United States Patent [19]

Walsh

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[54] **CHILDREN'S OR INFANTS FURNITURE**

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[52] **U.S. Cl.** **5/108,** 5/105

[51] **Int. Cl.** **A47d 9/02**

[58] **Field of Search** 5/108, 109, 61, 62

[56] **References Cited**

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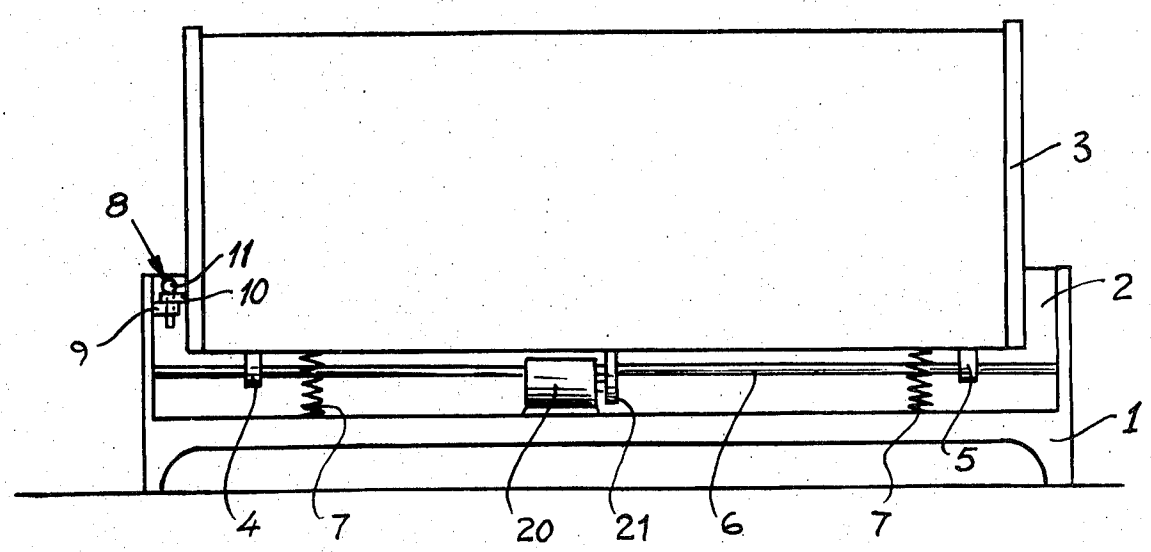
Primary Examiner—Casmir A. Nunberg

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[57] **ABSTRACT**

An article of children's or infants' furniture, such as a cot, comprises a cradle-portion in which a child or infant lies, drive means for actuating the cradle-portion in rocking movement and means which can be used to restrain the cradle-portion against movement when required. Various different means for supporting the cradle-portion for rocking movement are disclosed, and a device is also disclosed which can be used in conjunction with an existing cot, this device incorporating a platform which is mounted for rocking movement and upon which the cot to be rocked can be mounted.

13 Claims, 13 Drawing Figures



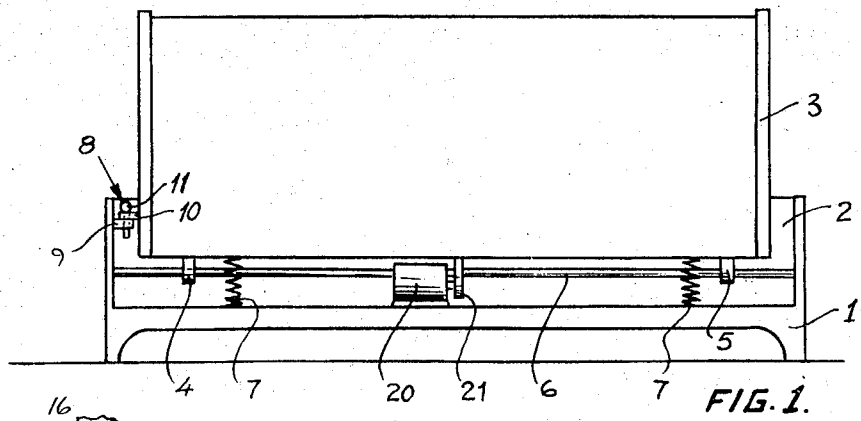


FIG. 1.

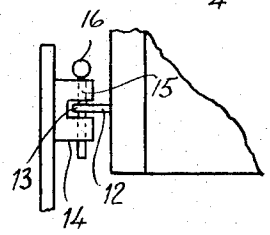


FIG. 3

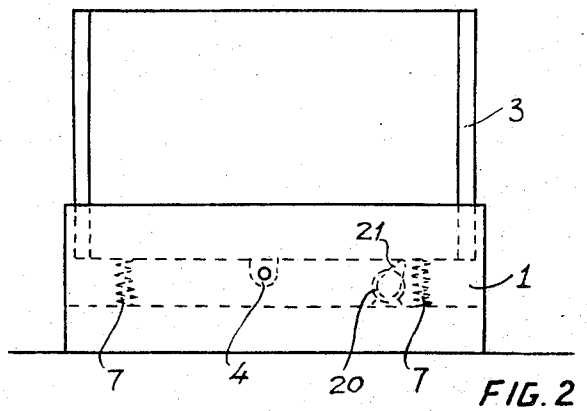


FIG. 2

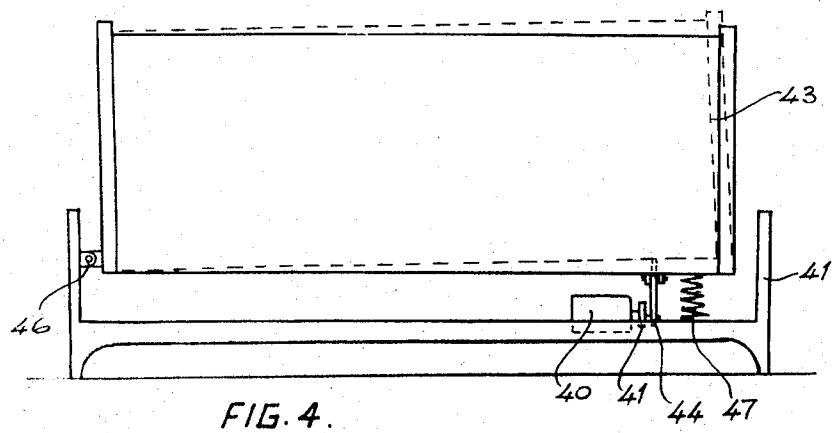


FIG. 4.

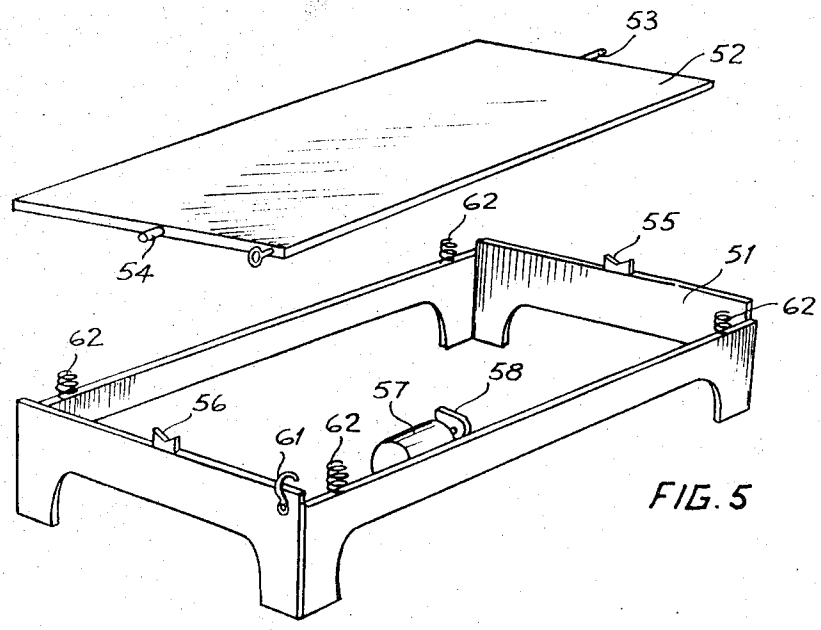


FIG. 5

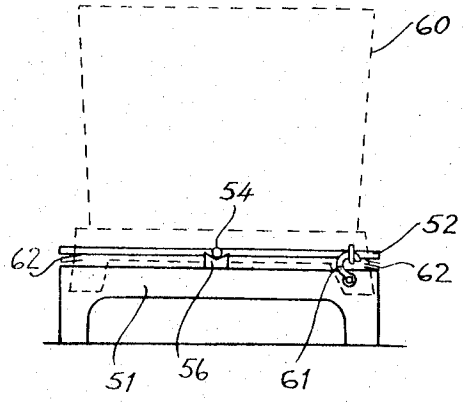


FIG. 6

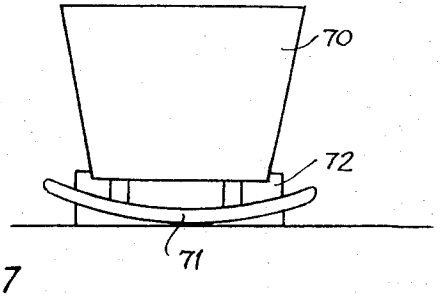


FIG. 7

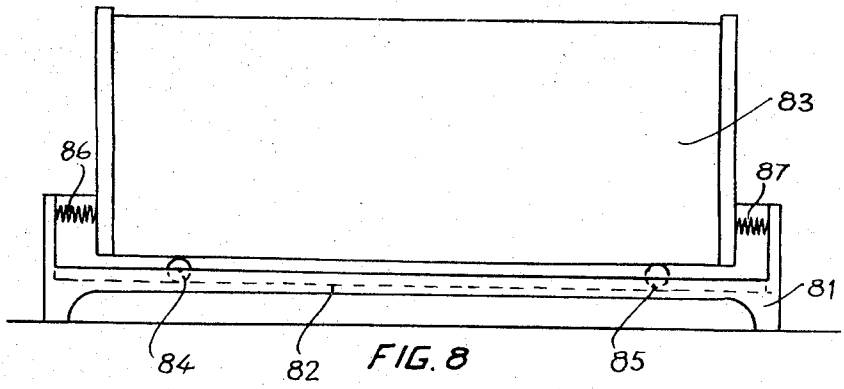


FIG. 8

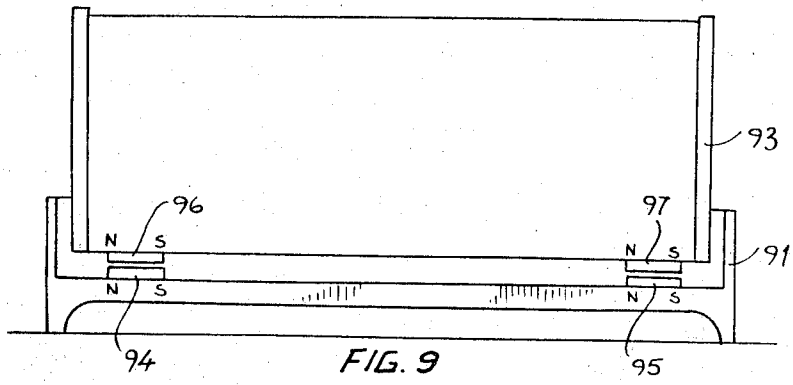


FIG. 9

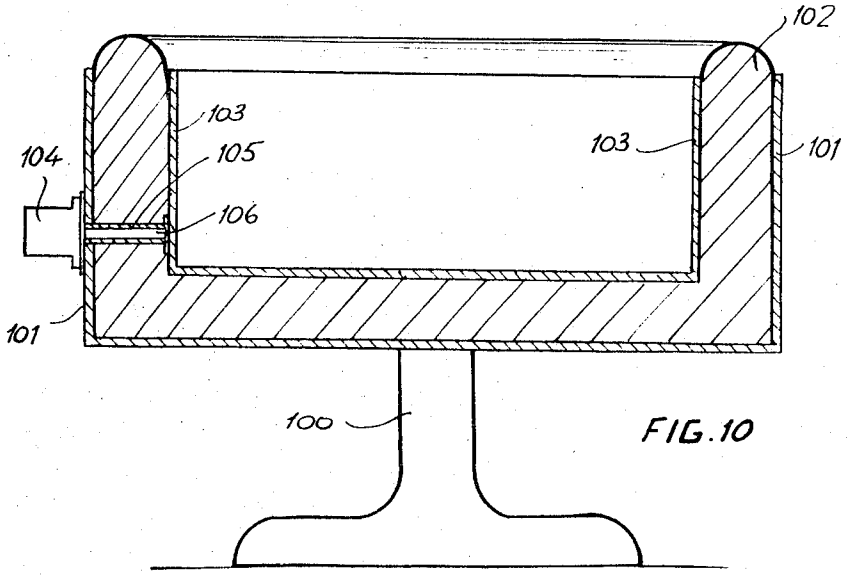


FIG. 10

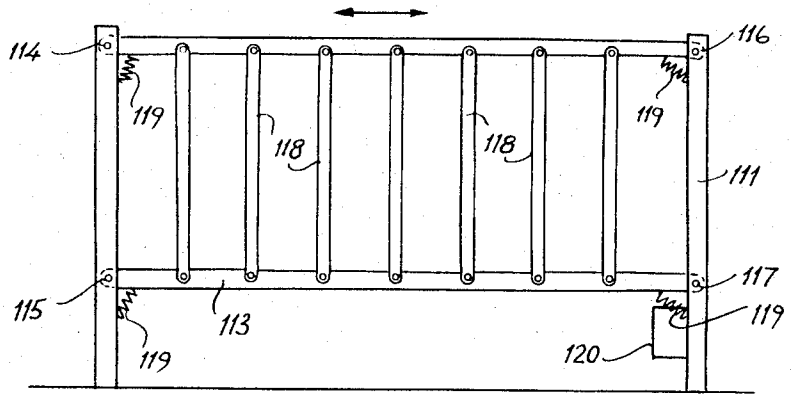


FIG. 11

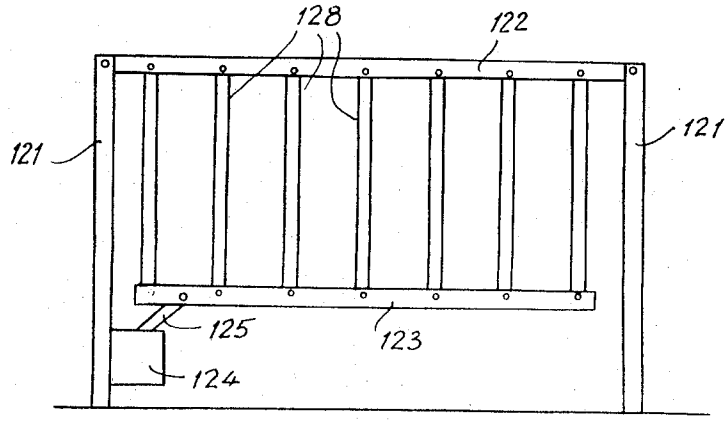


FIG. 12

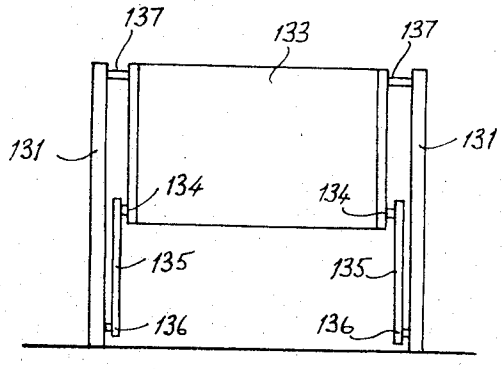


FIG. 13

CHILDREN'S OR INFANTS FURNITURE

This invention relates to children's or infants' furniture, and in particular to beds, cots, cradles or cribs for children or infants, all of which are to be understood as included in the term "cot" as used hereinafter.

It is well known that an infant can often be soothed or put at ease by rocking or gently agitating the cot. It is a principal object of the present invention to provide a cot having improved means enabling it to be rocked.

It is a further object of the invention to provide a cot having relatively simple means whereby rocking can be carried out automatically, in a convenient and effective manner.

Another object of the invention is to provide a device for use in conjunction with an existing cot, enabling the latter to be rocked.

A still further, and more specific object of the invention, is to provide a device which can be used in conjunction with an existing cot, without structural alteration of the cot, to enable the latter to be rocked.

The term "rocking" and related words are used in this specification in the broadest possible sense, and are to be understood as embracing pivotal or other oscillation about a horizontal or a vertical axis, as well as compound oscillatory movement which takes place about a number of axes simultaneously, or which takes place without any well-defined axis of oscillation, and also oscillatory movement along a rectilinear or curvilinear path.

According to one aspect of the invention, there is provided, a child's cot comprising a base-frame, a cradle-portion carried by the base-frame for rocking movement relatively thereto, drive means for actuating the cradle-portion in rocking movement relatively to the base-frame, and releasable fastening means for restraining the cradle-portion against movement relatively to the base-frame when required.

Various mechanical arrangements may be employed for supporting the cradle-portion for rocking movement, as will be described more fully hereinafter. Alternatively, a magnetic arrangement may be employed for this purpose, and, according to another aspect of the invention, there is provided a child's cot comprising a base-frame, a cradle-portion removably carried by the base-frame and capable of being mounted thereon in either of two oppositely directed endwise dispositions and co-acting magnetic means carried by the base-frame and by the cradle-portion, the relative magnetic polarities of the co-acting magnetic means being reversed by reversal of the endwise disposition of the cradle-portion, whereby the said magnetic means mutually repel in one endwise disposition of the cradle-member, so that the cradle-member is movable relatively to the base-frame, while the said magnetic means mutually attract in the other endwise disposition of the cradle-member, so that the cradle-member is restrained against movement relatively to the base-frame, the said cot further comprising drive means for actuating the cradle-portion in rocking movement relatively to the base-frame, when the said cradle-portion is in the disposition in which it is movable relatively to the latter.

Moreover, according to yet another aspect of the invention, there is provided a child's cot which includes a cradle-portion and a flexible fluid-containing envelope which, when containing fluid in the fluid-space therein, allows rocking movement of the cradle-portion, the said cot further comprising drive means for actuating the cradle-portion in its rocking movement and means for restraining the cradle-portion against rocking movement when required.

According to a further aspect of the invention, there is provided a child's cot comprising upright structural members and a cradle-portion supported by the upright structural members, the cradle-portion comprising at least four horizontal stretcher-members, two stretcher-members being arranged one above the other at opposite sides of the cradle-portion, and vertical bar-members extending between the two stretcher-members at each side of the cradle-portion, the bar-members being connected to the stretcher-members by means of pivotal joints, so as to allow angular oscillatory movement of the bar-members, to provide a rocking action of the cradle-portion, the cot further comprising drive means for actuating the cradle-portion in its rocking action and releasable fastening means for restraining the cradle-portion against rocking when required.

According to yet another aspect of the invention, there is provided a device for use in conjunction with an existing cot, comprising a base-frame, a platform mounted on the base-frame for limited movement relatively thereto, drive means for actuating the platform in its movement relatively to the base-frame, and releasable fastening means for restraining the platform against movement relatively to the base-frame when required, the platform being adapted to receive and support a cot, whereby the cot is rocked during movement of the platform relatively to the base-frame.

The invention will now be more fully described with reference to the accompanying diagrammatic drawings which show, by way of example only, various specific embodiments of the invention. In the drawings:

FIG. **1** is a side elevational view of one form of cot with a side panel removed, to show internal details;

FIG. **2** is an end view of the cot of FIG. **1**;

FIG. **3** is a fragmentary view showing a modification;

FIG. **4** is a view similar to FIG. **1**, but showing a different form of cot;

FIG. **5** is a perspective "exploded" view of a device for use in conjunction with an existing cot;

FIG. **6** is an end view of the device shown in FIG. **5**, the position of a cot used in conjunction therewith being indicated in dotted lines;

FIG. **7** is an end view of another form of cot, together with a device in accordance with the invention, used for rocking or agitating the cot;

FIGS. **8** and **9** are side elevational views, each similar to FIG. **1**, but showing further modified forms of cot;

FIG. **10** is a sectional view through a still further form of cot;

FIGS. **11** and **12** are side elevational views of still further forms of cot;

FIG. **13** is an end view of another form of cot;

Referring to FIGS. **1** and **2**, the cot shown therein comprises a support frame **1** which rests on the floor. The support frame has side panels, one side panel **2** being visible in FIG. **1**, but the other side has been removed to show internal details.

The cot includes a portion 3 in which the infant lies, referred to herein as the cradle-portion or, alternatively, and purely for the purposes of description, as the "basket." The sides of the cradle-portion or basket 3 consist of upright rods (not shown) in the conventional manner. The cradle-portion or basket 3 is mounted for side-to-side rocking movement by means of brackets 4 and 5 which are engaged on a rod 6 extending lengthwise of the frame 1.

In addition, the basket 3 is located relatively to the frame 1 by means of springs 7, three of which are visible in FIGS. 1 and 2. The springs 7 act as cushioning devices which limit the rocking movement of the basket and facilitate smoothness and quietness in the reversal of the motion thereof. A fastening device 8 is provided to fix the basket in position when desired and to prevent unwanted movement thereof. As shown in FIG. 1, the device 8 comprises rings 9 and 10 on the frame 1 and on the basket 3 which serve, when brought into co-operating positions, to receive a fixing pin 11, so that the basket 3 can be fixed relatively to the frame 1.

FIG. 3 shows an alternative form of fastening device, in which a ring 12 engages in a slot 13 formed in a block 14, the block 14 also being formed with a bore 15 to receive a fixing pin 16, by means of which the ring 12 can be fixed relatively to the block 14.

Referring again to FIGS. 1 and 2, a motor 20 is mounted on the frame 1. The motor 20 drives a cam 21 which bears directly against the basket 3 at a position near one side thereof. Thus the cam 21 causes the basket 3 to execute a jogging movement about the rod 6, as the cam is driven in rotation by the motor 20.

The cam 21 may be shaped so as to have a single rise, or two or more rises, so as to provide one or more jogging movements during each rotation of the cam.

Instead of the basket 3 being mounted on a long rod 6, it would be possible for the frame 1 to carry two short pivot-pins projecting inwardly from the end-members of the frame and engaging with pivot-pins provided on the basket 3. Alternatively, the pivot-pins could be mounted on the basket 3 and the pivot-points on the frame 1.

In such a construction, the pivot-pins and pivot-points can be arranged so that the pivotal axis of the basket 3 is near the bottom of the basket, in a similar position to the pivotal axis defined by the rod 6 in FIGS. 1 and 2, or the arrangement may be such that the pivotal axis is near the top of the basket.

Referring now to FIG. 4, the cot shown therein comprises a support frame 41 carrying a basket 43 which is mounted on the frame 41 by means of a rod 46 which extends transversely across the support frame 41, near one end of the latter. Thus the basket 43 is mounted for pivoting movement about one end thereof, being supported at the opposite end by springs mounted on the frame 41. One such spring is visible in FIG. 4, at 47.

The basket 43 may be jogged up and down at one end thereof by means of a motor 40. The motor 40 could drive the basket 43 by means of a cam arrangement as shown in FIGS. 1 and 2. However, FIG. 4 shows an alternative arrangement in which the motor 40 drives a disc 41 carrying an eccentric pin which is connected to the basket 43 by means of a connecting rod 44. Thus the basket 43 is jogged by means of the reciprocatory movement of the connecting rod 44.

A fastening (not shown in the drawings) similar to that described with reference to FIGS. 1 and 2 or FIG. 3, is provided to fix the basket 43 when desired.

Referring now to FIGS. 5 and 6, the device shown therein comprises a support frame 51 and a platform 52, the platform 52 being shown detached from the frame 51 in FIG. 5. The platform 52 carries pivot-pins 53 and 54 by means of which the platform 52 is supported on pivot-points 55 and 56 carried by the frame 51, in the manner shown in FIG. 6. The platform 52 can then be pivoted from side to side about the axis defined by the pivot-pins 53 and 54, under the action of a motor 57 mounted on the frame 51 and driving a cam 58.

The device shown in FIGS. 5 and 6 is used in conjunction with a conventional cot which can be rested on the platform 52, in the position indicated in dotted lines at 60 in FIG. 6. The cot indicated in FIG. 6 is of a type having four feet, which engage over the opposite ends of the platform 52 and locate it relatively to the platform. As the platform 52 is oscillated by the motor 57, the cot 60 is rocked from side to side.

A hook-and-eye fastener 61 is provided so that the platform 52 can be held rigid when desired. When the platform is free, the rocking movement thereof is limited by means of springs 62 mounted on the frame 51.

FIG. 7 shows a cot 70 of the kind provided with curved rockers at either end, one rocker 71 being visible in FIG. 7. The cot 70 is used in conjunction with a device 72 which is shown purely schematically in FIG. 7. The device 72 consists of a frame of somewhat similar construction to the frame 51 shown in FIGS. 5 and 6, carrying a motor provided with drive means, and a fastening device for use when rocking is not desired. The arrangement of the motor and drive means may be similar to that of the motor 57 and cam 58 shown in FIG. 5. In that event, as the cam is driven in rotation, it bears directly on the cot 70 and rocks the latter on its rockers 71.

Referring now to FIG. 8, the cot shown therein comprises a support frame 81 fitted with two or more rails extending lengthwise of the frame 81 and forming a guide-track, the position of the guide-track being indicated in dotted lines at 82. The cot includes a basket 83 which can "glide" lengthwise relatively to the rails 82. For this purpose the basket 83 may rest directly on the rails of the guide-track 82 but preferably, as indicated in FIG. 8, the basket 83 is mounted by means of rollers 84 and 85 running on the rails. The basket 83 is cushioned in its endwise movement by means of springs 86 and 87 engaging between the basket 83 and the end-members of the frame 81. It would also be possible for guide-rails to be provided, engaging the basket 83 at its sides, so as to provide lateral guiding.

It will be understood that, in the arrangement shown in FIG. 8, the basket 83 is capable of endwise oscillating movement. It can be actuated in such movement by hand, or by means of a motor. The motor may drive the basket 83 in its endwise movement by means of a cam, or an eccentric disc and connecting rod, as previously described. However, other means could be employed, such as a belt and pulley drive, for example. A fastening device is provided for holding the basket 83 in position, when rocking is not desired.

FIG. 9 shows a form of cot somewhat similar in overall construction to the cot shown in FIG. 8. However,

in this case, magnetic means are provided by means of which the basket **93** can be made to "float" relatively to the support frame **91.**

The frame **91** and the basket **93** are each fitted with a number of permanent magnets. Thus, for example, the basket **93** can be fitted with four magnets arranged near the four corners of the underside thereof, co-operating with magnets provided at corresponding positions on the frame **91.** In FIG. **9,** two magnets **94** and **95** are visible on the frame **91,** co-operating with two magnets **96** and **97** on the basket **93.**

The arrangement is such that the basket **93** can readily be removed from the frame **91,** and replaced with its endwise disposition reversed relatively to the frame **91.**

The disposition of the magnets on the frame **91** and on the basket **93** is such that, in one endwise position of the basket **93,** the polarities of the magnets are as indicated by the letters "N" and "S" in FIG. **9.** It will be seen that, in the mode shown in FIG. **9,** the magnets of each co-operating pair will tend to repel one another so that the basket **93** will "float." On the other hand, if the endwise disposition of the basket **93** is reversed, the magnets of the respective pairs will attract one another and the basket **93** will thus be held fixed relatively to the support **91.**

Referring now to FIG. **10,** the device shown therein comprises a rigid outer frame **101** and a cradle-portion or basket **103.** The basket **103** is supported by a flexible envelope **102** arranged inside the frame **101,** the envelope **102** being designed either to contain a liquid such as water, or to be inflated by means of air. The whole structure is mounted on a base or stand **100.**

A motor **104** is mounted on the outside of frame **101,** the motor having a reciprocatory drive shaft **105.** The envelope **102** is provided with a sealed sleeve **106** by means of which the shaft **105** extends through the interior space of the envelope, to be connected to the basket **103.** The motor **104** drives the shaft **105,** which agitates the basket **103** as desired.

A device is provided (not shown in the drawings) for holding the cradle-portion **103** against movement when desired.

It would be possible to dispense with the rigid frame **101** and with the separate cradle-portion or basket **103.** Both of these parts could be constituted by the wall of the envelope **102** which, for this purpose, could be formed with appropriate semi-rigid wall-portions.

Referring now to FIG. **11,** the cot shown therein in side elevation comprises four upright structural members, of which two are visible in FIG. **11** at **110** and **111.** The uprights are connected by two lengthwise stretcher-members **112** and **113** spaced one above the other and connected to the uprights by means of pivotal joints **114, 115, 116** and **117.** The lengthwise members **112** and **113** have vertical bar-members **118** extending between them, which are connected to the lengthwise members **112, 113** by means of pivotal joints similar to those already referred to. The uprights and stretcher-members are connected to one another by means of springs **119,** which retain the whole structure in the position shown in FIG. **11,** while nevertheless rendering the structure flexible, so that it can be oscillated in the direction indicated by the arrows in FIG. **11,** either by hand or by means of a motor mounted on the structure, as indicated at **120.**

It will be understood that the bearer-members **112, 113** and the vertical members **118** extending between them constitute two walls, defining between them the cradle-portion where the infant lies, rocking movement being imparted to the cradle-portion by the oscillatory movement applied to the whole structure as referred to above.

Means (not shown in the drawings) are provided for restraining the structure against movement when required, these means being similar to those already referred to in connection with other constructions.

Referring now to FIG. **12,** the cot shown therein likewise has a cradle-portion or basket, defined by walls, each of which is constituted by a plurality of vertical bar-members **128** extending between horizontal stretcher-members **122, 123.** In this case, however, only the upper stretcher at each side of the cot (the stretcher **122** as shown in FIG. **12**) is pivotally connected to the uprights **121,** so that the cradle-portion or basket is in effect suspended from the stretchers at the upper part of the cot, for oscillatory movement within the space defined by the four uprights **121.**

Oscillatory rocking movement of the basket is effected by a motor **124** mounted on one of the uprights **121,** which oscillates the basket by means of a reciprocatory connecting rod **125,** and fastening means are provided for locking.

FIG. **13** shows and end view of a modified form of the cot shown in FIG. **12.** In the construction shown in FIG. **13,** instead of the cradle-portion or basket **133** being freely suspended between the uprights **131,** the pivotal joints **134** at the corners of the basket **133** have link-members **135** connected thereto, the link-members extending to pivots **136** near the feet of the uprights **131.** The upper corners of the basket **133** are directly connected to the uprights **131,** by means of the pivots indicated at **137.**

The pivotal joints **134** are constructed with considerable play, and this allows very limited oscillatory movement of the basket **133** relatively to the uprights **131.** Drive means are provided for actuating the basket in its oscillatory movement, which drive means may be similar to the drive described with reference to FIG. **12.** Fastening means are provided, for locking the basket **133** in position, when required.

The above description of particular embodiments of the invention has, of course, been given by way of example only, and the details of the various embodiments may be varied without departing from the scope of the invention, as defined by the appended claims.

In particular, the details of the drive means described above may be varied, and the specific forms of drive referred to in connection with particular embodiments may be applied to others of the embodiments described.

Particular reference may be made to the fact that the various different drive arrangements described, may all be applied to the device shown in FIGS. **5** and **6,** which is intended for use in conjunction with an existing cot.

In certain of the embodiments described, a motor has been shown, mounted on the stationary base-frame of the arrangement, connecting means being provided for transmitting the drive to the movable portion of the arrangement. It would be equally possible for the motor to be mounted on the movable portion and to be connected to the stationary portion by connecting means,

so as to provide the necessary reaction for driving the movable portion in its rocking movement.

In connection with a cot of the kind shown in FIG. 7, which is mounted on curved rockers, a motor could be mounted on the cot, so as to provide the desired rocking movement by reaction, against the floor for example. In this case, cushioning elements, such as springs or rubber pads, would be mounted at the ends of the rockers, so as to limit the rocking movement of the cot, and facilitate reversal thereof, at the limits of its rocking movement.

Particular reference is directed to the feature of the invention, according to which means are provided for limiting movement in the various constructions described. Any form of resilient element can be employed for this purpose.

Another important feature of the invention, resides in the provision of means whereby movement can be positively prevented, when desired. The details described in relation to this feature, with particular reference to FIGS. 1 to 6, can be applied to all the embodiments of the invention described herein. Alternatively, any other convenient form of clamp or fastener can be employed for the purpose.

The two features just referred to have important practical advantages which are obtainable regardless of whether the rocking movement of the cot in question is effected by manual operation or by means of a power drive.

As regards the forms of power drive which may be employed, various kinds of motor are suitable, such as spring motors and electric motors, including linear and synchronous motors and solenoid devices. The motor used may be provided with a variable speed facility, and a timer may be employed, so that the motor is switched off after rocking action has been applied for a predetermined time.

I claim:

1. A child's cot or crib comprising in combination:
a base-frame,
a cradle-portion located adjacent said base-frame,
pivot means supporting said cradle-portion on said base-frame and defining an axis of pivotal movement about which said cradle-portion is capable of limited rocking movement,
resilient elements engaged between said cradle-portion and said base-frame, for cushioning said cradle-portion in its rocking movement about said pivotal axis,
drive means for actuating said cradle-portion in such rocking movement,
and releasable fastening means for selectively preventing movement of said cradle-portion relatively to said base-frame.

2. A cot according to claim 1, wherein the base-frame is of elongated form and the cradle-portion is mounted for pivotal movement about a substantially horizontal axis extending transversely of the base-frame, adjacent one end of the base-frame and of the cradle-portion.

3. A cot according to claim 1, wherein the said drive means comprise a motor and a rotary cam driven by the motor, the cam being arranged to bear directly against the cradle-portion so as to jog the cradle-portion sequentially during rotation of the cam.

4. A cot according to claim 1, wherein the said drive means comprise a motor, a rotary drive disc driven by the motor, an eccentric pin on the said disc and a connecting rod connecting the said pin to the cradle-portion, whereby the cradle-portion is rocked by reciprocatory motion of the connecting rod.

5. A child's cot comprising a base-frame of upright structural members and a cradle-portion supported by the upright structural members, the cradle-portion comprising at least four horizontal stretcher-members, two stretcher-members being arranged one above the other at opposite sides of the cradle-portion, and vertical bar-members extending between the two stretcher-members at each side of the cradle-portion, the bar-members being connected to the stretcher-members by means of pivotal joints, so as to allow angular oscillatory movement of the bar members, to provide a rocking action of the cradle-portion, the cot further comprising drive means for actuating the cradle-portion in its rocking action, releasable fastening means for preventing rocking when required and resilient elements engaged between said cradle-portion and said base frame, for cushioning said cradle-portion in its rocking movement.

6. A child's cot according to claim 5, wherein the two upper stretcher-members extend between the upright members at each side of the cot, the bar-members and the lower stretcher-members depending from the upper stretcher-members and being freely pivotable relatively thereto, so as to provide rocking action of the cradle-portion.

7. A child's cot according to claim 5, wherein the two upper stretcher-members extend between the upper parts of the upright members at the respective sides of the cot, and wherein two link-members are associated with the lower stretcher-member at each side of the cot, each said link-member extending between a pivotal connection at one end of the corresponding lower stretcher-member and a pivotal connection at the lower part of the corresponding upright member, the pivotal connections between the said lower stretcher-members and the link-members associated therewith having substantial play, whereby the lower stretcher-members are capable of endwise oscillatory movement to provide rocking movement of the cradle-portion.

8. A device for rocking a cot or crib comprising in combination a base-frame,
a cot or crib supporting platform located adjacent to said base-frame,
pivot means supporting said platform on said base-frame and defining an axis of pivotal movement about which said platform is capable of limited rocking movement,
resilient elements engaged between said platform and said base-frame, for cushioning said platform in its rocking movement about said pivotal axis, drive means for actuating said platform in such rocking movement,
and releasable fastening means for selectively preventing movement of said platform relatively to said base-frame.

9. A device according to claim 8, wherein the platform is mounted for pivoting movement about a substantially horizontal axis.

10. A device according to claim 9, wherein the said horizontal axis extends intermediately of the width of the platform.

11. A device according to claim 10, wherein the platform is mounted on the base-frame by means of co-

operating pivot-pins and pivot-points which define the said horizontal axis.

12. A device according to claim **8,** wherein the said drive means comprise a motor and a rotary cam driven by the motor, the cam being arranged to bear directly against the platform so as to jog the platform sequentially during rotation of the cam.

13. A child's cot comprising a plurality of upright structural members, two pairs of stretcher-members, extending between said upright members at opposite sides of the said cot, the two stretcher-members of each pair being spaced one above the other, and upright bar-members extending between the two stretcher-members of each pair, whereby the said stretcher-members and the said upright bar-members form two walls defining between them, a cradle-portion of the said cot, the said stretcher-members being connected to the upright members and to the bar-members by means of pivotal joints, whereby all of the said members are capable of mutual angular yielding movement so as to allow rocking of the said cot, drive means being provided to actuate said members in their mutual yielding movement and releasable fastening means being provided for preventing rocking when required and resilient elements engaged between said cradle-portion and said upright members for cushioning said cradle-portion in its rocking movement.

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