July 28, 1964 W. B. GARDEN 3,142,194

TENSIONING DEVICE FOR A BOARD FOR EDUCATIONAL PURPOSES

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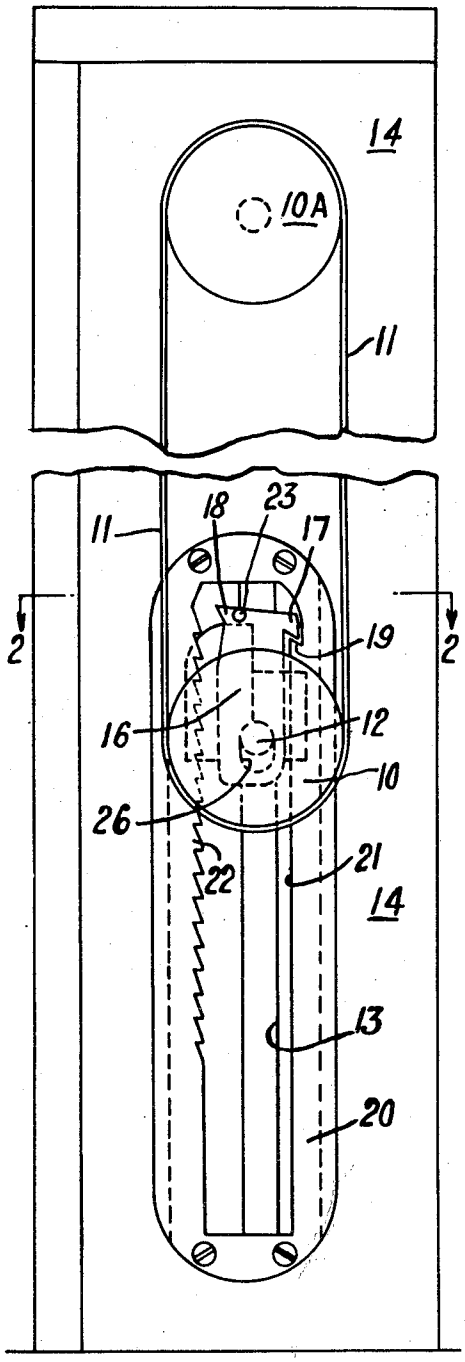


FIG. 1.

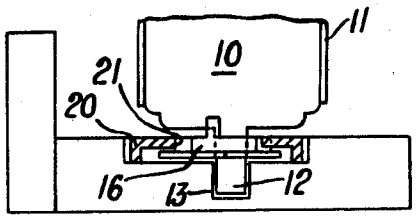


FIG. 2.

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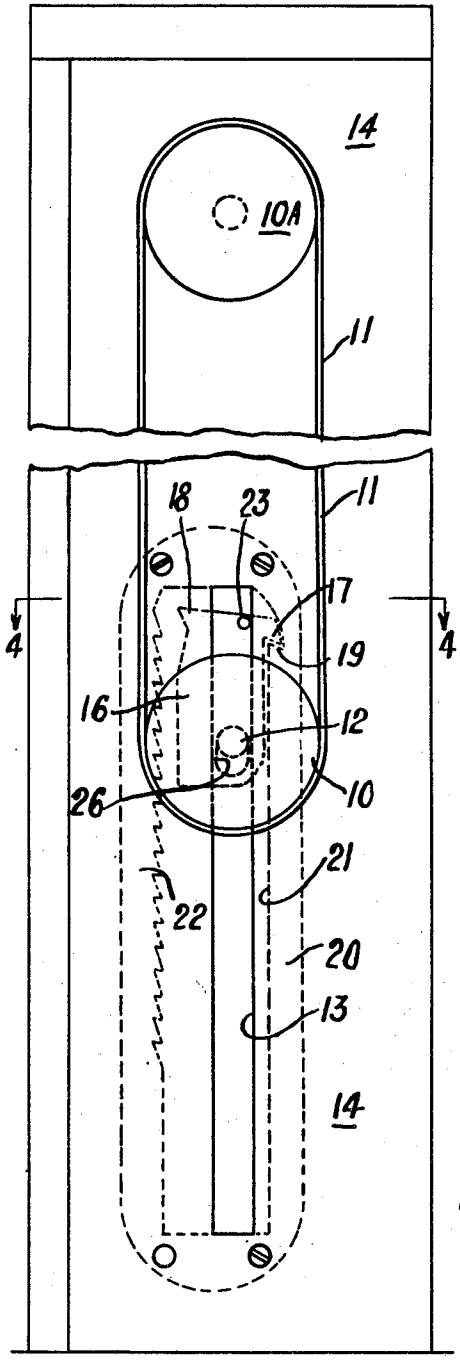


FIG. 3.

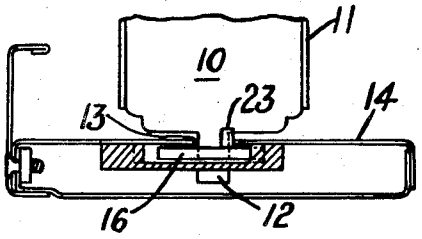


FIG. 4.

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TENSIONING DEVICE FOR A BOARD FOR EDUCATIONAL PURPOSES

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3 Claims. (Cl. 74—242.14)

This invention relates to improvements in or relating to tensioning devices for boards for educational purposes, and more particularly to boards of the type comprising an endless band of flexible material capable of bearing indicia and entrained around two rotatable rollers carried by a frame which comprises two substantially parallel uprights.

In such a board there is a tendency for the flexible band to stretch after prolonged use and to become slack.

It is an object of the present invention to provide means for maintaining the band taut between the rollers.

In a tensioning device for a board of the type referred to according to the invention the bottom roller has latch plates rotatably mounted on the ends thereof, each latch plate being so formed as to be locatable in substantially any position relative to the associated upright, the bottom roller and the latch plates being movable toward and away from the top roller.

Two embodiments of the invention are illustrated in the accompanying drawings in which:

FIG. 1 is a fragmentary side elevation of an upright of the first embodiment.

FIG. 2 is a section on the line 2—2 of FIG. 1.

FIG. 3 is a fragmentary side elevation of an upright of the second embodiment.

FIG. 4 is a section on the line 4—4 of FIG. 3.

Referring to the drawings in which like numerals denote like parts, 10 denotes a bottom roller and 10A denotes a top roller. An endless band 11 of flexible material capable of bearing indicia is entrained around the rollers 10 and 10A. The roller 10 carries at each end a spindle 12 adapted to be slidably mounted in a slot 13 formed in the adjacent face of the associated upright 14 of the frame so that the distance between the top 10 and bottom rollers 10 and 10A may be varied.

16 denotes a latch plate pivotally mounted on each spindle 12. The upper ends of opposed marginal edge portions of each plate 16 are formed with pawls 17, 18 projecting in opposite directions from the plate 16. Each plate 16 is rotatably mounted on the associated spindle 12 in such manner that the center of gravity of the plate 16 biases the plate 16 in the direction to cause the pawl 18 to engage with a ratchet 22 which is secured to the associated upright 14. The uprights 14, one of which is illustrated in FIGS. 1 and 2, are of wood. Referring to the construction illustrated in FIGS. 3 and 4, the uprights 14 are of hollow metallic form.

Considering one of the latch plates 16 the pawl 17 is engageable with a detent 19 formed in the face of the associated upright 14 opposite to the ratchet 22.

Means 23, which may conveniently be constituted by a pin attached to the plate 16, serves to enable the plate 16 to be manually pivoted about its point of mounting to the spindle 12 in opposition to the biasing effect acting on the latch plate 16. The means 23 also serve to disengage the pawls 17 from the associated detents 19.

The top roller 10A is mounted between the uprights 14, the bottom roller 10 also being positioned between the uprights 14 below the top roller 10A with the pawl 17 on each plate 16 in engagement with the associated

detent 19. In this way the bottom roller 10 is supported while the band 11 is entrained around the two rollers 10 and 10A, the two ends thereof being interconnected to form the endless band 11.

By manually pivoting each plate 16 by means of the peg 23 each pawl 17 is disengaged from the associated detent 19, the bias acting on each plate 16 causing the pawl 18 to engage with the ratchet 22 thereby preventing movement of the bottom roller 10 during, for example, movement of the band 11 during use thereof.

The weight of the bottom roller 10 tends automatically to maintain the band 11 taut since downward, but not upward, movement of the bottom roller 10 is permitted by the pawl and ratchet assembly 18, 22. Alternatively if the weight of the bottom roller 10 is insufficient to maintain the band 11 under the desired tension, the bottom roller 10 may be periodically forced downwardly thereby tensioning the band 11, the pawl 18 being automatically re-engaged with the ratchet 22 in the new position.

What is claimed is:

1. In a board for educational purposes having an endless band of flexible material capable of bearing indicia, two vertically spaced rotatable rollers around which said band is entrained, the lower of said rollers being vertically supported by said band, and a frame including two substantially parallel uprights relative to which said rollers are rotatably mounted; a tensioning device comprising at least one latch plate rotatably mounted on the lower one of said rollers, considered with said board in the operative position, said lower rollers being operatively urged away from the upper one of said rollers by the weight of said lower roller, a ratchet fixedly mounted on at least one of said upright members adjacent to said latch plate, and a pawl carried by said latch plate, the center of gravity of said latch plate being on the same side of an imaginary vertical through the position of rotatable mounting of said latch plate as said pawl, considered with said board in the operative position, whereby said pawl is urged by gravity into engagement with said ratchet, said ratchet being so mounted as to prevent movement of said lower roller towards said upper roller when said pawl is in engagement with said ratchet.

2. In a board for educational purposes having an endless band of flexible material capable of bearing indicia, two vertically spaced rotatable rollers around which said band is entrained, the lower of said rollers being vertically supported by said band, and a frame including two substantially parallel uprights relative to which said rollers are rotatably mounted; a tensioning device comprising at least one latch plate rotatably mounted on the lower one of said rollers, considered with said board in the operative position, said lower roller being operatively urged away from the upper one of said rollers by the weight of said lower roller, a ratchet fixedly mounted on at least one of said upright members adjacent to said latch plate, and a pawl carried by said latch plate, said pawl and the center of gravity of said latch plate being on the same side of an imaginary vertical through the position of rotatable mounting of said latch plate on said lower roller, considered with said board in the operative position, whereby said pawl is urged by gravity into engagement with said ratchet, said ratchet being so mounted as normally to prevent movement of said lower roller towards said upper roller, a second pawl carried by said latch plate, and a detent carried by said one of said uprights for engaging with said second pawl thereby to prevent movement of said lower roller away from said upper roller when said second pawl is engaged with said detent.

3. In a board for educational purposes having an endless band of flexible material capable of bearing indicia, two vertically spaced rotatable rollers around which said band is entrained, the lower of said rollers being vertically supported by said band, and a frame including two substantially parallel uprights relative to which said rollers are rotatably mounted; a tensioning device comprising at least one latch plate rotatably mounted on the lower one of said rollers, considered with said board in the operative position, said lower roller being operatively urged away from the upper one of said rollers by the weight of said lower roller, a ratchet fixedly mounted on at least one of said upright members adjacent to said latch plate, and a pawl carried by said latch plate, said pawl and the center of gravity of said latch plate being on the same side of an imaginary vertical through the position of rotatable mounting of said latch plate on said lower roller, considered with said board in the operative position, whereby said pawl is urged by gravity into engagement with said ratchet, said ratchet being so mounted as normally to prevent movement of said lower roller towards said upper roller, a

second pawl carried by said plate, a detent carried by said one of said uprights for engaging with said second pawl thereby to prevent movement of said lower roller away from said upper roller when said second pawl is engaged with said detent, and a manual gripping means being presented by said latch plate for facilitating manual pivoting of said latch plate against gravity to cause said second pawl to enter into or to be withdrawn from operative engagement with said detent to prevent downward movement of said lower roller.

References Cited in the file of this patent

UNITED STATES PATENTS

184,552	Smith	Nov. 21, 1876
1,075,072	Todd	Oct. 7, 1913
2,368,362	Johnstone	Jan. 30, 1945
2,481,012	Haseltine	Sept. 6, 1949
2,938,416	Maness	May 31, 1960
3,007,344	Schaefer	Nov. 7, 1961
3,062,066	Mohr	Nov. 6, 1962
3,077,791	Gray	Feb. 19, 1963