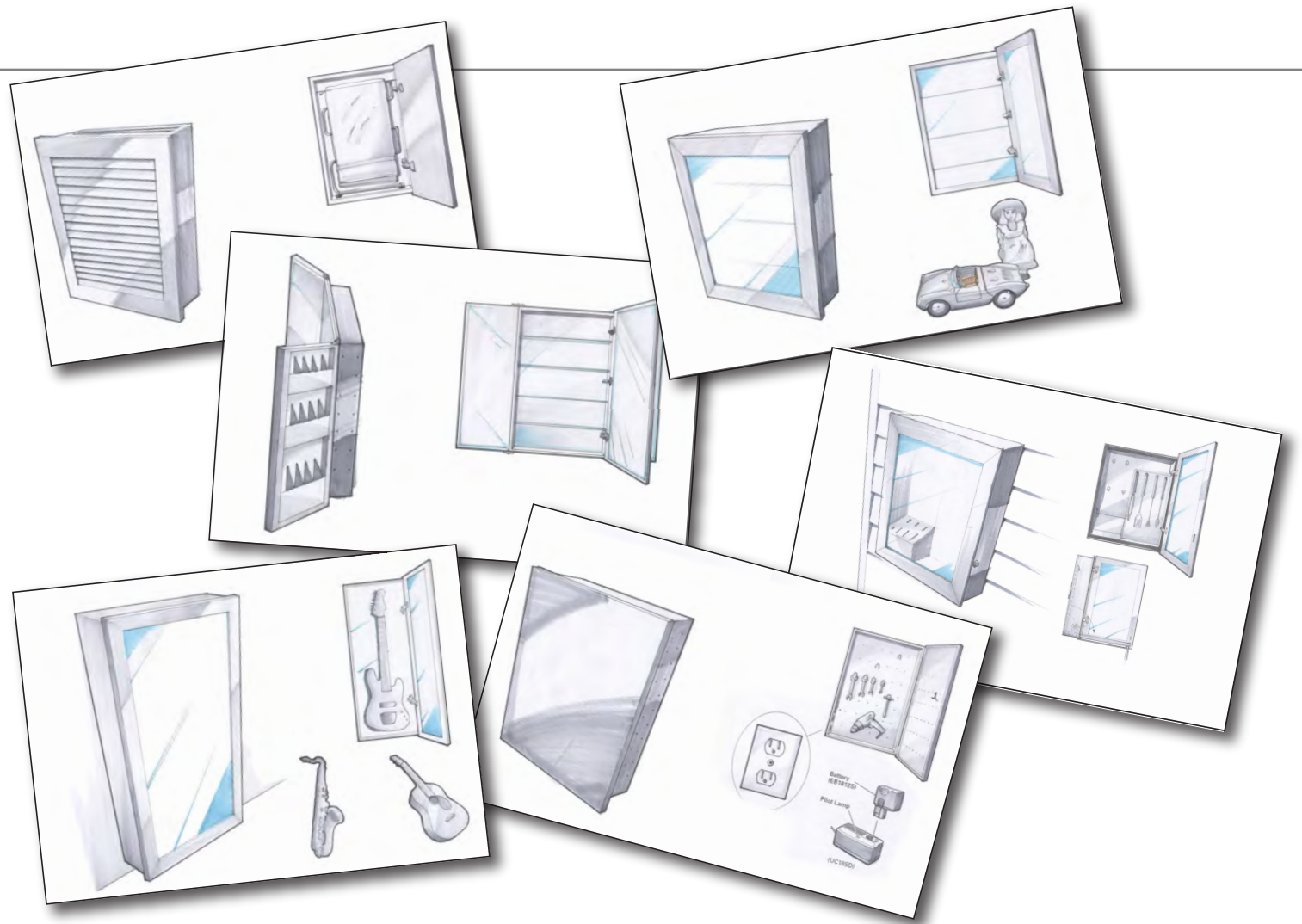


Storage Cabinet - Ideation



This work was part of a student-industry collaboration with Broan-NuTone.

Our team was given a set of design criteria from the client. These criteria were used to generate concepts for new storage cabinets.

The client sought a design solution that would expand their current product line into new areas of the household.

The new product line had to fit fully within their current manufacturing capability, and be appealing to a world-wide customer base.

Category	Parameters	Performance Criteria	
Human Function	Aesthetic	Style	Must match 5 most popular home decorating styles
		Color	Colors capable of matching any home decor
		Finish	Can match any wood finish Can match any steel or aluminum finish
	Physical	Cleaning	Can be cleaned with standard household glass and surface cleaners in under 5 minutes
		Mounting	Easy installation. Can be installed by average consumer in less than one hour.
		Assembly	Can be unpacked and assembled by average consumer in less than 20 minutes. All hardware will be provided.
		Disassembly	Any user can disassemble product for service with standard household tools in under 10 minutes.
Cognitive/Social/Cultural	Value	Steel or Aluminum will yield high perceived value and quality to the consumer and deliver on these perceived attributes.	
	Reliability	Product will remain in original condition for the lifetime of the user.	

Category	Parameter	Performance Criteria	
Technical Function	Internal	Wiring	Must work with existing 120 v wiring (240 v / foreign use)
		Shelves	Adjustable
	External	Durability	Maintain original appearance throughout the life of the product
		Method of Installation	DIY 80 % BIY 20 %
		Packaging	Be able to withstand up to 200 -400 lbs stacked on top without destroying the package or the contents.

Performance Criteria

Category	Parameter	Performance Criteria
Production Function	Tooling	Must fit with existing Manufacturing Process
	Assembly	Design for ease of assembly in factory in less than 180 seconds
		Any user can disassemble product for service in under five minutes with common household tools

Category	Parameter	Performance Criteria
Marketing Function	Target Market	Retail Big Box (Home Centers) BMDs
	Price	Sensitive Margin \$75 - \$125 Expensive Margin \$125 - \$325
	Material	Wood 68% Metal 27% Plastic 5%
	Channel	Home Center 69% Specialty 14% Other 17%
	Corporate Marketing	Must identify with target market World Wide Market

Dozens of concepts were generated. After a meeting with marketing executives from Broan-NuTone, a few concepts were chosen for further development.

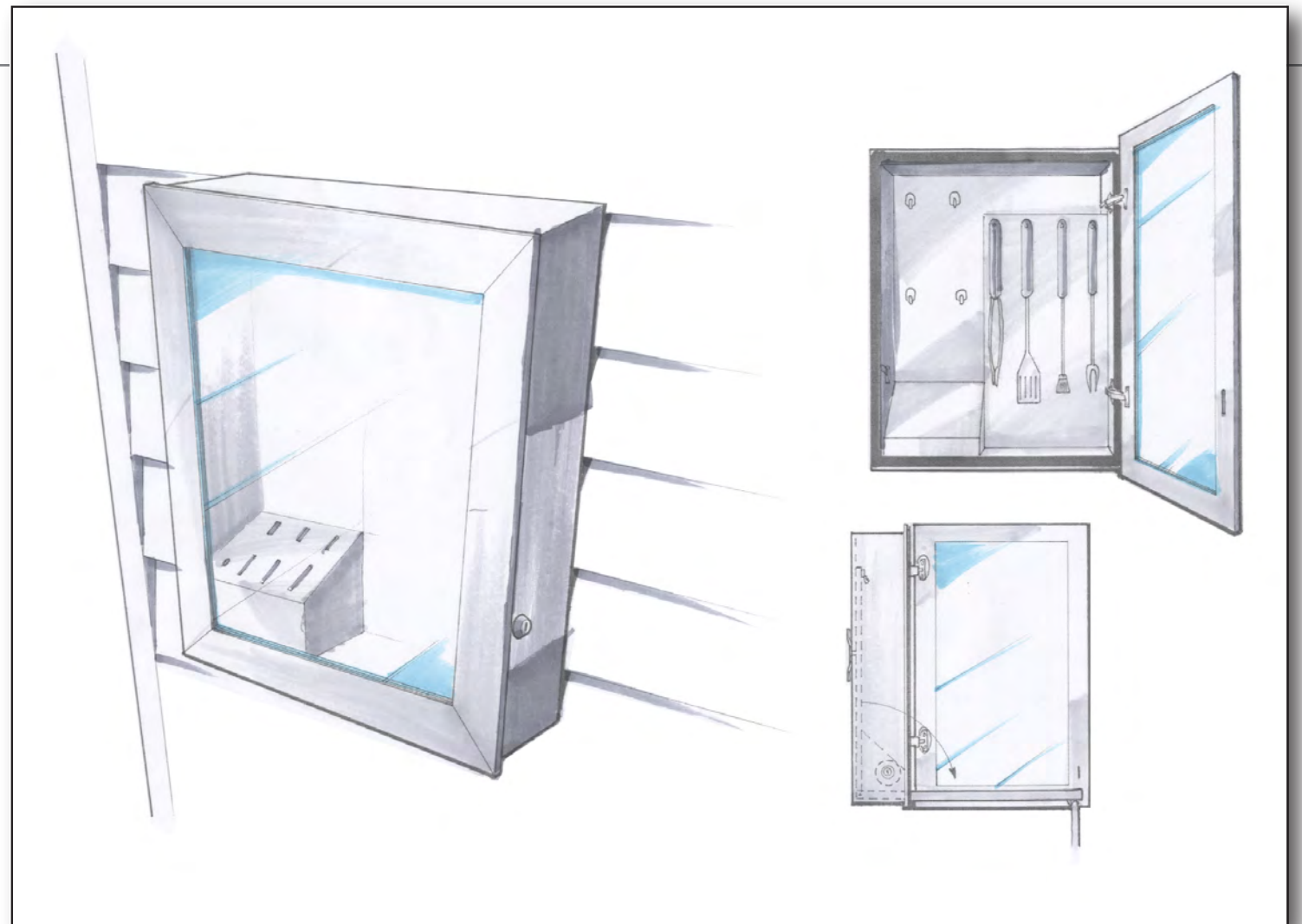
Final design direction was to produce a weatherproof cabinet to compliment the increasingly popular outdoor kitchen market.



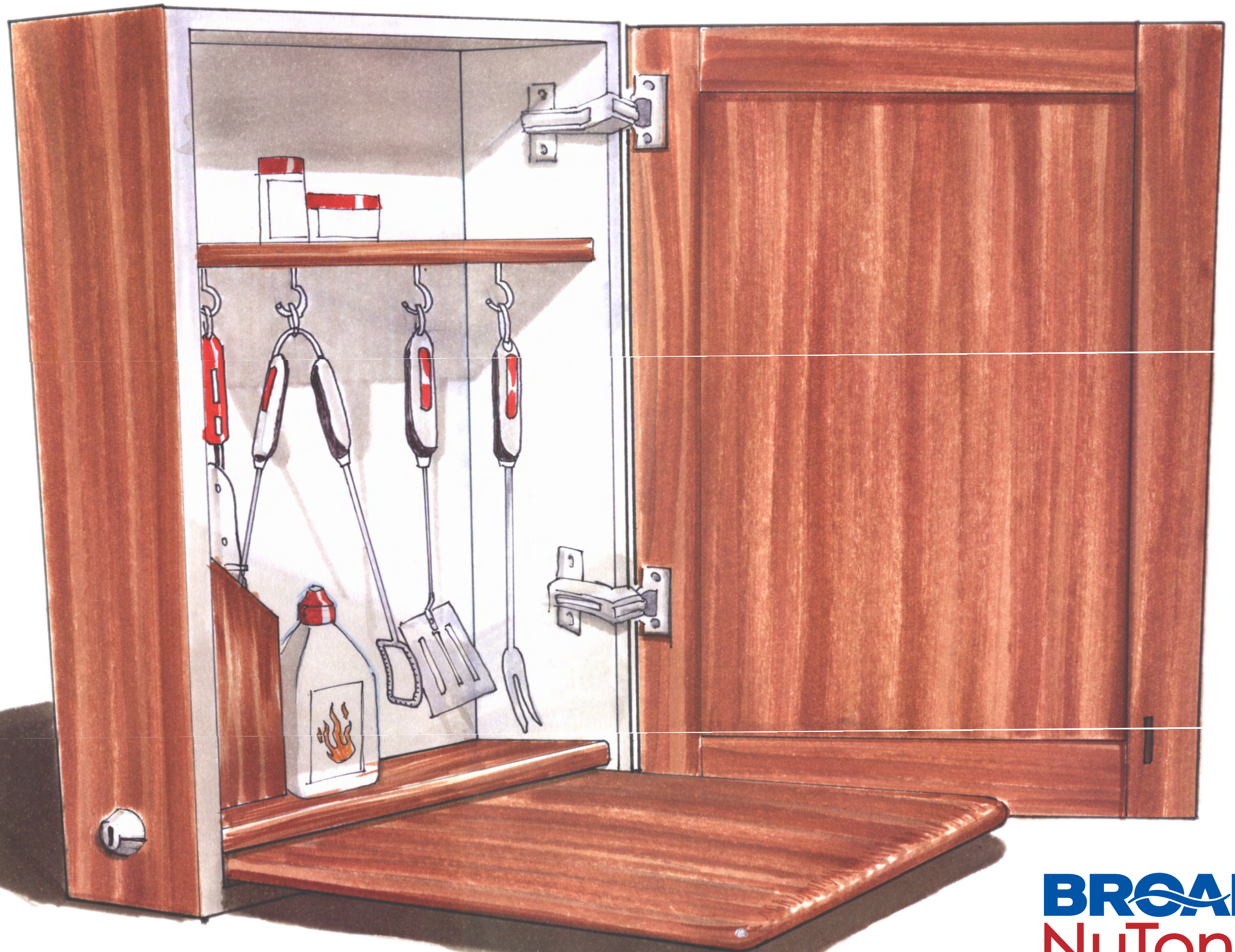
During research, it was discovered that outdoor grilling was becoming more popular, and more people were spending large amounts of money on new outdoor kitchens.

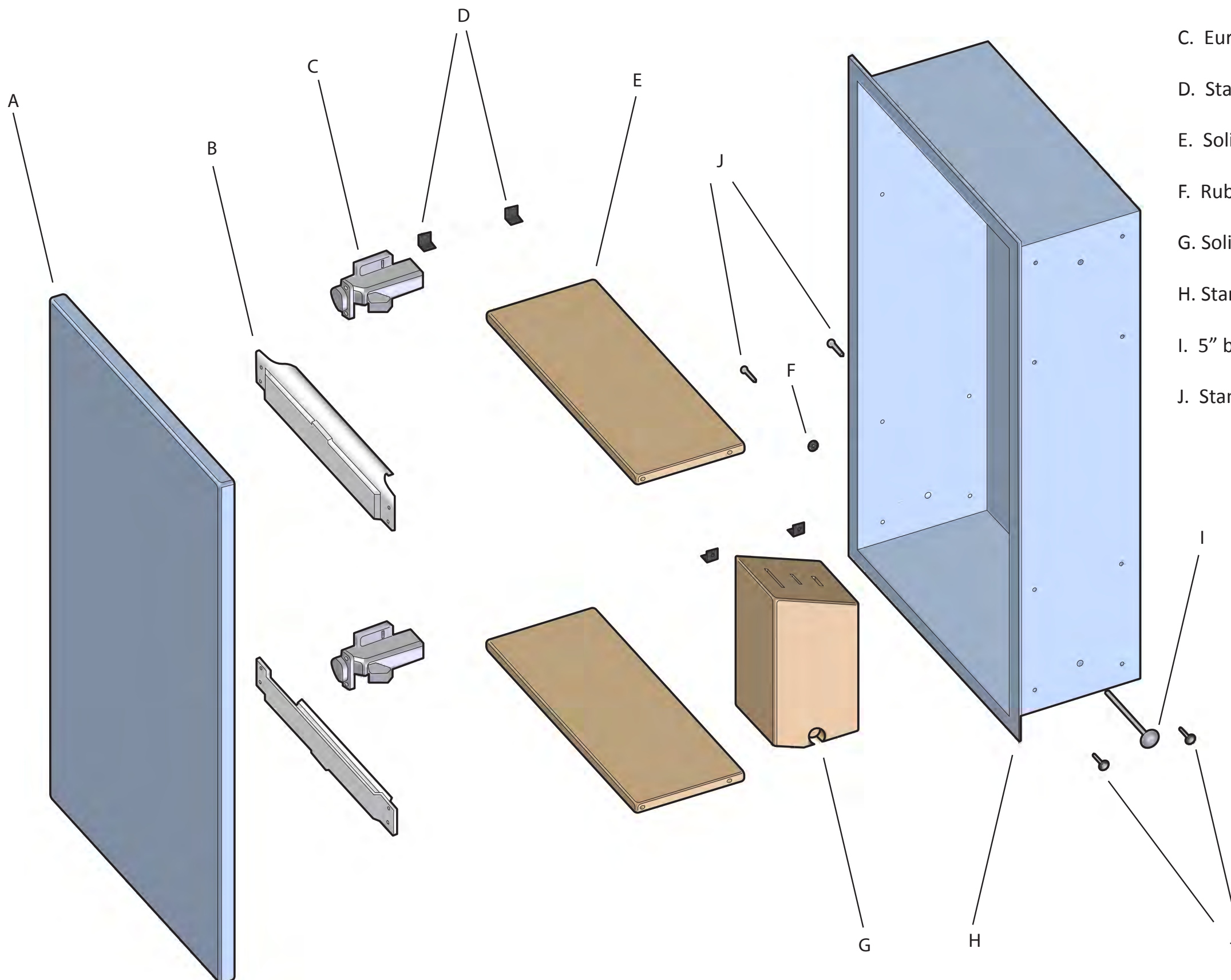
The storage solutions that existed were not attractive enough to compliment the expensive outdoor additions.

A decision was made to develop wood and stainless steel cabinets that would be both attractive and affordable to extend Broan-NuTone's existing medicine cabinet line.



Storage Cabinet - Refinement





- A. Front door panel
- B. Injection molded plastic holder for cutting board
- C. European hinges
- D. Standard shelf clips
- E. Solid wood shelves
- F. Rubber washer
- G. Solid wood knife block
- H. Standard cabinet frame
- I. 5" bolt for knife block axle
- J. Standard wood screws

Storage Cabinet - Design Solution



The cutting board can be stored in the door, inserted into the cabinet for extra shelf space, or completely removed for cleaning.

There is plenty of space for all of the tools and grilling spices you could need.

Careful consideration was given to materials that could withstand years of weathering in all but the most extreme weather conditions.

Design criteria included price point evaluation and marketing direction.

Sample catalogue pages were devised to show how this product would fit into Broan-NuTone's existing product line.



Grill Master

Tired of having all those specialty grill tools and having no place to store them? The Grill Master is a smart addition to any outdoor or indoor kitchen. High quality stainless steel, as well as weather and insect resistant woods work together to provide a long lasting, attractive addition to your home.



Making all of this function fit into the smaller cabinet size required some creativity.

In this version, the knife block rotates to allow the knives to slide out.

The board rests in the custom plastic slides on the door when not in use.



Grill Master

- Shelves provide place to store spices, rubs, and a variety of other items.
- A variety of wood panels are available to match any decor, indoor or outdoor. Exterior woods are rot and insect resistant, ensuring long life with little or no maintenance. Doors are also available in two styles, allowing even further customization.
- Hooks allow for storage of long grilling tools that will not fit in most conventional storage applications.
- Plastic hangers provide storage for 14" x 17" cutting board which can double as a shelf or be completely removed for use or cleaning.
- Knife block for 3 knives of varying lengths and styles.
- Fabricated steel construction features our durable rust-resistant finishing process.
- 14-1/4" wide wall openings allow for easy in-wall installs and fit between studs for new construction.
- Reversible installation allows right or left hand door opening.
- ISTA approved packaging provides safe shipment and handling.



Knife block rotates out on smaller cabinet to allow access to longer knives.

Model Number	Door Front	Frame Type	Door Type	Cabinet Depth	Door Shape	Overall Size (W x H x D)	Wall Opening (W x H)
Grill Master	Recessed and Surface Mount						
32553445D*	Flat	Frameless	Steel	6	Rectangle	15 25 7 14 1/4 24 6	
32553445D*	Flat	Frameless	Steel	6	Rectangle	15 35 7 14 1/4 34 6	
32553446D*	Routed	Frameless	Wood	6	Rectangle	15 25 7 14 1/4 24 6	
32553446D*	Routed	Frameless	Wood	6	Rectangle	15 35 7 14 1/4 34 6	

All measurements are in inches.

Surface Mount Side Wood Kits (for 4" cabinet depths only)

860214C (for models 24" in height in cedar)

860214C (for models 34" in height in cedar)

860248 (for models 24" in height in birch)

860248 (for models 34" in height in birch)

