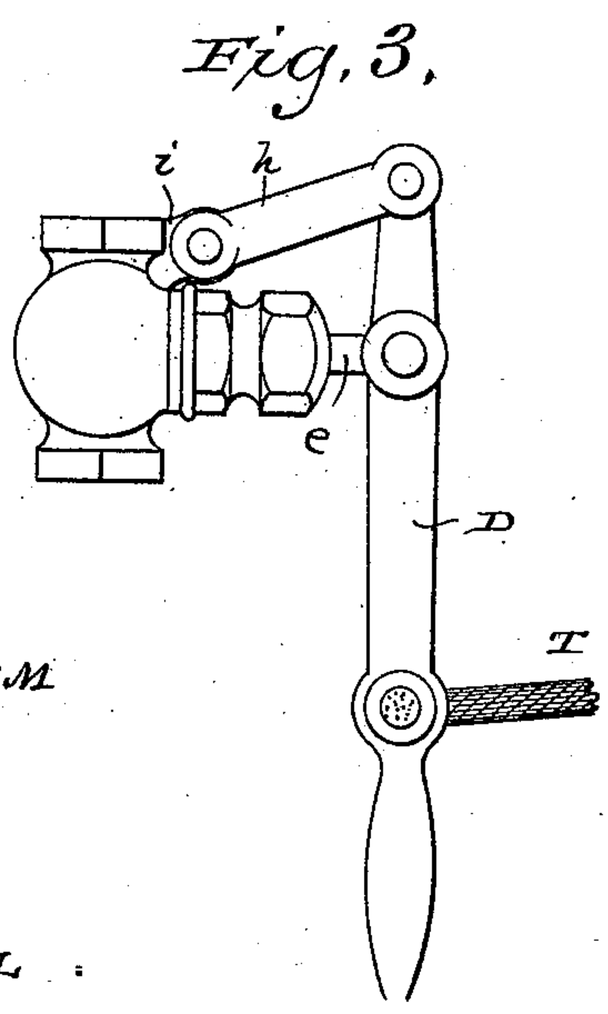


Fig. 2.

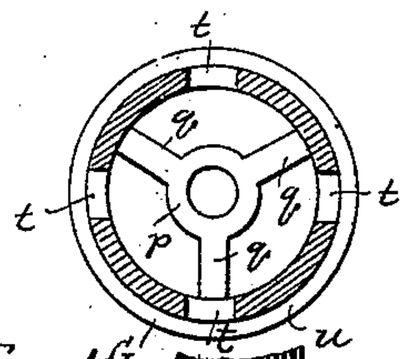
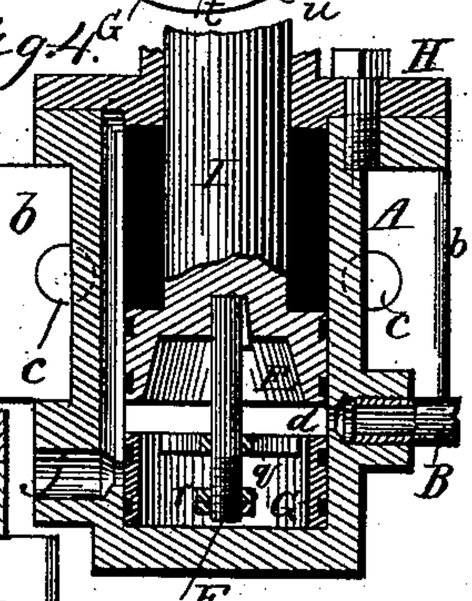


Fig. 4.



Witnesses
Geo. W. Young.
M. E. Oliphant

Inventor
George J. Gollmar
By H. G. Underwood
Attorneys

UNITED STATES PATENT OFFICE.

GEORGE J. GOLLMAR, OF BARABOO, WISCONSIN.

MECHANICAL BELL-RINGER.

SPECIFICATION forming part of Letters Patent No. 449,904, dated April 7, 1891.

Application filed May 17, 1890. Serial No. 352,202. (No model.)

To all whom it may concern:

Be it known that I, GEORGE J. GOLLMAR, of Baraboo, in the county of Sauk, and in the State of Wisconsin, have invented certain new and useful Improvements in Mechanical Bell-Ringers; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to mechanical bell-ringers such as are especially designed for use in connection with locomotives; and it consists in certain peculiarities of construction and combination of parts to be hereinafter described with reference to the accompanying drawings, and subsequently claimed.

In the drawings, Figure 1 represents a sectional view with certain of the parts in elevation and illustrates a mechanical bell-ringer constructed according to my invention; Fig. 2, a horizontal section of a slide-valve that constitutes part of the bell-ringer, the section being taken so as to show the valve as inverse to its normal position; Fig. 3, a detail view of a throttle-valve-actuating mechanism applicable to my device, but which differs somewhat in mere details of construction from the mechanism for the same purpose illustrated in Fig. 1; and Fig. 4, a view similar to Fig. 1, illustrating another form of my invention.

Referring by letter to the drawings, A represents a single-action steam-cylinder, preferably provided upon its exterior with lateral wings *b*, having holes *c* for screws or bolts, in order that said cylinder may be readily attached to any suitable support. A live-steam pipe B connects with the inlet-port *d* of the cylinder and the flow of steam or air under pressure to said cylinder is controlled by means of a throttle-valve, the latter being of any suitable construction.

In Fig. 1 the stem *e* of the throttle-valve is shown as provided with a hand-wheel *f*, and bolted or otherwise secured to this hand-wheel is a curved and grooved arm C, having its outer end formed with an eye *g*, the purpose of this construction being hereinafter described.

In Fig. 3 the throttle-valve stem *e* is shown as connected to a hand-lever D, and a link *h* connects the upper end of this lever with a lug *i* on the exterior of the chamber that incloses said valve. Either form of valve-controlling mechanism shown may be employed; but I do not wish to be understood as confining myself to any particular mechanism for the same purpose.

At a point below the inlet-port *d* the cylinder A is provided with an exhaust-port *j*, and communicating with the latter port is a relief-passage in communication with the opposite end of said cylinder.

Fitted in the cylinder A is a piston E, preferably provided with expansion-rings *k*, and in order to save metal and lighten the piston the latter is preferably recessed from the under side, as shown in Fig. 1.

Extending up from the center of the recessed portion of the piston E is a tapped opening *m* for engagement with a vertically-adjustable stem F, and a set-nut *n* on this stem holds the same in its adjusted position with relation to said piston. The stem F fits loosely in a guide *p*, that is connected by arms *q* with a hollow valve G, and the lower or free end of said stem is preferably upset to form a stop *r* in opposition to the guide; but it is obvious that the stop may be other than what is shown and described—as, for instance, a nut or collar.

The hollow valve G is shown as provided with expansion-rings *s*, a series of ports *t*, and an outer annular groove *u*, the latter forming a steam-space in communication with all of the ports and normally in register with the inlet-port *d* of the cylinder.

The cylinder A is provided with a detachable upper head H, having a bearing *v* for the shank or rod I of the piston E, and screw-threaded on the bearing is sleeve J, said bearing and sleeve forming a stuffing-box for the piston-rod.

The upper end of the piston-rod is made concave to form a seat for a ball *w* on the lower end of a rod K, that engages a sleeve L, the latter being provided with a head M, that is pivotally connected to the crank N on a bell-yoke P, and in order to shorten or lengthen the connection between the bell-crank and piston-rod the engagement of the rod K and sleeve L is regulated by a nut *x* on the latter rod, this nut being held in its adjusted position by a check-nut *y*, as shown in Fig. 1.

Surrounding the ball *w* on the rod K is a

thimble Q, that rests on a shoulder *z* adjacent to the upper end of the piston-rod I and projects beyond the latter, the construction just described forming a ball-and-socket joint that prevents any cramping of the connection between said rods I K, while at the same time I prefer to connect said thimble and piston-rod by means of a transverse pin R, although this latter connection is not absolutely essential.

Assuming the parts thus far described to be in the position shown in Fig. 1, and the throttle-valve actuated to admit steam or air under pressure to the cylinder A, the fluid will find its way through the ports *t* of the valve G and exert pressure against the piston E, and the upward movement of the latter through its connections with the crank N will swing the bell. The upward movement of the piston will also bring the stop *r* on the stem F against the guide *p*, that forms part of the valve G, and the latter will be drawn up to close the inlet-port *d* and open the exhaust-port *j* of the cylinder, after which the return-swing of the bell, due to its own gravity, will cause the several parts to assume their first position, and the operation, as above described, will be repeated so long as the throttle-valve is open. By having the stem F adjustable with relation to the piston E the steam or air under pressure is cut off from the cylinder at longer or shorter intervals in proportion to the adjustment, and this is one of the most important features of my invention.

As shown in Fig. 1, a flexible device S is secured to the grooved portion of the arm C of the throttle-valve, and said flexible device connects with a cord T, that in turn connects with a rod U, coupled to the lever V of a steam-whistle W, whereby when the whistle-cord is actuated said throttle-valve will be opened to automatically start the bell-ringer, and the ringing of the bell will continue until steam or air under pressure is cut off by hand.

The connection between the whistle-actuating mechanism and the throttle-valve of the bell-ringer is a very desirable one, as the rules concerning the running of locomotives frequently require the blowing of the whistle to be followed by the ringing of the bell. In Fig. 3 I show the whistle-cord T connected to the hand-lever D of the throttle-valve, and when the latter is provided with the arm C, as shown in Fig. 1, the flexible device S may be connected to the eye *g* on said arm, it being understood that I do not limit myself to any particular form of connection between said throttle-valve and whistle.

While the whistle and bell may be actuated by a single impulse, it is obvious that either may be operated independent of the other.

I am aware that a single-action cylinder having its inlet and exhaust ports controlled by a slide-valve having a loose connection with a piston is not broadly new in mechanical bell-ringers, and I am also aware that an adjustable sleeve-and-rod connection between the piston and bell-crank is not broadly new. Consequently my claims are limited to certain details of construction by which the said class of inventions is improved and rendered more efficient.

While I have more particularly shown and described the stem F as adjustably connected to the piston E, this connection may be a permanent one, and in such an instance I would make the stop *r* adjustable on said stem, as shown in Fig. 4, whereby the steam or air under pressure could be cut off from the cylinder at longer or shorter intervals, as above specified. I also desire it understood that the ports *t* and annular groove *u*, in connection with the valve G, may be dispensed with and said valve made short enough to permit the piston E to come down to the inlet-port *d*, as is also shown in Fig. 4, whereby the steam or air under pressure admitted to the cylinder A will find its way between said short valve and piston to actuate the device, as above described.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a mechanical bell-ringer, the combination of a single-action cylinder, a piston arranged to operate in the cylinder, a stem connected to the piston, a valve provided with a guide for the stem, a stop on said stem in opposition to the guide, and suitable means for regulating the normal distance between said guide and stop, substantially as set forth.

2. In a mechanical bell-ringer, the combination of a single-action cylinder, a piston arranged to operate in the cylinder, a stem connected to the piston and adjustable as to length beyond said piston, a valve having a guide loose on the stem, and a stop on the latter in opposition to the guide, substantially as set forth.

3. In a mechanical bell-ringer, the combination of a single-action cylinder, a piston arranged to operate in the cylinder and provided with a tapped opening, a stem having a screw-threaded end engaging said opening, a set-nut arranged on the stem in opposition to the piston, and a valve loose on the stem, substantially as set forth.

4. The combination, with a steam-actuated mechanical bell-ringer having a throttle-valve, of a lever connected to the stem of said valve, a whistle mechanism, and a flexible device connecting the valve-lever and whistle mechanism, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand at Baraboo, in the county of Sauk and State of Wisconsin, in the presence of two witnesses.

GEORGE J. GOLLMAR.

Witnesses:
J. B. DONOVAN,
D. MOORE.