

THE MYSTERY OF HISTORY — FEBRUARY 4, 2019

WHAT'S IT?



Fig. 1 (left): Front view. The back view is identical to this front view, except there is no embossing. The passageway above "410" goes through the casting to the back. Its openings are 1 3/16" in diameter and each end is internally threaded. PHOTO: © 2018 Richard W. Black

Fig. 2 (below): Bottom view. The hole in each of the four "ears" is 3/8" in diameter and is not threaded. The hole in the center is also not threaded and freely connects to both the passageway and the globe seen in figure 1. PHOTO: © 2018 Richard W. Black



ARTIFACT 19-01 ANSWER:

To be honest, this artifact has caused a ruckus among the hydraulic engineering community over the last two months it has been on display. No one yet can say for *certain* what the **LEADER** is or how it functioned.

Continued...

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Fig. 3: Top view. PHOTO: © 2018 Richard W. Black

The **LEADER**, the **Hammer**, and the **Arrest**

Vocabulary:

Hammer, Arrest, Compress

Questions:

- What is the “criminal” **arrested** by the **LEADER**?
- What other things might be **arrested** by devices like **LEADER**?

Most experts believe it is a water **hammer arrestor** of some sort, but they disagree on how and where in a system it would have been used. Let’s start with what a water **hammer arrestor** (WHA) is and how it functions.

A visual analogy will serve us well here. We are going back into your memory banks to the last time you used and/or saw someone else use a spitball (SB) and straw. The “hammer” is the leading edge of the SB—also referred to as a projectile. Imagine taking

in a big breath of air and explosively blowing into the loaded straw. The forced air in the straw rockets the SB projectile toward its intended non-living target (safety first!) The SB is now known as the **hammer** and when it smashes in to the bullseye one might say, “You **hammered** the target!”. Good shot.

Now imagine the same scenario only this time you have a friend holding an unfolded thin tissue one centimeter—about the width of your pinky fingernail—directly in front of the straw. What’s going to happen? If you have a large lung capacity, the SB projectile will blow right thru the tissue and proceed on to its target. If the aim and force of air were the same as the no-tissue shot, the SB is most likely going to hit lower on the target. Why? By golly, I think you’ve got it! When the SB projectile blew through the tissue (the **arrestor**) it lost some of its force (the **hammer** effect) and slowed down just enough for it to hit with less force and lower down on the target.

Back to our artifact: the **LEADER**. When seated, air is trapped inside the iron ball. If you examined the base closely, you would have noticed two threaded ports which would have allowed water lines to be screwed into the **LEADER**. Now imagine a water pump being turned on and a sudden surge of water comes rushing through the empty pipes. What might be the consequences of this water hammering into the system? The network of water lines and connectors would be jolted. Imagine this happening repeatedly, hundreds of times a day. Eventually pipes and their support structures are going to come loose, leak, or even burst! We need something to **arrest**, slow down, and lessen the force of the runaway slammer **hammer**. Here comes our super-hero artifact, **LEADER**, to the rescue!

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Fig. 4: A more dramatic front view. PHOTO: © 2018 Richard W. Black

Did you notice the four bolt holes on the bottom of the artifact? Might they be used to bolt the base of the **LEADER** onto something like a water pump outlet? Hmmmm... Before we go any further, there are two facts we need to know. Air can be **compressed** so it takes up less space, water is not **compressible**. So, as a pump is switched on, water rushes into the air ball inside the **LEADER**. What happens? Many of you have already predicted the answer! The force of the water **hammer** is **arrested** by the **compressible** air “pillow” inside the iron ball. Viola! No need for the mops today!

Is this what the **LEADER** was actually used for? The jury is still out. Sometimes the mysteries and the histories of artifacts remain hidden... but it sure is fun trying to unravel their hidden secrets!

Modern Water Hammer Arrestors: Are there any similarities with the artifact?



Thanks for participating in our “What’s It?” guessing contest! This artifact was definitely tougher than the first one. Now that you know more about it, perhaps other research you do will yield a more definitive answer in the future. Following are the answers we received to date.

REALLY INTERESTING GUESSES

- Anna Allen ... a mixing chamber for some type of liquids (or gasses) used in manufacturing.
- Mike D. Some kind of post or rail top.
- Carl Gouveia Tractor hitch.
- Ed Hefke To secure a boat on a dock with a rope.
- Dan Kwiatkowski A printing die that is turned by a pipe handle to use.
- Ron Wood Top of a fence post.

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BACKGROUND

“WHAT’S IT?” has been a proposed feature of the BCM website since its inception in 2007. In 2017 Brockport Community Museum (BCM) board member Archer “Buck” Noble, a Brockport Central School District teacher (now retired) developed “The Mystery of History” school project that encouraged fourth and fifth grade students to use observational and investigative techniques to determine what an artifact is and how it was used.

That project was introduced to the general public during a BCM outreach presence at the 2017 Brockport Sidewalk Sale. That success led to this collaboration between the Brockport Community Museum, Seymour Library and Brockport Central School District. The first artifact for identification debuted at the November 17, 2018 Seymour Library “After Dark” gala.

GET INVOLVED

- **Take your best guess** regarding the current artifact.
- **Watch our home page** for the next artifact and clue(s).
- **Do you have an artifact** you would like to know more about? Open your query to a larger audience.
- **Submit a suggestion** about how we can improve this project.

If so...

Leave your contact information in “Ye Olde Prediction Box” near the exhibit display.

CREDITS

Museum project committee

Archer “Buck” Noble
Richard W. Black
Norman Frisch

Seymour Library

Carl Gouveia, Director