



**Object:** Fire Pumper  
**Maker:** Joel Bates  
Philadelphia, PA  
**Date of Manu:** 1838 - 1840  
**Materials:** Oak, ash, tulip poplar, iron, brass  
**Dimensions:** 88" H x 184" L x 66" W



## Description:

This hand-drawn vehicle is a double decked-end stroked hand engine constructed primarily from oak, ash, tulip polar, iron, and brass. The box body is a frame and panel construction set upon un-sprung running gear. The axles are made from solid iron whose ends are threaded to accept square nuts to secure the wheels. The flush panels are finished and decorated with applied rails and stiles which have their interior edges chamfered. The main body panels are painted a light aqua blue-green, and the rails and stiles are painted a medium red; which in turn are decorated with oil gilt foliate forms in the four corners. The pump handles are made from a thick rolled iron plate with some evidence of hand forging. The handles which are joined side to side with threaded iron rods and secured with square nuts. The primary pump handles are fitted with four pair of turned wooden handles which fold out to allow, for up, to sixteen men to assist in operating the primary pumps.

The top of body is also fitted with two boards which fold out to allow firefighters to stand in an elevated position to operate the middle set of secondary pump handles on both sides of the pumper body. *The secondary wooden pump handles and wooden platforms are meant to be folded and stowed during transportation.*



**Pump handle platform - stowed position**



**Pump handle platform - operational position**



**Pump Cylinder**



**Pump Cylinder - Detail**

The body functions as a water holding tank or reservoir, to be filled with suction hoses coupled to brass fittings on the side body panels and side troughs as the pump is hand operated. The side troughs, reinforced with brass strapping, are found on either side of the body. A brass cylindrical pump body and piston is enclosed in the body just below a box-like super-structure which is secured to the deck of the pumper. The front and rear panels on this box-like structure are detachable, allowing access to repair or service the pump and pump handle linkage. The top perimeter edge of the super structure is decorated with a wooden rail and cast brass balustrade made in the form of eagles and split

foliate ornaments. The balustrade is supported upon two horizontal beams whose ends terminate with carved eagle heads.



**Balustrade - detail of carved eagle head**

The removable front and rear panels are decorated with paintings of firefighters.



**Painting on rear panel**



**Painting on front panel**

**Condition:**

This vehicle is structurally unstable. The wheels are in poor and unstable condition having areas in the felloe which are damaged by fungal decay. The spoke to hub joinery is quite loose and the wheels have significant "play" when side to side pressure is placed upon them. The iron tire is loose on the proper right rear wheel; small splits and fractures are found in the turn wooden wheel hubs.



**Proper right rear wheel**



**Proper left front wheel**

The front hubs are not matched to the rear wheel hubs and the front iron tires are significantly more worn than those on the rear; therefore, it is believed that the front wheels were replaced.

There are numerous wooden components which are loose, detached, or split: the upper gallery/balustrade is loose and several sections of wooden moldings are split on the front, proper right corner; the proper left lower stile is partially detached.



**Damaged super-structure balustrade**

The pumper has been partially re-built after, reportedly having been recovered from the Delaware River, in the early part of the twentieth century. The metal components and body are believed to be the only original components which remain, based upon preliminary examinations. The superstructure, which covers the primary pump, also appears to be re-constructed. The balustrade was reconstructed using the original cast brass decorative elements.



**Brass ornament**



**Re-carved or replaced carved decoration**



The upper hose nozzle has been modified having a down pipe added to attach to a hose connection secured to the proper right side of the body, just forward of the rear wheel.



The lids which cover the top of the open pumper body and front and rear super structure panels are made from 3/4" plywood. The wheels are structurally unsound.

The painted panels, depicting the two firefighters, were added in the in the 1970's; the paintings are painted on artist board and nailed to the replacement front and rear super-structure panels. Note these panels are made from 3/4" plywood.



**Front panel with painting**



**Reverse of front panel - plywood**

Several of the metal fittings which hold or secure the secondary pump handles and hoses, when the pumper is being moved are broken, bent or missing. Most have been painted with bronze powder paint.



**Broken nozzle "cradle"**



**Intact nozzle "cradle"**

All metal components have minor areas of active corrosion, including the copper pressure tank.



**Underside of front axle**



**Detail - underside of front axle**

Areas of actively flaking paint were noted on both the wood and metal components. There is approximately 5% paint loss on the wheels, and slightly less than 5% on the body. The entire vehicle was re-painted after its re-construction and some areas appear to have been retouched, since that time.

There are many abrasions and scrapes, as well as mold growth on the underside of the vehicle. The vehicle is covered with a heavy layer of filth and grime.

**Treatment Proposal:**

*Paint samples should be taken from the body and running gear and prepared for microscopic X-sectional analysis to determine original paint schemes. The results may dictate a course of action for the treatment of the body and running gear: either removal of the over paint, or consolidation of current paint scheme.*

*However, this proposal is based upon the retention and stabilization of the current finishes.*

**Treatment Proposal:**

1. The fire pumper will be vacuumed, brushed, and surface cleaned in order to reduce filth and grime.
2. A penetrating consolidant, such as polyvinyl butyrol will be applied to areas of decayed wood. To help to strengthen those weakened sections.
3. Unstable joinery, cracks, and splits will be stabilized and filled where necessary with an appropriate material.
4. If necessary, the proper right rear wheel will be replicated, using all original components where possible.
5. Replicate the rear outer cast brass hub nut covers and replace the non original front hub bands

6. Mechanically and/ chemically stabilize areas of active corrosion.
7. Remove bronze powder paint from cast brass fittings and lightly polish the brass using a cotton wadding polish.
8. Degrease the polished brass components and apply a protective lacquer coating.
9. Replicate the fractured and/or missing metal fittings using the remaining originals as patterns, using sand casting methods.
10. Flaking paint will be consolidated using a reversible acrylic, thermoplastic resin, such as Paraloid B-72.
11. Cupped and tented paint will be secured using a heated tacking iron.
12. Apply a protective isolation varnish using a reversible synthetic varnish, matted to reduce sheen.
13. Areas of loss will be toned to match the surrounding color scheme using appropriate, reversible paints.
14. Apply a final overall protective, reversible acrylic varnish, such as Paraloid B-67 will then be applied to the object.