



AMPHIBIOUS SPRAYER-BURNER

Basically this sprayer-burner is similar in design to the foregoing truck-mounted sprayer except that the unit is mounted in a 2-1/2-ton "DUKW" amphibious vehicle. The unit can be operated from the water as a boat or from the ditchbank road as a land vehicle. Construction details of this machine were outlined in the article "Building a Duck" that was included in the October 1946, issue of Reclamation Era. This sprayer-burner was designed and constructed for use by personnel of the All-American Canal Project, Yuma, Arizona.

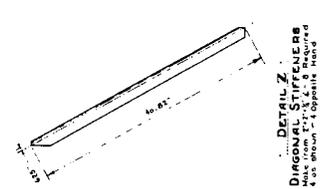
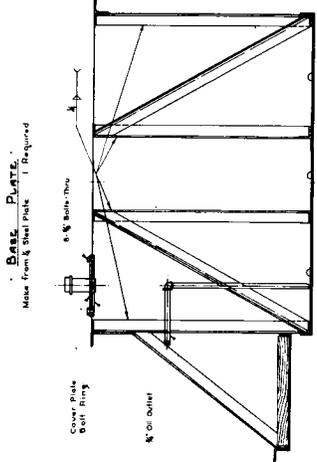
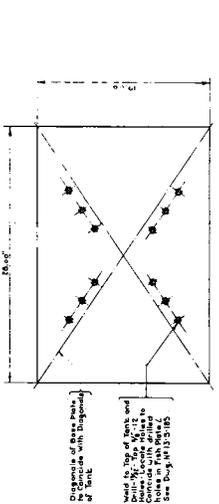
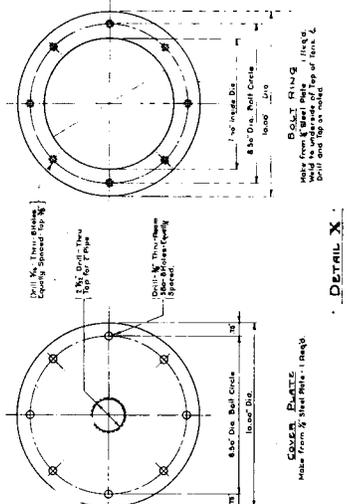
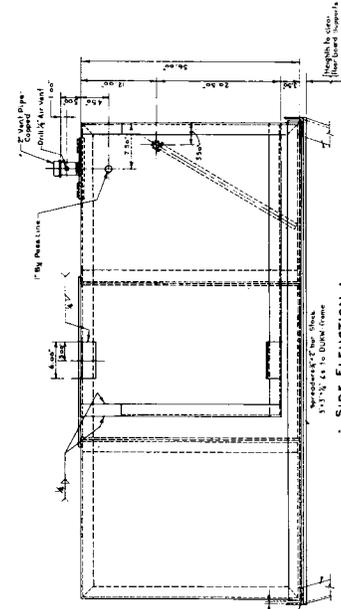
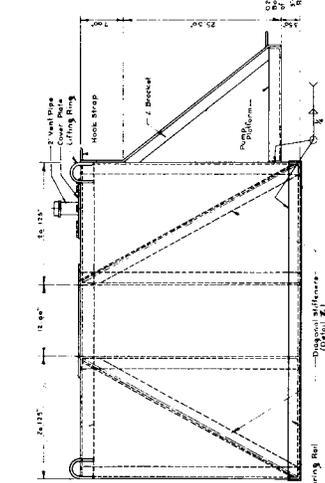
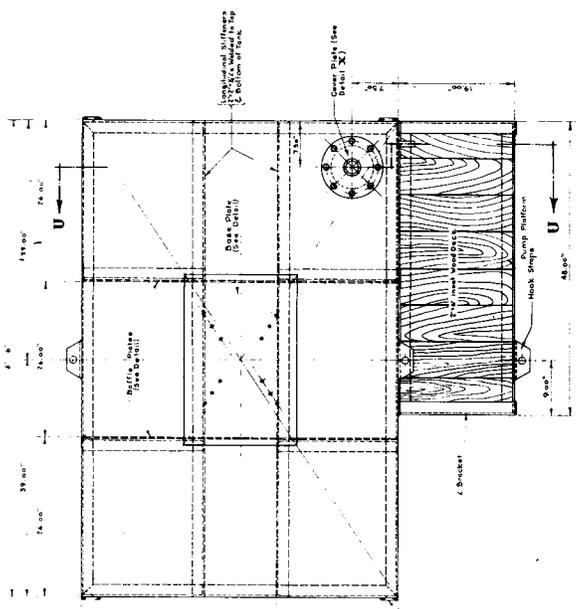
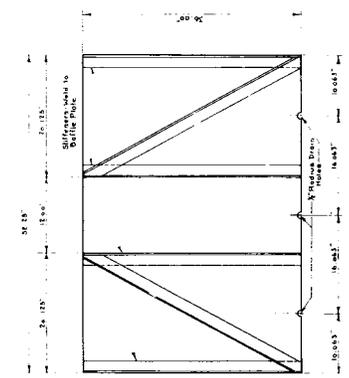
Construction Details:

The unit was constructed primarily as a burner to clear undesirable weeds from the All-American Canal ditchbanks but, as chemical weed control largely has replaced burning, the unit now is used primarily as a sprayer. Working from the water the "duck" moves close to the bank, or it can operate from the ditchbank to spray or burn where the weeds are not more than 30 feet down the slope from the operating road. When operating in the water the burning is especially efficient as the heat races up the ditchbank to consume the vegetation.



The all-wheel drive vehicle is driven down an inclined ramp into the water and when the machine is buoyant the propeller is engaged and the craft can travel about 8 miles per hour.

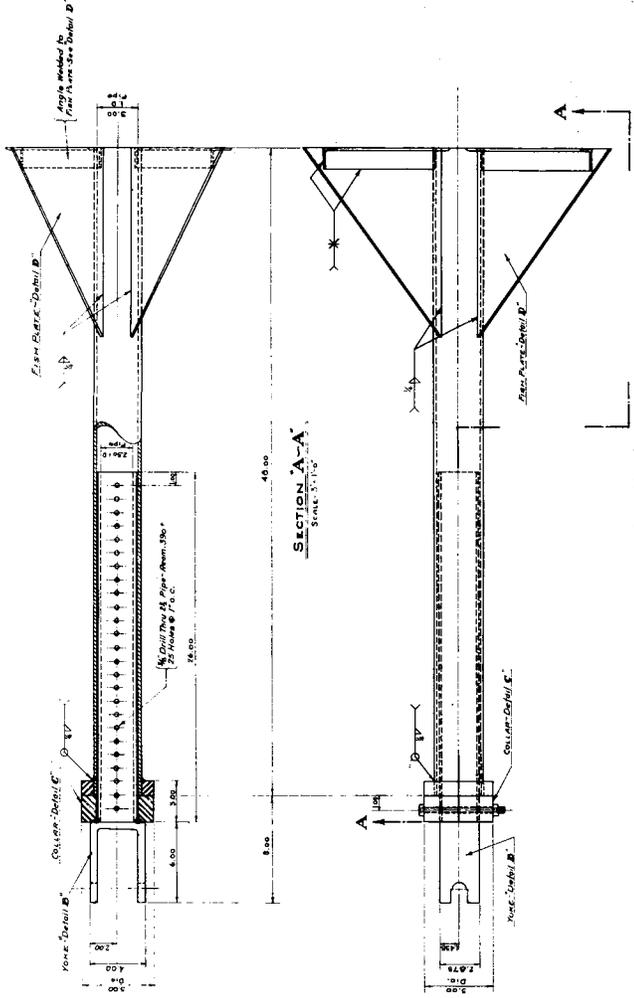
(The Imperial Irrigation District personnel have designed and constructed a sprayer which is mounted on a boat to be used in place of the duck. It is planned that information regarding this new unit will be included in a later release.)



General Notes:
 1. Tank to be made of 16 gauge sheet steel.
 2. All angles to be 2\"/>

Reference Drawings:
 Drawg No. 15-3-185 - Boom Platform
 Drawg No. 15-3-187 - Boom Details

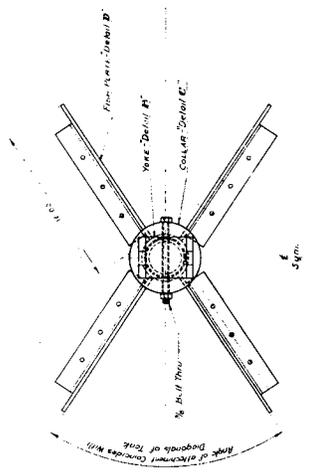
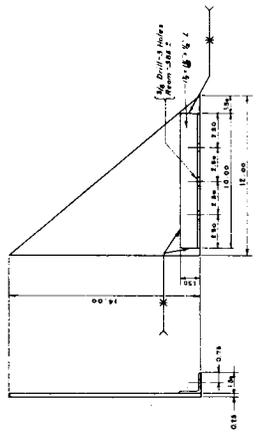
DESIGNED BY: *[Signature]*
 DRAWN BY: *[Signature]*
 CHECKED BY: *[Signature]*
 APPROVED BY: *[Signature]*
 DATE: 01-17-1946



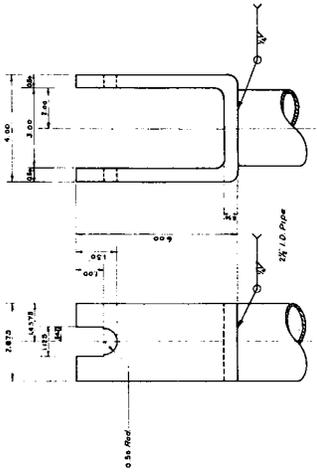
GENERAL NOTES

1. See Dup. 11-11-76 for angle of attachment of Fish Plank.
2. All pipe sizes are nominal I. D.

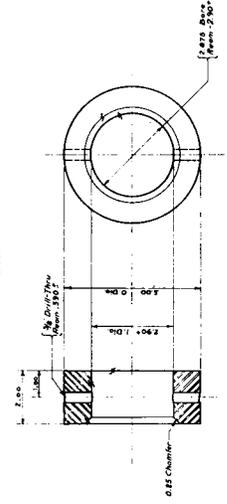
RELEASE DRAWING
 Dup. 11-11-76 - "BOW DETAIL"
 Dup. 11-11-76 - "FUEL PUMP DETAILS"



PLAN



DETAIL B

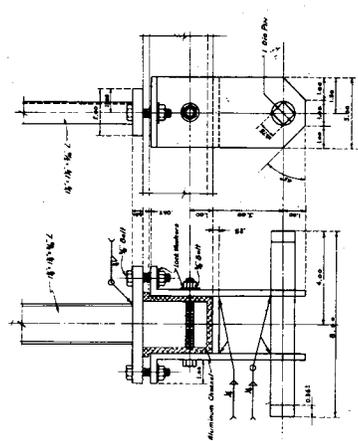


DETAIL C

COLLAR
 1/2 inch diameter hole
 1/4 inch diameter hole
 1.00 inch length
 0.125 inch thickness

DEPARTMENT OF THE INTERIOR
 BUREAU OF RECLAMATION
 COLORADO
 ALL-AMERICAN CANAL SYSTEM-CALIFORNIA
 DUNN 555-1/2 TON AMPHIBIOUS TRUCK
 AMPHIBIOUS WHEEL BURNER
 BOOM PEDestal

DRAWN BY: R. S. M. SUBMITTED: [Signature]
 TRACED BY: R. S. M. RECOMMENDED: [Signature]
 CHECKED BY: R. S. M. APPROVED: [Signature]
 11-11-76



DETAIL D - PIVOT JOINT

GENERAL NOTES:

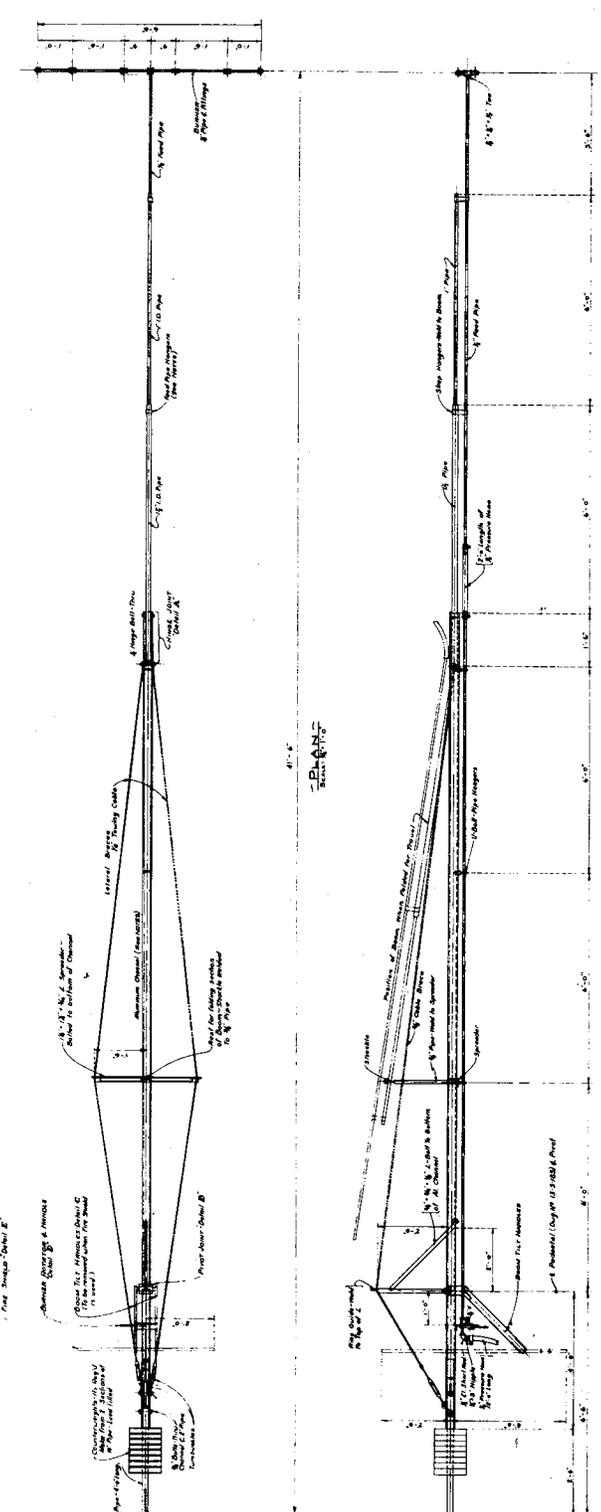
1. All dimensions are given unless otherwise specified.
2. All dimensions are given unless otherwise specified.
3. All dimensions are given unless otherwise specified.
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5. All dimensions are given unless otherwise specified.
6. All dimensions are given unless otherwise specified.
7. All dimensions are given unless otherwise specified.

REFERENCE DRAWINGS:

Fig. 15-10-105 - Show Assembly
Fig. 15-10-106 - See Note Details

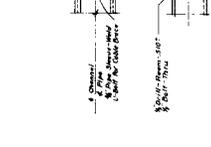
UNITED STATES
DEPARTMENT OF THE ARMY
ENGINEERING CENTER
BULDER CAMP, COLORADO
QUONIA 315-100 AMPHIBIAN TRUCK
AMPHIBIOUS WELD BURNER
DOOM DETAILS

DESIGNED BY: [Signature]
CHECKED BY: [Signature]
DATE: 15-10-105

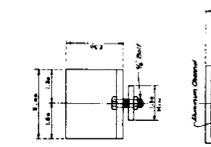


FRONT VIEW

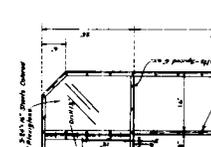
SIDE VIEW



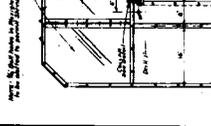
DETAIL A - HINGE JOINT



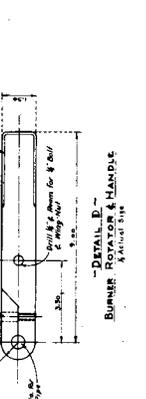
DETAIL B - COLLAR DETAIL



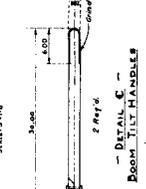
DETAIL C - DOOM TILT HANDLE



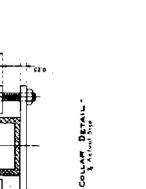
DETAIL D - BURNER ROTATOR & HANDLE



DETAIL E - FIRE SHIELD



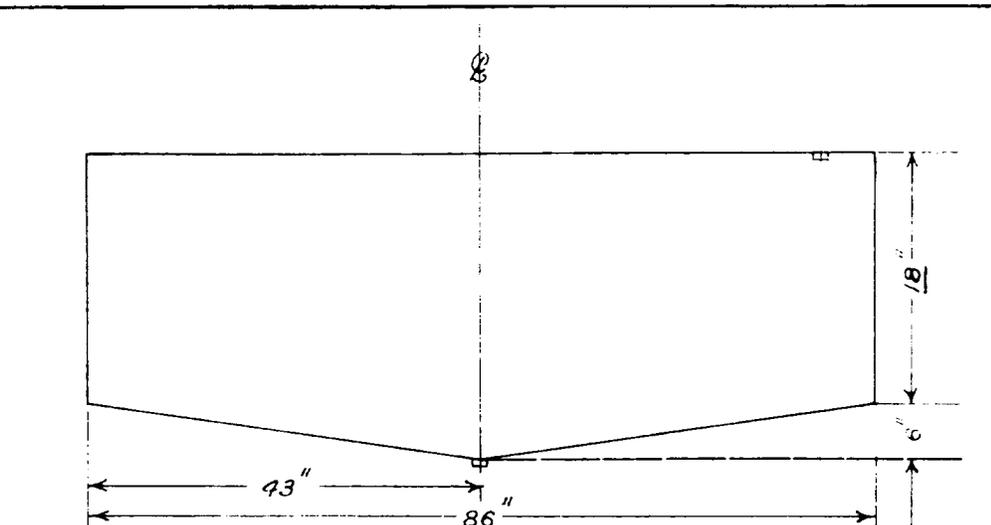
REAR VIEW



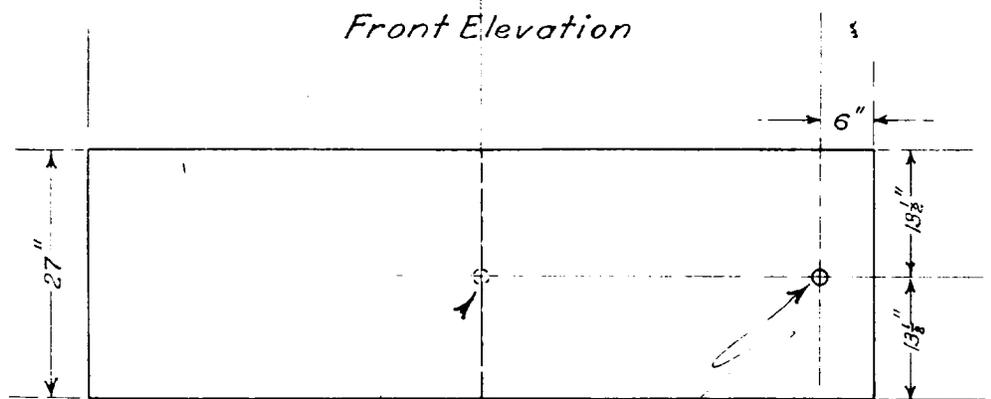
DETAIL G - PIVOT JOINT



DETAIL H - BURNER ROTATOR & HANDLE



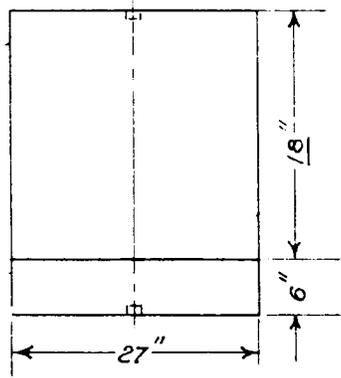
Front Elevation



Plan

Weld plug in bottom of tank. Tap for 1" pipe thread.

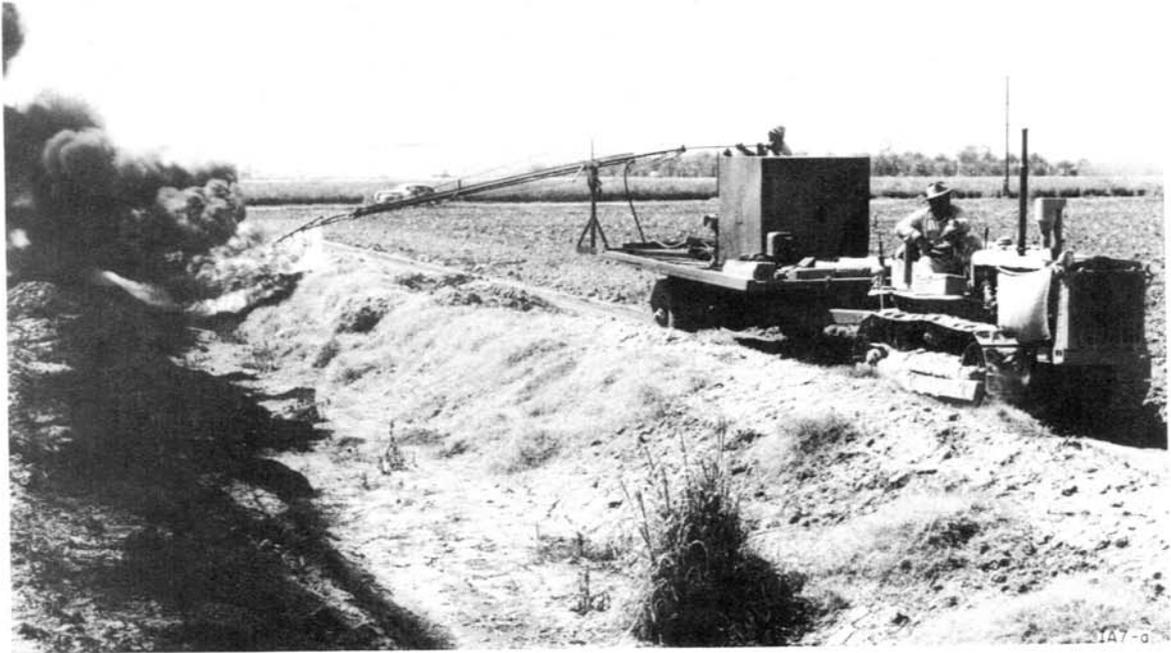
Weld plug in top of tank. Tap for 3" pipe thread.



End Elevation

- Notes:
- (1) Four tanks required.
 - (2) Material to be steel plate not less than 10 Ga.
 - (3) All joints to be welded.

Rev 2-3-47 R.S.W.	UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION BOULDER CANYON PROJECT ALL-AMERICAN CANAL SYSTEM-CALIFORNIA	
	TANK FOR WEED BURNER	
	DRAWN G.M.	SUBMITTED <i>Small</i>
	TRACED G.R.B.	RECOMMENDED
CHECKED T.E.K.	APPROVED	
13-A-580	YUMA, ARIZONA MAR. 22 1946 SHEET 2 OF 4	



TRAILER-MOUNTED WEED SPRAYER-BURNER

Units of this size and design have proved very useful for spraying or burning undesirable weed growths on farm ditches, along fence lines, and other waste places. Similar light compact machines can be used advantageously on irrigation projects which have narrow and inaccessible ditchbank operating roads. The tank, engine and pump combination, and boom pedestal can be constructed as one unit on a frame which is detachable from the trailer.

A positive means of agitation has been included in later models of this machine. A sprayer with an agitator is required for successful application of oil-water mixes, emulsions, suspensions, and for proper stirring of most herbicides or insecticides with the diluent being used.

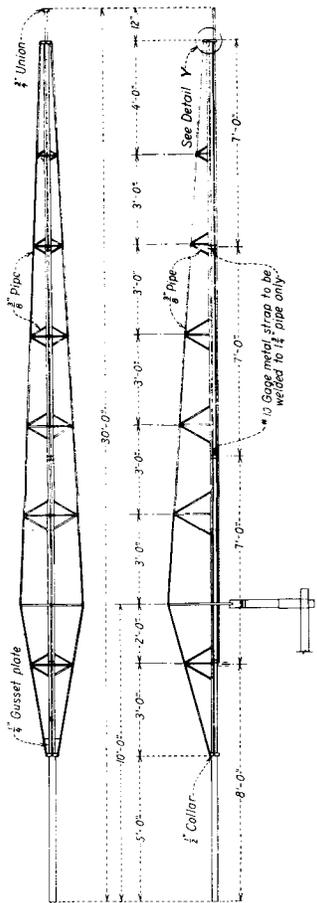
This unit was designed and constructed by personnel of the Lower Colorado River Indian Agency, Parker, Arizona.

Construction Details:

A small gasoline engine was used to drive the pump on the unit pictured, but other models have the pump attached to the tractor power take-off shaft.

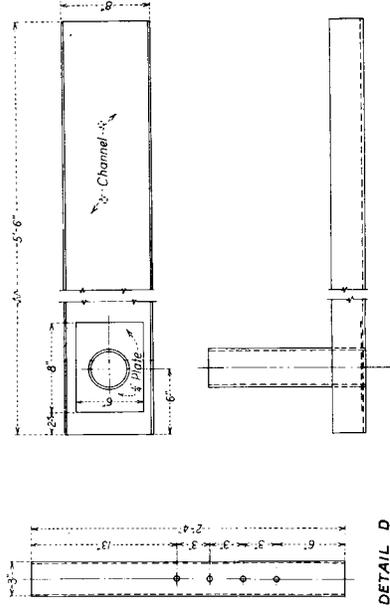
A gear, piston, or centrifugal pump which develops from 40 to 90 pounds pressure per square inch is satisfactory for spraying, but for burning higher pressures are preferred. A pressure regulator and pressure unloader should be installed with the pump so discharge to the nozzles is constant and unvarying.

The boom is constructed of double strength steel tubing reinforced with struts and turnbuckles. Oil resistant hose (Type 800, B. F. Goodrich) and high pressure fittings are used on the pictured machine. The boom pedestal can be moved to either side of the trailer which allows the operator to direct the boom into the ditch.



PLAN AND ELEVATION OF BOOM

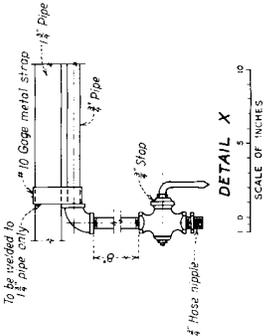
SCALE OF FEET



DETAIL E

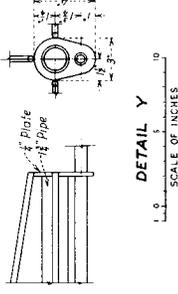
SCALE OF INCHES

DETAILS A TO E



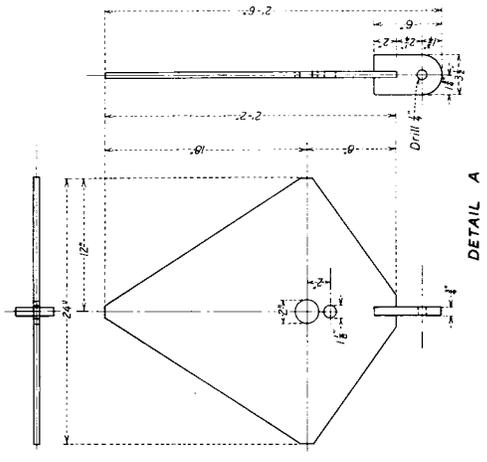
DETAIL X

SCALE OF INCHES

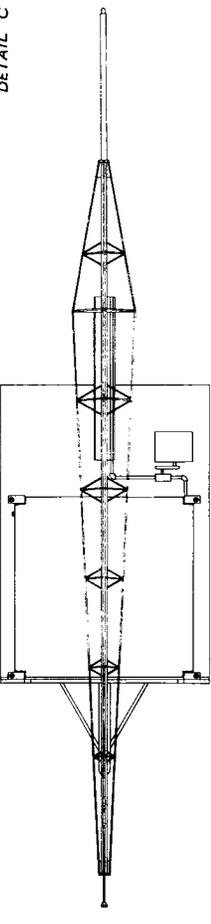


DETAIL Y

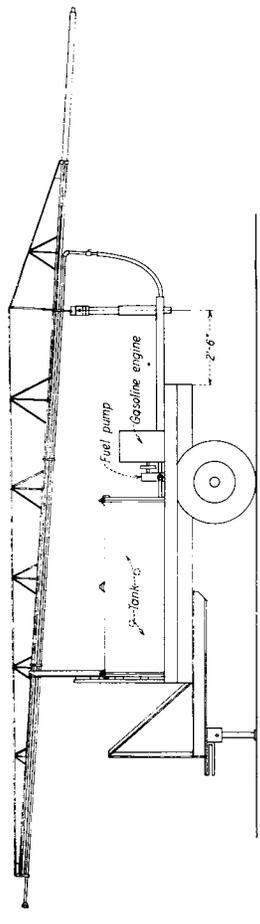
SCALE OF INCHES



DETAIL A

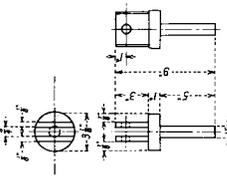


PLAN

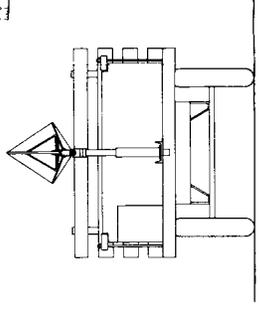


ELEVATION

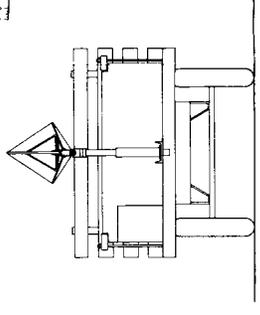
SCALE OF FEET



DETAIL B

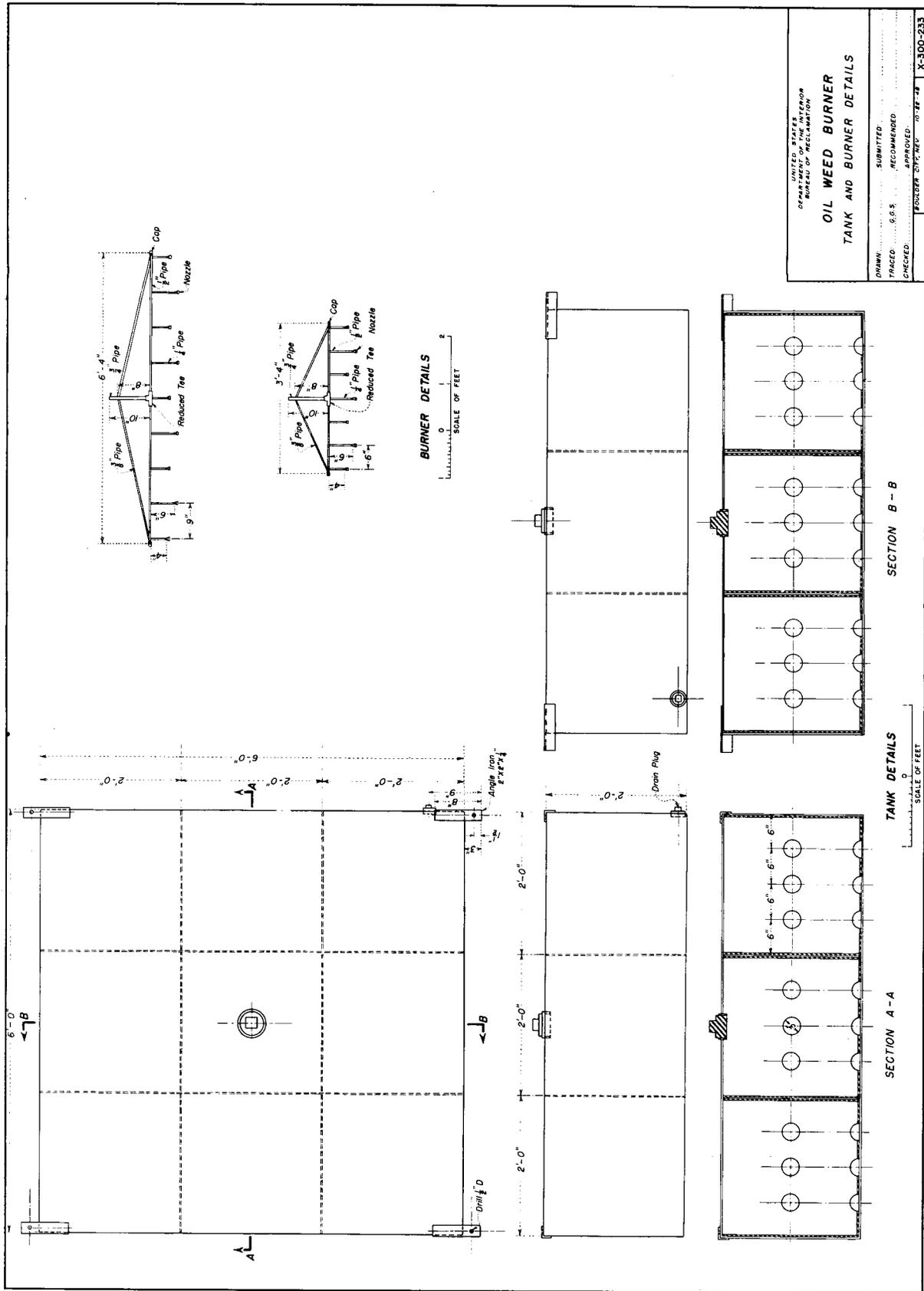


DETAIL D



END

OIL WEED BURNER			
PLAN, ELEVATION AND DETAILS			
UNION STATES DEPARTMENT OF AGRICULTURE BUREAU OF REclamation	DRAWN	SUBMITTED	
	TRACED	RECOMMENDED	
	CHECKED	APPROVED	
		DESIGNED BY	10787-18
			X-300-532



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

**OIL WEED BURNER
TANK AND BURNER DETAILS**

DRAWN: SUBMITTED:

TRACED: 6.6.5 RECOMMENDED:

CHECKED: APPROVED:

FOUNDER ENGINEERING CO. INC. - 48

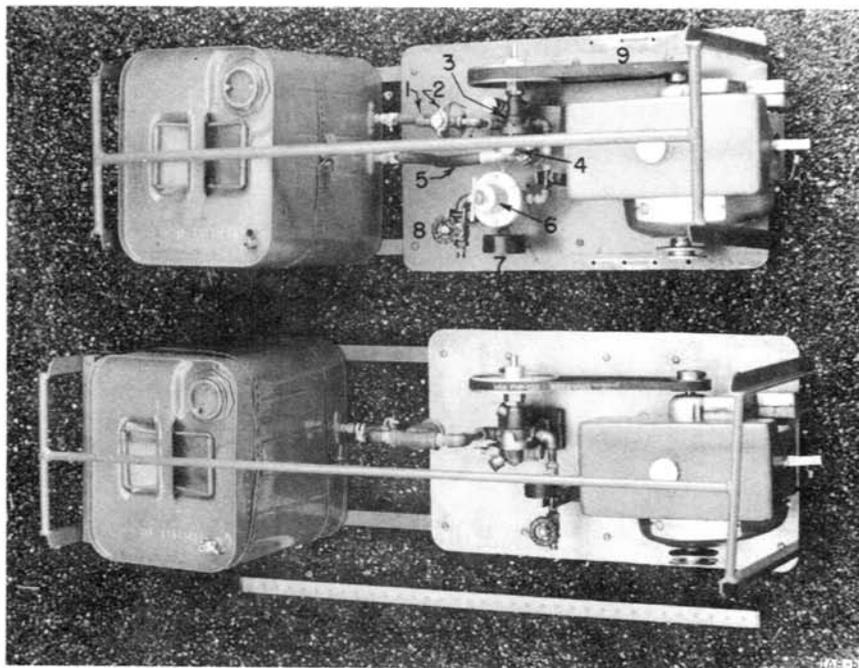
X-300-233



PORTABLE SPRAYER

This small portable sprayer which weighs less than 60 pounds has been used successfully for low-volume application to test plots and small areas which are inaccessible to more bulky equipment. The sprayer also has been used for applying aromatic solvent to control submersed aquatic weeds in small-sized irrigation ditches.

This unit was designed and constructed by Mr. S. T. Ancall, Agricultural Commissioner, Tehama County, Red Bluff, California.



Construction Details:

The two sprayers are shown in Photograph "b" to indicate how several additional parts will make the machine a more serviceable unit. A brief description of the numbered parts of the sprayer is as follows:

- (1) Feed line from tank to filter is
1/4-inch neoprene hose
- (2) Standard Ford gasoline line sediment bowl
- (3) Gear Pump (1/8-inch Oberdorfer, Oberdorfer
Foundries, Incorporated, Syracuse, New York
- (4) Pressure relief valve
- (5) Neoprene 1/4-inch hose from relief valve to
bottom of tank
- (6) Pressure control valve (C. A. Norgren Company,
222 Santa Fe Drive, Denver 9, Colorado)
- (7) Pressure gage
- (8) Outlet shut-off valve
- (9) The 2-cycle air cooled gasoline engine is constructed of
aluminum and weighs 17 pounds. (Power Products Model
1000, 1 horse power. Manufactured by B. Hayman com-
pany, Inc., P. O. Box 3847, Terminal Annex, Los Angeles
54, California.) The belt drive is a 4 to 1 pulley ratio

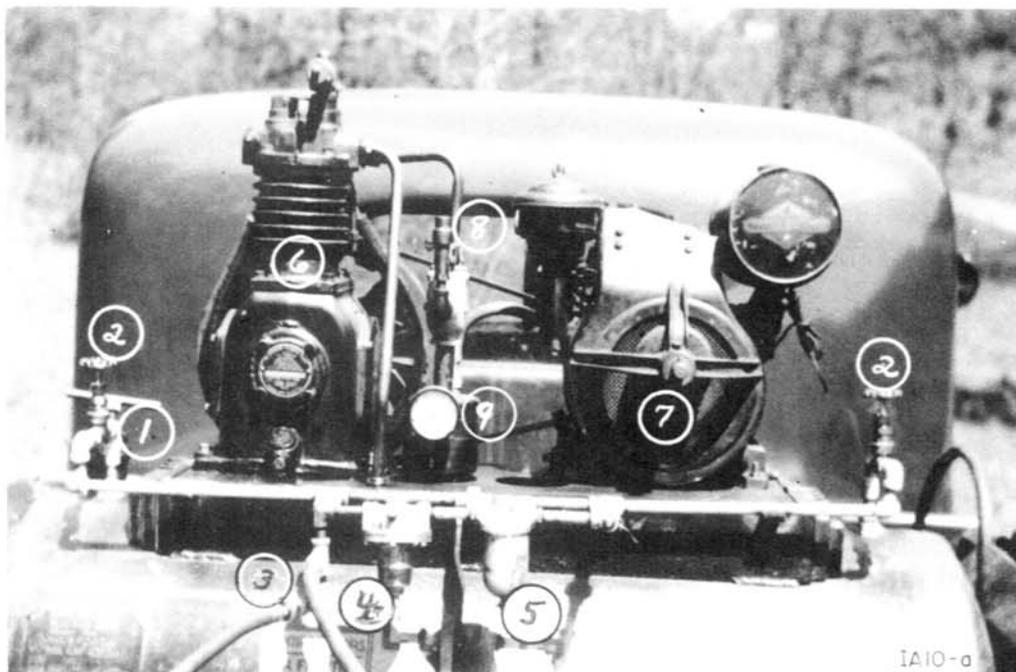


PROPANE HAND SPRAYER

A spray gun similar to a compressed-air paint sprayer is attached by a rubber hose to a tank of liquid propane. The pressure exerted by the propane in the tank is utilized as a propelling force to the herbicide which is contained in the one-quart spray gun. Pressure exerted by the compressed propane will remain constant up to 16 times longer than compressed air since additional force results from the propane changing from a liquid to a gaseous state. The gas escaping with the herbicide apparently does not affect results of the chemical treatment.

The spray gun has been modified with an adapter so that standard nozzles with interchangeable tips can be used for applying different quantities of herbicide. A gauge and an adjustable valve are installed on the outlet of the propane tank to regulate the pressure. By controlling the release of gas a constant pressure can be maintained at the gun to obtain very uniform spray coverage of the plot. Generally a pressure of approximately 40 pounds per square inch is used. The connecting hose is 20 feet in length which allows access to all corners of small experimental areas without moving the tank.

This equipment was constructed by Mr. E. H. Sutliff, Bureau of Reclamation, Carson City, Nevada.



COMPRESSED-AIR WEED SPRAYER

The compressed-air weed sprayer mounted in a 4-wheel drive vehicle has been used successfully by personnel of the Bureau of Entomology and Plant Quarantine in hilly or in mountainous country for barberry control work. Several hundred feet of 1/4-inch neoprene hose is used to reach isolated weed patches in areas where the vehicle cannot be driven. Photo courtesy of Bureau of Entomology and Plant Quarantine, 301 Metropolitan Building, Minneapolis 1, Minnesota.

Construction Details:

- | | |
|---|--|
| (1) Opening into 60 gallon tank for filling with solutions or emulsions (suspensions cannot be used as agitation in tanks has not been provided.) | Snap-on-type connectors are used to facilitate rapid coupling of the feed lines. |
| (2) Outlet valves on each end of tank insures discharge regardless of quantity of material in reservoir or the slant of the truck bed. Each outlet pipe extends almost to bottom of the tank. | (4) Adjustable pressure regulator |
| (3) Two outlet connections to 1/4 inch feeder hose. | (5) Line filter |
| | (6) Compressor |
| | (7) Air-cooled gasoline engine |
| | (8) Air tank safety or relief valve. |
| | (9) Air pressure gauge |



BELLE FOURCHE SPRAYER

This weed spray rig was assembled by the Belle Fourche Irrigation District forces at Newell, South Dakota, utilizing to the greatest extent possible the various parts and material available on the project. Low cost, compactness, and ability to travel small ditchbanks and over rough terrain are the principal advantages of this sprayer.

The weedicide is mixed in the two barrels, which are connected by a length of hose. The suction hose to the pump is fitted into top of the left barrel. The pump is driven from the power take-off shaft, and fluid is forced through 3/4-inch hose to the boom which is mounted in a bracket on the right side of the jeep. The boom can be swivelled to any desired position and turned on or off by the driver. A by-pass valve and hose on the pump discharge line returns excess spray to the left drum. The barrels may be refilled by putting the boom hose into the drum and the suction hose into the water supply.

The boom, which is equipped with a Hanson brodjet nozzle (Hanson Chemical Equipment Company, Beloit, Wisconsin) throws a large-droplet-size spray for 25 to 35 feet. A long hose is attached to the boom, which is detachable from the mounting bracket, so that the operator can spray areas not accessible from the operating road.



WIRE WEED TRAP

An inexpensive and simple weed trap to collect Russian thistles in an irrigation canal is constructed of smooth wires placed at an angle to the water flow which diverts floating material into a pocket or trap along the bank. This weed trap was designed and constructed by personnel on the Tucumcari Project, Tucumcari, New Mexico. An article "Tucumcari Tumbleweed Trap" was featured in the July 1950 Reclamation Era.

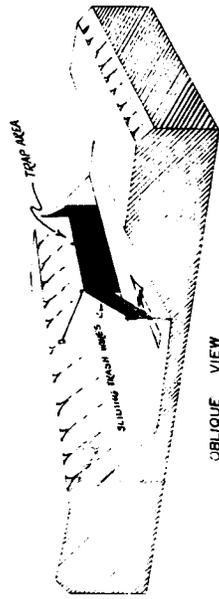
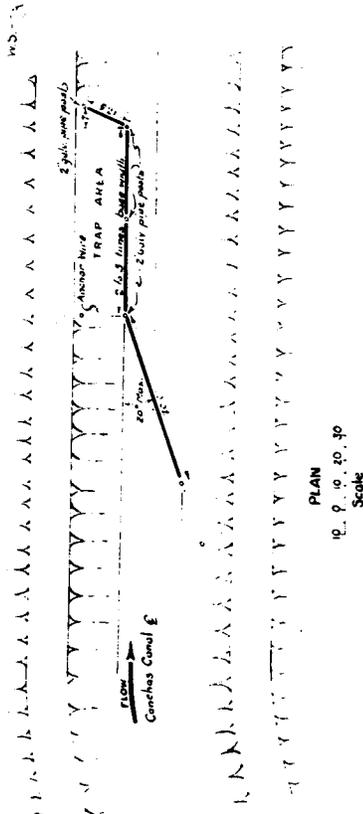
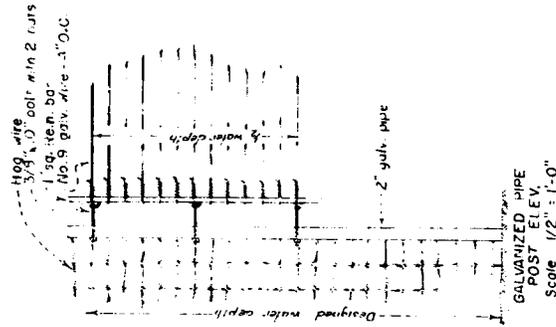
Construction Details:

The weeds are guided into the trap by smooth No. 9 galvanized wires which are strung four-inches apart across the ditch at an angle of not greater than 20 degrees to the embankment. The wires are placed parallel in a vertical plane from a few inches above the water level to about half the depth of the canal. Bracing with guy lines is suggested to prevent bending of the 2-inch pipe uprights and to keep the wires tight.

The trap or pocket, constructed of woven wire, may be of any width and may be extended for some distance parallel to the ditchbank. Debris is removed from the trap by using a weed fork mounted upon a mobile crane. In this manner the accumulated weeds are removed quickly at a fraction of the expense of hand labor. The design of an efficient weed fork is included in this publication, page IB3-1.



The estimated cost during 1950 for installation and material for a weed trap in a 24-foot canal was \$175, and as low as \$50 for a trap in a 10-foot wide ditch



UNITED STATES
 FEDERAL BUREAU OF INVESTIGATION
 LABORATORY
 400 ...
 WASHINGTON, D.C. 20535
 WEED TRAP
 LANCHESTER, MASS. STATE POLICE
 DIRECTOR: B.J.S. ...
 ANALYST: B.J.S. ...
 62 E 105 ...



WEED TRAP

An effective and economical way of collecting floating material such as Russian thistles in the irrigation system may be accomplished by a weed trap similar to the unit designed and constructed on the Payette Division, Boise Project, Boise, Idaho. Regardless of quantity of plants collected or the resulting damming effect, the water will not overflow the banks as the weed trap is located in a by-pass channel into which the floating material is directed by a log boom. Weeds floating in the system are forced up the inclined grating by the current where they subsequently are burned.

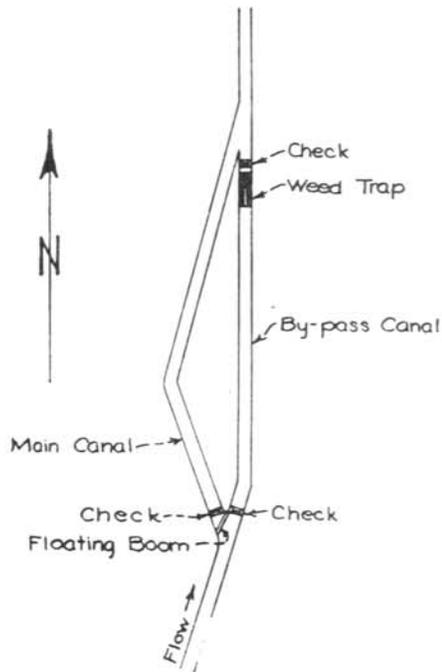
An article "Weed Trap" was featured in the January 1947 issue of the Reclamation Era.

Construction Details:

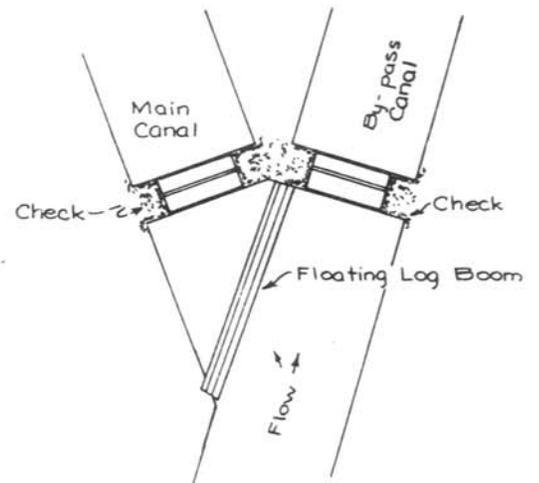
The rack is constructed of railroad rails 30 feet long and placed with flat side up and held in place by spacers which are far enough below the canal grade to keep floating weeds from collecting against the ends of the rails. A cross member holds the upper end of the sloping rails about 1 foot above high-water line. A grill supported by an iron frame levels off from the sloping rails and covers the entire width of the ditch. The grill itself is made from



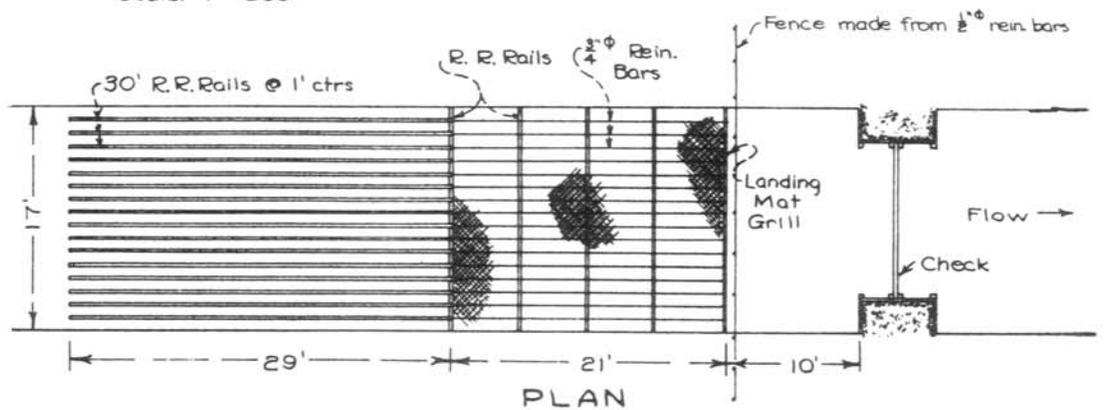
sheets of steel airplane runway mats placed over 3/4-inch reinforcing rod that is welded to the support frame. A railing or fence surrounds the grill to keep weeds confined until they are dry and can be burned.



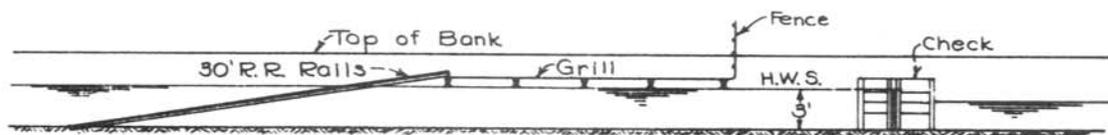
GENERAL PLAN
Scale: 1" = 200'



INLET CHECK DETAILS



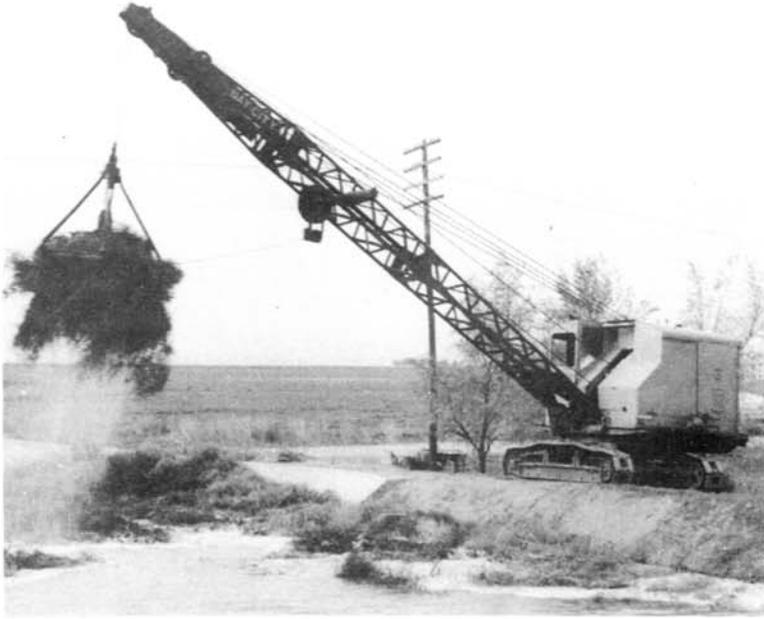
PLAN



LONGITUDINAL SECTION
WEED TRAP DETAILS

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION PAYETTE DIV. - BOISE PROJ. - IDAHO	
WEED TRAP D-LINE CANAL - MP. 23	
DRAWN: R.W.R.	
NOTUS, IDAHO - 9-3-46	

MECHANICAL WEED FORK



To remove weed growth which has been broken loose by chaining operations or to grab Russian thistles or other floating material, the use of a mechanical weed fork is recommended where the trash cannot be flushed from the irrigation system into a waste-way. A weed fork is more effective than a dragline bucket as a larger pay load can be carried and the water drains away freely when the debris is raised. Log booms frequently are used in large canals to guide the debris into a pocket within reach of the crane, or

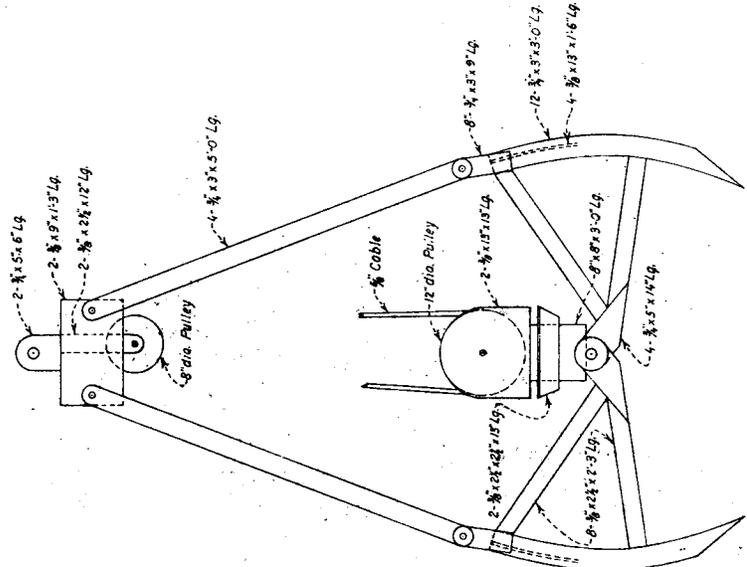
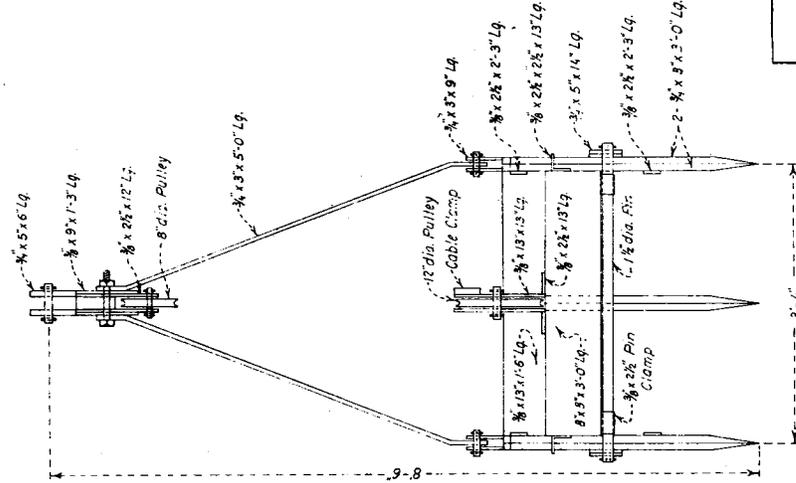
the material may be permitted to collect at a structure as pictured above.

Construction Details:

This weed fork was designed and constructed for use on the Bureau of Reclamation, W. C. Austin Project, Altus, Oklahoma. However, many other irrigation districts throughout the West have purchased sugar cane forks to which one or more tines are added.



Sugar cane forks are available from the Blaw-Knox Company, 2020 Farmers Bank Building, Pittsburg, Pennsylvania. Also, Bucyrus Erie manufactures a forked-grab for use with their all-hydraulic Hydro-crane, which can be used effectively for removing floating weeds or debris from irrigation systems.

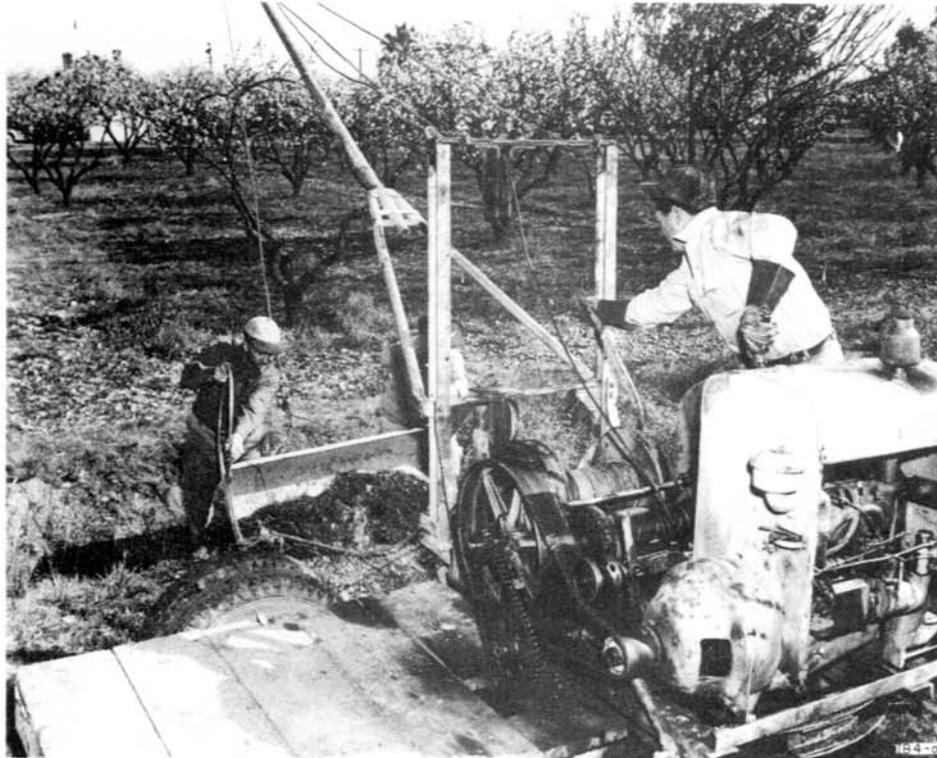


UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
W.C. AUSTIN PROJECT - OKLAHOMA

DETAIL OF WEED BUCKET

DRAWN BY: B.M. SUBMITTED BY: *Chubb*
TRACED BY: RECOMMENDED BY:
CHECKED BY: *J.P. Allen*
APPROVED BY: *J.P. Allen*
DATE: MAY 22, 1950 155P-501-1-17

IB3-2



SCRAPER FOR CLEANING WEEDS AND SEDIMENT FROM SMALL DITCHES

Removal of weed-infested berms and wind-blown or water-deposited soil from small ditches is a laborious task that often is done by hand. To mechanize this operation, Bureau of Reclamation personnel on the Orland Project, Orland, California, have designed and constructed this trailer-mounted winch-scoop to rapidly clean small-sized ditches.

Construction Details:

The main unit of the machine consists of a three-drum winch powered by a gasoline engine. Fixed upright standards are attached firmly to one end of the steel frame which is mounted crosswise upon a four-wheel trailer. The standards are used for the attachment and support of the light boom.

Operation of the machine is similar to a dragline, except that the unit is mounted rigidly and will not swing. A light scraper with a fixed handle on each end is guided by two men in the ditch. The hoist line from one drum is used to dump and return the scraper and a cable from the other drum serves as a dragline.