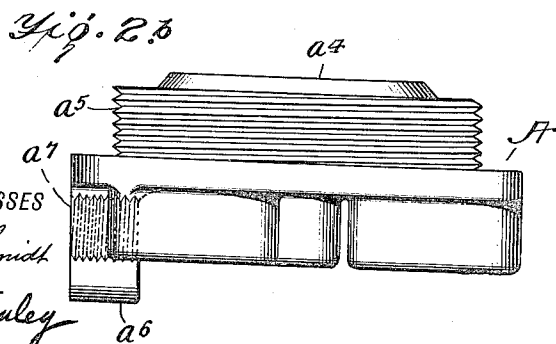
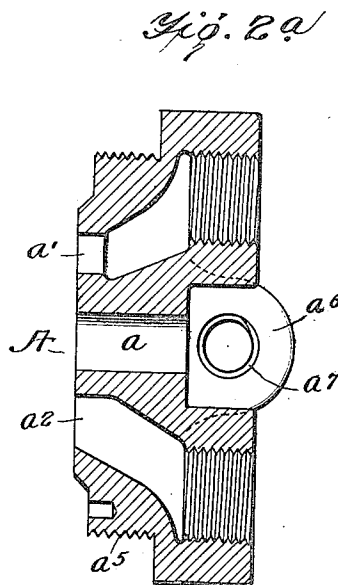
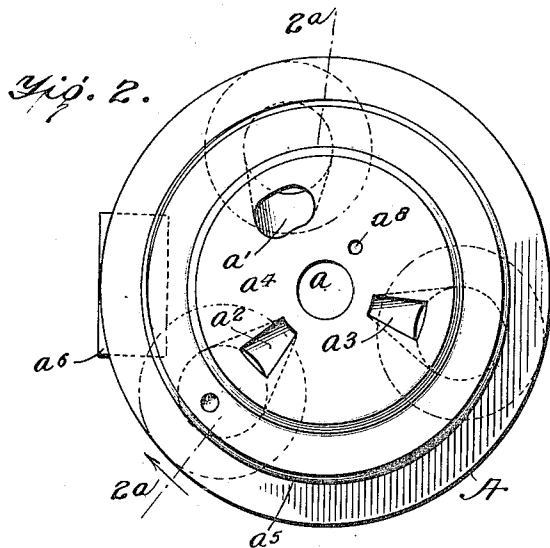
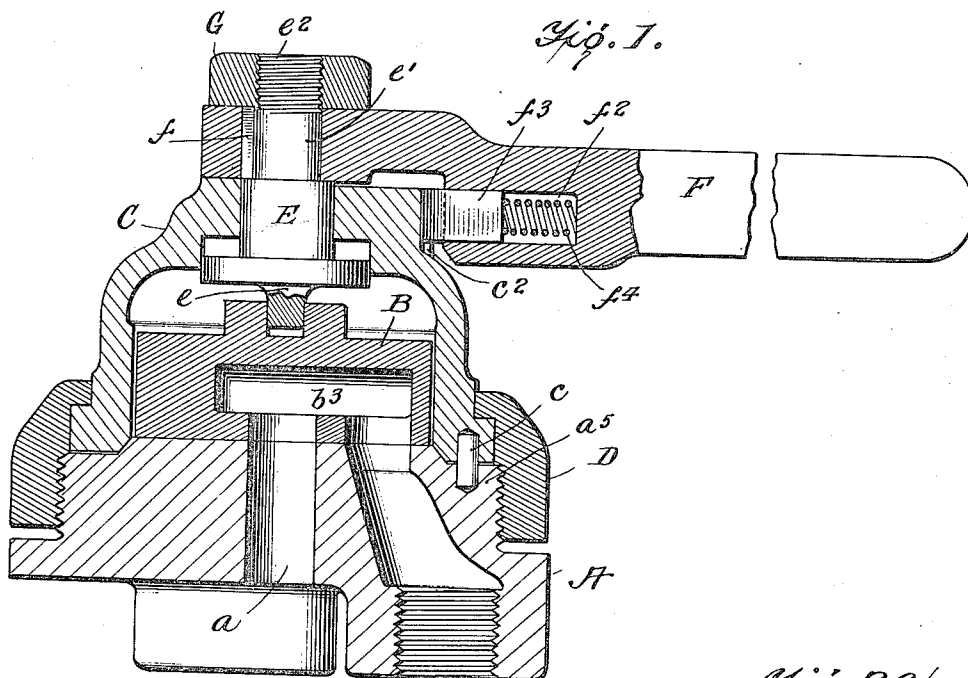


W. C. ARP, F. F. HILDRETH & F. N. RUMBLEY.
 UNIVERSAL CONTROLLING VALVE.
 APPLICATION FILED APR. 14, 1909.

948,571.

Patented Feb. 8, 1910.

2 SHEETS—SHEET 1.



WITNESSES

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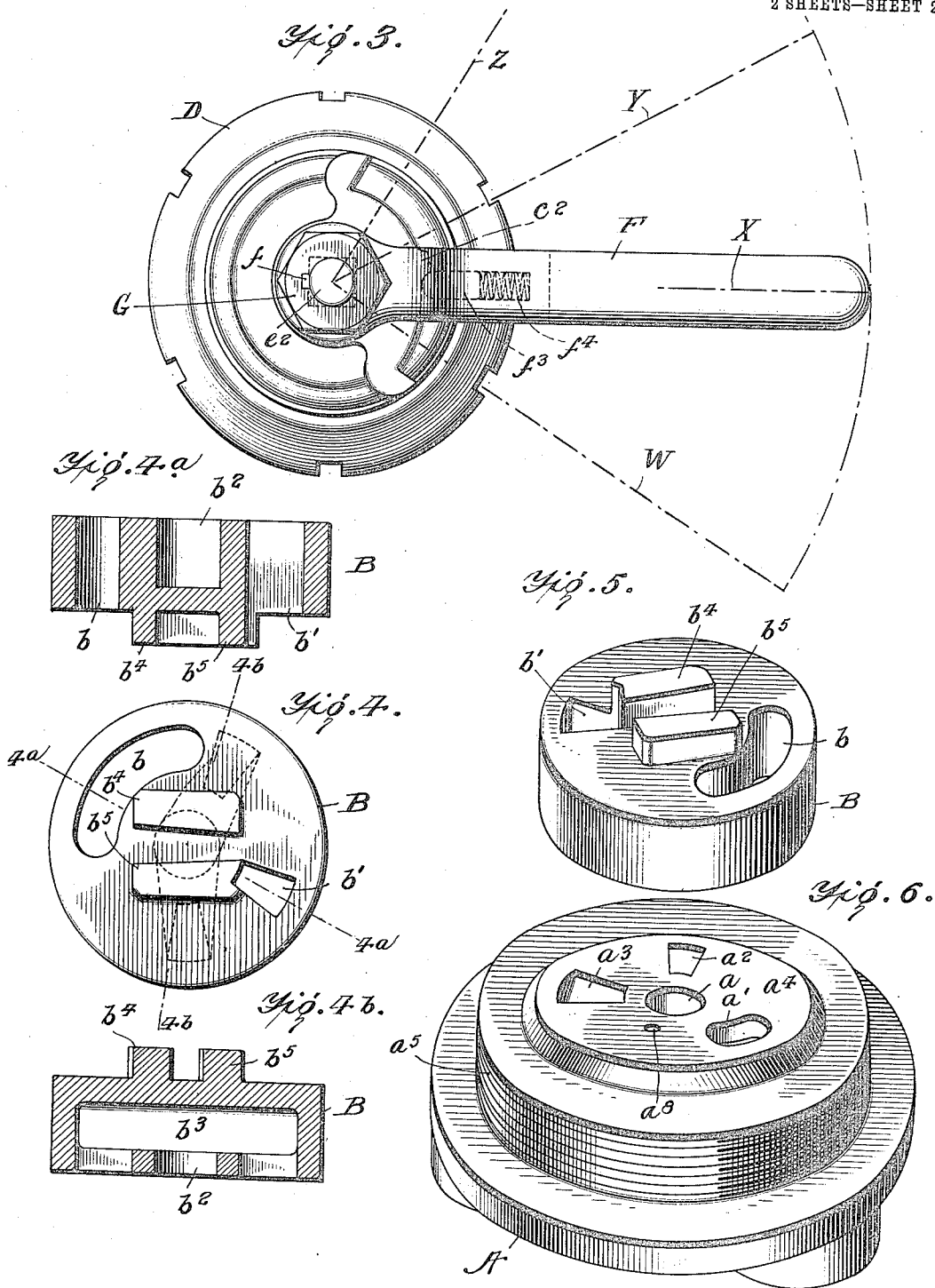
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UNITED STATES PATENT OFFICE.

WILLIAM C. ARP, FRED F. HILDRETH, AND FREDERICK NEWTON RUMBLEY, OF
TERRE HAUTE, INDIANA.

UNIVERSAL CONTROLLING-VALVE.

948,571.

Specification of Letters Patent.

Patented Feb. 8, 1910.

Application filed April 14, 1909. Serial No. 489,802.

To all whom it may concern:

Be it known that we, WILLIAM C. ARP, FRED F. HILDRETH, and FREDERICK N. RUMBLEY, citizens of the United States, and residents of Terre Haute, in the county of Vigo and State of Indiana, have made certain new and useful Improvements in Universal Controlling-Valves, of which the following is a specification.

Our invention relates to valves for controlling the operations of mechanism which are actuated by compressed air, steam or vapors under pressure, and it consists in the combinations, constructions and arrangements hereinafter described and claimed.

An object of our invention is to provide a device, in which, by the simple manipulation of an operating handle, the control of the various pipes and cylinders in an air brake system is effected.

A further object of our invention is to provide a novel form of controlling valve in which all bolts and gaskets are eliminated and which is of simple construction owing to the small number of parts.

A further object of our invention is to provide a controlling valve which can be taken apart readily to clean, oil or make repairs without necessitating any break in the pipe joint or their connections.

A further object of our invention is to provide a controlling valve with relatively large ports, thereby reducing the liability of the ports becoming clogged, thus rendering the mechanism unfit for use until it is cleaned.

Other objects and advantages will appear in the following specification and the novel features of the device will be particularly pointed out in the appended claim.

Our invention is illustrated in the accompanying drawings, in which similar reference characters indicate like parts in the several views, and in which—

Figure 1 is a central vertical section through the device. Fig. 2 is a plan view of the base portion of the controlling valve. Fig. 2^a is a section along the line 2^a—2^a of Fig. 2. Fig. 2^b is a side view of the base portion. Fig. 3 is a plan view of the operating handle and the dome. Fig. 4 is a plan view of the rotary valve. Fig. 4^a is an inverted section through the rotary valve on the line 4^a—4^a of Fig. 4. Fig. 4^b is a section through the rotary valve on the line

4^b—4^b of Fig. 4. Fig. 5 is a perspective view of the rotary valve, and Fig. 6 is a perspective view of the base portion.

In carrying out our invention we provide a base, denoted in general by A, of the general form shown in Figs. 1, 2, 2^a and 2^b. The base portion is provided with a central vertical opening *a* and the three ports *a'*, *a*² and *a*³, as clearly shown in Figs. 2 and 2^a. All three of the ports *a'*, *a*² and *a*³, communicate with threaded openings in the bottom of the base into which pipes (not shown) may be screwed. The upper part *a*⁴ of the base A constitutes a valve seat. Immediately below the valve seat is an enlarged threaded portion *a*⁵, while on one side there is a lug *a*⁶ provided with a threaded opening *a*⁷ for the attachment of a supporting member, see Fig. 2^b.

The rotary valve proper B, is shown in Figs. 4, 4^a, 4^b and 5. It consists of a cylindrical block having the vertical openings *b* and *b'* therethrough of the shape shown in Figs. 4 and 5. On one side of the block there is a vertical channel *b*², which extends part way into the block and communicates with a transverse channel *b*³, see Fig. 4^b. On the opposite side are two projecting lugs *b*⁴ and *b*⁵.

Referring now particularly to Fig. 1 it will be seen that there is a dome C which rests upon the base A and incloses the valve B. The inner cylindrical face of the dome keeps the valve B centered on the base. The dome is secured to the base portion by means of a nut D. The latter may be a spanner nut or it may be a six, eight, ten or twelve sided nut. The dome C is kept from rotating by means of one or more dowel pins *c*.

Arranged to project through an opening in the top of the dome is a valve stem E having a tapered tongue *e* adapted to fit between the projecting lugs *b*⁴ and *b*⁵ of the valve. The purpose of making the tongue *e* of a tapered or wedge shaped form is to insure proper assembling at all times. The upper part of the valve stem E has a reduced portion *e'* adapted to receive the end of an operating handle F, which is secured to the stem by means of the key *f* and the nut G on the threaded end *e*² of the stem E. The handle has a hollow portion *f*² in which a latch member *f*³ is arranged to reciprocate, being normally pressed outwardly by means of the spring *f*⁴. The latch *f*³ is arranged to

engage in notches formed between the lugs a^2 on the dome C. The latch is rounded on its end so that while it will hold the handle steady in any one position, it may be easily shifted to another position by pressure applied to the handle.

From the foregoing description of the various parts of the device the operation thereof may be readily understood.

10 In practice the ports a' , a^2 and a^3 , are connected respectively to a feed valve set at 45 pounds pressure which is supplied by the main reservoir, to a triple valve exhaust and to the brake cylinder. The center port or
15 hole a is used as the exhaust and leads to the atmosphere as shown. The small hole a^8 which extends through the valve to the outer atmosphere is used as a warning port.

There are four positions of the handle.
20 The position W, see Fig. 3, is the release, X is the running position, Y lap and Z service positions, respectively. In the release position the brake cylinders on the engine are in direct communication with the atmosphere
25 and the feed valve pressure is in communication with the one-sixteenth inch warning port, making a hissing sound so that the engineer will not allow the handle to remain in this position after the air has escaped from
30 the brake cylinders. If he should do so and make an application of the automatic brakes, he would have no engine brake.

When the handle is shifted to the running position the triple valve exhaust port is in
35 direct communication with the atmosphere and in this way gives the regular automatic brake on the engine. In lap position both the triple valve exhaust and the brake cylinder ports are blanked, thus allowing the
40 engine brakes to be held and the train brakes released.

In service position the brake cylinders are put in slight communication with the feed valve, thus allowing the engine and tender
45 brakes to set and in full service position they are put in direct communication, thus allowing them to set quickly. In piping this

straight air to the tender all that is necessary is that the brake cylinder pipe be carried back to the brake cylinder pipe on the tender 50 through a double check valve. With this arrangement the engine brakes can be released without releasing the tender brakes for an automatic application.

With our invention it is possible to use the 55 automatic brake as at present to release the engine brake without releasing the tender or train brakes and to apply or reapply the engine and tender brakes without applying or releasing the train brakes. The use of the 60 controlling valve with straight air insures constant pressure in the engine and tender brakes.

We claim—

In a universal controlling valve, a base 65 having a central cylindrical channel and provided with side channels, a rotary valve carried by said base having a central cylindrical channel arranged to register with the central channel in said base, and lateral 70 channels communicating with said central channel and adapted to be brought into and out of registration with the side channels in said base, a dome supported upon said base having an inner cylindrical face for keeping 75 said valve centered on said base; means carried by said base for centering said dome, a nut for securing said dome to said base, a detachable valve stem having a centrally disposed tongue arranged to engage the central 80 portion of said valve and a handle for operating said valve stem.

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