The Retractable Hanger

Kenneth Nebre, Heidi Attia, Siu Fung Lau, HorShan Tsoi, and Vincent Tam

Abstract

Hanging and removing clothing from a hanger generally requires more time and effort than necessary. After completing surveys, the top complaints about hangers were: that it is difficult to put a shirt on a hanger with a tight neck and that it is inconvenient to stretch the collar of a shirt when placing it on a hanger. To resolve this issue, a durable collapsible hanger was built to easily hang even the small collar of a turtleneck.

Design Specifications

The performance of the retractable hanger is largely defined by two factors; the weight of the clothing item and the strength of the spring within the mechanism. Calculations were performed for the prototype as well as the ideal spring and weight characteristics of the ideal design to withstand 2.25 kg of mass.

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<thead>
<tr>
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<th>Ideal Design</th>
<th>Model</th>
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<tbody>
<tr>
<td>Spring Stiffness (N/m)</td>
<td>23,000</td>
<td>5670</td>
</tr>
<tr>
<td>Critical Load (kg)</td>
<td>3.11</td>
<td>0.77</td>
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<tr>
<td>Height (in.)</td>
<td>6.5</td>
<td>12</td>
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<tr>
<td>Width (in.)</td>
<td>18</td>
<td>16</td>
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Using the design of a trash picker, the hanger was modeled by:
- Shortening and reassembling the body
- Cutting off the curved parts of the arms
- Replacing the original arms with dowels
- Attaching a hook to the top

Conclusion

Through the application of a spring-loaded vertical gear mechanism (much like a trash picker), the arms of the hanger may be retracted and collapsed to both remove and hang clothing with convenience and ease. If this model were to be manufactured, we would need to increase the stiffness of the spring used so that heavier loads could comfortably be placed on the hanger.

Acknowledgements

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References

- Patent 4717053, Patent 4856661
- Unger Brand “Nifty Nabber”