

JEWELCAST*

VACUUM PRECIOUS METAL CASTING KIT

INSTRUCTIONS

Welcome to the world of "JewelCast!" In order to make professional quality castings, utilizing the art of Lost Wax, it is important to follow these instructions in detail.

There are no shortcuts. Prepare your working area and then read **ALL** of these instructions before you begin. Your working area should be free of flammable objects, away from curtains, drapes, aerosol cans, etc.

This "JewelCast" kit has been designed with the utmost concern for safety. **BE SURE TO USE KIT IN A WELL VENTILATED ROOM. IT IS NOT RECOMMENDED FOR USE BY YOUNG CHILDREN.**

Necessary tools, other than those provided in your "JewelCast" kit, are: Candle, small screwdriver, standard measuring cups, teaspoon, bucket, kitchen spoon, four inch piece of aluminum foil and toothbrush.

Become familiar with each and every part pictured below. As you read further, the instructions will refer to these parts by name.



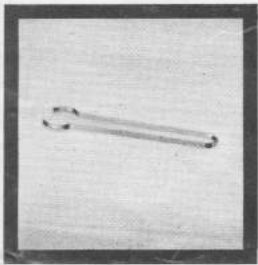
CASTER



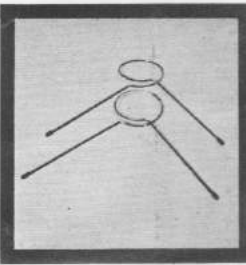
KILN



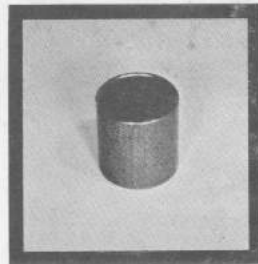
TORCH



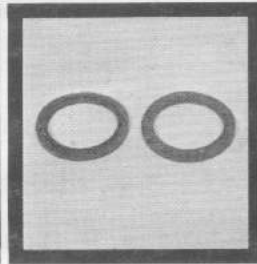
TONGS



STANDS



FLASK



HIGH TEMPERATURE GASKETS



INVESTMENT POWDER



DEBUBBLIZER



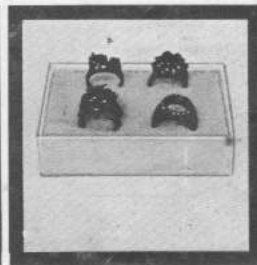
FLUX



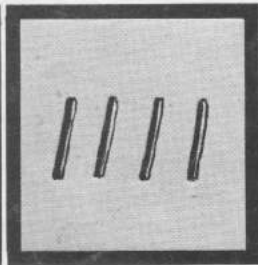
JEWELER'S BRONZE



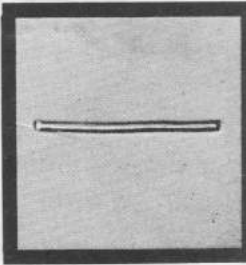
LARGE, SMALL MIXING BOWLS



WAX PATTERN



SPRUES
($\frac{1}{8}$ " WAX ROD)



STICKY WAX
($\frac{1}{4}$ " WAX ROD)

There are five basic steps in making a casting: 1. Attaching the Sprue; 2. Investing; 3. Burn Out; 4. Casting; 5. Polishing.

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STEP 1

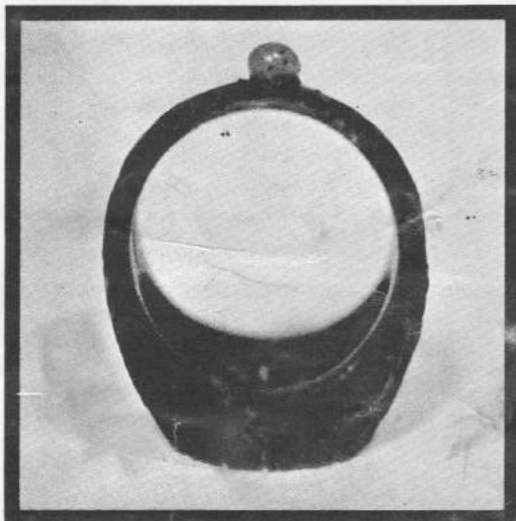
ATTACHING THE SPRUE

READ STEP COMPLETELY BEFORE BEGINNING

Select wax pattern. Handle it carefully, as it is fragile. Light candle.

Attach sprue (small wax rod) to wax pattern by heating a piece of sticky wax (large wax rod) with the candle, touch it to pattern, and deposit one drop of wax where you wish to attach sprue, normally an inconspicuous spot on pattern. Picture #1.

PICTURE #1



DROP OF STICKY WAX DEPOSITED ON WAX PATTERN

Quickly press one end of sprue on top of the drop of sticky wax, and hold it for a few seconds. Take a small screwdriver and heat blade with candle. Use this heated blade to uniformly weld wax pattern and sprue into one smooth joint, being sure that wax from both the sprue and pattern have melted together. There should be no sharp corners or angles. Picture #2. Blow out candle. Pour all debubblizer into small bowl. Immerse prepared wax pattern for 30 seconds. Picture #3.

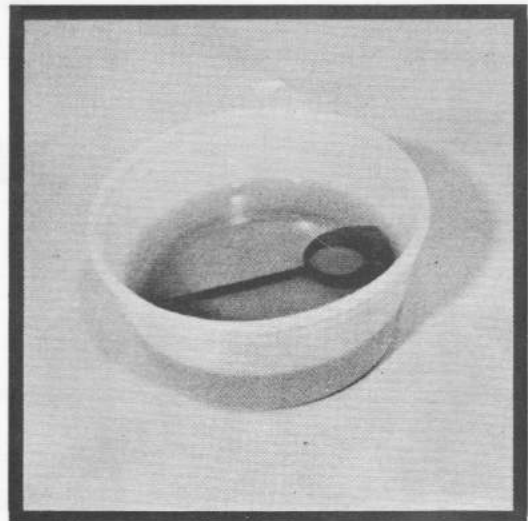
This not only cleans the pattern, but acts as a wetting agent and surface tension reducer, helping to cut down on unwanted air bubbles that might be trapped in Step #2. Remove, gently shaking off excess. Do not start Step #2 until pattern is dry. Pour the debubblizer solution back into bottle, as it may be used over and over. Clean small bowl.

PICTURE #2



SPRUE ATTACHED TO WAX PATTERN SHOWING SMOOTH WELD

PICTURE #3



PATTERN WITH SPRUE ATTACHED IN DEBUBBLIZER

STEP 2 INVESTING

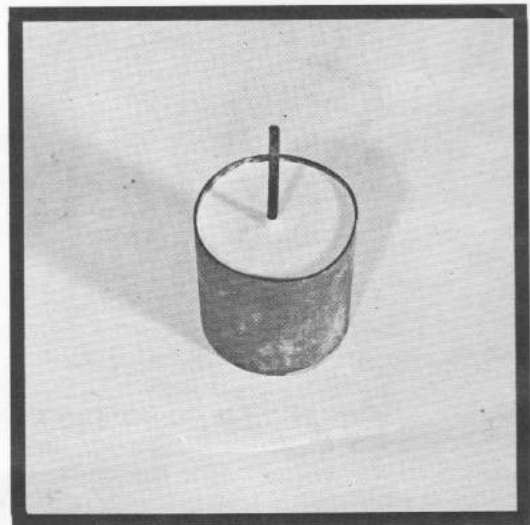
READ STEP COMPLETELY BEFORE BEGINNING

Take a four inch piece of aluminum foil and set it on a smooth surface. Examine flask to be sure it is clean, then set flask on top of aluminum foil. Pour one quarter ($\frac{1}{4}$) cup of water into large mixing bowl, add three quarters ($\frac{3}{4}$) of a cup of investment powder to the water. With a spoon, steadily stir the mixture until it becomes smooth like pancake batter. (Do not whip or beat.) Add one additional teaspoon of water to the mixture and stir until blended and void of lumps. Carefully pour mixture (investment) into flask. Mixture should be level with the top of flask. With mixture remaining in bowl, take brush and paint pattern, being sure to push brush into all crevices, forcing and filling investment into these areas. Picture #4. Do not take more than two minutes to do this. Holding sprue, insert painted wax pattern into center of the invested flask and move it all the way through mixture, until it **gently** touches bottom. (If you hit bottom too hard, you could break your wax pattern.) Holding sprue, raise pattern approximately one-fourth of an inch off bottom and release. It may be necessary to guide sprue slightly to keep it in an upright position. Picture #5. Let invested flask set, without being moved, for 45 minutes. At the end of this time, the investment will be hard. It takes about six minutes for mixed investment to start to harden. Once it begins to thicken, no additional water should be added to keep it thin. Clean brush, large mixing bowl and spoon with water.

After 45 minutes, take an old spoon and carefully carve a one inch circular crater into top side of flask (sprue side up), approximately $\frac{1}{16}$ th to $\frac{1}{8}$ th of an inch deep, cutting off sprue. Be sure that the lowest part of crater is also the location of sprue. Smooth any rough edges of crater with your finger. Be sure no investment covers sprue. Picture #6. Bottom of flask must also be smooth. Sometimes a knife may be needed to scrape bottom of flask to help make it smooth.

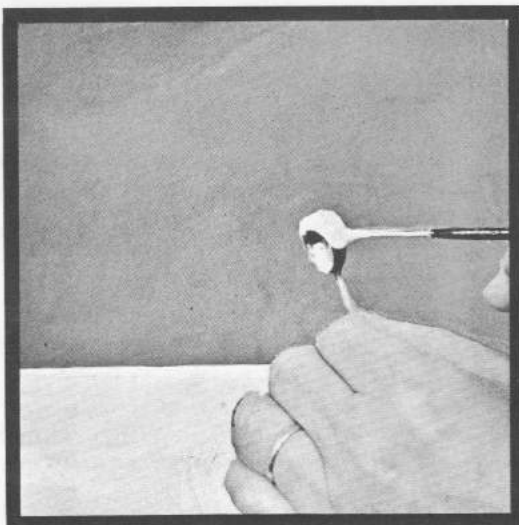
Place one high temperature gasket inside opening of caster (the other is a spare). Be sure gasket and area where gasket is placed (caster opening), are clean, before each casting. Place flask in the opening, crater side up. Firmly pull handle of the caster out all the way. At the end of three seconds, let go of pump handle and see if it springs back inside caster. (It will not go in all the way.) If it does not spring back, your gasket is worn, and needs to be replaced.

PICTURE #5



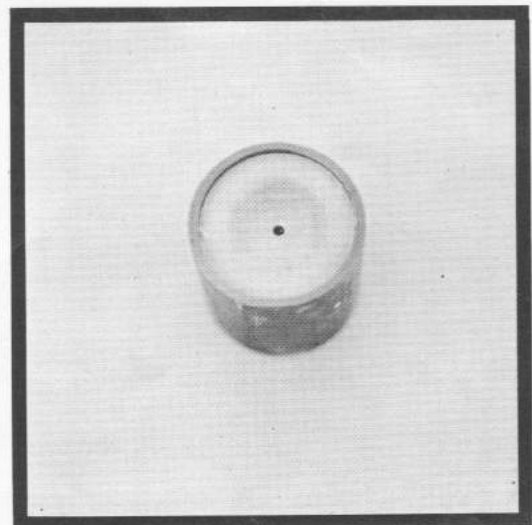
SPRUE IN AN UPRIGHT POSITION

PICTURE #4



PATTERN BEING PAINTED WITH
INVESTMENT MIXTURE

PICTURE #6



SMOOTHED CRATER SHOWING END
OF SPRUE

STEP 3 BURN-OUT

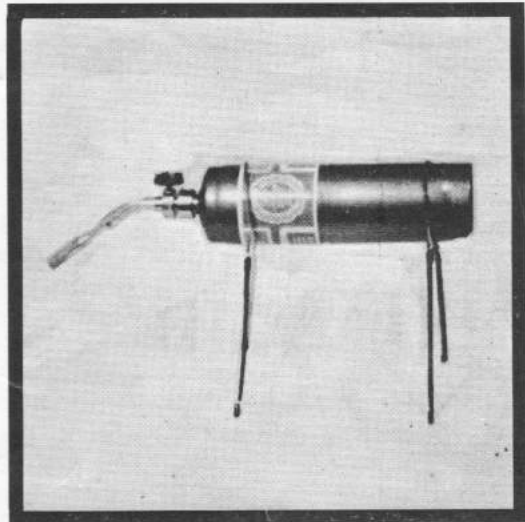
READ STEP COMPLETELY BEFORE BEGINNING

Push handle in all the way. Remove all packaging materials from inside kiln. Plug kiln into any 110V outlet. Remove flask from caster with tongs. **Turn it over**, crater side down, and place it inside kiln. Close kiln door. Turn dial on side of kiln to "Hi." Leave it at this setting for one hour. At the end of one hour, look inside the kiln. The flask should be glowing red hot, translucent appearing. If it is not, leave the flask in the kiln with the setting on Hi until the flask is glowing red hot, after which time turn kiln down to #5 for an additional 15 minutes. Just before it is time to remove flask from kiln, place stands on torch. Picture #7. Lift torch and set in an upright position. Light it by holding a lighted match on underside of nozzle and turning valve slightly to the left. Picture #8. Blue flame should be approximately one to one and one-half inches long.

When the final 30 minutes are up, using handle on side of kiln, slowly lower door, noting it is HOT. Place tongs around flask and remove. Handle the hot flask with care. Do not jar flask, for this could break a part of the delicate pattern inside flask. **Turn flask over**, crater side up, and place it into caster, on top of high temperature gasket.

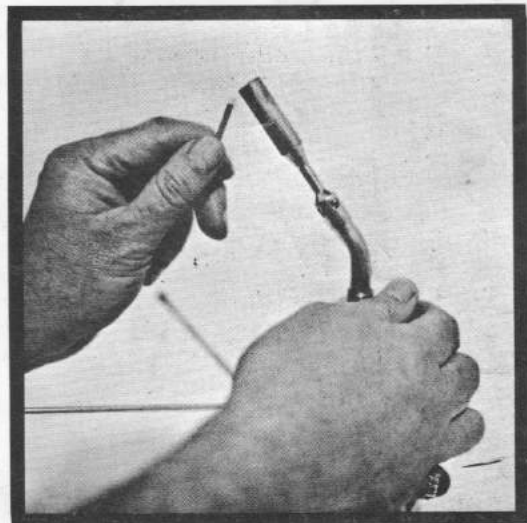
Vacuum handle must be in all the way. Close door of kiln and turn to "Off."

PICTURE #7



TORCH WITH STANDS ATTACHED

PICTURE #8



MATCH HELD UNDER TORCH FOR LIGHTING

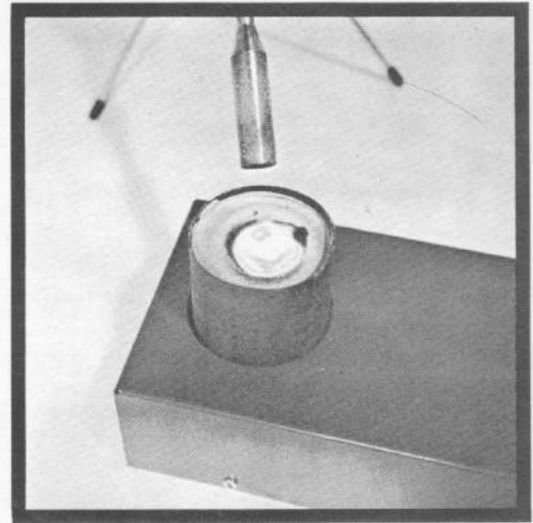
STEP 4 CASTING

READ STEP COMPLETELY BEFORE BEGINNING

Place one-third of the provided Jeweler's Bronze into crater of flask. Position torch (by bending front legs of the stand) so that tip of blue flame just touches metal. Picture #9. Depending on how much metal is being used, it should take approximately two to four minutes to melt the metal. It may be necessary to move torch around slightly, so that **every particle of metal is melted**. To aid melting, sprinkle a few grains of flux on top of the heating metal.

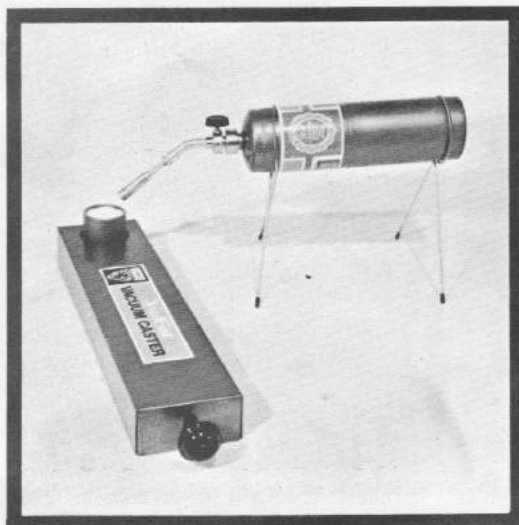
When metal is molten it will roll and take on a mirror-like appearance and is ready for casting. Picture #10. It is better to overheat metal than to underheat. Do not jar flask when metal is molten, as metal could run into the sprue hole prematurely. It is now time to cast your pattern. Keep flame on metal. Firmly hold onto caster with one hand. **Quickly, but smoothly**, pull handle of caster with other hand, out all the way, and hold it approximately 30 seconds. Picture #11. Part of the metal will be pulled into flask. After 30 seconds, slowly release handle and immediately turn off torch. **Do not jar caster**. Let flask set in caster for 30 seconds. Slowly push caster handle in the rest of the way. Remove flask with tongs from

PICTURE #10



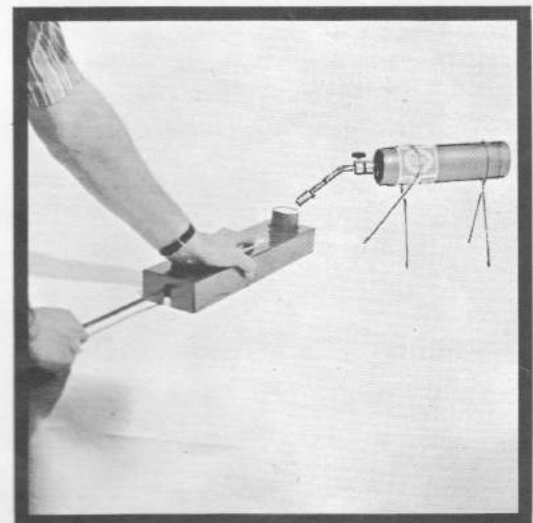
MOLTEN METAL WITH MIRROR APPEARANCE

PICTURE #9



TORCH POSITIONED SO THAT TIP OF BLUE FLAME JUST TOUCHES METAL

PICTURE #11



HANDLE BEING HELD OUT

caster. Place it on top of kiln for one minute. (It is still very hot.) During this time fill bucket with cold water. With tongs, submerge entire flask into water. Picture #12. It will sizzle and bubble. There is no danger. It is disintegrating the investment powder. After bubbling has ceased (in approximately one minute) examine water to locate casting.

PICTURE #12

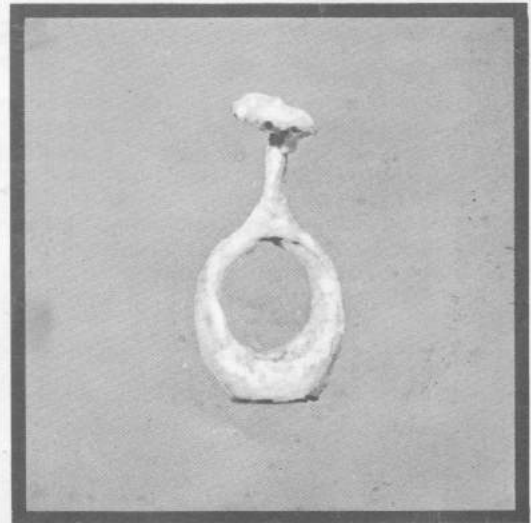


SUBMERGING HOT FLASK IN COLD WATER

STEP 5 POLISHING

Clean casting with toothbrush under running water, to remove all investment powder. You will notice that when you made your casting you also made a sprue with a "button." Picture #13. Sprue and button should be cut off after polishing, and when cleaned, can be melted again. To polish casting, use a fine wire wheel brush attached to some type of motor, such as a one-fourth inch drill, bench grinder, Dremel tool, etc. This will clean the oxidation off metal. To polish, use a soft buffing wheel with jeweler's rouge. Use file to touch up ring after cutting off sprue with "button."

PICTURE #13



CASTED RING WITH SPRUE & BUTTON



THE FINAL RESULT



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