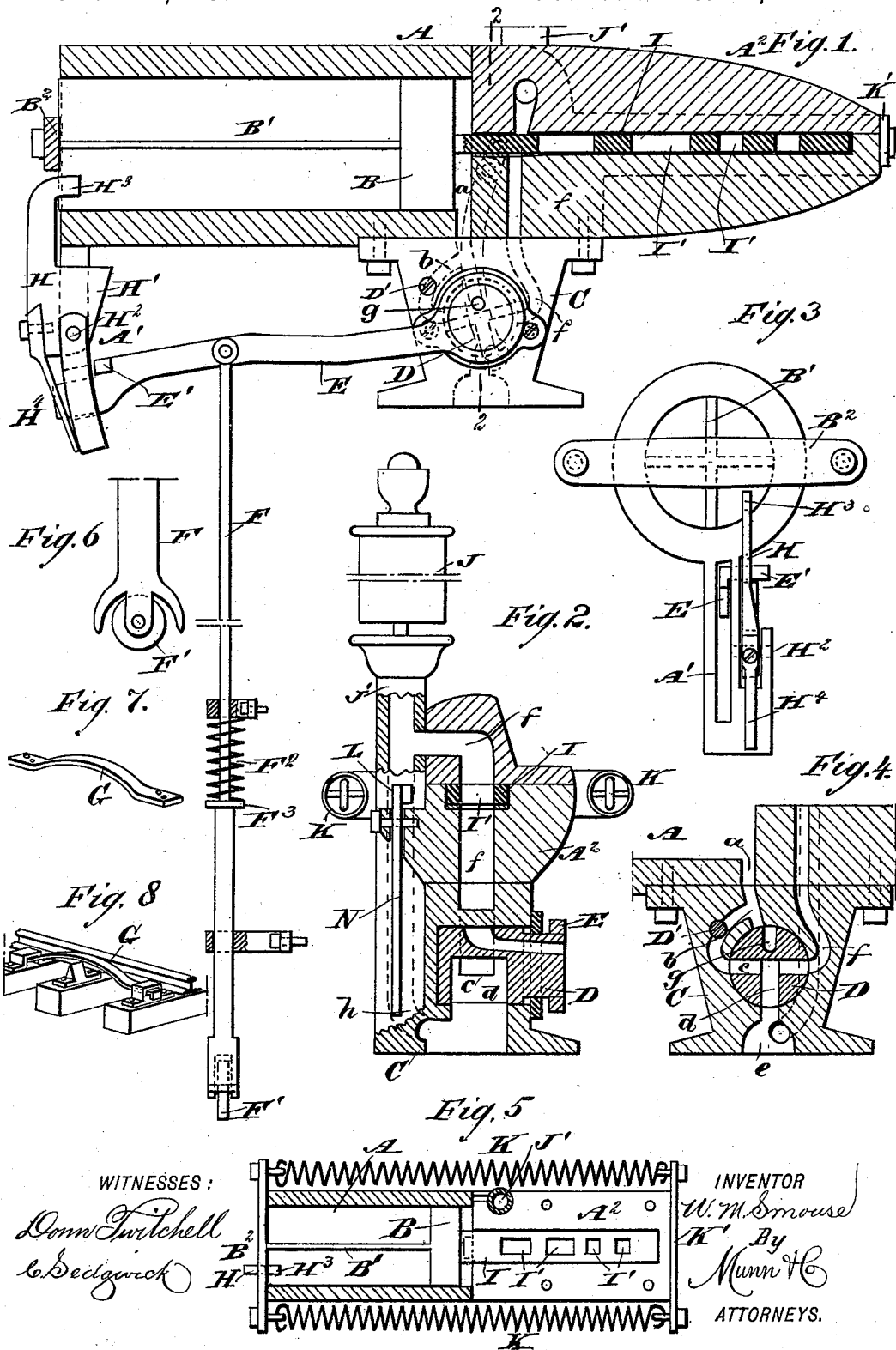


(No Model.)

W. M. SMOUSE.
SIGNAL WHISTLE.

No. 488,845.

Patented Dec. 27, 1892.



UNITED STATES PATENT OFFICE.

WILLIAM M. SMOUSE, OF GETTYSBURG, SOUTH DAKOTA.

SIGNAL-WHISTLE.

SPECIFICATION forming part of Letters Patent No. 488,845, dated December 27, 1892.

Application filed April 8, 1892. Serial No. 428,362. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. SMOUSE, of Gettysburg, in the county of Potter and State of South Dakota, have invented a new and Improved Signal-Whistle, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved signal whistle which is simple and durable in construction, very effective in operation, and more especially designed for use on locomotives to automatically sound a signal on the locomotive's approach to highway-crossings or other places.

The invention consists of a valve adapted to connect the steam supply with a cylinder containing a piston, and with a port leading to the whistle proper and crossing an apertured plate moving with the said piston.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement; Fig. 2 is a transverse section of the same on the line 2—2 of Fig. 1; Fig. 3 is an end elevation of the improvement; Fig. 4 is a sectional side elevation of the valve; Fig. 5 is a reduced sectional plan view of the cylinder piston and apertured plate; Fig. 6 is a side elevation of the lower end of the rod for operating the valve; Fig. 7 is a perspective view of the plate for raising the valve rod; and Fig. 8 is a perspective view of the same, as applied.

The improved signal whistle is provided with a cylinder A, open at its outer end, and containing a piston B fitted to slide in the said cylinder. From the inner end of the piston A leads a port *a*, connecting with a port *b* formed in the valve body C, containing the valve plug D, formed with a diametrical port *c* adapted to connect at one end with the said port *b* formed in the valve casing, and leading into the port *a* connected with the cylinder. From this diametrical port *c* extends, at right angles, a radial port *d* leading

to an opening *e* connected by pipe or other means with the steam supply, so that steam passing into the said opening *e* can pass through the ports *d* and *c* in the valve plug to the port *b*, and from the latter to the port *a* into the inner end of the cylinder A. The port *c* also connects with a port *f* formed in the valve casing C and extending through a casing A², which is an extension of the cylinder A, and forms the head for the same. The valve plug D is further provided with an exhaust port *g* leading to the outside and adapted to connect with a branch of the port *b*, so that the exhaust steam from the cylinder A can pass through the port *a* and port *b* into the said port *g*, and to the outer air.

When the plug D is in the position shown in Fig. 4, the exhaust *g* is disconnected from the port *b*, but the port *c* is connected with the ports *b* and *f*. When the valve plug is turned into the position shown in Fig. 1, then the exhaust port *g* connects with the port *b*, while the other port *c* is cut off from the ports *b* and *f*, and also the port *d* is cut off from the opening *e*.

In order to regulate the amount of steam passing from the supply through the port *b* into the port *a* and the cylinder A, a screw D' is provided, screwing in the casing C into the port *b*, so as to increase or diminish the opening for the steam to pass in the said port. The outer end of the valve plug D is provided with the lever E, pivotally connected with a downwardly extending rod F mounted to slide vertically in suitable bearings attached to the locomotive at a convenient place.

On the lower end of the rod F is arranged a friction roller F' extending to one side of the track rail and adapted to travel up on a plate G preferably curved and made of spring metal and placed alongside the rail in suitable keepers, as is plainly illustrated in Figs. 7 and 8. This plate G is placed near the highway crossing or other place, so that the locomotive, in passing over the track at that point, causes the wheel F' to travel up the said plate G so as to raise the rod F, thereby causing an upward swinging of the lever E and a shifting of the valve plug D from the position shown in Fig. 1 into the position

shown in Fig. 4 to admit steam to the cylinder A.

On the rod F is coiled a spring F² resting at one end on one of the bearings for the said rod and pressing, with its other end on a collar F³ held on the said rod, to return the latter to its normal lowermost position, as hereinafter more fully described.

The free end of the lever E is guided in a slot formed in a bracket A' secured to or formed on the outer end of the cylinder A, as is plainly shown in Figs. 1 and 3. Near the free end of the lever E is secured a transversely extending arm E' adapted to engage on the upward movement of the said lever a wedge shaped lug H' formed on an arm H pivoted at H² to the bracket A'. The upper end of the arm H is formed with a lug H³ extending into the open end of the cylinder A, so that the piston B, when nearing the outer end of its stroke, presses on the said lug H³ to impart a swinging motion to the arm H. The latter is held in the normal position shown in Fig. 1 by a spring H⁴ resting with its free end against the lower end of the bracket A'.

Now, when the roller F' passes over the plate G so as to raise the rod F and impart an upward swinging motion to the lever E, then the cross arm E' of the said lever engages the inner edge of the lug H' thus pressing the arm H outward against the tension of the spring H⁴, until finally the cross arm E' snaps over the top of the lug H', the arm H then being returned to a normal position by the action of the spring H⁴. Thus when the lever E is moved into an uppermost position, to shift the valve plug D to the position illustrated in Fig. 4, then the said lever E is held in this position by the lug H' of the arm H until the latter is acted on by the piston B, when the latter moves into its outermost position.

On the inner face of the piston B is attached a plate I mounted to slide in a recess formed in the casing A², the said plate I being provided with a series of apertures I', preferably made of different sizes, as shown in Figs. 1 and 5. The plate I crosses the port f so that the steam passing up the port f passes through the several apertures I' as the plate I is moved to the left at the time the piston B is on its outward stroke. It is understood that the apertures I' of the plate I are in line with the port f. The upper end of the latter connects with a pipe J' leading to the whistle J, of any approved construction, (see Fig. 2.)

The piston B is formed on its front face with a web B', preferably made in cross section in the shape of a cross, having its bearing on the inner surface of the cylinder A. On the outer end of the web B' is secured a transversely extending arm B² connected at its ends with springs K extending longitudinally alongside the cylinder A and the casing A² to connect at their rear ends with the transversely extending plate K' attached to

the outer end of the casing A², see Figs. 1 and 5. The springs K serve to regulate the speed of the outward movement of the piston B when steam passes through the port a into the cylinder A.

From the opening e in the valve casing C leads a port h, opening into the pipe J' below the port f, as will be readily understood by reference to Figs. 2 and 4. In this port h is arranged a valve L connected with a lever N pivoted on the casing A² and under the control of the engineer, so as to enable the latter to open the said valve L to admit steam directly to the whistle J whenever he sees fit to do so.

The operation is as follows:—When the locomotive nears the highway crossing or other place, in the neighborhood of which is placed a plate G, then the roller F', in traveling up the plate G, acts on the valve plug D as before described, the lever E passing into an uppermost position and being locked therein by the arm H. The steam now passes through the opening e into the port d and from the latter through the port c into and through the port b to the port a, to finally pass into the cylinder A, whereupon the steam exerts a pressure on the piston B and forces the same on its outward stroke. The outward movement of the piston B carries the plate I along, so that the apertures I' are brought successively in register with the port f through which also passes steam, as the lower end of the said port is connected with the port c in the plug D. Thus, while the plate I is drawn across the port f steam can pass into the upper end of the port at the time an opening I' registers with the said port. The steam then passes into the pipe J' and to the whistle J to produce the sound. As the several openings are brought successively in register with the port f, the sounds are of a duration which varies with the size of the opening I' and the speed with which the plate I is drawn across the port f. When the several sounds have been produced, the piston B nears the end of its outermost stroke, and then presses on the lug H³ of the arm H, whereby the lever E is released, and the spring F² forces the said lever and rod F, as well as the plug D, back into the normal position shown in Fig. 1. In doing so the supply of steam is cut off from the cylinder A and from the port f, and at the same time the port b acts with the exhaust port g so that the steam can escape from the said cylinder to the outer air. The piston B and the plate I are returned to their normal position by the action of the springs K which were expanded on the outward movement of the said piston. The device is then again in position to be again acted on by the next plate G alongside the track.

As before mentioned, the engineer can sound the whistle J any time he desires, by simply operating the lever N to open the valve L so as to permit the steam to pass from the open-

ing *e* through the port *h* to the pipe *J'* of the whistle *J*.

It will be seen that a device of the construction described, is very simple and very effective, and the sounds or blasts can be varied for any desired signal. It will further be seen that the device requires no attention whatever on the part of the engineer, is completely automatic, and always returns to an almost normal position after the signal has been given.

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

1. A signal whistle, comprising a valve connected with a steam supply, a cylinder adapted to be connected by the said valve with the steam supply, a piston mounted to slide in the said cylinder, and an apertured plate carried by the said piston and moving across a steam port leading to the whistle, substantially as shown and described.

2. A signal whistle, provided with a piston, and an apertured plate secured thereon and adapted to be drawn across a steam port connected with a steam supply and the whistle, substantially as shown and described.

3. In a signal whistle, the combination with a cylinder provided with a piston carrying an apertured plate adapted to be drawn across the steam port leading to the steam whistle, of a valve for controlling the inlet to the said cylinder and the said port leading to the whistle, and a rod adapted to shift the valve plug of the said valve to connect and disconnect the steam supply to and with the said cylinder and port, substantially as shown and described.

4. In a signal whistle, the combination with a cylinder provided with a piston carrying an apertured plate adapted to be drawn across the steam port leading to the steam whistle, of a valve for controlling the inlet to the said cylinder and the said port leading to the whistle, a rod adapted to shift the valve plug of the said valve to connect and disconnect the steam supply to and with the said cylinder and port, and a mechanism, substantially as described, for locking the valve plug lever in position at the time the connection is made between the steam supply for the cylinder and the said port, substantially as shown and described.

5. In a signal whistle, the combination with a cylinder provided with a piston carrying an apertured plate adapted to be drawn across the steam port leading to the steam whistle, of a valve for controlling the inlet to the said cylinder and the said port leading to the whistle, a rod adapted to shift the valve plug of the said valve to connect and disconnect the steam supply to and with the said cylinder and port, and a spring-pressed arm adapted

to be acted on by the said piston and arranged to lock the lever of the valve plug in position, substantially as shown and described.

6. In a signal whistle, the combination with a cylinder and a recessed casing extending from the said cylinder, of a piston fitted to slide in the said cylinder, an apertured plate connected with the said piston and fitted to slide in the said casing across a port in the latter, and a valve connected with the steam supply and arranged to connect the said port in the casing and the said cylinder with the steam supply, substantially as shown and described.

7. In a signal whistle, the combination with a cylinder and a recessed casing extending from the said cylinder, of a piston fitted to slide in the said cylinder, an apertured plate connected with the said piston and fitted to slide in the said casing across a port in the latter, a valve connected with the steam supply and arranged to connect the said port in the casing and the said cylinder with the steam supply, a spring-pressed rod connected with the lever of the valve plug of the said valve, and a fixed plate arranged alongside the track and adapted to engage the said rod, substantially as shown and described.

8. In a signal whistle, the combination with a cylinder and a recessed casing extending from the said cylinder, of a piston fitted to slide in the said cylinder, an apertured plate connected with the said piston and fitted to slide in the said casing across a port in the latter, a valve connected with the steam supply and arranged to connect the said port in the casing and the said cylinder with the steam supply, and springs connected with the said piston to regulate the speed of the latter and to insure its return movement, substantially as shown and described.

9. In a signal whistle, the combination with a cylinder and a recessed casing extending from the said cylinder, of a piston fitted to slide in the said cylinder, an apertured plate connected with the said piston and fitted to slide in the said casing across a port in the latter, a valve connected with the steam supply and arranged to connect the said port in the casing and the said cylinder with the steam supply, a rod connected with the valve plug lever and adapted to be actuated by a plate alongside the track, and a spring-pressed arm adapted to be acted on by the said piston and arranged to lock the valve plug lever in position, substantially as shown and described.

WILLIAM M. SMOUSE.

Witnesses:

WILLIAM SCHOOF,
MARTIN A. SMOUSE.