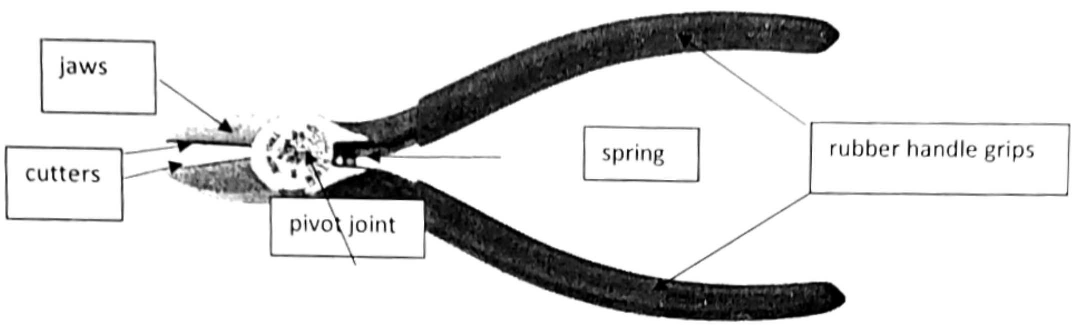
CONCORDIA UNIVERSITY

ENCS 282 - TECHNICAL WRITING AND COMMUNICATION - FALL 2016

Practice Exercises for Final Exam

1. Write a short (1 page) mechanism description for the tool shown below. Follow the formatting guidelines for mechanism descriptions.



2. Write an executive summary for the following text (approximately 100-150 words).

Effects of the Disaster: Ship Design and Safety Regulations

In an effort to prevent repeating their mistakes, the White Star Line modified several of their existing ships following the Titanic disaster. The changes were based on the design flaws that were assumed to have contributed to the disaster. Along with these design changes, the White Star Line, and all shipbuilding companies at the time, had newly established safety regulations, agreed upon by both the British and American governments, that they had to follow. Developing safety regulations for ships at sea was another attempt to avoid accidents similar to the Titanic. The following is a discussion of the changes made in the design of ships and the safety regulations implemented as a result of the Titanic disaster.

Ship Design

Following the Titanic disaster, the White Star Line modified the design of the Titanic's sister ships in two ways: the double bottoms were extended up the sides of the hull and the transverse bulkheads of the watertight compartments were raised. The double bottom on ships is constructed by taking two layers of steel that span the length of the ship and separating them by five feet of space [Garzke and others, 1994]. When a ship runs aground or strikes something in the water, the bottom plate of the hull can be punctured without damage incurred to the top plate. With a double bottom, the chance that a punctured hull would allow water into the watertight compartments is minimized. By extending the double bottoms up the sides of the hull, which adds another layer of steel to the sides of the ship, a similar event can be prevented. If an iceberg, or a collision with another ship, barely punctures the hull, only the space between the inner and outer sidewalls would flood with water. The watertight compartments would remain undamaged.

The ends of the transverse bulkheads of the watertight compartments were raised to prevent a tragedy similar to the Titanic. When the hull of the Titanic was torn open in the collision with the iceberg, water began to flood the damaged compartments in the bow. As the ship pitched forward under the weight of the water in the bow compartments, water began to spill over the tops of the bulkheads into adjacent, undamaged compartments. Although called watertight, the watertight compartments were actually only watertight horizontally; their tops were open and the walls extended only a few feet above the waterline. By raising the ends of the transverse bulkheads, if a ship were taking in water through the bow compartments and the ship began to pitch forward, the water in the compartments could not flow over the tops of the bulkheads into the next compartments. As a result, flooding of the damaged compartments could be controlled and isolated to only the damaged sections [Gannon, 1995].

At the 1948 Convention on Safety of Life at Sea, specifications for the orientation, length, and number of watertight compartments in passenger ships were established. The watertight compartments, which improve a ship's ability to withstand the effects of underwater damage, are used to control flooding in the hull of the ship. To maintain a nearly level position, the walls of the watertight compartments are to be oriented horizontally, or across the width of the ship, rather than vertically. If one side of the hull is damaged, the water that fills the hull will even out across the width of the ship. With vertical walls, the water in the hull would remain on the damaged side of the ship, causing the ship to lean to that side. The length of the watertight compartments is determined by the length of the ship. Shorter ships should have shorter compartments while longer ships should have longer compartments. The number of compartments is also determined by the size of the ship. One criteria that must be met, however, is that the ship must remain afloat with two of the watertight compartments flooded [Muckle, 1951].

Safety Regulations

Along with the changes in ship design that resulted from the Titanic disaster, safety regulations were established to govern passenger ships while at sea. Many of these regulations were established at the 1948 Convention on Safety of Life at Sea. The mandatory use of the wireless, the increased lifeboat capacity, and the implementation of the ice patrol-each of these was developed to prevent accidents similar to the sinking of the Titanic [Garzke and others, 1994]. Wireless is the means of communication for ships at sea. The regulations require that ships exceeding 1600 tons be equipped with wireless apparatus. Use of the wireless is beneficial for ships because they are able to receive weather reports, check their positions, and call for help in emergencies [Society, 1977]. On the night of the Titanic disaster, several warnings were called in to the Titanic from ships aware of her position. Following her collision with the iceberg, the Titanic was able to send out distress signals to other ships with her position and the status of her damage so help was on the way immediately.

Although there was room on deck for twice as many lifeboats, the Titanic carried lifeboats for just over half of the passengers and crew on board. The designer of the Titanic had allowed room on deck for two rows of lifeboats, but one row was removed before the voyage began to make the deck more aesthetically pleasing [Rogers and others, 1998]. With outdated British Board of Trade regulations, the Titanic's twenty lifeboats actually exceeded requirements by 10 percent capacity [Refrigerator, 1998]. The new safety regulations increased the required number of lifeboats to a number that would accommodate all passengers and crew aboard the ship. Based on the length of the ship, a given number of davits, which are the mechanism used to raise and lower the lifeboats, are mounted along the perimeter of the lower deck. Figure 4 shows the davits and lifeboats on the deck of the Titanic. If the minimum lifeboat capacity is not met, additional lifeboats must be stowed under other boats. Regulations also specify that each of the lifeboats must carry oars, sails, a compass, signalling devices, food, and water. In addition, for large ships, two of the boats need to be motor boats [Manning, 1956].

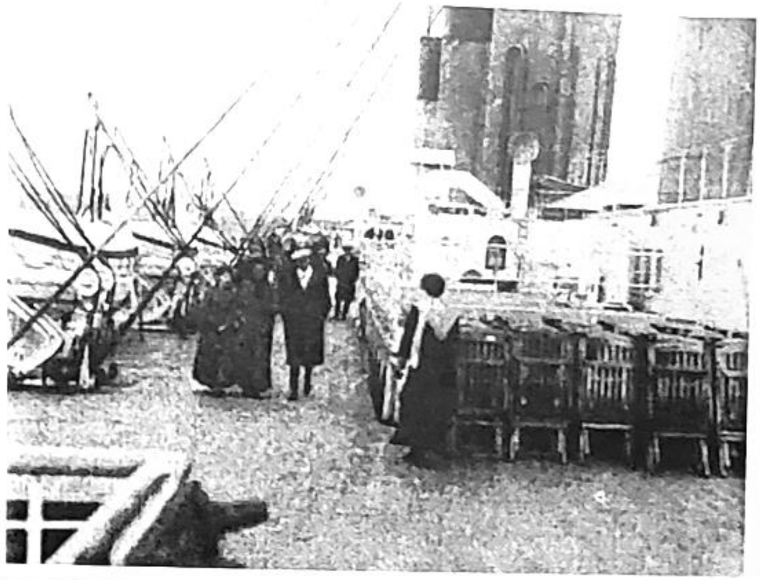


Figure 4. The deck of the Titanic [Refrigerator, 1998]. The davits and lifeboats are on the left. The people are walking through the extra space on the deck that was designed to hold the additional lifeboats.

The United States Government began the ice patrol so that ships travelling between England and the United States could be alerted of approaching ice fields. The ice patrol studies and observes the ice conditions in the North Atlantic in order to keep track of where the ice fields are in relation to nearby ships [Society, 1977]. Ice fields, large expanses of floating ice that are more than five miles in their greatest dimension, shift around depending on weather conditions. Therefore, without the ice patrol, ships would need to constantly monitor the positions of the ice fields. For the Titanic, the ice patrol could have informed the captain of the ice fields and surrounding icebergs and instructed him to stop the ship until morning.

(Adapted from Penn State University's Writing Guidelines for Engineering and Science. URL: http://writing.engr.psu.edu/workbooks/reports.html)

3. Write assembly instructions for the lamp shown on the back of this page. Include background information, assembly steps in adequate detail, and any suitable warnings.

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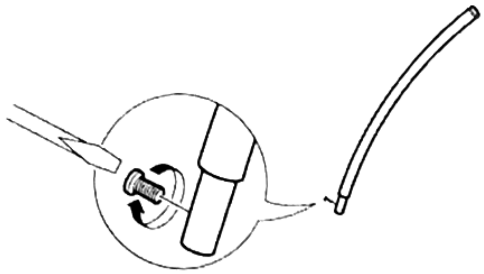

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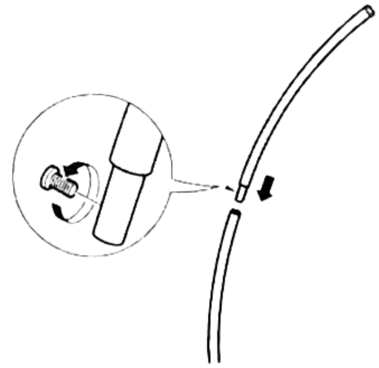

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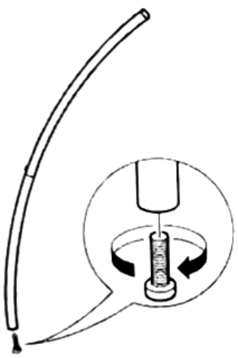

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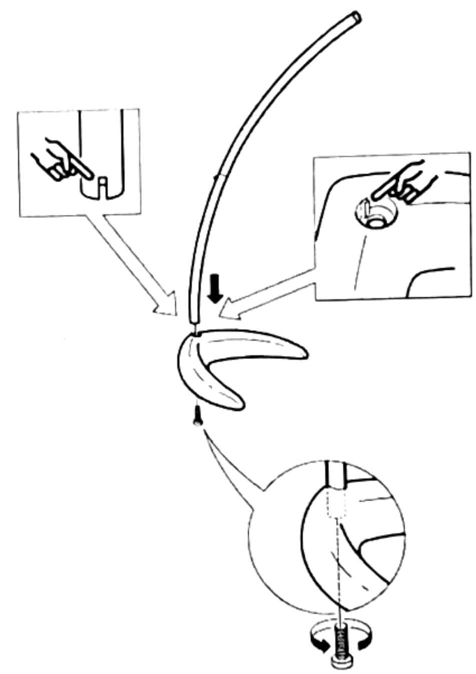

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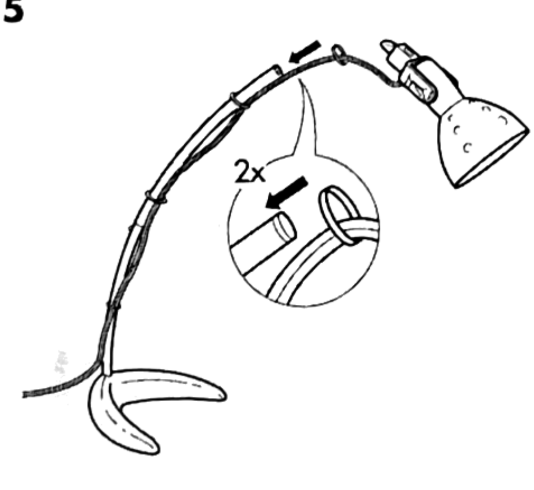

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