

# Cary Collection

Collection of pamphlets, memorandums, blueprints and drawings used by or created by Mr. Howard Cary, who was a welding engineer for the Fisher Tank Division, Grand Blanc Tank Arsenal (GBTA) from 1942 – 1945

## BOX 1

### Folder

- 1 Blueprint: “Fixture for Determining Transverse Stress of Welded Butt Joint”, Cary, Howard, Fisher Tank Division, GMC, GBTA, May, 1943
- 2 Printed Drawings: a) M4A2 Medium Tank b) T25E1 and T26E1 Heavy Tanks
- 3 Blueprint: “Preliminary T70 Tank Hull”, Jordan, J. , Fisher Tank Division, GMC, GBTA, July 16, 1943
- 4 Magazine Article: “Production of Welded Hulls for Wheeled Tanks”, Machinery, Vol. 64, #1630, Jan 6, 1944
- 5 Mimeographed Loose Pamphlet: Welding of Armor Plate for Tank Production, Fisher Tank Division, GMC, GBTA 21 January 1942, seventeen pages
- 6 Miscellaneous Notes on Welding of Tank Armor Includes codes for armor plate production
- 7 Magazine Article: “Welding Armor Plate for Combat Tanks”, Brooker and Elliot, The Iron Age, 14 January 1943
- 8 Organizational Charts: Welding Division, Fisher Tank Division, GMC, GBTA
  - a) Dated 4-13-43
  - b) circa 1944
- 9 Booklet; Welding Operation Instructions, M4A3 Hull, Fisher Tank Division, GBTA, c1944
- 10 Loose Sheets; M10 Welding Operation Instructions, Operation No. 13 (8 pages), Fisher Tank Division, GBTA, February 28, 1943
- 11 Miscellaneous Drawings and Sketches; Howard Cary, Fisher Tank Division, GBTA, 1943-1944

- a) Drawing; I. Check policy of specifying fillet size, c1943
  - b) Notes; Formulas for figuring areas of triangles, Howard Cary, 28 August 1942
  - c) Drawing; Design for Torsion Bar Suspension System to Simplify Manufacture, H. Cary, February 1942
  - d) Drawing; Untitled, Drawing upper rear deck of Unknown medium tank, February 1944
  - e) Drawing; Template for Radio Bracket opening M10 Upper Hull Side Plate, H. Cary, 8 April 1943
  - f) Mimeographed Drawing; Shrinkage Determination of -H- Plate, Welding Engineer Dept., Fisher Tank Div., G.B., 24 September 1944
  - g) Handwritten Notes on welding of the ring guard on the M10 3" Gun Motor Carriage, H. Cary, c1943, two pages
  - h) Drawing; Two loose pencil drawings – purpose unknown
  - i) Envelope containing original drawing, photo etching, blueprint and mimeographed copies of Welding Operation Instructions, Operation #13, Item #28, M10, H. Cary, Welding Engineer Dept, Fisher Tank, Grand Blanc, 9 April 1943
- 12 Memorandum; Assignments and Duties Not Completed, Welding Division, Fisher Tank Division, GBTA, February 10, 1944
- 13 Booklet; Record of Chemical Analysis, Metallurgical Lab, Fisher Tank Division, GBTA January - February 1943
- 14 Blueprint: "Armored Radiator Guard, M4A2 (76mm)", Fisher Tank Division, GBTA, March 10, 1944
- 15 Memorandums Engineering Release, Fisher Tank Division, GBTA
- a) Number R-2956, Electrode for Welding Attachments to Hulls and Combat Vehicles, June 21, 1943
  - b) Number R-3348, Repair Welding of Greater Than Major Defects in Cast Armor as Defined by Specification AXS-492, September 21, 1943
- 16 Memorandum, "Welding Standards", Fisher Tank Division, GBTA, March 3, 1943
- 17 Manuscript: Ferritic Plate Results, Cary, Howard, c1943
- 18 Memorandums: on firing tests against armor assemblies
- a) Firing Results, M4A2 Front Plate Assy, March 15, 1943
  - b) Firing Results, M4A2 Hull Assy, March 16, 1943
  - c) Two hand-written notes concerning the above tests.

- 19 Printed Drawings: Fisher Tank Division, Grand Blanc Tank Arsenal
- a) M4A2 Medium Tank, February 17, 1942
  - b) M4A2 (76mm) Medium Tank, c1944
  - c) T70 76mm GMC, July 30, 1943
  - d) M10 3" GMC, May 18, 1942
- 20 Blueprint: "Proposed Design for M4 Radio Bracket", Fisher Tank Division, GBTA  
March 16, 1943
- 21 Miscellaneous Memorandums and Drawings:
- a) Memo; From H. Cary to H. Klingelhofer, SUBJ: Butt Straps & Angle Support, 12 August 1942
  - b) Memo; From H. Klingelhofer to Mr. E. G. Biederman, SUBJ: Mild steel extensions to stainless steel electrodes, 9 November 1942
  - c) Memo; From H. Cary to R. J. Heusel, SUBJ: Comparison of weight of welding rod used to fabricate the T-70 hull front door by austenitic and ferritic welding, 21 April 1944 with attached drawings (1) undated, and (2) dated 18 April 1944 (3 sheets total)
  - d) Memo; From H. Cary to H. Klingelhofer, SUBJ: Time and Rods Required for M4 Assault Tank (extra welding), 6 April 1944, with attached drawing of front and side armor.
  - e) Memo; From H. Cary to H. Klingelhofer, SUBJ: Additional time and welding rod required for Assault Tank M-4A3-E2, 8 April 1944
  - f) Memo; From H. Cary to H. Klingelhofer, SUBJ: Total weight of welding rod required for M-4A3-E2, 8 April 1944 (two pages) with attached drawing.
  - g) Memo; From H. Cary to H. Klingelhofer, SUBJ: Better Transfer of Information between 1<sup>st</sup> and 2<sup>nd</sup> Shift Technicians, 24 April 1944 with typed example of a form attached - Quality Report
  - h) Memo; From H. Cary to Robert Barlow, SUBJ: Safety, 8 April 1944
  - i) Memo; From H. Cary to H. Klingelhofer, SUBJ: Warpage, 1 May 1944 with three attached pages marked Experimental Results
- 22 Blueprint: Ring Guard, M4A2, No. W.E. 198, April 8, 1943, Fisher Tank Division, GBTA
- 23 XM-1 MBT Articles (commercial)
- 24 Magazine; Recognition Journal, No. 12, August 1944, U.S. Navy and War Departments
- 25 Misc. Newspaper and Magazine Clippings 1942-1944 concerning armor and aircraft

## Loose

- a. Book; Great Tank Battles of WW II, Bradford, George, Arco Publishing, 1970
- b. Book; Tanks are Mighty Fine Things, Stout, Wesley W., Chrysler Corp., 1946
- c. Booklet; M10 Welding Operation Instructions, Operations 1-28 Welding Engineer Dept., Fisher Tank Division, GBTA, 28 April 1943
- d. Booklet; M10 Welding Operation Instructions, Operations 1-29, Welding Engineer Dept., Fisher Tank Division, GBTA, 6 July 1943 Serial Number 141
- e. Booklet; Welding Operation Instructions for 76mm GMC Gun Carriage T-70, Fabricated Hull, Welding Engineer Dept, Fisher Tank Division, GBTA, December 6, 1943, Serial Number X
- f. Booklet; M4 Welding Operation Instructions, Operations 1-28, Welding Engineer Dept., Fisher Tank Division, GBTA, March 24, 1943
- g. Booklet; Welding Instructions to be Followed, Welding Engineer Department, E. G. Biederman, Welding Engineer, c1943, Thirty-two pages.