Nov. 9, 1965 L. L. RIFKEN 3,216,752

COUPLING MEANS FOR BUILDING FRAMEWORKS, RACKS, SCAFFOLDS, AND THE LIKE

Filed June 26, 1963

Fig. 1

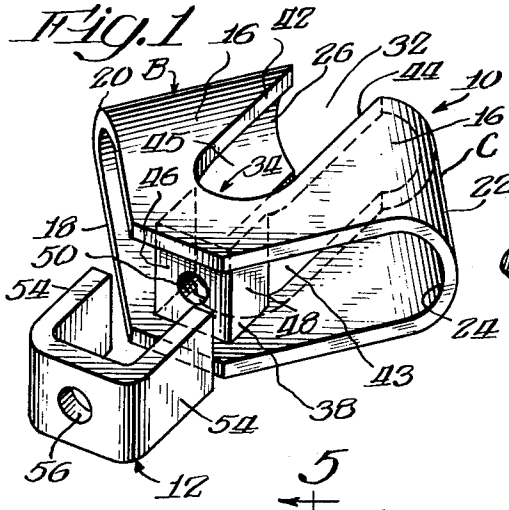


Fig. 4

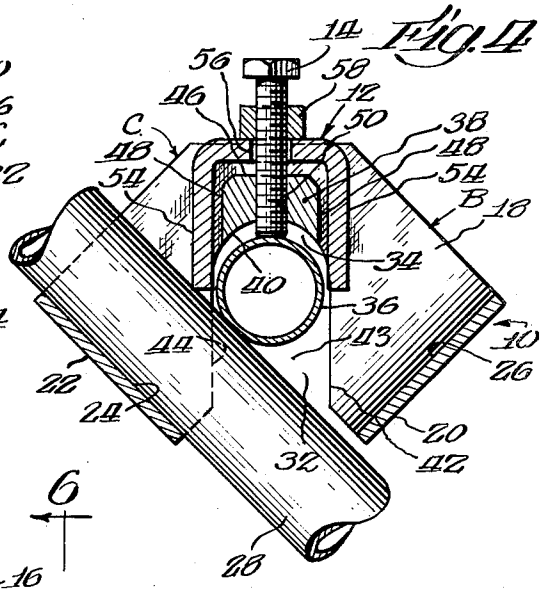


Fig. 2

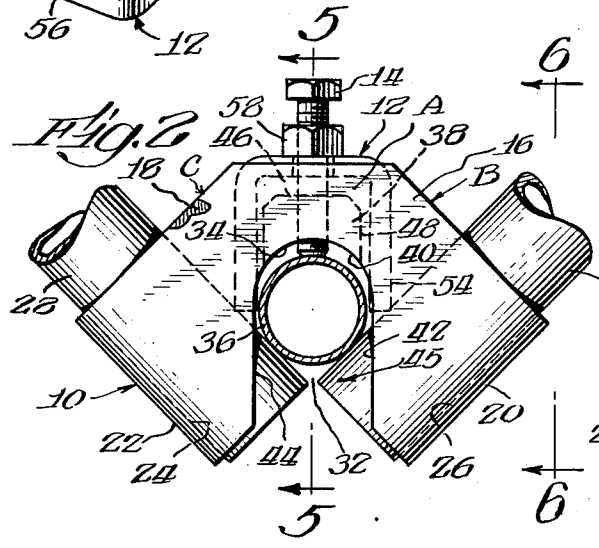


Fig. 5

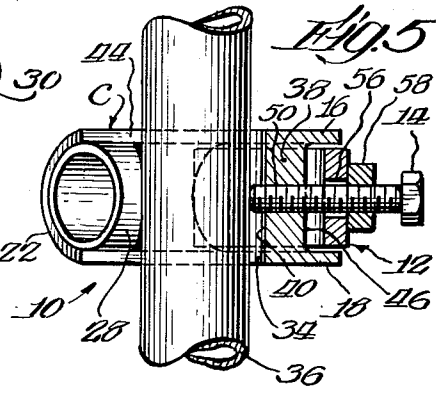


Fig. 3

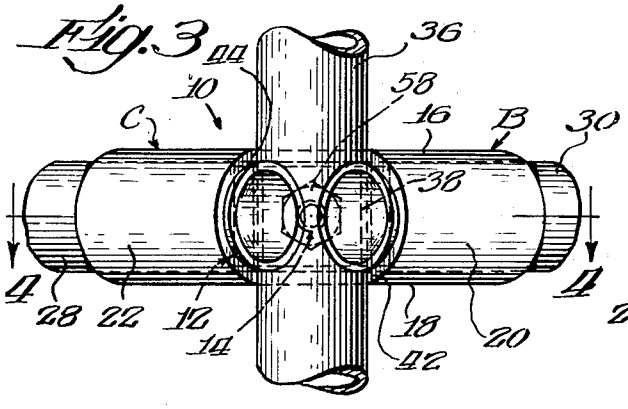
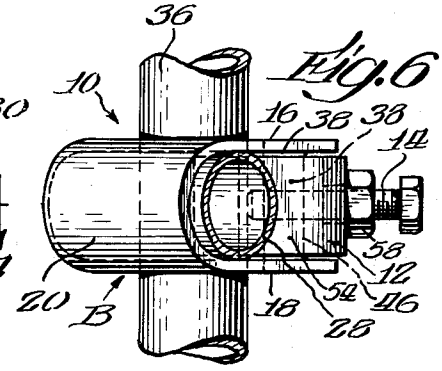


Fig. 6



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COUPLING MEANS FOR BUILDING FRAMEWORKS, RACKS, SCAFFOLDS, AND THE LIKE

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3 Claims. (Cl. 287—54)

This invention relates to improvements in coupling means for building frameworks, racks, scaffolds, and the like.

One of the objects of this invention is to provide a coupling member adapted to interlock and couple two or three framework members, pipes, or the like, in a positively locked position.

Another object of this invention is to provide a coupling device having means for causing the framework members to engage each other in a locked position and simultaneously provide clamping means for additionally engaging the framework members to reinforce the locking and positively maintain said members in such locked position.

This invention is an improvement on the structure described in my copending application, Serial No. 185,958 filed April 9, 1962.

Other objects will become apparent as this description progresses.

In the drawings:

FIG. 1 is an exploded view in perspective of the parts comprising the coupling means;

FIG. 2 is a side plan elevational view of same coupled with three framework members;

FIG. 3 is a front elevational view of FIG. 2;

FIG. 4 is a view taken on lines 4—4 of FIG. 3 but showing two framework members coupled;

FIG. 5 is a view taken on lines 5—5 of FIG. 2, and

FIG. 6 is a view taken on lines 6—6 of FIG. 2.

The coupling member consists essentially of two parts, both of which are shown in FIG. 1. The holder member which provides the sockets for receiving the framework is generally indicated at **10** and a separate U-shaped clamping member generally indicated at **12** cooperates with the holder, for the purpose to be described. These two parts are secured together by a threaded member or bolt generally indicated at **14**.

The holder **10** may be cast or formed of steel or any other material desired. It is generally C-shaped in side plan elevation and has a central body portion A with a pair of outwardly extending arms or sections B and C. As shown, the holder **10** is formed with a pair of parallel spaced side walls **16** and **18** connected at their opposite end by curved or arcuate shaped end walls **20** and **22**.

The arcuate shaped end walls **20** and **22** in effect form the side socket members **24** and **26**, for each receiving a framework member. The axis of socket member **24** is perpendicular or at right angles to the axis of socket member **26**, and the axes of the two side sockets intersect or meet within the outer borders of the arms or sections B and C of the holder **10**. The intersection is in alinement with the threaded bolt **14**. Each side socket member **24** and **26** receives a framework member designated respectively by the numerals **28** and **30**.

The holder **10** is provided with a generally U-shaped central recess **32** extending transversely of the holder which forms a central socket **34** for receiving a third framework member **36**, such as a tube, pipe or the like, similar to that previously described. Extending between the side walls **16** and **18** and connected thereto is a cross member **38** which has an inner arcuate shaped surface **40**

which forms the inner wall of the central socket **34** and against which the framework **36** rests.

The side walls **16** and **18** each have spaced inner rectilinear wall edges **42** and **44** formed by the recess **32**, and said edges each merge into the arcuate shaped surface **40**. The arms B and C are each provided with an enlarged opening designated by the numerals **43** and **45** communicating with the central recess **32**. The openings **43** and **45** are formed between the spaced side walls **16** and **18** and extend from the arcuate shaped surface **40** of the cross member to the opposite end of the arms B and C.

The cross member **38** has a top wall **46** and a pair of spaced parallel end walls **48** perpendicular thereto. The top wall **46** is positioned below the upper edges of the side walls **16** and **18** so that the cross member is received within the side walls **16** and **18**. The end walls **48** of the cross member are in substantially the same plane as the wall edges **42** and **44**. The cross member is provided with a central threaded opening **50**.

A U-shaped clamping bar designated generally by the numeral **12** is adapted to rest on the cross member **38**, as shown in FIG. 4, with the sides or legs **54** of the U-shaped member extending downwardly and into the openings **43** and **45** of the arms B and C, for the purpose of engaging the framework member or members in the side sockets **24** and **26** and thereby positively clamping the framework members in position. The U-shaped clamping bar **12** is provided with an enlarged opening **56** coaxial with the threaded opening **50**.

The threaded bolt **14** has an adjusting pressure nut **58** positioned thereon. The threaded bolt passes through the opening **56** and engages the threaded opening **50** whereby the threaded member or bolt **14** may be adjusted to extend into the central socket **34** and engage the framework member **36** positioned within said socket, as shown in FIG. 4. It will be seen that the longitudinal axis of the central socket **34** is transverse to the axes of either of the side sockets **24**, **26**, and is within the plane of the axes of said side sockets.

This device may be used to couple two or three tubular members or frameworks in the manner illustrated in the drawings. For example, for the purpose of coupling three frameworks, each of the sockets **24**, **26** and **34** receives a framework member, as shown. By adjusting the pressure nut **58** on the threaded bolt **14** and then rotating the threaded bolt **14**, the pressure nut **58** bears against the top of the clamping member **12** to cause it to move towards and positively engage the framework members **28** and **30** in the sockets **24** and **26** and to hold same in such position. As seen, the threaded bolt **14** engages the framework **36** in the central socket **34** and the sides **54** of the U-shaped clamping member **12** extend into the openings **43** and **45** and engage the said framework member **36** and simultaneously engage the two other framework members **28** and **30** in the side sockets. Thus, by adjusting the threaded bolt **14** and pressure nut **58**, the clamping member **12** and bolt **14** cause the framework members to engage each other in a locked position and simultaneously causes the clamping member to itself engage said framework members to apply an additional locking on said framework members so that the framework members are locked together by the forces of the framework members contacting each other and by the forces of the clamping member against the framework members.

In FIG. 4, two tubular frameworks are interlocked. One framework is in the central socket **34** and the other in one of the side sockets, for example, socket **24**. If it is desired to support the framework members in the two side sockets and not in the central socket, the legs

of the clamping member will engage the framework members to lock them in clamping position even though the threaded bolt **14** is not in engagement with a framework member.

It will be understood that various changes and modifications may be made from the foregoing without departing from the spirit and scope of the appended claims.

What is claimed is:

1. A coupling member comprising a body portion having a central socket and a pair of side sockets all integrally formed, each of said sockets adapted to removably receive a separate removable framework member, the axis of one side socket intersecting the axis of the other side socket in a single plane and the longitudinal axis of said central socket extending transversely to the axes of said side sockets, the framework member in said central socket being positioned between the removable framework member in said side sockets, a locking member secured in said body and extending into said central socket to engage the framework in said central socket and urge it against the removable frameworks in said side sockets to couple same together, a clamping member co-operating with said locking member and extending into said body and engaging the two removable frameworks in said side sockets when in clamping relation to reinforce the coupling of said frameworks.

2. A structure of the character defined in claim **1**, said clamping member comprising a generally U-shaped member with the legs thereof engaging the framework members in the side sockets.

3. A structure defined in claim **2** in which the body has a centrally positioned cross member, the inner wall of which forms the central socket, said cross member having a threaded opening to receive a threaded member which moves said clamping bar inwardly to cause same to engage the framework members in said side sockets.

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CARL W. TOMLIN, *Primary Examiner.*