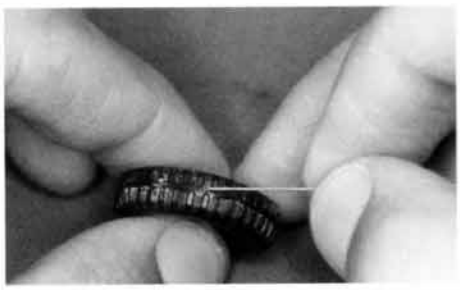
2 Tires, Road Wheels, Sprockets, and Tracks

Giving vinyl tracks a realistic appearance has always been a struggle for armor modelers. Making them appear heavy and wrapped around the sprockets and idler wheels, as well as lying across the road wheels or return rollers, has been one of the great secrets of master armor modelers. Another problem is that the entire tank often appears to be floating on the tracks, especially if they are thick and stiff. Manufacturers have come a long way in the past ten years, and the accuracy and overall appearance of vinyl or flexible tracks have improved greatly. While individual track links can really enhance the appearance and accuracy of your model, they also come with an increased cost—time and effort. Most individual track links are not designed to snap together, so each link has to be individually set and positioned.

Tires. Vinyl tires have also been a problem. Getting rid of the casting seam line can be difficult because the seam line, like the tire, flexes. There is an easy solution: place the tires in your freezer for 24 hours. While still slightly flexible, the seam line will then respond well to a medium- to fine-grit sanding stick. Achieving a fine demarcation line between the rubber and the metal rim on plastic tires has also been a problem for many armor modelers. Read on for an easy solution. It's the same one aircraft modelers use on landing gear tires.

Kits come with two basic types of tires. They are either two-piece injection-molded tires with the hubs already part of the tire, or vinyl tires that have wheel hub inserts. Injection-molded tires are assembled just like any other two-part assembly, but you need to pay particular attention to the alignment pins—I have found that they can sometimes be off enough to offset the tire fit. I usually remove the pins, flatten the gluing surfaces, tape the parts together, and then apply a thin bead of super glue with a thin wire applicator along the seam line. Use very small amounts of glue because you do not want it to seep down into the tread area. Careful scraping and sanding results in a perfect tire.



Align the tire halves and then apply a bead of super glue along the seam with a thin wire applicator. Use small amounts—you do not want the super glue seeping down into the tread area of the tire.

I paint the hub and tire whatever color the hub will be, then mask the hub and paint the tire. To give the tires a slightly worn and used appearance and to help them stand out, mix a little flat white with the flat black so the resulting color is a dark charcoal gray.

The first step in working with vinyl tires is to remove the seam along the center of the tire. As I noted earlier, the secret to removing the seam line is to freeze the tire first. While the vinyl will not become completely solid, the seam line will become stiff enough to respond to sanding. Use a fine-grit sanding stick to remove the seam, but be careful not to damage the tread detail. Don't worry about the fine scraped appearance of the vinyl surface along the tire's outside diameter—this will disappear when you paint it. Next, test-fit the hubs and then paint them the required color. Insert the painted hub in place on one side, place some glue on the interior area of the hub, and then position the other hub half. When you are done, give the assembled tire a coat of Testors Dullcote to remove the shine of the vinyl and to hide the surface scratches from the sanding stick. The Dullcote will also lighten the overall color of the tire.

Road wheels. When removing road wheels and return rollers from their sprues, be sure to leave some excess plastic on the part. Trim the excess on a hard surface if it is on the edge of the wheel, and slice it off if the excess is in the middle. The point here is not to damage the wheel or distort its shape. There are usually mold lines along the rim of the wheels and rollers, so be sure to scrape them off carefully using a number 11 X-acto blade. After you have finished scraping, carefully smooth the scraped areas with fine-grit sandpaper. Once you have cleaned up all the wheels and rollers, test-fit them into place along with their axles, suspension arms, and hubs. Next, prime the road wheels and return rollers, check for any defects or missed mold lines, and then reprime any areas that need work.

Tracks. Now you are ready for the part that causes many modelers to get frustrated with anything that has tracks. How do you paint the rubber on the rims of the road wheels and rollers and achieve a sharp demarcation line? The secret is that you do not paint it unless there is a high enough lip between the metal and the rubber so that you can get a small strip of masking tape to stick to it. While a few road wheel designs may have this high lip, the return rollers do not. On the rare occasions when road wheels have this high lip, you can use an airbrush to paint them. In the vast majority of cases, however, the lip between the metal and the rubber is just a raised line and masking tape will not work.

The simple solution is to use a set of disposable drawing pens. They are inexpensive, and you can find them in office supply stores. The ink is permanent and sticks very well to flat paint. Tip sizes can range from .1mm to .5mm. They are easy to use, and the fine tips of these pens will follow the edge of the smallest raised line. I use these pens to set the demarcation line between the metal rim and the rubber tire. To fill in the area along the edge as well as the outside diameter around the road wheel or return roller, I use a felt-tip permanent marking pen. The tips of these pens are pointed, so I simply cut the tip so that it looks like a small flat brush. When using these pens, work in one direction and do not go back over a freshly inked area while the ink is wet. Let the ink dry, which usually takes only a few minutes, and then give the area another coat. The ink will have a slight sheen to it, and the color of the ink will not appear to be uniform. Don't worry—the sheen and the uneven appearance of the ink will disappear once you apply a coat of Testors Dullcote.

When removing sprockets and idler wheels, don't break any of the teeth on the sprockets or distort the rims of the idler wheels. Typically, the sprocket is attached to the trees right at the tip of one or more of the sprocket's teeth. It is

best to snip the trees around these parts first, then snip away the remaining tree plastic, leaving some excess at the attachment point, and then carefully remove the excess with the tip of a number 11 X-acto blade. When attaching the two halves of the sprocket wheel, test-fit the track around it to be sure that the teeth on both sides line up into the holes in the track.

Occasionally you will find a kit in which the locating pins on the sprocket part halves are slightly misaligned. In this case, remove the locating pins, adjust the parts, and then glue them together. Most tracked kits have vinyl inserts that go between the road wheel, sprocket, and idler part halves. These vinyl parts are designed to allow the wheels to turn on their axles so you can motorize the kit. Sometimes you can disregard the vinyl inserts, and sometimes you'll have to add them, since the holes for the axles will have some play in them without the inserts. In either case, I glue all the road wheels, sprockets, idlers, and return rollers in place.

Once the glue has dried, scrape the glue and the seamline flat. Light, gentle scraping usually does the job, but be careful not to mar the tread detail.

Vinyl tracks. Tracked vehicle kits like tanks, self-propelled artillery, and half tracks have come with vinyl tracks for many years, and modelers have struggled with how to make them appear to be wrapped around the sprockets and idler wheels and resting or sagging on the return rollers.

There are three secrets to working with vinyl tracks. First, you need to add some weight to the inside of the model so the road wheels rest on the tracks instead of appearing to float on them. Large flattened lead fishing weights are great for this purpose and can be secured with super glue.

Second, test-fit the track by temporarily attaching all the road wheels, return rollers, sprocket, idler wheels, axles, and suspension arms in place to see how much slack or tightness there is on the track. Some kits allow either the idler or sprocket wheels to be adjusted to compensate for this, but in the vast majority of cases you will have to modify their location if you need to adjust the track tension. Fortunately, since most kits are well engineered, this does not happen very often, but once in a while you will come across one that needs adjustment. Be sure not to make the track too tight, or you won't be able to give it the appearance of lying on the road wheels or return rollers. To test the track, you'll have to assemble it permanently. I use either a hot knife or a small-tipped soldering iron to melt and mash down the vinyl pins.

The third and final secret is to select attachment locations on either the return rollers or the road wheels where the track will be tied to these wheels. Mark these locations. Since you will pull the track down onto the road wheels or rollers with clear nylon thread, you'll either drill small holes into the track or use the existing idler sprocket holes as attachment points.

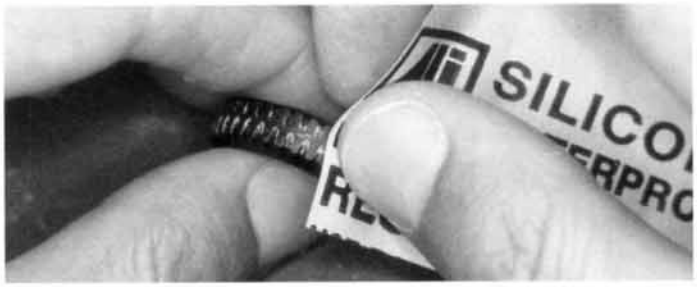
Paint the tracks before you attach them in place, and tie them down. Don't forget to paint the rubber pads if the track has them. Testors Metalizer nonbuffing paints stick very well to vinyl, provided you wash the track to remove mold release agents first. I like to paint my tracks either Metalizer burnt metal or Metalizer burnt iron with a top coat of Metalizer burnt metal. If you go with the burnt iron undercoat, you can make the burnt iron color come through in areas that you lightly wipe with fine 0000 steel wool. This gives the track a two-tone appearance of metal with hints of rust. If the track has rubber blocks, paint them flat black with a small flat brush. The flat paint will stick well to the Metalizer colors if you use the nonbuffing Metalizer paints.

Individual track links. These are supposed to be the answer to the sometimes crude appearance of vinyl tracks. Although using nylon thread to pull the tracks down fixes the problem of sagging, individual track links do have an improved appearance. However, it takes a lot of time to clean up and assemble individual track links. You have to be careful how you proceed with the assembly, or you will end up with some strange-looking tracks.

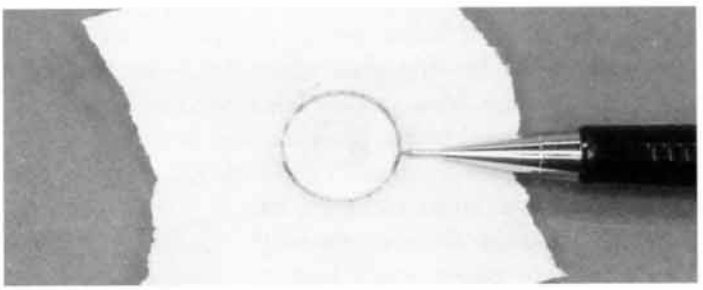
I always start around the sprocket and add one link at a time around it, carefully gluing individual links with small amounts of super glue applied with a thin wire applicator. I am very careful not to glue the links to the sprockets. Once I get the links around the outer edge of the sprocket, I turn my attention to the long flat sections on the road wheels. I carefully tape lengths of tracks together, lay them along the road wheels, and then connect this length to the links around the sprocket. You will need to add a few links between the sprocket's links and the road wheel length, since these are the links that will have a slightly curved appearance. I then repeat the process on the idler wheel and the rear flat run of road wheels. Here again you will need to add a few links to connect the track length that is wrapped around the idler wheel and the rear run of road wheel tracks.

Now you are ready for the track run along the return rollers. You can position another run of flat straight tracks along the return rollers that connect with the tracks wrapped around the drive sprocket and the idler wheel, or you can add a few links if you like sagged tracks.

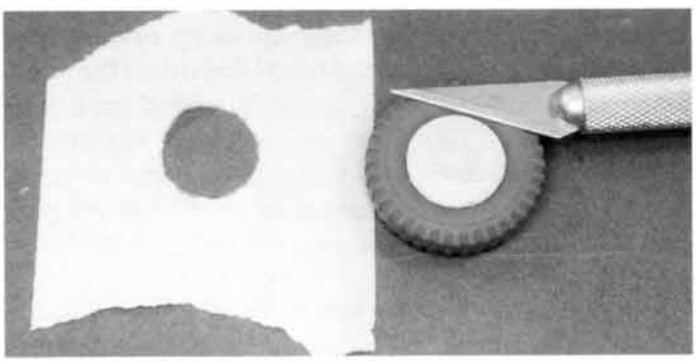
A word of caution here. Except for just a handful of tracked vehicles that have sagged tracks whether they are running or stopped, almost all tracked vehicles have fairly tight tracks to prevent the tracks from being thrown. Once you have completed assembling and gluing the lengths of track, you should have three or four subassembled lengths of individual track links. Use the same color Metalizer paints and flat black for the rubber pads as you would on vinyl tracks. Finally, position the lengths of assembled and painted track onto the sprocket, road wheels, idler, and rollers and then carefully glue them together. I usually start at the sprocket and work towards the idler wheel.



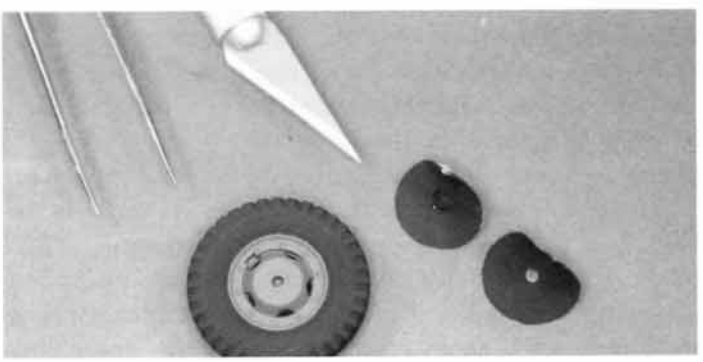
Smooth out the plastic and the glue using fine-grit sandpaper and then wet-sand the plastic to remove any surface scratches.



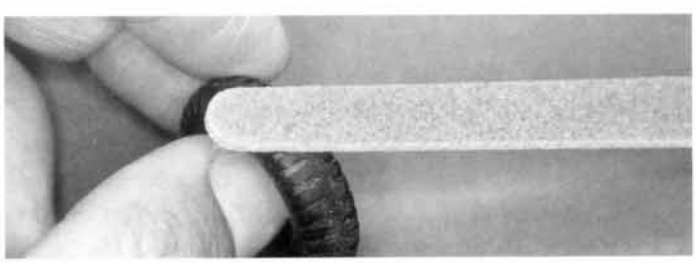
To paint the tires, airbrush the hub the necessary color and then mask it. Cover the hub with a length of masking tape and then draw the raised demarcation line between the steel rim and the tire onto the masking tape. Painter's masking tape stretches a little, so the tape will lie down on the raised area of the hub as you draw.



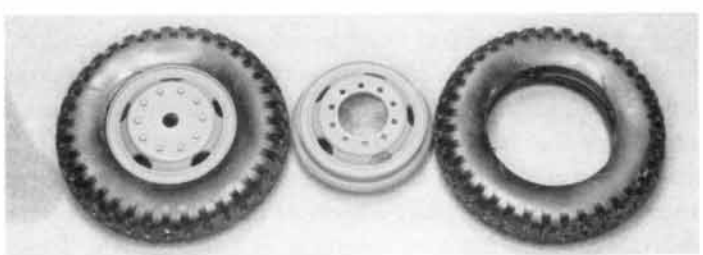
Next cut out the masking tape around the rim with the tip of a number 11 X-acto blade. Go slow and follow the line carefully.



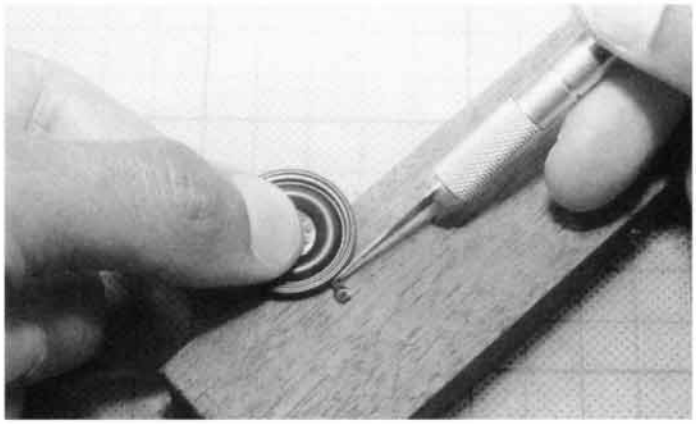
Paint the tire and then remove the masking tape. If you were careful when you cut out the tape, you should have a perfect demarcation line. You can always touch up the edges of the tire where it meets the steel rim with a detail brush if you have some bleeding.



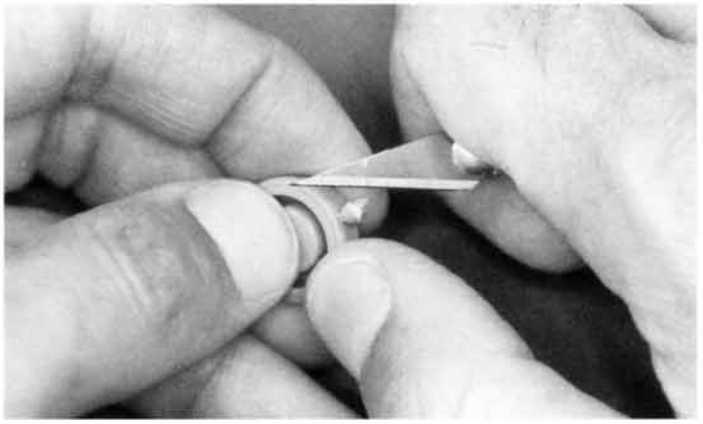
Vinyl tires have mold lines that have to be removed, but because the seam line is so flexible it will not respond to sanding. The trick is to freeze the tires and then sand them. While the vinyl will not become completely solid, the mold line will respond to sanding.



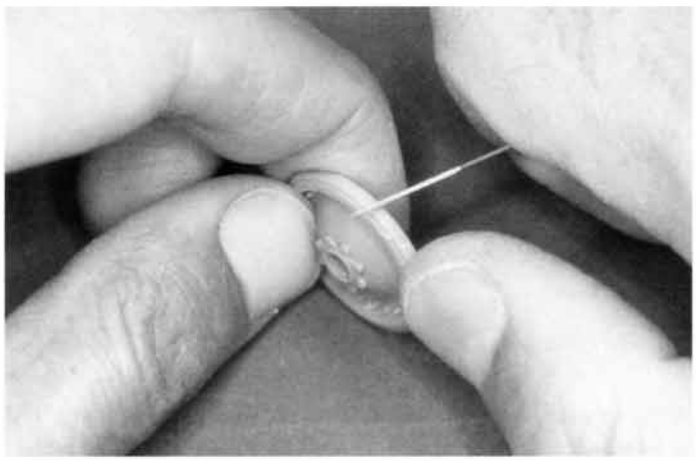
To assemble vinyl tires, paint the hubs and then assemble them onto the tire. To lighten the color of the vinyl and to dull its shine, give the completed tires a coat of Testors Dullcote.



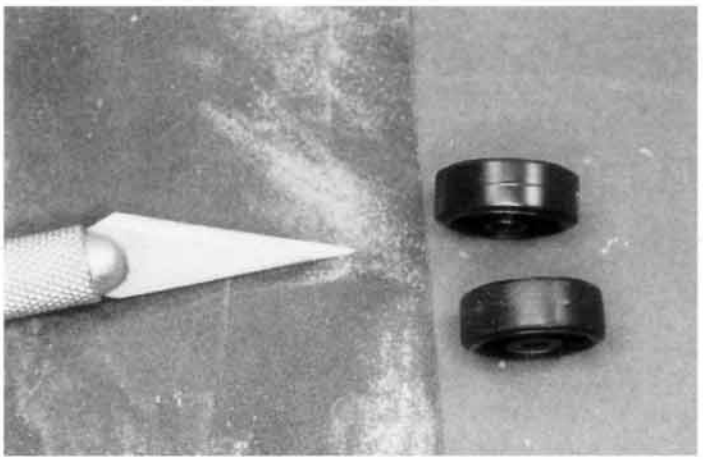
Always cut parts from their trees leaving a little excess plastic on the part. If the excess is located at the edge of the part, trim it off on an elevated hard surface. Be careful not to distort the shape of the parts.



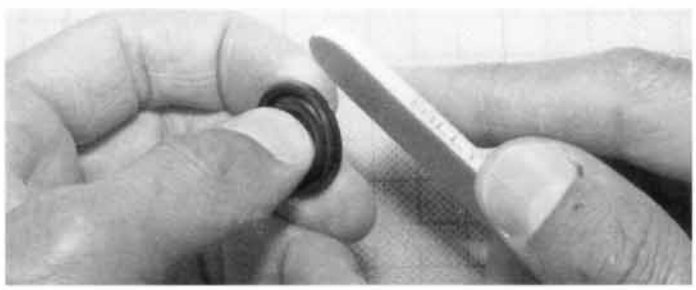
If parts have stem connections in the center, you'll have to slice them off without the benefit of a hard surface. If you lay these parts down and slice off the excess plastic, you stand a good chance of also removing some plastic from the part, resulting in a hole that needs filling.



Once you have removed the excess plastic, scrape the surface smooth. Don't forget to remove the mold line around each road wheel as well.

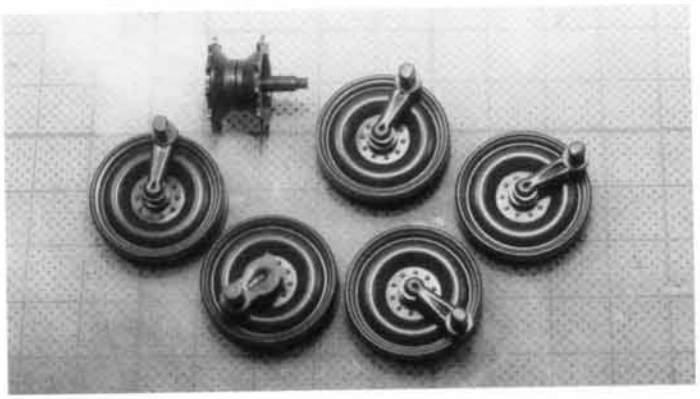


While some mold lines are subtle, other will stand out if you do not remove them. On thin disk-type road wheels, just scraping the line flat will do, but on wide wheels like the ones you find on a Sherman tank, you will have to carefully scrape off the mold line and then completely sand the surface smooth.

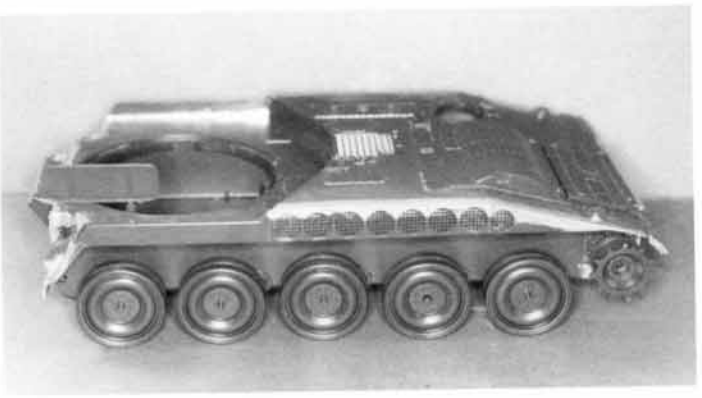


To remove any excess plastic that the knife blade might have missed, gently hit the excess plastic with a sanding stick.

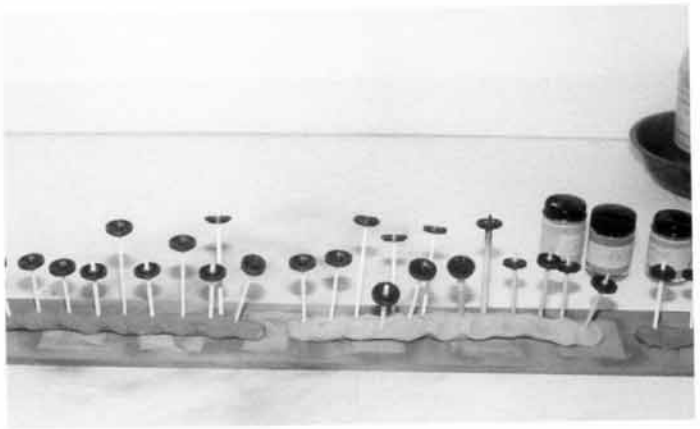
To smooth the plastic and polish the surface, use fine-grit sandpaper and wet-sand. To ensure that you do not distort the shape of the wheels, wrap the sandpaper around the wheel as you sand.



Once you have completed cleaning up the road wheels, idlers, sprockets, and return rollers, check the fit of all the parts, including the suspension arms and axles.

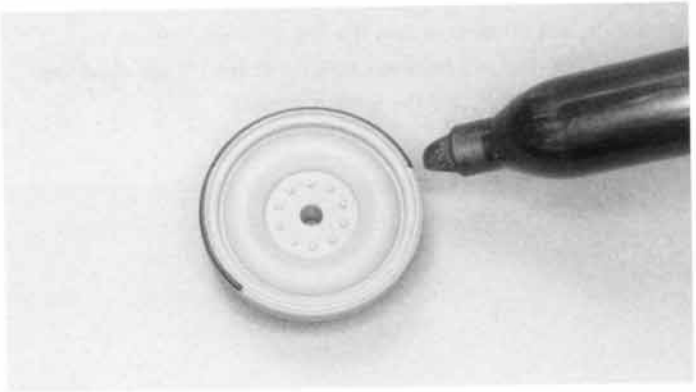


Also check the fit of the axles and suspension arms in the hull. Sometimes these parts do not always fit snugly into their locations. The time to fix these problems is long before you have painted all the components and are ready to assemble them.

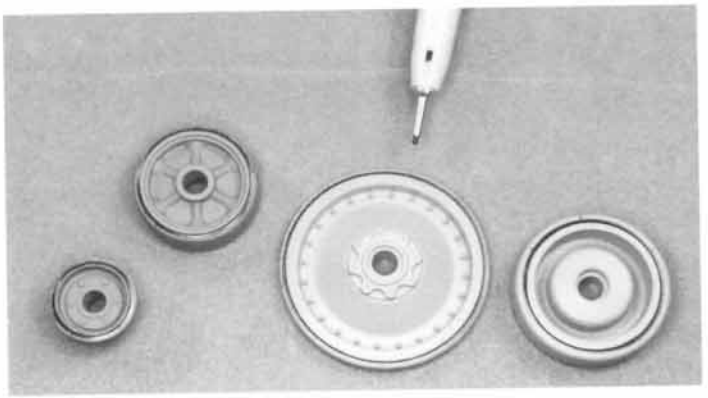


To paint all the wheels, roller sprockets, and idlers, I place each one on a plastic or wood dowel so that I can paint both sides at once. This saves a lot of time.

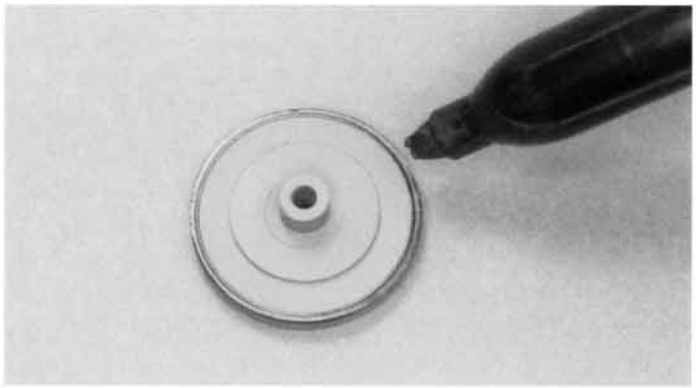
The dowels also allow you to rotate the wheels as you airbrush. This helps ensure that all the raised surfaces are painted.



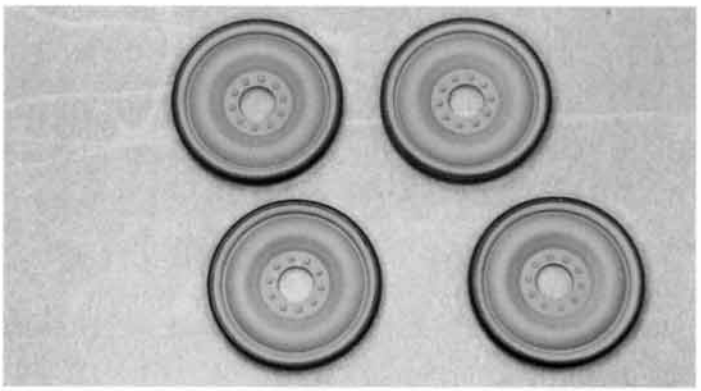
The secret to painting the rubber tread on road wheels and return rollers is not to paint them, but ink them. Indelible black ink felt-tip and needlepoint-tip pens are great for painting the rubber tread. Needle-tip drawing pens come with .1mm to .5mm tips. These fine tips will follow the shallowest raised line on any road wheel.



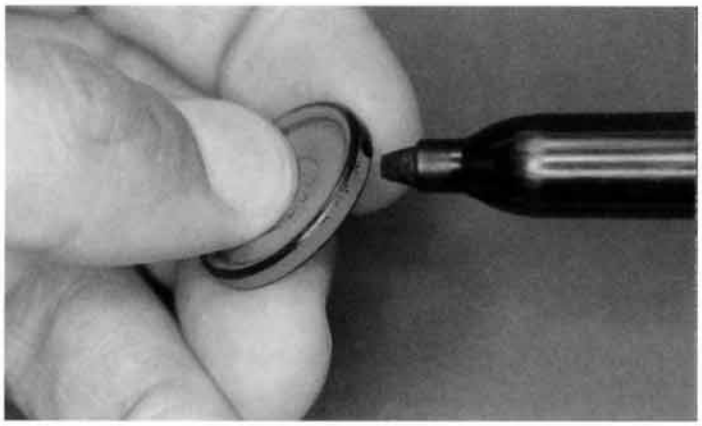
Use a fine-tip disposable drawing pen to set the demarcation line between the rubber and the steel. Then use progressively thicker pen points to fill in the remainder of the tire.



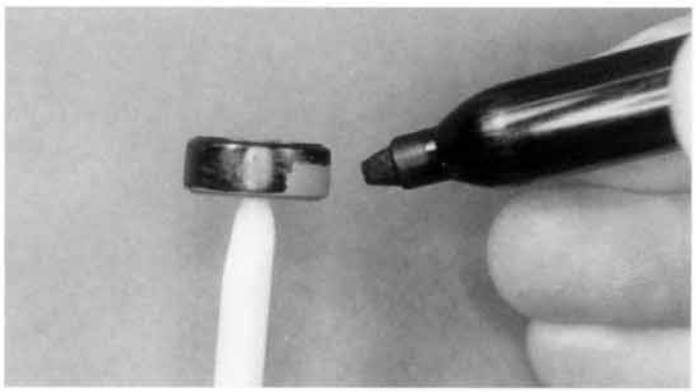
Use a thick-tip felt drawing pen with the tip cut flat to ink in the area around the edge of the rubber.



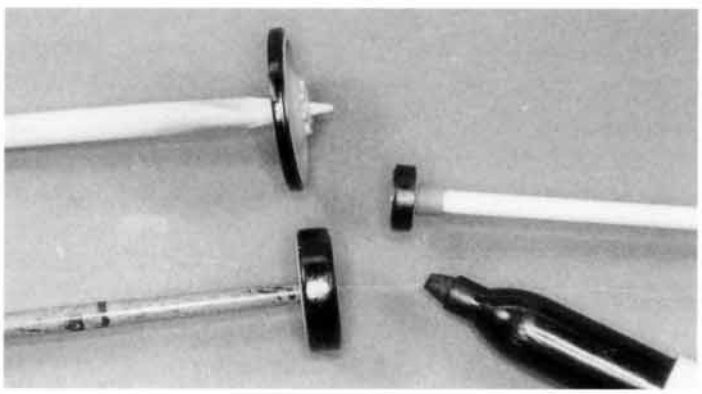
Both edges are complete on these road wheels, and they are ready to have the rims inked. Note the fine demarcation between rubber and steel. Using drawing pens is quick and easy, and there is no mess.



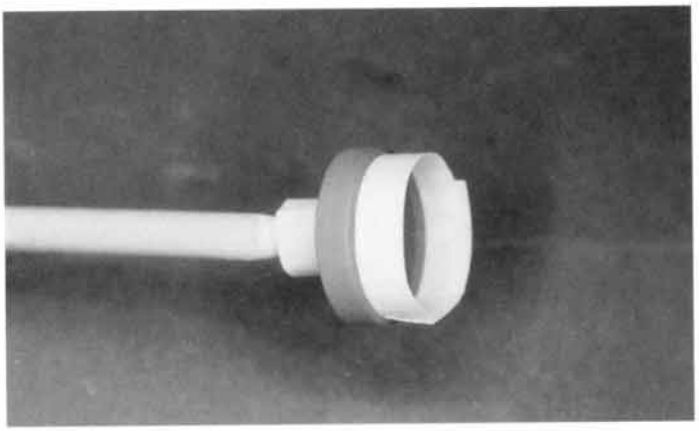
Larger felt-tip pens with flattened tips are great for inking in the rims of the road wheels.



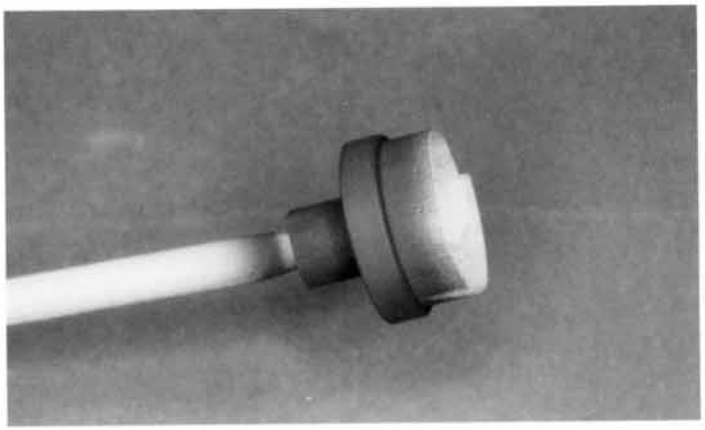
For small road wheels and return rollers, put the part on a dowel and rotate the part to speed up the inking process.



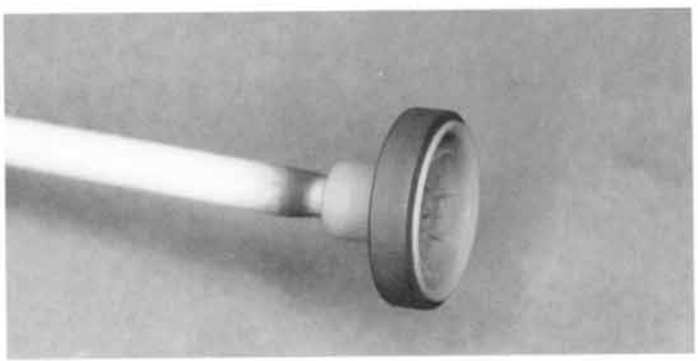
These road wheels and rollers have been completed. The inked surfaces will have a tendency to appear streaky and shiny. To even out the surface appearance and remove the shine, give the wheels a coat of Testors Dullcote.



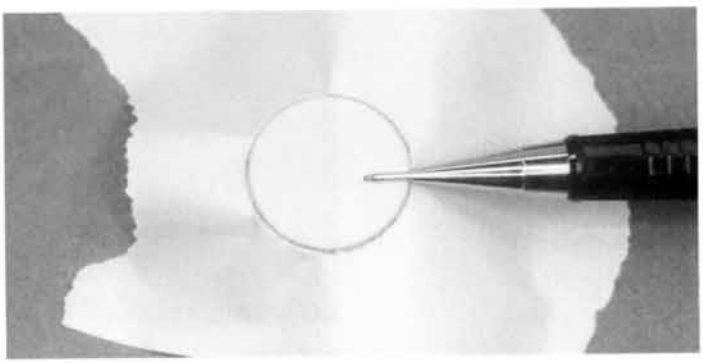
Some road wheels have a high lip separating the steel rim from the rubber, which will enable you to use masking tape. Most road wheels and return wheels have very shallow raised lines, but occasionally you do get road wheels with these high lips.



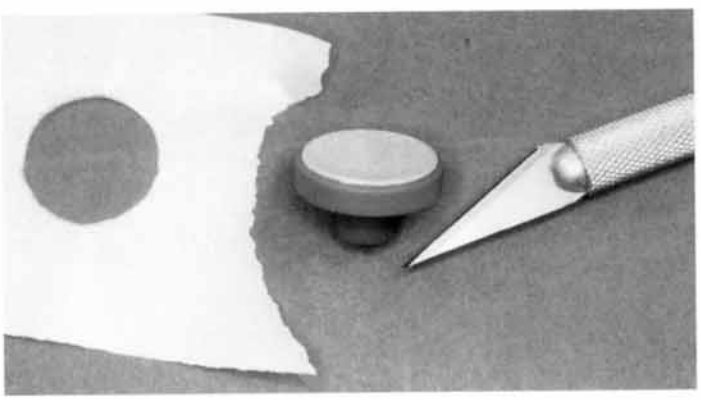
The next step is to paint the road wheel flat black. Add a few drops of flat white to the flat black to lighten the color of the rubber so that it will appear worn.



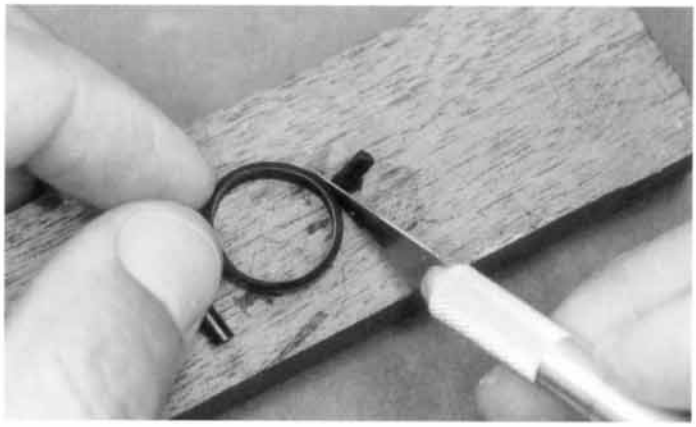
Here is the completed road wheel. Note the fine demarcation line that good masking can achieve.



Sometimes you can also use the same previously illustrated masking technique for road wheels that you use for regular wheels.

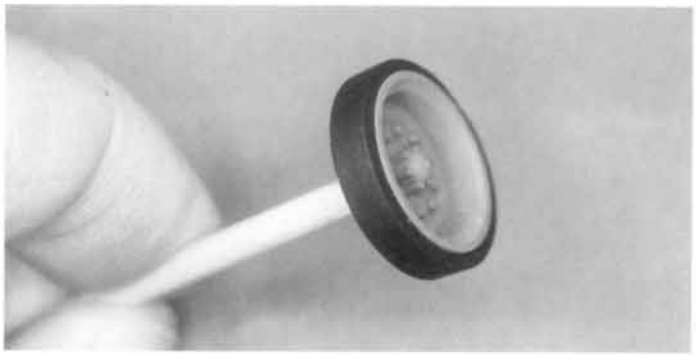


Next, carefully cut out the excess masking tape and then proceed to airbrush the parts.

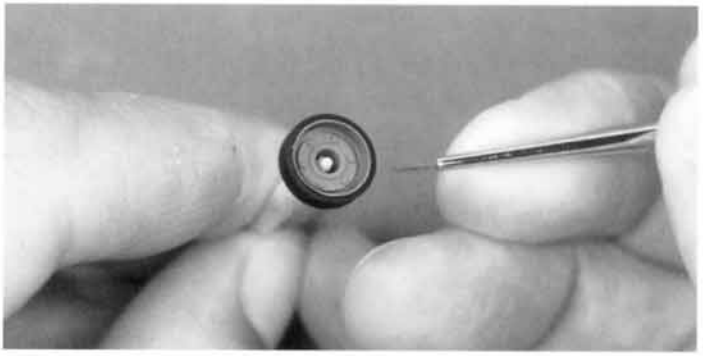


Occasionally, manufacturers get resourceful in trying to help modelers deal with long-standing problems. Several companies have experimented with separate vinyl inserts for road wheels. Be careful when removing the excess vinyl from these delicate parts. If you gouge the vinyl, position the completed road wheel so the gouged area touches the tread, and it won't be so noticeable.

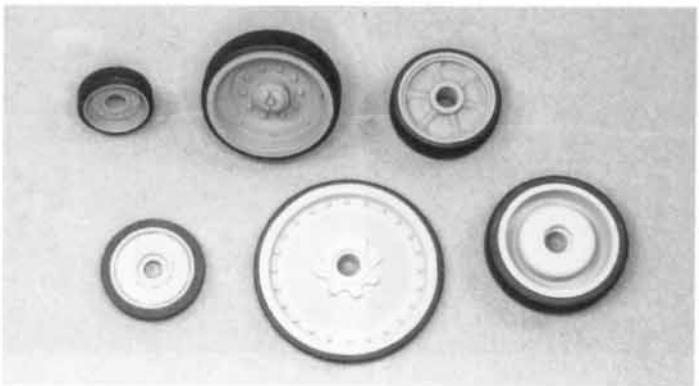
To sand the vinyl smooth, position the vinyl onto the road wheel before sanding so the vinyl won't flex, and be sure to freeze the part before sanding.



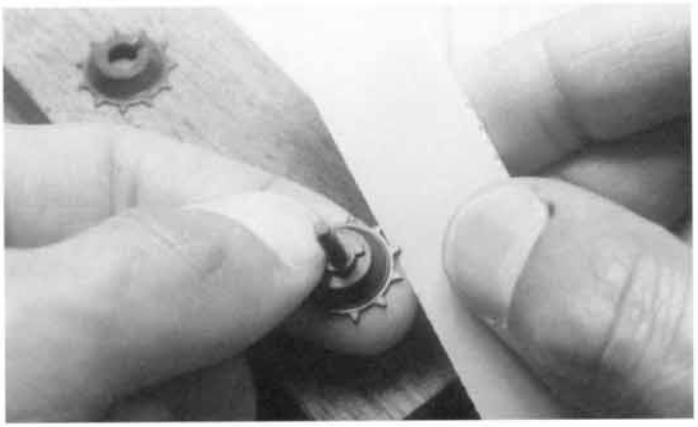
Attach the vinyl insert to the road wheel and give the completed part an overcoat of Testors Dullcote.



When using fine-tip drawing pens, you will occasionally slip. Simply touch up these areas with a fine detail brush. Paint will cover the unintended inked areas very well.

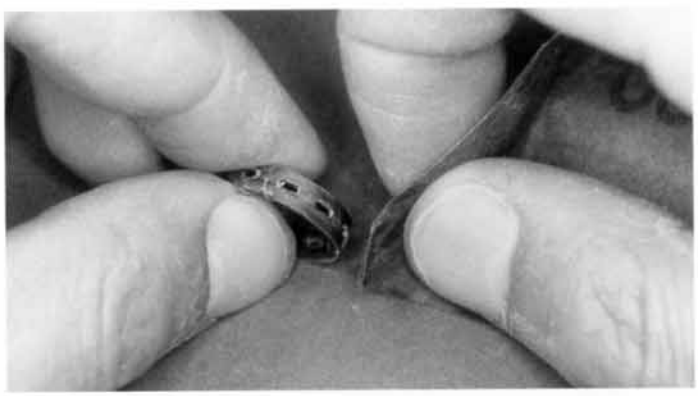


These completed road wheels and return rollers now are ready for installation. Each one of these road wheels has a raised line of a different height between the rubber and the steel, yet all the demarcation lines are clean, thanks to the fine-tip drawing pens.

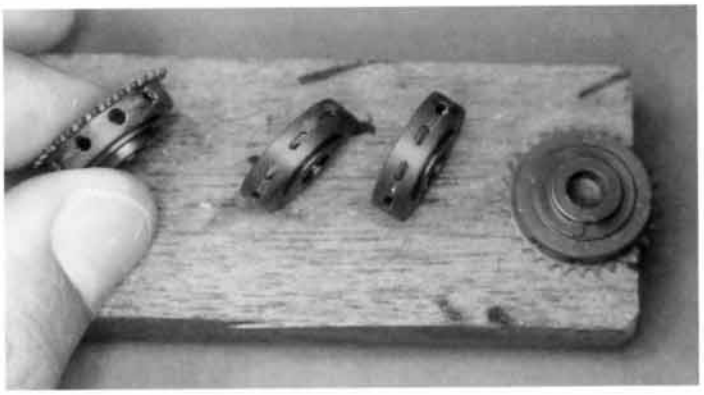


Sprockets are usually attached to their trees at the teeth, so you'll have to be very careful when removing these parts. Careful sanding with a sanding stick can easily restore the shape of the teeth.

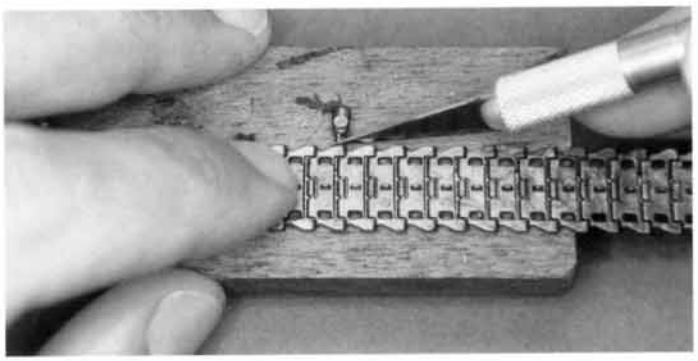
Glue together the multiple pieces of these idlers and sprockets, and fill the seams with super glue.



Careful scraping and sanding will help ensure that you don't distort the parts.

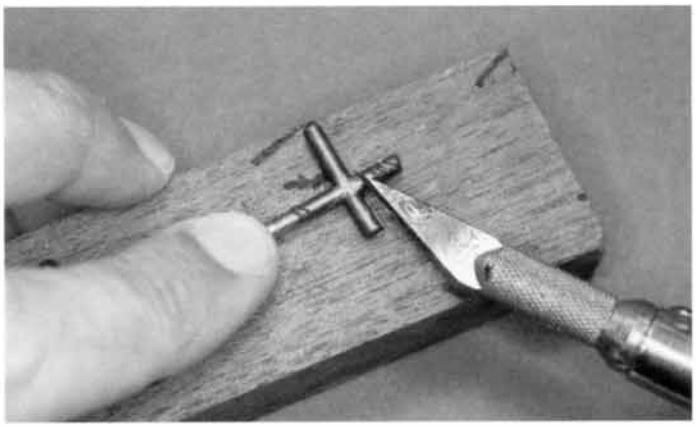


The completed sprockets and idlers are ready for painting. The seam lines are barely noticeable. This is one of the great advantages of using super glue. When it dries, it can be sanded and scraped like plastic and it blends in perfectly.



For vinyl tracks that are attached to trees, cut the track plus some excess and then carefully trim away the excess on a hard surface, just as if the vinyl track were a plastic part. You only get one shot at trimming vinyl, because it is almost impossible to repair, so do it right the first time.

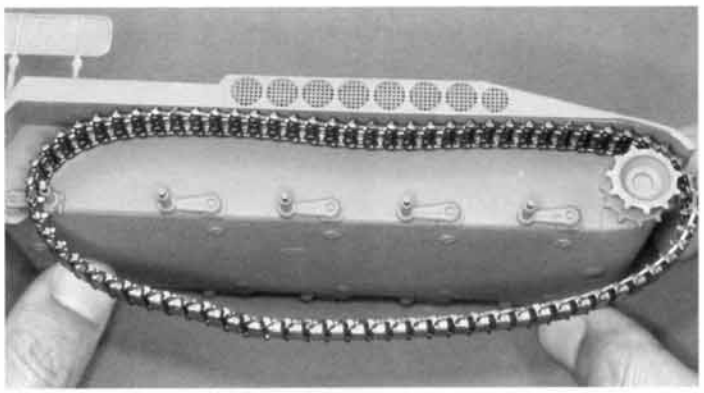
To help ensure that the vinyl pegs fit securely and firmly into the corresponding holes on the tracks, use a small-diameter dowel to push the track halves together. Even a pen will work.



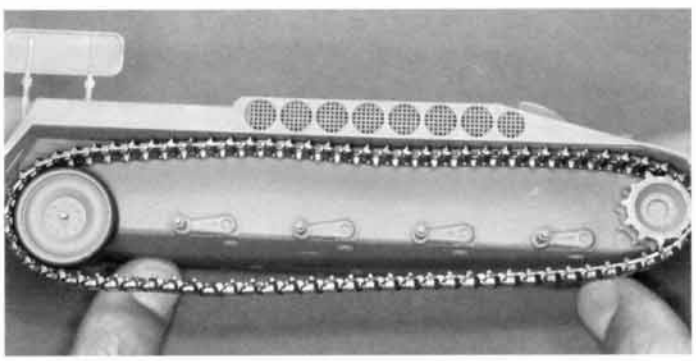
Instructions usually call for the modeler to burnish the ends of the vinyl pins with the tip of a hot screwdriver, but a hot knife or soldering iron with a micro tip works best. Where possible, test the hot knife or soldering iron before you use it on the track.

Carefully burnish the tips of the vinyl pins so they flatten out. Be careful how you position the hot knife—do not melt the track!

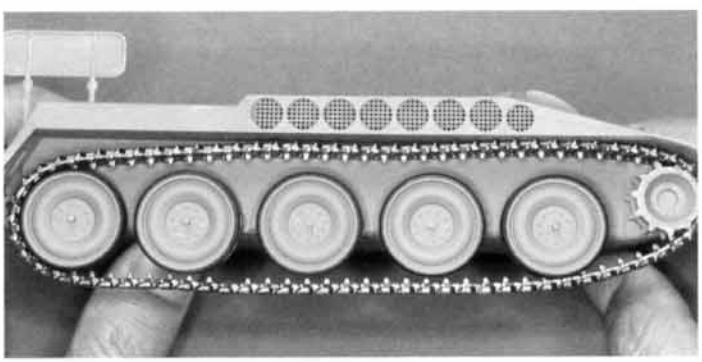
This track is ready for fitting, painting, and then final assembly.



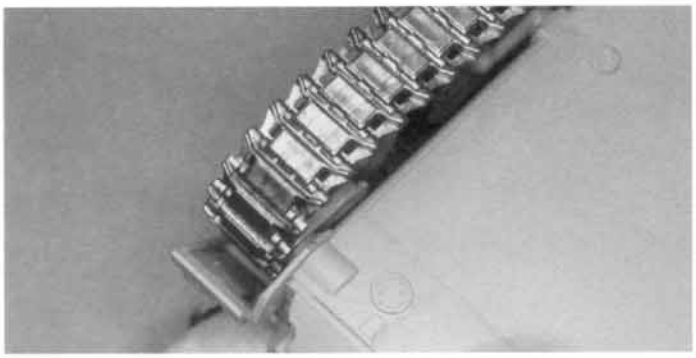
To test-fit a vinyl track, attach the sprocket and return rollers (if the tank has them), and then slip the track onto the sprocket.



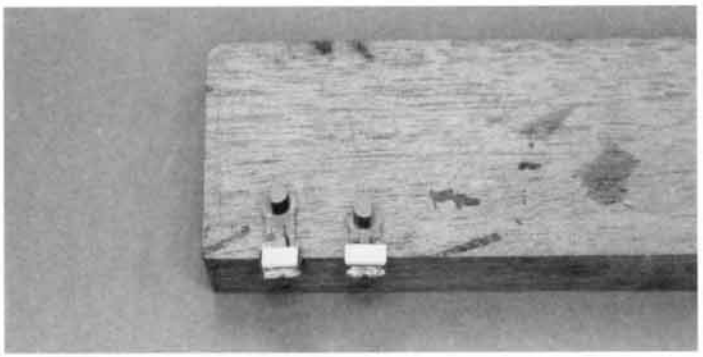
Next, attach the idler wheel by placing the wheel against the inside of the track and then pulling the track taut so that the idler wheel slips onto its axle. This is easier than attaching the idler wheel and then trying to stretch the track over the idler wheel.



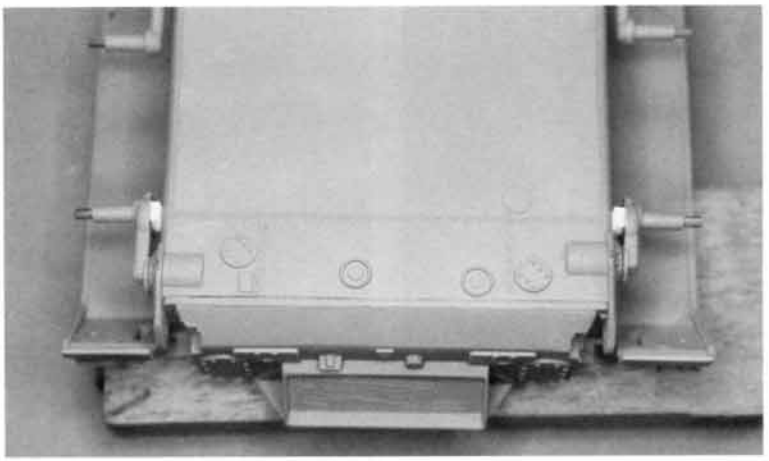
Next, attach the idler arms and the road wheels. The track on this model has plenty of slack. It will be easy to use nylon thread to pull the track down onto the tops of the road wheels.



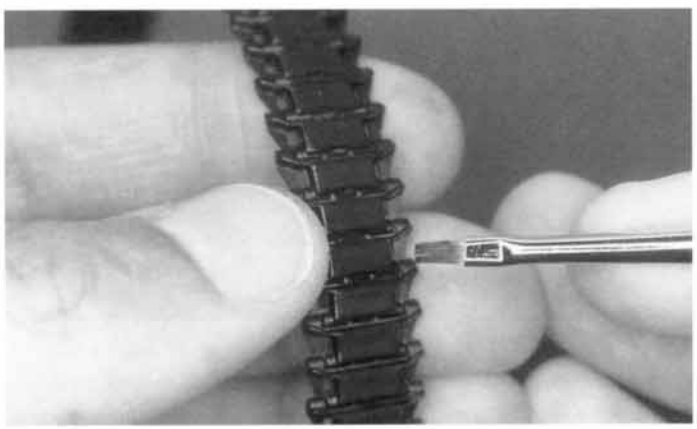
Testing the track on this model identified the fact that the suspension arm on the idler wheel was bent inward because of the way the track sat on the wheel. This skewed idler wheel was very noticeable and had to be corrected.



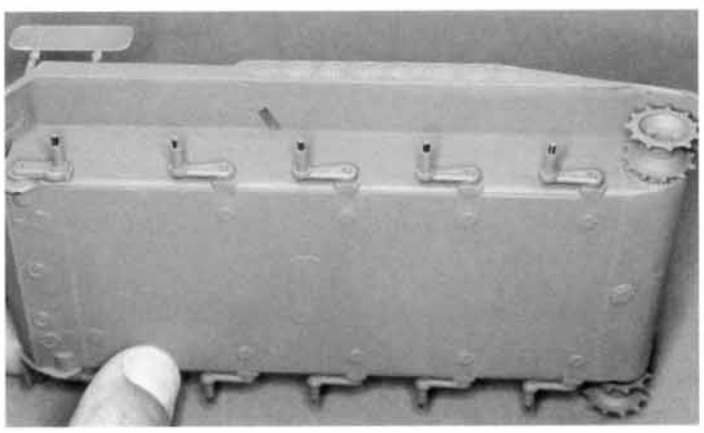
The simple solution was to add small pieces of Evergreen strip stock to the inside areas of the suspension arms.



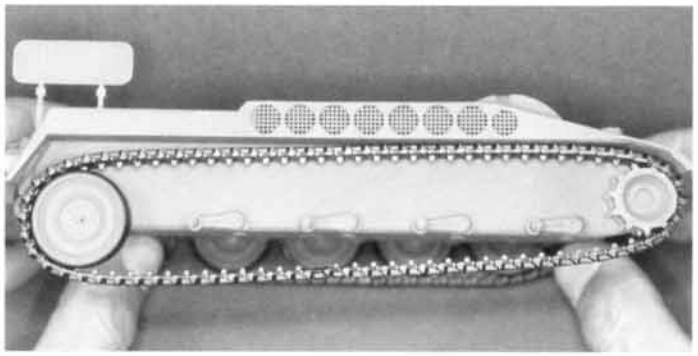
Glue the idler wheel suspension arms into place, and you'll just have to paint the plastic strips.



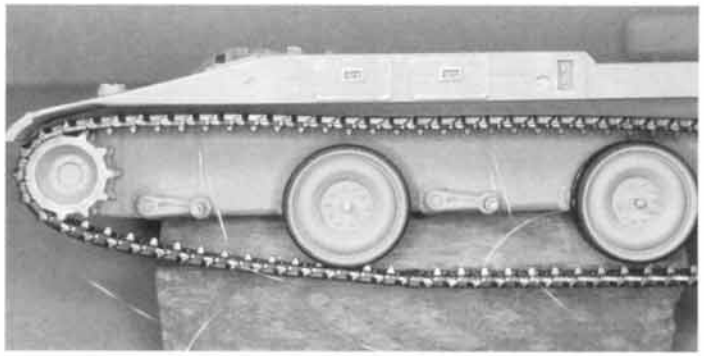
Testors Metalizer burnt iron and metal are great paint colors for tracks. To paint the rubber pads on tracks use a small, flat brush.



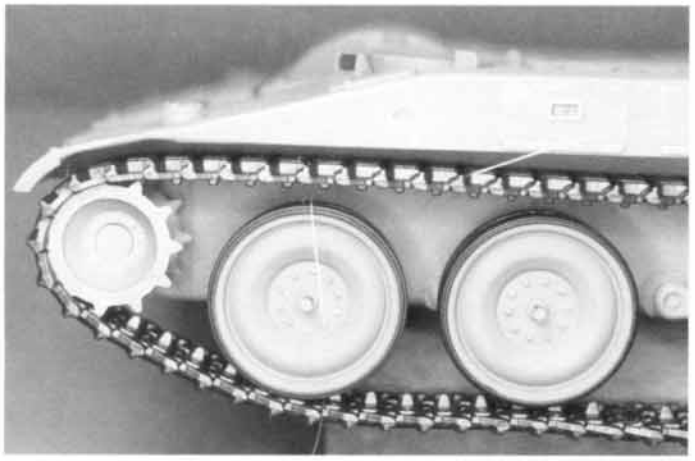
Once the tracks are painted, the next step is to permanently install the sprockets, suspension arms, and return rollers.



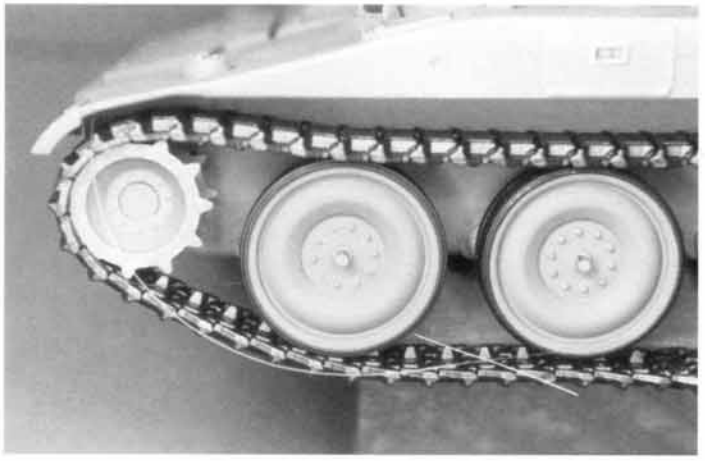
Next, attach the track to the sprocket, insert the idler wheel on the back half of the track, and then stretch the track out until the idler wheel fits into its location.



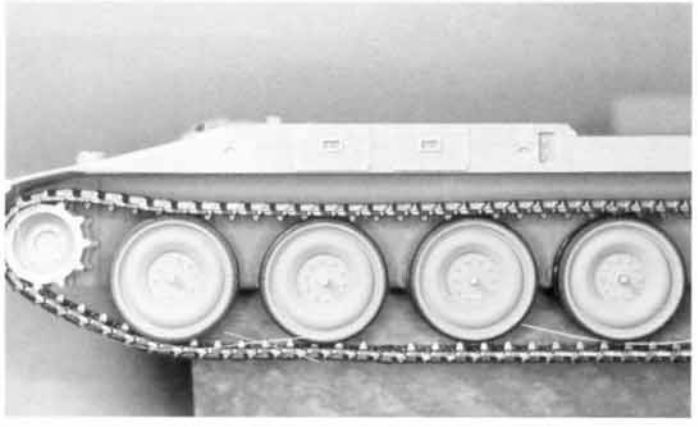
Next, drill small holes in the vinyl tracks to accept clear nylon sewing thread. Each location should have two holes on opposite ends of the outer edges of the track so you can run the nylon thread through both ends, giving the thread a secure attachment point. The thread locations must correspond to the locations of the road wheels.



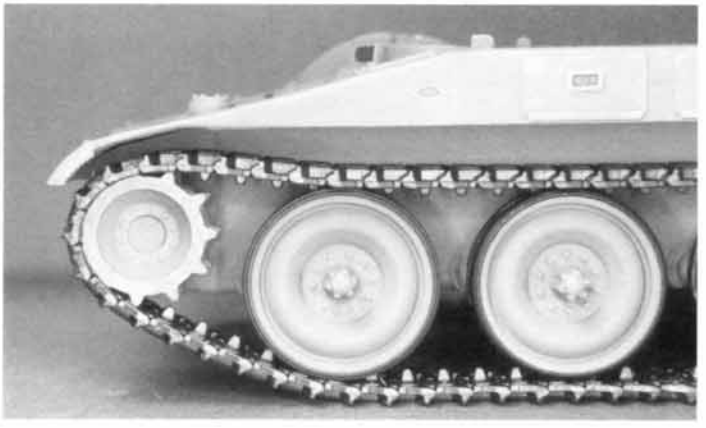
Install the road wheels and wrap the thread around the area between the inner and outer wheels. Pull the thread tight until the track lies down on the road wheel.



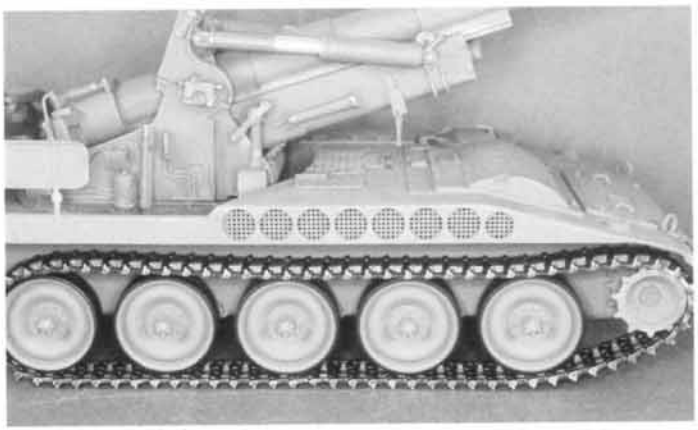
Knot the nylon thread and cut it. The track will lie on top of the road wheel.



Tie the road wheels to the track using a clear nylon thread along the entire length of the track, avoiding a wavy appearance.

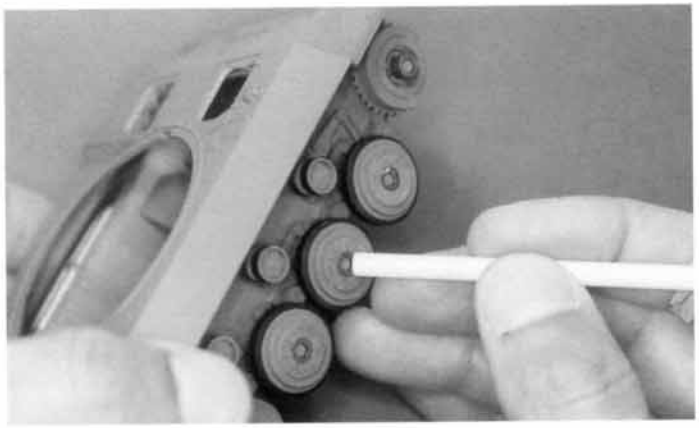


Cut the clear nylon thread, and there is no indication that you have tied the upper track to the road wheels.

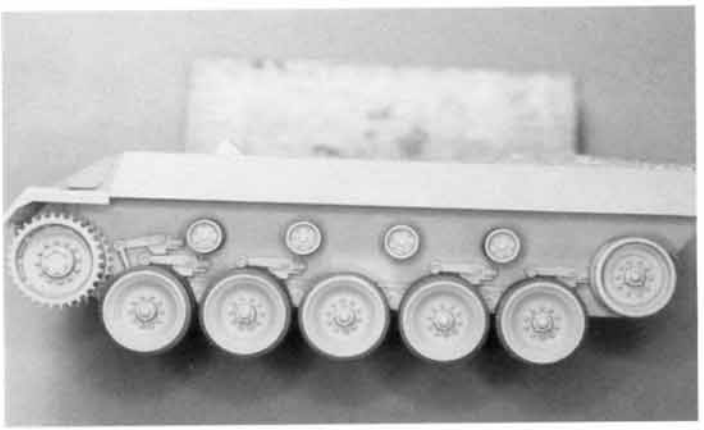


Although these vinyl tracks are probably slightly thicker than they should be, the overall appearance of the track is better now that the track appears to be lying on the road wheels instead of floating above them.

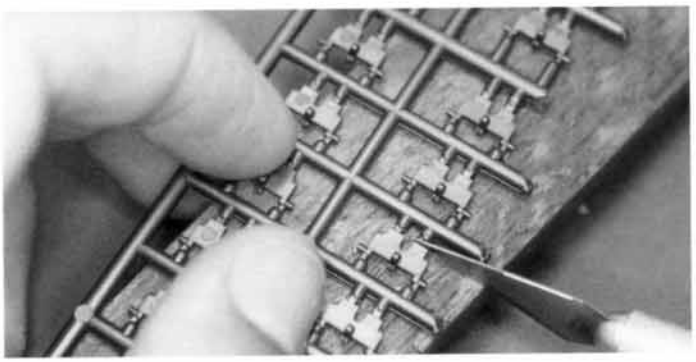
The drive sprocket on this World War I British female tank had to be trimmed because the sprocket pushed the track too far out. Test-fitting the track around this sprocket helped identify the problem before it was too late. After you lay the track across this area, the cut-up drive sprocket will not be visible.



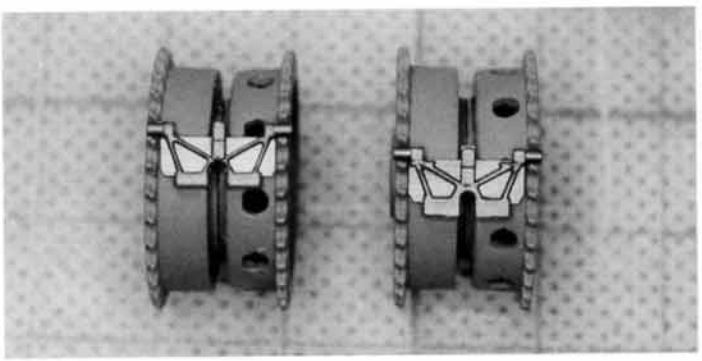
A length of Evergreen plastic tube works well to push vinyl inserts into place on the inside road wheels of this M-18 Hellcat.



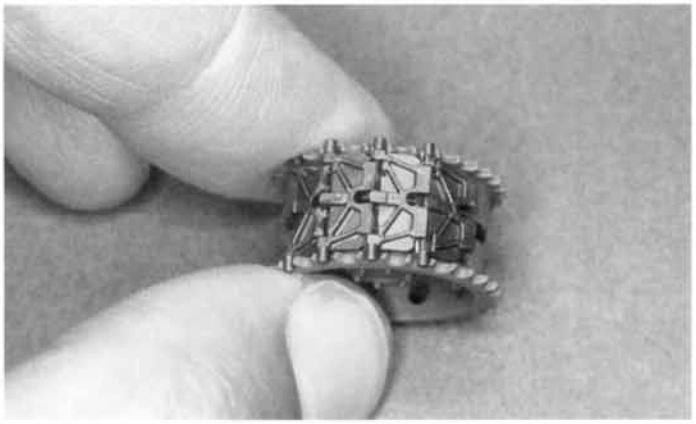
Install the drive sprockets, idler wheels, return rollers, and road wheels of the M-18 Hellcat. This tank is now ready for its individual track links.



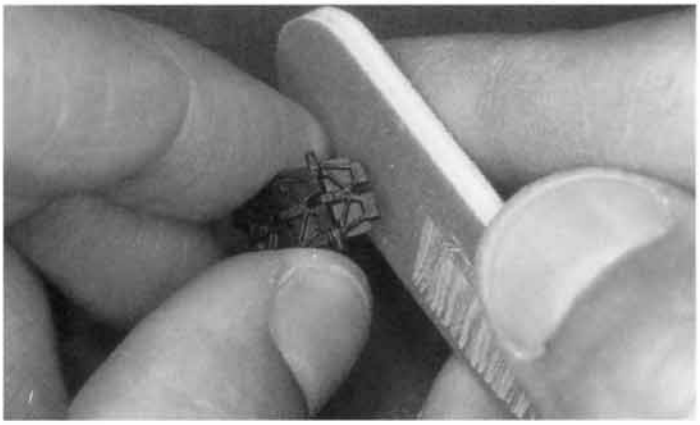
Cut individual track links directly off their sprues using a sharp number 11 X-acto blade.



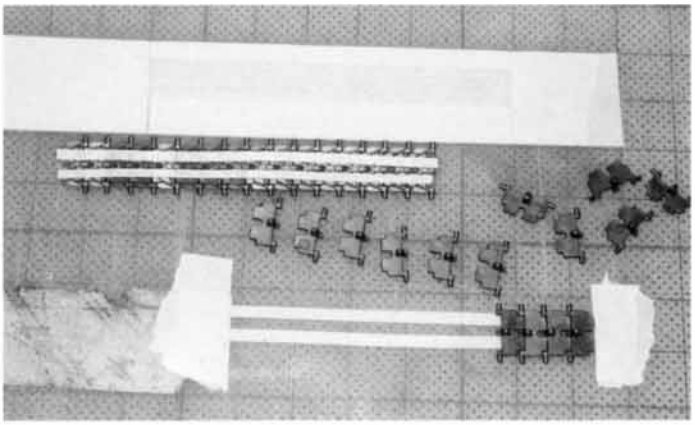
I like to build up individual track links starting around the sprocket. I position the first track link in place and then add additional links, gluing as I progress around the sprocket.



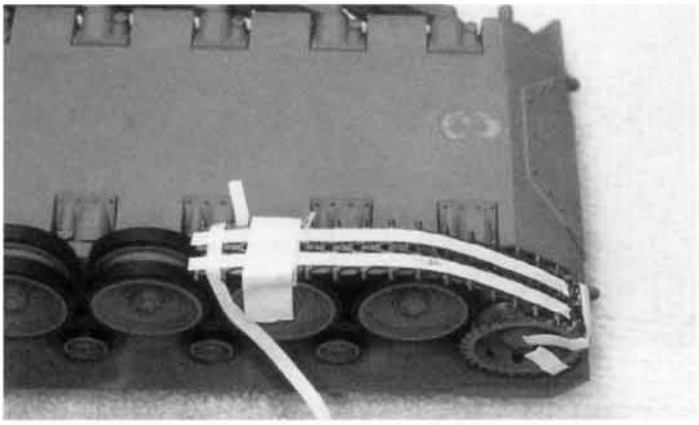
Fit the individual track links around the sprocket and glue the links to each other. Be careful when gluing links around the sprocket or the idler wheel—you do not want to glue the links to these parts at this time.



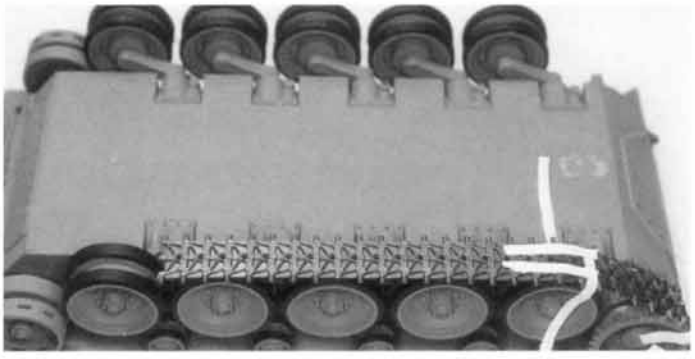
Sometimes you have to sand the edges of individual track links to get them to fit together correctly or tightly. This is most easily accomplished with a sanding stick.



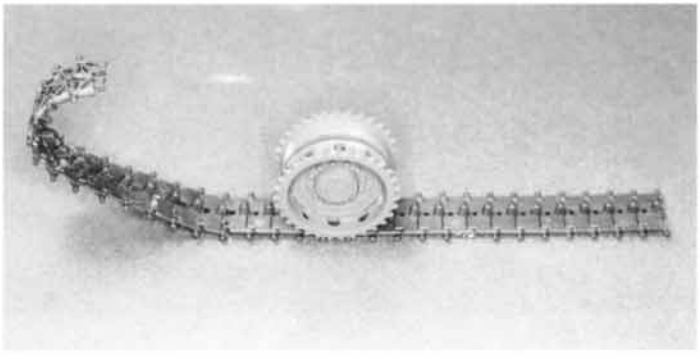
For straight or curved lengths of individual track links, lay out two thin strips of masking tape and then build up the links along the masking tape.



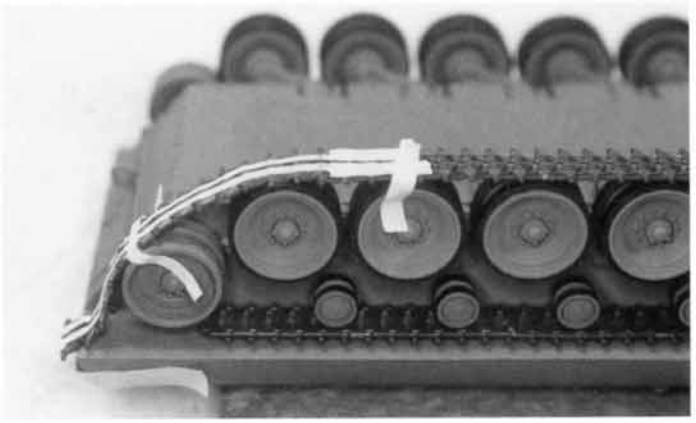
I like to work my way from the sprocket to the road wheels and then to the return rollers and the idlers. Fit a taped length of links from the lower end of the sprocket to the idler wheels. After you position it correctly, you'll glue the individual links to one another.



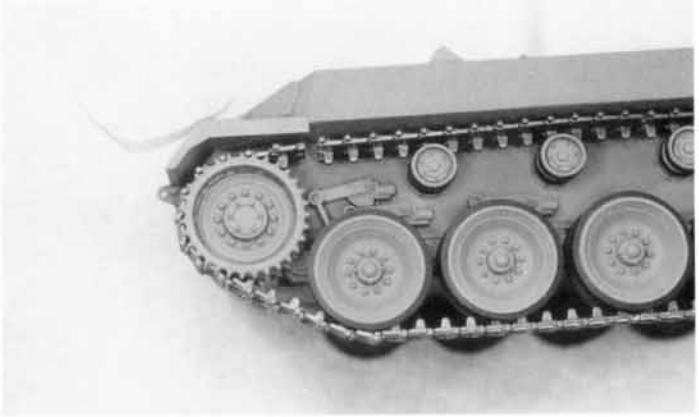
The forward area of the individual track links is complete. Now it's time to work towards the idler wheel.



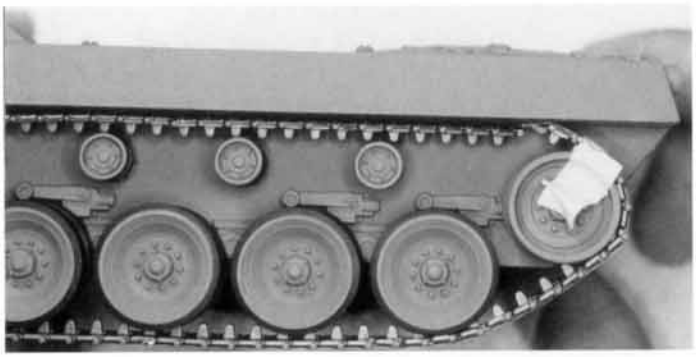
Here is a good example of a length of individual track links that was fitted around the sprocket and the forward road wheels.



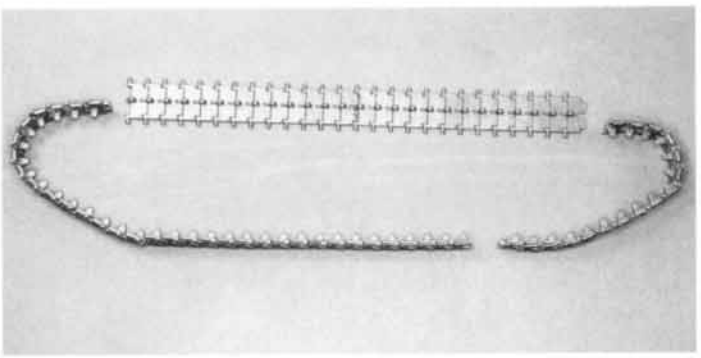
The process of taping individual links together and then fitting them in place around the idler wheel is the same as the one used on the sprocket.



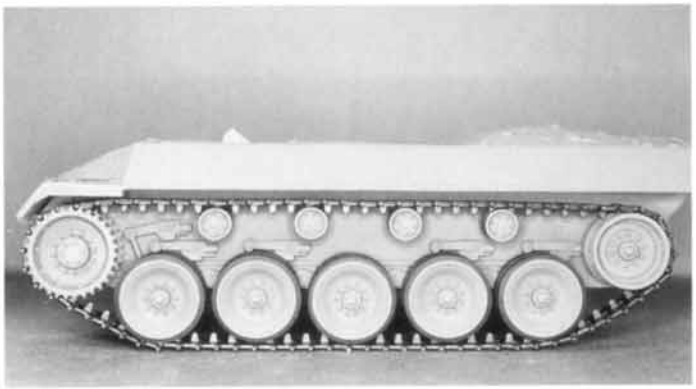
Slow and methodical test-fitting will usually identify problems. While the angle of the individual track links on the upper part of this sprocket is correct, you'll have to add one more link to make the connection between the sprocket and the length of links along the return rollers.



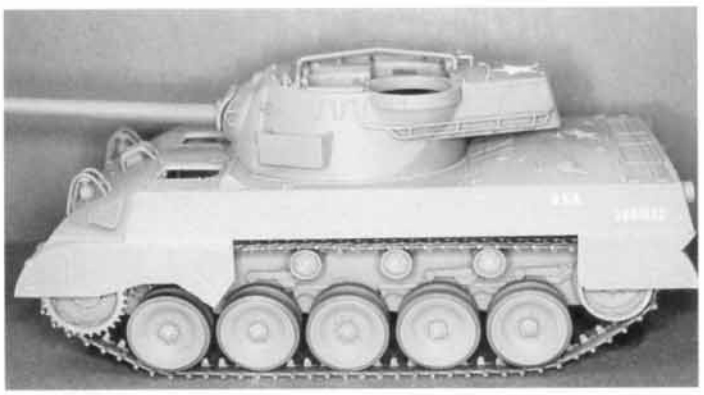
Going slow and test-fitting is important because sometimes you do make mistakes. Here the upper links around the top of the idler wheel have too much of a curve. You'll have to break them off and reattach them at a lower angle.



Here is a good example of a set of completed individual track links. The next step is to paint these three sections and then install them on the tank.



Paint the links, position them, and glue them into place. While these tracks look good, there is a slight upward bow between the sprocket and the first return roller. The solution here is to reposition the links by breaking them and reattaching or hiding the problem.



Since this M-18 Hellcat had forward and rear skirts, it was not necessary to make any adjustments to the track. Also note that all the running gear have received their first few subtle coats of mud and dirt wash.