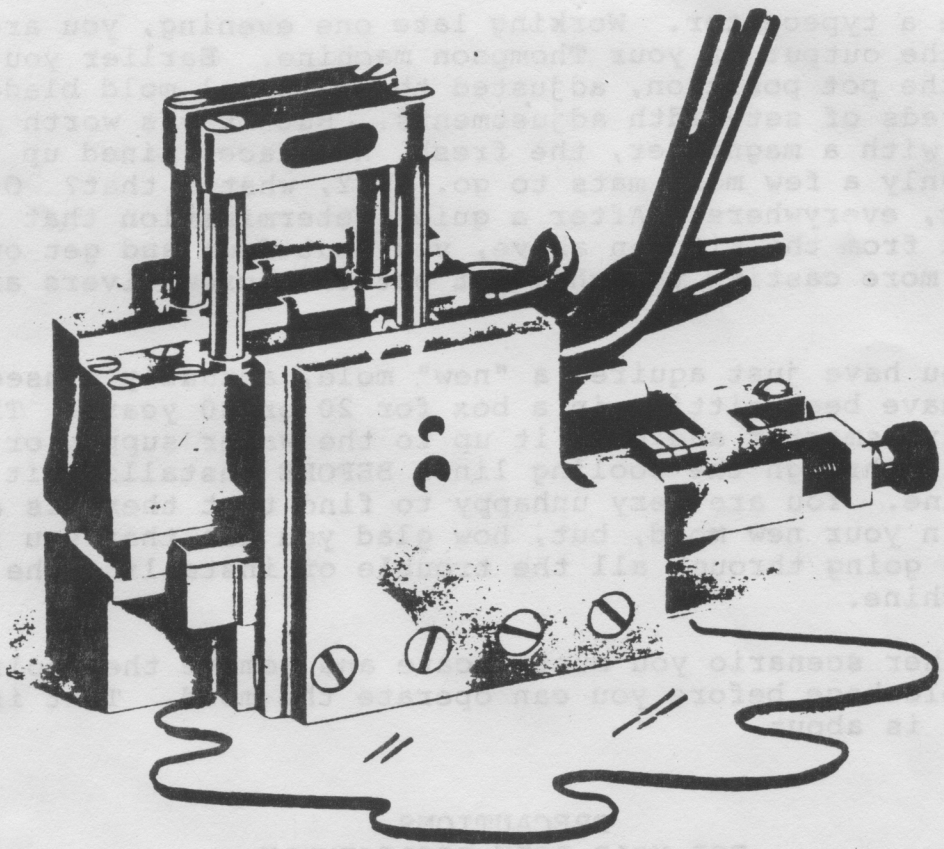
WATER, WATER, EVERYWHERE
BUT NOT IN THE MOLD!!!



A short treatise on unclogging waterway passages in a Thompson typecaster mold

by

James E. Walczak

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INTRODUCTION

You're a typecaster. Working late one evening, you are admiring the output of your Thompson machine. Earlier you had adjusted the pot position, adjusted the vertical mold blade and made hundreds of set-width adjustments. But it was worth it as you scan, with a magnifier, the fresh, new faces lined up in the galley. Only a few more mats to go. HEY, what's that? Oil? Oh no! Water, everywhere! After a quick determination that it is NOT a leak from the kitchen above, you shut down and get out the rags. No more casting tonight; get out the screwdrivers and wrenches.

Or, you have just aquired a "new" mold, actually a used one that may have been sitting in a box for 20 or 30 years. This time you are smarter and hook it up to the water supply or try blowing air through the cooling lines BEFORE installing it in your machine. You are very unhappy to find that there is a blockage in your new mold, but, how glad you are that you found out before going through all the trouble of installing the mold in the machine.

In either scenario you must locate and remove the cooling waterway blockage before you can operate the mold. That is what this paper is about.

PRECAUTIONS FOR MOLD BODY DISASSEMBLY

1. Only to be done as a LAST RESORT.
2. Use correctly sized screwdrivers.
3. Use proper sized wrenches and much care when removing or replacing brass tubing fittings.
4. Use a wooden cleat-board, wood clamp or soft-jawed vise to hold mold while loosening and tightening body screws.
5. Above all, protect the "business end" of the mold parts from damage. This means the sharp 90 degree edges that define the type body. Work on a clean, preferably wood top bench. A vinyl pad or sheets of white paper provide a protective work surface. Carpeting on the floor is smart, but <u>do not</u> plan on dropping anything!

THE WATER PATH

Cooling water courses through a series of drilled passages, carrying away heat from the hot end of the mold. Cross drillings connect the ends of the main drillings to create 180 degree reversals or 90 degree bends in flow direction. These cross drilled holes were then sealed with either a brass screw or plug. Mold components are interconnected by means of tubing and compression fittings. Figure 1 is an exploded sketch showing the cooling water circuit of a modern era English Monotype Thompson mold. Older molds should be similar.

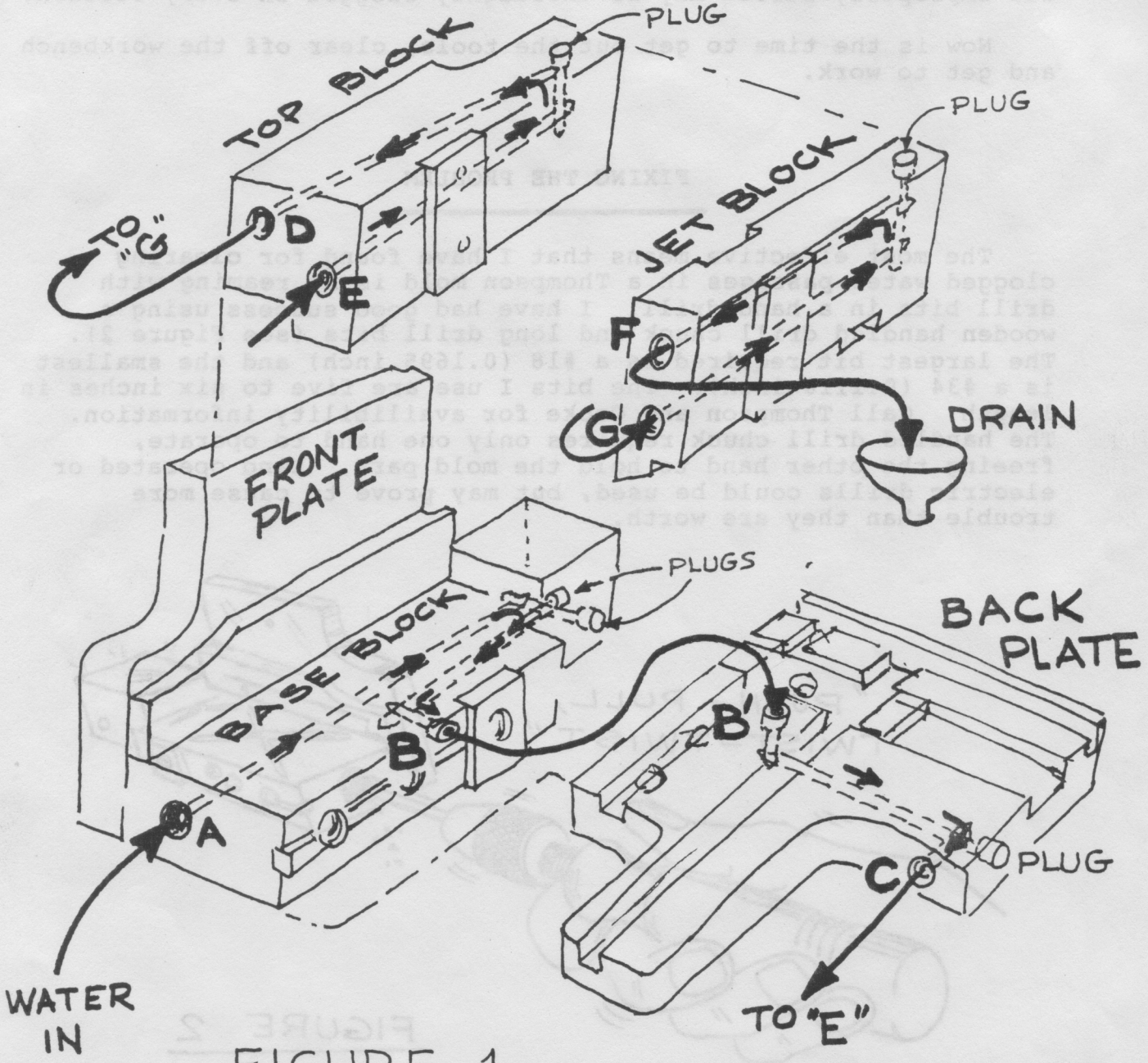

FIGURE 1

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LOCATING THE PROBLEM

Obstruction to the free flow of water is caused by mineral deposits, organic material and/or rust coating the drilled passageways within the mold. The most probable spots for the blockage are at the sharp turn around points.

When either of two symptoms occur, 1) no flow from the drain pipe, or 2) leakage from any of the brass tubing fittings, then it is time to determine in which part of the mold is the blockage.

Isolation of the problem may be accomplished by detaching hoses and simply blowing through each section of the mold until you know which sections are clear and which are not. A mold that was improperly stored may be thoroughly clogged in every section.

Now is the time to get out the tools, clear off the workbench and get to work.

FIXING THE PROBLEM

The most effective means that I have found for clearing clogged water passages in a Thompson mold is by reaming with drill bits in a hand drill. I have had good success using a wooden handled drill chuck and long drill bits (see Figure 2). The largest bit required is a #18 (0.1695 inch) and the smallest is a #34 (0.1110 inch). The bits I use are five to six inches in length. Call Thompson and Cooke for availibility information. The handled drill chuck requires only one hand to operate, freeing the other hand to hold the mold part. Hand operated or electric drills could be used, but may prove to cause more trouble than they are worth.

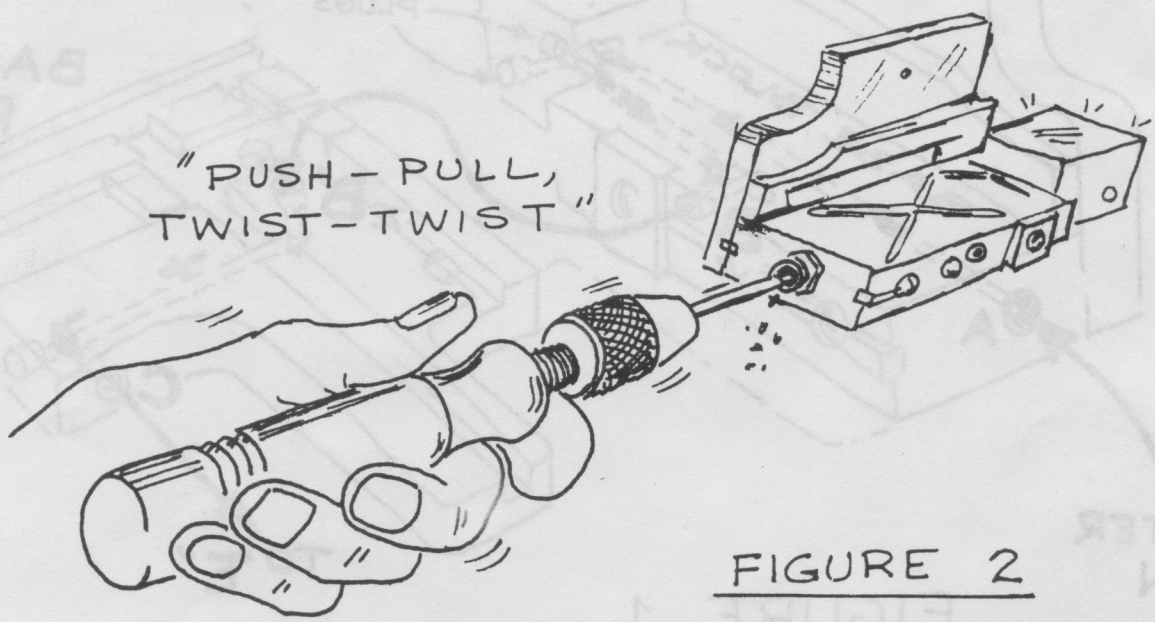

FIGURE 2

Hopefully, any of the main drillings can be cleared by this method. In some situations, a little acid solution (I have tried phosphoric acid) applied with a pipette or syringe, may help loosen stuborn deposits. More investigation needs to be done in chemical methods of aiding the process. One thing I found out about the use of hydrochloric (muriatic) acid, which disolves carbonate deposits, is that it almost instantly tarnishes the polished surfaces of the steel mold parts. Apparently, the acidic vapors alone are enough to deface a mold. Fortunately, the discoloration does not seem to affect the cast type body.

After drillings (see Figure 1) in the mold base (A & B), the rear plate (C), the top block (D & E), and the jet block (F & G) have been cleared using drill bits, pipe cleaners and compressed air, and it is still impossible to blow air through any or all of the mold parts, then blockages remain in the hidden, interconnecting drillings.

Not knowing how to remove the pressed-in brass plugs and gaining no success in unscrewing the screwed-in ones, I, after much deliberation, decided to drill a hole through the plug, large enough to gain access for a reaming drill. I planned to plug this new hole afterwards. A plug within a plug, you might say.

Drilling is quite simple if a drill press is in the foundry's inventory. With the mold part firmly clamped in a small wood-faced clamp, I carefully centerpunched the plug and drilled the plug through. In the process of drilling the plug, most of the waterway blockage can be automatically reamed out at the same time.

Once all obstructions are cleared in this manner and all drillings pass the air blow test, it is time to reseal the plugs. The holes are tapped (usually 8-32 thread), all shavings blown out, and brass screws, dabbed with pipe thread sealant, are screwed into place. The heads of the screws are snipped off with end cutters (NOT hacksawed) and the remaining stubs are carefully filed flush with the surface of the mold.

Extreme care must be exercised when filing at the type body end of the mold base block. Any damage to the top edges of the block will ruin the mold. Be careful here. Also, the plugs must be flush for tight fit of the vertical mold blade, and (in the case of center-jet molds) for the proper fit of the adjustable lower jet blade block.

After another air blast and careful wiping of the parts, the mold may be reassembled and installed in the Thompson.

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AFTERTHOUGHTS FOR DISCUSSION

With an ounce of prevention in mind, what are other Thompson owners doing to prevent water passage clogging?

Has anyone done or thought about:

1. use of demineralized water?
2. use of closed loop automotive type radiator system with chemical inhibitors?
3. methods of draining mold after use?
4. use of compressed air and chemical or oil additives?
5. long term lay-up protection?