ABSTRACT: A magnetic toy or building block having four of the six faces provided with magnetic pieces, with the same polarity being provided with the opposite faces, whereby the blocks upon being assembled together need to be assembled so faces of unlike polarity are joined and wherein the faces of line polarity or with no magnets in them will not properly be joined in the structure. The completed building block structure after the blocks are properly joined will be unitary mass so that upon lifting the mass by one of the blocks the other blocks will be lifted in mass with it. The blocks will be made of separate top and bottom sections and crossed magnetic retainer elements placing all magnets in the same central plane. The block sections and magnets within and retainers are joined together by adhesive or cement. A plastic coated metal plate is provided to which two of the blocks can be attached to illustrate the manner of attaching the blocks together and for testing the polarity of the respective side faces of the block.
MAGNETIC TOY OR BUILDING BLOCK

This invention relates to magnetic toy building blocks and more particularly to the construction of the same. It is an object of the present invention to provide a plastic cube made of two pieces of colored molded nonmagnetic material cemented or adhered together in the center with four small magnets adhered to the block parts in the same horizontal central plane so that the outside faces of the magnets are of the same polarity and which will require additional skill in the use of the blocks due to the attraction and repulsion of the magnet of adjacent blocks when trying to build with them and wherein there is required the need of opposite polarity sides in order for the blocks to be connected together.

It is another object of the invention to provide a magnetic toy building block in which the block is made of separable housing parts and separable magnet retaining parts, the magnetic retaining parts having finlike projections extending from a cradlike portion and the respective casing parts having guide faces for receiving the fins of the magnet holding parts such that the magnetic holding parts are held against twisting in the casing parts.

It is another object of the invention to provide a magnetic toy building block that can be adhered to opposite sides of a magnet disc such as may be suspended from a support overlying a baby carriage and with which the baby may play to join the blocks to the suspended metal plate and wherein the infant will not only learn to apply the blocks to the depending metal disc but to pull them from the same and learn that they can be assembled by certain of the sides of the block.

It is an object of the invention to provide a light weight plastic toy building block, having the above objects in mind, which is of simple construction, light in weight, inexpensive to manufacture, easy to assemble, provided with rounded corners, made from half shells of identical design and size, of similar size and shape, top and bottom magnet retainers, enjoyed by both young and old, by providing a further challenge in the assembling of blocks of strong but light construction, and inexpensive to manufacture and assemble.

For a better understanding of the invention reference may be had to the following detailed description taken in connection with the accompanying drawings, in which

FIG. 1 is a top perspective view of one of the building blocks constructed in accordance with the invention.

FIG. 2 is a vertical sectional view thereof taken on line 2—2 of FIG. 1.

FIG. 3 is a top plan view looking into the open end of one of the parts.

FIG. 4 is a vertical sectional view of the one part as viewed on line 4—4 of FIG. 3.

FIG. 5 is a top plan view of one of the magnetic retainers.

FIG. 6 is an end elevational view of the magnetic retainer taken on line 6—6 of FIG. 5.

FIG. 7 is a collective perspective view of the several parts of which the block is made.

FIG. 8 is a metal disc coated with plastic on which two of the blocks may be assembled by an infant.

FIG. 9 is a horizontal sectional view of the disc taken on line 9—9 of FIG. 8.

FIG. 10 is a perspective view of a carriage containing a child with the metal plate suspended from an overhanging bar on the carriage and with two of the magnetic blocks attached thereto with the infant removing or attaching the blocks to the metal disc.

Referring now to the figures, a magnetic toy building block shown generally at 15 is assembled from top and bottom parts 16 and 17 molded to provide thin shells with rounded corners 18 and edges 19 to prevent injury to infants or small children when handling the finished blocks. Each of the top and bottom sections are molded to have pairs of spaced guide portions on the inner sides of each of the four faces of the block halves as indicated at 21 and providing open slots 22 for receiving end edges 23 of fins 23 of a magnet retainer indicated generally at 24 and with these fins 23 centrally connected to a half sleeve portion 25 in which magnets 26 are supported in such a manner that the opposite magnet ends are of the same polarity adjacent to their opposite faces of the block.

The internal corners of the block sections as indicated at 27 are reinforced and diagonally opposite reinforced corners 27 have holes 28 while opposite diagonal corners have assembly pins 29 projecting therefrom.

The inner faces of the sides of the block halves are cut away as indicated at 31 to receive the ends of the magnets 26 and by providing a shoulder thickness 32 to hold the magnets against displacement between the sides of the blocks sections, upon the section being joined together are pins 29 and holes 28 in the corners of the block sections.

The magnetic retainer 24 adapted to be assembled in the bottom block section 17 is twisted to align another pair of magnets 26 turned 90° from the first pair of magnets in the top section and the supporting half sleeve portions overlying one another by allowing the magnets to lie in a common central plane equidistant from the top and bottom faces of the respective top and bottom block sections 16 and 17. When the block sections are assembled together they are glued or secured along their assembled edges and the entire section provide a unitary structure with all magnets in a central plane and with the magnet ends of right polarity lying in opposite side faces of the block, the polarity of the other side faces angled 90° will be of a different polarity whereby upon starting from one side face of the block ultimate polarity of the side faces upon going about the side of the block will be found.

It will be apparent that there has been described a plain plastic cube or block with all of the corners and edges rounded to prevent injury to infants or small children when handling the blocks. It is also apparent that the block is made up of two half shells or sections, two magnetic retainers and four cylinder magnets 26, the top and bottom half section being of identical section and as well the top and bottom magnet retainers being of identical design. The magnetic retainers will have been slid into four slots in the half shell so that the magnets extend in a common plane and upon the magnet retainer of the other half shell, upon the half shells being shown, the magnets will extend in the same plane centrally of the block and with the magnets of the one block.

The magnets are cemented in the half sleeve portions and the joined edges of the shell halves are similarly adhered or cemented. The shell material and the block material are made of nontoxic plastic or material so that the health of the infant will not be affected. The wall thickness of the shells and the magnetic retainers are approximately one-sixteenth of an inch thick but with the walls being cut away at 31 the thickness is reduced to fifteen- or twenty-thousandths of an inch so that the magnetic pull is not greatly effected from the block material.

These blocks or tubes can be sold in sets with a plastic coated metal disc 35 tapered at one side to provide an extended end 36 with a string hole 37 therein. The plastic coating is indicated at 38 and completely covers the metal disc portion 35. This disc assumes a teardrop shape and can be attached by a string 39 to an overhead support bar 41 on a baby carriage 42 within reach of ends 43 and 44 of an infant lying within the carriage. The plastic coating on the disc is nontoxic and the disc is within easy reach of the infant's hand and when the infant is provided with blocks 15 he may by chance find magnetic faces on the blocks which will adhere themselves to the metal disc 35.

The block sections can be made of color plastic and the purchaser may glue or paste upon the faces of the blocks any decals of their choice. This would add creative matter to the blocks for use by children in addition to their block magnetic properties. Upon assembling the blocks a face "N" polarity of one block will attach itself to "S" polarity of another block. While the block face with "N" will be repelled from an "N"
3. A polarity face of another block. If one of the magnetic faces of one block is matched with a neutral face of another block nothing happens and the blocks will not be secured together, thereby making need for finding a proper magnetic face so that when all of the blocks are stacked with one another they will be magnetically joined together. The users of the blocks will be fascinated because of the way the blocks will react or fall off from the neutral faces of the blocks or the magnetic faces be repelled from one another.

What is claimed is:

1. A magnetic toy block having four magnets assembled within the block and in the same common plane, extending through the block, the polarity of opposite side faces being the same, and the remaining two side faces of the block being without magnets and of neutral polarity, said block being formed of top and bottom hollow shell section, magnet retainers holding the magnets and assembled in the respective top and bottom shell sections, each magnetic retainer holding two magnets and the magnetic retainer of one section being angled 90° from the other section, each of the magnetic retainers comprising four supporting fins angled 90° apart and a half sleeve portion carried by the fins, the magnets lying in the ends of the half sleeve portions, and means on the inner walls of the top and bottom sections serving to orient and retain the magnetic retainer in the shell sections.

2. A magnetic toy block as defined in claim 1, and said means for retaining the magnetic retainers oriented in the shell section comprising pairs of spaced projections on the inner sides of the shell faces and providing slots therebetween, and said magnet retainers having fin edges extended into the slots provided by the pairs of spaced projections.

3. A magnetic toy block as defined in claim 2, and said side faces of the shell section on the inner faces being cut away and affording shoulders for supporting the outer ends of magnets, said magnets being of cylindrical shape and having their ends overlying the ends of the half sleeve portion of the magnet retainers.

4. A magnetic toy block as defined in claim 3, and said open edges of the half shell sections having fin and slot means for the joining of the half sections together.

5. A magnetic toy block as defined in claim 4, and said outer corners and side edges of the block section being rounded.

6. A magnetic toy block as defined in claim 1, and a plastic coated metal plate of teardrop shape with an extended side portion with a string hold therein, said metal plate adapted to be suspended through the string hole and to the sides of which the magnetic blocks can be attached to provide thereby an infant's toy.