Jan. 1, 1963 E. A. BENDER 3,070,811

FLEXIBLE SWIMMING POOL COVER

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FIG. 1.

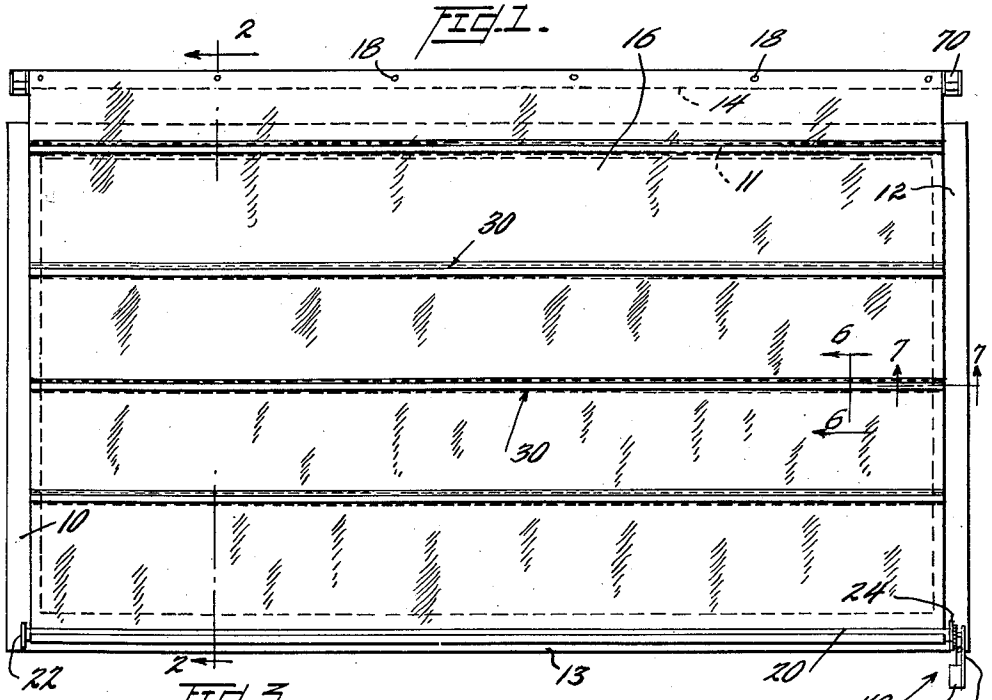


FIG. 3.

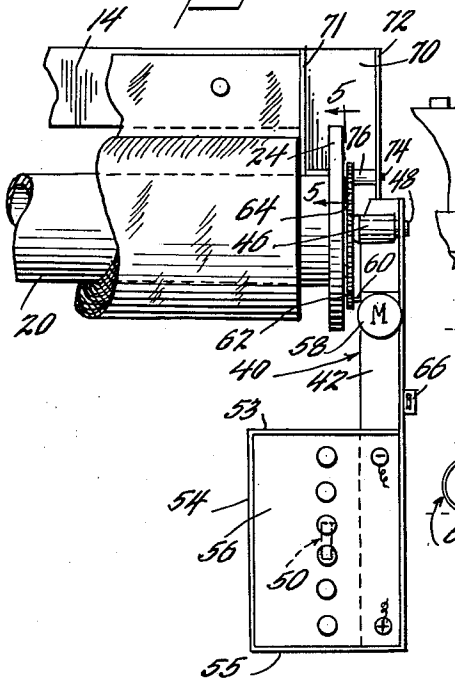


FIG. 4.

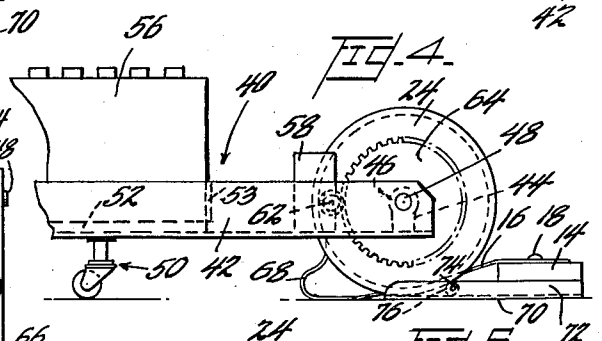
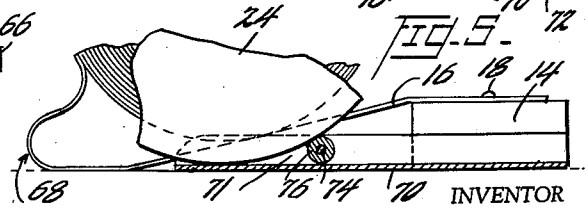


FIG. 5.



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FLEXIBLE SWIMMING POOL COVER

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FIG. 2.

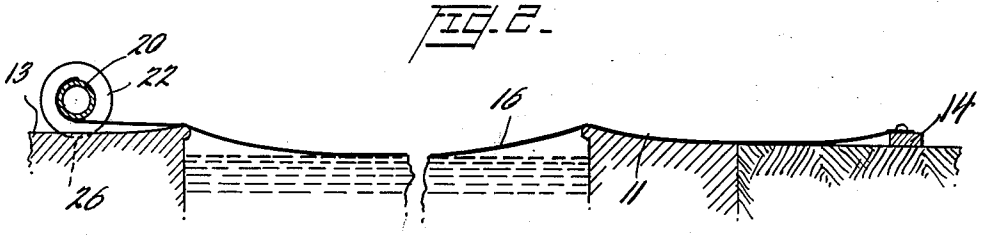


FIG. 6.

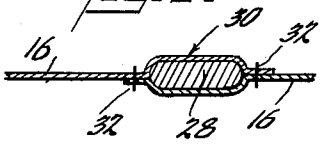


FIG. 7.

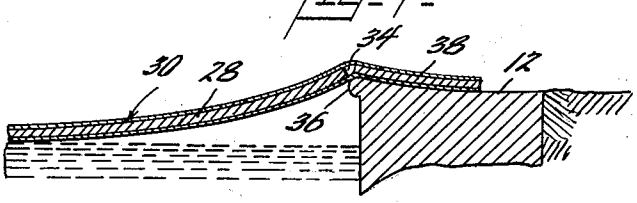
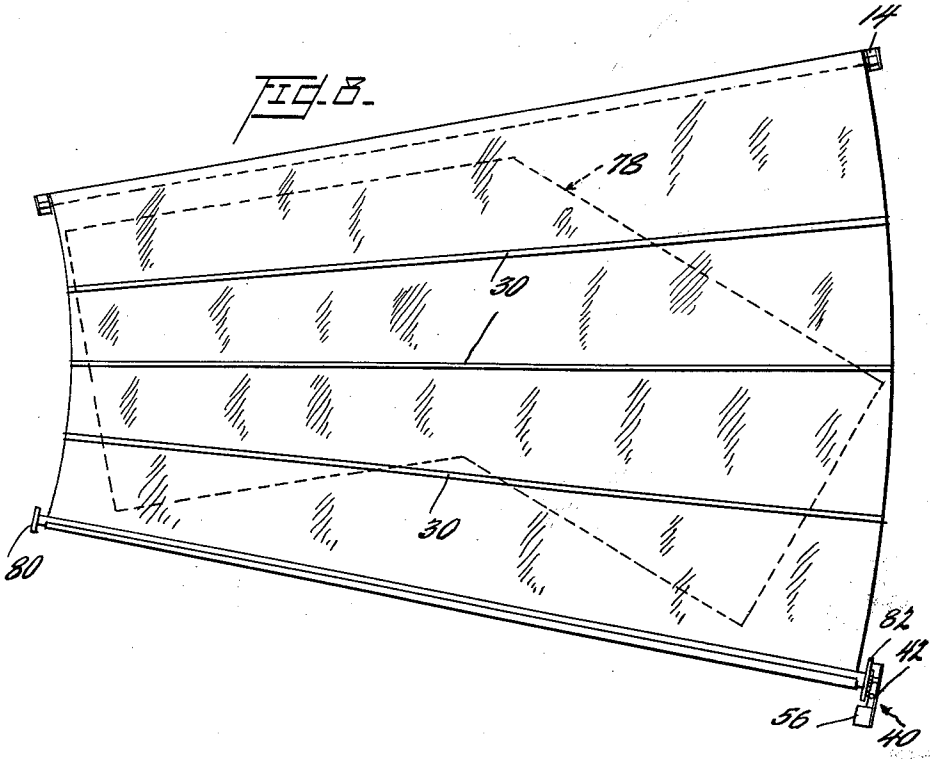


FIG. 8.



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FLEXIBLE SWIMMING POOL COVER

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8 Claims. (Cl. 4—172)

This invention relates to a cover for swimming pools, and in particular to a flexible cover which may be quickly and easily applied and removed. A pool with no cover protection during periods of non-use presents several difficulties of maintenance, for instance, pollution by such foreign matter as dust, pollen, leaves, insects, and even small animals. A cover may also be saving of life in the case of small children. In another aspect it will tend to inhibit heat transfer and thus retain overnight a reasonable amount of the heat stored in the water by day. Conversely the heat content may be kept down during the day if so desired.

It is an object of the invention to provide a pool cover which is flexible, easily applied, and occupies small space when not in use.

Another object is to provide a pool cover which is self-propelled in the pool-covering operation.

More particularly it is an object to provide a cover of sheet form which is stored in a roll when not in use.

Other objects are to provide a pool cover which is low in cost, easy of manufacture, facile in manipulation, low in weight yet with high strength, small in bulk, easily installed and removed, and readily portable.

Briefly described, the invention in a preferred embodiment will comprise an elongate spool on which is wound a flexible sheet whose outer end is anchored along one side of the pool, the flanges of the spool acting as rollers for carrying the sheet to pool-covering position in an unwinding operation, as well as in the wind-up process, and being powered by a motor carried on a dolly journalled on the axis of the spool.

For a more detailed description of the invention reference is made to the following specification, as illustrated in the drawings, in which:

FIGURE 1 is a plan view from above, showing the device in covering relation to a swimming pool;

FIGURE 2 is a sectional view along the line 2—2 of FIGURE 1, on enlarged scale and broken away for the purpose of fore-shortening;

FIGURE 3 is a fragmentary view, in top plan, of the end of the spool carrying the drive means, on enlarged scale, with the cover in rolled-up condition;

FIGURE 4 is an end elevational view of the elements shown in FIGURE 3;

FIGURE 5 is a sectional view, enlarged, showing details along the line 5—5 of FIGURE 3;

FIGURE 6 is a sectional view, enlarged, along the line 6—6 of FIGURE 1;

FIGURE 7 is a sectional view, enlarged, along the line 7—7 of FIGURE 1; and

FIGURE 8 is a plan view from above, similar to FIGURE 1, showing a modified cover and spool, adapted to a pool of odd shape.

Referring to the drawings by characters of reference, there is shown, in FIGURE 1, a pool of rectangular outline having side walls, the top surfaces of which are indicated by the numerals 10, 11, 12 and 13 respectively. Offset a short distance from one of the longer walls, 11, of the pool is an anchoring block 14 running the length of the pool, and which may be secured in position by ground-engaging spikes or other suitable means. The flexible sheet 16, which serves to cover the pool, is secured at one end to the block 14 as by upholstering tacks 18 or other means, such as staples. The other end of sheet 16 is secured to a tubular roller 20 having end flanges 22, 24 and constituting a spool for storage of the sheet in a winding operation, as will appear hereinafter, and the spool being of a length such that the flanges are positioned to roll along the top of end edges 10 and 12, respectively, of the pool. Thus, when the spool is rolled away from the anchor block 14, the sheet 16 is progressively laid down over the pool in covering relation, and movement in the opposite direction progressively uncovers the pool while winding the sheet on the spool for compact storage. As seen at 26 in FIGURE 2, recesses 26 may be provided in the masonry of the pool to receive the end flanges of the spool, and thus inhibit movement of the spool in the extended position of the sheet. Such recesses may also be provided on the sheet-storage side of the pool, adjacent the block 14.

Since there is no applied tension transversely of the sheet, stiffening means are provided in a series of spaced, parallel ribs 28 (FIG. 6) extending across the sheet, and which may conveniently be contained in pockets 30. As shown the sheet consists of separate segments overlapped to form the pockets, being stitched as at 32 along each side of the pocket, but a similar result may be achieved by providing a single-piece sheet and sewing on extra, narrow strips to provide the pockets. The sheet may consist of vinyl coated canvas or other suitable material, and the rib inserts may be of wood, for instance. These will preferably be spaced about 30 to 36 inches apart. The ribs are important, not only in giving rigidity to the cover when spread, but also to keep the cover from wrinkling or bundling up when being rolled onto the spool.

As seen in FIGURE 7, the ribs 28 may be of a length to terminate at 34 near the pool edge or coping 36, with separate, terminal segments of rib 38 inserted in the ends of the pockets, so that the ends will lie down on the pool edge rather than to extend upwardly at an angle in continuation of the curve of the cover resulting from sag. Instead of using separate rib segments, the rib may be hinged at the pool edge, at point 34.

The self-propulsion means for spreading and retrieving the cover is provided in a dolly indicated as a whole by the numeral 40. In the form shown the dolly, or drive platform comprises a main frame 42 of angle stock which may be of steel, structural aluminum, or the like. Near one end, the horizontal member of the frame 42 carries an upright block 44 to the top of which is fixed a bushing sleeve 46 in which is journalled a shaft or spindle 48 fixed in spool flange 24 on the line of its axis and protruding outwardly. The other end of the frame 42 is supported on a castor 50 which is secured to the underside of the bottom plate 52 of a battery box whose three sides 53, 54, 55 cooperate with the vertical member of the frame 42 to form an enclosure for a storage battery 56 which furnishes the motive power.

Driving is accomplished by a direct-current motor 58 mounted on the frame 42 and having an output shaft 60 with a spur gear 62 meshing with a larger gear 64 which is keyed to spool shaft 48, or which may be fixed to spool flange 24, the important point being that it revolve with the spool as one unit.

The operation of the device, in its main aspects, should now be apparent. Assuming the cover to be in stored condition, that is, rolled up on the spool, a reversing switch 66 on the carriage 40 is actuated to move the spool away from the anchor block 14. In traversing the pool, the diameter of the roll of cloth will at any instant be less than the diameter of the ground-engaging spool flanges which provide the traction. As a result the payout of the cover lags the normal rate of advance of the flange rollers. However, this is readily compensated by slippage between the flange rollers and the traction surface. Rolling up of the cover, however, does not involve such inherent compensation, and in this operation the

cover lags behind, as shown by the looped portion 63 in FIGURES 4 and 5. Therefore, means are provided for taking up this slack after the spool has reached the anchor block 14. Thus, each end face of the block 14 has secured thereto an upwardly opening section of channel 70, the upright walls 71, 72 of which have a pair of aligned bores freely journalling the protruding, axial, end pins 74 of a roller 76. As seen in FIGURES 3, 4 and 5 the traction roller flanges 24 of the spool enter the channels 70 at the end of the roll-up journey and move into contact with the free rollers 76, respectively. Any effort toward further movement of translation of the spool will tend to carry the flanges onto the rollers and thus lift them out of tractive engagement with the ground. As a result, the spool flanges are free to rotate without advancing and the slack is consequently taken up.

In the case of pools of irregular shape, such as shown in FIGURE 8 and indicated by the numeral 78, the area of the cover may be minimized by providing a spool flange 80 on one end of the spool which is smaller in diameter than the flange 82 on the other end. The effective rolling surface is thus frusto-conical, and in the covering operation the sheet develops in a fan-like pattern providing an economy of surface. In this form, the rib pockets 30 are divergently disposed to comport with the over-all pattern and to be received on the spool, in each case, properly aligned in the length direction thereof.

While certain preferred embodiments of the invention have been shown and described, it will be understood that the same is not limited thereby, since various modifications and substitutions will be apparent to those skilled in the art, in the light of this disclosure, and no limitation should therefore apply except as shall be properly inferred from the spirit and scope of the appended claims.

I claim:

1. A covering device for swimming pools and the like, comprising an elongate spool having a roll-form core and concentric circular end flanges, a flexible cover of sheet form, windable on said core, secured thereon, along one of its ends, and along its other end to an elongate block constituting a ground-anchoring means, stiffening ribs carried by said cover transversely thereof and rollable with the cover on the core, a carriage articulated to one of said flanges on the axis of said spool, a gear on said one of said flanges concentric with the axis of the spool and of less diameter than said flange, drive means on the carriage having a gear meshing with the first-mentioned gear, a rolling, ground-support means on said carriage, parallel tracks, one on each end of said block positioned to receive the respective flanges, and freely journalled rollers across said tracks adjacent the ends of said block and in the path of said flanges.

2. A device as in claim 1, said cover having a fan shape, said ribs being divergently arranged to comport with said fan shape, and said flanges being of different diameter, the smaller wheel being located on the end of the spool adjacent the shorter side of said cover.

3. A covering device for swimming pools and the like, comprising an elongate spool having a roll-form core and circular end flanges, a flexible cover of sheet form windable thereon secured along one of its ends on said core, and with its other end adapted for ground anchorage, stiffening ribs carried by said cover transversely thereof and windable with said cover on said core, a carriage articulated to one of said flanges on the axis of said spool, a gear on said one of said flanges concentric with the axis of the spool and of less diameter than said flange, drive means on the carriage having a gear meshing with the first-mentioned gear, and rolling, ground-support means on said carriage.

4. A device as in claim 3, said cover being fan-shaped, said ribs being divergently arranged to comport with said fan shape, and said flanges being of different diameter, the smaller wheel being located on the end of the spool adjacent the shorter side of said cover.

5. A covering device for swimming pools and the like, comprising an elongate spool having a roll-form core and circular end flanges, a flexible cover of sheet form secured at one of its ends to said core, its other end being adapted for ground anchorage, stiffening ribs carried by said cover, transversely thereof, said cover and ribs being windable upon said core, a carriage articulated to one of said flanges on the axis of said spool, rolling, ground support means on said carriage, power means on the carriage, and a driving connection between said power means and said spool to rotate the spool.

6. A device as in claim 5, said ribs each comprising a main, central segment and two shorter, separate segments at its ends.

7. In a covering device for swimming pools and the like, in combination, a spool, having end flanges fixed thereto, a flexible cover attached to said spool for winding thereon, a rigid bar block attached to the outer end of said sheet, and means on said bar block journalling a pair of free rollers for rotation on an axis parallel to said bar block, each roller located across the path of travel of one of the respective flanges of said spool.

8. A device as in claim 7, said cover being generally fan-shaped in outline, and said flanges being of different diameter, the smaller wheel being located on the end of the spool adjacent the shorter side of said cover.

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