

Face Cradle

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Client: Susan Frikken

Product Design Specifications

Function

Current static massage chair face cradles do not adjust as the subject becomes more relaxed. This results in the subject's neck and upper back shifting to an uncomfortable bowed position. This device must perform two important functions. First, it must support the head of a patient receiving a chair massage, specifically preventing the chin from slipping through the cradle. Second, it must adjust along the axis of the spine to accommodate a different position as the patient relaxes during the massage.

Client Requirements

This device must facilitate mental and physical relaxation. To do so it must be comfortable for all users and accommodate various positions as the patient relaxes. It must appear comfortable. Specifically the cradle must allow for changes in posture as cervical muscles relax. Adjusting the device must not require a significant portion of the massage.

Design Requirements

1. Physical and Operational Characteristics

- a. *Performance Requirements*: The device must accommodate 16 massages lasting 30 minute per day.
- b. *Safety*: The device should not adversely interact with human skin for periods of up to 1 hour.
- c. *Life in Service*: With proper use and maintenance the cradle should last for 5 years.
- d. *Operating Environment*: The device will be used in Ms. Frikken's home office, and a variety of indoor environments. The device may be transported through a wider range of environments and should tolerate limited exposure to temperatures of -30 to 35 °C.

e. *Ergonomics*: The device must comfortably support clients from children to larger adults. An 11 pound head must not slip through the cradle.

f. *Size*: The face cradle mount must be compatible with the two prong receiver of the chair. Each prong is 1.91 cm in diameter and they are 18.71 cm apart.

g. *Weight*: The device must be manageable to transport and less than 5 pounds.

h. *Aesthetics*: The design should appear comfortable and match the chair.

i. *Materials*:

-*Covering*: The material used should not adversely interact with the skin of the user and should tolerate moisture and oils. The material should be washable with soap and water. The client prefers environmentally materials.

-*Padding*: Padding for the device should be comfortable yet firm and capable of conforming to various faces sizes and shapes. The client prefers memory foam.

-*Frame*: The frame should be rigid under loads. Metal is preferred by the client.

2. Production Characteristics

a. *Quantity*: One device will be prototyped for under \$100. The chosen design should allow for mass production.

b. *Target Product Cost*: Final retail price should be comparable to current face cradles (\$45-\$100).

3. Miscellaneous

a. *Standards and Specifications*: The device will be classified as a Class I medical device. It will have minimal potential harm to the user.

b. *Customer*: The client is concerned about the ease of any face cradle adjustments during a massage, as they typically last less than 30 minutes. Any adjusting should be automatic or nearly so. She also would like to keep the budget under 100 dollars for the first prototype developed.

c. *Patient-related concerns*: Patient related concerns are primarily related to their comfort while using the face cradle. Materials that could cause any adverse reaction during prolonged contact will not be used.