

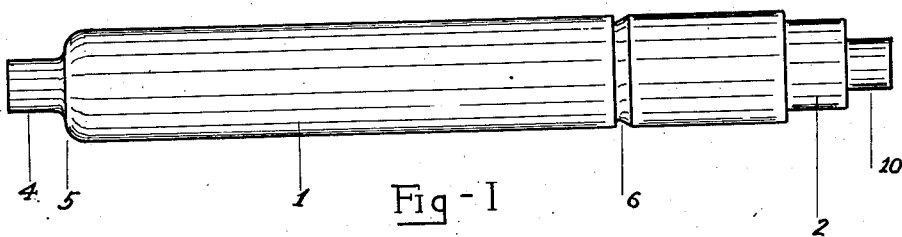
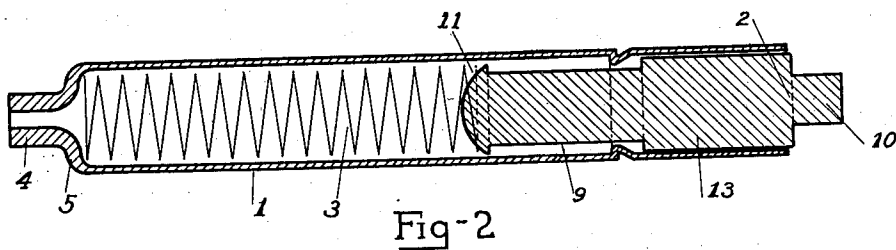
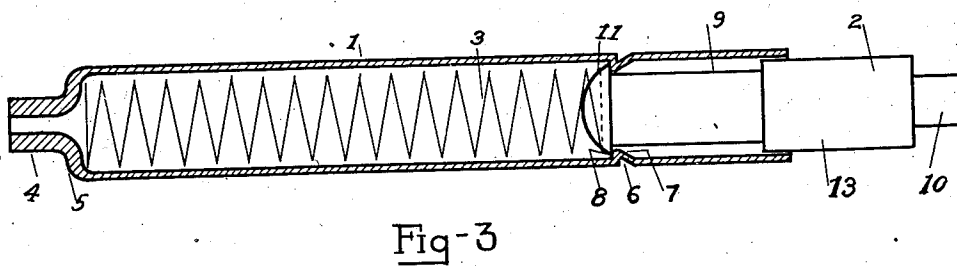
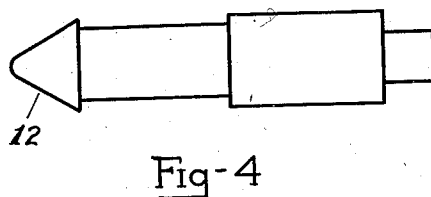
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SPRING BAR

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SPRING BAR

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12 Claims. (Cl. 24-265)

My invention relates to spring bars for wrist watches and flexible bracelets, and more specifically, to adjustable spring bars.

Spring bars are commonly divided into two classes, non-adjustable and adjustable. The non-adjustable bars are made by placing slideable trunnions separated by a spring in either end of a hollow tube and then bending the ends of the tube inwardly to hold the trunnions from slipping or being pushed from the tube. The adjustable bars are made by placing a spring in a hollow tube, placing trunnions with recessed portions in their rear in either end of the hollow tube and then upsetting the tube at the position of the recessed portions.

The non-adjustable bars made in the above fashion are made of four parts and require after the insertion of the parts into the tube the complicated process of bending the tube inwardly to hold the parts within the tube.

The adjustable bars are also made of four parts and the construction requires that the parts be placed within the tube and held in their proper position and then for the tube to be upset near its ends to hold the trunnions in position.

It is my object to make an adjustable spring bar with the following three parts, a trunnion, a spring and a tube.

Another object is the construction of a bar in such a manner that the insertion of the trunnion into the tube is the last step in the manufacture of the bar and obviates the necessity of upsetting the tube or bending its ends to lock the parts within.

Another object is to construct a spring bar in a simple and efficient manner.

I accomplish these objects by narrowing one end of a hollow tube, upsetting at an angle the tube near the other end, and inserting a trunnion into the upset end of the tube, the inner part of the trunnion being recessed and ending with a pointed face.

Further and more specific objects, features and advantages will more clearly appear from the detailed description given below taken in connection with the accompanying sheet of drawing which forms a part of this specification.

Referring to the drawing, Fig. 1 is a perspective view of my spring bar; Fig. 2 is a section through the center of my spring bar with the spring compressed; Fig. 3 is a view semi in section showing the spring bar expanded; Fig. 4 is a modification of a detail.

In the drawing, my spring bar is comprised

of a tube 1, a trunnion 2 and a spring 3 with the spring fitting inside the tube and the trunnion fitting partially inside the tube and holding the spring in place inside the tube.

The tube 1 is a hollow tube, one end of which is rolled, squeezed or drawn out or treated in some similar manner to form a pin 4 and provide the shoulder 5 and the other end is upset to form the inward projecting part 6. The side 7 of the part 6 furthest from the pin end 4 slopes toward the pin end while the other side 8 nearer the pin end is vertical or nearly so.

The trunnion 2 is provided near one end with a recessed portion 9 having vertical sides. The recess is deep enough to accommodate the inward projecting part 6 of the tube and long enough to provide for sufficient play of the trunnion in the tube that the spring bar will fit between any desired set of lengths and so be adjustable. The end of the trunnion removed from the recessed portion is narrowed into the pin like part 10 and the other end near the recessed part is provided with a sloping ovate tip 11 so that the center portion of the tip extends beyond the edges and so forms sloping sides to the tip, or the tip may be partly sharpened as shown in Fig. 4 at 12 toward the small rounded tip in the center and sides of the tip slope backward toward the edge. These sloping sides of the ovate or pointed tip correspond to the slope of the side 7 of the projecting part and permit the trunnion tip 11 to be forced wedge like into the tube 1 and past the projection 6 so that the projection 6 of the tube rests in the recessed part of the trunnion. When the trunnion is in this position, it cannot slip or be forced out from the tube as the contacting sides of the recessed part and the side 8 of the projecting part are vertical or nearly so.

The trunnion although it cannot be removed requires little force to be pushed into position in the tube because of the correspondingly sloping sides of the adjacent parts and because of the circularity of the tube.

The part of the trunnion 13 between the pin 10 and the recessed part 9 is as long as the recessed part 9 and both these parts are a trifle longer than the distance between the upset part of the tube 6 and the end removed from the pin 4. This gives the bar an adjustableness and it can be used between points varying in length from the tube length to points the tube length plus the distance 9.

My spring bar is constructed or assembled in the following manner in order to get efficiency

and a minimum handling of the various parts. The first step is the decreasing by rolling, squeezing or drawing out one end of a hollow tube into a pin shaped end and then upsetting inwardly at an angle the tube near the other end. A spring is then placed in the open end of the tube and a trunnion as described above is then forced into the tube until the recessed part of the trunnion is held by the upset part of the tube. This method of construction does not involve any forming of the parts during the process of assembly, all the forming being done before hand. This division means that once the parts are put together the pin is finished and no extra work need be done to hold the trunnions and spring within the tube.

While I have described my improvements in great detail and with respect to a preferred form thereof, I do not desire to be limited to such details and forms since many changes and modifications may be made and the invention embodied in widely different forms without departing from the spirit and scope thereof in this broader aspects. Hence I desire to cover all modifications, forms and embodiments coming within the language or scope of any one or more of the appended claims.

I claim:

1. A spring bar having a hollow tube projecting inwardly near one end and narrowed at the other end, said inward projecting part sloping inwardly toward the narrowed end and ending in a shoulder substantially normal to and joining the hollow tube, a spring inside said tube and a trunnion partly in said tube, the end of the trunnion extending beyond the tube being narrowed and the other end ovate shaped and a recessed portion near said ovate shaped end into which the inward projecting part of the tube extends.

2. A spring bar comprising a hollow tube having a narrowed portion at one end and an inward extending part near the other end, the inward extending part having a sloping part extending inwardly toward the narrowed end and terminating in a part substantially normal to the wall of the tube, a spring positioned within the tube, a trunnion having an end positioned against the spring, said end comprising a convex cap terminating in a shoulder normal to the axis of the tube, the cap being sufficiently larger than the inside of the tube at the inward extending part to pass beyond it.

3. A slidable extension comprising an inner part with a sloping capped end, a reduced portion adjacent the capped end, an outer part surrounding the inner part and having an indented part projecting into the reduced portion of the inner part, the sides of the indented part comprising one part sloping inwardly and away from the direction from which the inner part enters and the other part normal to and joining the outer part with the sloping part.

4. A slidable extension comprising an inner part with a sloping capped end, a reduced portion adjacent the capped end, an outer part surrounding the inner part and having an annular ring projecting into the reduced portion of the inner part, the sides of the annular ring comprising one part sloping inwardly and away from the direction from which the inner part enters and the other part normal to and joining the outer part with the sloping part.

5. A spring bar comprising a hollow tube having a projection extending inwardly thereof near

one end and narrowed at the other end, said inward projecting portion including a sloping portion extending toward the narrowed end and a part substantially normal to the hollow tube joining the sloping portion with the hollow tube, a trunnion partly in said tube, the end of the trunnion extending beyond the tube being narrowed and the other end provided with a recess forming a shoulder, said projecting portion extending into said recess in the path of said shoulder and a spring inside the said tube to actuate said trunnion.

6. In a spring bar, a hollow tube having a projecting portion extending inwardly near one end and narrowed at the other end said inward projecting portion sloping inwardly toward the narrowed end and terminating in a shoulder substantially normal to and joining the hollow tube, a trunnion partly in said tube, the end of the trunnion extending beyond the tube being narrowed and the other end sloping toward the narrowed end of the tube and a recessed portion near the sloped end into which the inwardly projecting portion of the tube extends, said sloped end and sloping portion of the inward projecting part facilitating the insertion of the trunnion and the substantially normal part preventing the extraction thereof.

7. In a spring bar, a hollow, springy tube having a projecting portion extending inwardly near one end and narrowed at the other end, said inward projecting portion sloping inwardly toward the narrowed end and terminating in a shoulder substantially normal to and joining the hollow, springy tube, a spring inside said tube and trunnion partly in said tube actuated by said spring, the end of the trunnion extending beyond the tube being narrowed and the other end sloping toward the narrowed end of the tube and a recessed portion near the sloped end into which the inwardly projecting portion of the tube extends, said sloped end and sloping portion of the inward projecting part together with the springy quality of the tube facilitating the insertion of the trunnion and the substantially normal part preventing the extraction thereof.

8. A trunnion for use in a spring bar having one of its ends narrowed and the other end for insertion into the tube of the spring bar provided with a recess forming a shoulder and having an ovate head beyond said shoulder.

9. A trunnion for use in a spring bar having one of its ends narrowed and the other end for inserting into the tube of the spring bar provided with a sloping head and a recess to the exterior of said head forming a shoulder.

10. A hollow, springy tube for use in a spring bar having one end narrowed and the other end having a projection extending inwardly thereof with said inward projecting portion including a sloping portion extending toward the narrowed end and another part substantially normal to the hollow tube joining the sloping portion with the hollow tube.

11. A process of constructing a spring bar comprising forming a trunnion, recessing a portion near one end of the trunnion, narrowing the other end, forming a springy, hollow tube, narrowing one end of the hollow tube forming an inwardly projecting part in the hollow tube near the end removed from the narrowed end, inserting a coiled spring into said hollow tube and forcing said trunnion into said springy tube until the recessed portion of the trunnion is caught in the projecting part of the hollow tube.

12. A process of constructing a spring bar comprising forming a trunnion, recessing a portion near one end of the trunnion, narrowing the other end, forming a springy, hollow tube, narrowing one end of the hollow tube forming an inwardly projecting part in the hollow tube near the end removed from the narrowed end, said inwardly projecting part being formed with one portion sloping inwardly toward the narrowed

end and another portion substantially normal to the tube and joining the sloping portion to the tube, inserting a coiled spring into said hollow tube and forcing said trunnion into said spring tube until the recessed portion of the trunnion is caught in the projecting part of the hollow tube.

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