METHOD OF MAKING TOILET SEATS

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My invention relates to methods of making toilet seats and has particular reference to methods of making toilet seats, toilet covers and similar articles from corrugated paper.

This is a continuation-in-part of my application Serial No. 272,946, filed May 11, 1939, which matured into Patent No. 2,185,169.

My invention has for its object to provide a method of making toilet seats and covers by winding a strip of a corrugated paper on a mandrel and cementing together the successive turns. I prefer to use for this purpose corrugated paper comprising a corrugated strip to one side of which a flat sheet of paper is glued, the strip being so cut that the corrugations extend straight across from one edge of the strip to the other. Such a strip is very flexible, so that it can be wound into a tight roll following the shape of the mandrel. The article thus obtained is very light in weight, a large portion of its volume representing air spaces between the corrugations. At the same time it is very strong, resisting compression, since the corrugations extend directly across from one side of the article to the other, being highly resistant to compression. The successive turns may be glued together during the process of winding or they may be secured together upon completion of the winding by applying glue to the sides of the article, thereby gluing together the edges of the strip. The edges of the article can then be rounded off by grinding or other suitable mechanical process. The finally shaped article can be given smooth appearance by applying a layer of a suitable plastic compound, such as plastic wood, to the outer surface of the article, so as to fill the spaces between the corrugations at the surface, leaving air spaces inside the article. The surface of the article can then be polished smooth and painted with a suitable water-resistant paint or enamel.

Articles made by my method are very light, inexpensive and possess relatively great rigidity. They are superior to ordinary seats made of wood in that they do not warp, do not crack, and retain their shape after long usage. They can be refined and re-enamed from time to time.

The outer contour or shape of the article can be controlled by placing suitable inserts between the turns of the strip as described in my foregoing patent application. These inserts can be also used for attaching hinges by suitable bolts or screws. Instead of polishing or painting the outer surface of the article, a moulded cover may be cemented on the outside, as also described in my foregoing application.

As a modification of my method, the article, upon completion of the winding of the strip and while the glue is still wet, may be pressed out to provide a convex surface at one side. The other side can be then ground or trimmed flat.

Another modification of my method as described in my foregoing patent application, consists in winding a long cylindrical body on a suitable mandrel, using for this purpose a wide sheet of corrugated paper with corrugations extending lengthwise of the mandrel. Inserts, if such are required, may be provided in the form of long strips or bars inserted between the turns at suitable points. The cylindrical body, upon completion of winding, is then cut by suitable gang cutters or saws into a plurality of relatively thin boards which are then finished into toilet seats or seat covers.

My invention is more fully described in the accompanying specification and drawing in which:

Fig. 1 is a top plan view partly in section of a seat made by my method;

Fig. 2 is an enlarged sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a fractional sectional view of a modified construction of the seat;

Fig. 4 is a top plan view of a seat of a modified construction;

Fig. 5 is a top plan view partly in section of a seat cover made by my method;

Fig. 6 is a sectional view of a seat of a modified construction;

Fig. 7 is an enlarged detail view of the seat showing filling at the surface;

Fig. 8 is a perspective view of a cylindrical body wound by my method and ready to be cut into a plurality of seats;

Fig. 9 is a diagrammatic view showing the cylindrical body in position to be cut by circular saws into separate seats;

Fig. 10 is a perspective view showing my method of making seats.

My improved method of making toilet seats and similar articles consists in winding a strip of corrugated paper around a suitable mandrel as shown in Fig. 10. The corrugated paper preferably consists of a corrugated strip glued at one side to a flat strip so that it retains its longitudinal flexibility, being at the same time fully rigid in transverse direction, the corrugations being aligned transversely to the strip. The successive turns of the corrugated paper strip are held together as by applying glue to the flat side of one turn and pressing against it the tops of corrugations of the other turn until the complete seat is formed.

The seat can be also wound without application of the glue until the winding is completed, and then glue is applied only to the top and bottom surfaces of the seat at the edges of the strip.

The peripheral contour of the seat can be made of any desired shape by placing inserts or filling pieces between the turns as shown in Figs. 1 and 2. With such inserts a flat rear side...
can be obtained for mounting hinges which sup-
port the seat on a toilet bowl (not shown). Ad-
nitional inserts 6 may be provided for bolts or
screws 1 which fasten hinges 3 (Fig. 3) to the
seat. The inserts 6 are preferably placed when
the seat is fully formed, by drilling a correspond-
ing hole, or groove, through the seat and cement-
ating the insert in the hole. The inserts are pref-
errably made of a machinable material, such as
wood, fiber, etc., or they can be made of pieces
of corrugated board.

Another method of making toilet seats is shown
in Fig. 4. The seat 9 is wound to a larger
overall size as shown in dotted lines 10. The
excess material is afterwards removed by trim-
ming or grinding.

The covers 11, Fig. 5, are formed in a similar
manner by winding a strip around an elongated
mandrel or core 12. The core in this case is not
removed upon completion of the winding, as is
the case with the seat, but is left in the cover,
being firmly cemented in its place. It is also
possible to wind the cover without any core, using
the first turns of the strip as the core.

The seat, when fully wound, is ground or
trimmed around so as to round off its corners
as shown in Figs. 2 and 3. A smooth moulded
cap or cover 13 may be cemented to the outside
of the seat for making it smooth and impervious
to water, a similar flat cover 14 being cemented
to the under side of the seat.

The seat can also be finished smooth without
the additional covers by closing the opening be-
tween the corrugations with a suitable plastic or
cementitious plastic material 15, Fig. 7. The
plastic material penetrates only at the surface,
leaving air spaces between the corrugations in-
side the seat.

These air spaces render the seat very light in
weight, the necessary strength being provided
by the straight corrugations extending across
the thickness of the seat. The surfaces of the seat
are ground and polished when the plastic ma-
terial becomes sufficiently hardened. A coat
of paint or enamel can be then applied to the pol-
ished surface, if desired.

Another method of finishing the seat is shown
in Fig. 6. The seat, upon winding and before
the glue or plastic material is hardened, is
formed in a special mould, so that its upper side
is made convex as shown. The seat may be left
in the mould until the plastic or cementitious
material is hardened. Upon removal from the
mould, the seat is ground flat on the under side.

Another method is shown in Figs. 8 and 9,
especially applicable to a mass production. A
wide sheet 16 of corrugated board is wound on a
long mandrel or core 17, the latter being mount-
ed on a shaft 18 for its rotation. Long inserts
19 are placed between the layers of the sheet to
form corners of the seats. The completed article
in the form of an elongated cylinder 20 is cut
into a number of separate seats by means of cir-
cular saws 21 mounted on a shaft 22.

For splitting the board or wound cylinder 22
a gang saw can be used, either on a reciprocat-
ing frame or in the form of a continuous zig-zag
mounted band saw.

It is understood that my invention may be fur-
ther modified without departing from the spirit
of the invention, as set forth in the appended
claims.

I claim as my invention:

1. A method of making a toilet seat consisting
in tightly winding around a mandrel a strip of
corrugated paper having a strip of flat paper
 glued to one side with the corrugations extend-
ing straight across the strip, the width of the paper
being substantially equal to the thickness of the
finished article, gluing the successive turns to-
gether, placing filling pieces between the corru-
gations extending to the edges of the product so
as to control the outer contour of the product,
and finally grinding the surfaces to the required
shape and finish.

2. A method of making a toilet seat consisting
in tightly winding around a mandrel a strip of
corrugated paper having a strip of flat paper
 glued to one side with the corrugations extending
straight across the strip, the width of the paper
being substantially equal to the thickness of the
finished article, the tops of the corrugations of
one turn being during the process of winding
 glued to the flat paper of the other turn, the cor-
rugations forming transverse air ducts in the
product, grinding the finished article to the re-
quired shape, filling the spaces between the cor-
rugations at the surfaces of the article with a
plastic material, partly entering the ducts, fin-
ishing the article on all sides and covering with a
layer of waterproof material.

3. A step in the method of making toilet seats
consisting of tightly winding beside one strip of
a corrugated paper having a strip of flat paper
 glued to its one side with straight corrugations
 extending across the strip, gluing together the
tops of the corrugations of one turn to the flat
paper of the other turn, the corrugations form-
ing transverse air ducts in the product, and clos-
ing the ends of the air ducts at the surface of
the product with a plastic material partly enter-
ing the ducts.

4. A method of making toilet seats consisting
in forming an elongated body by winding a strip
of fibrous material, placing inserts in the form
of long bars between the turns of the strip so
as to control the shape of the outer contour of
the body, splitting the body with the inserts into
a plurality of boards of a desired thickness,
smoothing together the successive turns of the
strip, rounding off the upper corners of each
seat, and rendering the surfaces of the core
smooth and water-tight.

5. A method of making a toilet seat consisting
in tightly winding around a mandrel a strip of
corrugated paper having a strip of flat paper
 glued to one side with the corrugations extend-
ing straight across the strip, the width of the paper
being substantially equal to the thickness of the
finished article, adding sufficient number of
turns at the periphery of the article as re-
duced for the widest portions of ducts in the
article, gluing together the consecutive turns, removing por-
tions of the added turns at the periphery of the
article for imparting the desired contour thereeto,
rounding the upper corners, and covering the
surface with a layer of water-proof material.

6. A method of making a toilet seat consisting
in tightly winding around a mandrel a strip of
corrugated paper having a strip of flat paper
 glued to one side with the corrugations extend-
ing straight across the strip, the width of the paper
being substantially equal to the thickness of the
finished article, gluing the successive turns to-
gether, boring holes edgewise through the pro-
duct across the corrugations, and placing inserts
into the holes adapted to receive screws for hinges.

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