

typing has been applied up to the present date in a variety of ways since it was organized by Thomas Spencer, in 1837, this is, I believe, the first time that an attempt has been successfully made to prepare an engraved copperplate with harder metal, with the view of increasing its printing capabilities, and I feel happy to have been the first to introduce so valuable a discovery into this, my adopted country.

For the Journal of the Franklin Institute.

Particulars of the Steamer Albatross.

Hull built by George Greenman & Co., Mystic Bridge, Connecticut.
Machinery by the Corliss Steam Engine Company, Providence, R. I.
Owners, Commercial Steamboat Company.

HULL.—

| | | | | |
|---|-------------------|---|------|-------------|
| Length on deck, | . | . | . | 158 feet. |
| Breadth of beam, (molded,) | . | . | . | 30 " |
| Depth of hold, | . | . | . | 10 " |
| " | to spar deck, | . | . | 10 " |
| Frames, <i>molded</i> , | . | . | . | 13 inches. |
| " | <i>sided</i> , | . | . | 10 & 12 " |
| " | apart at centres, | . | . | 26 " |
| Depth of keel, | . | . | . | 14 " |
| Draft of water | { forward, | . | . | 11 " |
| | { aft, | . | . | 13 " |
| Area of immersed midship section at load draft, | | | | 310 sq. ft. |
| Tonnage, | . | . | 450. | |
| Masts, 3.—Rig—Schooner. | | | | |

ENGINES.—Upright direct action.

| | | | | |
|--|---|---|------------------|-------------|
| Diameter of cylinders, two, | . | . | . | 34 inches. |
| Length of stroke, | . | . | . | 2 feet 10 " |
| Cut off, | . | . | within one half. | |
| Maximum pressure of steam in pounds, | . | . | 45. | |
| Maximum revolutions at above pressure, | . | . | 75. | |

BOILER.—One—Return flue.

| | | | | |
|-----------------------------|-----------------------------|-------------|------------------------------------|----------------|
| Length of boiler, | . | . | . | 24 feet. |
| Breadth " | . | . | . | 10 " |
| Height " | exclusive of steam chimney, | . | . | 10 " 8 inches. |
| Weight " | without water, | 52,000 lbs. | | |
| Number of furnaces—two. | | | | |
| Breadth of " | . | . | . | 4 " 6 " |
| Length of grate bars, | . | . | . | 6 " |
| Number of flues, | . | . | { above 14. | |
| | . | . | { below 10. | |
| Internal diameter of flues, | . | . | { above 12 ins. | |
| | . | . | { below 6 of 15 ins. and 4 of 17 " | |
| Length of flues or tubes, | . | . | { above 17 ft. 6 ins. | |
| | . | . | { below 10 ft. 6 ins. | |
| Diameter of smoke pipe, | . | . | . | 4 feet. |
| Height " | . | . | . | 20 " 6 " |

PROPELLER.—

| | | | | |
|--------------------|---|---|----|-------------------|
| Diameter of screw, | . | . | . | 10 feet 8 inches. |
| Length of " | . | . | . | 2 " |
| Pitch of screw, | . | . | . | 19 " |
| Number of blades, | . | . | 4. | |

Remarks.—Filled solid under engines. One independent steam, fire, and bilge pump. Boiler, chimney, and smoke pipe protected from com

municating fire by felt and sheet iron. The hull is coppered. The boilers are on deck and has water bottoms. Has a poop cabin. Date of trial, December 22d, 1858.

C. H. H.

For the Journal of the Franklin Institute.

Particulars of the Steamer Arizona.

Built by Harlan & Hollingsworth, Wilmington, Delaware. Intended service, New Orleans to Brazos.

HULL.—

| | | | | | |
|---|----------------------------|---|------|---------------|-----------|
| Length on deck, | . | . | . | 201 feet | 6 inches. |
| Length on deck at load line, | . | . | . | 200 " | |
| Breadth of beam, | . | . | . | 34 " | |
| Depth of hold, | . | . | . | 10 " | |
| " to spar deck, | . | . | . | 17 " | 6 " |
| Length of engine space, | . | . | . | 75 " | |
| Draft forward, light, | . | . | . | 4 " | 6 " |
| " load, | . | . | . | 7 " | |
| Draft aft, light, | . | . | . | 5 " | 2 " |
| " load, | . | . | . | 8 " | 2 " |
| Tonnage, | { Hull, | | 632. | | |
| | { Engine room and bunkers, | | 236. | | |
| Area of immersed section at load draft, | | | | 228 sq. feet. | |
| Speed in knots, | { with tide, | . | 14½. | | |
| | { against tide, | . | 10. | | |
| Masts, 2.—Rig—Schooner. | | | | | |

ENGINES.—Vertical beam—condensing.

| | | | | |
|-----------------------|---|---|--------------|------------|
| Diameter of cylinder, | . | . | . | 44 inches. |
| Length of stroke, | . | . | . | 11 feet. |
| Cut-off, | . | . | . | 5 " 6 " |
| Maximum revolutions, | . | . | 17½. | |
| Weight of engines, | . | . | 360,000 lbs. | |

BOILER.—One—Return flued.

| | | | | |
|---------------------------------------|---------------------------|---|--------------|----------------|
| Length of boiler, | . | . | . | 24 feet. |
| Breadth " | . | . | . | 15 " 6 inches. |
| Height " exclusive of steam chests, | . | . | . | 7 " 7 " |
| Weight " with water, | . | . | 130,000 lbs. | |
| Number of furnaces, | . | . | 4. | |
| Breadth " | . | . | . | 3 " 5 " |
| Length of grate bars, | . | . | . | 6 " 2 " |
| Number of flues, | { above 8. | | | |
| | { below 8. | | | |
| Internal diameter of flues, | { above 1 ft. 5½ ins. | | | |
| | { below 2 ft. by 1-6 ins. | | | |
| Length of flues, | { above 14 ft. 2 ins. | | | |
| | { below 15 ft. 6 ins. | | | |
| Heating surface, | . | . | . | 1880 sq. ft. |
| Diameter of smoke pipe, | . | . | . | 5 " 3½ " |
| Height " | . | . | . | 33 " 8 " |
| Load on safety valve per square inch, | . | . | 30 lbs. | |
| Consumption of coal per hour, | . | . | ¾ ton. | |

PADDLE WHEELS.—

| | | | | |
|----------------------|---|---|-----|---------------|
| Diameter overboards, | . | . | . | 30 feet. |
| Length of blades, | . | . | . | 6 " 6 inches. |
| Depth of blades, | . | . | . | 22 " |
| Number " | . | . | 21. | |

Remarks.—Frame | 3½ ins. × 1 in.—18 ins. apart; 12 strakes of