

The **Modern** 
MOTOR-DRIVEN
WOODWORKING
SHOP



How to **PLAN - OPERATE**
and get the most out of it

The Modern Motor-Driven Woodworking Shop

HOW TO PLAN, OPERATE AND
GET THE MOST OUT OF IT

BY
HERBERT E. TAUTZ
AND
CLYDE J. FRUITS

With
207 Working Drawings, Diagrams,
and Illustrations

VOLUME I

WOODWORKERS EDUCATIONAL DEPARTMENT
(Division of Delta Manufacturing Co.)
Milwaukee, Wis., U. S. A.

COPYRIGHT 1930
WOODWORKERS EDUCATIONAL DEPARTMENT
(Division of Delta Manufacturing Co.)

All Rights Reserved

PUBLISHED OCTOBER, 1930

Printed in the United States of America

PREFACE

The working of wood by means of hand tools is one of the oldest arts practiced by man. Many books have been written about the use and care of hand woodworking tools. The Machine age, however, has provided mechanical means for doing much of the work done by hand in the past.

Not only are large woodworking shops and factories equipped with machines, but also the small workshop owner and the mechanic out on the job or the home craftsman have at their disposal portable machines which progressive manufacturers have devised.

Very little has been written about the installation, use, care, and upkeep of this type of machinery. It is the express purpose of this book to give full and complete information on the care, use, and upkeep of portable woodworking machinery.

This book contains hundreds of illustrations and a wealth of information. It is written in simple language, so that even the beginner will have no trouble in following the directions given.

Now a word about the authors:

Clyde J. Fruits has worked a lifetime in large furniture and piano factories as apprentice, journeyman, foreman, and superintendent. As superintendent he had complete charge of all woodworking departments. He knows whereof he writes.

Herbert E. Tautz is a mechanical engineer who has specialized for years in the designing of practical and efficient woodworking machinery which would be within the reach of all. He is a member of the American Society of Mechanical Engineers.

Equipped with this background, these men felt that they could write a book on the installation, use, care, and upkeep of portable woodworking machinery that would be of real assistance to the thousands who are using woodworking machinery.

The publishers hope that this book will enable the reader not only to more efficiently operate his woodworking machinery, but that it will also help him to derive more satisfaction from it because of his more thorough understanding on which their operation depends.

Milwaukee, Wis.
October, 1930

Woodworkers Educational Department
(Division of Delta Mfg. Co.)

TABLE OF CONTENTS

CHAPTER I.

THE VALUE OF A WORKSHOP

| | |
|----------------------------------------------|----|
| As a Hobby..... | 11 |
| For Inventive and Creative Developments..... | 12 |
| Educational Value..... | 12 |
| Profit Derived from the Workshop..... | 13 |

CHAPTER II.

HOW TO PLAN A WORKSHOP

| | |
|-----------------------------------|----------|
| The Arrangement of Equipment..... | 15 to 46 |
| Space Required..... | 15 to 46 |
| Location..... | 15 |
| 15 Model Shops..... | 15 to 46 |

CHAPTER III.

THE CIRCULAR SAW

| | |
|----------------------------------------------------------------------------------------------|----|
| History..... | 47 |
| Fundamentals of Design and Construction of Base—48, Table—48, Rip Gauge—52, Miter Gauge..... | 52 |
| Bearings—53, Arbor—54, Guards and Desirable Safety Features..... | 55 |
| Selecting a Circular Saw..... | 56 |

CHAPTER IV.

CIRCULAR SAW ACCESSORIES

| | |
|---------------------------------------|----|
| Saw Blades..... | 57 |
| Rip Saws..... | 57 |
| How to Make a Filing Vise..... | 57 |
| Care of and Filing of Saws..... | 58 |
| Setting Circular Saws..... | 59 |
| Jointing the Saw Teeth..... | 61 |
| Gumming the Circular Saw..... | 61 |
| Filing Cut-off Saws..... | 62 |
| Combination or Novelty Saws..... | 62 |
| Dado Heads..... | 63 |
| Moulding Cutter..... | 64 |
| The Moulding Cutter Guide Fence..... | 65 |
| Typical Work for Moulding Cutter..... | 66 |

CHAPTER V.

OPERATING THE CIRCULAR SAW

| | |
|--------------------------------------------------|----|
| Ripping..... | 67 |
| Taper Ripping..... | 67 |
| Bevel Ripping..... | 69 |
| How to Make Glue Blocks..... | 69 |
| Re-sawing..... | 70 |
| Cove Cutting..... | 71 |
| Cut-off Sawing..... | 72 |
| Trimming Wide Stock..... | 74 |
| Miter Joints..... | 75 |
| Coped Joints..... | 77 |
| Spline Miters..... | 78 |
| Slip Feather Joints..... | 78 |
| Nailed Miter Joints..... | 79 |
| Doweled Miter Joints..... | 79 |
| Tenons Made with the Circular Saw..... | 80 |
| Dado Head Operations..... | 81 |
| Spline Joint..... | 81 |
| Cutting Tenons with the Dado Head..... | 82 |
| Grooving with the Dado Head..... | 83 |
| Safety Hints for Operating the Circular Saw..... | 83 |

CHAPTER VI.

HOW TO USE A MOULDING CUTTER

| | |
|----------------------------------------------------|-----|
| Moulding Shapes in Common Use..... | 85 |
| How to Set Knives in the Head..... | 87 |
| How to Place the Head on the Arbor..... | 88 |
| How to Operate a Moulding Cutter..... | 88 |
| How to Make Strip Moulding..... | 90 |
| How to Make Special Inserts for the Saw Table..... | 92 |
| Combination Cuts..... | 93 |
| Shaping Table or Cabinet Tops..... | 94 |
| Flute Cutting..... | 96 |
| Reed or Bead Cutting..... | 98 |
| Making Wide Mouldings..... | 98 |
| The Rule Joint..... | 99 |
| Dowels and How to Make Them..... | 99 |
| Panel Raising..... | 100 |
| Chamfering..... | 101 |
| Matched Glue Joints..... | 102 |
| Carved Mouldings and How to Make Them..... | 102 |

CHAPTER VII.

FUNDAMENTALS OF DESIGN OF THE JOINTER

| | |
|----------------------------|-----|
| Jointer Base..... | 109 |
| Jointer Tables..... | 110 |
| Arbor..... | 110 |
| Bearings..... | 110 |
| Cutterhead..... | 112 |
| Knives and Their Care..... | 112 |
| Guide Fence..... | 114 |
| Guards..... | 115 |
| Selecting a Jointer..... | 116 |

CHAPTER VIII.

OPERATING THE JOINTER

| | |
|---------------------|-----|
| Glue Joints..... | 118 |
| Taper Jointing..... | 119 |
| Rabbeting..... | 120 |
| Bevel Jointing..... | 121 |
| Chamfering..... | 121 |

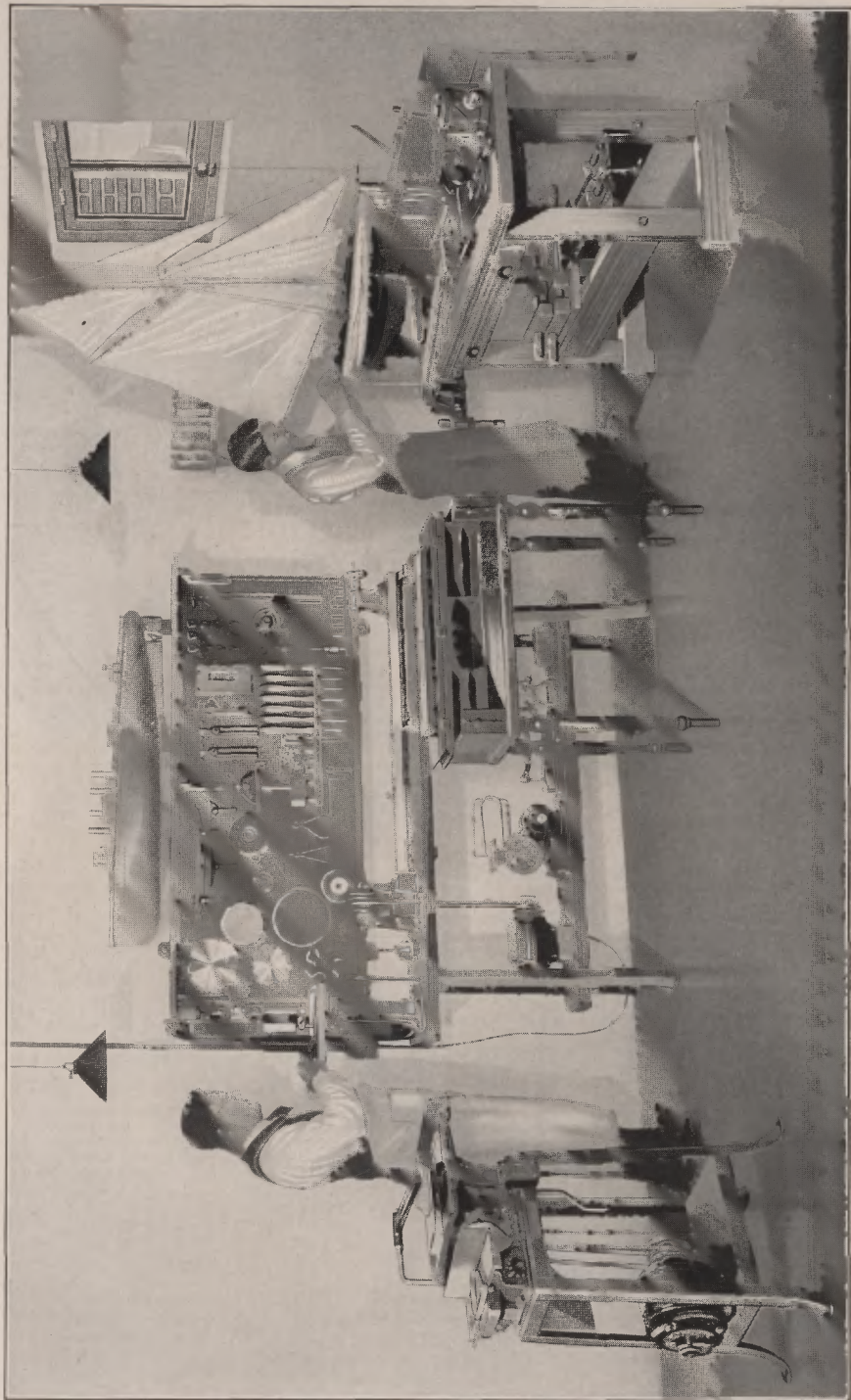


Fig. No. 1

CHAPTER I

THE VALUE OF A WORKSHOP

Hobby

Many doctors recommend the adoption of some hobby or avocation to relieve the stress and strain that modern life puts on the individual. Sedentary workers especially, find exercise and relaxation in home workshops. Routine workers too, find variety, mental refreshment, and stimulation, in the work of their own choice at home. Business and professional men who are harassed by the many problems incidental to their daily work, find that the pursuit of some hobby counteracts the ill effects produced by the daily nerve-racking grind.

A hobby which embraces some form of creative activity, produces the therapeutical result which doctors say we need in this age of specialization, hurry, and worry. It is precisely for this reason that hospitals, homes for convalescent soldiers, sanatoria, and other institutions caring for the physically or mentally diseased, prescribe some form of creative work for their patients.

Woodworking, an art as old as civilization itself, is by far the most popular hobby. A short time spent in the seclusion of the workshop, will quickly relieve the nervous tension brought on by the day's activities. This form of hobby can be taken up by anyone regardless of age, experience, education, or position.

Many fine tools and machines have been developed which make woodworking very easy and exceedingly interesting and profitable. The purpose of this book is to acquaint you especially with the use of machine tools. You will find it a guide to the solution of any woodworking problem which may confront you. This book will be found especially helpful, as nothing has as yet been published which gives such precise information on the subject of modern motor driven woodworking machines.

Rebuilding old and discarded furniture into pieces that fit into present surroundings, is one of the profitable jobs that the home craftsman may undertake. Many an old-fashioned mahogany or walnut table or dresser has been brought from the attic, and turned into an attractive spinet desk. In this way, discarded pieces of furniture can be converted into useful and attractive articles, which still retain all of the sentimental value that the original piece may have had.

There is a great thrill awaiting those who have never experienced the joy and pride of having made things from wood. The ring of the whirling circular saw or the hum of the jointer is music to the ears of any real man or

boy, and the sense of achievement which comes from seeing the object of one's labor take form, amply repays one for the effort that must be put forth.

What man or boy has not thought, when he admired a certain bookcase, end table, spinet desk, smoking stand, reading lamp, trellis, birdhouse or model stage coach, that he too, could make these articles if only he had a properly equipped workshop. Then too, such a shop permits of the making of repairs, replacements, and new things for the house, such as screens, panels, picture frames, garden furniture, flower boxes, toys for the kiddies, and hundreds of other items too numerous to mention.

Years ago, work of this kind had to be made with hand tools. This was not only tedious and required a great amount of skill, but also took up a great amount of time. Now that motor-driven machines are available to anyone, it is comparatively easy to make things, and a few hours of spare time will produce results that would have taken weeks had they been made with hand tools. You may not be skilled enough to properly square up a 6 in. board with a hand saw, but with a good power-driven circular saw, this operation is almost as easy as sharpening a pencil.

Inventive and Creative

In every man and boy there is a great desire to make and create things and it is through the development of this instinct that some of our greatest inventions have been made. Many times while working on some article, the idea for a different process is developed, and a new invention is born. This may appear as though it were an accident, but it can be brought about only by development and application. Every man and boy should give himself the opportunity to develop his creative genius by having his own workshop, equipped with those power-driven machines which are most suited to his requirements. Then when the new idea comes, he will be prepared to work it out and really develop it.

Educational

Encourage your boy to create things with his own hands, using his own ideas, and his own ingenuity. He will value a crudely made wagon produced by himself, much more than the nicer looking and much better constructed wagon bought for him at a toy store.

Modern educational institutions know the value of developing this faculty, hence the enormous spread of the manual-training idea throughout the country. Boys who have a workshop of their own, may continue their schoolwork at home, thus gaining additional skill and producing more and better work as they progress.

Home training in woodworking is an asset to anyone. Skill and ability can be acquired in a short time. Hands, eyes, and mind are trained at the same time, developing the intellect and fitting the individual for a more responsible position.

The home workshop is a great influence in keeping the boy at home. He takes pride in his accomplishments, and enjoys showing the results of

his labor. It is really surprising to see what some fourteen and fifteen-year-old boys have accomplished, and the authors of this book have often been surprised by the excellence of the articles that have been produced by boys.

Profit

Many men and boys use their workshops to make extra money and some of them have developed quite a paying business. With the use of power-driven machines, articles of wood may be made as attractive and as well constructed as any factory-made product. There is no limit to what can be produced with the proper equipment.

For anyone contemplating entering the manufacturing business, it is well to start with things that are in seasonal demand. For example, garden and lawn furniture, such as lawn seats, trellises, arbors, flower boxes, and bird houses, may be made for the spring and summer time. End tables, occasional tables, spinet desks, smoking stands, and table lamps make beautiful and useful Christmas gifts that can be sold in the fall and winter.

Some young men are paying their way through college by selling articles which they made in their home workshops. Others do furniture repairing or make special things to order.

When you enter business, you may do all the work yourself or you may employ several helpers. With good machines and proper arrangement of equipment, several men can be working at different operations at the same time. For example, one man can be mitering mouldings, another making turnings, another doing band sawing, and another the assembling. The home workshop offers any ambitious man or boy a fine opportunity to enter a profitable business with but a very small investment.