

Sept. 21, 1926.

1,600,527

A. I. WOODRING

SIGNALING APPARATUS

Filed Oct. 27, 1924

2 Sheets-Sheet 1

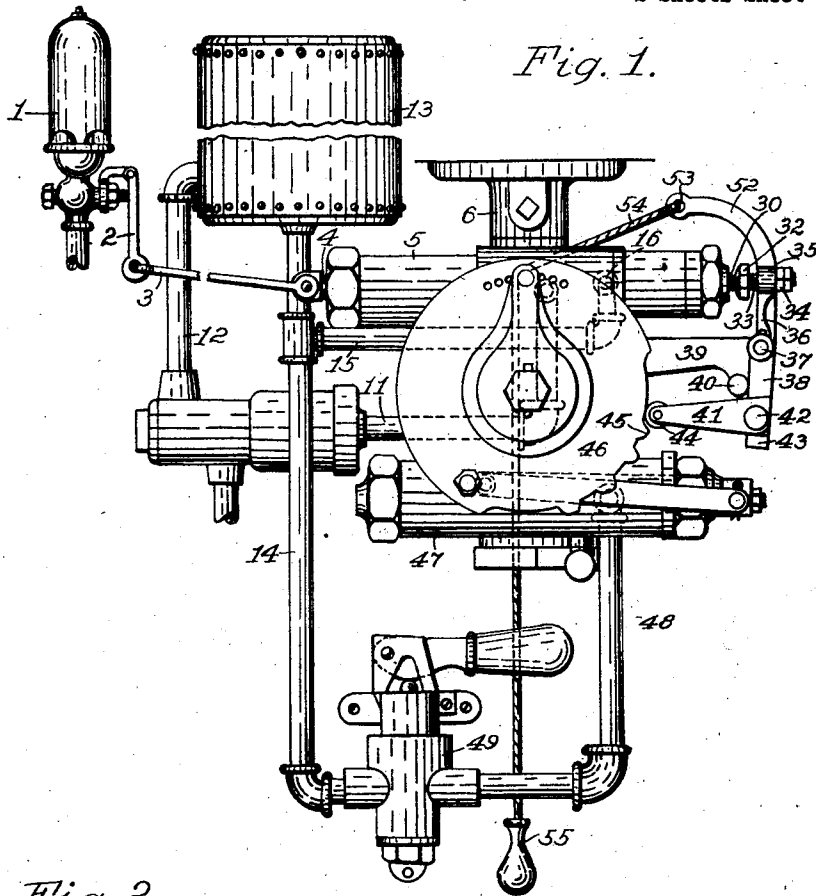
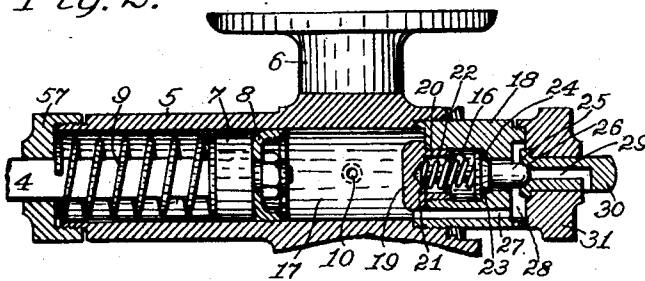


Fig. 2.



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2 Sheets-Sheet 2

Fig. 3.

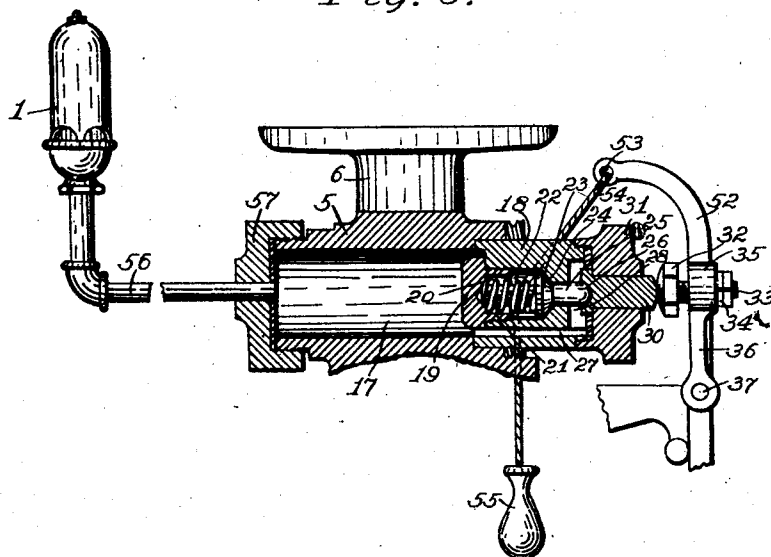
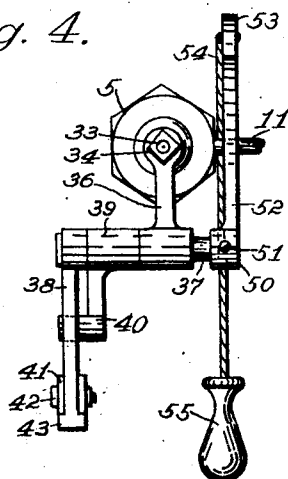


Fig. 4.



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UNITED STATES PATENT OFFICE.

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SIGNALING APPARATUS.

Application filed October 27, 1924. Serial No. 746,097.

My invention relates to improvements in signaling apparatus, and the object of my improvement is to use and incorporate with the mechanism of a signaling device independently manually actuable means for operating the signaling device without otherwise actuating the entrained complete mechanism therefor where the complete entrained mechanism aside from said means is actuable only by included devices for producing predetermined numbers and durations of signals.

This object I have accomplished by the means and mechanisms which are herein-after described and claimed, and which are illustrated in the accompanying drawings, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the said drawings, in which similar numerals denote similar parts throughout the several views, Fig. 1 is a front elevation of my combination apparatus for actuating a signaling device. Fig. 2 is an enlarged detail of the relay cylinder with its included mechanism, parts of both being in longitudinal central section and parts in elevation or broken away. Fig. 3 is a like enlarged detail view of a modification of said cylinder and its included mechanism, also partly in section and in elevation, and Fig. 4 is an end elevation showing the combined valve tripping devices for the other mechanism included in said cylinder.

The invention disclosed in this application includes novel devices as added to and operatively combined with the other devices which are previously disclosed in my pending applications for Patents Serial Numbers 721,900 and 721,901, both filed June 23, 1924. I therefore have not included in this application specific detail disclosures and descriptions of the elements of the said previous inventions only as much as appears to be necessary in the explanation of the combination herein as affected by and combined with my new means for permitting also the actuation of the signaling device manually by the operator as desired without at the same time actuating the signaling device

in the predetermined manner as set out in the disclosures heretofore.

The numeral 1 denotes a whistle of the type as used for audible signals on locomotives, or elsewhere, as on electrically-propelled vehicles or even in other applications as on shop or other buildings. Referring first to Figs. 1 and 2, and also to said Fig. 4, the whistle 1 is adapted for connection to a supply of any suitable fluid under pressure, such as steam when on a steam actuated locomotive or vehicle, and in which the whistle has the usual valve to be opened by means of a lever 2.

The numeral 5 denotes a hollow cylinder having its opposite ends closed by the screw-caps 57 and 31, both having apertured seats, the cap 57 having a bearing-seat for a plunger-stem 4, and the cap 31 having a seat for an apertured stem 30.

Upon the stem 4 within and fitting the inner wall of said cylinder is an imperforate plunger 7 and a flexible packing member 8, and a coiled compression-spring 9 is mounted around said stem and engaged between the plunger and the inner wall of said cap 57, tending to normally displace the plunger to the right.

This plunger 7 is forced to the left in order to open the whistle-valve by means of a connecting-rod 3 connected pivotally between the stem 4 and the lever 2, by compressed air or other fluid under pressure admitted to the interior hollow 17 of said cylinder by way of an admission-port 16, which is placed in a hollow plug 18 having a threaded connection with said cylinder, and on which plug the screw-cap 31 is removably mounted. This port opens into a closed chamber 20 between the stop-closure plug 19 fitted in the left-hand end of said plug 18 and a valve-head 23 fitting a valve-seat 24 in the plug 18, the latter having a communication with a chamber 28 between the plug and the cap 31, a by-pass 27 leading through the plug into the hollow 17 of said cylinder.

The bearing aperture in said cap 31 contains a slidable stem 30 whose right-hand end protrudes from the cap outwardly, and whose left-hand end has a fillet as a stop member against the cap. The filleted end of said stem 30 has a valve-seat 26 to seat the

curved end of the valve member 25 which projects centrally to the right from the valve-head 24. The valve-seat 26 communicates by way of a passage 29 with an exhaust-port directed angularly therethrough and normally opening without the cap 31. A coiled compression-spring 22 is mounted around the stem 21 of the valve-head 23 and engaged between said valve-head and the inner wall of the plug 19. A pipe 15 effects communication between the admission-port 16 and a pipe 14 leading to a reservoir 13 containing a fluid under pressure, which may be compressed air. A pipe 11 effects communication between a valve-controlled port 10 in the cylinder 5 to the right of the plugs 18—19 and a valve-chamber which controls the communication between said reservoir 13 and the motor of a bell-signal not shown, this latter being a subject of one of the said previously filed applications for patents.

The mechanism contained in the cylinder 5 may be actuated to operate the whistle-signaling device 1 in the manner and by the means shown in said previous application 721,900. This means is so constructed and arranged as to actuate the whistle with a predetermined number of blasts of predetermined durations and separated by intervals also of predetermined durations.

For the convenience of an engineer, and also to save the considerable extra expense of a separate whistle-operating device by which the engineer may operate the whistle signal independently in producing one or more blasts at will as may be necessary and without at the same time operating the first-mentioned combination device for the said predetermined signals, I have combined with the first-mentioned mechanism other mechanism by which the whistle may be independently operated with ease and certainty by the engineer. The first-mentioned mechanism for operating the signal by predetermined actuations having been fully disclosed in said previously filed applications will not be specifically described herein, but includes a circumferentially-dentated rock-disk 46, having a plurality of detents 45 of the desired number and circumferential breadths and separated by intervals of the predetermined breadths. This disk 46 may be positively rocked in one direction by any desired means, such as mechanism spring-controlled to be relayed by power derived from a fluid under pressure acting on a valve device in a relay-cylinder 47 as shown in said applications, and whose supply is provided by way of a manually operable valve in a valve-chamber 49 having a communicating conduit 48 to the chamber 47 and having another communication 14 with the reservoir 13. The numeral 39 denotes a fixed bracket apertured to receive a rock-shaft 37 (best

shown in said Fig. 4), and the shaft 37 has a depending arm 38 fixed thereon stopped in one direction by a lug 40 on the bracket 39. An arm 41 has forked parts mounted on the lower part of the arm 38 on a pintle 42 and stopped in one direction by means of lugs 43 on said arm 38. In the free end of the arm 41 where bifurcated is rotatably mounted a roller 44 which normally lies in the path of movement of the detents 45 of the disk 46, so that when the disk is rocked downwardly the detents successively push outwardly to the right the roller 44 and the arm 38, but when the disk is reactively returned by a spring connection not shown, the roller 44 rides over the detents without swinging the arm 38 to the right. Also fixedly mounted on the rock-shaft 37 is an upwardly projecting arm 36 having a head 35 provided with an interiorly-threaded aperture alined with the stem 30 and containing an adjustable bolt 33 whose head 32 is normally in contact with the outer end of the said stem 30, secured by nuts 34. The rock-shaft 37 is prolonged rearwardly and carries rigidly a hub 50 secured by a set-screw 51 or other means on which is an upwardly projecting curved arm 52 with a terminal eye 53. One end of a pull-cord 54 is secured in said eye 53 and its other depending end furnished with a handle 55, the cord running suspensively over the conduit 11 which leads into the cylinder 5.

When the disk 46 rocks the arm 38 by means of its spaced detents 45 the arm 36 also rocks to successively push in the stem 30 with the predetermined durations of actuations and intervals, thus pushing the other stems 21—25 to the left and opening communication by way of the passages 28 and 27 between the admission-port 16 and the chamber 17 to thrust the plunger 7 to the left and actuate the whistle signal 1.

When the detents are not thrusting outwardly upon the roller 44, the stem 30 is released from pressure by the arm 36 and moves back to the right to expose to the atmosphere the exhaust passage 29 to exhaust residual fluid under pressure in the chamber 17, so that the spring 9 may react and return the plunger 7 to its first position.

When the engineer desires to manually control the whistle 1 to thus secure one or more independent blasts therefrom as may be necessary, he pulls down the pull-cord 54 which rocks to the left the curved arm 52 and also the rock-shaft 37, thereby rocking the arm 36 to the left to push in the stem 30, and as hereinbefore described actuate the whistle through the medium of the controlling elements in the cylinder 5. When the pull-cord 54 is released, the said contained parts are returned in the above described manner.

It will be seen that my combination ap-

paratus thus includes all the coacting and alternatively operable mechanisms which are required by an engineer in actuating the whistle under all contingencies.

5 When the installation is of the type necessary in actuating the whistle blasts by direct fluid pressure without a valve and plunger connections as shown in my said application Serial No. 721,901, and as shown
10 herein in said Fig. 3, the plunger 7 and stem 4 of Fig. 2 are not used. The whistle 1 has then a single conduit 56 which enters an apertured central seat in the left-hand head 57 of the cylinder 5 to communicate with its
15 chamber 17 direct. The other elements shown in Fig. 2 in the right-hand part of the cylinder 5 are used without change, except that the stem 30 has no aperture or passage therethrough. Then when the stem 30
20 is pushed in by either operating means above described, the stems 21—25 are shifted to pass air from the conduit 11 to the chamber 17 to thus actuate the whistle 1 as desired either way.

Having described my invention, what I 25 claim as new, and desire to secure by Letters Patent, is:—

In combination, a signaling device, a fluid pressure chamber in communication with a source of fluid under pressure, a resiliently 30 controlled valvular device and a resiliently controlled plunger connected to the signaling device both within said chamber, mechanism operative upon said valvular device to actuate it to control said communication 35 with predetermined intermittent actuations, and including a medially pivoted arm whose members respectively coact with said mechanism and with said valvular device in actuating the latter, and an operating element 40 connected to one of said members to move it to operate said valvular device to control said communication independently of the first-mentioned operating mechanism.

In testimony whereof I affix my signature. 45

ALBERTO I. WOODRING.