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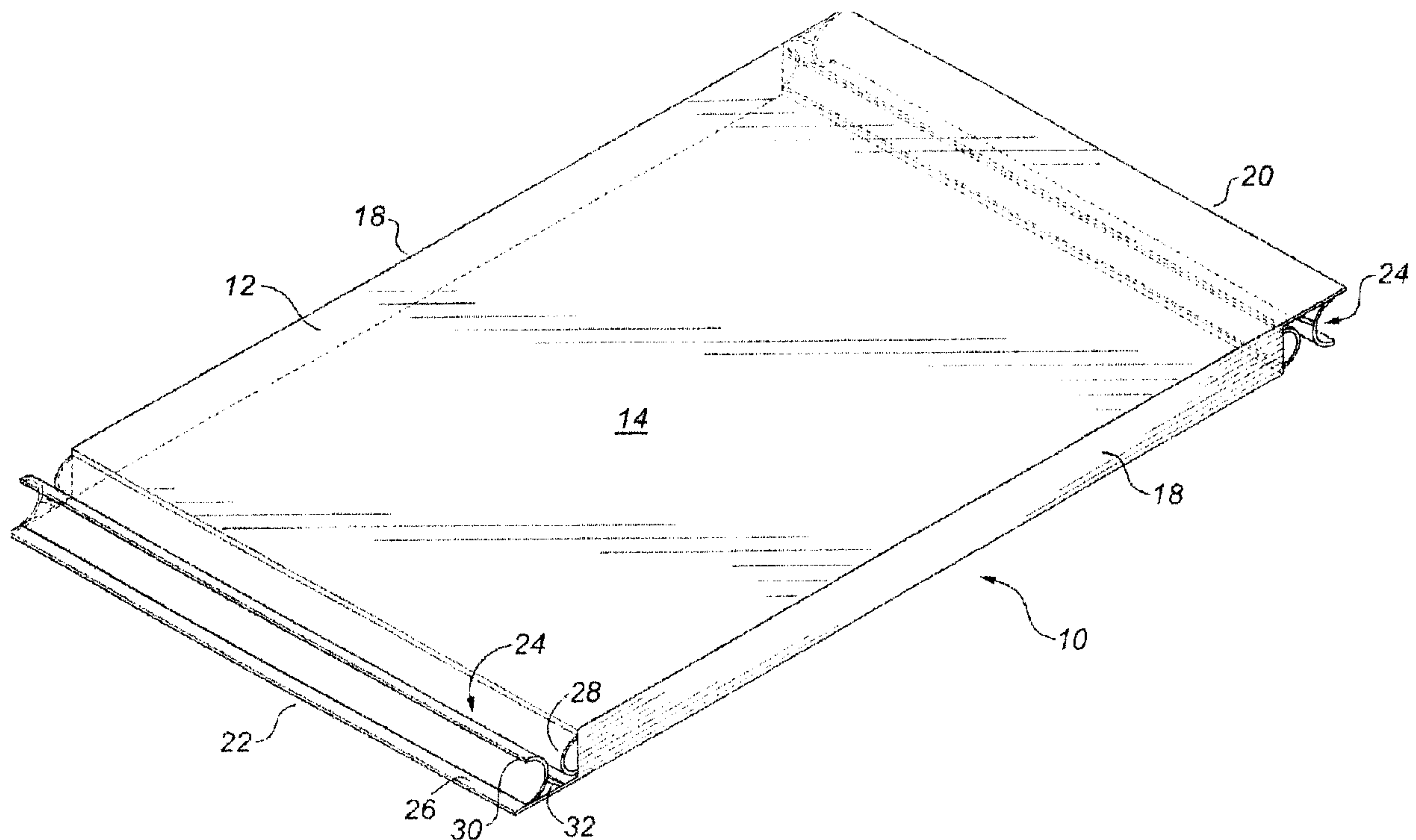
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(72) Inventeurs/Inventors:
BEAMISH, SHAWN, CA;
SPARROW, KELLY, CA

(73) Propriétaires/Owners:
BEAMISH, SHAWN, CA;
SPARROW, KELLY, CA

(54) Titre : COUCHES DE REVETEMENT ROUTIER

(54) Title: ROAD MATS



(57) Abrégé/Abstract:

A portable road mat including a body having a first end with a first face and a reciprocal second end with a second face. The first coupling is positioned at the first end and has a coupling portion extending from the first end comprising of two parts consisting of a large female coupling member and a smaller male coupling member for the receiving of like positioned members of the second face on the second end. The female and male couplings of the second end engage the reciprocal members of the first end allowing for vertical displacement but preventing separation.



ABSTRACT:

A portable road mat including a body having a first end with a first face and a reciprocal second end with a second face. The first coupling is positioned at the first end and has a coupling portion extending from the first end comprising of two parts consisting of a large female coupling member and a smaller male coupling member for the receiving of like positioned members of the second face on the second end. The female and male couplings of the second end engage the reciprocal members of the first end allowing for vertical displacement but preventing separation.

ROAD MATS

Description

FIELD OF THE INVENTION

[0001] The present invention relates to a road mat

BACKGROUND OF THE INVENTION

[0002] Current road mat designs are limited to large square or rectangular mats, which are designed to be laid directly onto a ground surface prior to being driven over by vehicles and equipment. These mats see such service in areas where it is prohibitively expensive to develop a full-scale roadway and where access is required and time sensitive, as well as in environmentally sensitive areas where development of a full-scale roadway is simply not feasible due to regulations and/or environmental concerns. The current designs are limited by there ability to provide some form of highly secure mechanical interlocking mechanism to prevent the shifting of the mats while being traversed by heavy equipment. If the mats shift for any reason and become unhinged, substantial damage may occur to the traversing equipment, as well such shifting requires maintenance of the mats, substantially increasing transportation costs. Though some designs exist that provide for a limited interlocking capability they are restricted in both their ability to interlock; to allow for an even surface when placed on undulating sub soils; to allow for load dispersal and weight transfer between the structures and to allow for ease of installation and removal, i.e.: unlocking.

[0003] The proposed invention provides for both a secure interlocking mechanism, which provides for a true interlocking structure, as well as allowing for ease of both placement and removal while also presenting a limited end gap, preventing wildlife injury and reducing the collection of debris in the interlocking joint.

SUMMARY OF THE INVENTION

[0004] The proposed invention provides for a highly secure interlocking mechanism by virtue of the mating of reciprocal semi-circles on the mat end plates designed as one male joint and one female joint per road mat joining end. The male and female joints being located by steel plates to the road mat load bearing structure and that when joined together with another such structure become aligned and securely interlock in a reciprocating mirror image. This interlocking system further providing for dynamic rotation of the road mat end plates in the vertical plane to allow for inconsistencies in the terrain without loss of coupling capability or strength.

[0005] The preferred embodiment of the invention consists of two smaller identical sized semi-circles, created with one half circle acting as the male joint connector and two larger identical sized semi-circles, created with another half circle, acting as the female joint connector. One of each of these male and female connectors is aligned and located to each road mat end plate by way of steel locating plates. On one end of the road mat, they are aligned upright and on the other end of the same plate, they are aligned identically opposite, i.e.: upside down. This allows the plates to both mesh and interlock securely and easily, on either placement or removal, in a reciprocating fashion allowing for continuous, infinite, addition of mats to the overall structure. Other embodiments of the invention may consist of variations in the shape and design of the male and female connectors, but the preferred embodiment uses common and readily available materials. It will be apparent to one skilled in the art that modifications may be made to the illustrated embodiment without departing from the spirit and scope of the invention as hereinafter defined in the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] These and other features of the invention will become more apparent from the following description in which reference is made to the appended drawings, the drawings are for the purpose of illustration only and are not intended to in any way limit the scope of the invention to

the particular embodiment or embodiments shown, wherein:

[0007] FIG. 1 Shows the road mat top view and side view.

[0008] FIG. 2 Shows the road mat top and side view interlocked.

[0009] FIG. 3 Shows the road mat side view of the ends, uncoupled.

[0010] FIG. 4 Shows the road mat side view of the ends, interlocked.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0011] The preferred embodiment, a road mat generally identified by reference numeral 10, will now be described with reference to FIGS. 1, 2, 3 and 4.

[0012] Review of the Prior Art

[0013] Common road mat designs are mainly large steel and wooden mats that are designed to be laid over the surface to be traversed. Such mats, as noted in prior art contained in Canadian patent # 2348328, generally use a rudimentary L or J shaped reversing or reciprocating style end joint or coupling end, that is easily joined upon placement but provides for very limited and inherently insecure interlocking capability. Such imprecise designs afford numerous difficulties upon removal, this mainly due to the collection of debris in the sloppy or loose mating joints. A further deficit of current designs is the capability for wildlife traversing the mats to become injured due to the substantial joint gaps required and presented by such designs.

[0014] Structure and Relationship of Parts

[0015] Referring to FIG. 1, there is provided a road mat 10 that includes a mat body 12 with a first end 20, a second end 22. The locking mechanism 24 is provided at the first end 20 and the

second end 22. First locking mechanism 24 has a male coupling portion 28 and a female coupling portion 30 that extends on the first end 20.

[0016] The second coupling end 22 is provided as a reciprocal end to first coupling end 20 of road mat 10. The second coupling end 22 is produced as a mirror image of first coupling end 20 allowing for interlocking of male ends 28 to female ends 30.

[0017] Referring to FIG. 2 showing first mat 10 and second mat 10 are coupled to form a temporary roadway with end locking mechanisms 24 fully engaged with first end 20 coupling with second end 22 to allow for vertical displacement but preventing separation.

[0018] Referring to FIG. 3 the first end 20 is shown with mat 10, top surface 14, bottom surface 16 and mat body 12 with male connector 28, female connector 30, alignment plate 32 and second end in mirror image with mat 10, top surface 14, bottom surface 16 and mat body 12 with male connector 28, female connector 30, alignment plate 32 allowing for interlocking of the first and second ends.

[0019] Referring to FIG. 4 the first end 20 and the second end 22 are shown fully interlocked with female couplers 30 fully interlocked with male couplers 28 via alignment plate 32.

[0020] Operation

[0021] The use and operation of road mats 10 will now be described with reference to FIGS. 1 through 4. Referring to FIG. 2, road mats 10 are designed to be laid on ground surface in end to end relation and driven over by motor vehicles. Mats 10 are fully secured together by interlocking coupling 24 of road mat 10.

[0022] In this patent document, the word "comprising" is used in its non-limiting sense to mean that items following the word are included, but items not specifically mentioned are not excluded. A reference to an element by the indefinite article "a" does not exclude the possibility

that more than one of the element is present, unless the context clearly requires that there be one and only one of the elements.

[0023] It will be apparent to one skilled in the art that modifications may be made to the illustrated embodiment without departing from the spirit and scope of the invention as hereinafter defined in the claims.

CLAIMS:

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A road mat comprising: (a) a mat body having a first coupling end and a second coupling end; (b) a first locking mechanism provided at said first coupling end, said first locking mechanism comprising a male coupling member and a female coupling member, said male coupling member positioned substantially between said mat body and said female coupling member such that said mat body, said male coupling member, and said female coupling member are horizontally in tandem; and (c) a second locking mechanism provided at said second coupling end said second locking mechanism comprising a male coupling member and a female coupling member, said male coupling member positioned substantially between said mat body and said female coupling member such that said mat body, said male coupling member, and said female coupling member are horizontally in tandem; (d) wherein said male coupling members and said female coupling members have a substantially semi-circular shape.
2. The road mat of claim 1 wherein said male coupling members interact to connect with said female coupling members of a successive mat body.
3. The road mat of claim 1 wherein said first locking mechanism is substantially parallel to said first coupling end and said second locking mechanism is substantially parallel to said second coupling end.
4. The road mat of claim 1 wherein said first locking mechanism extends substantially the length of said first coupling end and said second locking mechanism extends substantially the length of said second coupling end.
5. A road mat system comprising: (a) at least one prior road mat and at least one successive road mat, each road mat comprising: (i) a mat body having a first coupling end and a second coupling

end; (ii) a first locking mechanism provided at said first coupling end, said first locking mechanism comprising a male coupling member and a female coupling member, said male coupling member positioned substantially between said mat body and said female coupling member; and (iii) a second locking mechanism provided at said second coupling end said second locking mechanism comprising a male coupling member and a female coupling member, said male coupling member positioned substantially between said mat body and said female coupling member; and (b) said second locking mechanism of said prior road mat interlocks with said first locking mechanism of said successive road mat; (c) wherein said at least one prior road mat and said at least one successive road mat are substantially identical.

6. The road mat system of claim 5 wherein said male coupling members interact with said female coupling members to connect successive road mats.

7. The road mat system of claim 5 wherein: (a) said male coupling member of said second locking mechanism of said prior road mat interacts with said female coupling member of said first locking mechanism of said successive road mat; and (b) said female coupling member of said second locking mechanism of said prior road mat interacts with said male coupling member of said first locking mechanism of said successive road mat.

8. The road mat system of claim 5 wherein said first locking mechanism is substantially parallel to said first coupling end and said second locking mechanism is substantially parallel to said second coupling end.

9. The road mat system of claim 5 wherein said first locking mechanism extends substantially the length of said first coupling end and said second locking mechanism extends substantially the length of said second coupling end.

10. A road mat system comprising: (a) at least one prior road mat and at least one successive road mat, each road mat comprising: (i) a mat body having a first coupling end and a second coupling end; (ii) a first locking mechanism provided at said first coupling end, said first locking

mechanism comprising a male coupling member and a female coupling member, said male coupling member positioned substantially between said mat body and said female coupling member; and (iii) a second locking mechanism provided at said second coupling end said second locking mechanism comprising a male coupling member and a female coupling member, said male coupling member positioned substantially between said mat body and said female coupling member; and (b) said second locking mechanism of said prior road mat interlocks with said first locking mechanism of said successive road mat; (c) wherein said first locking mechanism is a reciprocating mirror image of said second locking mechanism.

11. The road mat system of claim 10 wherein said male coupling members interact with said female coupling members to connect successive road mats.

12. The road mat system of claim 10 wherein: (a) said male coupling member of said second locking mechanism of said prior road mat interacts with said female coupling member of said first locking mechanism of said successive road mat; and (b) said female coupling member of said second locking mechanism of said prior road mat interacts with said male coupling member of said first locking mechanism of said successive road mat.

13. The road mat system of claim 10 wherein said first locking mechanism is substantially parallel to said first coupling end and said second locking mechanism is substantially parallel to said second coupling end.

14. The road mat system of claim 10 wherein said first locking mechanism extends substantially the length of said first coupling end and said second locking mechanism extends substantially the length of said second coupling end.

15. A road mat system comprising: (a) at least one prior road mat and at least one successive road mat, each road mat comprising: (i) a mat body having a first coupling end and a second coupling end; (ii) a first locking mechanism provided at said first coupling end, said first locking mechanism comprising a male coupling member and a female coupling member, said male

coupling member positioned substantially between said mat body and said female coupling member; and (iii) a second locking mechanism provided at said second coupling end said second locking mechanism comprising a male coupling member and a female coupling member, said male coupling member positioned substantially between said mat body and said female coupling member; and (b) said second locking mechanism of said prior road mat interlocks with said first locking mechanism of said successive road mat; (c) wherein said male coupling members and said female coupling members have a substantially semi-circular shape.

16. The road mat system of claim 15 wherein said male coupling members interact with said female coupling members to connect successive road mats.

17. The road mat system of claim 15 wherein: (a) said male coupling member of said second locking mechanism of said prior road mat interacts with said female coupling member of said first locking mechanism of said successive road mat; and (b) said female coupling member of said second locking mechanism of said prior road mat interacts with said male coupling member of said first locking mechanism of said successive road mat.

18. The road mat system of claim 15 wherein said first locking mechanism is substantially parallel to said first coupling end and said second locking mechanism is substantially parallel to said second coupling end.

19. The road mat system of claim 15 wherein said first locking mechanism extends substantially the length of said first coupling end and said second locking mechanism extends substantially the length of said second coupling end.

20. A road mat system comprising: (a) at least one prior road mat and at least one successive road mat, each road mat comprising: (i) a mat body having a first coupling end and a second coupling end; (ii) a first locking mechanism provided at said first coupling end, said first locking mechanism comprising a male coupling member and a female coupling member, said male coupling member positioned substantially between said mat body and said female coupling

member; and (iii) a second locking mechanism provided at said second coupling end said second locking mechanism comprising a male coupling member and a female coupling member, said male coupling member positioned substantially between said mat body and said female coupling member; and (b) said second locking mechanism of said prior road mat interlocks with said first locking mechanism of said successive road mat; (c) wherein said road mat system provides for dynamic rotation of the coupling ends in the vertical plane to allow for inconsistencies in the terrain without loss of coupling capability or strength.

21. The road mat system of claim 20 wherein said male coupling members interact with said female coupling members to connect successive road mats.

22. The road mat system of claim 20 wherein: (a) said male coupling member of said second locking mechanism of said prior road mat interacts with said female coupling member of said first locking mechanism of said successive road mat; and (b) said female coupling member of said second locking mechanism of said prior road mat interacts with said male coupling member of said first locking mechanism of said successive road mat.

23. The road mat system of claim 20 wherein said first locking mechanism is substantially parallel to said first coupling end and said second locking mechanism is substantially parallel to said second coupling end.

24. The road mat system of claim 20 wherein said first locking mechanism extends substantially the length of said first coupling end and said second locking mechanism extends substantially the length of said second coupling end.

25. A road mat comprising: (a) a mat body having a first coupling end and a second coupling end; (b) a first locking mechanism provided at said first coupling end, said first locking mechanism comprising a male coupling member substantially parallel to said first coupling end and a female coupling member substantially parallel to said first coupling end, said mat body, said male coupling member, and said female coupling member positioned substantially

horizontally in tandem; and (c) a second locking mechanism provided at said second coupling end said second locking mechanism comprising a male coupling member substantially parallel to said first coupling end and a female coupling member substantially parallel to said first coupling end, said mat body, said male coupling member, and said female coupling member positioned substantially horizontally in tandem; (d) wherein said male coupling members and said female coupling members have a substantially semi-circular shape.

26. The road mat of claim 25 wherein said first locking mechanism extends substantially the length of said first coupling end and said second locking mechanism extends substantially the length of said second coupling end.

27. The road mat of claim 25 wherein in relation to each coupling end, said male coupling members are positioned in tandem with said female coupling members at each coupling end.

28. A road mat comprising: (a) a mat body having a first coupling end and a second coupling end; (b) a first locking mechanism provided at said first coupling end, said first locking mechanism comprising a male coupling member substantially parallel to said first coupling end and a female coupling member substantially parallel to said first coupling end, said mat body, said male coupling member, and said female coupling member positioned substantially horizontally in tandem; and (c) a second locking mechanism provided at said second coupling end said second locking mechanism comprising a male coupling member substantially parallel to said first coupling end and a female coupling member substantially parallel to said first coupling end, said mat body, said male coupling member, and said female coupling member positioned substantially horizontally in tandem; (d) wherein said male coupling members and said female coupling members provide for dynamic rotation of the coupling ends in the vertical plane to allow for inconsistencies in the terrain without loss of coupling capability or strength.

29. The road mat of claim 28 wherein said first locking mechanism extends substantially the length of said first coupling end and said second locking mechanism extends substantially the length of said second coupling end.

30. The road mat of claim 28 wherein in relation to each coupling end, said male coupling members are positioned in tandem with said female coupling members at each coupling end.

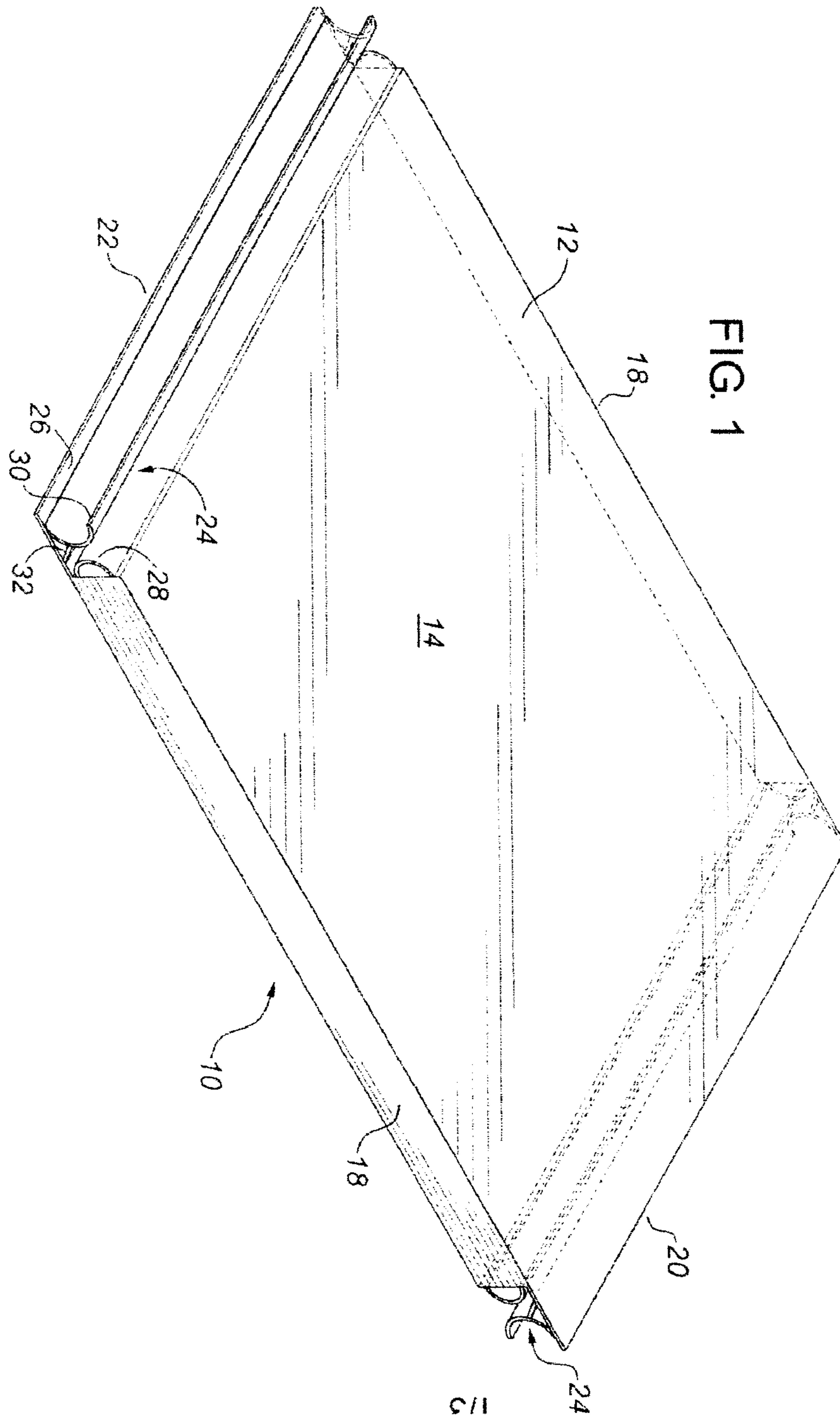
31. A road mat comprising: (a) a mat body having a first coupling end and a second coupling end; (b) a first locking mechanism provided at said first coupling end, said first locking mechanism comprising a male coupling member and a female coupling member, said male coupling member positioned substantially between said mat body and said female coupling member such that said mat body, said male coupling member, and said female coupling member are horizontally in tandem; and (c) a second locking mechanism provided at said second coupling end said second locking mechanism comprising a male coupling member and a female coupling member, said male coupling member positioned substantially between said mat body and said female coupling member such that said mat body, said male coupling member, and said female coupling member are horizontally in tandem; (d) wherein said male coupling members and said female coupling members are C-shaped channel members.

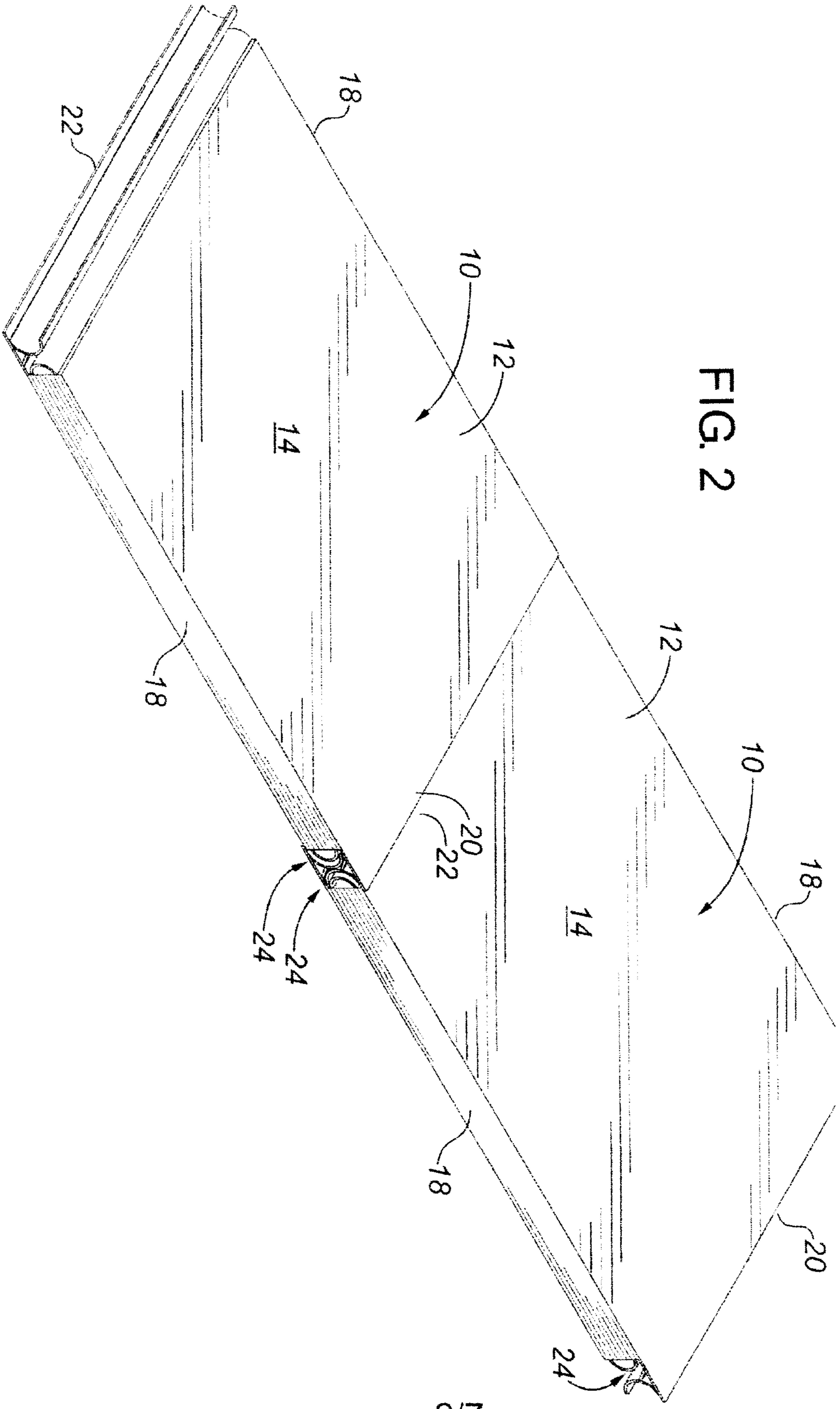
32. The road mat of claim 31 wherein said male coupling members interact to connect with said female coupling members of a successive mat body.

33. The road mat of claim 31 wherein said first locking mechanism is substantially parallel to said first coupling end and said second locking mechanism is substantially parallel to said second coupling end.

34. The road mat of claim 31 wherein said first locking mechanism extends substantially the length of said first coupling end and said second locking mechanism extends substantially the length of said second coupling end.

DRAWINGS:





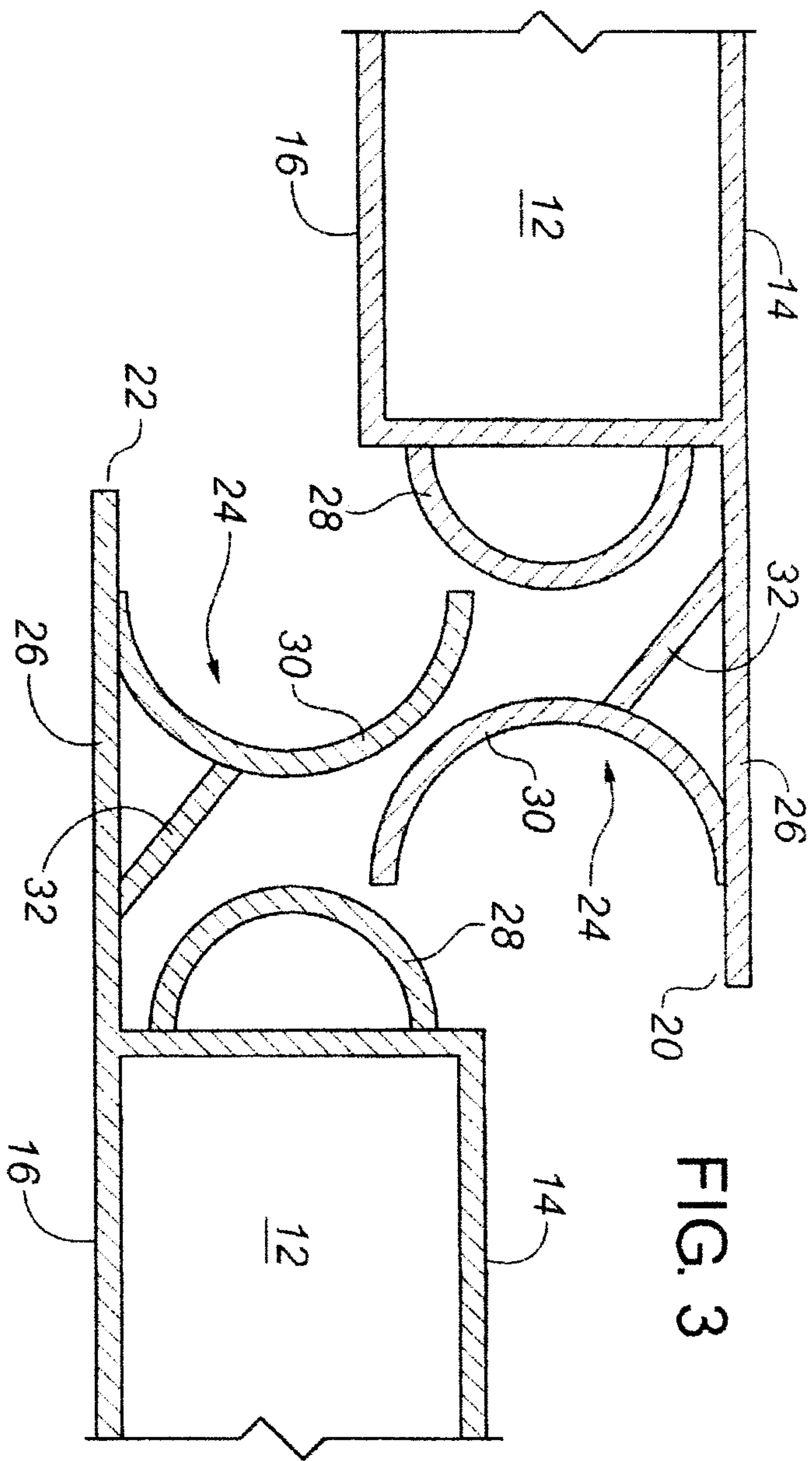


FIG. 3

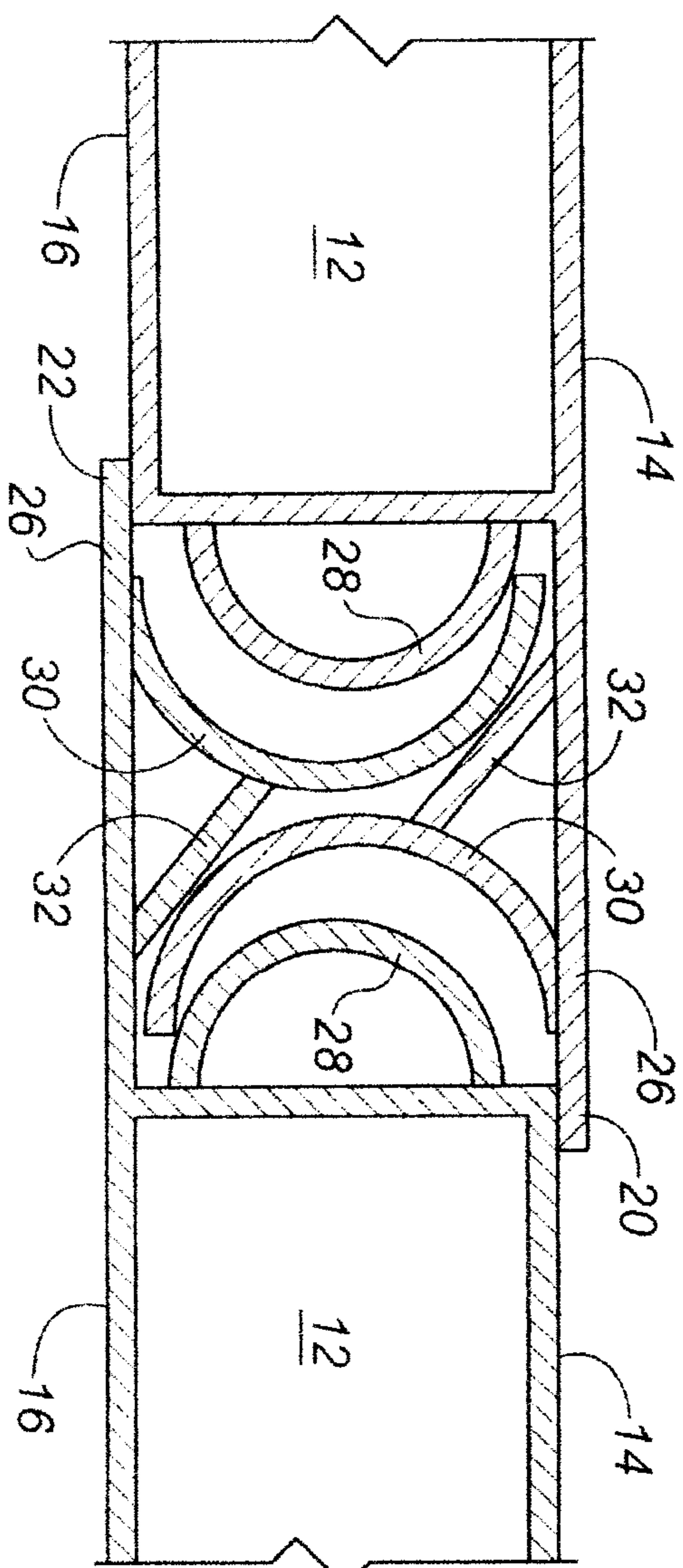


FIG. 4

