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RIDABLE BOUNCING BALL RECREATIONAL DEVICES

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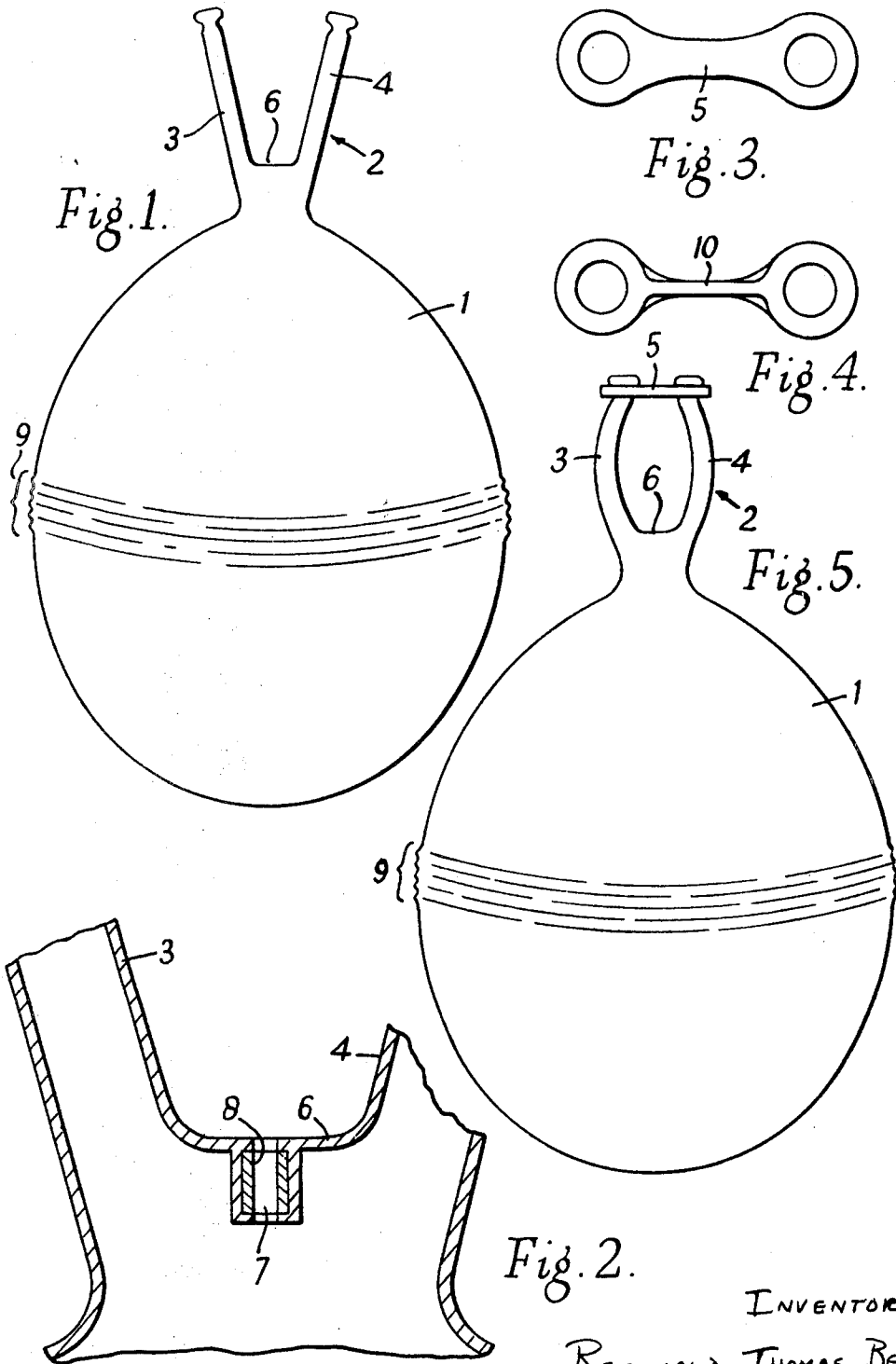


Fig. 2.

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**RIDABLE BOUNCING BALL RECREATIONAL DEVICES**

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3 Claims

**ABSTRACT OF THE DISCLOSURE**

The recreational device is a resilient ball surmounted by a handle. The device is intended to be used by a person sitting on the ball with the handle projecting upwardly between his/her legs and with the handle being gripped by both hands, whereupon the person can bounce along on the ball. The preferred embodiment of the device is inflatable. The device may be moulded on a rotating moulding machine wherein there are several stations for the complete operation. Multiple moulds are used so that several devices may be moulded at each operation.

This invention relates to a recreation device.

The present invention consists in a recreational device which includes a body which either is inherently resilient or can be rendered resilient and a flexible handle, said handle consisting of two prong- or antennae-like elements which are integral with the body and which are, if desired, connectable to one another at their free ends in such a manner as to form a closed figure, said body and said handle being such as to permit a person to sit astride the body and to grasp the handle and to bounce along on said recreational device.

Preferably, said elements, when the free ends thereof are not connected by said bar, project upwardly from the body and also away from one another, and are substantially rectilinear. When said free ends are connected by said bar, said rectilinear elements are maintained in such a position that said elements are concave with respect to one another over the greater proportion of their respective lengths.

Preferably, said free ends are connected to one another by a bar formed separate from the body and said elements, said bar being provided with apertures at or in the vicinity of its ends and said apertures being such as to be an interference-fit with said free ends.

The present invention will now be more particularly described with reference to the accompanying drawing, in which:

FIG. 1 illustrates in side elevation an inflatable recreational device and its integral handle consisting of two prong- or antennae-like elements as said device appears when removed from the moulding machine;

FIG. 2 illustrates, on an enlarged scale compared with that of FIG. 1, a fragmentary section in the plane of the paper on which FIG. 1 is drawn of the neck of the handle of said device;

FIG. 3 illustrates a preferred embodiment of a bar which is formed separately from the device and which is adapted for connection of the free ends of said two prong- or antennae-like elements;

FIG. 4 illustrates an alternative embodiment of such a bar as aforesaid; and

FIG. 5 illustrates in side elevation the recreational device of FIG. 1 with the bar of FIG. 3 connecting the free ends of said elements.

Referring to FIG. 5 of the drawings, the body 1 will be seen to be provided with a handle 2 which consists of elements 3 and 4 which are connected to one another by a bar 5, thereby forming an efficient handle for said recreational device which is of the desired shape aesthetically. Referring to FIG. 1, it will be seen that each of the elements 3, 4 is prong-like or antenna-like, each element being connected at one end thereof to the corresponding end of the other element by a bridge portion 6 and the two elements extending upwardly from said bridge portion 6 divergently with respect to one another. We have found it convenient, in the manufacture of the recreational device, to utilise said bridge portion to accommodate an inflation valve and thus said bridge portion 6 contains a sleeve 7 having a bore 8 which is adapted to accommodate the inflation valve (not illustrated), the material from which the recreational device is made having been caused to flow around the outer peripheral surfaces of said sleeve 7 so as to render said sleeve captive. The equatorial zone 9 of the device is, in the embodiment illustrated, provided by spaced parallel ridges in order to assist grip of the device between the legs.

Although the preferred method of manufacture of the recreational device does not form a part of the present invention, it is considered desirable to describe briefly said preferred method of manufacture and to refer to some of the advantages obtained thereby. Thus, a rotational moulding machine is employed which consists essentially of two horizontally spaced members which are vertically disposed and rotatable about a substantially horizontal axis. Each of said members consists of three arms extending radially from said axis of rotation, the three arms being of equal radial length and spaced apart from one another by 120 degrees, the three arms of one of said two members being in axial alignment with the corresponding arms of the other member. A beam extends between the axially inner faces of each of the three pairs of axially aligned arms and each of the three beams is adapted to be rotated about an axis of rotation which is parallel to the first-mentioned axis of rotation of said two members. Each of said beams carries two circular frames spaced from one another along the beam, said circular frames being adapted to be rotated about the parallel axes of rotation which are normal to the axis of rotation of said beam. Each circular frame supports three spaced copper moulds, each mould when in assembled or moulding condition having a radially inner surface which is, obviously, the "negative" of the radially outer surface of the moulded recreational device. Each mould, which will hereafter be called spherical for brevity only, is divisible into two parts equatorially, the division occurring in a plane parallel to the parallel planes between which the circular supporting frame lies. That part of the two-part spherical mould which is not moved or removed in order to permit extraction of the moulded article is provided with a needle which projects from that pole of the spherical mould towards the centre of said spherical mould.

The machine operator, having extracted a set of six moulded recreational devices from six opened spherical moulds, slides a sleeve 7 of plastics material along the needle projecting upwardly from the pole of the mould part in question and pushes it against an end stop on said needle, repeating this operation in respect of each of the six mould parts in turn. Thereafter, he introduces into each of said mould parts a metered quantity of a polyvinyl chloride polymer which has been compounded with a plasticiser, an extender and a stabiliser. Having thus recharged the relevant mould part, the machine operator secures the movable or removable mould parts to said

relevant mould parts and awaits the end of the moulding cycle.

When the cycle-timing equipment indicates that the newly charged spherical moulds can be repositioned to initiate the curing part of the cycle, the operator actuates the appropriate machine controls to cause the three-armed members to rotate about the first-mentioned axis of rotation. Such rotation causes, simultaneously, (a) the set of six newly charged moulds to move into the "oven" where the plastics material is cured, (b) the set of six moulds which were in the "oven" to move to a location in which the moulds can cool to a temperature which will enable the operator to handle the movable or removable parts of said moulds, and (c) the set of six moulds which were at said cooling location to move to the location which was previously occupied by said newly charged moulds.

When the cycle-timing equipment indicates that the curing of the plastics material in the so-called newly charged set of moulds is completed, the said machine controls are again operated to move said moulds to the cooling location and, subsequently, after a similar interval of time said moulds are again moved to the location at which the moulded recreational devices can be removed from the cooled moulds which are then recharged. It will be appreciated, therefore, that each of the three sets of six moulds is emptied and recharged, moved into the "oven," moved to the cooling location and finally emptied and recharged again in an endless series of sequential steps throughout the operator's shift.

In one cycle of operation, which is given purely by way of example, the curing time (that is, the time during which each set of six moulds remains in the "oven" in order to permit cure of the plastics material to take place) is ten minutes with the result that the time allowed for cooling at the cooling location and the time allowed for emptying and recharging the relevant set of moulds is also ten minutes. However, this curing time is not critical.

The curing temperature, on the contrary, is critical and should be maintained, when the curing time is ten minutes, at 470 degrees Fahrenheit (243½ degrees centigrade) with as great an accuracy as is possible because variation by as little as 5 degrees Fahrenheit above or below the optimum temperature may result in the moulded recreational device being rejected or failing during use by the ultimate purchaser.

The design of the handle of the recreational device in the form of two prong-like or antennae-like elements 3, 4 has enabled us to overcome a serious problem which was encountered with earlier designs of said recreational device. Said earlier designs included handles of a closed figure (for example, handles which were circular in a side elevation comparable with the side elevation illustrated in FIG. 5 of the accompanying drawings, or which were substantially an inverted triangle with a vertical piece connecting the base and the vertex of the triangle and so on) which made a handle which was easy to grip and which could not slip out of the grasp of gripping hands since the two grippable parts of the handle were connected to one another by another part which was formed simultaneously with the said two grippable parts. In order to make such a recreational device the spherical mould had to be in four parts of which two concerned the body of the device and two concerned the handle. The effect of the heat applied in the "oven" was particularly severe in the handle region because, since the joint of the two parts of the mould which concerned the handle became worn in time even if perfect when the mould was new, the heat scorched the handle along a part or the whole of the joint, this scorching being much more severe at the handle than at the body of the ball because the dimensions of the grippable parts of the handle were such as enabled that scorching to affect substantially the

whole of the handle. With the handle illustrated in FIG. 1, the two prong-like or antennae-like elements 3, 4 and the conjoined approximately hemispherical portion of the recreational device are formed in or against that mould part which is mounted on the circular frame and the remaining approximately hemispherical portion of said device is formed in or against the movable or removable mould part. Thus, any scorching to which the device, as a whole may be subjected is limited to the equatorial zone at which said scorching and the consequences thereof are not so serious as they were when said scorching affected the handle which is obviously subjected to considerable and repeated flexion.

It will be appreciated that the method of manufacture using a rotational moulding machine is one in which the radially inner surface of each spherical mould becomes evenly coated with the polyvinyl chloride material mentioned above during the simultaneous rotation of the beam concerned about the second-mentioned axis of rotation and rotation of each circular frame about its axis of rotation which is normal to said second-mentioned axis of rotation. The wall-thickness of the finished product is such that each recreational device weighs between 2¼ to 4 pounds (approximately 1 to 1.8 kilograms) or something of that order, one preferred weight being about 2¼ pounds, the circumference of the recreational device, when inflated, at the equatorial zone 9 thereof, being 61 inches (155 centimetres).

It is preferred to apply the bar 5 or a bar 10 (FIG. 4) or some equivalent means to the free ends of the elements 3, 4 as soon as possible after extraction of the moulded recreational device from the spherical mould if the device is to be used with the handle illustrated in FIG. 5. It might be desirable, however, to market the device in the form thereof illustrated in FIG. 1, the box or other packaging containing the ancillary bar 5 or 10 or the other equivalent means, the user being free to choose whether to use said device either without the applied bar or with it.

The rotational moulding machine described above is only one embodiment thereof, of which certain features may be varied; for example, the moulds may be of aluminum or stainless steel, the number of moulds can be different from six and so on.

Similarly, the curing time of ten minutes and the critical curing temperature of 470 degrees Fahrenheit which is associated with that curing time may be varied to give different rates of production of recreational devices; if the curing time is reduced, the curing temperature must be appropriately increased.

What we claim as our invention and desire to secure by Letters Patent of the United States is:

1. A recreational device adapted to be used by a person sitting astride the device and causing the device to bounce along a surface through the action of their legs and feet comprising a resilient body having a substantially spherical shape, means about the equatorial portion of the body to provide a gripping surface for the legs of the user, a handle integral with the body and extending outwardly therefrom on a vertical axis thereof, the handle comprising two prong-like members extending outwardly from the body and means extending across the outer ends of the prong-like members and being substantially near the outer ends thereof to form an enclosed area between the prong-like members for reception of the hands of the user of the device to grasp the handle and the means preventing the hands from slipping off of the prong-like members.

2. A device as set forth in claim 1 wherein the means extending across the outer ends of the prong-like members is a bar engaging the ends of the prong-like members and is held thereon and fitted thereto.

3. A device as set forth in claim 1, wherein the device is hollow and is inflatable, and valve means mounted

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in the connection between the handle and the body and within the base of the prong-like members.

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