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GAUGE FOR MEASURING CHEST EXPANSION

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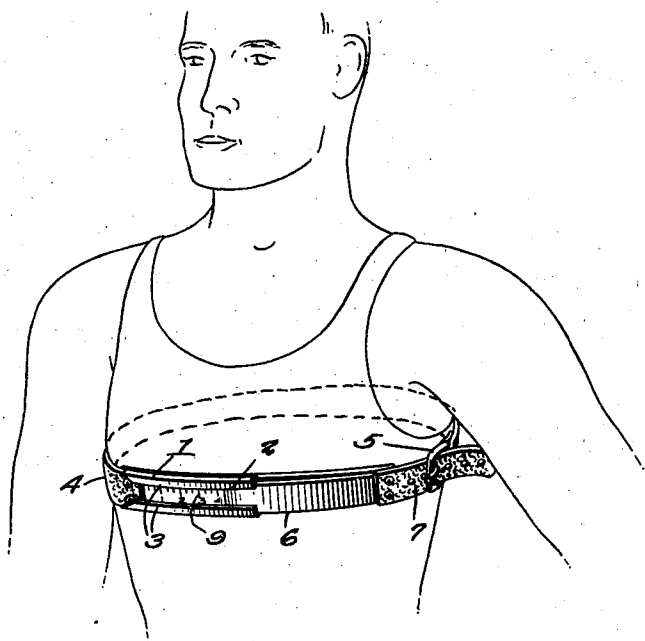


*Fig. 1.*

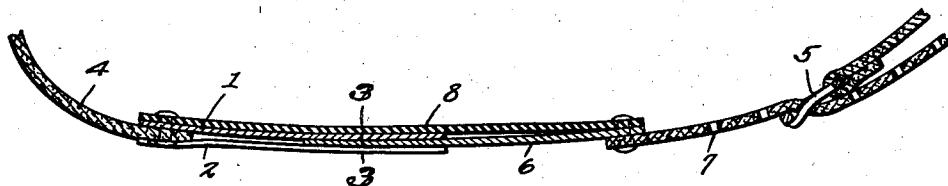


*Fig. 2.*

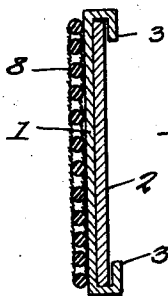


*Fig. 3.*

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## UNITED STATES PATENT OFFICE

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GAUGE FOR MEASURING CHEST  
EXPANSION

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1 Claim. (Cl. 33—179)

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This invention relates to a belt designed primarily for use by patients who are undergoing treatment for pulmonary ailments.

While treating patients with inhalants it is frequently difficult for the physician to determine whether or not air has been completely inhaled or exhaled and the present invention has for its object the provision of an indicator whereby these conditions will be accurately indicated.

It is a further object of the invention to provide a belt which can be used by the patient as a means for exercising the chest muscles and the lungs.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claim, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

In the accompanying drawing, the preferred form of the invention has been shown.

In said drawing:

Figure 1 is a perspective view showing the belt in position while being used by a patient.

Figure 2 is an enlarged longitudinal section through the front portion of the belt.

Figure 3 is an enlarged section on line 3—3, Fig. 2.

Referring to the figures by characters of reference, 1 designates an elongated strip having a longitudinal channel 2 in its front face, the upper and lower walls of which are extended toward each other to form retaining flanges 3. To one end of this strip 1 is secured one end of a flexible strap 4 the other end of which can carry a buckle 5. A slide 6 is mounted in the channel 2 and has a strap 7 extending from one end thereof for adjustable engagement with the buckle 5. Strap 7 is joined to the opposite end of strap 4 by means of an elastic connection 8 which can be rubber or elastic fabric. This connection 8 is constantly under tension so that, under normal conditions, the slide 6 extends throughout the length of the channel 2. The front surface of the back wall of the channel is provided with graduations 9 which serve to indicate, in units of measure, the extent of movement of slide 6 relative to strip 1 during the expansion of the chest of the user.

In practice the belt is placed about the chest of the user and is tightened while air is being exhaled from the lungs. The belt is tightened until the maximum point of contraction due to exhalation has been reached at which time the free end of the slide 6 will be located at the first or "0" graduation. Thereafter normal expansion of the chest will result in elongation of the connector 8 while continued inhalation and resultant

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expansion will result in further movement of the slide. At all times the amount of expansion will be indicated by locating the position of the end of the slide relative to the scale on the guide strip 1.

When inhalation of a vapor or other treatment material is required the physician, after adjusting the belt, can request the patient to exhale and by observing the scale, he can determine quickly whether or not exhalation has reached the desired degree. The vapor is then applied and the patient told to inhale. Thus by constantly observing the action of the indicator the physician can constantly determine whether or not the required quantities of inhalant are being drawn into the lungs.

Obviously as has already been stated the belt can also be used as a means for exercising the muscles of the chest by indicating to the user the extent of expansion during inhalation and thus encouraging the user in an effort to increase inhalation.

What is claimed is:

A device of the class described comprising a chest-encircling strap of non-elastic flexible material and including sections adjustably connectable at one end, the other ends of the sections being spaced apart, a relatively elongated connecting strip of elastic material bridging the space and permanently connected at its ends to the spaced ends of the strap sections, a guide strip fixedly attached at one end to one of the spaced ends of the strap sections, the guide strip being extended longitudinally, and overlying a substantial part of, the connecting strip, retaining flanges extending from the side edges of the guide strip, whereby to define a longitudinal channel therein, the face of the guide strip, constituting the inner wall of the channel, being provided with graduated markings, and a slide fixedly attached at one end to the other spaced strap section end, said slide overlying the remainder of the connecting strip and having its free end slidable within the channel and normally covering the graduated markings, whereby expansion and contraction of the connecting strip will cause said free end to serve as an indicator relative to said graduated markings.

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