United States Patent [19]

Itatani

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[54] **STEEL ROD STRAINING DEVICE**

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[51] **Int. Cl.** **F16b 7/06**

[58] **Field of Search** ..... 287/60, 59, 61, 62, 287/20.5, 113, 117, 111; 29/175 R, 463; 24/DIG. 21

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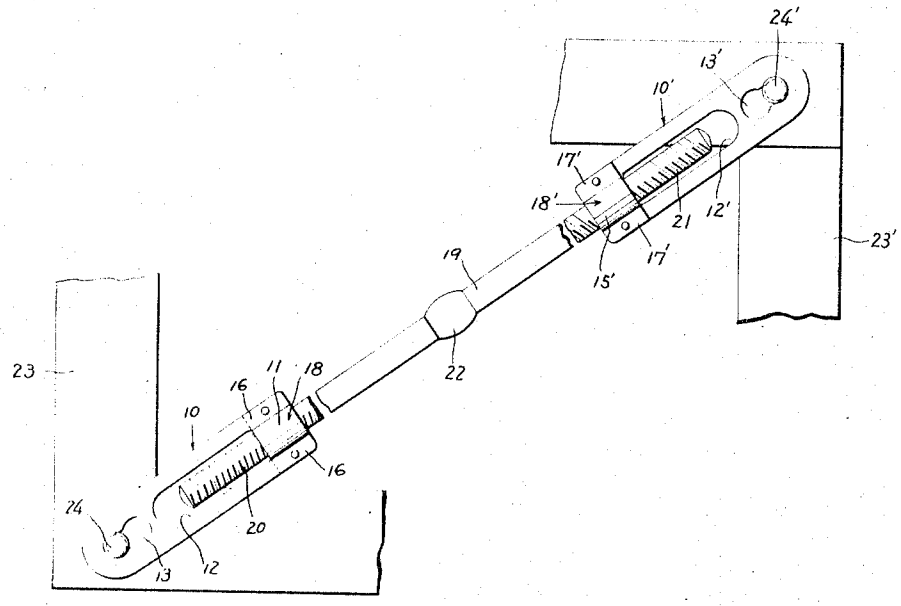
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[57] **ABSTRACT**

A steel rod straining device has a pair of strain applying members, one having a right handed threaded tubular part thereon and the other having a left handed threaded tubular part thereon. A steel rod extends between the strain applying members, one end of the rod having right handed threads thereon threaded into the right handed threaded tubular part on one of the strain applying members and the other end of the rod having left handed threads thereon threaded into the left handed threaded tubular part on the other of the strain applying members. The strain applying members can be attached to the framework of a structure in which the steel rods are to be used as reinforcing rods.

1 Claim, 4 Drawing Figures



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SHEET 1 OF 2

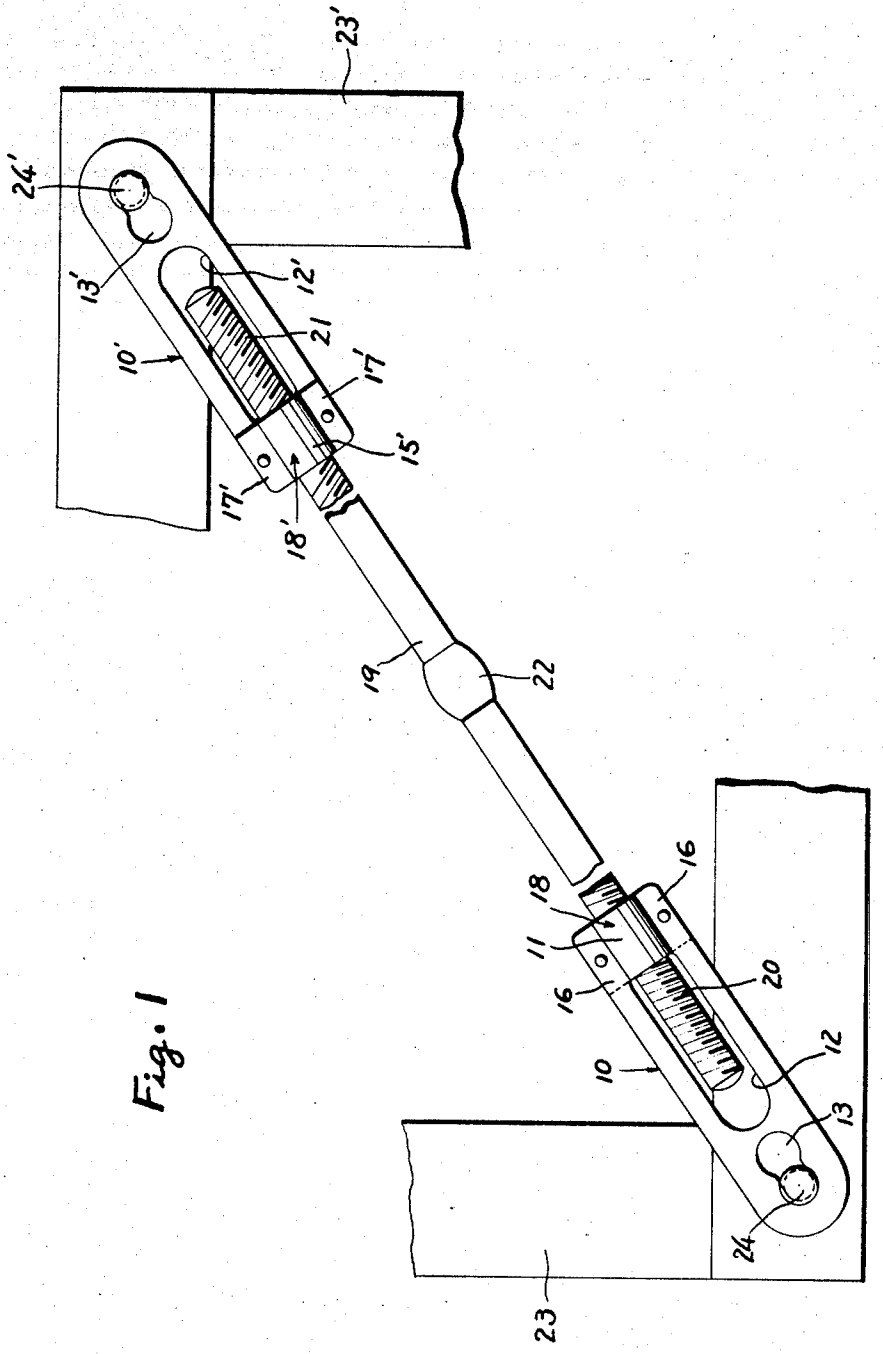


Fig. 1

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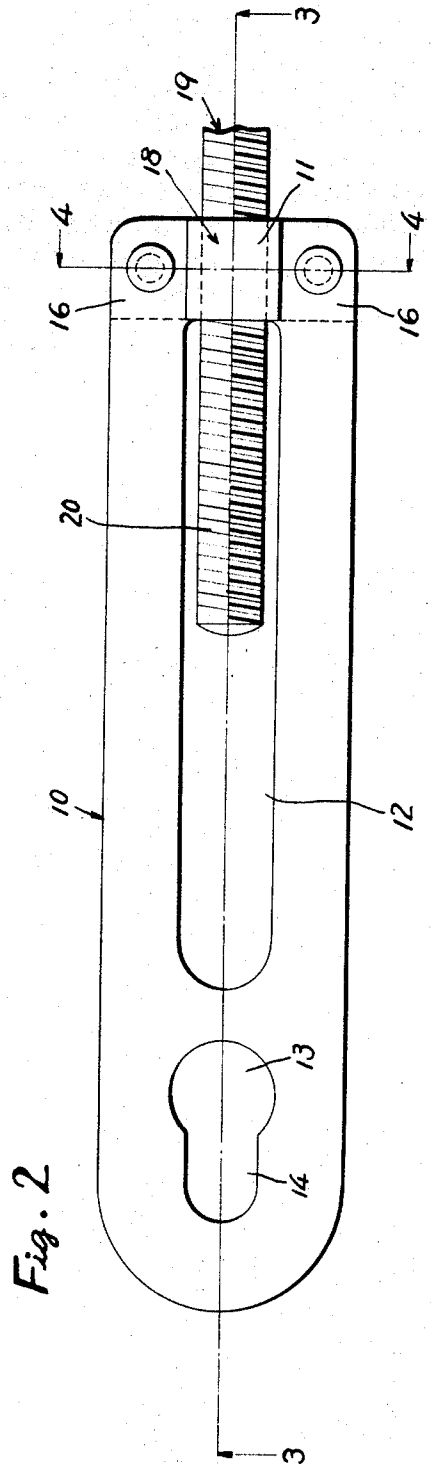


Fig. 2

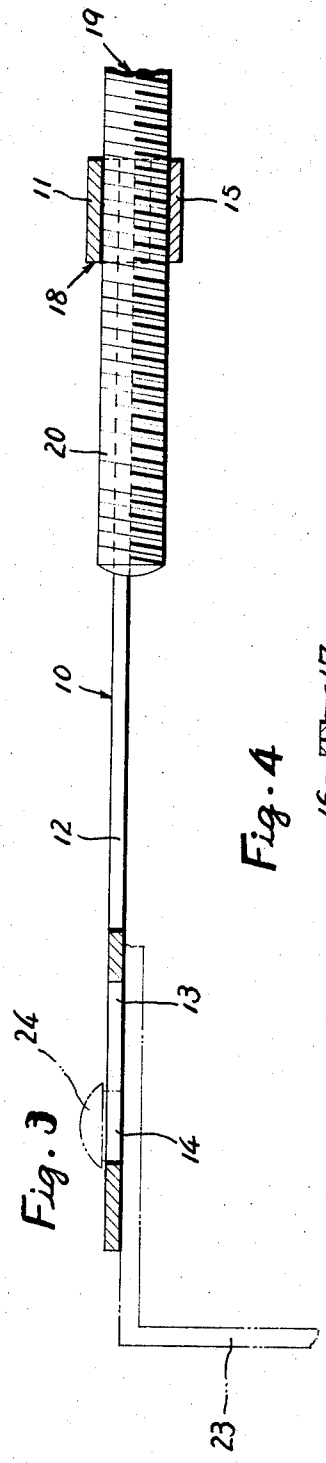


Fig. 3

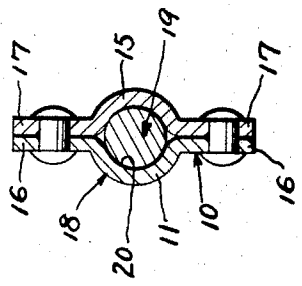


Fig. 4

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STEEL ROD STRAINING DEVICE

This invention relates to a steel rod straining device. More specifically, this invention relates to an apparatus for straining the reinforcing steel rods used in buildings and other structures.

A commonly employed device for straining reinforcing rods in buildings, for example in prefabricated houses, has consisted of a pair of steel rods the outer ends of which are welded to a receiving plate and the inner ends of which are threaded into a turnbuckle. This commonly employed device is costly due to the relatively high cost of the turnbuckle.

It is an object of the present invention to provide an apparatus for straining steel rods which does not require a turnbuckle, which has a good straining effect, the construction of which is simple and which is manufactured easily.

An apparatus according to the present invention is illustrated in the accompanying drawings.

In the drawings:

FIG. 1 is a front view of a steel rod straining device according to the present invention;

FIG. 2 is a partial view, on an enlarged scale of the device of FIG. 1;

FIG. 3 is a transverse section taken on line 3 — 3 of FIG. 2; and

FIG. 4 is a transverse section taken on line 4 — 4 of FIG. 2

Referring now to the drawings, a pair of strain applying members **10** and **10'** of a steel plate have longitudinally extending slots **12** and **12'** therein. Extending across the slots at the inner ends thereof are semicircular parts **11** and **11'** which are integral with the plates. Key-hole shaped openings **13** and **13'** are provided at the outer ends of the members, the smaller parts **14** and **14'** of which extend outwardly from the larger parts. Semicircular elements **15** and **15'** are positioned face to face with semicircular parts **11** and **11'** and have the same shape as semicircular parts **11** and **11'**. The semicircular parts **11** and **11'** and **15** and **15'** are fastened by rivets or the like through flat portions **16** and **16'** and **17** and **17'**, respectively, to form tubular parts **18** and **18'** at the inner ends of members **10** and **10'**. Right-handed threads are cut inside tubular part **18** of strain applying member **10**, and left-handed threads are cut inside tubular part **18'** of strain applying member **10'**. A steel reinforcing rod **19** is provided with connecting part **22** in the shape of a spanner with parallel flat faces at about half-way between the ends of the steel rod **19**. One end of the rod is provided with right-handed threads **20** and the other end of the steel rod **19** is provided with left-handed threads **21**. Frame members or pillars of a building or like structure are shown at **23** and **23'** and projections **24** and **24'** are provided on the building or the structure.

As shown in the figures, said right-handed threads **20** and said left-handed threads **21** are threaded into said tubular parts **18** and **18'** having the right-handed threads and and left-handed threads on the inner surface thereof on said pair of straining applying members **10** and **10'**, respectively.

The thus constructed straining device can be attached to projections **24** and **24'** on the frame or pillar **23** and **23'** of buildings or like structures by placing the larger parts of said key-hole like openings **13** and **13'** at the outer ends of said strain applying plates **10** and **10'** over said projections. Said steel rod **19** is rotated and the two ends are caused to move into said slots **12** and **12'** in said straining applying members **10** and **10'** due to the opposite directions of said right-handed threads **20** and said left-handed threads **21**, resulting in drawing said strain applying members **10** and **10'** toward each other. This action reinforces the strain between said projections **24** and **24'** on said pillars **23** and **23'**.

If it is necessary that the strain on said steel rod **19** and the pair of straining applying members **10** and **10'** be released, this can easily be done by rotating said steel rod **19** in the opposite direction to that for producing straining.

From the foregoing explanation, the action of the steel rod straining device of the present invention can be clearly understood.

In the present invention, the pair of straining applying members **10** and **10'** can be manufactured on a large scale by a pressing operation, and accordingly, the cost of manufacturing said members **10** and **10'** is low. Because the semicircular parts **11** and **11'** formed at the inner end of said members **10** and **10'** are at the inner ends of said slots **12** and **12'** and during the straining action of said straining device the ends of said steel rod **19**, move along the grooves **10** and **10'** toward the outside ends thereof during rotation of said steel rod **19**, there are no obstructions to the movement of the rod and accordingly the steel rod straining device of the present invention can be handled more easily than the conventional device using a turnbuckle. In addition, the steel rod straining device of the present invention can apply a larger amount of strain and it eliminates the use of a comparatively expensive turnbuckle.

It will be understood that many changes can be made without changing the scope of the present invention. If it is desired, said tubular parts **18** and **18'** can be formed by welding the opposed faces of the parts **16** and **16'** and **17** and **17'**, or said semicircular parts **15** and **15'** can be replaced with internally threaded tubular parts mounted firmly on members **10** and **10'** by a method as welding.

It is thought that the invention and its advantages will be understood from the foregoing description and it is apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing its material advantages, the form hereinbefore described and illustrated in the drawings being merely a preferred embodiment thereof.

I claim:

1. A steel reinforcing rod device comprising a pair of strain applying members, each strain applying member being comprised of an elongated flat steel plate having a keyhole shaped opening at one end thereof and an elongated slot extending from a position adjacent said keyhole opening toward the other end of said elongated plate, said other end of said plate being bent in a semi-cylindrical shape and being provided with screw threads, a corresponding semi-cylindrically shaped member having screw threads thereon positioned adjacent said semi-cylindrical portion of said plate and being riveted thereto thereby forming a tubular member having an internal screw thread, the tubular member on one of said strain applying members having a right handed screw thread and the tubular member on the other of said strain applying members having a left

handed screw thread, a steel rod extending between said strain applying members, one end of said rod having right handed threads thereon and being threaded into said right handed threaded tubular member on said one of said strain applying members and the other end of said rod having left handed threads thereon and being threaded into the left handed threaded tubular member on said other of said strain applying members, said ends of said rod extending through said tubular members into said elongated slots, and a flat portion positioned at an intermediate portion of said steel rod and adapted to be engaged with a tool for turning said rod.

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