

RESTRICTED

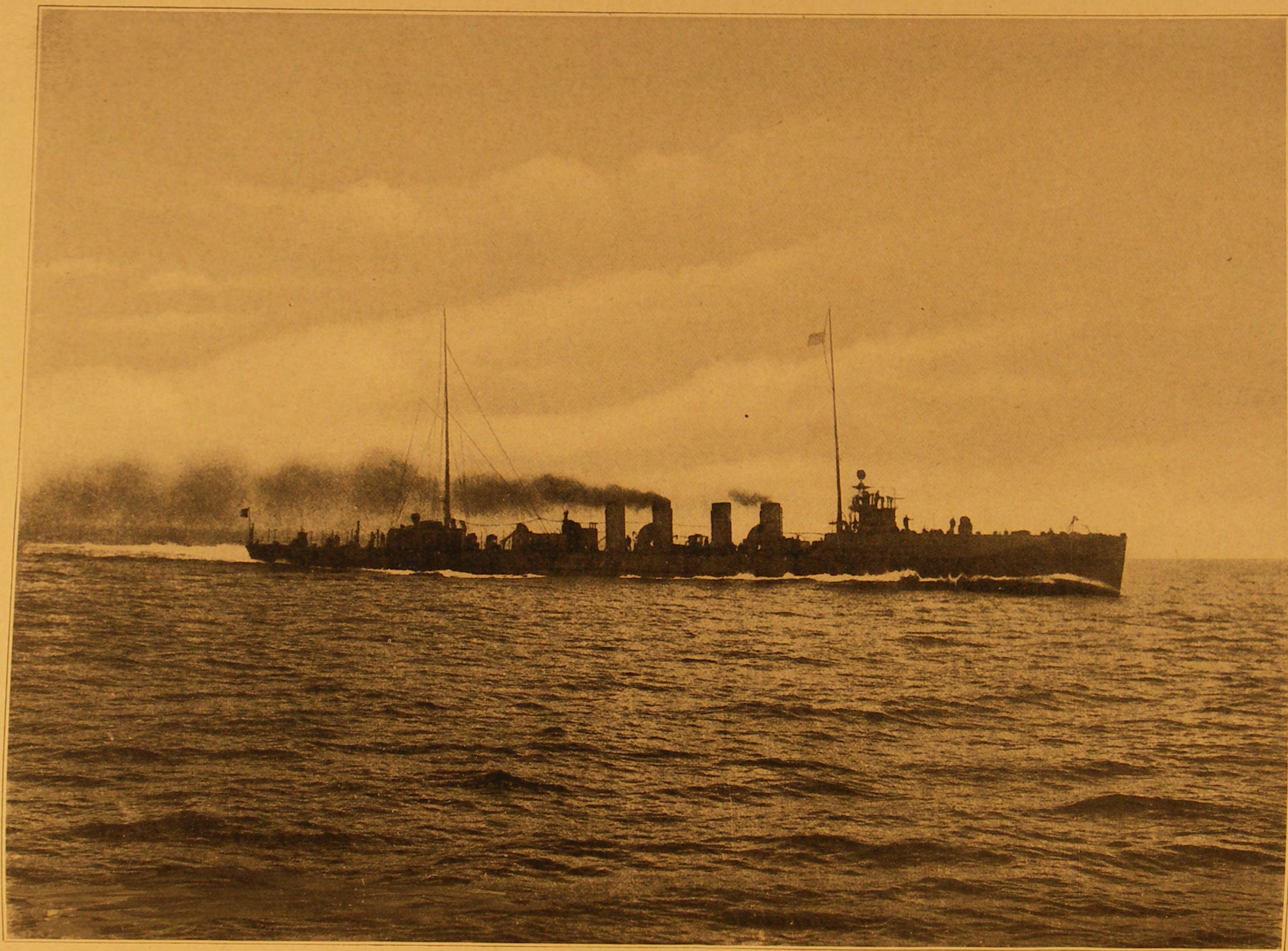
44

GENERAL INFORMATION

TORPEDO BOAT DESTROYER NO. 43

U. S. S. CASSIN

INFORMATION RELATIVE TO ITEMS UNDER THE
COGNIZANCE OF THE BUREAU OF
CONSTRUCTION AND REPAIR
NAVY DEPARTMENT



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INFORMATION RELATIVE TO ITEMS
UNDER COGNIZANCE OF THE

BUREAU OF CONSTRUCTION AND REPAIR
NAVY DEPARTMENT

Office of the Superintending Constructor
for U. S. Navy
Bath Iron Works
Bath, Maine

1913

FINISHED PLAN No. 38

**BUREAU OF SHIPS
NATIONAL ARCHIVES FILES**

50632

INTRODUCTION

Authorized by Act of Congress dated.....	March	4, 1911.
Contract signed by Bath Iron Works.....	September	6, 1911.
Contract date of completion (24 months).....	September	6, 1913.
Contract price.....		\$761,500.00.
Date of principal events during construction :		
First hull material ordered.....	September	12, 1911.
Lines faired in mold loft.....	March	2, 1912.
First large casting received.....	May	31, 1912.
First large casting erected.....	June	25, 1912.
First frame raised.....	May	2, 1912.
First compartment tested.....	September	17, 1912.
Vessel launched.....	May	20, 1913.
Dock trial.....	June	9, 1913.
Official preliminary trial :		
Four-hour speed trial.....	June	26, 1913.
Contract speed not less than.....		29.5 knots.
Average speed attained.....		30.15 knots.
Mean trial displacement.....		1,010 tons.
Date of preliminary acceptance.....	August	8, 1913.
First commissioning.....	August	8, 1913.

This book was prepared by authority of the Bureau of Construction and Repair, and contains lists and descriptions of the various features and systems that have been installed under cognizance of that Bureau.

LISTS OF PLANS

Furnished under the cognizance of the Bureau of Construction and Repair for ship use.

Additional copies of any plan specified in the list of finished plans may be issued to the Commanding Officer, at his request, from the Bureau of Construction and Repair. Booklet plans are furnished as follows: One for Commanding Officer; one for each officer in charge of a department; one for the officers' mess.

All plans issued to a vessel shall be receipted for and shall be considered as a charge on the books of the Executive Officer, under the same regulation as governing articles of equipment.

All plans and booklets are to be considered confidential documents.

Plan No.	TITLE-FINISHED PLANS.	No. Copies.
1	Docking plan.....	1
3	Cross sections.....	1
4	Inboard profile.....	1
5	Outboard profile.....	1
6	Joiner, deck plans and hold.....	1
15	Expansion of outside plating.....	1
22	Torpedo arrangements.....	1
25	Steering gear (general arrangement) and compass installation....	1
26	Ammunition stowage, forward.....	1
26-a	Ammunition stowage, aft.....	1
27	Boat stowage.....	1
29	Zinc Protectors.....	1
30	Water service, profile and sections.....	1
31	Water service, hold, main and berth decks.....	1
33	Piping arrangement, fuel oil system.....	1
	Displacement and other curves.....	1
36	Final inclining experiment.....	1
38	Booklet of general information.....	7
39	Booklet of general plans.....	7
41	Draft diagrams.....	1
42	Steering engine, general arrangement.....	1
42-a	Steering engine, bedplate	1
42-b	Steering engine, crank shaft.....	1
42-c	Steering engine, cylinders	1
42-d	Steering engine, shafting.....	1
42-e	Steering engine, worm gear	1
42-f	Steering stand	1
42-g	Steering wheel	1
42-h	After steering, hand steering gear.....	1
42-j	After steering, forward and after frame	1
42-k	After steering, 60" steering wheel.....	1

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42-l	After steering, shafting.....	1
42-m	After steering, sprocket wheel and guide-sheave.....	1
43	Windlass, general arrangement.....	1
43-a	Windlass, bedplate.....	1
43-b	Windlass, (crank disks, thrust collar, crank and vertical shafts) ..	1
43-c	Windlass, engine bedplate.....	1
53	Towing gear.....	1
54	General instructions for painting and cementing vessels of the United States Navy (pamphlet).....	1
	Corrected copy of hull specifications.....	1

COMPLEMENT

OFFICERS

Commanding Officer.....	1
Wardroom Officers.....	4
Total.....	5

CHIEF PETTY OFFICERS

Chief Boatswain's Mate.....	1
Chief Quartermaster.....	1
Chief Gunner's Mate.....	1
Chief Machinist's Mate.....	3
Hospital Steward.....	1
Chief Water Tenders.....	1
Total.....	8

SEAMAN BRANCH

Coxwains.....	2
Gunner's Mate, 1st class.....	2
Gunner's Mate, 2nd class.....	2
Quartermaster, 1st class.....	1
Quartermaster, 2nd class.....	2
Seamen.....	18
Ordinary seamen.....	13
Total.....	40

ARTIFICER BRANCH

Electrician, first class.....	1
Electrician, 1st class (wireless).....	1
Carpenter's Mate, 2nd class.....	1
Machinist's Mate, 1st class.....	3
Machinist's Mate, 2nd class.....	3
Water Tenders.....	5
Oilers.....	4
Firemen, 1st class.....	10

Firemen, 2nd class.....	7
Coppersmith.....	1
Boilermaker.....	1
Blacksmith.....	1
Total.....	38

SPECIAL BRANCH.

Yeoman, 1st class.....	1
Yeoman, 2nd class.....	1
Total.....	2

COMMISSARY BRANCH

Ship's Cook, 1st class.....	1
Ship's Cook, 2nd class.....	1
Total.....	2

MESSMEN BRANCH

Wardroom Steward.....	1
Wardroom Cook.....	1
Mess Attendant.....	1
Total.....	3

RECAPITULATION

Commanding Officers.....	1
Wardroom Officers.....	4
Chief Petty Officers.....	8
Seamen Branch.....	40
Artificer Branch, engine room.....	38
Special Branch.....	2
Commissary Branch.....	2
Messmen Branch.....	3
Total.....	98

GENERAL INFORMATION

GENERAL DIMENSIONS

Length over all.....	305' 3"
Length between perpendiculars.....	300.0'
Projection forward of F. P.....	2' 0"
Projection aft of A. P.....	3' 3"
Length of straight keel.....	262' 6"
Length on 9' 4" waterline (N. L. W. L.).....	300' 0"
Breadth, extreme, over guards.....	31' 1½"
Breadth, extreme, on 10' waterline.....	30' 5¾"
Breadth, molded, on 10' waterline.....	30' 5¼"
Breadth, molded, at 8' 0" waterline.....	29' 6¾"
Mean draft to bottom of keel at mean trial displacement, about.....	9' 3"
Midship section, frame 86.....	21"
Frame spacing (regular).....	1010 tons
Displacement for 9' 3" waterline, tons.....	14.25
Tons per inch at 9' 3" waterline.....	9430 sq. ft.
Area of wetted surface.....	.42
Coefficient of fineness, block.....	.67
Coefficient of fineness, midship section.....	.66
Coefficient of fineness, 9' 3" waterline.....	61.7
Total area of rudder, square feet.....	190.
Area of midship section, square feet (immersed).....	

HEIGHTS ABOVE NORMAL LOAD WATERLINE

Normal load waterline above bottom of keel amidships.....	9' 3"
Top of truck on foremast.....	90'
Top of truck, truck light, mainmast.....	90'
Top of pilot house, at centerline.....	24' 7"
Forecastle deck plating at stem.....	17' 0½"
Main deck plating at stern.....	8' 0½"
Top of bridge at side.....	24' 1"
Berth deck beams at frame 48.....	2' 3½"
Berth deck beams at frame 134.....	9"
Floor of forward searchlight platform.....	30' 9½"
Floor of after searchlight platform.....	15' 5¾"

CARE AND PRESERVATION

Attention is invited to the Navy Regulations, 1909, relative to the "Care and Preservation" of vessels, Chapter XX, Section 2; also to the following:

- A steam heating coil is fitted in the gravity tank for use in cold weather.
- The scuttle butt should be drained in very cold weather to prevent freezing.
- The fresh water hand pump located on the hatch coaming, frame 47, port, main deck, is provided with a drain for drawing off the water from the pump to prevent freezing.
- The dogs on the watertight doors are capable of adjustment for bearing on the wedges.
- The sheaves for the transmission leads of the steering gear are fitted with grease cups, excepting sheaves in trunk which have metalline bushings and should NOT be oiled.
- The weight of the rudder is transmitted through the yoke by means of a pin fitted through the yoke bars and the rudder stock to a graphite inserted bronze disc bearing floating between two chilled steel discs supported on a steel casting at main deck.

(g) Should any attention be given to the caulking be done likely to result in more seams or rivets.
(h) The automatic sired to provide additional (i) Particular attention, relative to the inspection, dated August 17, 1908, vessel is in dock, as contained (j) It is advised that they may be effective in p should be operated daily, (k) The fire hydrant and in very cold weather which the valves may be c (l) Attention is call their total cubical contents

SYSTEM OF

Each compartment be boiler compartment is des Each compartment be compartment and the after noted by the letter "B" and Each compartment be ment and the after transve noted by the letter "C" and Each compartment be compartment and the stern this D-10. The four principal di "B," "C" and "D." In each division the commencing with the low with No. 1) to the end of the numbers from forward Magazines and shell the number of the compa have the same designation engine compartment is C the letter indicating the p this B-4.

Comp.	No.	Deck	Location
A-1	Hold	C	
A-2	Hold	C	
A-3	Hold	C	
A-4	Hold	P	
A-5	Hold	S	

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PROPELLING MACHINERY

TURBINE DATA

Turbine	Diameter of Rotor Drum in Inches	Number of Expansions
H. P.	48	6
H. P. cruising stages	46	2
L. P. ahead	60	6
L. P. astern, port	43	6
L. P. astern, starboard	43	6

RECIPROCATING ENGINE DATA

H. P. cylinder	16" diameter	18" stroke
L. P. cylinder	24" diameter	18" stroke

ARRANGEMENT OF TURBINES AND RECIPROCATING ENGINE

Starboard shaft.....	H. P. and A.
Port shaft.....	L. P. and A.; and reciprocating engine.

BOILERS, DATA

Kind of boiler.....	Normand return tube, express type.
Number (two in each boiler compartment).....	4
Designed working pressure, pounds.....	260
Length of combustion chamber, feet.....	9.42
Number of oil burners, each boiler.....	12
Number of furnaces.....	1
Heating surface (each boiler) area in square feet.....	5375
Smoke pipes, height above furnace.....	31' 0"
Area of section, each, square foot.....	19.2
Number of smoke stacks (all boilers).....	4

SHAFTING

Diameter of shafting, inches.....	8 $\frac{3}{4}$ "
Diameter of axial hole, inches.....	5"

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PROPELLERS

Number of blades.....	3
Diameter, feet and inches.....	7' 4"
Pitch, feet and inches.....	6' 8"
Ratio of diameter to pitch.....	.909
Area, projected, square feet.....	25.375
Area, helicoidal, square feet.....	28.388
Area, disc, square feet.....	42.236
Area of immersed midship section, square feet.....	190.0
Height of lower tip of blade above or below keel, inches.....	0"
Material of propellers.....	Manganese bronze.
Hand of propellers:	
Starboard.....	Right hand
Port.....	Left hand

ELECTRIC PLANT

There are two Curtis turbo-generators, single stage, direct-connected, of 10-KW capacity, at 125 volts, at designed speed of 5000 R. P. M., located on the port side of the auxiliary engine room.

STEERING ARRANGEMENTS

There are three steering stations: A combined hand and steam gear in the pilot house, a steam gear on top of pilot house on bridge, and a hand gear aft on the main deck; all of the steering gear is above the main deck.

A Hyde Windlass Company steering engine, $6\frac{1}{2}" \times 5\frac{1}{2}"$, is located in the forward end of pilot house on the forecastle deck, and operated by a wheel in the pilot house.

The steering engine can also be operated by a wheel on the bridge by throwing in a clutch on the vertical operating shaft in the pilot house, which gives a direct control from the wheel on the bridge, to the steam engine.

The wheel in the pilot house can also be used for steering by hand. Instructions for different methods of steering are given below:

The transmission gear from steering engine to yoke and rudderhead is by means of $2\frac{3}{4}"$ plough steel galvanized wire rope, with a 15-16" galvanized steel chain at the turns. The wire rope, which runs along the ship's side above the main deck, is held in place by guide rollers and fairleads suitably located, and terminates in sliding blocks at frames 162-165. Turnbuckles are provided for taking up the slack of the wire rope and chain, one located at the joints between the wire rope and the chain, and one in the standing part of the chain that passes over the sliding block sheaves, and secured to padeyes on main deck at frame 158.

The tails of the sliding blocks are connected to the yoke by a $1\frac{3}{8}"$ galvanized steel chain.

A hand steering stand with two handwheels is located on the centerline at frames 153-154. The leads from this stand are $\frac{7}{8}"$ galvanized steel chain, the ends of which are connected with the sliding block chains by a shackle and pin on both sides of the vessel. A key lug is fitted in the spur gear of the steering stand for unlocking, so that the handwheels will remain stationary when the forward steering gear is in use.

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An emergency relieving tackle is fitted, consisting of $2\frac{1}{2}$ " wire rope attached to eyes on top of the yoke arms, with a single and double block and $3\frac{1}{2}$ " manila rope. The single block is hooked into a padeye at frame 154, port and starboard.

To steer by hand from pilot house: Open main clutch between spur gear and worm wheel. Throw in clutch in front of pinion and clutch of handwheel. Throw out clutch on vertical shaft to bridge wheel stand.

To steer by hand from after wheel: Disconnect steam steering lead at sliding block and throw in locking plug in spur gear at hand steering wheel.

To steer by steam from pilot house: Throw out locking plug in spur gear at after hand wheel. Throw in main clutch and throw out clutch in front of pinion.

To steer by steam from bridge: Proceed as above, except unlock steering wheel in pilot house and lock hand wheel on bridge.

An emergency clamp is provided for joining the wire rope should it become broken.

STEERING GEAR TESTS, PRELIMINARY TRIAL "CASSIN"

Time observed at rudderhead to bring rudder from amidships to 38 degrees, port.....	21 seconds
Time to shift wheel on bridge, for above.....	20½ seconds
Time to bring rudder from 30 degrees port, to 37 degrees starboard.....	20 seconds
Time to shift wheel on bridge.....	20 seconds
Time to swing 360 degrees change of course, wheel hard-a-port, minutes and seconds.....	3 minutes, 30 seconds
Estimated diameter of turning circle for above, yards.....	600
Time to swing 360 degrees change of course, wheel hard-a-starboard, minutes and seconds, speed of ship 29 knots.....	3 minutes, 11 seconds
Estimated diameter of turning circle for above, yards.....	600

STEERING GEAR DATA

Radius of rudder yoke.....	6' 6"
Total area of rudder, square feet.....	61.7
Area of balanced portion, square feet.....	10.7
Angle of steering engine stops, degrees.....	35.0
Angle of rudder stops, degrees.....	38.0

STEERING ENGINE DATA

Steering engine, Hyde Windlass Co., Bath, Maine.	
Number of cylinders.....	2
Diameter of cylinders, inches.....	6½"
Stroke of piston, inches.....	5½"
Working steam pressure, pounds.....	200
Steam supply pipe, diameter, inches.....	1½"
Steam exhaust pipe, diameter, inches.....	2"

ANCHOR WINDLASS

The anchor windlass is located on the forecastle deck, frames 11-12. It is operated by a vertical type steam engine located on the forward side of bulkhead 12. The windlass engine drives the windlass and wildcat for chain through a vertical shaft, the connec-

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tion being through worm gearing. For heaving in by hand, it is necessary to disconnect the worm wheel near the bottom of the vertical shaft. This is done by removing the key in the worm wheel rim which allows the worm wheel to run idle on the shaft.

The gypsy head and the wildcat, each have a complete separate locking arrangement, so that they may be worked independent of each other.

The windlass engine and windlass were furnished by the Hyde Windlass Company, Bath, Maine. The engine is designed for a working steam pressure of 200 lbs. per sq. in., the specifications requiring that the engine be capable of standing the full boiler pressure. The engine is a 5" x 4", with two cylinders. Provision is made for dismantling the gearing at the engine, without disturbing that part of the windlass located on the forecastle deck.

A chain clearer is fitted on the windlass bedplate, and is so designed that chain will be cleared from the wildcat when running in either direction.

The wildcat is designed for a standard 1" close-link anchor chain. This chain is furnished by the Government.

The friction band on the wildcat is designed with sufficient surface and ample size to "ride by" with the windlass unlocked.

The engine is controlled from the forecastle deck, where a hand wheel is fitted. This handwheel operates the throttle valve through a connecting rod and lever.

The windlass engine was tested with the engine operating at 265 lbs. steam pressure, with exhaust to the atmosphere.

A chain compressor is fitted at each of the two chain pipes.

A plate guard is fitted around wildcat.