

E. H. MILLER.
TAPE LINE SPRING SCALE.
APPLICATION FILED NOV. 9, 1910.

1,014,839.

Patented Jan. 16, 1912.

Fig. 1.

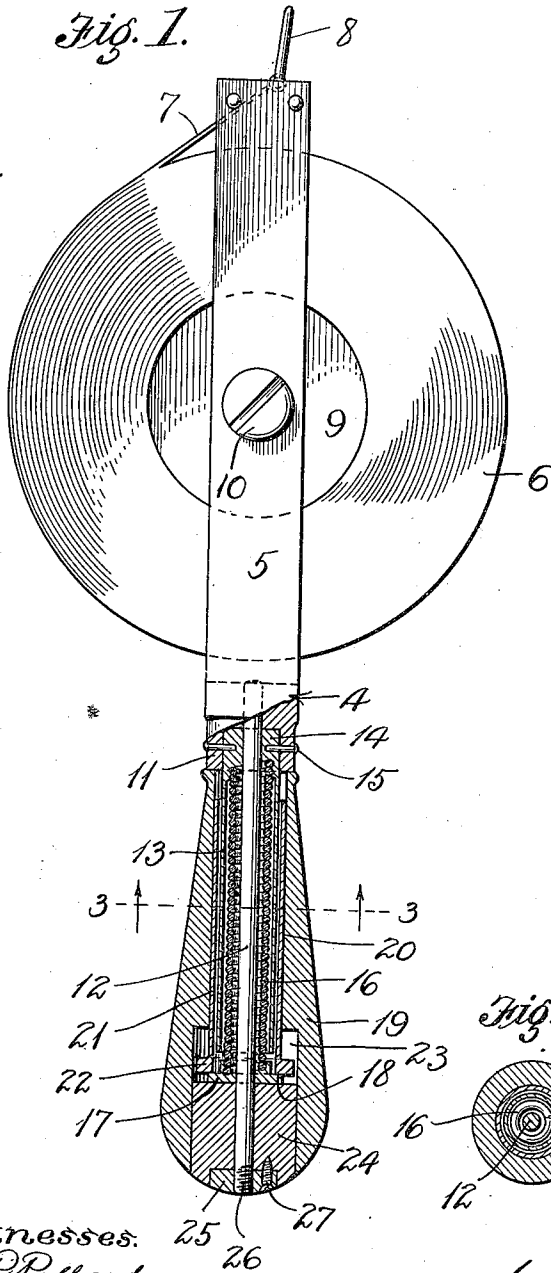


Fig. 2.

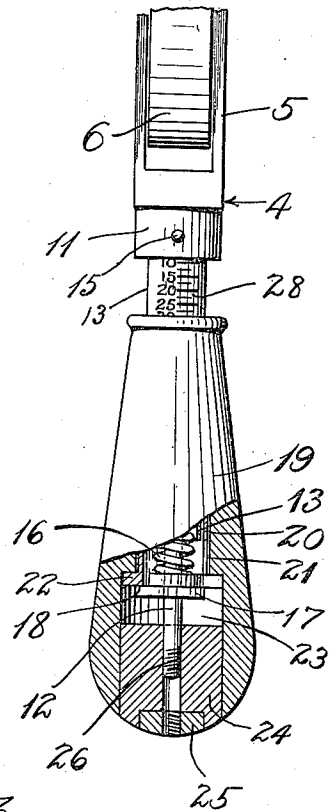
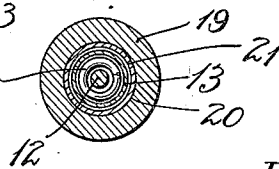


Fig. 3.



Witnesses.

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TAPE-LINE SPRING-SCALE.

1,014,839.

Specification of Letters Patent.

Patented Jan. 16, 1912.

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To all whom it may concern:

Be it known that I, EDWIN H. MILLER, a citizen of the United States, residing at Los Angeles, county of Los Angeles, State of California, have invented new and useful Improvements in Tape-Line Spring-Scales, of which the following is a specification.

This invention relates to measuring tape such as used by surveyors and others for measuring distances. These tapes are usually made of steel and variations in temperature produce appreciable variations in the length of the tape, tending to give incorrect measurements.

The object of this invention is to produce means for compensating for these variations in the length of the tape and I accomplish this result by providing a tension device in connection with the tape which enables the tension of the tape to be varied to correspond with the temperature. In this way in the coldest weather the tape is subjected to the greatest tension in taking measurements and in warmer weather less tension is applied. In this way I insure accuracy in the measurements made with the tape.

In the drawing forming a part of the annexed specification, Figure 1 is a side elevation of the tape provided with my invention and the handle of the device is broken away and shown in longitudinal section so as to illustrate the construction of my invention. Fig. 2 is a side elevation showing a portion of the tape and showing the handle partly broken away and extended as though the tape were in tension. Fig. 3 is a cross section through the handle of the device taken on the line 3—3 of Fig. 1.

Referring more particularly to the parts, 4 represents the frame of the device which presents two forks or side bars 5 between which the tape 7 is normally held in the form of a roll 6, the end of the tape being guided through the outer end of the forks and being provided with a ring 8 by means of which the tape may be extended. The roll 6 is mounted on the rotatable hub 9 which is held rotatably between the forks 5 on a suitable pivot screw 10.

The inner end of the frame 4 is formed into a socket 11 in which there is mounted a fixed stem 12 and this stem is secured in the sleeve 13, the outer end of said sleeve being formed into a head 14 which is received in the socket and secured therein by

pins 15 as shown. The sleeve 13 is of cylindrical form and its lower end is open as shown.

Within the sleeve and around the stem 12 there is received a helical coiled spring 16 and the outer end of this spring is secured in the head 14 as shown. The inner end of the spring 16 is attached to a collar 17 which is mounted to slide freely on the stem, and this collar 17 has a reduced body so that it presents a shoulder 18 for a purpose which will appear more fully hereinafter.

The sleeve is incased in a handle 19 of elongated tapered form as shown, the axis of the handle coinciding with the axis of the stem 12. This handle has a longitudinal bore 20 of reduced diameter which receives the sleeve, and in this bore there is a cylindrical sleeve or bushing 21 and the inner end of this bushing is formed into a projecting collar 22. This collar 22 is received in an enlarged bore or counter-bore 23 which is formed in the butt of the handle. In the counter-bore 23 a plug 24 is fixed to the handle, and this plug 24 is provided with a nut 25 which is screw threaded so as to engage corresponding screw threads 26 formed on the end of the stem as shown. This nut 25 is secured to the plug 24 by a suitable screw 27 as indicated in Fig. 1.

As shown in Fig. 2 the sleeve 13 is provided near its outer end with a scale 28 and this scale has numbers indicating pounds of tension on the spring when the device is in use.

In using the device the tape is pulled out and the roll 6 is held against rotation by hand and the tension is supported on the tape by pulling on the handle 19. In doing this the collar 22 seats against the shoulder 18 and extends the spring as indicated in Fig. 2. The handle moves away from the socket 11 so as to expose the scale 28 and the position of the inner end of the handle with respect to the scale measures the amount of tension existing in the tape through the medium of the spring.

The bushing 21 is freely movable in the handle and in order to prevent it from extending from the upper end of the handle so as to cover the scale 28, the outer end of the bushing is cut short as indicated in Fig. 1.

When the device is to be used without the tension of the spring the handle is readily attached to the stem by rotating the same

with the nut 25 so as to cause said nut to engage the thread 26 as indicated in Fig. 1. In this way it will be seen that I provide the frame 4 with a tension device arranged within the handle and arranged so as to indicate the degree of tension in the tape when extended.

What I claim is:—

1. A device of the class described, comprising a frame carrying a tape, a handle connected with said frame, a tension device interposed between the handle and the frame comprising a spring fastened to the frame at one end and extending into a recess in the handle, an enlarged head being secured to the spring within said handle, a movable shoulder mounted in said handle for limiting the outward movement of the head of the spring; a bolt extending from the frame into said handle, and locking means carried by the handle and adapted to engage said bolt, for holding the parts against separation, the movable shoulder

permitting the rod to be drawn away from the securing nut when the spring is to be employed, and a scale cooperating with said spring to indicate the pull upon the parts.

2. In a device of the class described, in combination, a frame adapted to receive a tape, a graduated sleeve extending from said frame, a handle mounted to slide on said sleeve, a spring connecting said handle with said frame, and adapted to be extended when said handle is pulled, said scale affording means for measuring the displacement of said handle and measuring the tension of said spring, and a telescoping bushing in said handle having a collar forming an abutment for the said spring.

In witness that I claim the foregoing I have hereunto subscribed my name this 2nd day of November 1910.

EDWIN H. MILLER.

Witnesses:

F. D. AMMEN,
EDMUND A. STRAUSE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents Washington, D. C."