

(12) UK Patent Application (19) GB (11) 2 202 753 (13) A

(43) Application published 5 Oct 1988

(21) Application No 8805370

(22) Date of filing 7 Mar 1988

(30) Priority data

(31) 8705465

(32) 9 Mar 1987

(33) GB

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(51) INT CL⁴

A63F 9/08

(52) Domestic classification (Edition J):

A6H 12E

(56) Documents cited

GB 20672/1890

FR 2431311

US 3810630

(58) Field of search

A6H

Selected US specifications from IPC sub-class

A63F

(54) Game

(57) A game comprises a board (1) having three tracks (7,8,9) of the same length, each closed at one end (11), track means (10) connecting the open ends of the three tracks (7,8,9) and a plurality of tokens (2), each marked differently and restrained to move only in the tracks (7,8,9) or track means (10).

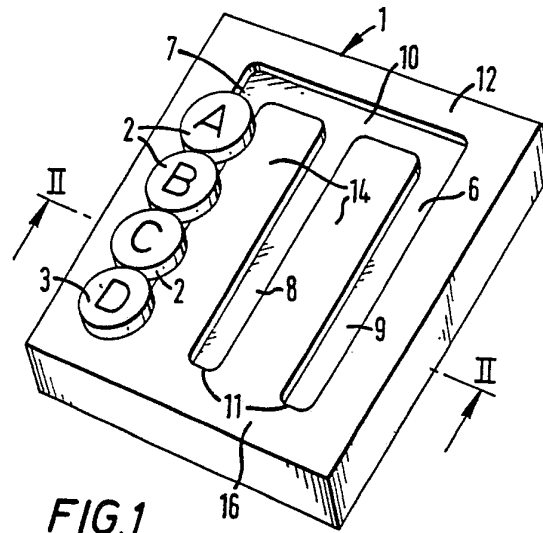


FIG. 1

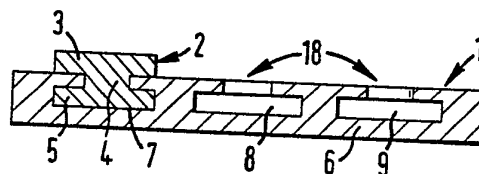


FIG. 2

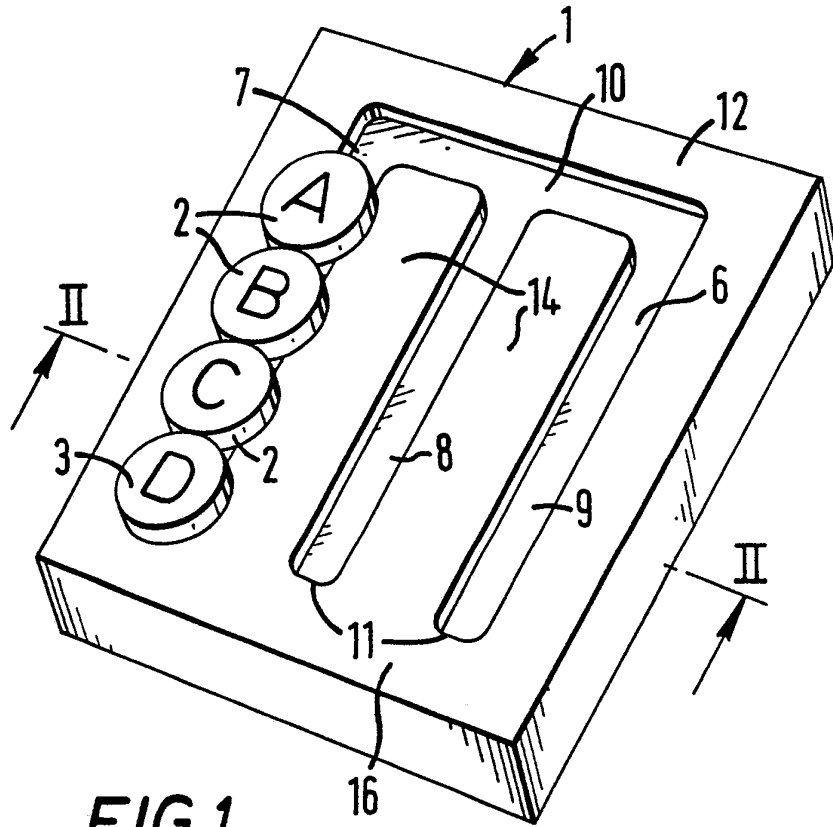


FIG. 1

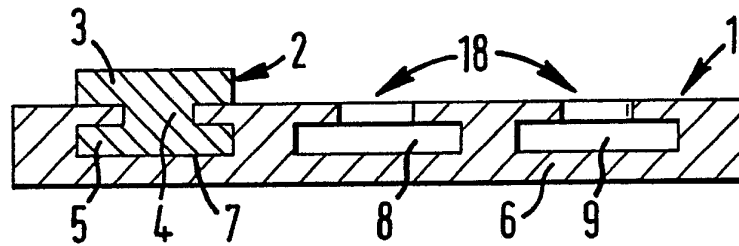


FIG. 2

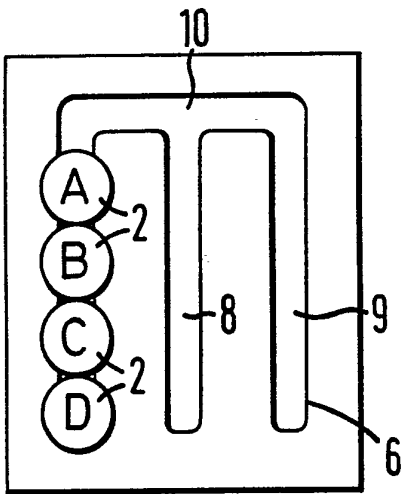


FIG. 3

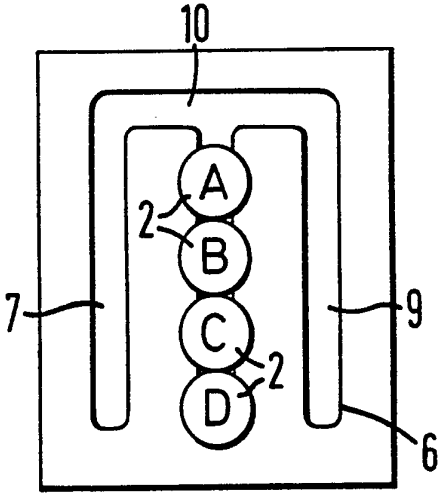


FIG. 4

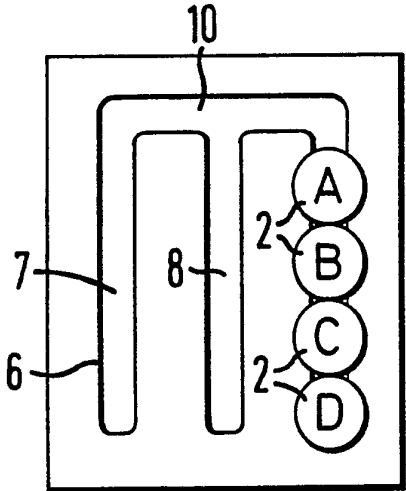


FIG. 5

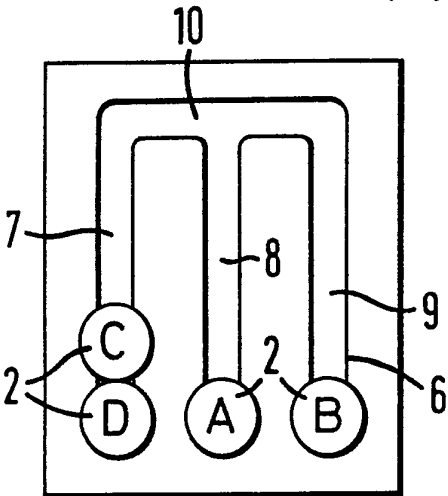


FIG. 6

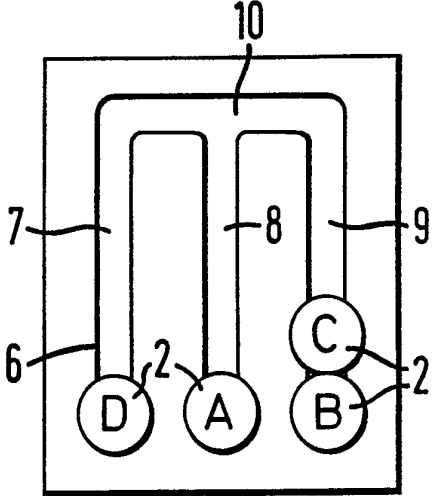


FIG. 7

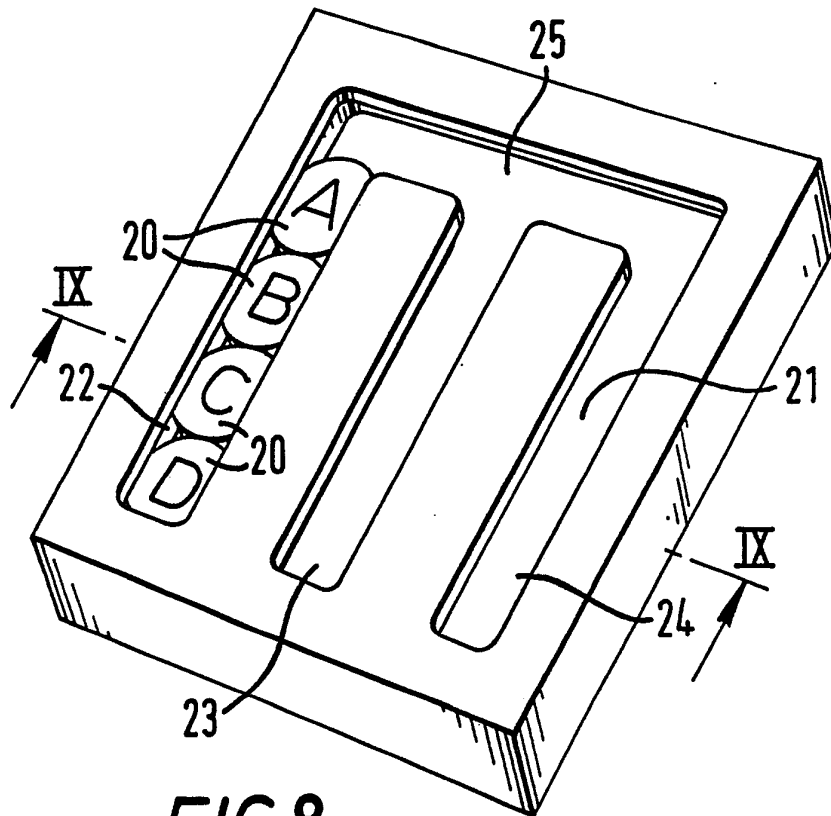


FIG.8

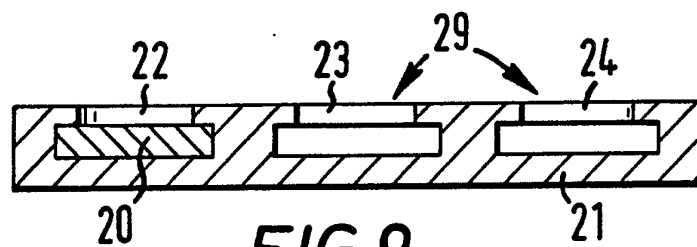


FIG.9

GAME

This invention relates to a game and more particularly to a version of a game known as "The Tower of Hanoi".

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The original game was invented some considerable time ago and comprises a number of apertured discs of different diameters mounted on a peg passing through the apertures. Two other pegs are provided and the object of
10 the game is to transfer the discs to another of the pegs so that they end up with the largest at the bottom, the next largest on top of the largest and so on with the shortest number of moves. Only one disc may be moved at a time to any other peg but under no circumstances may a
15 larger disc be placed on a smaller disc.

The usual version of this game has a board on which three upstanding pegs are provided together with a number of discs of appropriate diameter. While such a
20 version is satisfactory in operation, it has a number of disadvantages. The apparatus is relatively large and therefore not easily carried about by a child who might wish to amuse itself on a long journey, for example. Also the discs are, of necessity, loose and can become
25 lost rendering the game useless.

The present invention seeks to provide a game of the same type as the Tower of Hanoi in which some or all of the above disadvantages are reduced or obviated.

30

According to the invention, a game comprises a board having three tracks of the same length, each closed at one end, track means connecting the open ends of the
three tracks of the same length and a plurality of
35 tokens, each marked differently and restrained to move only in the tracks or track means.

The track means may comprise a fourth track connecting the open ends of the three tracks of the same length. The three tracks of the same length may be parallel to each other while the fourth track may be at right angles to the said three tracks so as to form a system of tracks in the form of a lower case "m".

Alternatively, the track means may comprise a track connection connecting the open ends of the said three tracks substantially directly together.

Preferably the tracks comprise undercut grooves which at all times cover edges of at least part of the tokens so that while access can be had to the tokens, they cannot be removed from the tracks.

The tokens may lie mainly outside the grooves and have a short leg ending in a foot which is trapped within the groove. The tokens may be of dumbbell shape.

20

Alternatively, the tokens may comprise discs located in the grooves such that they are retained in the grooves but are accessible through the mouths of the grooves.

25 In either case, the tokens may be marked numerically, alphabetically or with part of a picture so that they form a completed picture when arranged in their correct order.

30 The invention will now be described in greater detail, by way of example, with reference to the drawings, in which: -

Figure 1 is a perspective view of one form of game in accordance with the invention;

Figure 2 is a sectional view taken on the line II-II of figure 1;

Figures 3 to 5 show diagrammatically the three possible starting or ending positions of the game;

Figure 6 shows one example of a correct intermediate position of the game;

10 Figure 7 shows one example of an incorrect intermediate position of the game;

Figure 8 is a perspective view of a second form of game in accordance with the invention, and

15

Figure 9 is a sectional view taken on the line IX-IX of figure 1;

Referring firstly to figures 1 and 2, there is shown a game using a board 1 and four tokens 2, here shown as dumbbell shaped elements having a disc form upper portion 3, a short leg portion 4, and a foot portion 5. The upper portions 3 are labelled "A", "B", "C" and "D". The board 1 comprises a backing member 6 on which is formed 25 four tracks in the form of undercut grooves 7, 8, 9 and 10, the grooves 7, 8, and 9 being parallel and adjacent to each other. These three grooves 7, 8 and 9 are each closed at one end 11 and their open ends are connected together by means of the fourth track or groove 10 which 30 is at right angles to the grooves 7, 8 and 9. In this way a groove pattern is provided roughly in the form of a lower case "m".

As can be seen from the drawings, the grooves 7, 8, 9 35 and 10 can readily be made up using an outer frame 12 on the backing member 6 with two elongated projections 14

extending inwardly from one side 16 of the outer frame 12. The foot portions 5 of the tokens 2 are circular and of a diameter slightly less than the main width of the grooves 7, 8, 9 and 10 to enable them to move freely 5 therein but of a diameter greater than the width of the longitudinal mouth 18 of the grooves so that they cannot pass through it. The thickness of the foot portions 5 is substantially the same as the depth of the grooves between the undercut and the base thereof. In this way 10 the tokens 2 can be moved easily along all of the grooves but are retained thereby.

The object of the game is to move all the tokens 2 from one of the three possible positions shown in figures 3 15 to 5 to any other of the positions shown therein. To do this, only one token 2 can be moved at a time and, with an ABCD order of the tokens 2, at no time may a disc which is higher up the alphabet be placed on one which is lower down the alphabet. Thus "A" can be placed on 20 "D" but "D" may never be placed on "A". An example of a correct move is shown in figure 6 and an example of an incorrect move is shown in figure 7. Of course, if desired, the order may be reversed to DCBA. Thus, in this latter case, a "D" can be placed on an "A" but an 25 "A" can never be placed on a "D".

Mathematically it will be appreciated that the minimum number of moves to complete a game is $2^n - 1$ where n is the number of tokens provided. Thus with four tokens, 30 the minimum number of moves is 15 while with five tokens, the minimum number of moves is 31 and so on. The most suitable number of tokens is around six so that the game is not too long but long enough to make it interesting. For the sake of simplicity, the game has 35 been shown with four tokens. The moves of these four tokens in moving from a start in the left hand groove

(column 1) to the right hand groove (column 3) is detailed in the two tables below, of which Table I recites the moves and Table II shows the moves being carried out:-

5

TABLE I

MOVE NUMBER	TOKEN LETTER	GROOVE IN WHICH THE TOKEN IS LOCATED BEFORE THE MOVE STARTS	GROOVE TO WHICH THE TOKEN IS MOVED
1	A	1	2
2.	B	1	3
3.	A	2	3
15 4.	C	1	2
5.	A	3	1
6.	B	3	2
7.	A	1	2
8.	D	1	3
20 9.	A	2	3
10.	B	2	1
11.	A	3	1
12.	C	2	3
13.	A	1	2
25 14.	B	1	3
15.	A	2	3

TABLE II

	A - -	- - -	- - -	- - -	- - -	- - -	- - -
5	B - -	B - -	- - -	- - -	- - -	- - -	- - -
	C - -	C - -	C - -	C - A	- - A	A - -	A B -
	D - -	D A -	D A B	D - B	D C B	D C B	D C -
	Move 0	Move 1	Move 2	Move 3	Move 4	Move 5	Move 6
10							
	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	- A -	- A -	- - -	- - -	- - -	- - -	- - -
15	- B -	- B -	- B A	- - A	A - -	A - C	- - C
	D C -	- C D	- C D	B C D	B C D	B - D	B A D
	Move 7	Move 8	Move 9	Move 10	Move 11	Move 12	Move 13
20							
			- - -	- - A			
			- - B	- - B			
			- - C	- - C			
25			- A D	- - D			
			Move 14	Move 15			

30 It will be noted that Disc "D" moves only once, Disc "C" moves twice, Disc "B" moves four times and Disc "A" moves eight times. In order to make the game more difficult, the column into which the tokens are to be moved can be specified at the beginning of the game.

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Figures 8 and 9 show an alternative form of the game in

which the dumbbell shaped tokens are replaced by plain discs 20, also labelled "A", "B", "C" and "D". The board for the game again comprises a backing member 21 on which are formed four undercut grooves 22, 23, 24 and 5 25. These grooves are in the same pattern as the grooves in the first embodiment but have much wider mouths 29.

As can be seen, the discs 20 are of a diameter slightly less than the main width of the grooves to enable them 10 to move freely therein but of a diameter greater than the longitudinal mouth 29 of the grooves so that they cannot pass through it. The thickness of the discs 20 is substantially the same as the depth of the grooves between the undercut and the base thereof. In this way 15 the discs 20 are easily accessible and can be moved easily along all of the grooves but are retained therein.

It will be appreciated that modifications and variations 20 of the above described embodiments may be carried out without departing from the scope of the invention. For example, the tokens or discs could be marked differently. They could use a different alphabet eg. "α", "β", "γ" etc. They could use numerals "1", "2", "3" 25 etc. or "I", "II", "III" etc. Alternatively they could use the appropriate number of dots or could use circles or other figures of different sizes.

While circular discs have been shown, these could be 30 replaced by square shapes so that the edges of the tokens fit together. Particularly in these circumstances, the tokens could constitute parts of a picture which would then be made up into the whole picture when arranged in the correct order, using the 35 same rules as previously described. Other suitable geometric shapes could be used.

In the case of tokens having foot portions in the grooves, the part of the tokens outside the grooves could be modelled in the form of articles, such as 5 animals, different articles being used for each token or the same article could be provided in different sizes.

While the above described embodiment has an arrangement of three parallel grooves and a joining groove at right 10 angles thereto, it will be appreciated that various other configurations could be used. For example, one of the three parallel grooves, preferably the middle groove, could extend from the opposite side of the fourth groove to the other two. Also, the fourth groove 15 could be omitted, the three grooves being connected effectively directly together and lying in a star pattern. The connecting part, which would consist of the ends of the grooves which would need to be somewhat longer than where a fourth track was used, would form a 20 track means. The angles of the star arrangement need not be 120° but could be of any desired size. In a further alternative, with three generally parallel grooves, the centre groove could be straight while the two outer grooves could be curved at their open ends so as to meet 25 the centre groove.

If desired, the various markings on the discs and tokens could be rendered luminous, for example, for use on night time car journeys, or alternatively, the discs or 30 tokens could be luminous themselves, the markings on them thus being dark and outlined by the liminosity of the discs or tokens.

It will be appreciated that the above described 35 embodiment provides a very compact and portable game which can afford children many hours of amusement.

CLAIMS

1. A game comprising a board having three tracks of the same length, each closed at one end, track means
5 connecting the open ends of the three tracks of the same length and a plurality of tokens, each marked differently and restrained to move only in the tracks or track means.
- 10 2. A game as claimed in claim 1, wherein the track means comprises a fourth track connecting the open ends of the three tracks of the same length.
- 15 3. A game as claimed in claim 2, wherein the three tracks of the same length are parallel to each other while the fourth track is at right angles to the said three tracks so as to form a system of tracks in the form of a lower case "m".
- 20 4. A game as claimed in claim 1, wherein the track means comprises a track connection connecting the open ends of the said three tracks substantially directly together.
- 25 5. A game as claimed in any one of claims 1 to 4, wherein the tracks comprise undercut grooves which at all times cover edges of at least part of the tokens so that while access can be had to the tokens, they cannot be removed from the tracks.
- 30 6. A game as claimed in claim 5, wherein the tokens lie mainly outside the grooves and have a short leg ending in a foot which is trapped within the groove.
- 35 7. A game as claimed in claim 6, wherein the tokens are of dumbbell shape.

8. A game as claimed in claim 5, wherein the tokens comprise discs located in the grooves such that they are retained in the grooves but are accessible through the mouths of the grooves.

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9. A game as claimed in any one of claims 1 to 8, wherein the tokens are marked numerically.

10. A game as claimed in any one of claims 1 to 8,
10 wherein the tokens are marked alphabetically.

11. A game as claimed in any one of claims 1 to 8,
wherein the tokens are marked with part of a picture
so that they form a completed picture when arranged in
15 their correct order.

12. A game substantially as described herein with
reference to the drawings.