Aug. 23, 1966 J. R. MacRAE 3,267,823

STEPPING STONES

Filed June 10, 1963

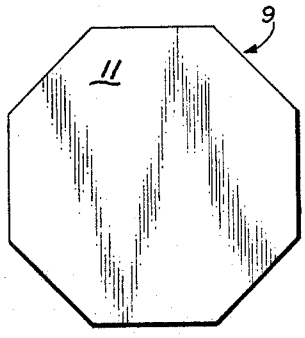


Fig - 1

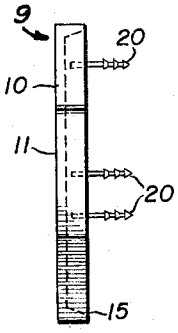


Fig - 3

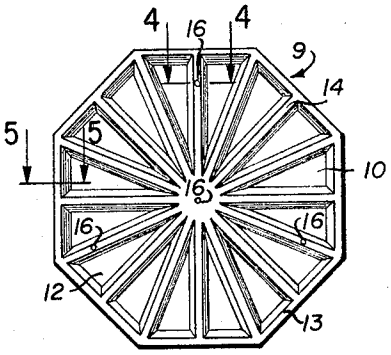


Fig - 2

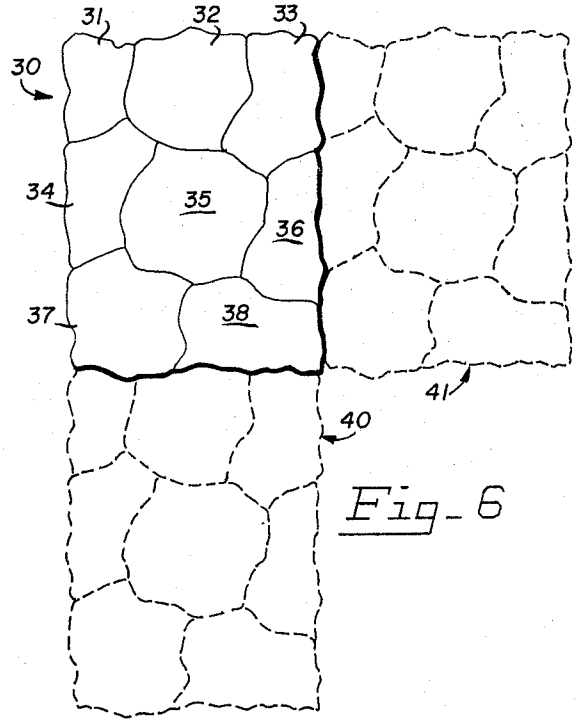


Fig - 6

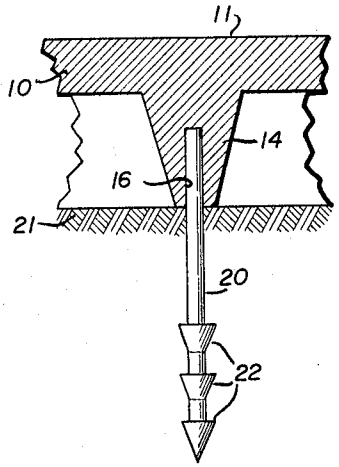


Fig - 4

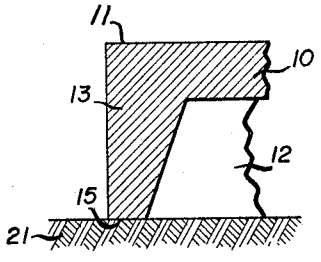


Fig - 5

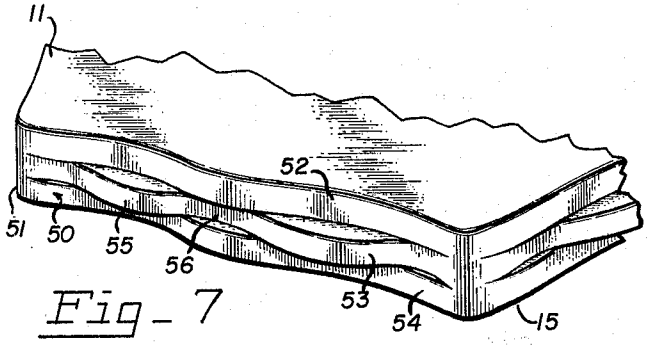


Fig - 7

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STEPPING STONES

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This invention relates to stepping stones, and more particularly to walk surfaces for the outdoors which are removable and which may be placed singly or in combination with other walk surfaces to form an extended walk surface and which simulate, in appearance as well as in utility, permanently placed stepping stones.

With the present day mobility of the population, many home owners give serious consideration to the problem of making permanent outdoor improvements such as placing walks, patios, and the like in the area surrounding the house. Often a home owner is discouraged from making such outdoor improvements because he does not know how long he will be able to remain and, in case he is transferred, such improvements cannot be removed for subsequent placement in his next home.

Another problem often considered by the home owner in the installation of conventional stepping stones, either singly or in combination to form borders, sidewalks, patios and the like, is the cost of materials and labor. With conventional stepping stones it is necessary to prepare the ground such as grading, pouring concrete and the like. Particularly where weather conditions change much between hot and cold or wet and dry, the preparation necessary for a durable sidewalk or the like is relatively expensive due to the cost of the time and labor required for proper installation.

In some instances the objection to the installation of permanent stepping stones, either individually or in combination with others, to form sidewalks, edgings or borders, is not cost or the inability to move the improvement to a new location, but rather the difficulty of neatly mowing immediately adjacent of the stepping stones. Heretofore this problem was sought to be overcome by the employment of special edging tools which could trim close to an obstruction. However, there still remained the hazard of damaging the blade of the mower.

It is therefore a primary object of this invention to provide a stepping stone which may be removably placed upon the ground.

It is another object of this invention to provide a stepping stone which is removable and portable so it may be removed from a lawn prior to mowing to do away with the hazards of breakage involved in attempting to trim closely around such stones with manual or motorized mowing equipment.

It is a further object of this invention to provide a stepping stone which is easily and readily installed upon a lawn or upon the ground where it may be secured, if so desired, against vertical and horizontal displacement by a ground stake.

It is another object of this invention to provide a lightweight, portable, opaque, sheer resistance, plastic imitation of a natural stepping stone.

It is still another object of this invention to provide stepping stones which may be colored and textured to imitate any desired natural stepping stone and which may be contoured in various forms and shapes, including squares, rectangles, triangles, hexagons, octagons, and segments thereof, and irregular freeforms.

It is a further object of this invention to provide a plurality of stepping stones which may be assembled in a selected order to form a "set" of stepping stones having a selected outline so that a plurality of identical sets may be used to build up extended areas. In such combination, each plurality of stones may be unique in the shape of its individual stepping stones as long as its "set" outline is the same.

It is another object of this invention to provide a stepping stone which includes registration means for mating with an immediately adjoining stepping stone so that positive edge engagement is provided.

It is a still further object of this invention to provide an inexpensive, movable, light-weight body having a walking surface which imitates a conventional stepping stone and which may be placed directly upon the ground without preparing the ground for such placement.

It is a still further object of this invention to provide a stepping stone which may be secured against horizontal displacement by one or more ground supported stakes which also make it possible to replace the stepping stones after removal in its exact former position.

Briefly, the preferred embodiment of the stepping stone of this invention comprises a pressure molded, element resistant, light-weight, opaque, sheer resistant, plastic body. The body includes a panel having a flat upper walking surface colored and textured according to taste and downwardly depending sidewalls which define an open body space below the panel, housing a reinforcing structure such as ribs integral with the panel and the sidewalls for maximum strength and minimum weight of the body.

The reinforcing structure is provided with at least one, but preferably more than one, apertures in the form of closed cylindrical bores suitable for engaging stakes or poles firmly anchored into the ground. Additionally, the outer face of the sidewalls is formed with registration means to engage the sidewall of an adjacent stepping stone in key and groove fashion.

Other objects and a better understanding of the invention may be had by reference to the following description, taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a top view of an octagonal stepping stone constructed in accordance with this invention;

FIG. 2 is a bottom view of the stepping stone of FIG. 1 showing the ribbed open body construction and registration apertures;

FIG. 3 is a side view of the stepping stone shown in FIG. 2 showing stakes engaging the registration apertures;

FIG. 4 is a cross sectional view along line 4—4 of FIG. 2 showing the engagement of the aperture registration with the registration stake;

FIG. 5 is a cross sectional view taken along line 5—5 of FIG. 2;

FIG. 6 is a top view of three sets of stepping stones in which each set is comprised of individual stepping stones; and

FIG. 7 is a perspective fragmentary side view of the outer face of the stepping stone sidewall showing the lateral registration means for mating with adjacent stepping stones.

Referring to the drawing in detail, a stepping stone **9**, as best seen in FIGS. 1 to 5, comprises a panel **10** having a flat upper face **11** forming a walking surface which may be textured to suit, to imitate a flagstone or the like. Sidewalks **13** are integral with panel **10** and depend downwardly from the periphery of panel **10** to form an open body space **12** below panel **10**. To add rigidity and strength to stepping stone **9**, the open body space houses a reinforcing structure such as ribs **14** which may form a wagon wheel pattern as shown in FIG. 3. It is to be

understood that any kind of reinforcing structure is suitable such as, for example, ribs disposed at right angles to one another or honeycomb patterns.

Reinforcing structure **14** is provided with apertures **16** in form of closed cylindrical bores extending perpendicular to panel **10** which, depending on the diameter of the bore desired, may be formed in a boss integrally molded as part of rib **14**. Aperture **16** is dimensioned to engage a stake or post **20** firmly anchored into the ground **21**. In this manner a horizontal registration means is provided which permits removal of stepping stone **9** by lifting the same and subsequently replacing the same in its former position.

If found practical, poles or stakes **20** may be provided with a number of arrowheads, such as shown at **22**, for aiding in their placement and for preventing their withdrawal.

Stepping stone **9**, as has been explained heretofore, is preferably of unitary construction and may be pressure molded or cast of some material which has the desired resistance to the elements, is light in weight, is opaque to light, and has sufficient sheer resistance to withstand skew forces. One suitable material is a plastic resin which is readily molded and which may easily be colored and textured to suit. Instead of utilizing a plastic resin it is also within the contemplation of this invention to utilize other materials such as plaster, concrete and the like if weight is no object. Further, stepping stones **9** may be constructed of sawdust, wood shavings or the like to which binder is added which hardens if dried or exposed to heat as well known to those skilled in the art.

The peripheral shape of stone **9** may be square, round, rectangular, triangular, hexagonal, octagonal, segments thereof, or irregular freeform in case of individually placed stepping stones. In case of forming sets of stepping stones certain restrictions are placed upon the peripheral shape as will be explained in connection with FIG. 6.

In operation, stepping stone **9** may be directly placed upon ground **21** whether the same be a lawn or sand or gravel, so that end face **15** of side edge **13** forms the ground engagement surface. If it is desired to hold stepping stone **9** against lateral displacement, stakes **20** are driven into the ground first and stone **9** is placed such that apertures **16** engage stakes **20**. In this case, stone **9** must be lifted vertically upwards for removal.

Referring now to FIG. 6, there is shown a further embodiment of this invention in which a plurality of stepping stones, such as **31** to **38**, are shaped to fit together to form a stepping stone set **30** which is much like a jigsaw puzzle. Set **30** may have any peripheral shape desired but in case it is to be combined with other sets to form an extended area, it must have an outline in which opposite sides are respectively male and female in case of freeform or else the outside must define a straight line. In FIG. 6 a freeform outline has been selected by way of example which is substantially rectangular to match with like sets **40** and **41** to form an extended area.

In this manner a building block set is provided in which a set forms the building block and additional sets may be purchased to fit with all other sets. The individual setting stones making up a set may be different to obtain interesting variations and to get away from too repetitious a pattern. Even though sets **30**, **40** and **41** are shown to be identical, this is not necessary as long as the periphery of the sets are the same.

FIG. 7 shows a modification of the stepping stone of this invention in which a registration means **50** is included as part of the outer face of side edge **51**. Registration means **50** comprises three horizontally undulating surfaces **52**, **53** and **54** vertically stacked. Surfaces **52** and **54** are identical and surface **53** is undulating in opposition to surfaces **52** and **54**. This is also referred to as being out-of-phase so that a crest of surface **53** corresponds to a trough of surfaces **52** and **54**. The effect of the opposite undulations of surfaces **52**, **53** and **54** is to alternate, in a horizontal direction, between a key **55** and a keyway **56**.

Registration means **50** is of little value for stepping stones placed individually but comprise an important improvement when combining stepping stones into extended areas. For example, the individual stepping stones **31** to **38** may be constructed with registration means **50** in such a manner that adjoining edges mate for interlocking so that the individual stepping stone edges are secured against relative vertical motion in either direction. This becomes particularly important where a set is placed on a soft lawn or upon sand or rough ground not previously leveled.

Registration means **50** may also be advantageously utilized in connection with the side face of sets so that adjoining sets can be properly keyed to one another for providing a planar, extending walking surface.

In utilizing the stepping stones of this invention, a path may readily be laid over grass by merely mowing a close-cropped path along the proposed route and placing the stepping stone, either individually or in sets, along the close-cropped path. The opaque nature of the stepping stones assures complete absence of light of the covered area so that no vegetation will grow thereunder. Furthermore, in case of mowing, the stones may simply be lifted from their bed and replaced after the mowing is completed.

In case horizontal registration of the individual stepping stones is desired, registration stakes are provided which do not seriously interfere with mowing since no vegetation grows under the stones and the stakes are well within the peripheral area of the stepping stones. All that is necessary is to expose the stepping stone margin to the mower which is not obstructed by the stakes.

In case the owner becomes dissatisfied with the arrangement of stepping stones, it is a simple matter for him to rearrange or to relocate the same in any desired manner. In case he moves to another home, he merely moves the stepping stones to the new location. Since the stepping stones are light, transportation thereof is inexpensive and simple.

Another advantage of the stepping stones of this invention is that they may be used for a temporary patio dance floor on a lawn or gravel area for an evening. It is therefore seen that the stepping stones of this invention are ideally suitable to provide a temporary but very servicable surface which may be quickly laid and removed. For such applications the walking surface will preferably be smooth instead of textured to provide a good dance floor.

The foregoing is considered as illustrative only of the principle of this invention. Further, since numerous modification and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claim.

There has been described heretofore a stepping stone which, because of its light-weight, its movable character, and its ease of placement, may be put to many uses to provide a convenient walking surface. In some cases the stepping stones of this invention may also be permanently installed by pressing them into a wet cement base which is then permitted to set.

What is claimed is:

A stepping stone comprising:

(a) a horizontally disposed panel having an upper face forming a walk surface;

(b) side edges integral with and depending downwardly from the periphery of said panel to form the sides of said stepping stone and to define an open body space below said panel, the lower end face of said side edge forming a ground engagement surface;

(c) a cell-like reinforcing structure within said open body space and integral with said panel and said side edges;

(d) at least one closed cylindrical vertically extending bore integral with said reinforcing structure for disengageable reception with a ground supported stake-like registration means; and

(e) side edge mating means integral with said side edges for horizontally engaging a corresponding mating means of an adjoining stepping stone, said mating means including at least three horizontally undulating and vertically stacked adjoining surfaces in which the upper and lower undulating surfaces are in phase with one another and the center undulating surface is out of phase with the upper and lower undulating surfaces so that along the length of each side edge the three undulating surfaces alternately form a male and a female engagement member.

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