The purpose of this document is to illustrate the process Wendy went through as she solved a complex search challenge. Seeing examples of how others solved search challenges can be beneficial; you may gather some insights you can use when solving your own challenges.
Question: When going through one of P. T. Barnum's notebooks, filled with diagrams of transportation devices, this picture fell out. What is it? Knowing what it is will help me put it back in the notebook in the right place.

Figure 1. Line drawing of mystery transportation device.

Research Questions:

1. What is this?
2. Who invented this?
3. In what year was this invented?
4. What connection, if any, did the inventor have with P.T. Barnum?
Step 1: Google Image Search

- Drag and drop image into Google Image search

Figure 2. Example of dropping image into Google Images
Search results are organized by:

- Best guess for this image
- Visually similar images
- Pages that include matching images

I chose to explore "Pages that include matching images" because the results have both the matching image and information about it.

Figure 3. Search results for mystery image search
Step 2: Preliminary Search Results

- I clicked on the 1st link and found the mystery image and a short description of it, linking it to Abraham Lincoln. [http://inventors.about.com/od/weirdmuseums/ig/Inventive-Thinking/Abraham-Lincoln-s-Patent.htm]

- I clicked on the 2nd link to double check my findings and found a short description of the patent and the year it was issued. [http://www.thenewatlantis.com/publications/lincolns-patent-for-buoying-vessels-over-shoals]

- Now that I knew the name of the inventor and the patent number, I searched for further information using Google Patent Search.
Step 3: Google Patent Search

- Google Patent Search contains a complete list of US patents.
- I wanted to verify my research thus far and get more background information on the drawing by using this method.
- If all three sources matched up, I could prove the previous two websites were credible because data would be triangulated (or verified by cross-referencing at least 3 sources).

I accessed Google Patent Search by:

1. Selecting the option for "More" from the Google home page
2. Selecting the last option in the menu for "Even more"
3. Scrolling down and selecting Patent Search
4. It can also be accessed by Google searching "patent search"

Figure 4. Visual to show how to get to Google Patent Search.
Step 3: Google Patent Search

- I searched for [Abraham Lincoln].

- I clicked on the top result because it matched the name of the patent from the previously viewed website.

Figure 5. Search results from Google Patents for the search query [Abraham Lincoln].
Step 3: Google Patent Search

The search results confirmed the answers to questions #1-3:

1. This is a design to make boats more buoyant.

2. Abraham Lincoln invented this method.

3. The patent was dated 1849.

The data was triangulated with the use of Google Patent Search. I could now vouch for the credibility of the websites referenced earlier.

Figure 6. Search results for "Buoying Vessels over Shoals"
Step 4: Search for more specific information

- My next search involved trying to find connections between Abraham Lincoln and P.T. Barnum.
- To begin this search, I used the query [Abraham Lincoln P.T. Barnum].
- I filtered the results using the News filter and restricted the time period to 1800-1900 in the hope of finding primary documentation from when they were both alive. This was a dead end because it produced no relevant results (although it did provide me with an interesting article about Lincoln's possible affiliation with a popular form of social media).

Figure 7. Filtering results using Google News.

Figure 8. Using custom range to filter search results by time.
Step 4: Search for more specific information

- I then filtered my query [Abraham Lincoln P.T. Barnum] results by selecting Google Books. I chose several books: (books.google.com/books?isbn=0766030229, books.google.com/books?isbn=0786431024, books.google.com/books?isbn=1136864024) and skimmed the passages (using [Ctrl-F]) that contained both names. This search produced several results confirming that P.T. Barnum visited the White House when Lincoln was president.

- This search concluded by affirmatively answering question #4. The inventor of the patent (a method to buoy boats over shoals), Abraham Lincoln, did have connections to P.T. Barnum. He was invited to the White House when Lincoln was president. Additionally, Lincoln attended several of P.T. Barnum's circus performances.

Figure 9. Search using Google Books.
Advanced Power Search Tools

I used the following advanced power searching skills in my research:

- Filter image results to locate faces, images of particular sizes, and similar images.
- Use Google News and the News Archive search to locate newspaper and news blog articles.
- Use Patent Search to locate American and European patents.
- Use Book Search as a research tool.
- Recognize the kind of problem you are asking and match the kinds of resources to search.
- Apply search strategies: comparing multiple sources.

Conclusion:

The mystery drawing should be placed in the boat design section of P. T. Barnum's notebook.