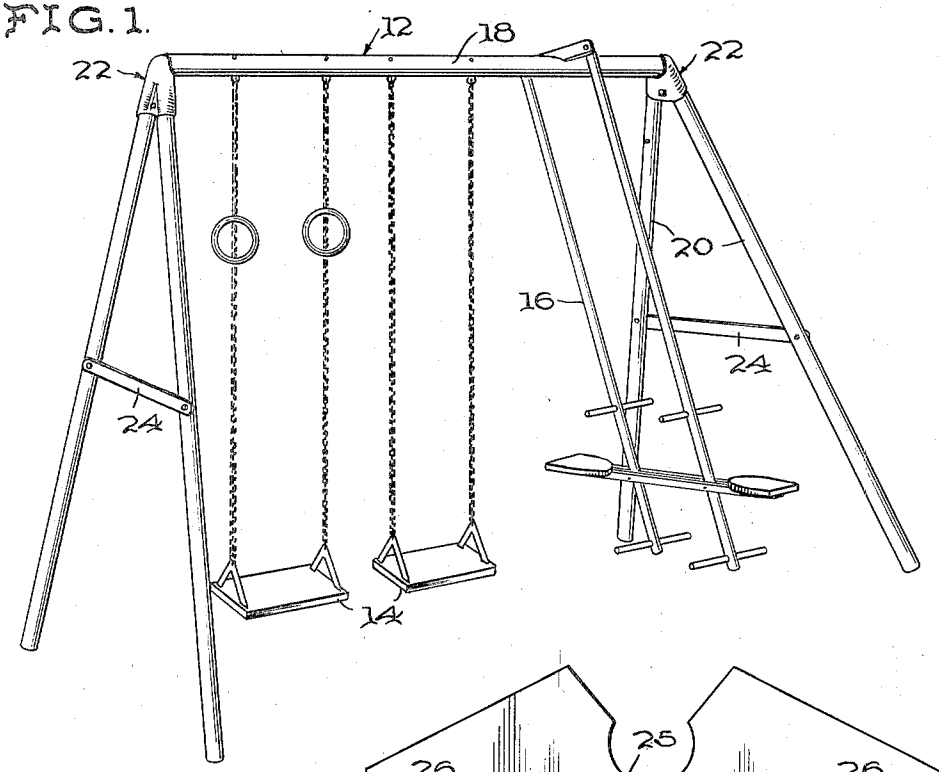
Sept. 18, 1956 D. SCARAMUCCI 2,763,455

FRAME CONSTRUCTION FOR PLAYGYMS

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FIG. 1.



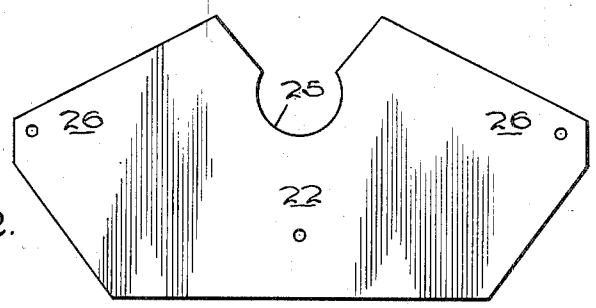
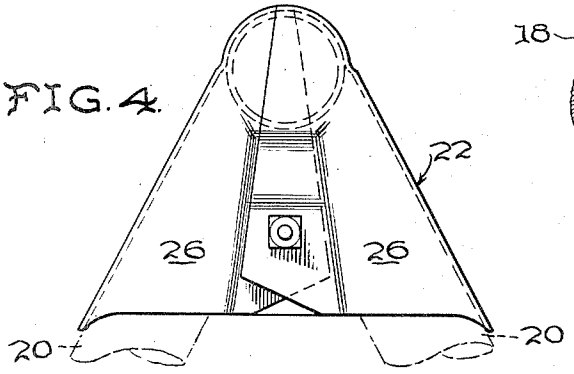


FIG. 2.

FIG. 4.



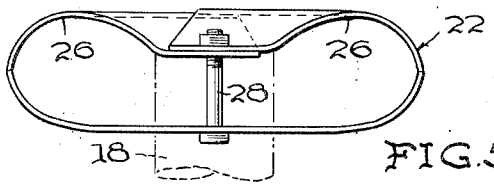


FIG. 5.

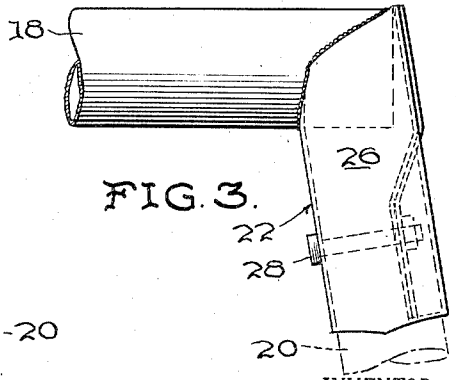


FIG. 3.

INVENTOR.
Domer Scaramucci
BY Leach & Radue

ATTORNEYS

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FRAME CONSTRUCTION FOR PLAYGYMS

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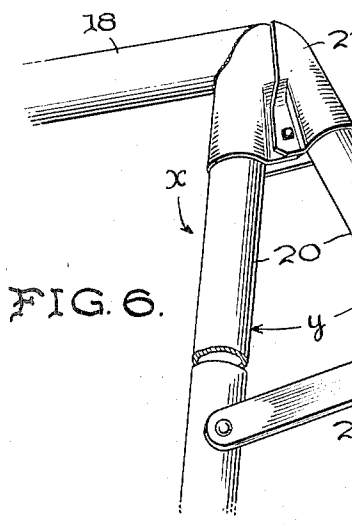


FIG. 6.

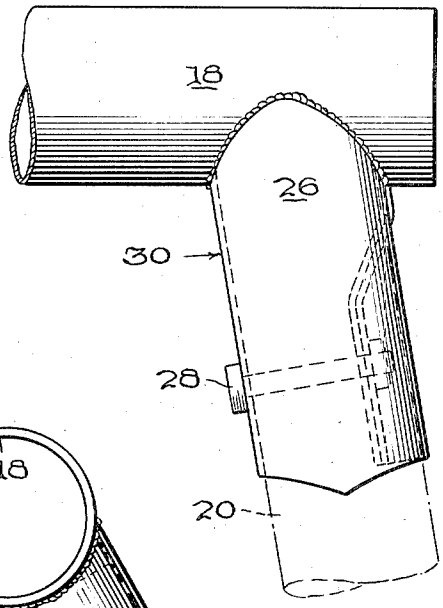


FIG. 7.

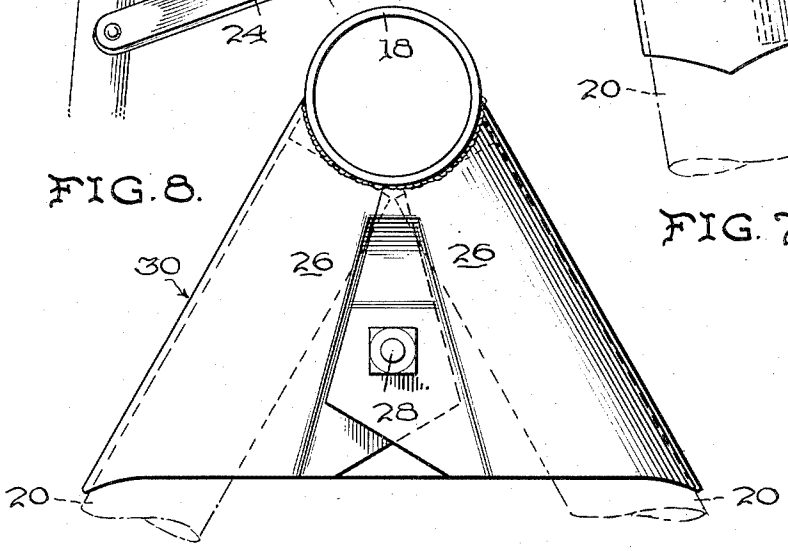


FIG. 8.

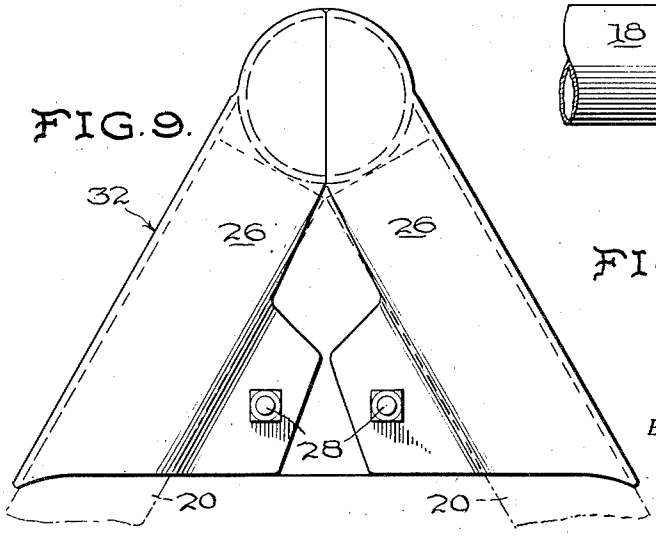


FIG. 9.

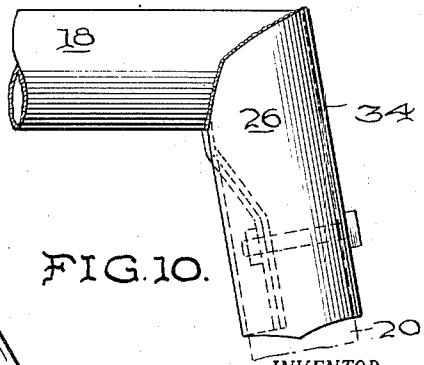


FIG. 10.

INVENTOR.
Domer Scaramucci
BY
Leech & Radue
ATTORNEYS

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2,763,455

FRAME CONSTRUCTION FOR PLAYGYMS

Domer Scaramucci, Oklahoma City, Okla.

Application December 16, 1952, Serial No. 326,229

5 Claims. (Cl. 287—54)

This invention relates generally to swings, playgyms, gliders, etc. which include spaced pairs of supporting legs connected by a top bar and more particularly to a coupling for connecting the top bar and its supporting legs.

Couplings of this type are known in the art and due to the severe stresses to which they are subjected during use of the swings and similar equipment, have proven to be unsatisfactory because of early failure due to lack of strength, lack of rigidity of the frame, poor design, and excessive costs due to the necessity for using castings, heavier and more complex members and difficulty of manufacture of the same.

The legs and frame members of swing structures are usually tubular and in one prior art construction, the ends of the tubular bar and legs are flattened, apertured, and joined by bolts. Another construction involves the bolting of arcuate plates to the ends of the top bar and flattening and conforming the upper ends of the legs thereto and welding. In either case, the movement of a swing and particularly one of the parallel bar type, results in a strong torque tending to oscillate the top bar which flexes the flattened portions, and loosening and breakage soon results even though, in the latter case, heavier tube members must necessarily be used.

The use of short lengths of heavy tubing as sockets for the ends of the legs and top bar is also known in various forms and differ mainly in their fabrication, cast socket designs being excessively costly and rarely employed. Such heavy tube sockets are cut at one end to conform with the top bar, and set screws are set in the leg sockets to retain the legs in operative position. While this more expensive construction partially eliminates the twisting and loosening at the top bar, another serious problem is created in that the twisting stresses are concentrated at the set screws. These stresses are increased by the anchoring of the legs to the ground to prevent tipping and the set screws gouge through the tubular legs and work loose so that positive locking cannot be achieved.

Accordingly, the chief object of the present invention is to provide an improved coupling for the top bar and legs of swing and playgym structures which will obviate the disadvantages characterizing known prior art structures.

Another important object of the present invention is to provide an improved coupling which will continuously withstand the severe torsional forces acting on the top bar and legs through use of the swings without loosening or failure thereof.

A further important object is to provide an improved coupling of the type described which will act as a positive leg fastening means and also brace and steady the frame even when used with lighter tubes.

A still further important object is to provide an improved coupling for top bars and their supporting legs in which the twisting stresses transmitted from the bar will be distributed throughout the portion of the tube held by the coupling.

Another object is to provide an improved coupling of

the type described which may be readily and economically manufactured and of long life in use.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the drawings I have shown several embodiments of the invention. In these showings:

Fig. 1 is a perspective view of a swing set or playgym employing the coupling comprising the present invention;

Fig. 2 is a plan view to an enlarged scale of the blank from which the coupling is formed;

Fig. 3 is a fragmentary side elevational view showing the formed coupling fixed in operative position on the end of the top bar;

Fig. 4 is an end elevational view thereof;

Fig. 5 is a bottom view thereof;

Fig. 6 is a fragmentary perspective view thereof;

Fig. 7 is a side elevational view of a modified form of the invention;

Fig. 8 is an end elevational view thereof;

Fig. 9 is an end elevational view of a further modification of the invention; and

Fig. 10 is a side elevational view of a still further modification of the invention.

Referring to Fig. 1 of the drawings, numeral **12** designates a swing set or playgym as a whole which includes a pair of chain supported swings **14** and a parallel bar swing **16**, all supported by a top tube or bar **18** connected with spaced pairs of diverging legs **20** by means of the couplings also indicated as a whole as **22**. The pairs of legs are braced intermediate their lengths by connecting bars **24**. The top bar and legs are usually and preferably formed of strong steel tubing.

The coupling **22** is formed from a sheet metal stamping and as seen in Fig. 2, the blank comprises a central portion including an arcuate notch **25** and a pair of outer wing portions **26**. A bolt receiving aperture is formed in the outer part of each wing and directly below the notch **25** for a purpose to be described.

The blank is formed into the coupling **22** by arcuately bending each wing **26** along the line connecting its aperture and the central aperture until the three apertures are aligned when a bolt **28** is slipped therethrough. A pair of diverging leg tube receiving sockets are thus formed (Figs. 3–6 incl.) connected by overlying spaced, intervening webs and the angle of divergence is supplementary to the angle formed between the lines from the wing apertures to the central aperture before bending.

It will be noted that the notch **25** forms a supporting shoulder for one end of the top bar **18** which is closed by the overlapped wings **26** and the two members are welded together along their entire line of contact including the shoulder **25** and the wings **26**. A second coupling **22** is similarly fixed to the other end of the tube **18**.

In assembling the legs to the top bar and coupling unit thus formed, which may be done at the site of intended use of the swing, etc., the upper ends of each pair of legs are inserted in the diverging sockets formed in the couplings **22**. The brace bars **24** are next fixed to the legs in order that the frame may be prestressed when the couplings are then tightened.

The tightening of the single bolt **28** of each coupling **22** draws the webs toward each other and tends to wrap the socket about each leg so that upon final tightening, the socket is held in tension about the leg which is in a state of compression. Thus, the stresses are evenly distributed throughout the leg tube and are not concentrated at any single point.

The coupling provides a prestressing of the frame which insures its continued rigidity as well as a positive leg gripping with distributed stresses. As seen in Fig. 6, the tightening of the bolt **28** sets up forces generally indicated

as x which tend to close the vertex angle y formed by the legs. The forces x are adequately resisted by the brace bars **24** which is thus prestressed in compression by the tightening of the bolt and any slack is permanently eliminated.

The Figs. 7 and 8 disclose a slightly modified form of the invention in which the coupling **30** is stamped from a blank so shaped as not to close the end of the tube **18** but to provide a pair of notches to conform with the bottom thereof. The coupling **30** and the tube **18** are joined by welding as before and inwardly of the end of the tube; and the end may or may not be closed as desired.

Fig. 9 discloses a form of the invention which embodies the principles described but which permits, by the use of a pair of bolts **28**, the accomplishment of the wrap around principle of the coupling **32** separately with respect to each leg.

The disclosure of Fig. 10 is almost identical with that of Figs. 1–6 incl. but differs in that the wings **26** terminate and overlap on the inside of the coupling **34** rather than on the outside as disclosed in the coupling **22**.

It will now be readily apparent that the improved coupling comprising the present invention provides a continued, positive clamping of the tubular legs with an even distribution of the stresses thereto; eliminates the need of making and installing an end cap for the top bar; permits the use of lighter tube members as the sockets grip the legs evenly so as to minimize crushing, distortion or failure and through prestressing increase the rigidity of the coupling; and promotes economy in fabrication through the use of stamped plate instead of castings or specially cut heavy tubes.

It is to be understood that the forms of the invention herewith shown and described are to be taken as preferred examples of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. A coupling for the ends of the horizontal top tube and divergent legs of swing frames, etc. comprising a single, one-piece, elongated sheet metal body notched at the center of one long side and configured to provide edges to closely receive and conform to a portion of the walls of the top tube along an irregular line substantially angled to the axis of the tube and adapted to be welded thereto along the engaging edges, said body sheet beyond said notch defining a pair of merging but divergent leg receiving sockets directed to hold the ends of the legs against said top tube opposite the edge connections thereto, and intervening webs edge connected to the sockets and overlying and spaced apart, and means to draw said webs toward each other to tension both sockets about the leg ends.

2. The coupling of claim 1 in which said webs are integral extensions of the sheet material of the sockets and a single bolt is positioned to draw them toward each other to increase the tension about the leg ends and simultaneously apply decreasing angle of divergence tension to the sockets.

3. The coupling of claim 2 in which one of said webs comprises overlapping portions of said sheet metal body each perforated for said bolt whereby leg gripping tension is applied separately to each socket.

4. For use in a frame for swings, etc. having a top tube, a pair of supporting divergent tubular legs and a connecting brace bar between the latter, the combination of a one-piece sheet metal coupling permanently fixed to the top tube adjacent to and covering one end thereof, said coupling having a shape to form a pair of divergent leg tube receiving sockets each substantially open where it faces the other, one edge of each opening being connected by a continuous web and each other edge having a web extending therefrom and overlapping that from the other, said continuous and overlapping webs being spaced apart and means to draw them toward each other to clamp the leg tubes and to simultaneously tend to reduce the angle of socket divergence whereby the brace bar is placed under compression.

5. The device of claim 4 in which said coupling sheet is notched to receive and closely support the end portion of the top tube and means welding the edges of the notch to the walls of the top tube to integrate these parts.

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