

Penn State **Extension**

Beehives and Honey Equipment

Agricultural and Biological Engineering

abeddept@psu.edu

No. IP 790-32

This Idea Plan is intended to provide educational information and ideas concerning various ideas for the beekeeper and honey producer. The following attached drawings are based on historical plans and may not meet design and construction standards for your area:

Beehives and Honey Equipment (USDA 84-1)

Solar Beewax Extractor (1969) (PSU 301)

Low Cost Beehive (USDA 6324)

Honeycomb Uncapping Tank and Super Dumping Board (USDA 6325)

5 & 6 Deep Brood Hive (USDA 6327)

Honey Extractor (USDA 6330)

The Department of Agricultural and Biological Engineering at Penn State has a variety of educational material available related to agricultural and biological engineering. This material is intended to help Pennsylvania farmers and others develop buildings and facilities for modern, environmentally-compatible farm facilities. The material can be used in conjunction with county extension staff, builders, suppliers, consulting engineers, the Natural Resources Conservation Service, financial management advisors, farm lenders, veterinarians, and others to assemble a facilities plan suitable for local conditions.

Publications are available in the areas of agricultural safety and health, animal housing systems, building and farmstead planning, crops and greenhouses, machinery systems and tractors, residential housing, soil and water resources, and solid waste management.

Contact your county Penn State Extension Office for more information on these subjects. Questions regarding this or other publications, please contact: Department of Agricultural and Biological Engineering 246 Agricultural Engineering Building University Park, PA, 16802-1909 Telephone: 814-865-7686 Fax: 814-863-1031 Email: abeddept@psu.edu

An OUTREACH program of the
College of Agricultural Sciences

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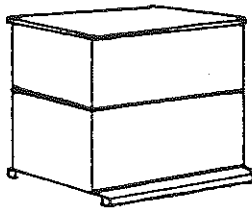
This publication is available in alternative media on request.

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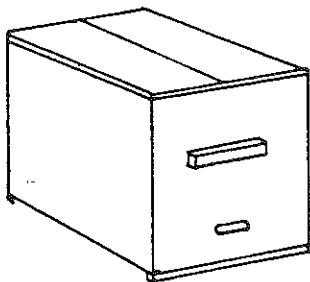
BEEHIVES AND HONEY EQUIPMENT

COOPERATIVE
FARM BUILDING
PLAN EXCHANGE

PLAN
LEAFLET
NUMBER 84-1



LOW-COST BEEHIVE
PLAN NO. 6324



FIVE-FRAME-DEEP BROOD HIVE
PLAN NO. 6327

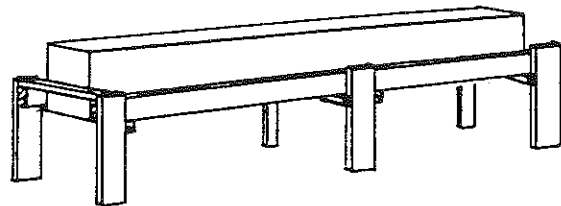
Beekeeping is interesting and can be profitable. It is well suited for small farm operations. The productivity of several crops can be enhanced greatly through pollination by bees kept near the field.

The five plans that are described in this leaflet can help small unit operators keep expenses low by constructing their own equipment.

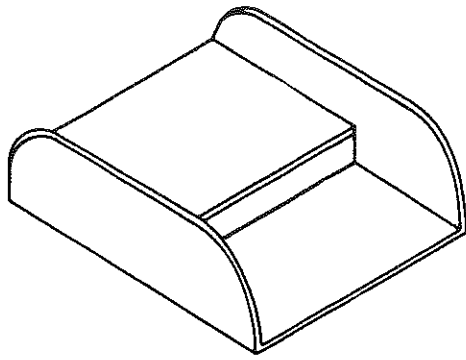
Plan 6324 is a simple, low-cost hive that can be easily crafted on the farm. One hive can be cut from one 1 x 12 piece of lumber and one 1 x 8 piece of lumber, each 10 feet long. The plan shows one brood hive, a super, a base and a cap. Plan 6327 is a taller brood hive than 6324. It has two options, a five-frame-deep unit or a unit with a double row of three frames each.

Although comb honey is marketable, many customers will prefer to have the honey separated from the wax. In Plan 6325, a honeycomb uncapping unit and a dumping board are handy adjuncts for accomplishing this task. Details are given for cutting the 30-gallon dumping tank from a sheet of galvanized iron. If you wish to speed up the separation process, you can uncap the combs and then spin the honey from them using a handcrank operated honey extractor. Plan 6330 shows the detail for a stand and comb holder that holds four combs at a time. The honey passes through an expanded metal screen and into a commercially available pail that is large enough to contain the unit.

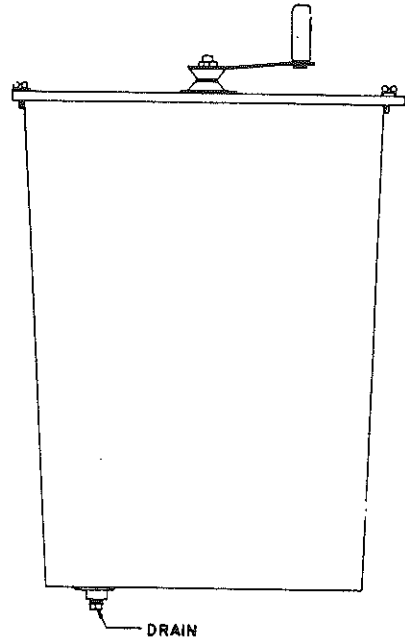
If you wish to let the sun speed up the extraction, use Plan 6265. The sun warms the honey so it flows faster and more completely from the combs.



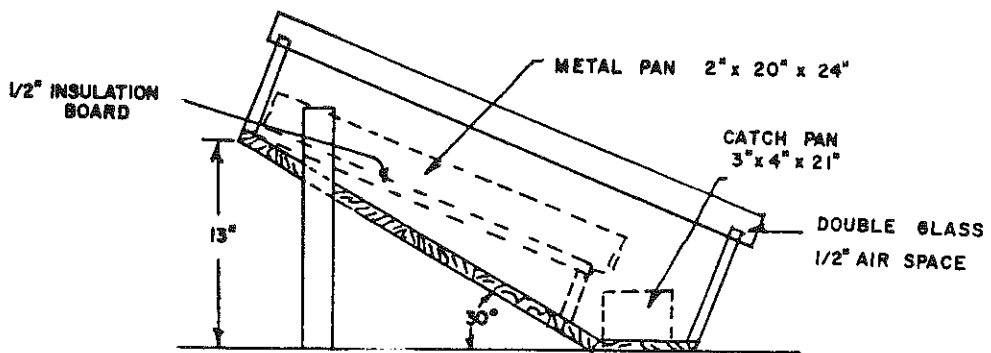
HONEYCOMB UNCAPPING TANK
PLAN NO. 6325



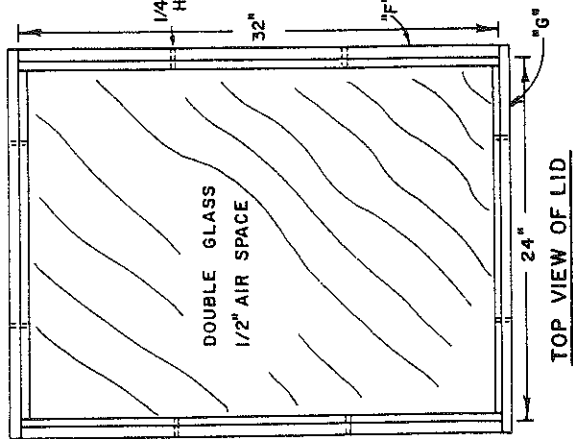
SUPER DUMPING BOARD
PLAN NO. 6325



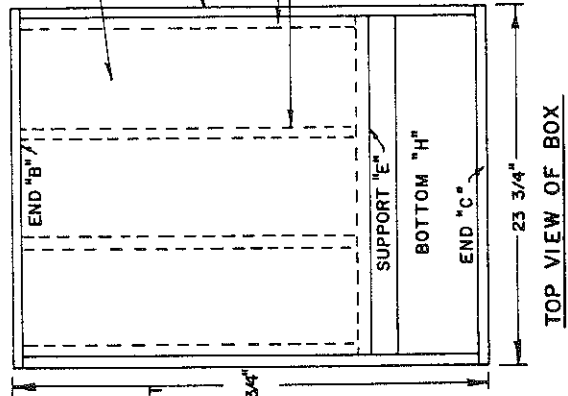
HONEY EXTRACTOR
PLAN NO. 6330



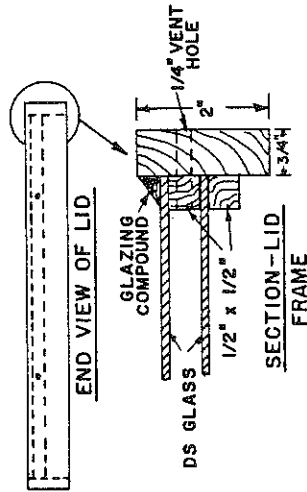
SOLAR BEESWAX EXTRACTOR
PLAN NO. 301



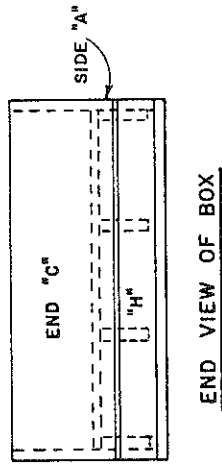
TOP VIEW OF LID



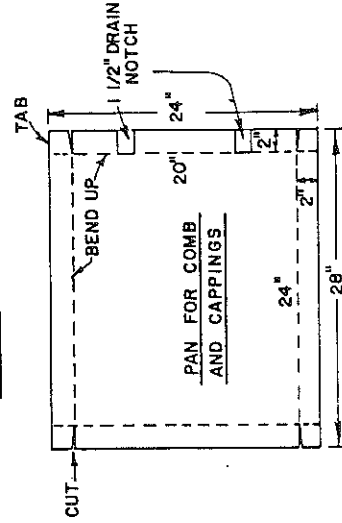
TOP VIEW OF BOX



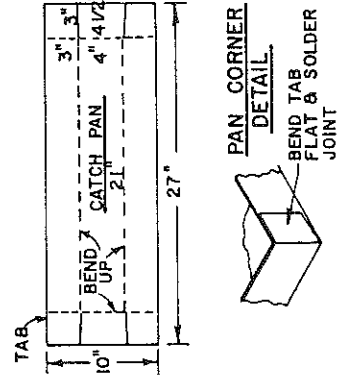
END VIEW OF LID



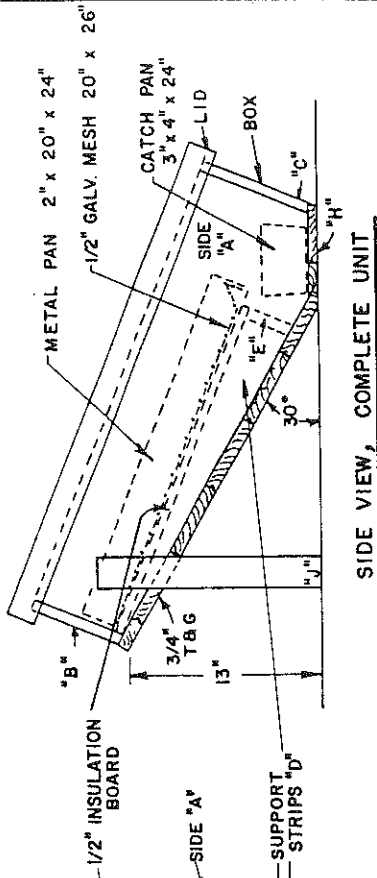
END VIEW OF BOX



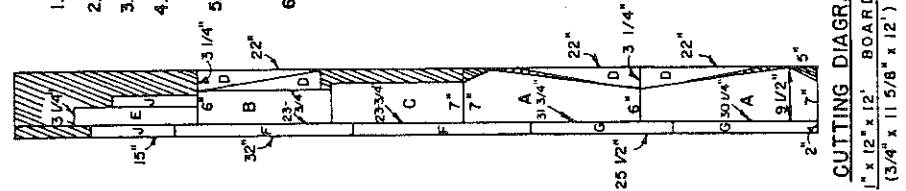
CUTTING DIAGRAMS FOR 24 GA. GALVANIZED STEEL PANS



PAN CORNER DETAIL



SIDE VIEW, COMPLETE UNIT



CUTTING DIAGRAM

1" x 12" x 12" BOARD -
(3/4" x 11 5/8" x 12")

NOTES

1. PAINT INSIDE WHITE.
2. PAINT OUTSIDE BLACK.
3. SEAL ALL CRACKS.
4. PLACE IN PROTECTED PLACE ON SOUTH SIDE OF A BUILDING.
5. REMOVE WAX AND HONEY WHEN MOST COMBS ARE MELTED. THE HONEY SHOULD BE DISCARDED.
6. SEE REVERSE SIDE FOR BILL OF MATERIALS.

THE PENNSYLVANIA STATE UNIVERSITY
AGRICULTURAL EXTENSION SERVICE

SOLAR BEESWAX
EXTRACTOR

DRWN. BY: SLB
DESIGN: ARG
DATE: 9/1/69

ORDER NO.
790-301

SHEET 1 OF 1

BILL OF MATERIALS FOR THE SOLAR BEESWAX EXTRACTOR

Parts "A" through "G", also "J" - 1" x 12" x 12" Pine

Glass strips $\frac{1}{2}$ " x $\frac{1}{2}$ " cut from waste pine above

Part "H" - bottom - 14' - 1" x 6" T & G Pine or 24" x 36" Exterior Plywood
($\frac{1}{2}$ " or 5/8")

Pan Platform - 1 pc. 2' x 2' - $\frac{1}{2}$ " Insulation board.

Lid Glass (double) - 2 pcs. 24" x 32" DS window glass

Comb Pan - 1 pc. 24" x 28" 24 Ga. galv. steel.

Catch Pan - 1 pc. 10" x 27" 24 Ga. galv. steel.

Comb support - 1 pc. 20" x 26" $\frac{1}{2}$ " galv. mesh

Hardware - Small nails 1" long
Nails 6D
2 doz. 2" No. 8 FH Woodscrews

Paint - Small can white enamel
Small can black enamel

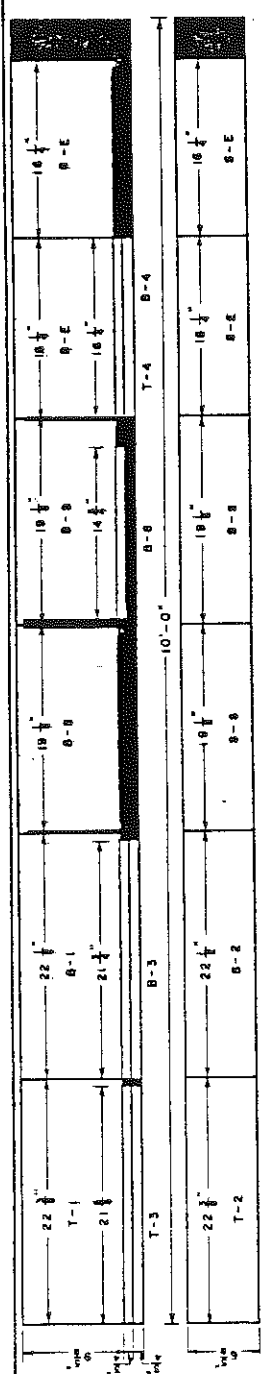
Glazing - Small can Glazing compound

MEANING OF SYMBOLS

B	BOTTOM
T	TOP
-E	END
-S	SIDE
B-	BROOD BODY
B-	SHALLOW SUPER

SCHEDULE OF PARTS

SYMBOL	AMOUNT	DIMENSIONS (INCHES)
T-1	1	3/4 x 9 5/8 x 22 3/8
T-2	1	3/4 x 8 5/8 x 22 3/8
T-3	2	3/4 x 3/4 x 21 5/8
T-4	1	3/4 x 3/4 x 18 1/4
T-5	2	1/8 x 1 1/2 x 16 1/4
B-1	2	3/4 x 6 5/8 x 19 1/8
B-2	2	3/4 x 6 5/8 x 16 1/4
B-3	2	3/4 x 8 5/8 x 19 1/8
B-4	2	3/4 x 5/8 x 16 1/4
B-5	1	3/4 x 6 5/8 x 22 1/2
B-6	1	3/4 x 5/8 x 22 1/2
B-7	2	3/4 x 5/4 x 21 3/4
B-8	1	3/4 x 3/4 x 16 1/4
B-9	2	1 1/8 x 1 1/2 x 16 1/4
B-10	1	3/4 x 3/4 x 14 3/4



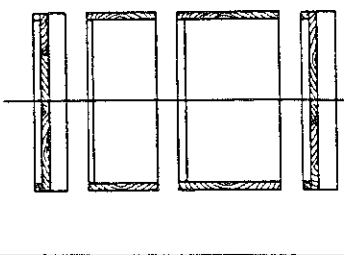
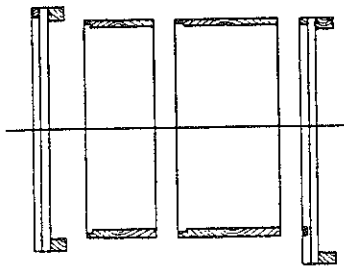
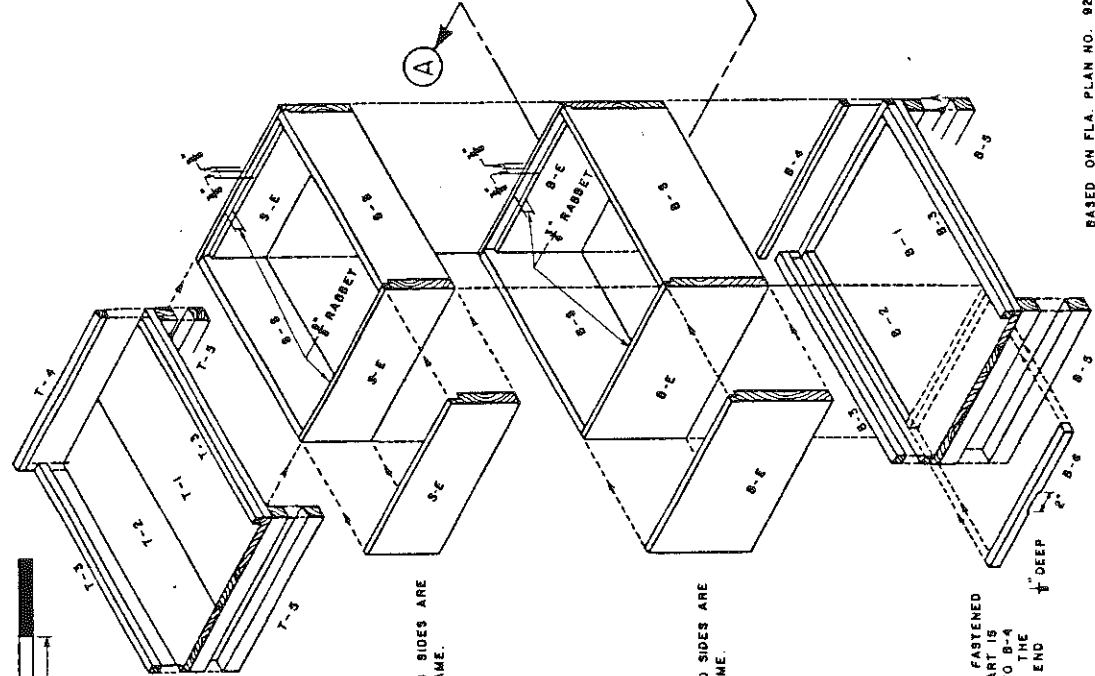
NOTE: DIAGRAM ABOVE SHOWS HOW ONE HIVE CAN BE CUT FROM A 12' x 12' AND A 12' x 8', BOTH 10' LONG, AND A 2' x 2' 6" LONG. (1/8" FOR SAW CUT)

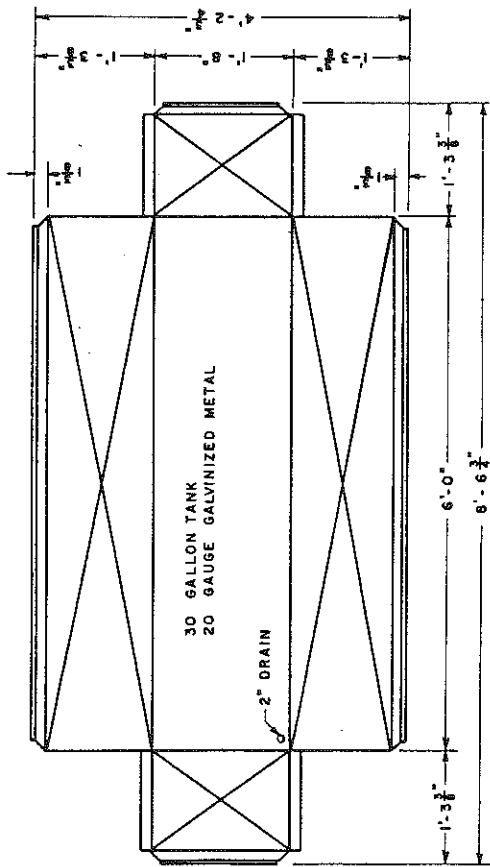
EXPLODED TOP: T-1, T-2, THE TWO T-3'S, T-4, AND THE TWO T-5 PIECES ARE ASSEMBLED TO FORM THE TOP.

SHALLOW SUPER EXPLODED END VIEW: ENDS AND SIDES ARE ASSEMBLED INTO ONE SOLID FRAME.

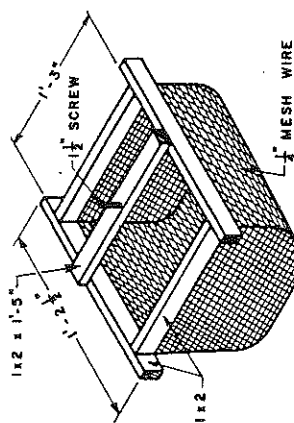
BROOD BODY EXPLODED END VIEW: ENDS AND SIDES ARE ASSEMBLED INTO ONE SOLID FRAME.

EXPLODED BOTTOM: B-1 AND B-2 ARE FASTENED AT EACH END TO A B-5 PART. A B-3 PART IS ATTACHED TO EACH SIDE, BUTTING UP TO B-4 AT THE END. B-6 IS LOCATED BETWEEN THE B-3'S AND DIRECTLY BELOW BROOD BODY END AS SHOWN.

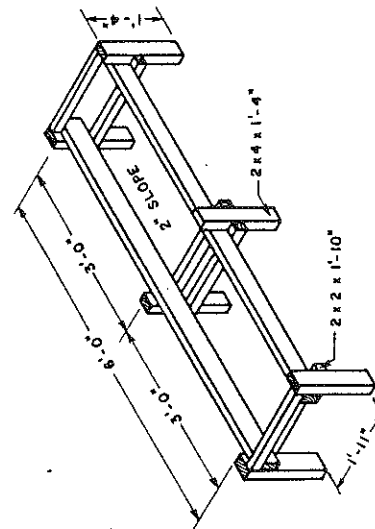




HONEY UNCAPPING TANK



BASKET TO COLLECT WAX CAPPINGS



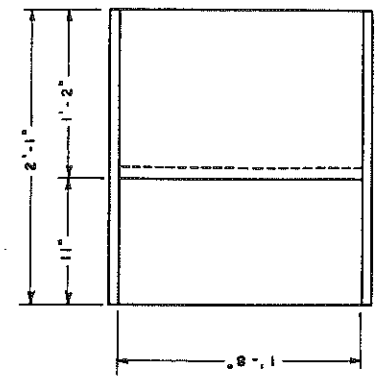
FRAME TO SUPPORT UNCAPPING TANK

NOTE:
THE UNCAPPING TANK IS USED TO OPEN THE COMBS BEFORE HONEY EXTRACTING. TWO BASKETS MAY BE USED LEAVING APPROXIMATELY 1/2 TO HANG UNCAPPED COMBS.

- MATERIALS:
- FRAME 2 x 2 x 6'-0" PINE
2 x 4 x 26'-0" PINE
1 LB. 106 NAILS
 - BASKET 1 x 2 x 8'-0" PINE
16 1/2" x 5'-0" x 1/4" MESH HOW. CLOTH
 - TANK 4'-2 3/4" 8'-6 3/4" 26 GA. GALVANIZED

HONEYCOMB UNCAPPING TANK

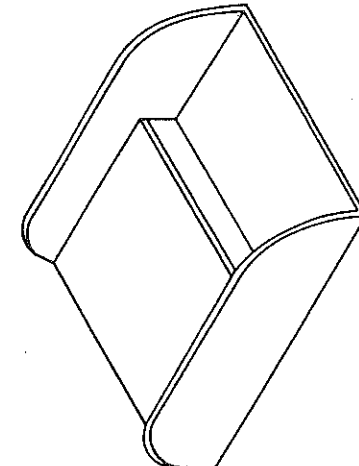
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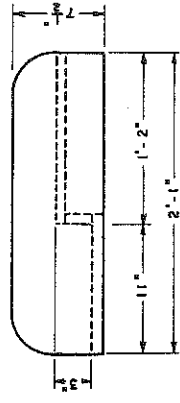
TOP VIEW



END VIEW



ISOMETRIC VIEW



SIDE VIEW

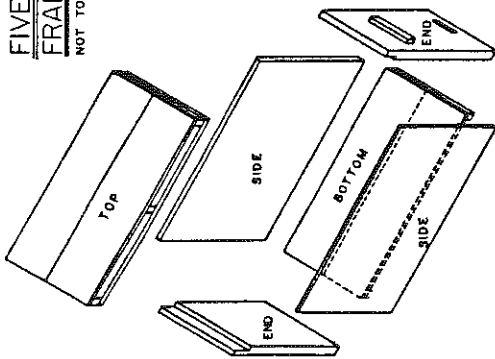
NOTE:
FINISHED UNIT SHOULD BE PAINTED WITH PAINT APPROVED FOR USE IN CONTACT WITH FOOD.

SUPER DUMPING BOARD

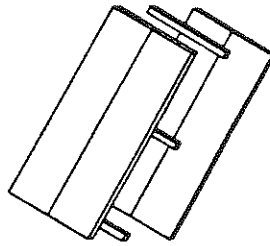
SCALE: NONE

COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
The Pa. State Univ.
UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING
HONEYCOMB UNCAPPING TANK AND SUPER DUMPING BOARD
USDA ' 80 EX. 6325 SHEET 1 OF 1
790-6325

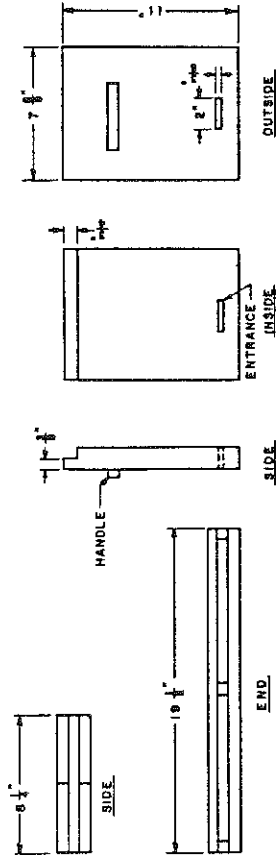
FIVE DEEP BROOD
FRAME HIVE
NOT TO SCALE



EXPLODED ISOMETRIC VIEW
NOT TO SCALE



EXPLODED VIEW OF TOP
NOT TO SCALE

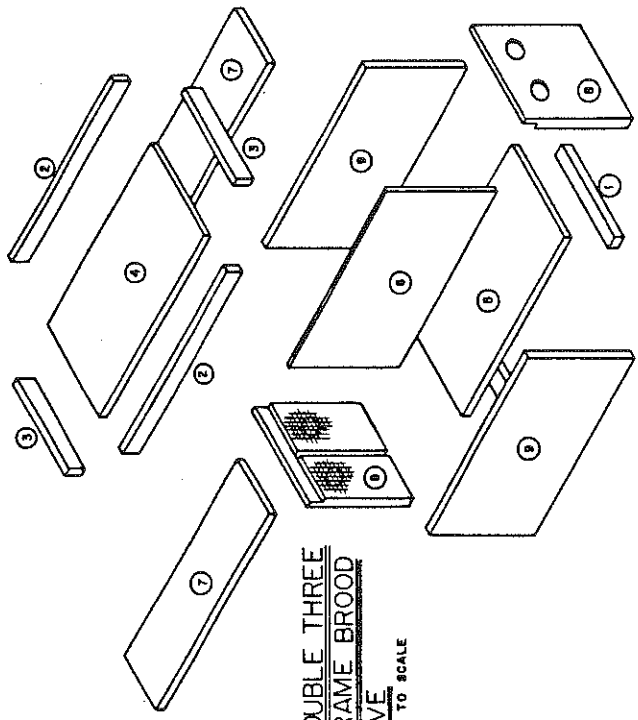
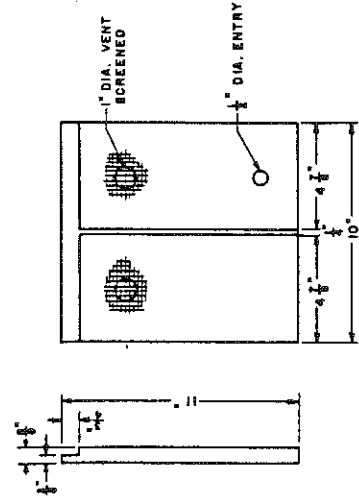


VIEW OF TOP

VIEW OF END

- NOTE:
- PART NO. 8 AND NO. 7 TO BE REMOVABLE.
 - DO NOT GLUE OR NAIL.
 - PARTS NO. 1, 2 AND 5 MADE FROM 1/2" PLYWOOD.
 - PART NO. 6 MADE FROM 3/4" EXT. A-A PLYWOOD.
 - ALL OTHER PARTS OF 3/4" EXT. A-A PLYWOOD.
 - TREAT ALL PARTS WITH PENTA SOLUTION.

PART NO. 8 - END



DOUBLE THREE
FRAME BROOD
HIVE
NOT TO SCALE

EXPLODED ISOMETRIC VIEW
NOT TO SCALE

PART NO.	LOCATION	SIZE
1	BOTTOM SUPPORT	1" x 10"
2	TOP RAIL	1" x 19"
3	TOP RAIL	1" x 12"
4	TOP	1 1/4" x 19"
5	BOTTOM	10" x 18"
6	DIVIDER	10" x 18"
7	INTER-TOP	4" x 18"
9	SIDE	11" x 19"

COOPERATIVE EXTENSION WORK IN
AGRICULTURE AND HOME ECONOMICS
THE PENNSYLVANIA STATE UNIVERSITY
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5 8 6 DEEP BROOD HIVE

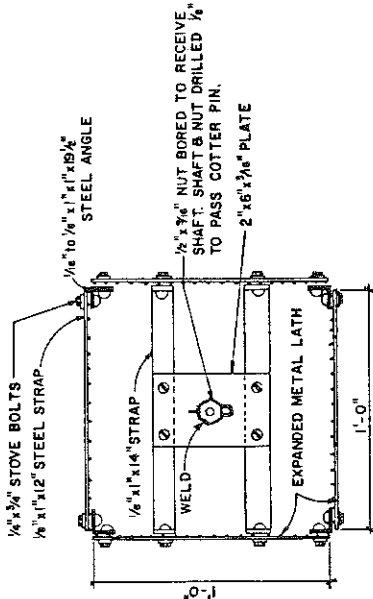
EX. 6327

SHEET 1 OF 1

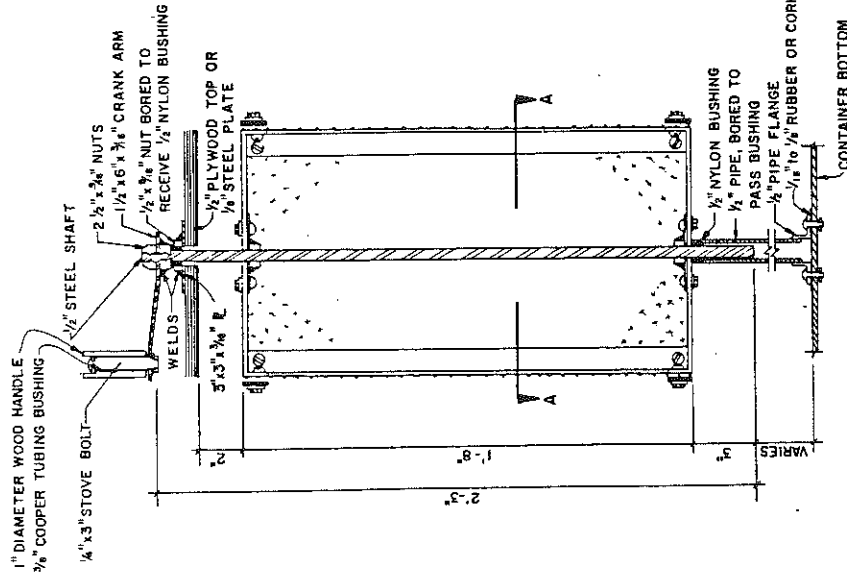
790-6327

NOTE: BASED ON UNIV. OF FLA. PLAN NOS. 807 AND 824-H

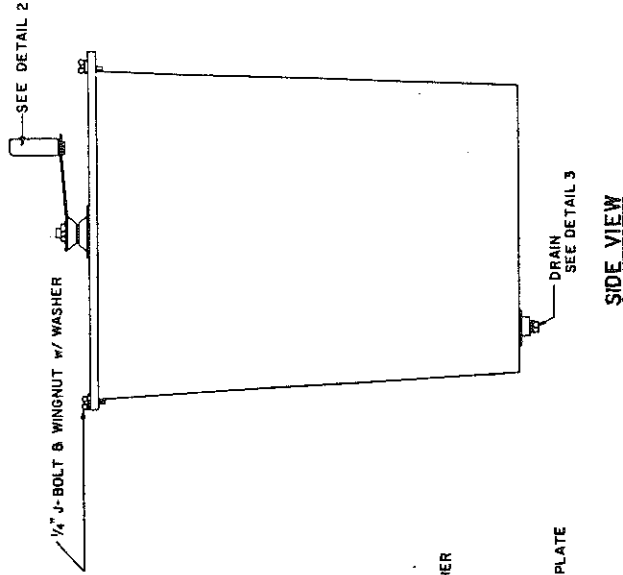
NOTE: THE HONEY EXTRACTOR IS USED TO SPIN HONEY OUT OF THE COMBS. AFTER THEY HAVE BEEN UNCAPPED, THIS UNIT WILL HANDLE FOUR COMBS AT ONCE. CAUTION SHOULD BE USED WHEN EXTRACTING FROM NEW OR VERY OLD COMBS AS THEY ARE SUBJECT TO BREAKAGE. THESE COMBS SHOULD BE PARTIALLY EMPTIED ON ONE SIDE THEN TURNED AND PARTIALLY EMPTIED ON THE OTHER SIDE, REPEATING THIS PROCEDURE UNTIL ALL HONEY IS REMOVED.



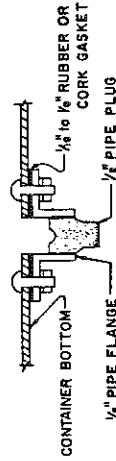
SECTION AA



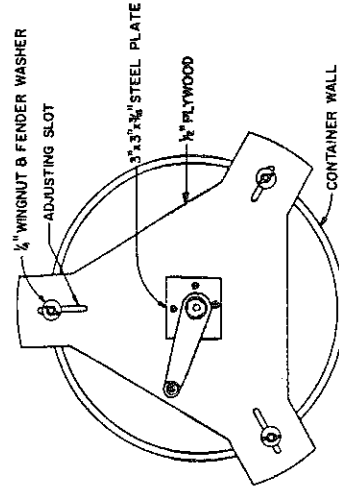
DETAIL 2 - EXTRACTOR PARTIAL SECTION



SIDE VIEW



DETAIL 3 - DRAIN FITTING
NOT TO SCALE



TOP VIEW

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HONEY EXTRACTOR	
USDA '79	EK-6330 SHEET 1 OF 1
790-6330	

BASED ON FLA. PLAN No. 903-R2