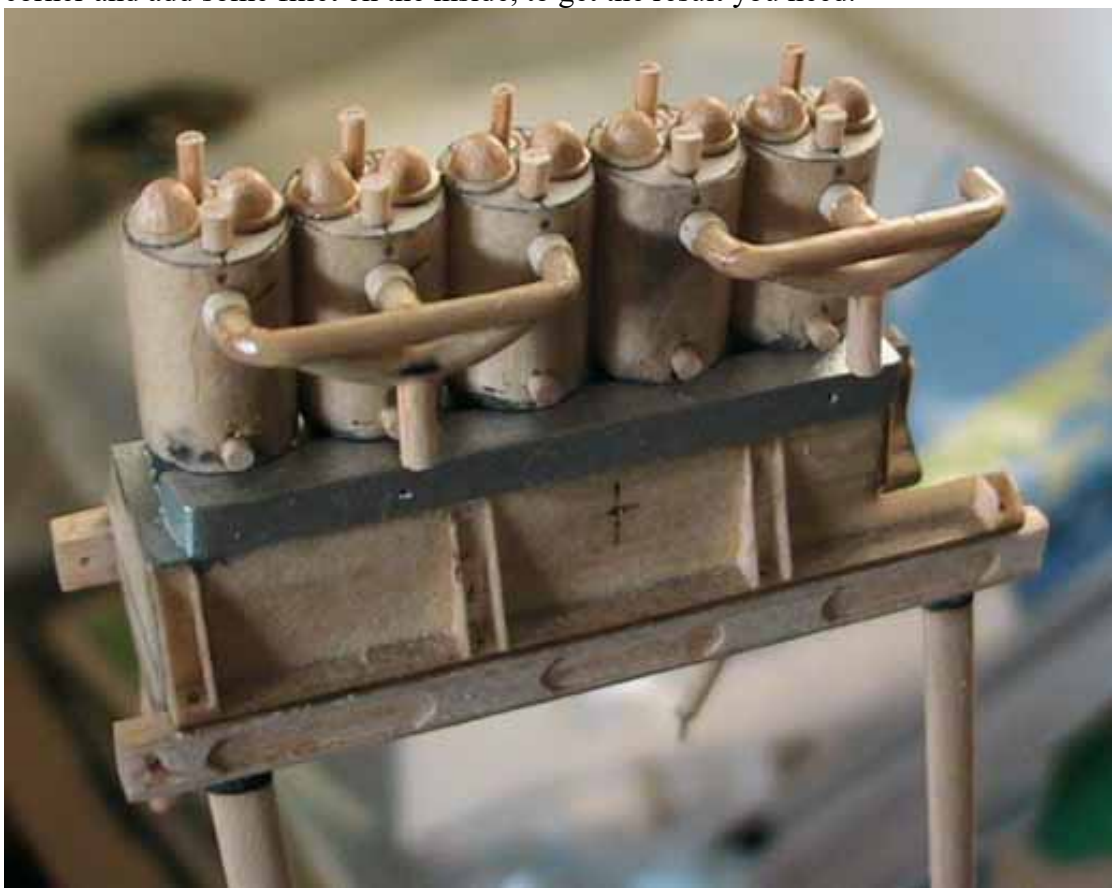
A word about cylinders. Either the engine is water or air cooled. For the former you need a very smooth surface, to simulate copper ir steel. The aircooled cylinders are more of a problem. The easy way is soda straw flexible necks: only good for a very simple engine. No flexibility in diameter size, they stand out as soda straw necks.
My favorite method is the two-thread method. First you make the cylinder, following the profile of the fins (cylinders have almost never the same diameter along their length. At the combustion chamber the ribs are bigger). This is covered with glue and left to dry. Next you wrap two pieces of fine thread and with dope or thinner you glue them on the cylinder. Once the wraping is completed, wait a few minutes and start unwraping the one thread. What s left is an evenly spaced thread wrapped on the cylinder. Again some dope to seal everything. The effect will be further enhanced during painting.

Farman Moustique “sport” model. Cylinders are balsa with thread wrapping. Dry brushing enhances depth.

The next major step is bringing the engine “alive” by adding details. Based on the pictures one can see ribs on the crankcase, various plates or covers, cooling tubes, camshafts, rocker arm covers etc. The more you add, the better. Anything, in order to kill large flat areas. Screw heads on cylinder covers. For all the above mostly two materials are used: balsa rods and paper. I make rods either by turning (diameters bigger than 2mm) or by extruding. A balsa stick passes through holes through a highly sofisticated tool, a metal plate with succesively smaller holes, until the required diameter is achieved. Some fine sanding, dope and you are ready to simulate tubing of any diameter.

Exhausts are made the same way, you only have to combine parts together. A tricky part is bent tubing. For this you need to glue two pieces at 90^{o} , sand the outside corner and add some fillet on the inside, to get the result you need.



1/20 scale Green for Sopwith Batboat. Length 5cm. Mainly balsa construction

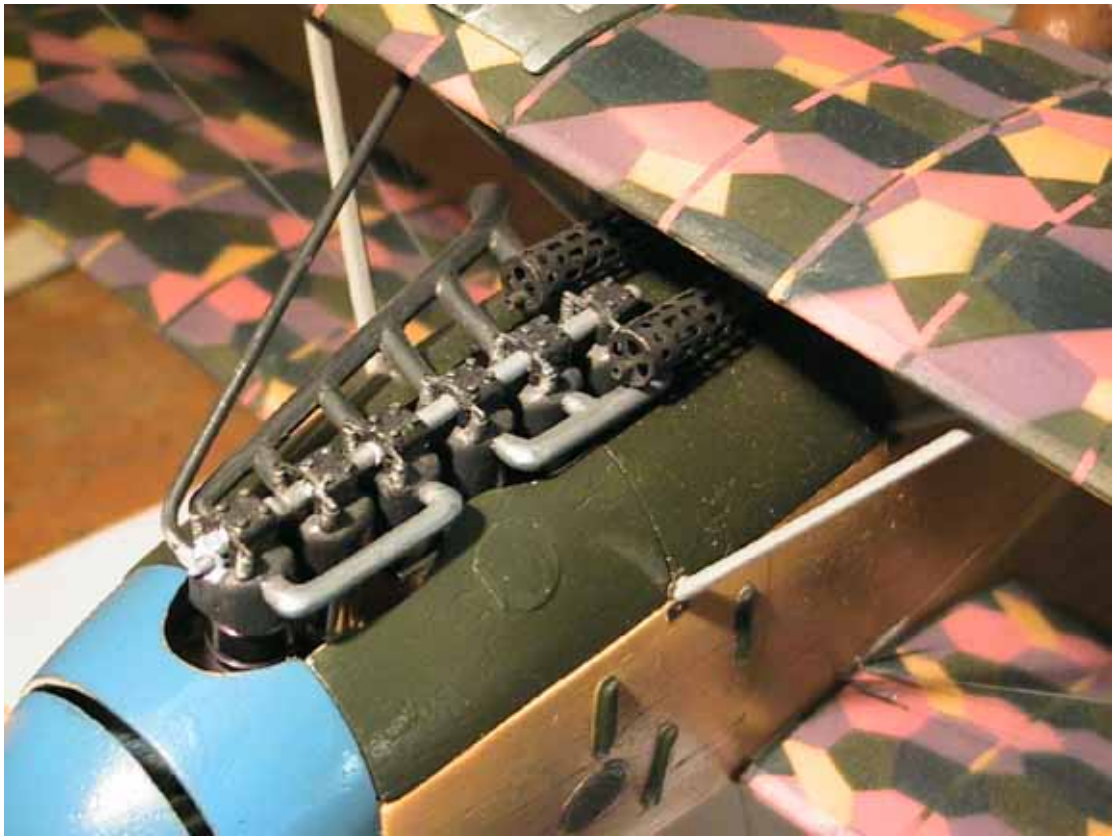
Paper is wrapped around balsa to simulate connection flanges, small diameter variations, or anything that was sheet-metal on the original.
Thread can be used for cables to sparkplugs. For extreme detailing I also use soft wire, for valve springs, for example. The best I have found is wire used on WEDM (wire electric discharge machining) used by tool and die makers.

You have to decide yourself how far you want to go with details. Usually this is defined by your eyes and your patience.

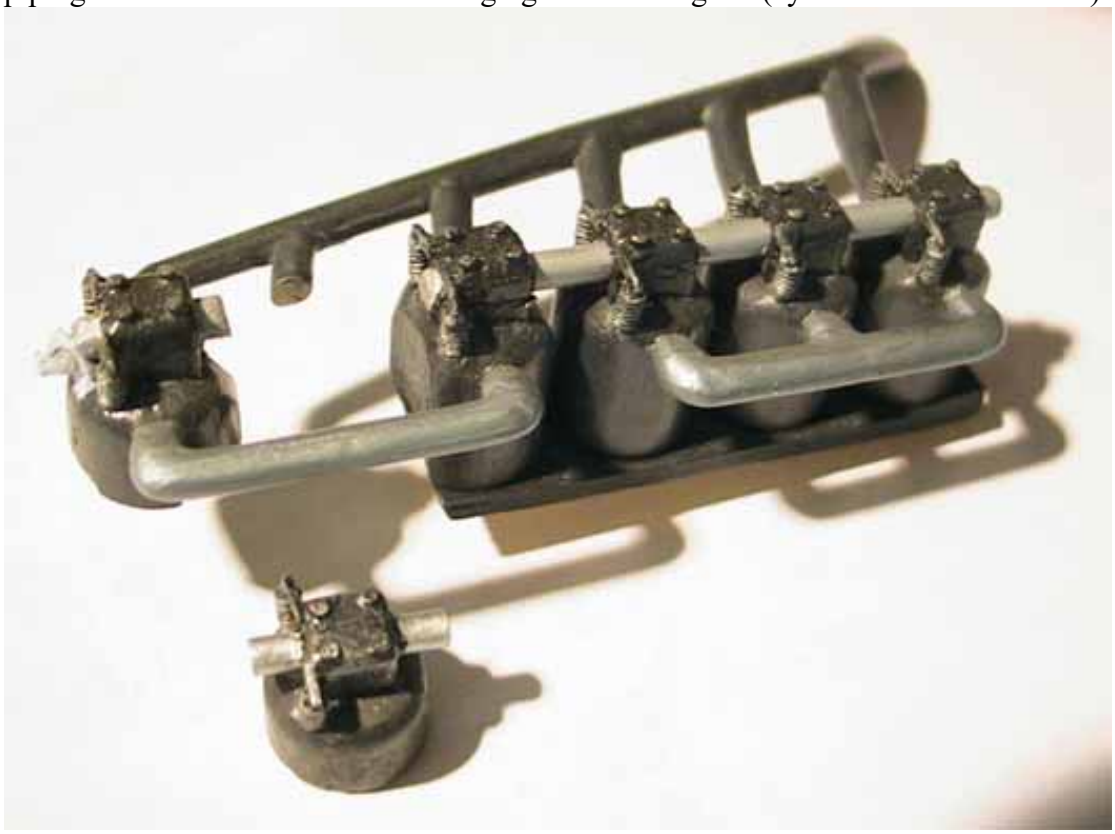
When everything is ready, we reach the stage of painting. Here is where the "simulation" really begins. Steel has to look like steel, copper like copper, etc. A variety of colors is necessary nearly for every powerplant: cast iron, steel, burnished steel, stainless steel, aluminium, copper, brass, etc. I have nearly 10 Testors metal shades (enamel & metalizer), used for various components. A photo of the actual engine is invaluable here. So we paint everything, bu it still doesn't look real enough. An engine is never clean unless it is in a museum. But our models fly, so some weathering is necessary, oil stains, exhaust trails etc. Dry brushing is used a lot here. Silver to highlight details and cooling fins, darker colors to increase depth impression, anything to make it dirty.Unless something is polished, then it has to look polished. It

is mostly in the eye of the builder. Compare your product with the pictures and work on it until you start seing similarities.

14 cylinder Salmson (Canton Unne), dummy for a Brown GB24 twin. Engine diameter aprox. 4.5cm



Albatros DIII 1/20 scale. Engine is only cylinder head assemblies, together with piping. Removable 2nd cover for charging the CO2 engine. (cylinder bellow 1st cover)



Albatros engine removed. Few details with suitable painting give the impression of the real thing. It is only balsa.

There is not much more to it, really. Just practice, patience and good eye sight. And a steady hand.
Hope this helps, as do the pictures. I will be posting more in the future of the Green , until it is completed.