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# DESCRIPTION

## Technical Field

**[0001]** This invention relates to stalls or cubicles for animals.

## Background Art

**[0002]** Farm animals are frequently accommodated indoors using stalls (also referred to as cubicles or pens; the term "stalls" will be used herein). One common design of stall has a common head barrier or wall with parallel dividers projecting out to define individual spaces for animals between a pair of adjacent dividers.

**[0003]** Typical steel stall dividers are a basic U shape made of one piece of steel tubing bent to make the U shape. The ends of the "U" are mounted to the head end barrier (i.e. with the "U" lying on its side) and with the bottom of the "U" projecting outwards. These dividers cause injuries to the animals.

**[0004]** One solution is to replace the stainless steel divider with a pair of flexible plastic pipes, replacing the upper and lower rails of the steel "U" shape. Easyfix Limited, of Ballinasloe, Ireland supply such a product employing hollow polypropylene random (PP-R) co-polymer pipes, which provide a safe replacement for the conventional steel stall dividers and eliminate possible injuries to animals.

**[0005]** One problem encountered with this solution was that because the PP-R pipe stall system uses two open ended pipes, when young animals or animals, which were not used to a stall system, first entered the stall there was a chance of them being able to turn around in the stall and end up facing the wrong way.

**[0006]** It is not practical to bend an extruded PP-R pipe into a U-shape as the pipe has to be heated evenly all the way through its 12.5mm wall thickness. This would require a huge oven capable of taking several 4 meter lengths of pipe and then bending them in a press big enough to press them into shape and hold that shape while they cooled. Such a process would be cost prohibitive.

**[0007]** A further drawback of recreating the steel U-shape with PP-R material is that the resultant product loses the flexibility inherent in having a pair of pipes freely projecting from a single mounting point. If created in a U shape, the PP-R pipe would be too rigid a product.

**[0008]** EP 2497356 relates to a box separator made of a flexible, plastic material or reinforcing fibers, and contains plastic material manufactured separating element and a neck

lock. The separating element has an upper train and a beam, which is connected on a connecting element.

**Disclosure of the Invention**

**[0009]** According to the invention, there is provided a stall divider for animal stalls according to claim 1, comprising:

first and second pipes each having a head end adapted for mounting on a fixed head-end barrier, whereby in use said pipes extend from said head end to a free end, the pipes lying within and defining a substantially vertical plane which separates a pair of neighbouring stalls; and

a C-shaped connecting member comprising a curved length of flexible material having first and second ends, the first and second ends being adapted for mounting in the free ends of the first and second pipes, respectively.

**[0010]** Preferably, said first and second pipes are made of PP-R (polypropylene random copolymer).

**[0011]** The connecting member preferably comprises a solid flexible tube extending in a curved fashion from the free end of the first pipe to the free end of the second pipe.

**[0012]** Preferably, the connecting member is secured to the free ends by being inserted into a hollow terminal portion at the free end of each pipe, and being secured by a bolt extending through the free end and the connecting member.

**Brief Description of the Drawings**

**[0013]** The invention will be further illustrated by the following description of embodiments thereof, given by way of example only with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of a layout of an animal house containing a set of stalls;

Fig. 2 is a detail of Fig. 1;

Fig. 3 is a perspective view of a barrier component of one animal stall divider assembly;

Fig. 4 is a front elevation of the barrier component of Fig. 3;

Fig. 5 is a sectional elevation of the barrier component of Fig. 3, along the line V-V in Fig. 4;

Fig. 6 is a rear elevation of the barrier component of Fig. 3;

Fig. 7 is a plan view from below of the barrier component of Fig. 3; and

Fig. 8 is a side elevation of the barrier component of Fig. 3.

**[0014]** In Fig. 1 there is indicated, generally at 10, an animal house layout containing an animal stall assembly 12 with a plurality of animal stalls 14 arranged in two rows 16, 18.

**[0015]** Referring additionally to Fig. 2, a detail of the Fig. 1 layout is shown, including a series of cubicle posts 20 mounted along a centre line 22 of the animal house. The endmost post 20 is shown without any barrier or stall divider, and it can be seen that the post is provided with a pair of upper mounting posts 24 and a pair of lower mounting posts 26. As seen with the next adjacent post 20, the upper mounting posts (not visible) are used to each mount a respective upper barrier pole 28 which extend horizontally outward from one another, while the lower mounting posts (not visible) are used to each mount a respective lower barrier pole 30 which extend outward from one another in the same vertical plane as the upper posts 28, but inclined upwardly at an angle of 15 degrees.

**[0016]** Lengthwise head-end rails, known as neckrails 32, are tied to the top of the upper barrier poles 28 by a series of steel neckrail clamp brackets 34, such that the pair of neckrails 32 run in parallel along the head-end of each row 16, 18 of stalls 14 (Fig. 1). (As used herein the term "head-end" refers to the part of the stall nearest to the centre line 22, as opposed to the "open end" into which the animal enters a stall.)

**[0017]** Connecting the upper barrier pole 28 and lower barrier pole 30 of each stall divider or barrier assembly is a generally C-shaped barrier component 36, with the barrier assembly comprising a connected pair of poles 28, 30 and the component 36. It can be seen that the ends of the "C" shape are mated with the poles 28, 30 at the open end of the stalls. The poles are either hollow along their length or hollow at the end section to receive an end section of the component 36, which will now be described in greater detail.

**[0018]** Referring to Fig. 3-8, the barrier component 36 is shown in perspective (Fig. 3), from the front, rear, below and one side (Figs. 4, 6, 7 and 8, respectively), and in Fig. 5 in cross section taken along the line V-V in Fig. 4.

**[0019]** The component 36 comprises a curved, elongated body member made of vulcanised, moulded rubber (though other flexible elastomers can be used). The body member has a middle section 38 which is curved into an arc and which occupies the major part of the length of the generally cylindrical curved body 36. The arc subtends an angle of 165 degrees, such that its upper end 40 is offset from its lower end 42 by an angle of 15 degrees, as seen in Fig. 8, matching the offset of the poles 28, 30.

**[0020]** Each of the end sections ends 40, 42 is provided with a through hole 44 allowing it to be secured in place within its respective pole 28, 30 using a bolt (not shown) which passes through a corresponding pair of holes (not shown) in the pole. The diameter of the end sections 40, 42 is dimensioned to make a snug fit with the interior diameter of the hollow ends of the poles. The diameter of the middle section is approximately the same as the outside diameter of the poles.

**[0021]** Between the middle section 38 (having a first diameter) and the each of the ends 40, 42 (having a second diameter less than the first diameter), is a collar formation 46 which has a flared formation 48 (Fig. 5) that increases in diameter towards the end section to which it is adjacent from the first diameter where it merges with the middle section to a third diameter greater than the first and second diameters. An annular skirt 50 projects axially from the flared formation 48 towards the end section 40,42 to which the collar is adjacent. The skirt 50 and the end section 40, 42 define between them an annular recess 52 which is dimensioned to receive the end of the pipe or pole 28,30 onto which the component is mounted.

**[0022]** When the component 36 is mounted on a pair of poles 28, 30, the collar shields the pole ends and provides a continuous rather than abrupt transition. The resulting assembly is flexible and designed to avoid injuring the animals, while overcoming the disadvantages of known prior art systems as described earlier.

The invention is not limited to the embodiments described which can be modified without departing from the scope of the claimed invention as defined by the appended claims.

## **REFERENCES CITED IN THE DESCRIPTION**

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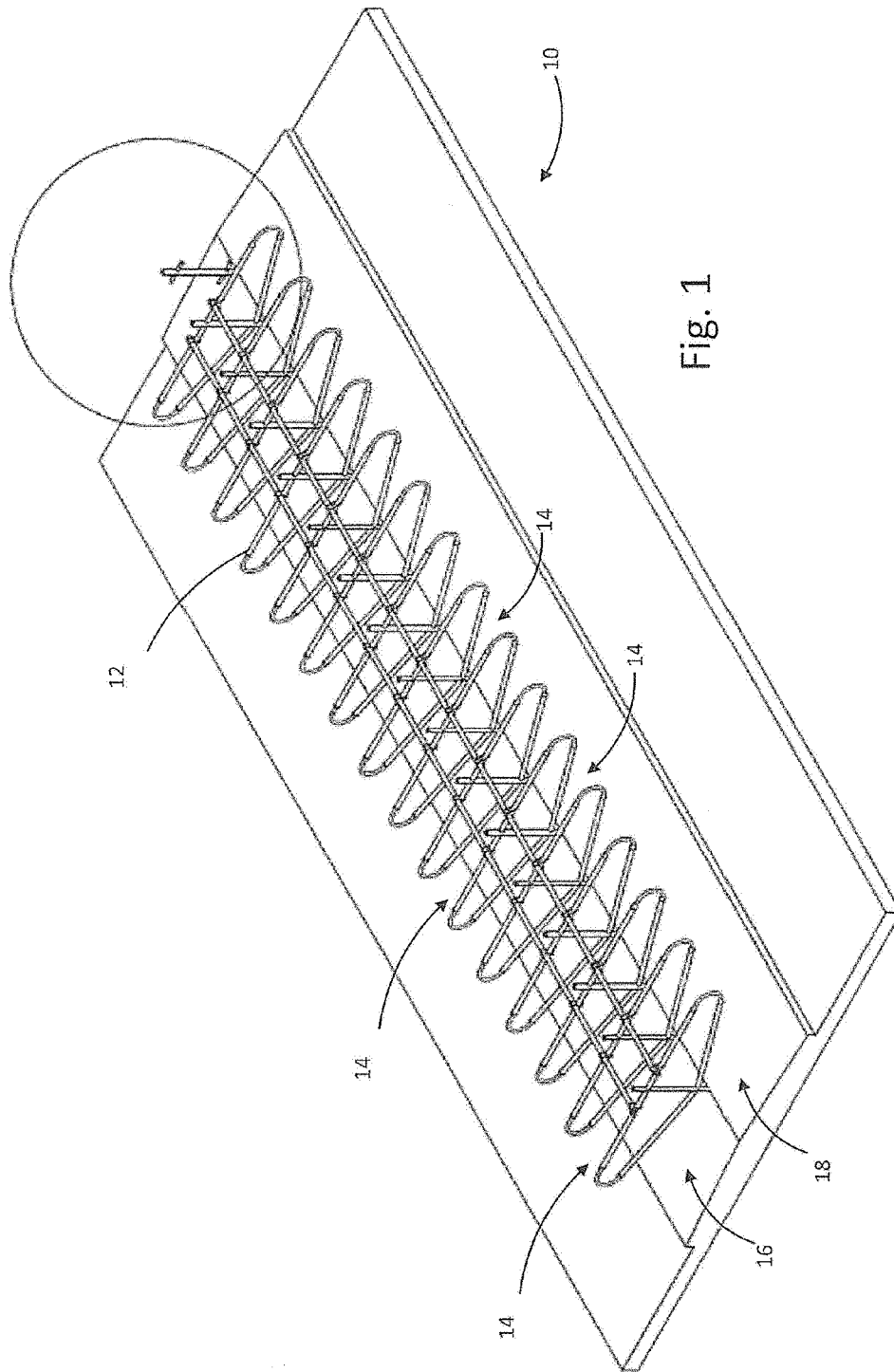
### **Patent documents cited in the description**

- [EP2497356A](#) **[0008]**

**Patentkrav**

1. Båsoptdeler til dyrebåse, der omfatter:  
første og andet rør (28, 30), der hvert har en hovedende, der er tilpasset til montering på en fast hovedendebariere, hvorved, i anvendelse, rørene strækker sig fra hovedenden til den frie ende, hvilke rør ligger indenfor og definerer et i alt væsentligt vertikalt plan, der adskiller to nabobåse; kendetegnet ved  
et C-formet forbindelseselement (36), der omfatter en buet længde af fleksibelt materiale med første og anden ender, hvor den første og den anden ende er tilpasset til montering i de frie ender af henholdsvis det første og det andet rør.
2. Båsoptdeler ifølge krav 1, hvor det første og det andet rør (28, 30) er fremstillet af en vilkårlig polypropylencopolymer (PP-R).
3. Båsoptdeler ifølge krav 1 eller 2, hvor forbindelseselementet (36) omfatter et solidt fleksibelt rør, der strækker sig på en buet måde fra den frie ende af det første rør (28, 30) til den frie ende af det andet rør (28, 30).
4. Båsoptdeler ifølge et hvilket som helst af kravene 1-3, hvor forbindelseselementet (36) er fastgjort til de frie ender ved indføring i en hul terminal portion ved den frie ende af hvert rør (28, 30) og er fastgjort med en bolt, der strækker sig gennem den frie ende og forbindelseselementet.

## DRAWINGS





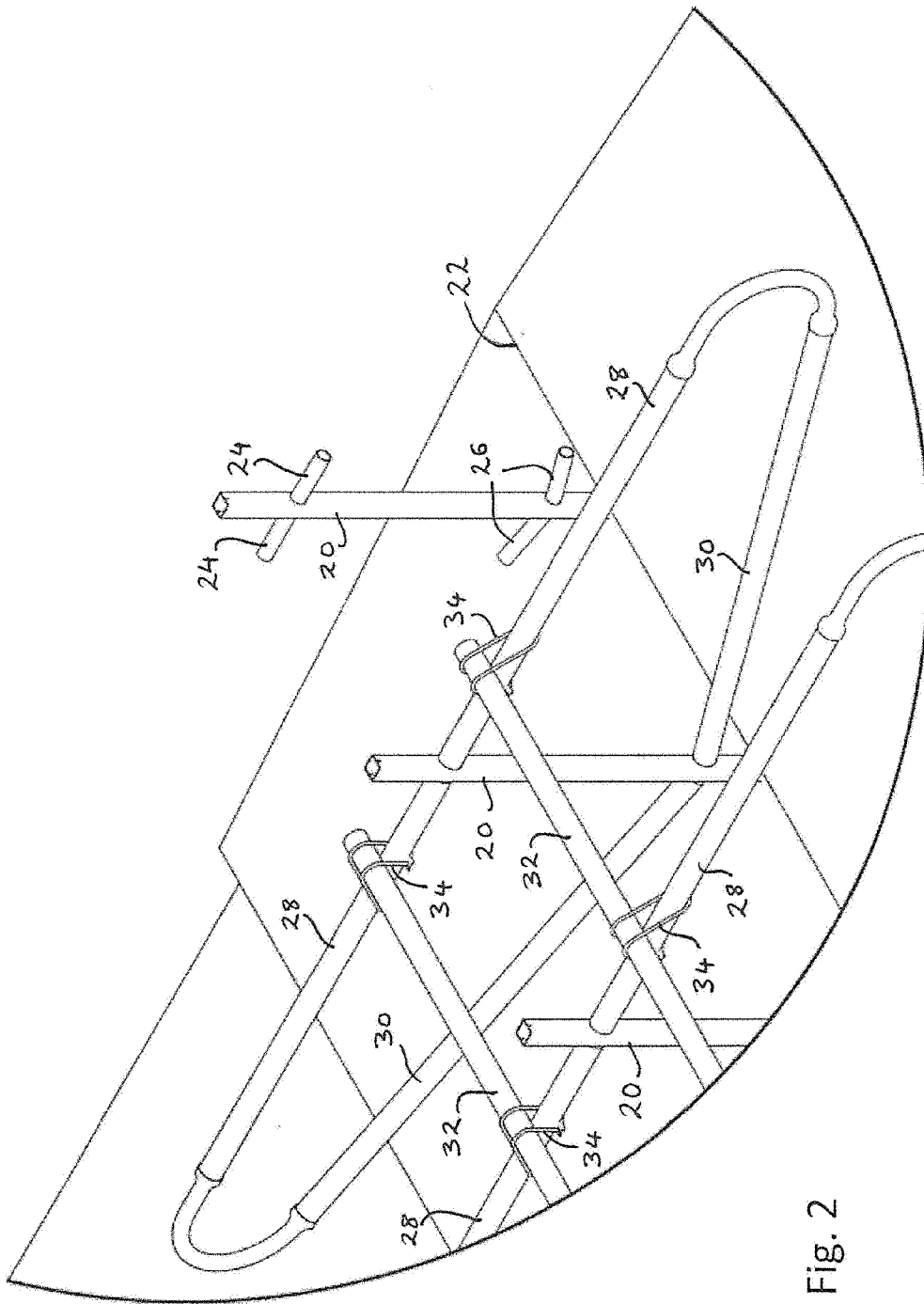


Fig. 2

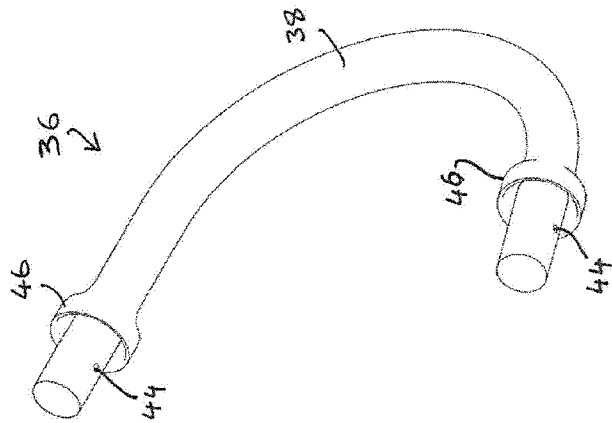


Fig. 3

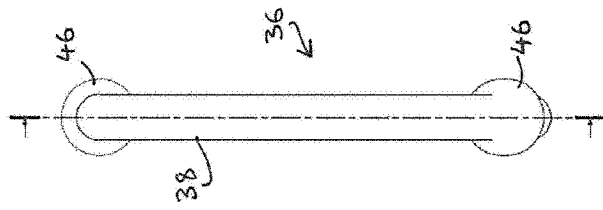


Fig. 4

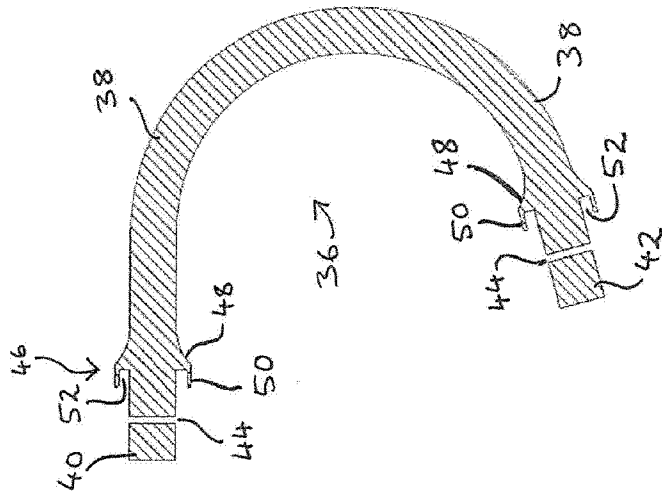


Fig. 5

Fig. 6

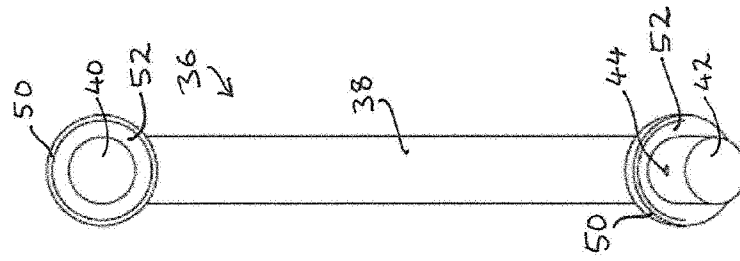


Fig. 7

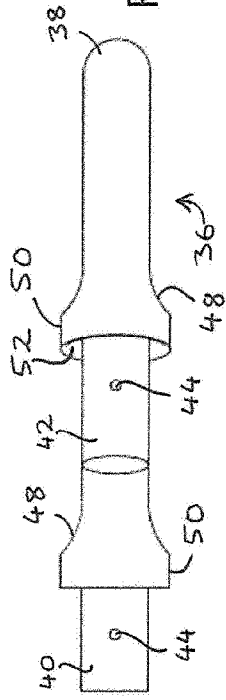


Fig. 8

