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Carrousel Collator

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CARROUSEL COLLATOR
by
John Thompson

CARROUSEL COLLATOR

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April 16, 1984

ABSTRACT

This report describes the design, fabrication, and testing procedures used to produce a collating aid device for The Association for Retarded Citizens of Allen County (ARC Industries). Bulk pages of a publication will be stored in this device prior to collating and binding. The device has a six-sided paper storage bin containing 96 compartments mounted to a turntable bearing secured to a steel workbench. Each compartment is capable of storing 250 sheets of 8 1/2 X 11 inch paper. The storage bin is powered with a parallel shaft gearmotor and revolves in 60 degree increments. The operator of this device will systematically retrieve pages from the storage bin as it indexes prior to collating and binding them.

DESCRIPTIVE ABSTRACT

OBJECTIVE :

The objective of this project was to design, build, and test a collating aid device for The Association for Retarded Citizens of Allen County (ARC Industries). The device was to meet the criteria established by ARC Industries as well as those I also deemed necessary.

CRITERIA :

1. Small enough to mount on a workbench supplied by ARC
2. Wooden construction with removable shelves
3. Electrically or pneumatically powered
4. Must rotate as operator triggers switch
5. Revolution counter if possible
6. Material purchases reviewed with ARC
7. Weight less than 50 pounds
8. Minimum paper storage capacity of 4000 sheets

PRELIMINARY ANALYSIS :

A CAD system was used to layout possible configurations. Design was selected from one that would best meet criteria.

After investigating several power sources, an electric gearmotor was determined to best meet the requirements.

DESIGN SOLUTION :

Four major components were used for this device.

1. A six-sided paper storage bin with removable shelves capable of holding 4000 sheets of 8 1/2 X 11 inch paper
2. A switching mechanism consisting of a start-stop switch, DPDT relay, and toggle-action limit switch
3. A gearmotor drive consisting of a 1/15 hp gearmotor, drive bushing, bushing plate, and motor support plate
4. A turntable bearing capable of supporting 1000 pounds

FABRICATION :

The gearmotor drive parts and portions of the paper storage bin were fabricated by outside sources. I fabricated the remaining parts.

COST :

Total cost of the unit was \$354.22

SUMMARY :

The project met all of the objectives and design criteria. Representatives of ARC Industries were satisfied with the device.

TABLE OF CONTENTS

Introduction Background Information	1
Objective	3
Criteria	4
Preliminary Analysis	4
Technical Plan	
The Design Solution	5
Fabrication	8
Testing	8
Cost	9
Summary	10
Working Bibliography	11
Appendix A : Part Prints	
Appendix B : Calculations	
Appendix C : Computer Program	
Appendix D : Reference Material	