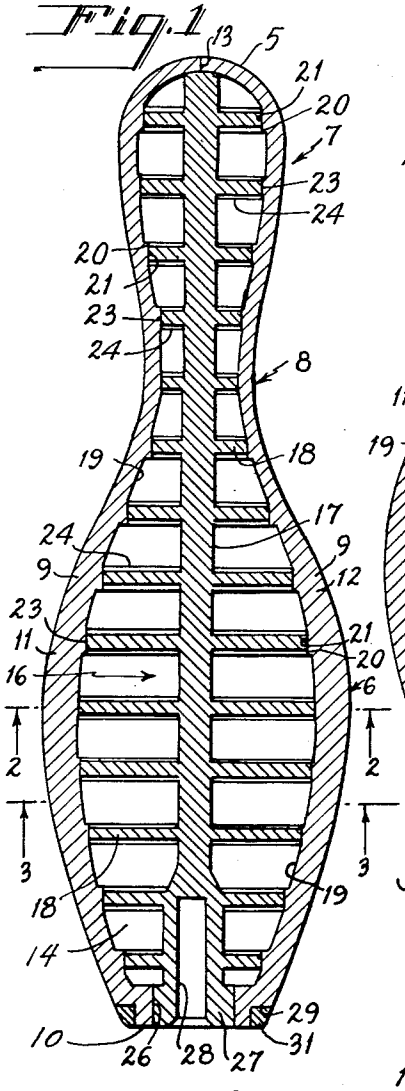
June 28, 1960 J. FONTENELLI 2,942,885

GAME PIECES

Filed March 4, 1959

Fig. 1



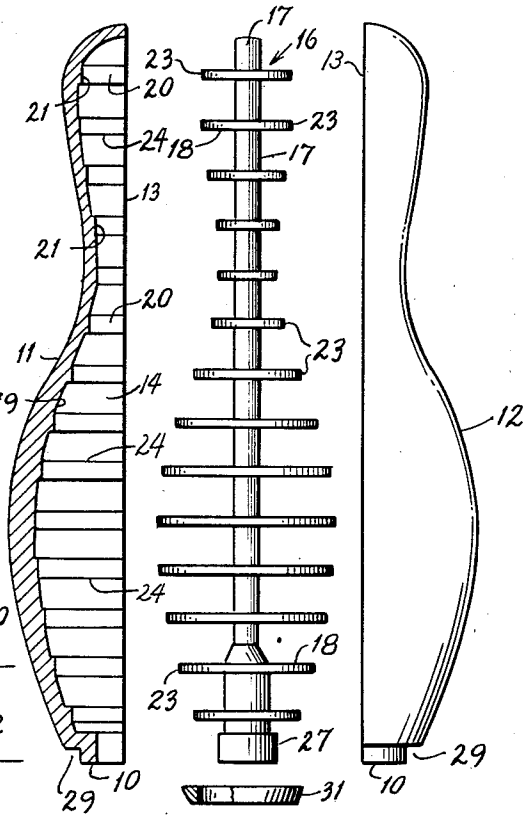


Fig. 4

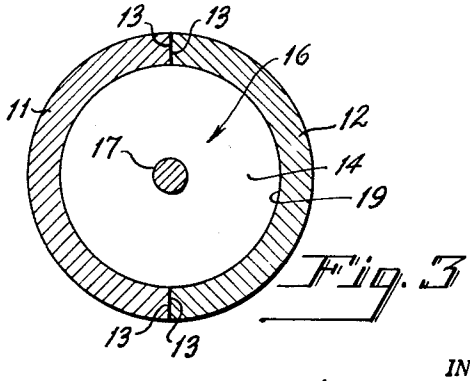


Fig. 3

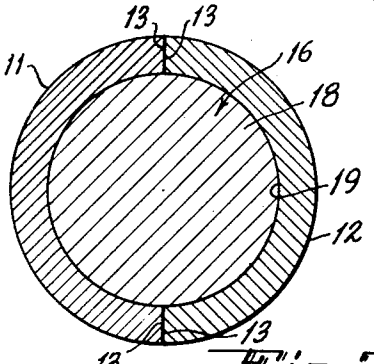


Fig. 2

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United States Patent Office 2,942,885 Patented June 28, 1960

2,942,885

GAME PIECES

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Filed Mar. 4, 1959, Ser. No. 797,126

7 Claims. (Cl. 273—82)

This invention relates to game pieces. More particularly, it relates to bowling pins and the like, such as for example, duckpins.

A principal object of the invention is to provide a structure for bowling pins or the like which makes feasible fabrication of the pins from plastics. While other materials could be employed to embody the construction, principal advantages of the invention, which are low cost and high durability, are most pronounced when plastics are employed.

Another objective is a construction not requiring the use of wood, yet one which facilitates compliance with weight requirements as is necessary to provide commercially acceptable pins and which permits compliance with other requirements such as ruggedness so as to withstand the impacts normally encountered in the use of the pins.

The manner in which these and other objectives are attained will be apparent from the following description considered in reference to the accompanying drawing, wherein there is depicted an embodiment of the invention. In the drawing:

Fig. 1 is an elevation view, in cross-section, of a pin according to the invention;

Fig. 2 and Fig. 3 are axially transverse cross-sections taken, respectively, along line 2—2 and line 3—3 in Fig. 1;

Fig. 4 is an exploded view of the pin shown in Fig. 1 and depicts the manner in which the principal pin parts are assembled.

According to the invention, a bowling pin or the like comprises an outer shell which substantially defines the outline of the pin, and is formed essentially by axially extending shell members which are secured together along axially extending edges thereof. The outer shell defines an axially extending cavity within the pin, and a core member, which serves to reinforce the shell, is positioned within the cavity. The core member is formed essentially by a center post and members or arms disposed axially transversely of the center post and at spaced intervals therealong. The core member is positioned within the cavity with the center post coaxial with the cavity and the core arms extending radially outwardly from the center post into abutment with the shell.

Referring to the drawing, there is there shown a bowling pin comprising a body portion 6, which extends upwardly from the base 10 of the pin, a head portion 7, which extends downwardly from the top 5 of the pin, and a neck portion 8 disposed intermediate the body portion and head portion. An outer shell 9 substantially defines the outline of said pin portions. The outer shell 9 is formed essentially by two axially extending shell members 11 and 12, which are each semi-circular in axially transverse cross-section. More than two shell members can be employed if desired, but two is preferred since this number permits convenient assembly of the pin parts while at the same time suitably limiting the number of shell parts necessary to work with. The shell members 11 and 12 can be identical and this of course facilitates production. The shell members are secured together along axial edges 13 so as to form the shell as a unitary piece.

The shell 9 defines an axially extending cavity 14 within the pin, and which extends along the pin body portion 6, neck portion 8 and top portion 7. The cavity can be circular in axially transverse cross-section and, from adjacent the pin base 10 to the neck portion 8, it increases and then decreases in diameter, and, from the neck portion 8 to the pin top 5, it increases and then decreases in diameter.

A core member 16 is positioned within the cavity 14. The core 16 is formed by an axially extending center post 17, which is disposed axially of the pin, and axially transverse members in the form of discs 18, which are disposed at axially spaced intervals along the post and extend radially outwardly of the center post into abutment with the inner surface 19 of the shell.

A distinctive feature of pins according to the invention is the provision of ledges 20 at locations along the inner surface 19 of the shell. The ledges 20 have axially extending inwardly facing surfaces 21 for receiving in abutting engagement the core discs 18. This construction facilitates assembly of the pin parts into tight fitting relationship.

The manner of engagement of the core discs 18 and ledges 20 shown in the drawing is a preferred construction. Thus, the engagement edge or surface 23 of each of the core discs 18 is normally axially spaced a short distance from the edge 24 of the ledge inner face 21 which abuts and which edge is disposed toward that adjacent portion of the shell 9 which has a decreasing diameter as it recedes from the ledge. As can be best seen in Fig. 1, this construction will permit slight axial movement of the core member relative to the shell, when the shell and core member are not bonded together. This is desirable as it permits minor adjustment of the parts to compensate for dimensional inaccuracies and hence facilitates arranging the parts in tight fitting relationship.

Desirably, means such as an adhesive or solvent are employed to bond the core arms 18 to the ledges 20 after the parts have been assembled into tight fitting relationship.

A cylindrical opening 26 is disposed in the base 10 of the pin so that it is coaxial therewith, and the core center post 17 has a bottom member 27 which extends coaxially therefrom and is received in the opening 26 in close fitting relationship. This extension of the center post through the base 10 of the pin facilitates adjustment of the core member within the cavity. A hole 28 is disposed in the core bottom member 27 in order to permit setting up of the pins when in use by lowering the pins over a small upright member adapted to be received in the hole 28.

Desirably, the shell 9 is formed to provide a recess 29 about the periphery of the pin base 10, and a wear ring 31 is secured in the recess. Thus, excessive wear about the lower edge of the pin can be allowed for. The wear ring can be relatively tough material so as to better withstand wear or can be mounted so as to be replaceable.

The preferred materials of construction for the pins of the invention are plastics. Various plastic materials are suitable and such materials will readily occur to those skilled in the art. An example of such a material is cellulose acetate butyrate. The shell members and core member can each be made of the same material, or if desired, different materials can be used. Opaque, translucent or transparent plastics can be used. The pin parts can be secured together by use of adhesives and solvents in ways and with compositions well known to those skilled in the art.

The parts can be made by injection molding or other known means. Advantageously, as mentioned hereinbefore, the shell is formed of two parts. Desirably, the core member is an integral plastic structure including the center post and discs. The parts can be suitably proportioned to provide the necessary total weight, weight distribution and strength. Advantageously, as is shown in the drawing, the central portion of the shell body portion 6 can be made of increased wall thickness in order to provide the necessary strength for this portion of the pin which is subjected to high impact forces during normal use.

The pins can be made by applying an adhesive or suitable solvent to the surfaces which are to abut, assembling the shell members and core member and then holding the shell members so that the abutting surfaces of the various parts are in tight engagement until the adhesive or solvent sets and satisfactorily secures the parts together.

Various modifications of the pin shown in the drawing will occur to those skilled in the art. The pin shown in the drawing is intended merely as representative of the invention and it is intended that all modifications thereof and of the construction as described hereinbefore, which are within the scope of the appended claims, be secured by these Letters Patent.

What is claimed is:

1. A game piece useful as a bowling pin, comprising a body portion extending upwardly from the base of the pin, a head portion extending downwardly from the top of the pin and a neck portion disposed intermediate the body portion and the head portion, said pin comprising an outer shell which substantially defines the outline of said pin portions and is formed essentially by axially extending shell members secured together along axially extending edges thereof, said outer shell defining an axially extending cavity which extends along the body portion, said cavity from adjacent the base of the pin to the neck member thereof increasing and then decreasing in diameter, a core member for reinforcing the shell positioned within said cavity, said core member being formed essentially by an axially extending center post which is disposed axially of the pin, and axially transverse members disposed at axially spaced intervals along the post and extending radially outwardly of the center post into abutment with the inner surface of the shell, said shell having positioned on the inner surface thereof ledges having axially extending inwardly facing surfaces for receiving in abutting engagement the core member axially transverse members, whereby assembly of the shell members and core member into tight fitting relationship is facilitated.

2. A game piece useful as a bowling pin, according to claim 1, said core axially transverse members having peripheral engagement edges for abutment with the facing surfaces of the ledges, the engagement surface of each core axially transverse member being normally spaced a short axial distance from the edge of the ledge inner face which it abuts and which edge is disposed toward that adjacent portion of the shell which has a decreasing diameter as it recedes from the ledge, whereby, the core member when unbonded to the shell is slidably moveable relative to the shell and thereby adjustment in position of the core member can be made to facilitate assembly of the pin shell members and core.

3. A game piece useful as a bowling pin, comprising a body portion extending upwardly from the base of the pin, a head portion extending downwardly from the top of the pin and a neck portion disposed intermediate the

body portion and the head portion said pin comprising an outer shell which substantially defines the outline of said pin portions and is formed essentially by axially extending shell members secured together along axially extending edges thereof, said outer shell defining an axially extending cavity which extends along the body portion, neck portion and head portion, said cavity from adjacent the base of the pin to the neck member thereof increasing and then decreasing in diameter, said cavity from the neck portion to the pin top increasing and then decreasing in diameter, a core member for reinforcing the shell postioned within said cavity, said core member being formed essentially by an axially extending center post which is disposed axially of the pin, and axially transverse members disposed at axially spaced intervals along the post and extending radially outwardly of the center post into abutment with the inner surface of the shell, said shell having positioned on the inner surface thereof ledges having axially extending inwardly facing surfaces for receiving in abutting engagement the core member axially transverse members, whereby assembly of the shell members and core member into tight fitting relationship is facilitated.

4. A game piece useful as a bowling pin, according to claim 3, said core axially transverse members having peripheral engagement edges for abutment with the facing surfaces of the ledges, the engagement surface of each core axially transverse member being normally spaced a short axial distance from the edge of the ledge inner face which it abuts and which edge is disposed toward that adjacent portion of the shell which has a decreasing diameter as it recedes from the ledge, whereby the core member when unbonded to the shell is slidably moveable relative to the shell and thereby adjustment in position of the core member can be made to facilitate assembly of the pin shell members and core.

5. A game piece useful as a bowling pin, according to claim 4, said pin having means defining an opening in the base thereof, said opening being of uniform axially transverse cross-section and coaxial with the pin, said core center post having a bottom member extending coaxially therefrom, said core bottom member being received in said opening in close fitting relationship.

6. A game piece useful as a bowling pin, according to claim 4, said shell members being formed of plastic, said core member including the center post and axially transverse members being an integral plastic structure and said core axially transverse members being discs which extend radially outwardly from the core center post.

7. A game piece useful as a bowling pin, according to claim 6, said pin having means defining an opening in the base thereof, said opening being of uniform axially transverse cross-section and coaxial with the pin, said core center post having a bottom member extending coaxially therefrom, said core bottom member being received in said opening in close fitting relationship.

References Cited in the file of this patent

UNITED STATES PATENTS

1,491,279	Stewart	Apr. 22, 1924
2,199,310	Hartley	Apr. 30, 1940
2,510,505	Leonard	June 6, 1950
2,814,835	Faulkner	Dec. 3, 1957
2,870,569	Bergstrand	Jan. 27, 1959

FOREIGN PATENTS

22,649	Finland	July 27, 1948