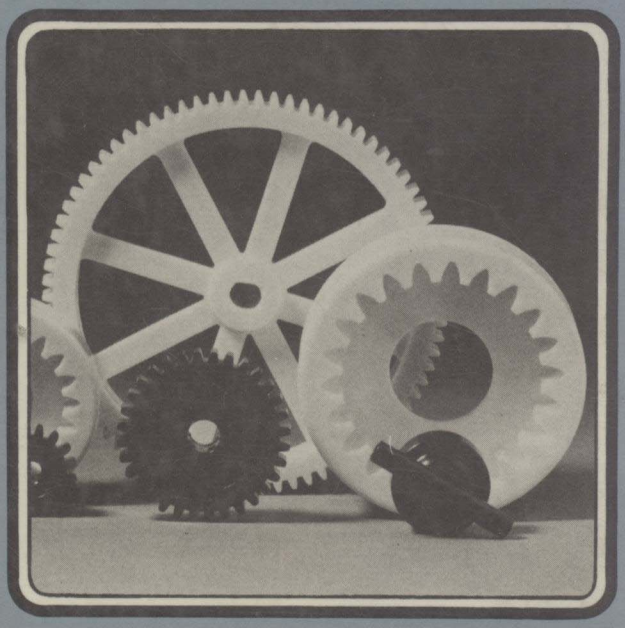
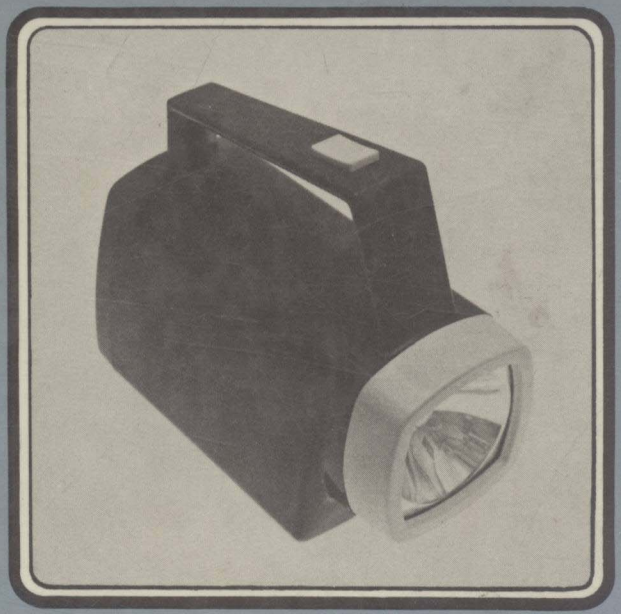
Modern Design in Plastics

D. P. Greenwood





MODERN DESIGN IN PLASTICS

D.P. Greenwood

John Murray

First published 1983
by John Murray (Publishers) Ltd
50 Albemarle Street, London W1X 4BD

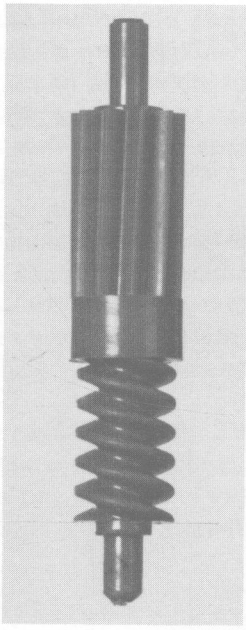
Typeset in Great Britain by
Servis Filmsetting Ltd, Manchester.
Printed by Camelot.

British Library Cataloguing in Publication Data

Greenwood, D.P.
Modern Design in Plastics.
1. Plastics—Moulding
I. Title
668.4'12 TP1150

ISBN 0-7195-3966-8

INTRODUCTION



Modern plastics are almost entirely a product of human ingenuity and technical skill. In terms of function, they can often do jobs that are simply beyond the capabilities of other materials: they can be made into pipes that don't burst, tanks that don't corrode, boats that fold up but are almost impossible to sink, chairs that give but never break, and shoe-soles that last practically for ever. Plastics are also remarkably versatile from the manufacturing point of view. A handle that fits the grip perfectly can be moulded in seconds, whereas a piece of wood would have to be cut, shaped, sanded and polished. Yet at the same time, plastics can be beautiful. Soft or hard, flexible or rigid, smooth or textured, transparent or any colour of the rainbow, plastics are perhaps more than any other material exactly what the designer makes them.

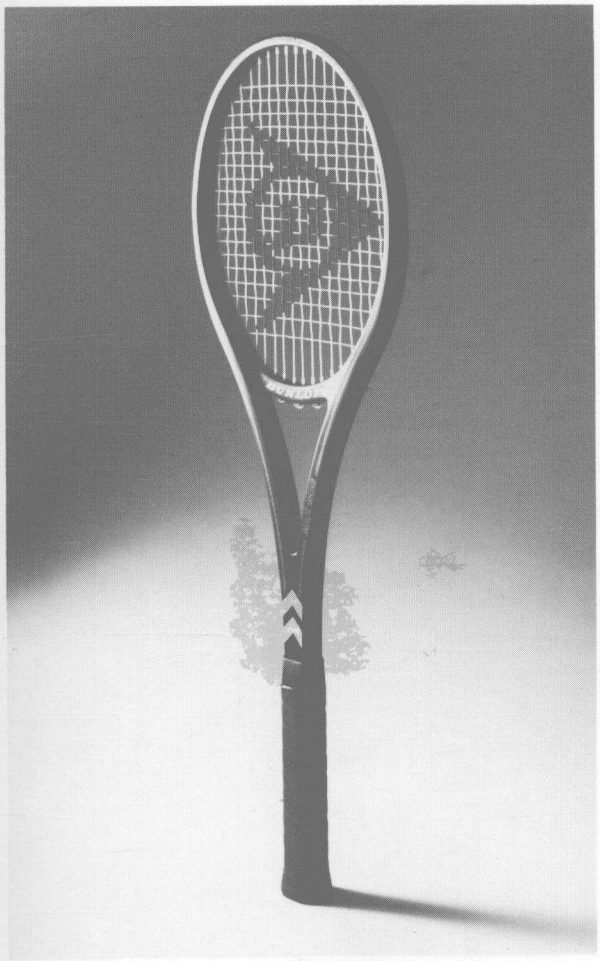
Good design has been defined as the marriage of function and form, and the examples chosen for this book are arranged to show how these two elements combine. In the earlier sections the emphasis is on function, with examples from the fields of industry, engineering and construction, showing that in the real world good design must often be severely practical. In addition to the assembled items, photographs of the component parts are often included, to show how the product works and some of the problems involved in designing the whole piece. As the book develops, more purely aesthetic considerations come into play. The wide selection of articles for leisure, sport and games shows how things designed to serve specific purposes can also look exciting, and visual appeal plays an even more important part in the furnishings and household items that follow. The book ends with a section on jewellery and sculpture, where aesthetic considerations are all-important. All the photographs have been carefully chosen to illustrate a wide range of modern plastics from the mass-production of everyday items to the crafting of unique pieces. Each photograph is fully captioned, with the materials specified according to their basic types (sometimes by trade names). The collection as a whole shows a very wide variety of products, many of which have already been accepted as works of excellence as regards both utility and appearance.

ACKNOWLEDGMENTS

More than sixty companies are represented in this book, many of them well-known internationals, others small but equally important in their own specialised fields. The author acknowledges the generous help and interest of these organisations; without their photographs and technical information this book would not have been possible.

With the growing emphasis on craft, design and technology in education, the book offers both teachers and students a source of reference and a wide range of ideas. The hand-crafted pieces have an obvious relevance to workshop activities in schools and colleges, but the mass-produced items can also be used as a source of inspiration for student projects. These items can often be produced on a one-off basis, using a variety of materials and a range of hand or machine skills. Some such items will require the use of moulds or jigs to achieve a satisfactory result, and this in turn introduces the skills needed to obtain the appropriate finish. But it is left very much to the reader to extract and develop these ideas.

This book takes its place alongside Richard Stewart's *Modern Design in Wood* and *Modern Design in Metal*, which have become standard reference books in schools and colleges. It is the first such book to deal specifically with the wide range of modern plastics.



CONTENTS

Introduction	vii
Industry and Engineering	1
Building Accessories	11
Gardening	21
Leisure, Sport and Hobbies	31
Nursery Products and Toys	45
Furniture and Interiors	55
Household Items	69
Jewellery and Sculpture	85

INDUSTRY & ENGINEERING

ADVANCED PASSENGER TRAIN

The cab shell is part GRP and part aluminium. Made by British Rail Engineering Ltd.

***a* GEAR WHEELS**

Various wheels for the automotive industry made from nylon. Courtesy Akzo Plastics.

***b* RADIATOR CAPS**

Moulded in 'Akulon' Courtesy Akzo Plastics.

***c* WORM-WHEELS**

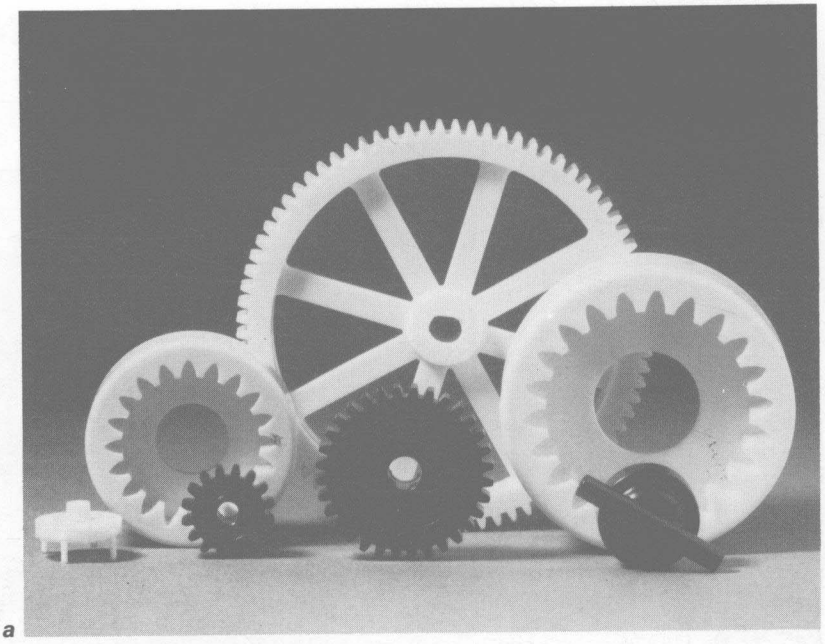
Used in speedometers. Also in 'Akulon'. Courtesy Akzo Plastics.

***d* FILTER**

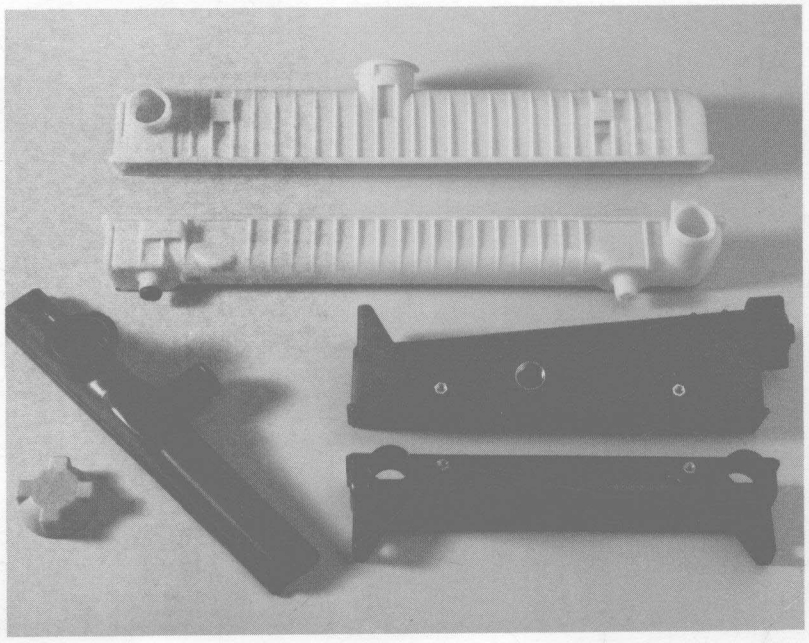
Hydraulic circuit filter for brake and clutch systems, made in nylon. Courtesy Akzo Plastics.

***e* DOMESTIC WATER FILTER**

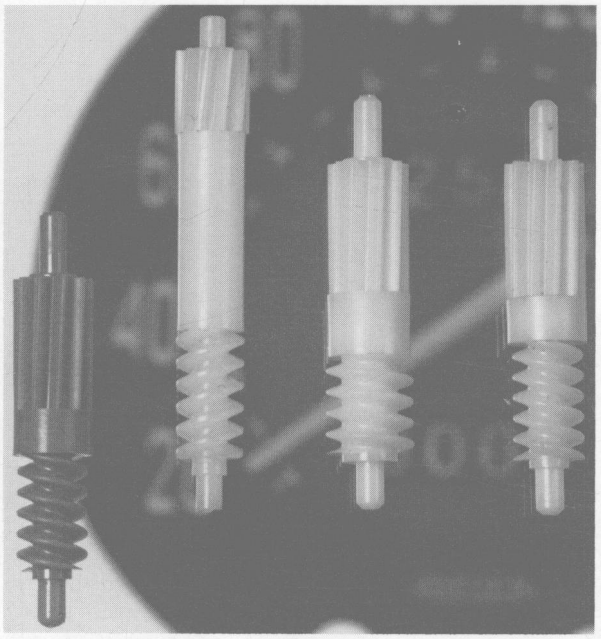
The body and nearly all components are moulded in acetal copolymer. The outlet arm is chrome-plated ABS. Made by Doulton Industrial Products, Courtesy Amcel Ltd.



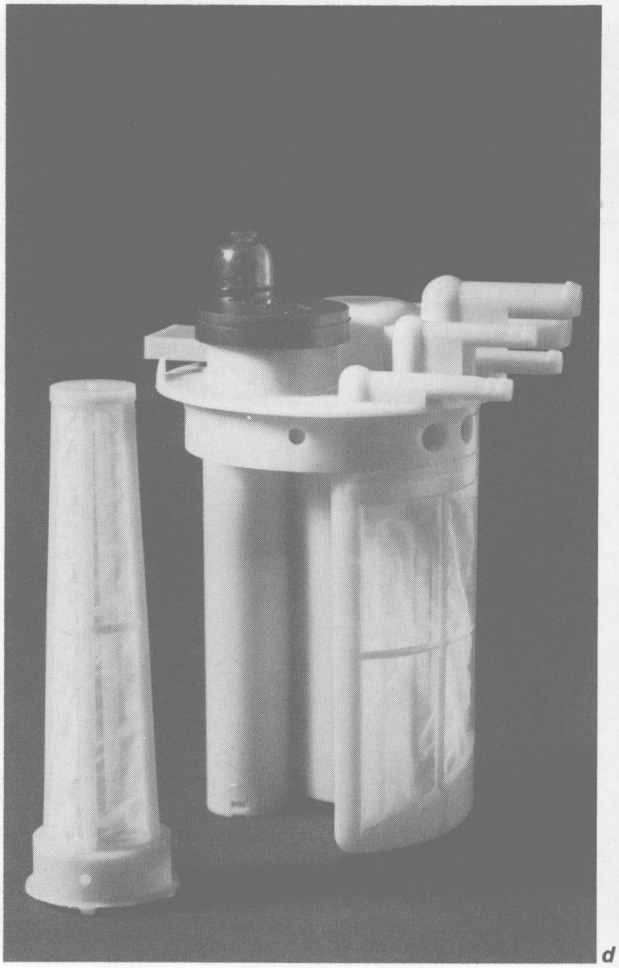
a



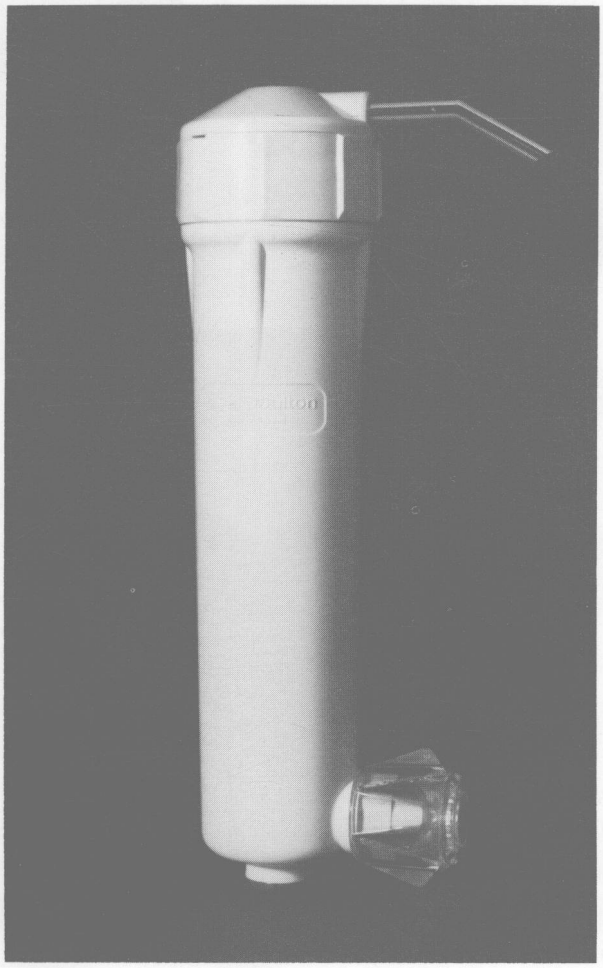
b



c



d



e

***a* CAR GRILLE**

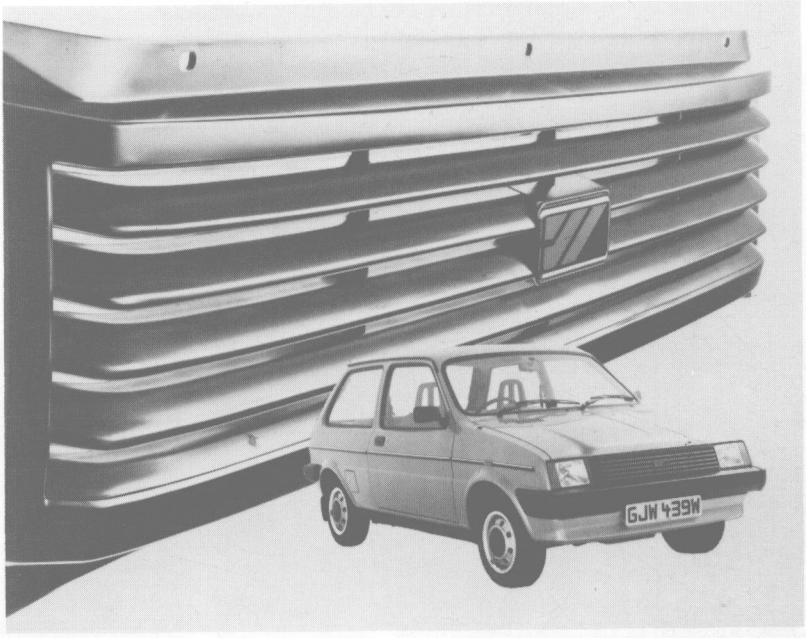
Moulded in a special grade of Monsanto's ABS to give rigidity, toughness and heat resistance. Made by Pressed Steel Fisher.

***b* TRAIN**

Outer shells for the high-speed train made in GRP. Courtesy British Rail.

***c* AIRSHIP**

All the windows are shaped from 'Perspex', ICI's acrylic sheet. Made by Suntex Ltd.



a

b

c

d

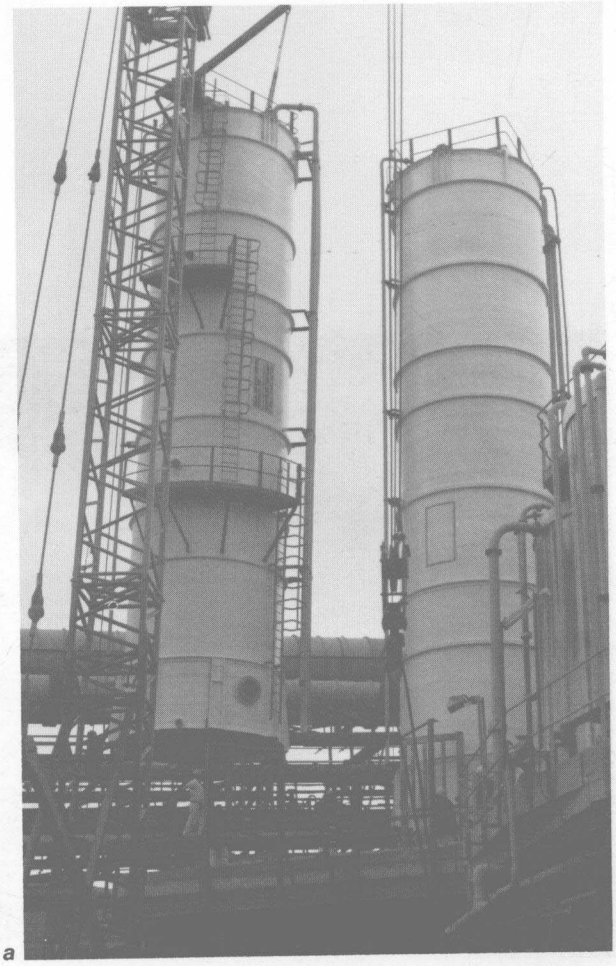
***d* TORNADO AIRCRAFT FACSIMILE**

A full-size replica complete in every detail, produced for the RAF recruiting organisation. Made by Specialised Mouldings Ltd.

***e* COMMERCIAL VEHICLE CAB**

The cab is built from 23 individual press-moulded GRP mouldings. The air deflector on the roof is also press-moulded. Courtesy Fibreglass Ltd.

e

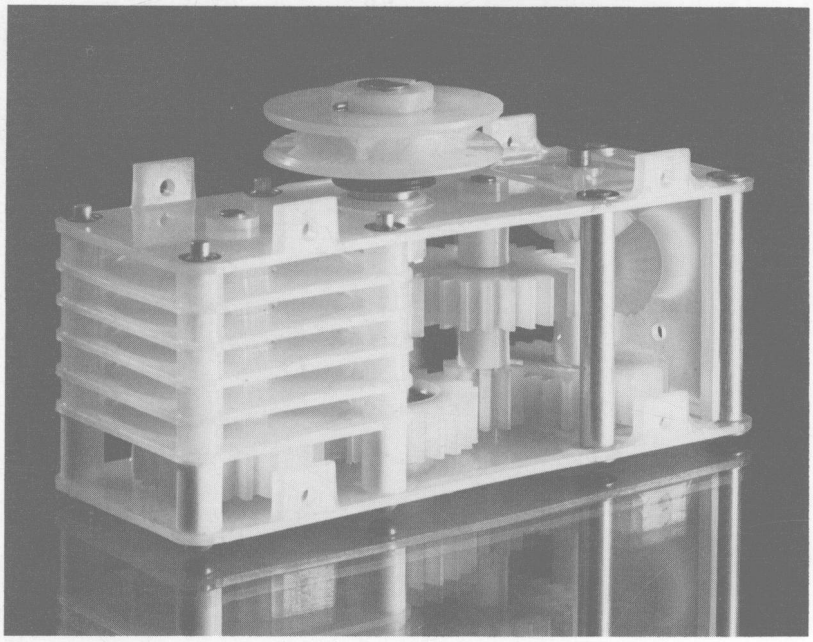


a **CHEMICAL SILOS**

The two GRP hoppers are designed to hold chemicals. They are being located on a platform enabling tankers to run beneath for loading purposes. Courtesy Fibreglass Ltd.

b **CROP SPRAYER**

The tank is rotationally moulded in polyethylene by Argoe Plastics Ltd.



c **BLIND MECHANISM**

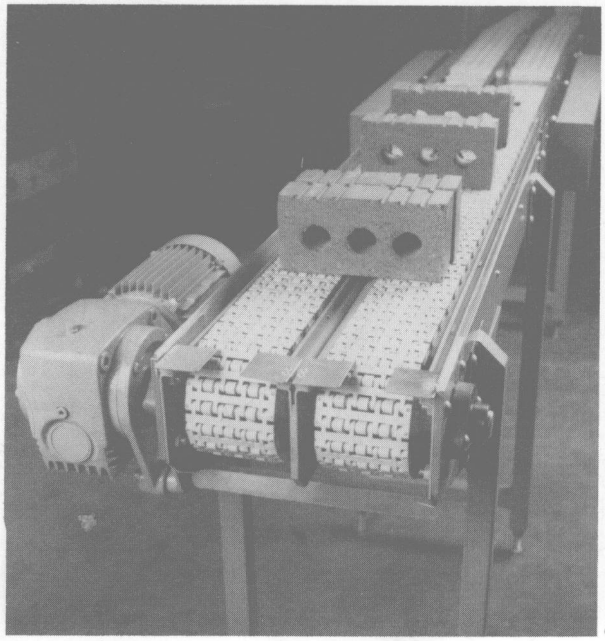
Winding system made of nylon for venetian blinds. Courtesy Akzo Plastics.

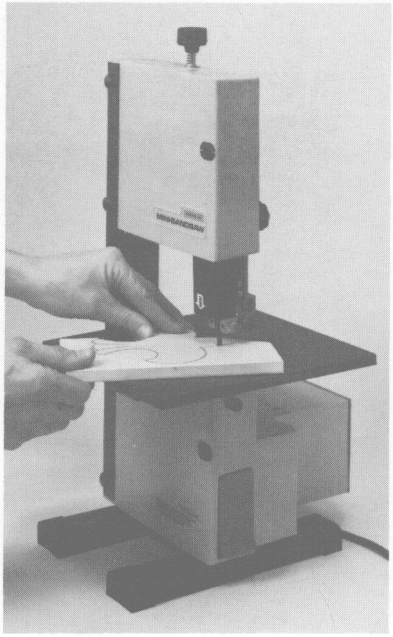
d **CONVEYOR CHAINS**

Designed for materials handling and widely used in the food and building brick industries. The chains are made by Ling Systems Ltd in acetal copolymer. Courtesy Amcel Ltd.

e **MINI-BANDSAW**

The top and bottom housings, their doors and the motor cowl are moulded in nylon reinforced with glass bead to minimise warpage. The switch plates are reinforced with glass fibre, which has good mechanical and thermal properties. All components moulded by Britton Plastics for Burgess Power Tools. Courtesy ICI Plastics Division.





***a* SAFETY GOGGLES**

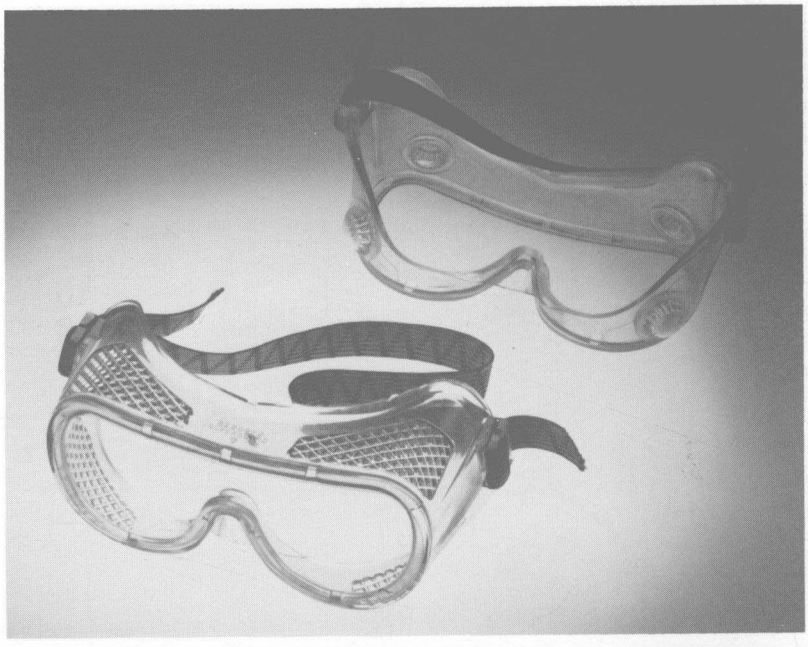
Moulded in 'Welvic', ICI's PVC. Made by Superguard Ltd.

***b* EYE GUARDS**

The lenses of these safety spectacles are made from 'Rocel' polished acetate sheet. Courtesy Courtaulds Acetate Ltd.

***c* VISOR**

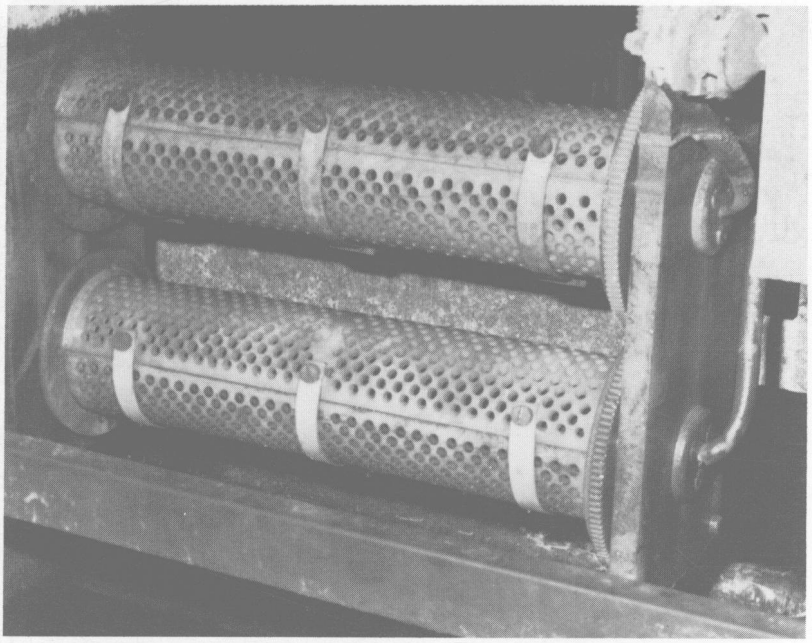
Polished cellulose acetate sheet is used for the visor. Courtesy Courtaulds Acetate Ltd.



a

b

c



d **ELECTROPLATING BARRELS**

Fabricated in polypropylene by Varicol Ltd. Courtesy Courtaulds Acetate Ltd.

e **ELECTROPLATING JIG**

Fabricated in 'Polyplex', Courtaulds Acetate's extruded polypropylene sheet. Made by Varicol Ltd.

f **ELECTROPLATING TANKS**

The two outer tanks contain water washes and the inner tank zinc coating solution. Made of polypropylene by Varicol Ltd. Courtesy Courtaulds Acetate Ltd.