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8 November 1989
ORIGINAL: ENGLISH

UPGRADING OF THE PRODUCTION OF FURNITURE
FROM "GUANIQUE" AND OTHER REEDS

SI/CUB/88/804/11-01

CUBA

Technical report: Assessment of the situation at the
project site and proposed programme of work*

Prepared for the Government of Cuba
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of B. Ebrada, Specialist in the production
of furniture from wicker, rattan and other fibres

Backstopping Officer: A. V. Bassili
Industrial Management and Rehabilitation Branch

United Nations Industrial Development Organization
Vienna

* This document has not been edited.

V.89-60989

EXPLANATORY NOTES

The monetary unit of Cuba is the Cuban Peso. The official rate of exchange for the Cuban Peso at the time of this mission was 0.794 Cuban Pesos - US\$ 1.00.

Mention of equipment brand names in this report is not to be construed as a recommendation or endorsement but merely as a citation that this is typical in its field.

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I. INTRODUCTION

1.1 Project Background

Upon the request of the government of Cuba, two workshops located in Buey Arriba and Buey Cito were visited by a UNIDO mission sometime in 1987. The UNIDO mission was to find out which of these locations would need assistance to their rattan and wicker furniture industry.

An expert in rattan furniture production, Mr. Benjamin Ebrada, was assigned by UNIDO from 9 September to 7 October 1989 to start the implementation of this assistance. The assistance was to be implemented over a period of three months (split missions). The expert was assigned to the Federacion de Mujeres Cubanas.

1.2. Project Objectives

The present mission had for its objectives to develop and pilot-test a scheme for improving the production of furniture from wicker and other natural fibers, specifically in Buey Arriba or Buey Cito locations. His duties are given in Annex 1.

1.3. Programme of Activities

After briefing by UNDP and the pertinent government officials, the expert, together with the various executives of the Federacion de Mujeres Cubanas, the High Institute of Industrial Design, and the Craft Department of the Enterprise formulated the following programme of activities:

- short visits to municipal workshops in Vinales, La Palma and San Diego de Los Banos and the Santa Fe Provincial workshop
- visit to an agriculture/forestry station in Pinar Del Rio
- visit to mountain sites where Guaniguigui grows wild
- visit to various furniture displays and design centers in Havana (Note: These visits were deemed necessary in order to give the expert a firsthand knowledge of the operation of these different workshops as regards to products, skills, organization/structure, production methods, product designs and current problems and sources and utilization of various natural fibres. The role of women in these different workshops was highlighted in these visits.)
- visit to the proposed sites in Buey Arriba and Buey Cito

II. THE RATTAN AND WICKER FURNITURE INDUSTRY OF CUBA

2.1. Current status

Based on observations made during the various visits conducted by the expert to the above locations, the following characteristics best describe the current status of the industry.

- Very limited furniture manufacturing operations were presently ongoing. Only two workshops (Santa Fe and Buey Arriba) were producing furniture. All the other workshops were producing baskets.
- Use of machines in processing of raw materials and production is practically nil. Hand tools, rather than industrial machines, are mostly used.
- Use of production methods such as jigs and fixtures is minimal.
- Furniture and other household accessories are of low quality and output levels are also low.
- Basic concepts of material control, production control, quality control and maintenance are practically unknown.
- Basic designs of furniture produced are old, and of the squarish type. (Although the designers have designed modern and well rounded furniture, the lack of production skills and facilities of the workshops limited to a great extent the use of the modern designs available.)
- The industry is still at the primitive stage as far as finishing operations are concerned. The use of quick drying lacquers and stains are still unknown.
- Inadequate production and organizational structures and lack of qualified staff is prevalent everywhere.
- It appears that the market is forced to accept products with whatever designs and quality these workshops produce.
- The industry is blessed with the availability of various fibers that can be used for good quality furniture. It appears that the industrial transformation of these various fibers are still at the infant stage.

Buey Arriba Workshop

The existing Buey Arriba Workshop is too small. The covered area is not enough to house the equipment to be acquired by the project and leave space for working. Also it has no outside or uncovered area to locate the boiler and the steam box nor an area for drying the green poles.

The Buey Arriba Workshop has one circular saw, one splitting machine for flat strips, one hot water tank, two bench vises, two carpenters saws, one lamp, and two hammers. It has four working tables for the rattan furniture production and 16 tables used for weaving in the mezzanine floor.

The products produced are of poor quality, bindings do not cover fully the joints, they are misaligned, not glued on, and nails are visible. Joints are loose and visible. Finish is very rough. Designs are old and output is small.

It has 17 women making baskets and weaving seat backs and 26 men working in the furniture line. It has 11 supervisory personnel. It is over-staffed for its size and output and no semblance of costing exists. Knowledge on big volume production is lacking.

The supply inventory is very low. They have only a few gallons of varnish, a few boxes of shoe tacks, several pieces of sanding paper and a few kilos of nails in stock.

The workshop has one Administrative Officer, one Assistant Administrative Officer, four Brigade Chiefs, one Storekeeper, one Inspector. An incentive system is applied to the 12 women workers in the removal of the skin of the poles and the slicing of flat strips. It is also applied to the Carpenters in the Assembly Section and to the two women sanders. Workers' salary ranges from 118.10 pesos to 163.10 pesos per month. Brigade Chief salaries are from 141.00 pesos to 186.00 pesos per month.

Buey Cito Workshop

The covered area is 22 m x 44 m with a big open area on three sides. The walls are of cement blocks with a roof high enough to build a mezzanine. At the time of the visit it had only one slicing machine and two round core finishing machines installed. The existing office space and toilets are located in a separate building. It is a suitable area for the project. The proposed plant layout locating the areas for the machines and the different production sections is given in Annex 2. At the time of the visit it had a work force of 38 women all making baskets.

2.2 Industry's needs and problems

2.2.1. Raw material survey

Guaniguigui vine, which is the main raw material envisaged to be used by this project, grows in abundance in the hills. Aside from the reliance on this fibre for its natural growth, the government of Cuba has stated that it is presently undertaking a big replanting project in the province of Granma. This fibre can be processed to produce a good smooth finish and has good enough bending characteristics to permit the production of curved-design items. Big Guaniguigui poles can be processed to produce strong but flexible round cores with diameters from 2 mm to 6 mm to be used to produce wicker type furniture. Bigger round cores from 10 mm to 15 mm can also be made to be used for furniture decor and the laminate type furniture. Other fibers like the Yagua, the Yarrey and the Copey have their own commercial usages.

2.2.2. Machines, tools and supplies

The need for proper machines for the processing of raw materials, and production and finishing of furniture items is a must. Volume production and high quality products can never be produced without the proper machines. A list of tools and expendable supplies to be purchased by the project (within its limited financial resources) is given in Annex 3. These are needed for the start up of serial production. The technical specifications of equipment to be purchased by the project (again if the limited budget permits it) are given in Annex 4. The expert recommends that the boiler and steam box, spray booth, working tables, checking board and bending blocks be fabricated in Havana. Drawings and specifications for these are given in Annexes 5 to 8.

2.2.3. Product development and product design

The expert has seen, during his stay in Cuba, suitable modern designs, possibly acceptable also on export markets. These were however not in production in the project site due to lack of equipment and skilled craftsmen to produce them. Designs currently produced are bulky, "squarish" and not acceptable on any overseas market.

2.2.4. Production methods, quality and material control

There is a great need to impart the technology needed for the use of the proper production systems, jigs and fixtures, materials and quality control, costing, etc. The technology transfer to all supervisory levels will take place in the second mission, upon receipt and installation of the equipment provided by the project. Initial technology absorption may be acquired during the study tour.

2.2.5. Weakness or absence of various management levels

Observation of the production organizational structure of the two workshops shows the reliance on the craftsman at many levels of supervision. One workshop did not have any middle management position. To correct this weakness a production organizational structure together with the respective qualification requirements has been proposed. It is given in Annex 9. It has been accepted by the Cuban authorities and will be introduced in the Buey Cito Workshop during the second mission under this project.

2.2.6. Lack of knowledge on surface preparation and finishing materials systems and techniques of application

The workshops, due to lack of knowledge, process the guaniguigui poles without proper drying. In short the application of the varnish on moist surface has affected not only the brilliance of the finish but also its adhesion. The long drying requirements of the local varnish presently used negates the output advantage gained during processing. Quick drying stains and lacquers are best because of their shorter processing times. Also, spray application methods increase the output volume.

III. CONCLUSIONS AND RECOMMENDATIONS

3.1. Conclusions

Upon completion of the second mission the Training cum Production Center in Buey Cito will be able to produce all types of wicker furniture, all types of rattan furniture and rattan accessories.

It is recommended that this Training cum Production Center be given, as first priority, the training of the Brigade Chiefs of the different municipal workshops in the country in the production of wicker type furniture. After this specialized training, which can be done in 3 weeks, these Brigade Chiefs can return to their respective workshops and start production of wicker furniture using the existing weaving skills of the women basket weavers.

With this particular technology transfer, more municipal workshops can be established thereby creating more jobs for the women in the rural areas and help alleviate the demand for household furniture. One or two such Training cum Production Centers and many municipal workshops can then be created in each province. The socio-economic benefits to the rural areas all over the country are beyond imagination.

The proposed programme of the study tour of Mr. Sarrabia (see Annex 10) is specifically conceived to enable him to cover the wicker furniture production. It is planned that he will handle this special training programme in the Buey Cito Center after having benefited from additional advice during the expert's return mission.

After the production of wicker furniture in the municipal workshops, the training and production of rattan accessories can then be introduced. More jobs can also be created using a similar method.

Aside from the training portion of this Training cum Production Center, they can produce all types of rattan furniture from the low priced range furniture to serve the low budget families to a sophisticated middle and high priced range to serve the requirements of restaurants, hotels and eventually also for export.

3.2. Recommended follow-up activities

- Completion of the locally fabricated equipments as shown in Annexes No 5 for the boiler, No 6 for the steam chamber, and No 7 and 8 for the spray booth.
- Purchase and arrival of equipment, tools and supplies as early as possible (Annexes 3 and 4).
- Completion of the building addition, and electrical installations to conform with the plant layout (Annex 2).
- Study tour of the three persons to be conducted on the recommended covered (Annex 10).
- Availability of qualified supervisory personnel for start-up of production as per the new organizational chart (Annex 9).
- All equipment both imported and locally fabricated with the air pipes, electrical wires, etc. be available for installation by the expert.
- Availability of an adequate supply of dried Guaniguigui poles of all sizes sufficient for a 3 month production inventory.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO

Job description

SI/CUB/88/804/11-01 (J 12209)

Title of Post: Specialist in the production of furniture from wicker, rattan and other fibres

Duration: Three months (split mission)

Required Date: As soon as possible

Duty Station: Buey Arriba, Province of Granma, Cuba

Purpose of Project: To develop and pilot-test a scheme for improving the production of furniture from wicker and other natural fibres through the transfer of production technology and product design, introduction of machinery and reorganization of the production process, and training for women in production techniques, design and quality control, and to demonstrate the technical and economical viability of the scheme for upgrading.

Duties: The Expert will be assigned to the Federacion de Mujeres Cubanas. He will advise the small workshop in Buey Arriba on improving the productivity and quality of the furniture produced from reeds, including equipment selection and plant layout, and train counterparts in the above. He will be assisted by a furniture designer, and will undertake his mission in two phases.

In particular he will be expected to:

Phase I: (approximately one month)

- Assess the current situation with respect to raw materials, product range, designs and production facilities.
- Draw up technical specifications for equipment to be provided by the project, and that to be produced locally.
- Recommend the plant layout for the new facility - using as far as possible the existing one.

- Recommend the manpower needs and qualifications, both with respect to direct production and administration.
- Recommend a programme for the study tour.

Phase II: (approximately two months)

- Supervise the installation of the equipment.
- Train personnel in its operation.
- Train counterparts in such fields as production planning and control, design and manufacture of jigs, machine maintenance, raw material processing and storage, packaging of products, etc.
- Supervise the production of the 20 prototypes designed by the Rattan Furniture Designer.
- Develop a training programme.
- Draw up training manuals to be used in subsequent training of personnel.
- Prepare a terminal report that will incorporate his findings and recommendations, addressed to the plant management, the Federation of Cuban Women and the Government.

Qualification: Specialist in the production of furniture from rattan and natural fibres

Language: Spanish

Background Information:

Guaniquique is a locally existing reed which grows in large quantities in the eastern provinces of the country. It is used particularly as raw material for the production of baskets and hats. Furniture is also being produced, the production is however not well developed.

The production of various articles from guaniquique and other reeds presents an old regional tradition. It has a particular importance as source of employment for the rural population. Women represent the majority of the workforce, with men being employed mainly in the tasks requiring physical strength, whereas it are primarily women who carry out the plaiting.

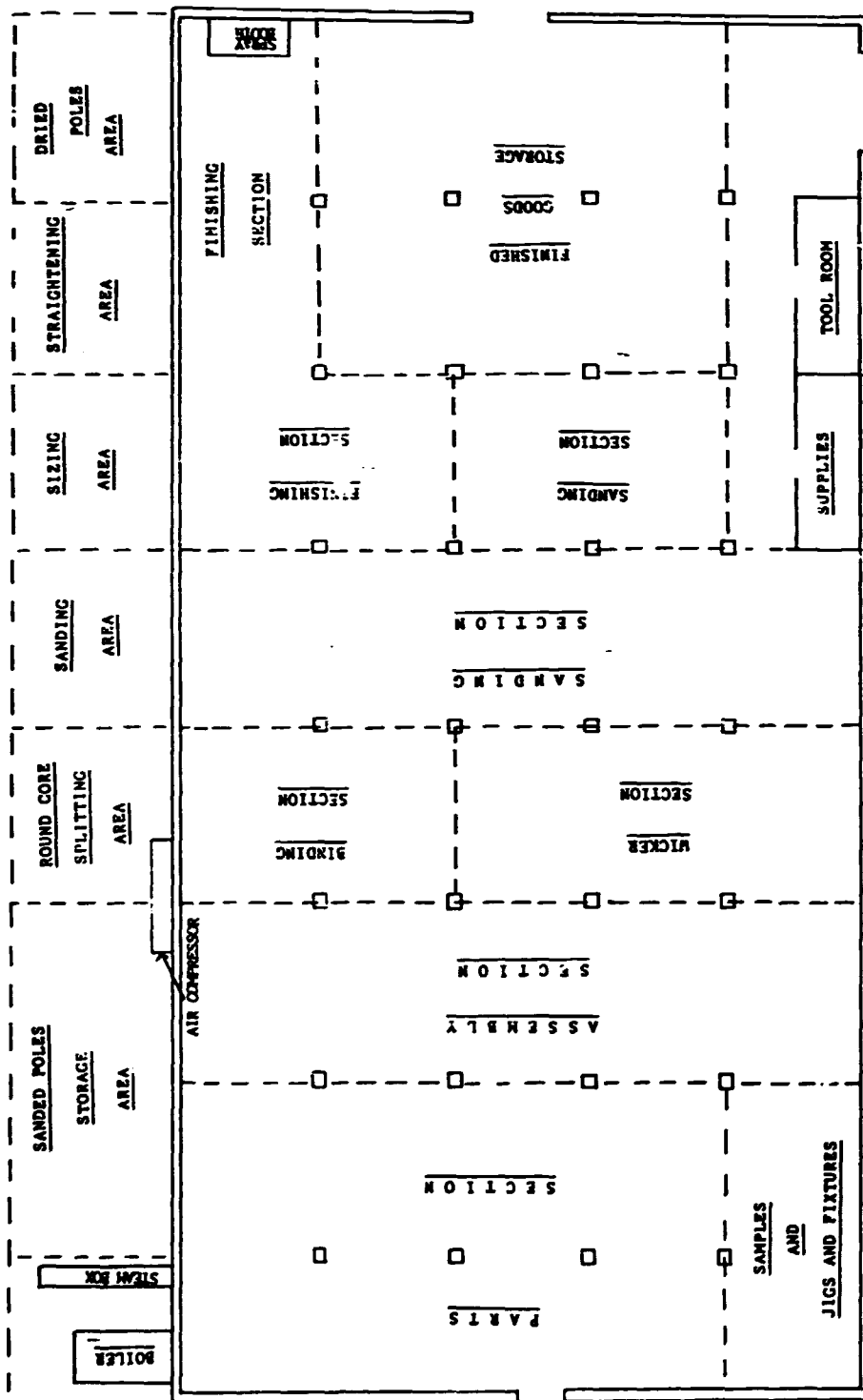
The production is artisanal. The technology applied is very rudimentary; apart from some primitive mechanical aids no machines are used. The organization of the work process is inefficient and lacks adequate technical orientation. Due to the artisanal, completely unmechanized production, the output is very low. A particular problem is the poorly developed, not very attractive design of the furniture. Although the production of furnitures and other articles from guaniquique and other reeds represents an old tradition, the traditional designs, which can still be seen in museums, seem to have got lost.

The purpose of the project is to develop in a pilot project a scheme for upgrading this merely artisanal production to a small-scale industrial process, which can be used for demonstration purposes, and can later on be transferred to other workshops. This demonstration scheme will include the introduction of a number of technical devices and machinery to mechanize certain parts of the production process, e.g. the debarking, and will comprise a reorganization of the work process in order to make it more rational and efficient. Particularly important will be to improve the design in order to make the furniture more attractive, and advice on different possibilities to utilize the raw material including other kinds of reeds apart from guaniquique.

A small workshop to process guaniquique (located in the province of Granma) has been proposed by the Government counterpart agency to be utilized as demonstration plant. This workshop, which is located in the capital of the district of Buey Arriba, and another workshop in the village Bueycito in the same district were visited by the UNIDO mission.

The first plant took up work already two years ago at a very small scale (with 8 workers). At the time of the visit the plant was in the process of being enlarged, with the inauguration of the enlarged plant foreseen for the same month. The other plant had just been inaugurated. The workers of the first plant were training their new colleagues in the two plants.

Both plants are producing the same not very attractive designs. Only very primitive technical devices are being applied. The organization of the work process and the working conditions are poorly developed in the first plant (which is foreseen for receiving the assistance). In this plant space is limited. To enlarge the workshop the space has been divided into two floors, which has made the working conditions however worse because of the limited height of the floors. An assistance would first have to evaluate the suitability of this workshop for demonstration purposes.



TRAINING AND PRODUCTION CENTER IN BUEY CITO

To be constructed

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UNITED NATIONS
INDUSTRIAL DEVELOPMENT
ORGANIZATION

REQUISITION FOR
EQUIPMENT/SUPPLIES/PUBLICATIONS
OR CONTRACTUAL SERVICE

PAGE 1 OF 4

REQUISITION NUMBER 89/02

PPCSA [] [] [] []

MISPI No. [] [] [] []

Date 3 October 1989

LOCAL PURCHASE REQUESTED

HEADQUARTERS PURCHASE

Scaling up the production of wicker reed furniture from artisanal to small-scale industrial level

Title of Project

B.T. Ebrada / A.V. Bassili

Chief Technical Adviser/Requesting Officer

Project Number SI/CUB/88/804/E

Sub-Contracts 21-

Expendable Equipment 41- 1

Non-Expendable Equipment 42- 0 1

Premises 43- 0 1

Check appropriate box

CLEARED (SUBST. OFFICE): Antoine V. Bassili IMRB/IIS/10 3. 10. 1989

FUNDS AVAILABLE: (CON/CONTROL) Name Section Date

CON/GSD/DA Received Returned

Item	Quantity	Unit	Description, Specifications, Catalogue Number, Reference to Project Document Component	Est. cost in US dollars
1	12	pcs	Claw hammer	
2	24	pcs	Spokeshave	
3	24	pcs	Hand saw 12" (for wood)	
4	6	pcs	Rubber mallet-Big	
5	12	pcs	Curved chise - 1"	
6	12	gal	White glue PVAc water based solution	
7	6	pcs	Flat chisel - 3/4"	
8	12	gal	Putty-white	
9	12	reams	Sand paper-wood # 40	
0	12	reams	Sand paper-wood # 80	
11	12	reams	Sand paper - wood # 120	
12	12	reams	Sand paper - wood # 220	
13	24	5 gal	Clear lacquer - nitro cellulose	
14	24	5 gal	Sanding sealer - nitro cellulose	
15	12	1gal	Penetrating wood stain - mahogany colour	
16	12	1gal	Penetrating wood stain - honey colour	
TOTAL				

SPECIAL INSTRUCTIONS:

If funds not sufficient reduce quantities on prorata basis.

Ship Via Surface To: Resident Representative of United Nations Development Programme.

For: Federacion de Mujeres de Cuba
Habana - for onward shipment to the project site

Target Date: end 1989

UNIDO/Form/IO.B/Rev.2 (9.88)

- Original: CON/GSD/DA
- Copy 1: CHIEF TECHNICAL ADVISER
- Copy 2: CON/CONTROL UNIT
- Copy 3: SUBSTANTIVE BRANCH/SECTION
- Copy 4: DRAFTER

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PAGE 2 OF 4

REQUISITION NUMBER 89/02

PPCSA

MISPI No.

Date 3 October 1989

LOCAL PURCHASE REQUESTED
HEADQUARTERS PURCHASE

Scaling up the production of wicker reed furniture from artisanal to small-scale industrial level
Title of Project
B.T. Ebrada/A.V. Bassili
Chief Technical Adviser/Requester

Project Number SI/CUB/88/804/E
Sub-Contracts 21-
Expendable Equipment 41- 1
Non-Expendable Equipment 42- 0 1
Premises 43- 0 1
Check appropriate box

CLEARED (SUBST. OFFICE): A.V. Bassili IO/IIS/IMRB 3.10.198
Name Section Date

FUNDS AVAILABLE: (CON/CONTROL) Name Section Date

CON/GSD/DA Received Returned

Item	Quantity	Unit	Description, Specifications, Catalogue Number, Reference to Project Document Component	Est. cost in US dollars
17	12	pcs	Spur bit - 3/8" *	
18	12	pcs	Spur bit - 1 1/2"	
19	12	pcs	Woodruff - 1/8" (for wood) *	
20	12	pcs	Woodruff - 3/16"	
21	12	pcs	Woodruff 1/4"	
22	48	pcs	Sizer blade 1/2" *	
23	12	pcs	Router bit 1/4" *	
24	12	pcs	Router bit 3/8 "	
25	12	pcs	Router bit 7/16"	
26	100	pcs	Belt sandpaper # 40 72" long each	
27	6	box	Welding rod - electric for mild steel	
28	100	pcs	Belt sandpaper # 80 72" long each	
29	2	box	Welding rod - brass -oxyacetylene	
30	1	set	Box Open wrench set	
31	1	set	Pipe threader set	
32	1	pc	Pipe wrench 12"	
TOTAL				

SPECIAL INSTRUCTIONS:
* Pls find attached reference.

Ship Via Surface To: Resident Representative of United Nations Development Programme.
Air
For: same as page 1.

Target Date: end of 1989

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PAGE 3 OF 4
 REQUISITION NUMBER 89/02
 PPCSA
 MISPI No.
 Date 3 October 1989

LOCAL PURCHASE REQUESTED
 HEADQUARTERS PURCHASE

Scaling up the production of wicker reed furniture from artisanal to small-scale industrial level

_____ Title of Project

B.T. Ebrada/A.V. Bassili
 Chief Technical Adviser/Proposing Officer

Project Number SI/CUB/88/804/E
 Sub-Contracts 21-
 Expendable Equipment 41- 1
 Non-Expendable Equipment 42- 0 1
 Premises 43- 0 1
 Check appropriate box

CLEARED (SUBST. OFFICE): A.V. Bassili IO/IIS/IMRB 3.10.1989
 Name Section Date

FUNDS AVAILABLE: (CON/CONTROL) _____
 Name Section Date

CON/GSD/DA _____
 Received Returned

Item	Quantity	Unit	Description, Specifications, Catalogue Number, Reference to Project Document Component	Est. cost in US dollars
33	1	Box	Finishing nails - 1 1/2"	
34	1	Box	Finishing nails - 2"	
35	1	Box	finishing nails - 2 1/2"	
36	1	Box	finishing nails - 3"	
37	24	pcs	Paint brush 4"	
38	12	pcs	Curved chisel - 1"	
39	12	boxes each	Staples for tackers - 4 sizes	
40	12	pcs	Spur bit 9/16" *	
41	12	pcs	Spur bit 5/8"	
42	12	pcs	Spur bit 11/16"	
43	12	pcs	spur bit - 3/4"	
44	12	pcs	Spur bit - 13/16"	
45	12	pcs	Spur bit - 7/8"	
46	12	pcs	Spur bit - 1"	
47	12	pcs	Spur bit - 1 1/8"	
48	12	pcs	Spur bit - 1 1/4"	
TOTAL				

SPECIAL INSTRUCTIONS:

Original: CON/GSD/DA
 Copy 1: CHIEF TECHNICAL ADVISER
 Copy 2: CON/CONTROL UNIT
 Copy 3: SUBSTANTIVE BRANCH/SECTION
 Copy 4: DRAFTER

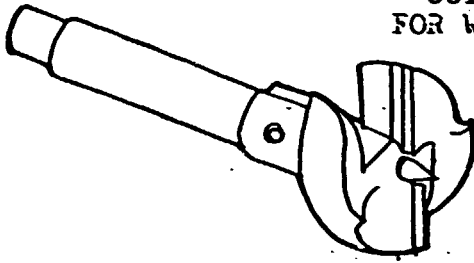
Ship Via Surface To: Resident Representative of United Nations Development Programme.
 Air

For: same as page 1

Target Date: end 1989

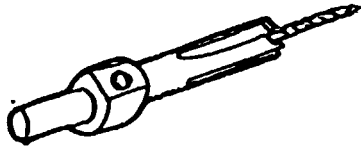
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CUTTING TOOLS
FOR WOOD & RATTAN



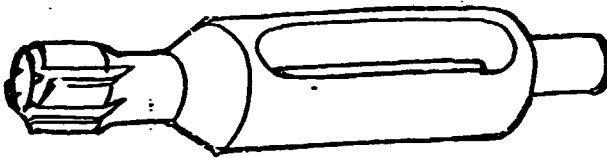
SPUR BIT
(CARBIDE TIPS)

9/16" 5/8" 11/16"
3/4" 13/16" 7/8"
1" 1-1/8" 1-1/4"
1-3/8" 1-1/2"
1-5/8" 1-3/4"



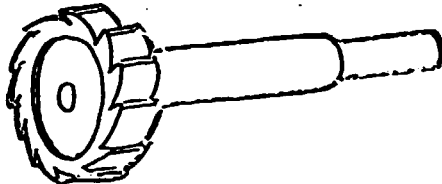
COUNTER SINK
(TOOL STEEL)

5/16" 3/8"
7/16"



HOLLOW PUNCH
(TOOL STEEL)

5/16" 3/8"
7/16"



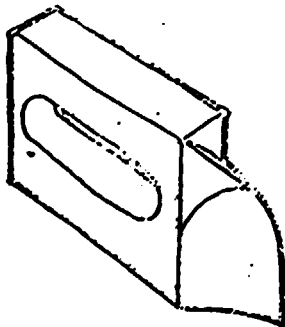
WOODRUFF
(CARBIDE TIPS)

1/8" 3/16" 1/4"



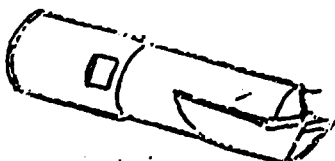
TWIST DRILL
(HSS)

1/16" to 1"



SIZER BLADE
(HSS)

1/2" 5/8"



ROUTER BIT

OR 1/4" 3/8"
STRAIGHT BIT 7/16" 1/2"

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PAGE 1 OF 2

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PPCSA

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Date 3 October 1989

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HEADQUARTERS PURCHASE

Scaling up the production of wicker reed furniture from artisanal to small-scale industrial level

Title of Project

B.T. Ebrada/Antoine V. Bassili

Chief Technical Adviser / Industrial Officer

Project Number SI/CUB/88/804/E

Sub-Contracts 21-

Expendable Equipment 41- 1-

Non-Expendable Equipment 42- 0 1

Premises 43- 0 1

Check appropriate box

CLEARED (SUBST. OFFICE): Antoine V. Bassili IO/IIS/IMRB 3 October 1989

Name Section Date

FUNDS AVAILABLE: (PUR/CONTROL) _____

Name Section Date

*R/GSD/DA _____

Received Returned

Item	Quantity	Unit	Description, Specifications, Catalogue Number, Reference to Project Document Component	Est. cost in US dollars
1	1	pcs	Rattan splitting machine, 15 H.P. 10 mm to 25 mm, capacity 1,700 kg supplier Chaya Mas Cenerlang Co. Ltd. INS	
2	1	pc	Rattan straightener, Air-stroke - 90 mm, thrust - 500 kg supplier Cornedo Machine Shop PHI	
3	1	pc	Rattan sizing machine, spindle - 3 H.P. Feeder 1 H.P., output - 30 to 40 FT./MIN Supplier: Ditto	
4	1	pc	Sand cloth polisher, 3 H.P. + 1 H.P. Plower feeding speed - 8 MT./MIN Supplier: Ditto	
5	1	pc	air compressor, 7 H.P. including pressurized storage tank	
6	1	pc	Circular saw, hand - 1 H.P. Bosch or Black & Decker	
7	1	pc	Paint spray set (Bessure cup gun)	
8	1	pc	Electric planer, hand Bosch or Black & Decker	
9	2	pcs	Bench drill, 1/2" chuck max.	
10	2	pcs	Tacker, air (stapler)	
11	2	pcs	Pneumatic Hammer (aero Smith)	
12	2	pcs	Small table band saw, 1 H.P. 12" Ø wheel	
			TOTAL	

SPECIAL INSTRUCTIONS:
Power : 110 V, 60 cycles, 3 phase items are in order of priority
Electric power tools to be industrial (and not Do-it-yourself type).
If funds not sufficient reduce to each where originally 2.

Ship Via Surface To: Resident Representative of United Nations Development Programme.
XXX

For: Federacion de Mujeres de Cuba
Habana - for onward shipment to the
project site.

Original: PUR/GSD/DA
Copy 1: CHIEF TECHNICAL ADVISER
Copy 2: PUR CONTROL UNIT
Copy 3: SUBSTANTIVE BRANCH/SECTION
Copy 4: DRAFTER

Target Date: End 1989

To be sent to Substantive Branch, IO, UNIDO - P.O. Box 300, A-1400 Vienne, Austria

UNIDO Form IO.8/Rev.1 (1.88)

UNIDO
UNITED NATIONS
INDUSTRIAL DEVELOPMENT
ORGANIZATION

REQUISITION FOR
EQUIPMENT/SUPPLIES/PUBLICATIONS
OR CONTRACTUAL SERVICE

PAGE 2 OF 2

REQUISITION NUMBER 89/01

PPCSA

MISPI No.

Date 3 October 1989

LOCAL PURCHASE REQUESTED

HEADQUARTERS PURCHASE

Scaling up the production of wicker reed furniture from artisanal to small-scale industrial level
 Title of Project
 B.T. Ebrada/A.V. Bassili
 Chief Technical Adviser/Requesting Officer

Project Number SI/CUB/88/804/E
 Sub-Contracts 21-
 Expendable Equipment 41- 1-
 Non-Expendable Equipment 42- 0 1
 Premises 43- 0 1
 Check appropriate box

CLEARED (SUBST. OFFICE): Antoine V. Bassili 10/IIS/IMRB 3.10.1989
Name Section Date

FUNDS AVAILABLE: (PUR/CONTROL) Name Section Date

PIR/GSD/DA Received Returned

Item	Quantity	Unit	Description, Specifications, Catalogue Number, Reference to Project Document Component	Est. cost in US dollars
13	2	pcs	Jig saw, hand electric Bosch or Black & Decker	
14	1	pc	Router, hand, 2 H.P. Elu or similar	
15	1	pc	Exhaust fan, 5 H.P. 30" Ø	
16	1	pc	Electric drill, hand, 1/2" chuck Bosch or Black & Decker	
17	1	pc	Electric drum sander " " "	
18	1	pc	Screw driver, electric, reversible " " "	
19	2	pcs	Stone grinder, 1/2 H.P. table model	
20	2	pcs	Orbital sander, electric Bosch or Black & Decker	
21	2	pcs	Rotary sander, air	
22	1	set	Smallest electric welding set	
23	1	set	smallest oxy-acetylene set	
				TOTAL 23,000

SPECIAL INSTRUCTIONS:

Same as page 1

Ship Via Surface To: Resident Representative of United Nations Development Programme.
Air

For: Same as page 1

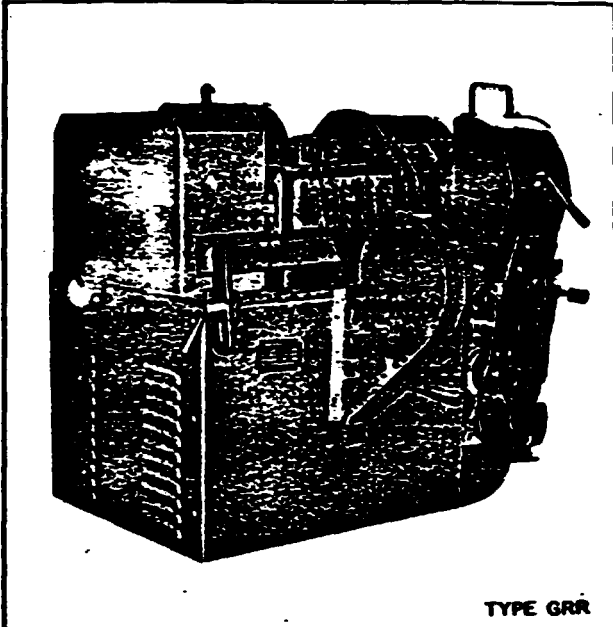
Target Date: End 1989

To be sent to Substantive Branch, 10, UNIDO - P.O. Box 300, A-1400 Vienna, Austria

UNIDO/Form/10.6/Rev.1 (1.88)

Original: PUR/GSD/DA
Copy 1: CHIEF TECHNICAL ADVISER
Copy 2: PUR CONTROL UNIT
Copy 3: SUBSTANTIVE BRANCH/SECTION
Copy 4: DRAFTER

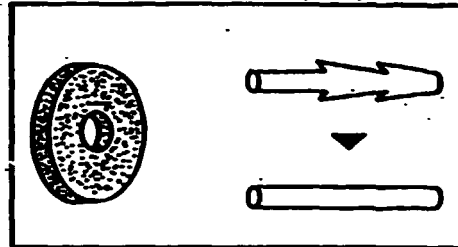
03 MESIN GERINDA ROTAN TYPE GRR
 RATTAN GRINDING MACHINE
 砂輪磨光機



TYPE GRR

Untuk membantu proses amples
 Dimaksudkan untuk menghemat penggunaan amples rotan

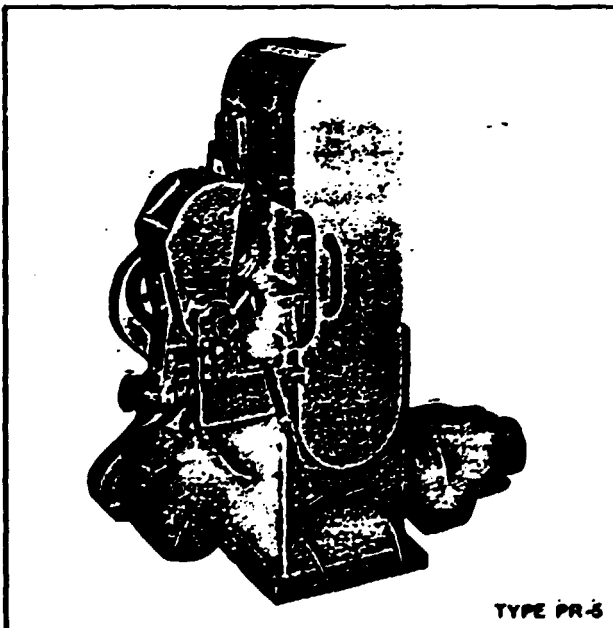
THIS MACHINE CAN SAVE THE SAND-CLOTH COST



Specifications	
1. Feeding speed	± 8 Meters/min.
2. Motor	3 HP & 1 HP, 220/380 V, 3 Phase
3. Dimension	1016 x 711 x 1219 mm
4. Weight	± 230 kg

Standard Accessories	
1. Grinding stone	1 pcs.

04 MESIN POLIS ROTAN TYPE PR-5
 SAND-CLOTH POLISHER
 砂布磨練機

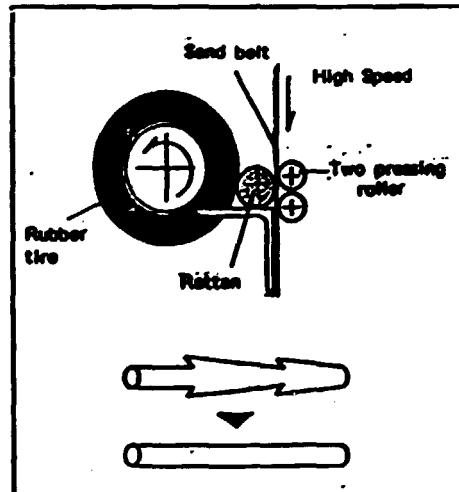


TYPE PR-5

Mesin ini dipergunakan untuk memoles/menghaluskan permukaan rotan betangan

THIS MACHINE IS TO POLISH THE RATTAN CANES

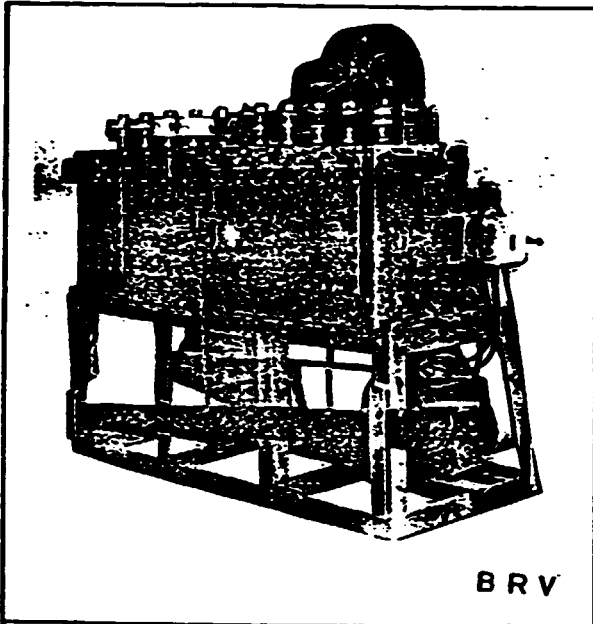
To grind the rattan surface until without any coarse spots, ready for use in furniture



Specifications		Standard Accessories	
1. Sand belt size	130 x 1850 mm	1. Sand belt	1 pc
2. Feeding speed	± 8 Meters/min.	2. Blower fan	1 pc
3. Size of Rattan	10 up to 60 mm.		
4. Motor	3 HP & 1 HP (Blower)		
5. Dimension	1200 x 840 x 1350 mm		
6. Weight	± 280 kg.		



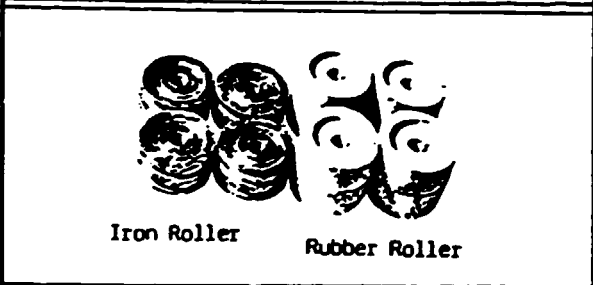
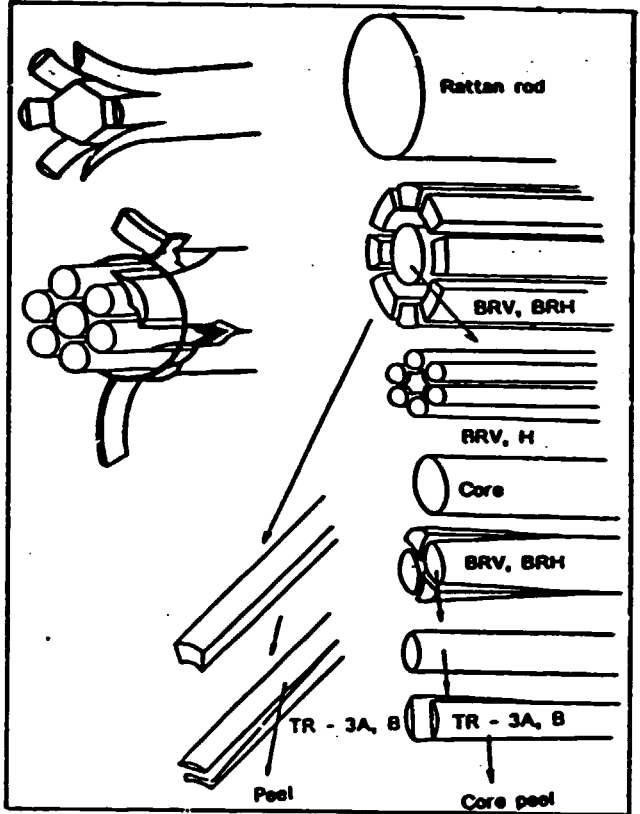
MESIN SPLIT/PEMBELAH ROTAN TYPE BRV
RATTAN SPLITTING MACHINE
 開蔴機



BRV

- Mesin ini dapat mengirak/membelah Rotan menjadi rotan kulit atau rotan ati (plrit)

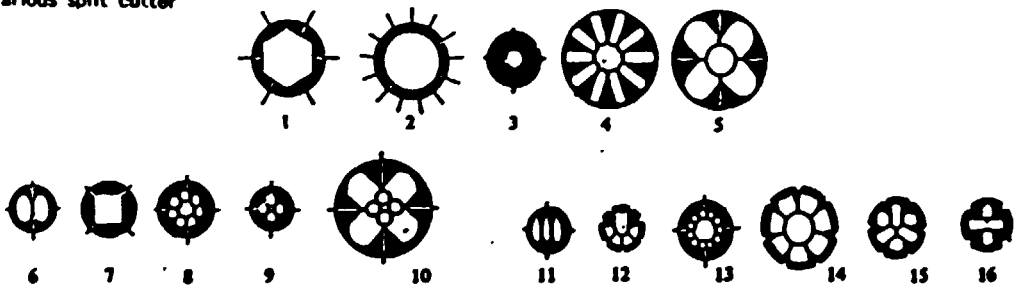
To split rattan into rattan peel and rattan core



Iron Roller

Rubber Roller

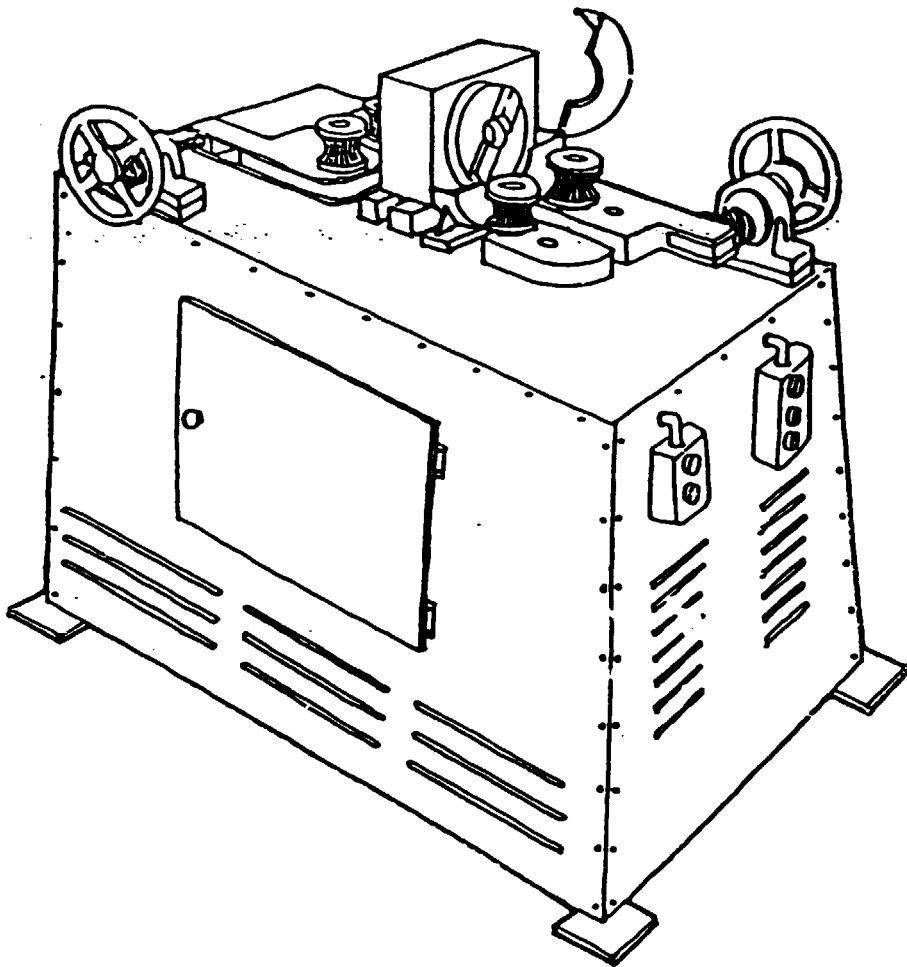
Various split cutter



SPECIFICATION	BRV-12	BRV-11	BRV-9	BRV-7	BRV-5
1. Number of Roller	15 pairs	11 pairs	9 pairs	7 pairs	5 pairs
2. Motor	15 HP, 220/380 V, 3 phase	10 HP 220/380 V, 3 phase	7,5 HP 220/380 V, 3 phase	5,5 HP 220/380 V, 3 phase	3 HP 220/380 V, 3 phase
3. Size of Rattan	15 mm up to 35 mm	10 mm up to 25 mm	7 mm up to 16 mm	6 mm up to 10 mm	5 mm up to 8 mm
4. Capacity/8 Hour	± 1700 kg	± 1500 kg	± 800 kg	± 400 kg	± 400 kg
5. Dimension (cm)	265 x 125 x 140	200 x 125 x 141	140 x 130 x 140	130 x 125 x 140	120 x 125 x 140
6. Weight	± 2000 kg	± 1700 kg	± 900 kg	± 600 kg	± 400 kg

Standard Accessories

	BRV-12	BRV-11	BRV-9	BRV-7	BRV-5
1. Fixed Clip	21 pcs	16 pcs	10 pcs	5 pcs	4 pcs
2. Middle Conducting	36 pcs	25 pcs	24 pcs	9 pcs	6 pcs
3. Iron Roller	242 pcs	114 pcs	52 pcs	24 pcs	12 pcs
4. Rubber Roller	12 pcs	10 pcs	6 pcs	6 pcs	4 pcs
5. Cutter	1 pc	1 pc	1 pc	1 pc	1 pc
6. Cutter Clip	1 pc	1 pc	1 pc	1 pc	1 pc
7. Blower	1 HP	1 HP	1 HP	1 HP	1 HP
8. Transmission (4 speed)	1 pc	1 pc	1 pc	NSJ	NSJ



SIZING MACHINE

CAPACITY : ½ inch to 1-3/8 inches diameter

CUTFUT : 30 to 40 feet/minute

MOTORS : Spindle - 3HP
Feeder - 3/4 or 1HP

FEEDER : Reversible: Low, Medium, High

STANDARD ACCESSORIES FOR FREE

3 set of your choice

Sizes Available: ½, 5/8, 3/4, 7/8, 1",
1-1/8, 1-1/4, 1-3/8

ONE SET SIZING ACCESSORY COMPOSE OF THE FF.:

2 pcs. Infeed Roller

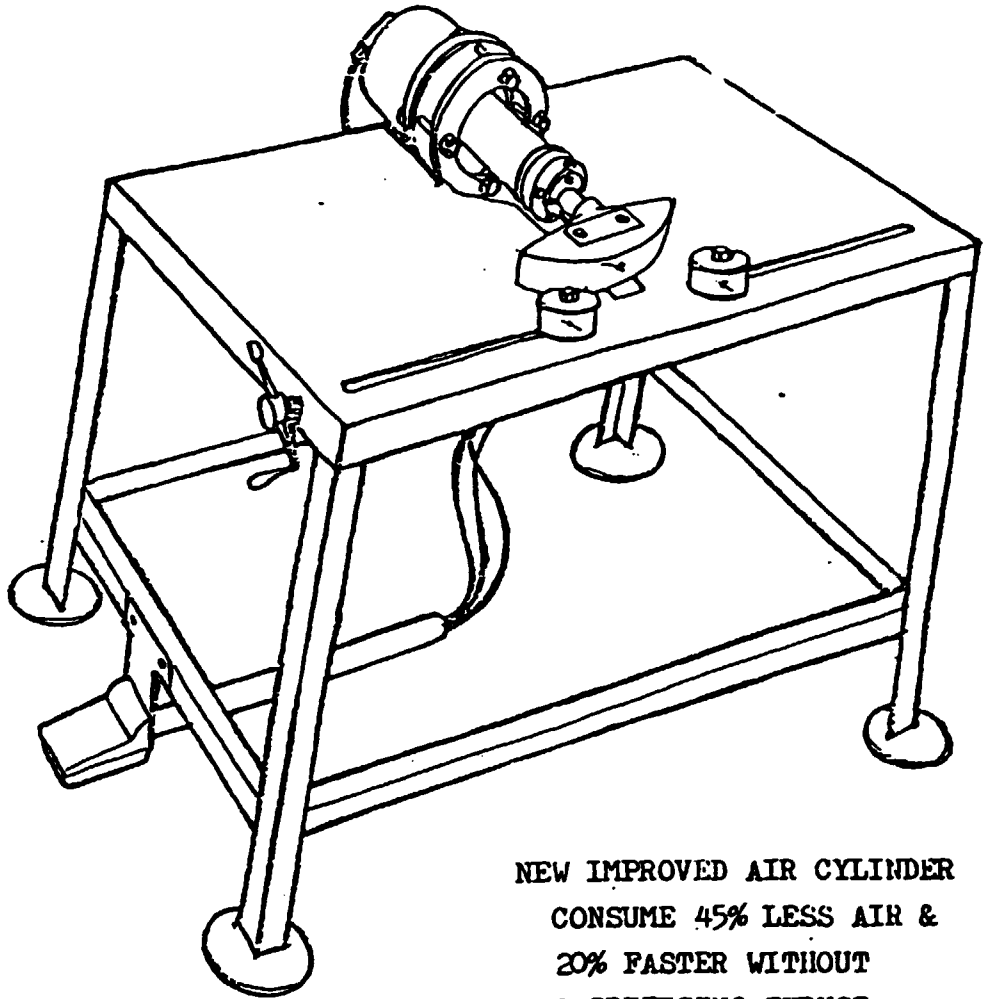
2 pcs. Outfeed Roller

1 pc. Dowel Head

1 pc. Bushing

2 pcs. Sizing Blade

**RATTAN STRAIGHTENER
WITH DOUBLE PISTON CYLINDER**



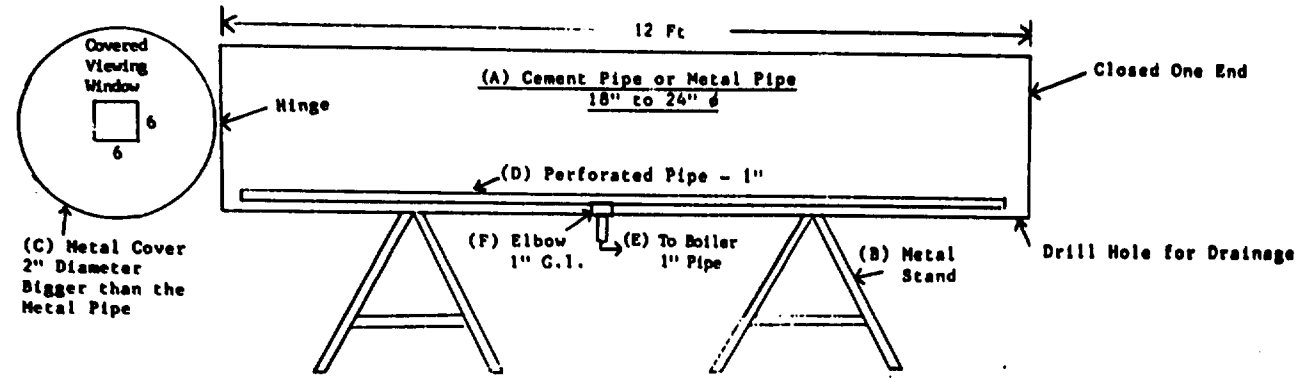
**NEW IMPROVED AIR CYLINDER
CONSUME 45% LESS AIR &
20% FASTER WITHOUT
SACRIFICING THRUST.**

**STROKE : 90 MM
THRUST : 500 KGS**

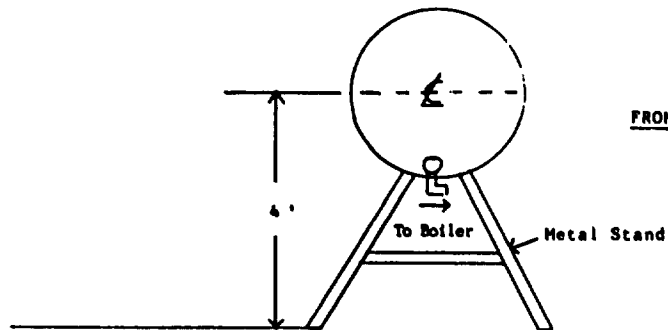
RUBBERIZE HEAD & ROLLERS

Source: Cornejo Machine Shop, Rizal St.,
Ibabao, Mandaue City, Tel.No. 8-15-87

STEAM CHAMBER
(One Unit)



SIDE VIEW



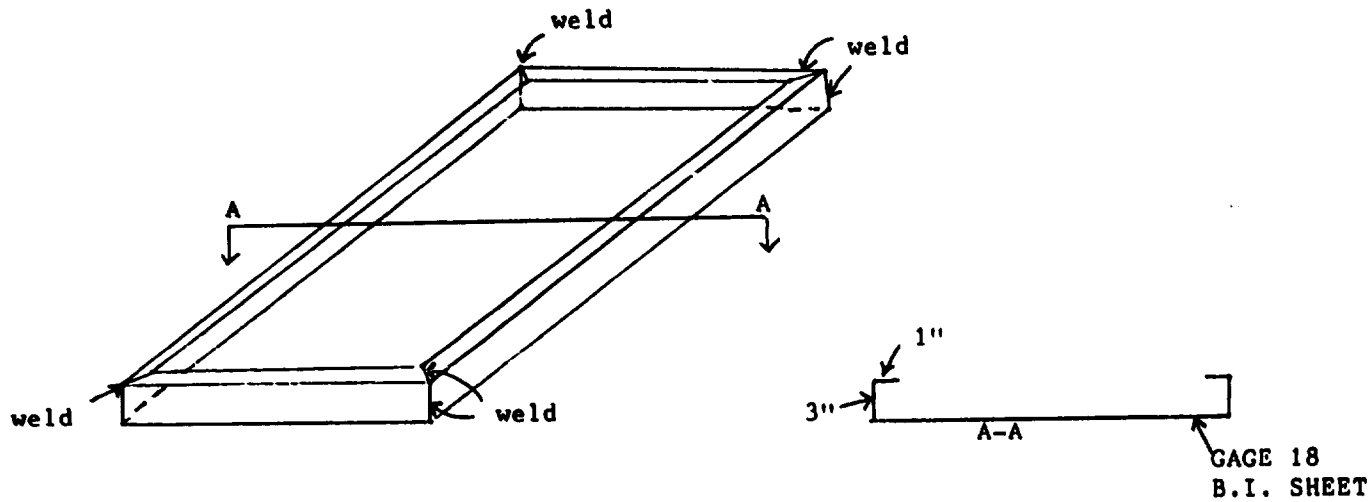
FRONT VIEW

BILL OF MATERIALS				
NO	QTY	UNIT	ITEM	SPECIFICATIONS
A	1	Pc.	Steam Chamber	18" to 24" ϕ Pipe
B	2	Pcs.	Stand	Metal
C	1	Pc.	Cover	1/8" Steel Sheet
D	1	Pc.	Perforated Pipe	1" ϕ G.I. Pipe
E	1	Pc.	Connecting Pipe	1" ϕ G.I. Pipe
F	1	Pc.	Elbow	1" G.I.

SPRAY BOOTH PANELS

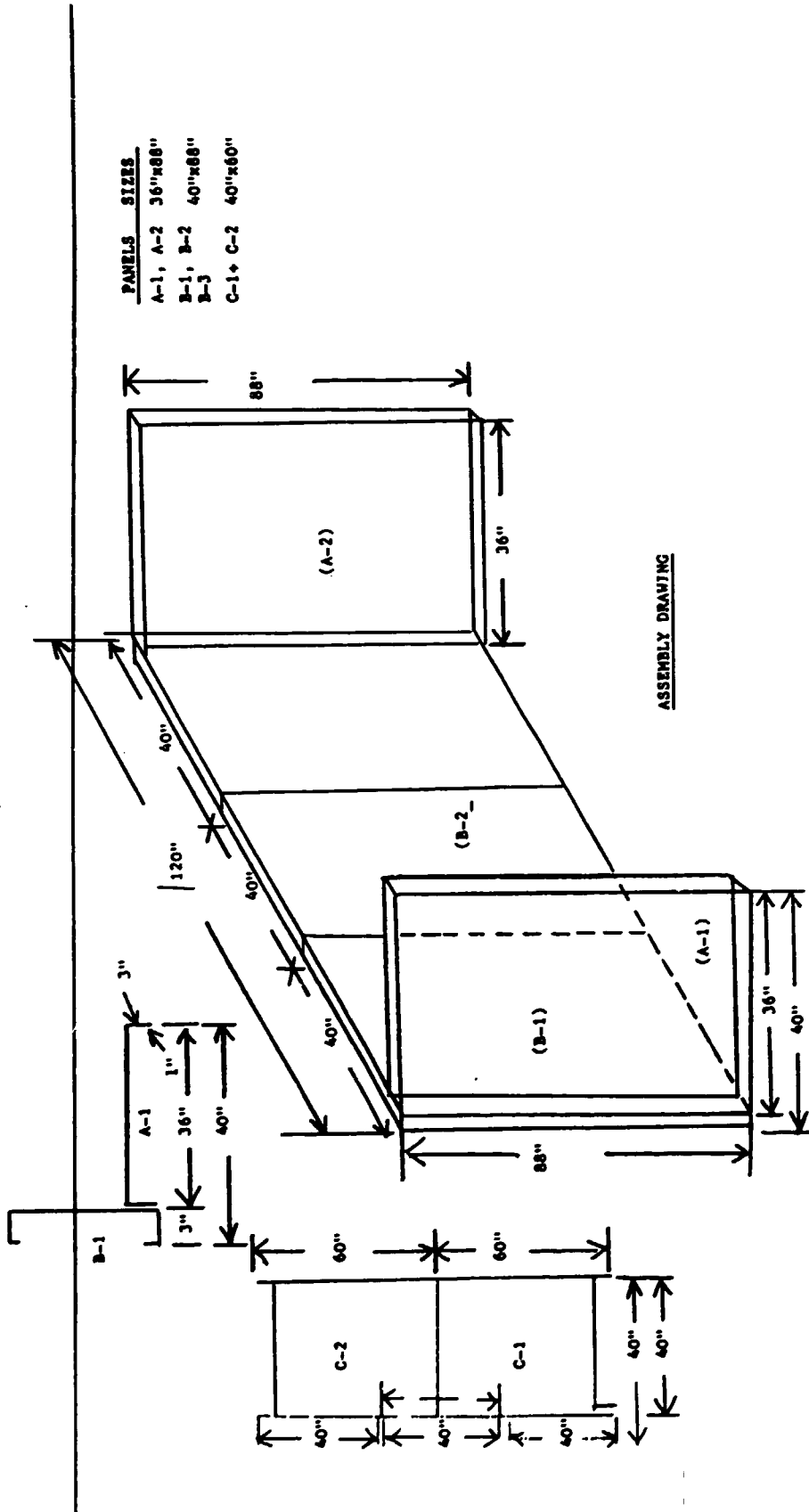
BILL OF MATERIALS

Panel No.	PCS	Size
A-1, A-2	2	36" x 88"
B-1, B-2 B-3	3	40" x 88"
C-1, C-2	2	40" x 60"



FABRICATION DRAWING

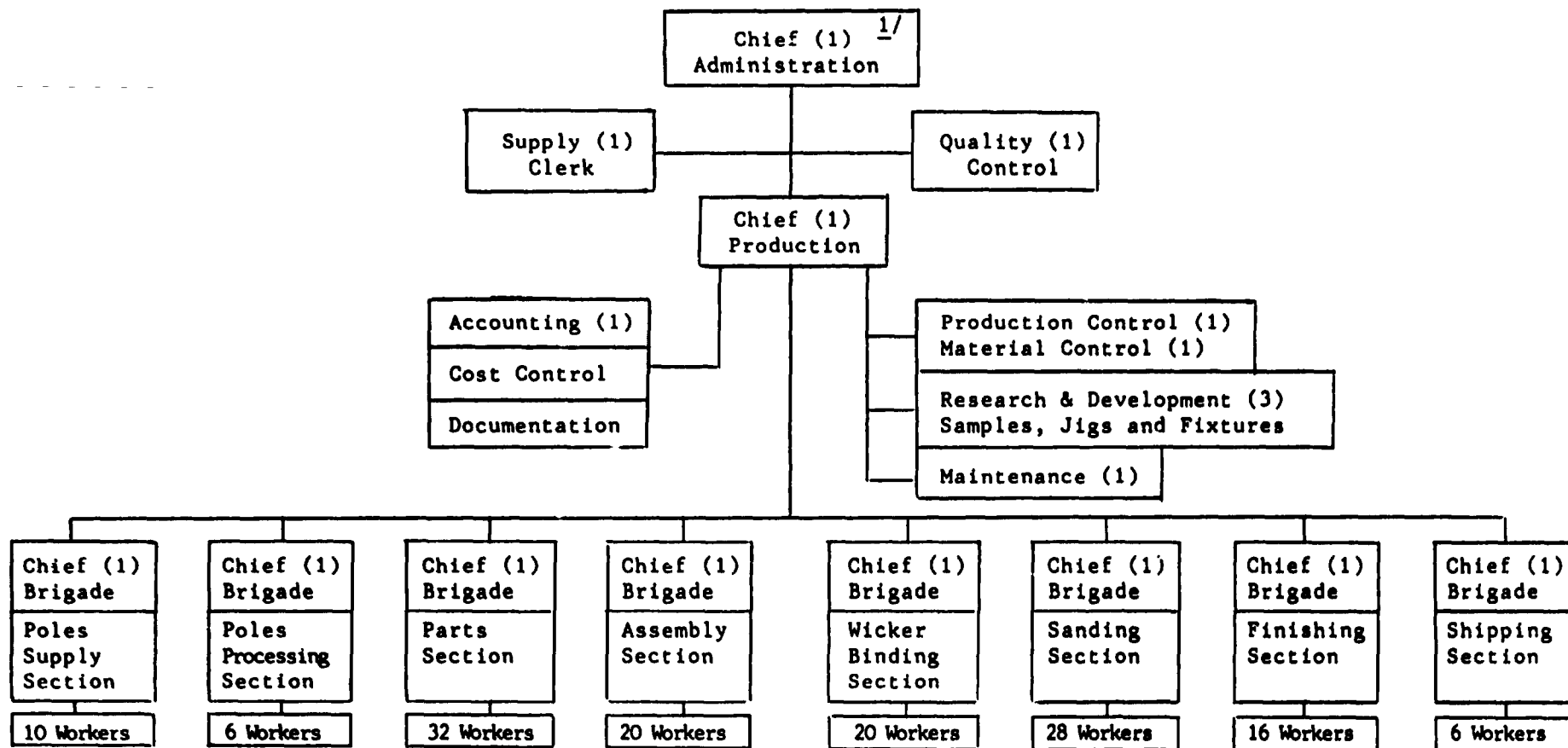
SPRAY BOOTH
(ONE UNIT)



ASSEMBLY DRAWING

ORGANIZATIONAL CHART

TRAINING GUM PRODUCTION CENTER



1/ The numbers indicate the optimal number of staff in each section/Brigade if all the equipment listed in Annexes 2 and 3 have been acquired.

STUDY TOUR

Person	Recommended Coverage	Recommended Locations (to be confirmed)	Recommended Points to observe (in order of priority)
ARNALDO SANCHEZ PEREZ	Production, raw material, quality control, sample making, jigs and fixtures costing, documentation, maintenance, research and development and all processing methods from poles processing to delivery.	<u>Manila:</u> a) Luzon Rattan b) Cancio Associates <u>Cebu City:</u> a) Lotus Rattan b) Rattan Pacifica c) Admacor d) Knu-cane	1. Production of samples and prototypes 2. Jigs and fixtures used for rattan furniture production 3. Production of parts (components) 4. Assembly of rattan furniture
SARABIA RODRIGUEZ	Production of the frame and weaving of wicker furniture, production of rattan accessories.	same as above	1. Construction of frames of wicker furniture 2. Weaving procedures of wicker furniture
OLGA CASTELEIRO	Designs of wicker, rattan furniture and accessories, basket.	<u>Manila:</u> a) Cancio Associates b) Luzon Rattan c) Other locations through the handicraft association <u>Cebu City:</u> a) Lotus Rattan b) Carlos Disenos c) Admacor d) Knu-Cane	1. Designs of basketware 2. Designs of wickerware 3. Designs of rattan accessories 4. Designs of wicker furniture 5. Designs of handicrafts