R. F. SCHNEIDER.

REGISTERING INSTRUMENT.

APPLICATION FILED MAY 4, 1916.

1,278,761.

Patented Sept. 10, 1918.

Fig. 1.

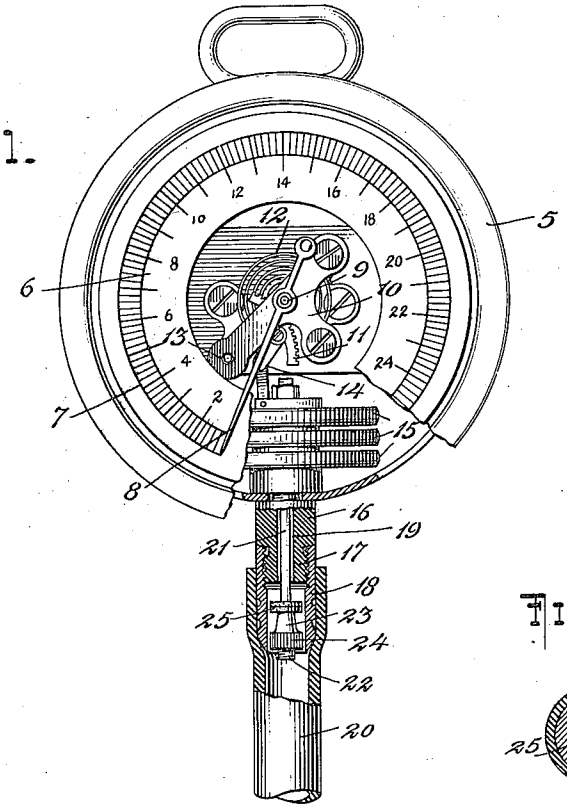


Fig. 3.

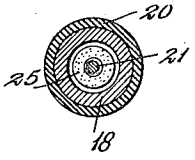
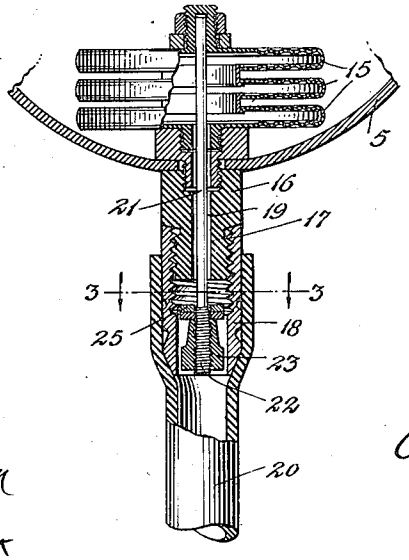


Fig. 2.



WITNESSES

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REGISTERING INSTRUMENT.

1,278,761. Specification of Letters Patent. Patented Sept. 10, 1918.

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To all whom it may concern:

Be it known that I, RALPH F. SCHNEIDER, a citizen of the United States, and a resident of the borough and county of the Bronx, city and State of New York, have invented a certain new and useful Improvement in Registering Instruments, of which the following is a specification.

My invention relates to registering instruments and more particularly to that type thereof in which the registering mechanism is operated by a fluid actuated means. The purpose of my improvement is to prevent an operation of said fluid actuated means beyond a predetermined point and to obviate the danger of injury thereto through an abnormal actuation thereof and to this end consists in providing a simple and efficient means whereby the actuating fluid is automatically cut off from said member at a predetermined point and actuation thereof is coincidentally arrested. My invention will be fully described hereinafter and the features of novelty will be pointed out in the appended claims.

In the accompanying drawings I have shown my improvement operatively combined with a sphygmomanometer it being understood that this is only an example used for illustrative purposes. In said drawings Figure 1 is an elevation of a sphygmomanometer with parts broken away and in section including my improvement; Fig. 2 is an enlarged detail view partly in section; and Fig. 3 is a sectional view on the line 3—3 of Fig. 2.

The registering instrument or more specifically the sphygmomanometer may be of any well known and usual construction comprising for instance the casing 5 having a dial 6 in its front face provided with suitable indications 7 in the customary manner. The instrument further includes an indicator hand 8 adapted to coöperate with said indications and carried by a shaft 9, journaled on a frame 10 and which is rotated in one direction by means of a sector 11 in operative engagement with a pinion on the shaft 9 which being a well known arrangement has not been shown in detail. The shaft 9 and with it the hand 8 are rotated in the reverse direction or returned to normal position by means of a spring 12 shown in Fig. 1. The sector 10 is pivoted at 13 on the frame 10 and is connected by means of a link 14 with the fluid actuated means which in the illustrated example comprises an expansible chamber or member 15 constructed in the customary manner and connected in any well known way, for instance as shown in Fig. 2, with a neck or connection 16 which is located exteriorly of the casing 5 and preferably terminates in a screw-threaded end 17 adapted to removably receive the nipple 18. The said neck or connection 16 is formed with an axial passage 19 communicating with the interior of the chamber or member 15 as shown in Fig. 2 and normally also communicating with the flexible tube 20 which is detachably connected with the nipple 18 and which leads to the source of the actuating fluid.

As shown in the drawings my improvement comprises a stem 21 which is rigidly connected with the end wall of the chamber or member 15 to move therewith and which projects from the interior surface thereof through said chamber or member 15 and extends through the axial passage 19 of the neck or connection 16 and beyond the end thereof as shown in Figs. 1 and 2. The projecting end of said stem 21 is preferably screw-threaded as at 22 to receive the internally screw-threaded nut or projection 23 which may be provided with an annular knurled surface 24 for facilitating the rotation thereof. In the preferred construction one or more washers 25 are located on the stem 21 between the projection or nut 23 and the end face of the neck or connection 16 and either independently mounted on said stem 21 or connected with the nut 23 to move therewith as desired.

In explaining the operation of my improvement I will use the illustrated sphygmomanometer as an example, such instrument being usually operated by forcing air through the tube 20 and connection 16 into

the member or chamber 15 whereby the latter is caused to expand. This expansion of said member or chamber 15 carries with it the link 14 and thus causes a pivotal movement of the sector 11 which in turn brings about a rotation of the shaft 9 and an actuation of the hand 8 along the indications 7 of the dial 6. With such arrangements, if the forcing in of the air into the member or chamber 15 is continued beyond the maximum point for which the particular instrument is constructed or in other words if said member is abnormally actuated the latter is in danger of being fractured or distorted whereby the efficiency and accuracy of the instrument is destroyed or interfered with. It has heretofore been attempted to overcome this danger in various ways as for instance by causing the closed movable end of said member or chamber 15 to engage with a stationary stop. As such stop merely limits the expansive movement of the chamber or member 15, a continued forcing or pumping in of the air will simply cause said chamber or member 15 to expand in directions other than its normal direction of movement or at points other than the point where resistance to the normal expansive movement is offered by the stationary stop. The objections above noted are thus not satisfactorily or efficiently overcome with such constructions.

With the present arrangement as the chamber or member 15 is expanded the stem 21 will be carried along and will be drawn lengthwise of the axial passage 19 until finally the washer or washers 25 backed up by the nut or projection 23 are brought into engagement with the end face of the neck or connection 16. As soon as this happens the expansive movement of said chamber or member 15 is not only arrested but the end of the passage 19 is sealed by the washer 25 so that the admission of any more actuating fluid to the chamber or member 15 is cut off and prevented. It is thus impossible to further inflate the member 15 and as the nut 23 may be adjusted on the stem 21 this result may be brought about at any point and at all times within the expansive limit for which the particular chamber or member 15 is constructed. Even if the washer or washers 25 are omitted and the nut 23 alone is relied upon to simply arrest the expansive movement of the member 15, the moment said nut 23 engages the end of the connection 16 a resistance to the incoming air will be effected to forcibly indicate to the operator that the limit of intended actuation of said member 15 has been reached. The stem 21 by being secured to the end surface of the member 15 and in combination with the nut 23 and connection 16 also rigidly secures the said member 15 against distortion even if said nut 23 alone is used merely as a stop to arrest the expansive movement of said member 15. In the preferred arrangement, however, I prefer to include the washers 25 or their equivalent so that, in addition to arresting the actuation of the member 15, the admission of any additional actuating fluid thereto is prevented and cut off.

By adjusting the nut 23 on the stem 21 the point at which the arresting of the expansion of said fluid actuated means and the cutting off of the actuating medium thereto, takes place may be varied so that numerous and various results may be obtained in a simple and efficient manner. It will be noted that the nipple 18 surrounds and incloses the projecting portion of the stem 21 and the washers 25 and nut 23 so that these elements are protected against tampering, after the desired adjustment thereof has been had. To change the adjustment the nipple 18 is removed by means of a suitable tool from the screw-threaded end 17 of the connection 16 whereby the nut 23 is brought into ready accessibility as will be apparent.

My improvement is simple in construction and effective in operation and may be efficiently combined with numerous types of registering instruments other than sphygmomanometers and which include a fluid actuated means for operating the recording or indicating mechanism.

While I have shown and described my improvement in combination with a registering instrument, it will be obvious that the same may, with equal efficiency, be operatively combined with recording and other instruments in which a permanent record is made.

Various changes in the specific form shown and described may be made within the scope of the claims without departing from the spirit of my invention.

I claim:

1. The combination of registering mechanism, a hollow, fluid actuated, expansible member for operating said mechanism, a tubular neck communicating with the interior of said member and adapted for connection with a source of fluid supply, a stem carried by said member and movable therewith, said stem extending through and beyond said tubular neck, and a valve adjustably mounted upon the projecting end of said stem so as to be accessible from the exterior of said neck, said valve engaging the end of said neck whereby the expansion of said member is arrested and the admission of fluid thereto is coincidentally cut off.

2. The combination of registering mechanism, a hollow, fluid actuated, expansible member for operating said mechanism, a tubular neck communicating with the interior of said member and adapted for con-

nection with a source of fluid supply, a stem carried by said member and movable therewith, said stem extending through and beyond said tubular neck, means adjustably mounted upon the projecting end of said stem so as to be accessible from the exterior of said neck, said means engaging the end of said neck whereby the expansion of said member is arrested and a nipple detachably connected with said tubular neck and inclosing said means.

In testimony whereof, I have hereunto set my hand.

RALPH F. SCHNEIDER.