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STEEL BAND MEASURE

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Fig. 1.

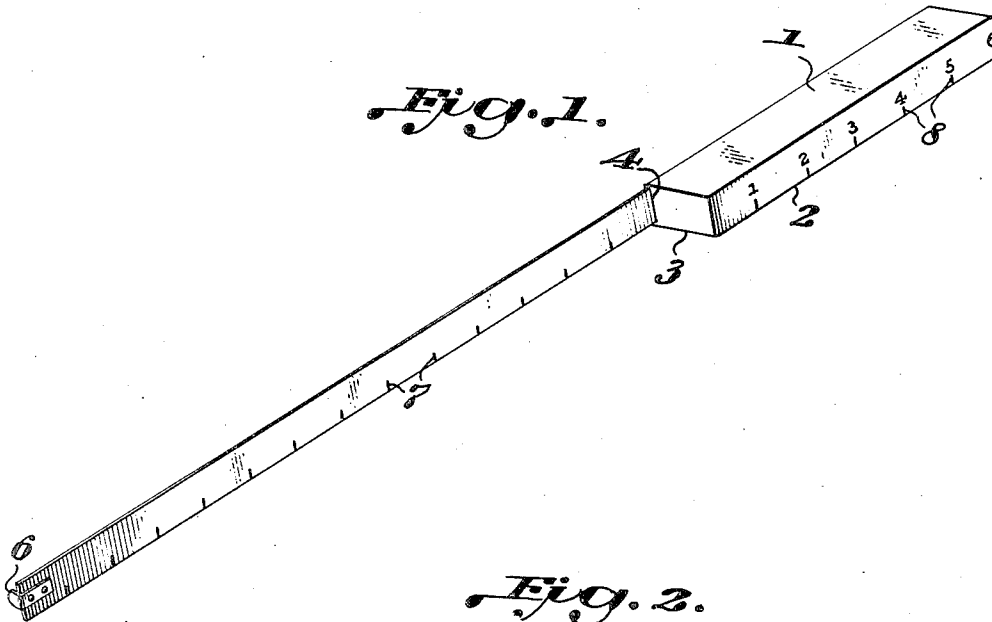


Fig. 2.

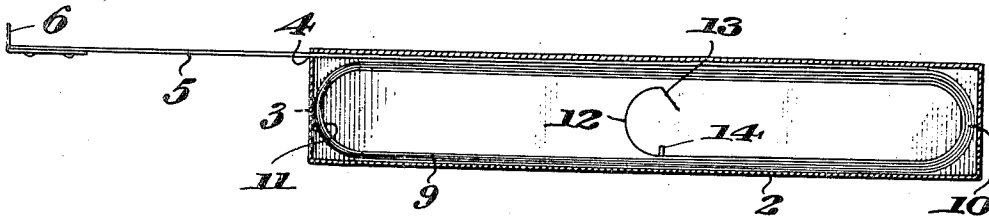
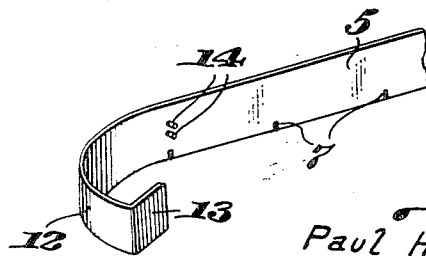


Fig. 3.



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STEEL BAND MEASURE

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2 Claims. (Cl. 33-137)

The steel bands of the rollable steel band-measures of known type are rolled up circularly. The steel band which, when pulled out of the casing, has to be as straight as possible is obliged in the state of rest, that is when wound up in the casing, to wind up spiral-like on its whole length in a comparatively small radius of curvature. Especially if such steel band measures have not been used for a longer time, their facility to direct themselves straight when pulled out of the casing, is considerably impaired.

In order that the steel bands adjust themselves straight as much as possible when pulled out of the casing, i. e. that these straight steel bands "stand" as well as possible, they are often carried out crowned, that is with curved cross-section. If such a crowned steel band is wound up circularly in a commonly used casing, the steel band of curved cross-section is pressed flat in the wound state on its whole length. The commonly employed method of winding steel bands in the casings of a steel band-measure is inconvenient for the said reasons.

In order to obviate especially these existing inconveniences, the invention consists in first instance therein that the steel band, preferably crowned, is accommodated in the casing in longitudinal windings. The band is of course lying flat in the short portions at the ends of the windings, but straight on the two longitudinal sides of the oblong windings, which long sides form the essential constituent of the total length of the steel band-measure, and, if it is crowned, it cannot lose its crowned shape at these longitudinal sides of the windings when it is in the wound up state. By this new manner of winding the steel band in oblong windings it is therefor less strongly stressed so that it is of accordingly longer duration.

From the point of stressing of the steel band, it is, if the steel band is wound in oblong windings according to the invention, immaterial of which shape the casing is which encloses these oblong windings of the wound band. It is, however, especially advantageous to adapt the casing to the form of the oblong windings of the steel band so that it is rod-shaped, that is that the casing is of rectangular cross-section and of a length several times greater than its width.

Owing to the fact, that the casing of the steel band-measure, same as the windings of the steel band, are oblong, this steel band measure can be handled, especially if the casing with rectangular cross-section is of rod-shape, in a similar manner as for instance the carpenter or the

joiner handles the commonly used folding pocket measure. The carpenter or joiner can push the instrument according to the invention in the customary manner between boot and trousers or insert it into the deep, narrow pocket provided in the trousers for accommodating pencils and the like. Engineers, architects and others can easily insert the instrument according to the invention into the breast- or pencil-pocket of the waistcoat and remove it from there. This easy handling of the steel band measure is not possible with steel band-measures of the usual construction with circular winding of the steel band and corresponding round or multicornered casing.

It has shown to be particularly advantageous to leave the steel band movable in the casing on its whole length. When pulling out the steel band of the casing or when inserting it into the same, the individual windings of the steel band move continually the one relative to the other. The end of the steel band which is in the casing and, in this instance, is not fixed in the same displaces itself in longitudinal direction, accurately like the outer end of the steel band pulled out of the casing. If therefor, when pulling out or pushing in the steel band, the tendency to jamming should exist which might happen if the instrument is handled in an unskilled manner, the tensions produced thereby within the windings of the wound up steel band-section are always compensated again by the possibility of mutual movement of these windings.

The handling of this instrument is especially facilitated, if the inner end of the steel band is curved. It is then advisable, to make the radius of curvature of the end-curve of the steel band in the casing smaller than the radius of curvature at the ends of the windings. It has been found that with such a construction of the steel band this band can be easily pushed into or pulled out of the casing, no auxiliary guide faces being necessary in the casing itself. The circumstance that the radius of curvature of the end curve of the steel band is made smaller than the radius of curvature of the ends of the windings has the result that, if this end curve moves along a winding curvature it is not possible that from two opposite sides of the windings a pressure can be exerted upon the wound up portion.

An embodiment of the invention is illustrated, by way of example, in the accompanying drawing in which

Fig. 1 shows in perspective view a steel band measure, the steel band being partly pulled out. Fig. 2 is a longitudinal section of Fig. 1.

Fig. 3 shows the inner end of the steel band in perspective view and on larger scale.

The casing 1 of the steel band-measure is rod-shaped, that is it is of rectangular cross-section with the long sides 2 and the transverse sides 3. The height of the casing corresponds to the width of the steel band 5 which can move in the slit 4 in the end wall 3 of casing 1. A stop 6 on the outer end of the steel band 5 on the one hand prevents this end of the steel band 5 from slipping into the casing and on the other hand serves as handle for pulling the band 5 out of the casing. On the band 5 which, as indicated by the long lines, is crowned, that is of curved cross-section, the graduation 7, for instance an inch graduation, is marked. The corresponding long side 2 of the casing (Fig. 1) has the same graduation and in the present instance it is 6 inches long.

If an inner measure has to be taken with this instrument, the casing itself can be placed on the inner edge of the object to be measured, and to the measure read on the band 5 at the slit 4 the length of the casing, that is 6 inches, are added. The longitudinal windings of the steel band in the casing 1 are indicated in Fig. 2 by the numeral 9. To these 10 long windings 9 of the steel band belong the curved winding ends 10 and 11. It is essential that, for the determination of the width 3 of the casing 1, not less than a minimum measure is chosen, as otherwise clamping of the steel band within the winding ends 10 and 11 might happen. If the length of the casing 1 is, as in the present instance, 6" it is advisable to make the casing 1" wide. These dimensions are valid for the usual cross-section of the known crowned steel bands.

The inner end 12 of the steel band 5 is curved arc-shaped and its extreme end portion 13 is bent at an angle. This bent end portion 13 serves merely to avoid a sharp edge at the end of the curved portion 12. As can be seen, the radius of curvature of the arc 12 of the steel band 5 is smaller than the radius of curvature of the windings 10 and 11. This means that, when the band 5 is moving, the edge between the curved end 12 and the bent portion 13 does not touch the adjacent winding of the steel band. By the end curve 12 no pressure tensions between the individual windings of the steel band can be caused. When the steel band is being pulled out or pushed in, the curved end 12 moves the winding ends of the steel band so that it slides along the radius of curvature of the winding ends without exerting a special pressure upon these ends of the windings. This phenomenon occurs because the end curve 12 itself can curve further beyond its normal radius of curvature when sliding through the winding ends owing to the free bent end 13.

As can be seen from Fig. 2, the outer winding end 10 does not bear against the corresponding end wall 3 of the casing 1. These ends of the windings are spaced from the corresponding transverse wall 3 of the casing when the steel band 5 is pulled in outward direction. During this movement of the steel band merely the winding end 11 bears against the corresponding transverse wall 3. Inversely, the end 11 of the winding is spaced from the corresponding transverse wall 3 when the steel band is being pushed into the casing.

At the transition from the curved end 12 to the long steel band 5 pins 14 are fixed which serve to retain the curved end 12 always in the casing 1 if the steel band is pulled out completely. The graduation 7 is made on the steel band 5 so that the end graduation corresponds with the position of the pins 14.

I claim:

1. A measuring device comprising a casing having a free, unobstructed chamber in the form of a right parallelepiped and having a slit therein, and a metallic band in the chamber and projecting through the slit, said band being curved in cross-section, the end portion of the inner end of the band being permanently bent longitudinally to form an arc of substantially 180°, said band being removable and self-accommodating when pushed into the chamber, to form elongated coils the end turns of which have a minimum radius greater than the radius of the curved cross-section, so that upon the insertion of the band into the casing said bent end will freely travel around the corners of the chamber and around the end turns of the elongated coils.

2. A measuring device comprising a casing having a free, unobstructed chamber in the form of a right parallelepiped and having a slit therein, and a metallic band in the chamber and projecting through the slit, said band being curved in cross-section, the end portion of the inner end of the band being permanently bent longitudinally to form an arc of substantially 180° and the other end of the band having a stop by means of which the band may be pulled out of the casing, said band being removable and self-accommodating when pushed into the chamber, to form elongated coils the end turns of which have a minimum radius greater than the radius of the curved cross-section, so that upon the insertion of the band into the casing said bent end will freely travel around the corners of the chamber and around the end turns of the elongated coils, and stop means on the end portion of the band adjacent the curved section to prevent complete removal of the band from the casing.

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