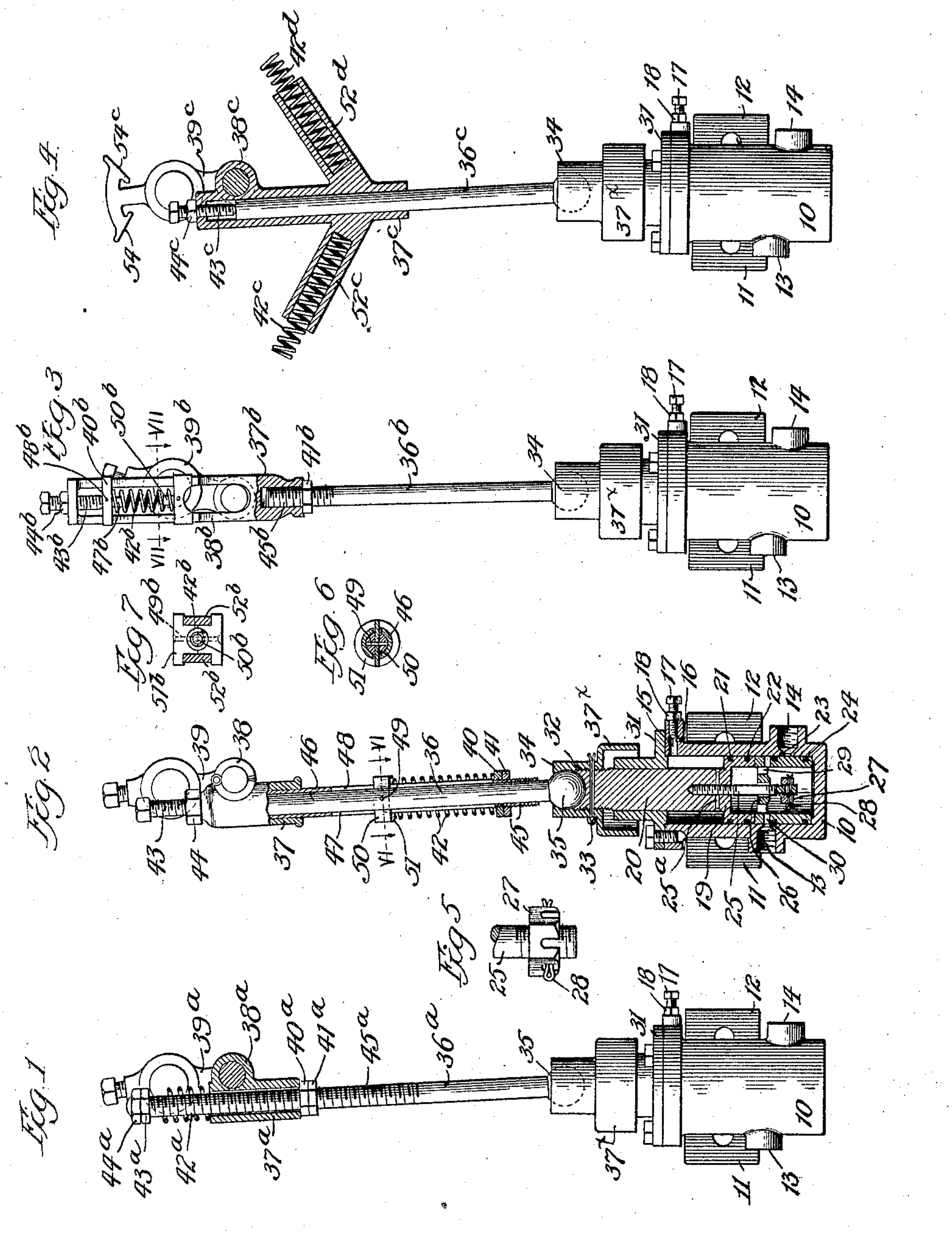
H. VISSERING.

BELL RINGING MECHANISM.

APPLICATION FILED JUNE 18, 1909.

1,036,939. Patented Aug. 27, 1912.



WITNESSES

Donald C. Williams

Geo. C. Davison

INVENTOR

Harry Vissering

by Synnestvedt & Carpenter

Attorneys

UNITED STATES PATENT OFFICE.

HARRY VISSERING, OF CHICAGO, ILLINOIS, ASSIGNOR TO HARRY VISSERING AND COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

BELL-RINGING MECHANISM.

1,036,939. Specification of Letters Patent. Patented Aug. 27, 1912.

Application filed June 18, 1909. Serial No. 502,966.

To all whom it may concern:

Be it known that I, HARRY VISSERING, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bell-Ringing Mechanism, of which the following is a specification.

My invention relates to bell ringing mechanism and especially to mechanically operated devices of this class and more particularly to such devices as are operated by air, steam or other fluid pressure and is in some of its actuating features of a general type of construction known in the art, of which one embodiment is illustrated in Letters Patent of the United States No. 449,904 to Gollmar.

The principal objects of my invention are the provision of a bell ringing mechanism of the class described which is peculiarly adapted for service on railway locomotives, to provide a bell ringer with an improved form of cut off device; to provide a construction of bell ringer which will prevent the entry of cinders, dirt and other foreign substances to the actuating mechanism; to provide a bell ringer which may be more economically constructed, maintained and operated, more readily assembled and repaired, less apt to get out of order, and which will be more economical in the consumption of fluid pressure than those known to me; to provide an improved form of mechanically operated bell ringer which has means for restraining the bell from turning over, and this without undue strain either upon the actuating mechanism or upon the bell crank, together with additional objects which will hereinafter appear.

The foregoing as well as certain other advantages I attain by means of the constructions illustrated in the accompanying drawing, wherein—

Figure 1 is an elevation partly in section of a bell ringer embodying my improvements; Fig. 2 is a sectional elevation of another exemplification of my invention wherein the actuating mechanism is illustrated in greater detail; Figs. 3 and 4 are further exemplifications of my invention; Fig. 5 is an enlarged view of a detail; Fig. 6 is a section taken on the line VI—VI of Fig. 2, and Fig. 7 is a section taken on the line VII—VII of Fig. 3.

Referring especially to Figs. 1 and 2 of the drawing, it will be observed that in carrying out my invention I provide a cylinder 10, preferably made of cast steel, which may be attached to the bell frame or supported upon the boiler by means of a bracket to which the wings 11 and 12 may be bolted or otherwise suitably connected. The cylinder is provided at 13 with a suitable connection to a source of fluid pressure, preferably air from a reservoir or steam from the boiler, and at 14 with an exhaust port, admission of the pressure being controlled by a conveniently mounted valve (not shown). At the end opposite the exhaust port 14 the casing is provided with a passage 15 having a relief port 16 and an adjustable plug 17 with a set nut 18, whereby the size of the opening may be readily varied conformably with the pressure by which the device is operated. For actuating the bell, I provide in the cylinder 10 a piston head 19, carried by a piston rod 20, the head being preferably provided with expansion rings 21 and 22.

It will be apparent that to provide for a greater convenience and range of and a finer degree of adjustability of the cut-off than is possible with either a screw connection and jam nut alone, or a movable nut alone, the piston head and rod are threaded to receive a stem 25 which may be pinned in position as indicated at 25^a, and at the opposite end of the stem is carried a hollow valve 26, which preferably has expansion rings 23 and 24, the lower end of the stem 25 carrying (see Fig. 5) a castellated nut 27 screw threaded thereupon and adapted to be held in adjusted position by a cotter pin 28. The valve 26 is provided with a plurality of communicating ports 29 and 30, the ports 30 being also in communication with the inlet 13 at the beginning of the movement of the piston.

On viewing Figs. 1 and 4 it may be seen that the cylinder 10 is provided with a head 31 forming a bearing for the piston rod 20 and that at the upper end of the piston rod I have provided a sleeve 32 screw threaded thereupon and held in adjusted position by the cotter pin 33, the upper end 34 forming a socket for the ball 35 formed on the end of the connecting rod 36 for actuating the bell, and the lower end 37 of the sleeve being extended outward and downward, its rim being below the top of the cylinder head 31,

in order to form a sheild to guard the bearing against the entrance of cinders, dirt or other foreign matter between the piston rod and the cylinder head, which tends to cut these parts and render the valve less efficient and economical in operation. It is also to be noted that the actuating mechanism above described is the same for all embodiments of my invention illustrated in the accompanying drawing.

Referring now more particularly to Fig. 1 it will be observed that the connecting rod 36^a carries a crank box 37^a having a head 38^a formed to provide a bearing for a crank 39^a by which the bell is operated. It will be apparent that in order to provide for varying the length of the connecting rod between the piston and the bell crank, the box 37^a is adjustable reciprocally on the rod 36^a by means of the check and lock nuts 40^a, 41^a, engaging the thread 45^a.

In order to provide a non-rigid engagement between the bell crank 39^a and the piston rod 36^a and thereby not only permit the bell to travel freely to the extreme limit of its allowed movement without simultaneously carrying the piston with it or causing strain or shock of the several parts, but also to prevent the bell from turning over and over, and thereby not operating as efficiently as when it is required to rock back and forth and strike regularly instead of allowed to rotate with the constant irregular clatter or jangle, I have mounted a spring 42^a between the upper end 38^a of the box and the check and lock nuts 43^a and 44^a whereby the compression of the spring may be regulated and thence the movement of the bell restrained, its stoppage however being cushioned and all shock avoided.

Referring now more particularly to Figs. 2 and 6, in the embodiment of my invention here shown it will be seen that I mount the box 37^x upon a sleeve 46 slotted intermediate its ends as indicated at 47 and 48, and adapted for reciprocal movement upon the rod 36. The box 37 is adjustable vertically relatively to the rod 36 by means of a governor bolt 43 which has threaded engagement with the interior of the box and is provided with a lock nut 44 and is adapted to provide a stop for the end of the rod 36, the head 38 and the link 39 being of the same form as illustrated in Fig. 1. The sleeve 46 is prevented from disengagement with the rod 36 by means of a key 50 passing through a slot in the rod 36 and through the slots 47 and 48 in the sleeve 46 and fixed in position in the rod 36 by a rivet 49.

For the purpose above described in connection with Fig. 1 I have mounted a spring 42 between the check and lock nuts 40 and 41 having threaded engagement with the lower extremity of the sleeve as indicated at 45 at one end, and at the opposite end a collar 51 which the key 50 also serves to restrain.

Referring now more particularly to Figs. 3 and 7 in the embodiment of my invention here disclosed, I provide the box 37^b with a screw threaded engagement with the rod 36^b as indicated at 45^b in order to permit of adjustment, a jam nut 41^b holding the parts in adjusted position. The crank 39^b has a slotted bearing 38^b in the said box, and a spring 42^b is carried in the housing 52^b and prevented from displacement by the removable stud 50^b pinned into the movable abutment 51^b carried in the housing, as indicated at 49^b, the tension of the spring being adjustable by means of the governor bolt 43^b screw threaded in the top of the box 37^b and pressing upon an opposing movable abutment 40^b having pinned therein as indicated at 48^b a stud 47^b, the bolt 43^b being fixed in position by means of the jam nut 44^b.

Referring now more particularly to Fig. 4, in the exemplification of my invention here illustrated, the box 37^c has reciprocating engagement with the rod 36^c, but its reciprocation thereupon is limited by the governor bolt 43^c screw threaded into the top of the box and provided with a lock nut 44^c. The crank 39^c is journaled in the bearing 38^c similarly to the constructions shown in Figs. 1 and 2, but at the upper part of the crank is provided a pair of oppositely disposed buffers 54 and 54^c adapted to contact against the springs 42^c and 42^d which are respectively carried in the housings formed in the outstanding arms 52^c and 52^d carried upon the box 37^c.

The operation if my invention is as follows: Pressure being admitted through the connection 13 and ports 30 and 29 and thereby permitted to expand under the piston 19, the piston, the piston rod 20 and the connecting rod 36 are caused to rise, simultaneously moving the parts carried by the rod as above described and forcing the bell to swing. As the piston is forced upward, and swings the bell, the stem 25 arises with the piston and as the nut 27 strikes the valve 26 the said valve rises closing the inlet 13, and upon further traverse of the valve the exhaust port 14 is uncovered. The bell having received an impulse continues its motion after the piston 19 has reached the upper limit of its stroke, the crank box 37 sliding outward on the connecting rod 36, and by virtue of the slidable connection between the rod 36 and the box 37 the crank 39 does not force the piston to follow it but compresses the spring 42, until the limit of its compressibility is reached or the impetus which the crank has received is expended, when the bell will fall. The force to which the bell is subjected being expended the bell descends

carrying the crank box with it and the piston is thereby forced downward, contacting directly with the valve 26, whereby the exhaust port 14 is closed and the inlet port 13 reopened.

It will be observed that by means of the plug 17 the size of the relief port 16 may be varied and the upward movement of the piston cushioned as desired, and that by virtue of the fact that during part of the movement of the valve 26 downward, the exhaust port 14 is closed, the piston will be cushioned by the pressure then remaining in the cylinder. It is further to be observed that by virtue of the threaded connection between the stem 25 and piston head 19 and rod 20, as well as the provision of the nut 27 on the end of the stem, a bell ringing mechanism of my improved construction can be precisely adjusted to cut off the pressure after the piston has moved any desired distance, and according to the pressure available and proportionately to the travel required. It is further to be observed that by means of all of the several embodiments of my invention shown in the accompanying drawing as above described, though the crank box and consequently the bell is allowed to move freely without causing the piston to follow, the bell is prevented by an adjustable and resilient resistance from making a complete revolution.

It is thought that the operation of all of these embodiments will be fully understood by those who are skilled in the art to which my invention relates without further particularized description, the fluid pressure actuating mechanism being the same for all such embodiments and operating as above described.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is the following:

1. The combination with bell ringing mechanism, of a cylinder having inlet and outlet ports on opposite sides thereof near one end, and an outlet passage at the opposite end, said last named passage having a relief port, an adjustable plug therefor, a piston in said cylinder, a piston rod carrying said piston, a hollow valve within said cylinder, a stem held in said rod and carrying said valve, said valve provided with a plurality of communicating ports one of which is in communication with the inlet to said cylinder at the beginning of the movement of the piston, and a connecting rod having ball and socket connection with the piston rod.

2. The combination with bell ringing mechanism, of a cylinder having inlet and outlet ports on opposite sides thereof near one end, and an outlet passage at the opposite end, said last named passage having a relief port, an adjustable plug therefor, a piston in said cylinder, a piston rod carrying said piston, a hollow valve within said cylinder, a stem held in said rod and carrying said valve, said valve provided with a plurality of communicating ports one of which is in communication with the inlet to said cylinder at the beginning of the movement of the piston, and a connecting rod having ball and socket connection with the piston rod, said ball and socket connection embodying a box adjustable on the piston rod and having a hood-like cap loosely receiving and telescoping the adjacent end of the cylinder.

In testimony whereof I have hereunto signed my name in the presence of the two subscribed witnesses.

HARRY VISSERING.

Witnesses:
PAUL CARPENTER,
DONALD C. WILLIAMS.