May 22, 1945. F. W. ODIN 2,376,716

TELESCOPIC STRUCTURE

Filed June 12, 1944

Fig. 1

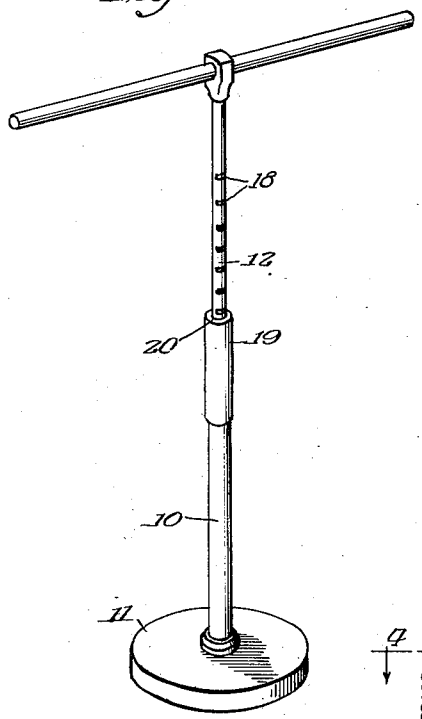


Fig. 2

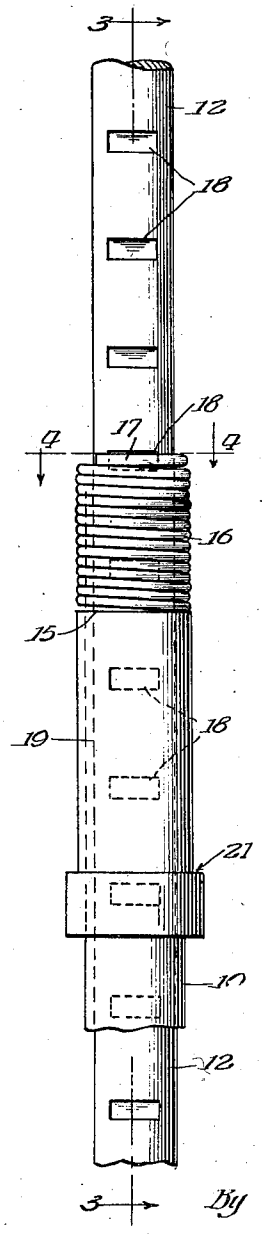


Fig. 3

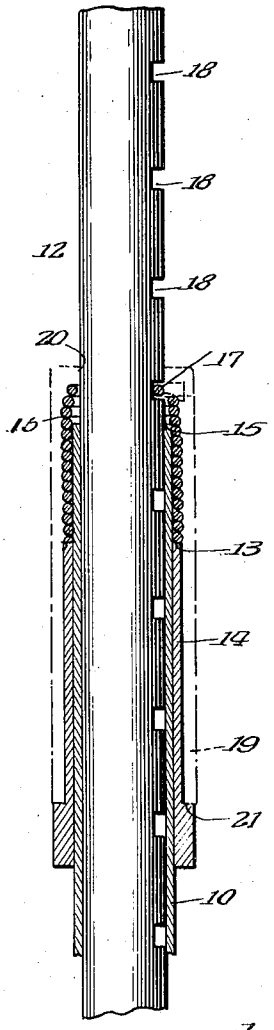


Fig. 4

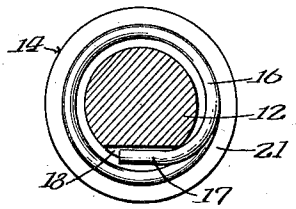
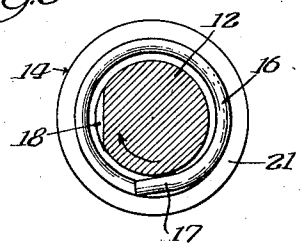


Fig. 5



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By
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2,376,716

UNITED STATES PATENT OFFICE

2,376,716

TELESCOPIC STRUCTURE

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Application June 12, 1944, Serial No. 539,982

6 Claims. (Cl. 287—58)

This invention relates, in general, to telescopic structures, but more particularly to improved means for locking together two telescoping members, at any desired point in their relative longitudinal adjustment, quickly and effectively.

A further object is to provide an improved locking means in which the number of parts will be reduced to a minimum, and which will be effective and efficient in operation.

To the attainment of these ends and the accomplishment of other new and useful objects as will appear, the invention consists in the features of novelty in substantially the construction, combination and arrangement of the several parts, hereinafter more fully described and claimed, and shown in the accompanying drawing illustrating this invention, in which

Fig. 1 is a perspective view of a display stand constructed in accordance with the principles of this invention.

Fig. 2 is an enlarged elevation of the locking means.

Fig. 3 is a detail sectional view taken on line 3—3, Fig. 2.

Fig. 4 is a horizontal sectional view taken on line 4—4, Fig. 2.

Fig. 5 is a view similar to Fig. 4, showing the parts in a different positon.

Referring more particularly to the drawing, the numeral 10 designates a tubular standard mounted upon a suitable base 11, and telescoping with the standard is a member 12. The standard 10 is provided with a circumferential shoulder 13 adjacent the top thereof, and this shoulder may be formed in any desired or suitable manner, either by applying a sleeve 14 to the standard, which sleeve terminates a suitable distance below the extremity 15 of the standard, or the standard may be externally reduced in diameter to form such shoulder.

Encompassing the portion of the standard beyond the shoulder 13, is a resilient element 16, preferably in the form of a coil spring, one end of which is anchored to the standard, and the coil is of such a length that a portion thereof will extend beyond the end 15 of the standard. The extremity 17 of the coil is deflected so that it will extend transversely across a portion of the extremity 15 of the standard.

The member 12 is preferably round in cross-section, and is provided with a series of recesses 18 extending transverse to the length of the member, and these recesses are arranged in spared relation throughout the length of the standard or member 10. The diameter of the member 12 is such that when the two members are telescoped, it will slide freely within the standard or member 10, and the extremity 17 of the element 16 is so disposed that as the recesses 18 move in alinement therewith, the resiliency of the element 16 will cause the end 17 to enter and be seated within the adjacent recess, thereby locking the member 12 against relative adjustment with respect to the member 10.

Furthermore, the end 17 of the coil being resilient, it will enter the recess, and the bottom thereof being flat and somewhat extended, the end 17 will prevent a relative rotation of the member 12 with respect to the member 10 under normal conditions. However, the end 17 of the spring will yield under rotary force applied to one of the members when the other member is held against rotation. As a recess approaches the end 17 of the spring, the latter will snap into recess, thereby assisting in properly positioning the members in locking relation. At the same time, when the members are locked together, should any heavy object strike the end of the member 12, there will be a slight relative longitudinal movement of the members, one with respect to the other, thereby preventing damage to the parts.

In order to effect a relative longitudinal adjustment of the member 12 with respect to the standard or member 10, the member 12 may be axially rotated within the standard 10, from the position shown in Fig. 4 to the position shown in Fig. 5, so as to cause the recess 18 to move away from the extremity 17 of the element 16 to unseat the latter from the recess, with the result that, when in this position, the member 12 may be moved longitudinally with respect to the member 10.

After the desired adjustment of the members 10 and 12 has been obtained, the member 12 is again rotated within the member 10, from the position shown in Fig. 5 back to the position shown in Fig. 4, so as to position one of the recesses 18 to receive the end 17 of the element 16. This will lock the two members against relative longitudinal adjustment, until the member 12 is moved in a direction to unseat the end 17 of the element 16.

If desired, and in order to protect or cover the resilient element 16 and the extremity 17, there may be provided a sleeve 19 having an opening 20 in one end, of a diameter to closely fit the member 12. The sleeve is telescoped over the end of the standard 10, and may be held in position in any suitable manner, preferably by

means of one end thereof resting upon a shoulder 21 carried by the standard 10. This sleeve 19 is readily removable when it is desired to gain access to the element 16.

While the preferred form of the invention has been herein shown and described, it is to be understood that various changes may be made in the details of construction and in the combination and arrangement of the several parts, within the scope of the claims, without departing from the spirit of this invention.

What is claimed as new is:

1. In a telescopic structure, the combination of an inner member provided with a series of recesses spaced longitudinally thereof, and a resilient locking member anchored to the outer member, a portion of said locking member projecting above and transversely across the adjacent end of said outer member and adapted to enter one of said recesses, to lock said members together against relative longitudinal movement and against relative rotary movement, the latter under normal conditions, one of said members being axially rotatable with respect to the other to effect such locking, and under force to render the said locking member ineffective with respect to said recesses, to permit a relative longitudinal adjustment of said members.

2. In a telescopic structure, the combination of an inner member provided with a series of recesses spaced longitudinally thereof, and a locking member anchored to the outer member, a portion of said locking member projecting above and transversely across the adjacent end of said outer member and adapted to enter one of said recesses, to lock said members together and to permit a slight yielding movement of the members longitudinally, one with respect to the other, when locked, one of said members being axially rotatable with respect to the other to effect such locking, and to render the said locking member ineffective with respect to said recesses, to permit a relative longitudinal adjustment of said members, said locking member comprising a resilient element encompassing said inner member, one end of said resilient element being free, said free end constituting the recess engaging portion.

3. In a telescopic structure, the combination of an inner member provided with a series of recesses spaced longitudinally thereof, a locking member anchored to the outer member, a portion of said locking member projecting above and transversely across the adjacent end of said outer member and adapted to enter one of said recesses, to lock said members together, said portion of said locking member also constituting a yieldable support for the inner member, when locked, one of said members being axially rotatable with respect to the other to effect such locking, and to render the said locking member ineffective with respect to said recesses, to permit a relative longitudinal adjustment of said members, and a sleeve slidable in one direction longitudinally upon one of said members to conceal said locking member, and in another direction to expose the locking member.

4. In a telescopic structure, the combination of an inner member provided with a series of recesses spaced longitudinally thereof, and a locking member anchored to the outer member, a portion of said locking member projecting above and transversely across the adjacent end of said outer member and adapted to enter one of said recesses, to lock said members together, one of said members being axially rotatable with respect to the other to effect such locking, and to render the said locking member ineffective with respect to said recesses, to permit a relative longitudinal adjustment of said members, said locking member comprising a coil spring encompassing the end of said outer member, one end of said spring anchored to said outer member, the free end of said spring being spaced above its supporting member and extending transverse to the axis of the coil, whereby to also form a cushion between the members, when locked, and adapted to be seated and unseated in one of said recesses as one of said members is axially rotated with respect to the other member.

5. In a telescopic structure, the combination of an inner member provided with a series of recesses spaced longitudinally thereof, and a coil spring encompassing and anchored to the outer member, a portion of said locking member projecting above and transversely across the adjacent end of said outer member and adapted to enter one of said recesses, to assist in positioning and locking said members together, one of said members being axially rotatable with respect to the other to effect such locking, and to render the said locking member ineffective with respect to said recesses, to permit a relative longitudinal adjustment of said members, said inner member being substantially round in cross-section, said recesses being formed in a portion only of the periphery thereof, and extending transverse to the length of said inner member.

6. In a telescopic structure, the combination of an inner member provided with a series of recesses spaced longitudinally thereof, a locking member anchored to the outer member, a portion of said locking member projecting above and transversely across the adjacent end of said outer member and adapted to enter one of said recesses, to assist in positioning and locking said members together against relative longitudinal movement, one of said members being axially rotatable with respect to the other to effect such locking, and to render the said locking member ineffective with respect to said recesses, to permit a relative longitudinal adjustment of said members, said locking member comprising a coil spring encompassing the end of said outer member, one end of said spring anchored to said outer member, the free end of said spring extending transverse to the axis of the coil, and adapted to be seated and unseated in one of said recesses as one of said members is axially rotated with respect to the other member, said end also constituting a resilient support for the inner member, when the members are locked together, and a sleeve slidable lengthwise of said members into a position to house said spring, and out of such position to expose the spring.

FRANK W. ODIN.