Oct. 23, 1951 W. C. RICE 2,572,389

MAGNIFIER FOR PULSE BEAT INDICATORS

Filed June 11, 1948 2 SHEETS—SHEET 1

FIG. 1.

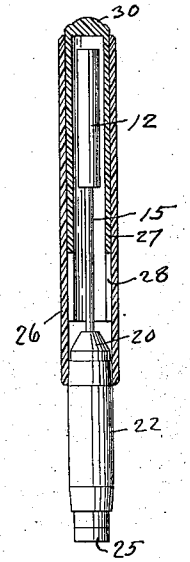



FIG. 2.

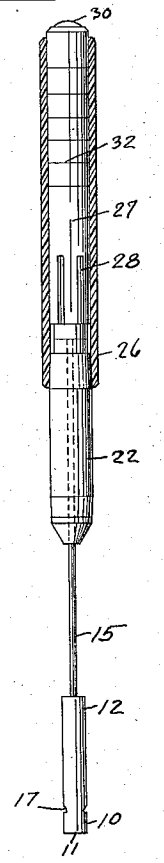



FIG. 3.

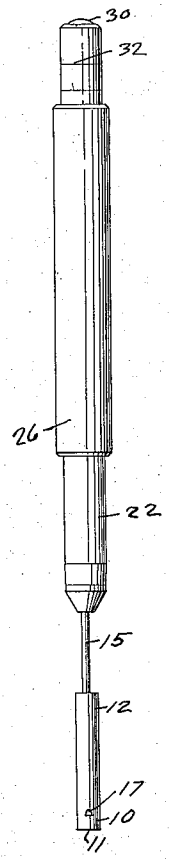



FIG. 4.

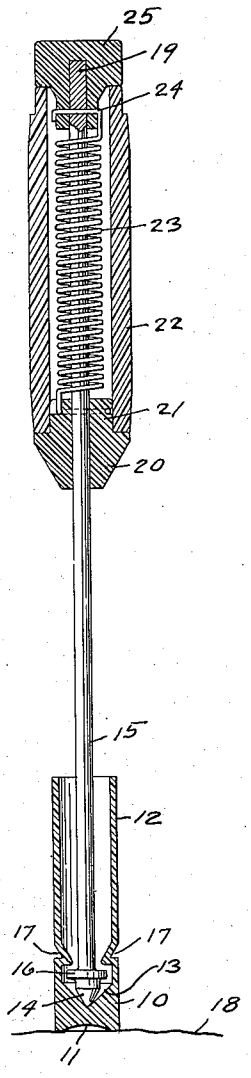
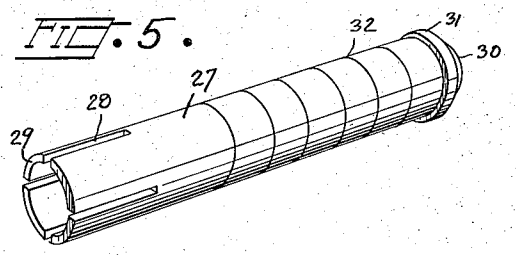



FIG. 5.




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FIG. 6.

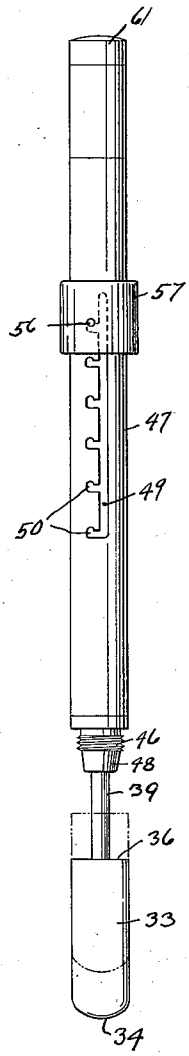



FIG. 8.

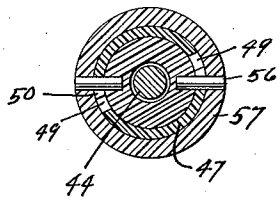



FIG. 9.

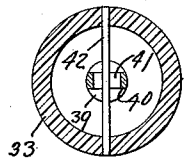
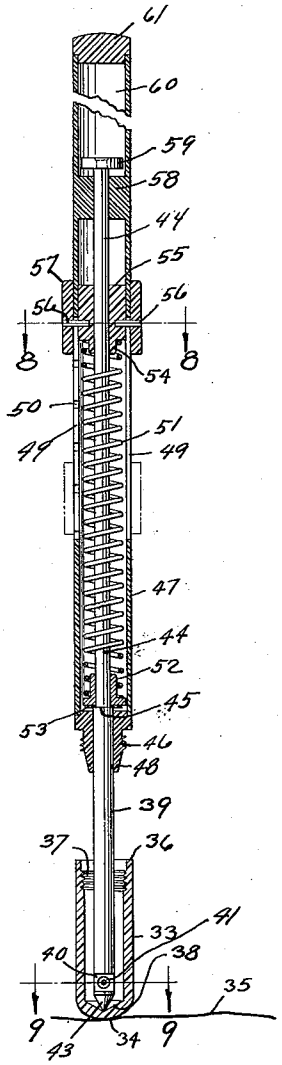



FIG. 7.




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2,572,389

## MAGNIFIER FOR PULSE BEAT INDICATORS

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Application June 11, 1948, Serial No. 32,349

3 Claims. (Cl. 128—2.05)

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This invention relates generally to medical instruments and particularly to a pulsimeter and indicator for blood pressure.

The main object of this invention is to provide a simple form of pulsimeter and indicator for blood pressure which can be produced at a negligible cost and which, while not perfectly accurate, will give a very fair approximation of the blood pressure.

The second object is to produce a device of the class described which can be operated by an inexperienced person.

A further object is to so construct the device that it will be no larger than a fountain pen and may be so carried.

I accomplish these and other objects in the manner set forth in the following specification as illustrated in the accompanying drawings, in which:

Fig. 1 is a partial section showing the parts in position for carrying in the pocket.

Fig. 2 is a view showing the parts in position for use with the cover in section.

Fig. 3 is an elevation showing the indicator in an extended position.

Fig. 4 is an enlarged section through the actuating portion of the device.

Fig. 5 is a perspective view of the indicating element.

Fig. 6 is a side elevation of a modified form of the device in a position of rest.

Fig. 7 is a section showing the parts in an operating position.

Fig. 8 is a section taken along the line 8—8 in Fig. 7.

Fig. 9 is a section taken along the line 9—9 in Fig. 7.

Like numbers of reference refer to the same or similar parts throughout the several views.

Referring in detail to the drawings, there is shown an actuating tip 10 having a cupped end 11 and a tubular end 12 having the converging end 13 which forms a seat for the point 14 on the stem 15 near whose lower end is formed a flange 16.

The member 12 is preferably made of plastic material and is crimped at the two points 17 above the flange 16 in order to hold the tube 12 loosely on the stem 15. The tube 12 is capable of a limited rocking movement with relation to the stem 15 when the cupped end rests upon the portion of the body 18 where pulse action is observable.

The end 19 of the stem 15 is passed slidably through the guide 20 from whose shoulder 21 extends the tube 22 which encloses a tension spring

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23 whose end 24 pins the stem end 19 to the plunger 25.

The mechanism thus far described is the actuating portion of the device.

The barrel 26 slidably receives the tube 22. Within the barrel 26 is slidably placed the indicating element shown in Fig. 5. This consists of a tube 27 having slots 28 formed across its end 29 to insure a certain amount of friction being present between the parts 26 and 27.

The tube 27 has a closed end 30 preferably provided with a flange 31 which prevents the end 30 from slipping into the barrel 26.

The tube 27 is provided with calibrations 32 which may be arbitrary values or represent the approximate pressure in the blood stream.

The operation of the device is as follow:

The end 11 is placed against the body 18 at a point of pulsation, care being taken to hold the stem co-axial with the end 12. Owing to the position of the pivot point 14 with relation to the boundaries of the tip 10, the pulsations will cause a rocking motion of the tube 12.

The barrel 26 is held in the hand and pressure gradually applied along the axis of the stem 15 until the pressure at the tip 10 is sufficient to stop the flow of blood and consequently the rocking of the tube 12.

This pressure on the barrel 26 elongates the spring 23 and as the plunger 25 engages the end 29 of the tube 27 it causes the graduated portion of the tube 27 to emerge from the barrel 26 and the last calibration 32 to emerge from the barrel 26 indicates approximately the pressure of the blood.

In Figs. 6 to 9, the same result is accomplished with a somewhat different mechanism. There is shown a tubular tip 33 whose rounded end 34 is used to engage the body surface 35.

The open end 36 of the tip 33 is provided with an internal thread 37. The closed end 34 has a conical recess 38 formed in its inner side. Extending into the tip 33 is a stem 39 whose flattened portion 40 is provided with a large opening 41, through which freely extends the pin 42 which is mounted transversely in the tip 33.

The purpose of this construction is to permit a free rocking movement of the tip 33 in any direction without permitting the point 43 of the stem 39 to escape from the recess 38.

The stem 39 has a reduced portion 44 from which it is separated by the shoulder 45. The stem portion 44 is slidable in the guide 46 which forms the end of a barrel 47.

The guide 46 is externally threaded and pro-

vided with a pointed end **48** to facilitate inserting same into the threaded end **36** of the tip **33**. The barrel **47** has an elongated slot **49** formed therein having the lateral notches **50**.

The reduced portion **44** has placed thereon a spring **51** which is placed against the centering collar **52** and washer **53**, the latter of which engages the shoulder **45**.

The opposite end of the spring **51** engages the centering lug **54** of the plunger **55** which is connected by the pins **56** through the slots **49** to the band **57**, through the manipulation of which the initial pressure on the spring **51** may be varied to meet the various requirements for age or other factors.

The reduced stem portion **44** extends through the plunger **55** and slides in the guiding wall **58**. On the end of the stem portion **44** is secured an indicator head **59** which is confined within the cavity **60** which is closed by the cap **61**.

The barrel **47** is preferably of transparent material so that the position of the indicator **59** may be seen within the cavity **60**.

The operation of this form of the device is similar to that described for Figs. 1 to 5 except that in this case the indication of pulse action is only momentary while the device is in place during which time the observation must be made, while in the first described form of the device the indication remains visible until manually moved.

Obviously, the members **10** and **15** may be used alone to magnify visibly the pulse action in case the count alone is desired.

I claim:

1. A magnifier for pulse beat indicators comprising a body engaging tip, a stem pivotally mounted on said tip near it's body engaging end and a tubular extension on said tip surrounding



said stem and spaced therefrom whereby the pulse action will cause a magnified rocking motion of said extension with relation to said stem.

2. A magnifier for visibly indicating pulse beats comprising a tip adapted to be placed against the skin at the point of pulsation, a tubular extension for said tip, a stem within said extension, pivotally mounted on said tip, whereby a pulse action exerted against said tip will produce a lateral rocking motion of said tubular extension with relation to said stem and means for applying pressure axially along said stem.

3. A magnifier for visibly indicating pulse beats comprising the device described in claim 1, together with a spring loaded pressure applicator including a calibrated scale whereby the pressure applied by said applicator is visibly indicated on said scale and the frequency of the pulsations is indicated by the rocking motion of said extension.

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