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Casting Aluminum Helmet Hangers

For my project, I made two motorcycle helmet hangers. These devices were made out of cast aluminum. I first had to make a wooden pattern. Since you cannot make the wood super smooth, I had to use Bondo (auto body repair putty) and polyurethane to further smooth the surface. A smooth surface does not stick to the petrobond sand, which I used to make the mold cavity. Once I finished the pattern, I started on the "flasks". The flasks are wooden boxes which hold the sand that will be packed around the pattern. Next, I added "screw" and "riser" holes using small pipes. These holes allow the metal to flow into the mold cavity and let the air escape from the mold. There are also "runners", which channel the metal horizontally from the screw and riser to the cavity. My last step for building the mold was to take the wooden patterns out of the sand, put the flask together, and get ready to pour. My pouring methods were a bit primitive, but they got the job done. I used casting grade aluminum to make my hangers. The furnace was heated by charcoal, and a vacuum blower provided air to heat it up to over 1200 degrees. After cooling for a half hour, I was able to remove the cast aluminum hangers from the sand in the flasks. After making finishing touches to the helmet hangers, they were ready to mount on the wall for use.