



# WR PLUMB BOB NEWS

# 2008-01  
Jan. 7, 2008



## Information for plumb bob collectors

Edited by Wolfgang Ruecker Germany

plumbbobwolf@t-online.de

### TABLE OF CONTENTS FABRICATION OF PLUMB BOBS

- 1) FORGING
- 2) FOUNDRY OR CASTING
- 3) TURNING
- 4) DIE CAST

[back to this page](#)

### FABRICATION OF PLUMB BOBS

The first plumb bob to verify a vertical direction was produced by hanging a simple stone on a line. No great expense. As a travel-report of Dogan Basak shows, this method exists still in some countries. When the building is ready they throw the stone away. No chance for plumb bob collectors. ☹. The plumb bob was used as a weight to hold the line tight. Later on the bobs got tips to plumb down a point. In some countries we still find nowadays plumb bobs without a sharp tip. (In France the “truncated cone” and in the Netherlands the cylindrical “flat bottom”). Similar to the technical development in the world the shape, the material and the production method of the plumb bobs were adapted. The history of the plumb bobs is also the history of the technique.

#### 1) FORGING or HAMMER

A very simple method to forge plumb bobs was using a hammer (and an anvil). We have good items of Ottoman bobs that were forged. [\(Picture right\)](#).



In 2007 a blacksmith made me a very nice plumb bob only by using a hammer. He did it during an antique market where I had my exhibition. The plumb bob is elegant und it works! Especially made for me! [\(Picture left\)](#)



The body of these plumb bobs was of one material only. At that time they did not have a hardened steel tip by another material or a combination of different materials. Unfortunately we don't have pictures that show the production of plumb bobs in that time ☹.

The plumb bob was a tool that was not worth to show it in a picture. It was too simple! We know only pictures of forging swords by the blacksmith.



# WR PLUMB BOB NEWS

# 2008-01  
Jan. 7, 2008



## Information for plumb bob collectors

Edited by Wolfgang Ruecker Germany

plumbbobwolf@t-online.de

## 2) FOUNDRY OR CASTING

Another method is to cast plumb bobs in moulds. The material of the moulds was a simple stone or clay, later copper, brass or steel. The material of the plumb bobs was plumb, because it melts already at 327 degrees Celsius. Later they used brass and iron.



A very good sample for an open mould you can see in the museum MAISON DE L'OUTIL in Troyes / France. I tried to produce my own French flat plumb bob with such a mould. Unfortunately the result was not really as expected, but I can use it. ☺ ☹

Very simple is the system with the three wires in the middle to fix the line.



Original                      result of my test

# WR PLUMB BOB NEWS

# 2008-01  
Jan. 7, 2008



## Information for plumb bob collectors

Edited by Wolfgang Ruecker Germany

plumbbobwolf@t-online.de

Simple plumb bobs for the old levels were produced with such moulds:

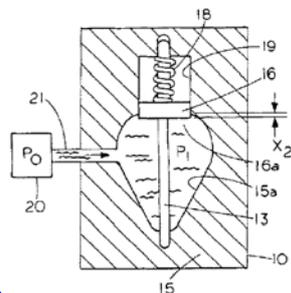
The use of such a level in a picture of 1555.



This mould was offered by Hans Brunner, an antique dealer in Australia:



An US Patent 6926065 of 2005 talks about the problems of the production.



### BACKGROUND OF THE INVENTION

One of the problems with casting materials that expand during solidification is that the solidified materials often develop cracks or fractures that reduce the effectiveness and appeal of the cast product as well as the integrity of the product. This is particularly true in the sporting industry where bismuth and bismuth alloy metals are being touted to replace lead and lead alloy articles such as fishing sinkers. In order to remove such a cast article from a mold, the molds have been made in multiple parts that allow the mold parts to be removed in sections thereby preventing the cast article from being retained in the mold cavity due to an interference fit between the mold surfaces and the surfaces of the solidified cast article.



# WR PLUMB BOB NEWS

# 2008-01  
Jan. 7, 2008

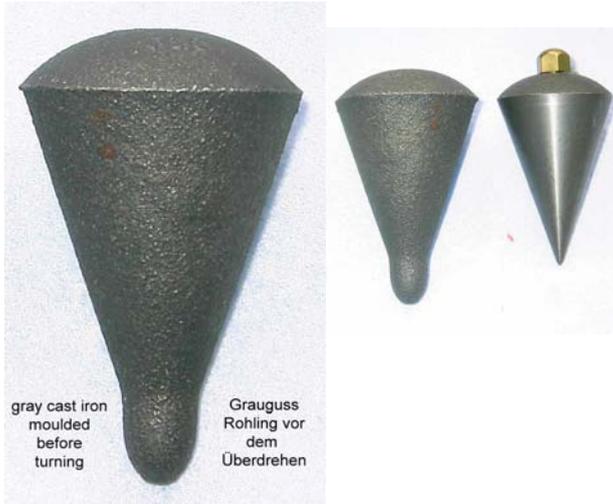


## Information for plumb bob collectors

Edited by Wolfgang Ruecker Germany

plumbbobwolf@t-online.de

When you produce plumb bobs or other things from grey cast iron you have to work them after casting by turning on a lathe.  
Sample of a GREY CAST IRON plumb bob that was produced until 1970.



gray cast iron moulded before turning

Grauguss Rohling vor dem Überdrehen



This mould is for 33 plumb bobs.

Some of the offered moulds are not used to produce „real“ plumb bobs. Some are for making so called “fishing sinkers”. The quality of these bobs must not be as high as for the plumb bobs for workers. They have a simple eye / loop to fix the line.

These fishing sinkers are usually not a part of our collection of plumb bobs from masons etc., but it is nice to know how they are looking.





# WR PLUMB BOB NEWS

# 2008-01  
Jan. 7, 2008



## Information for plumb bob collectors

Edited by Wolfgang Ruecker Germany

plumbbobwolf@t-online.de

I got the chance to take photos in a small factory where they produced since 1896 and still are producing plumb bobs. We will see the production of six-sided (cant roll) plumb bobs, the brass types in different shapes and the die cast method. You can follow the way from the raw material to the final product.

### 3) TURNING

**You will see the fabrication of different types of plumb bobs, beginning with the raw material up to the final product.**

**Remark:**

The photos are made not on the actually modern lathes, but on an older one to show better the different steps and not to show actual secrets of the factory.



- **I got the permission to make photos inside of a factory**
- **I tried to tell no secrets of this factory**
- **This factory produces plumb bobs since 1896**
- **They make a lot of different types (see catalogue)**



In the 1920s they produced on such a lathe.



# WR PLUMB BOB NEWS

# 2008-01  
Jan. 7, 2008

## Information for plumb bob collectors

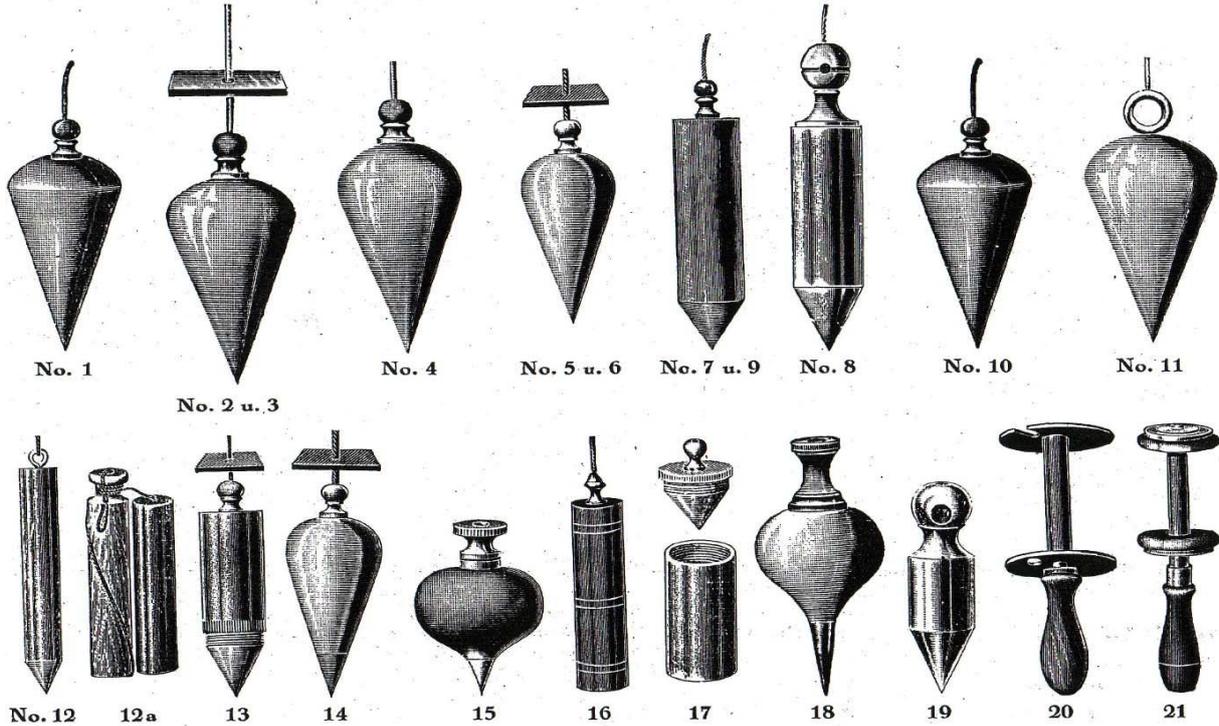


Edited by Wolfgang Ruecker Germany

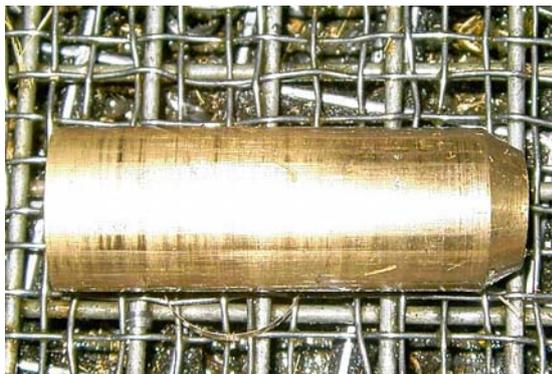
plumbbobwolf@t-online.de

These types are still produced nowadays (with some exceptions)

### Catalogue from 1926.



- Most of the plumb bobs start as a rod
- Raw material from brass or iron
- Round or hexagonal



Raw materials



# WR PLUMB BOB NEWS

# 2008-01  
Jan. 7, 2008



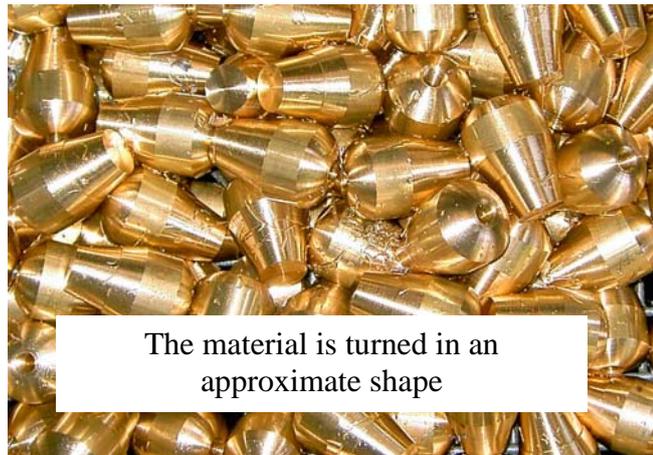
## Information for plumb bob collectors

Edited by Wolfgang Ruecker Germany

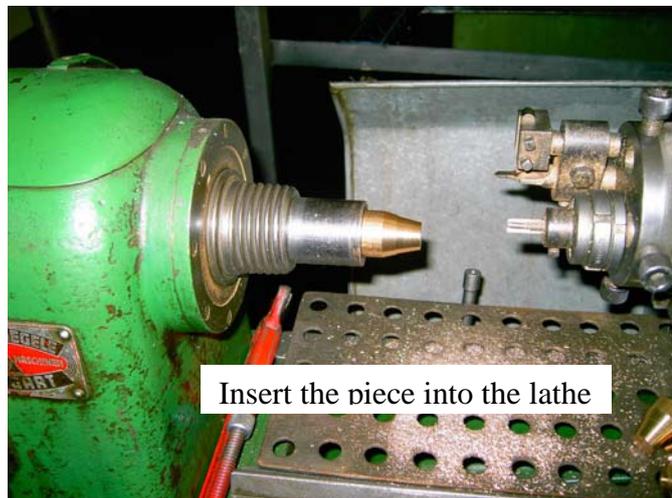
plumbbobwolf@t-online.de

### PRODUCTION TYPE 14:

- Plumb bob of brass
- Fine polished and varnished
- brass knob unscrews
- With steel point
- (with steel plate / spacer)
- Weights of  
125, 150, 200, 250, 300, 350, 400, 500 g



The material is turned in an approximate shape



Insert the piece into the lathe



# WR PLUMB BOB NEWS

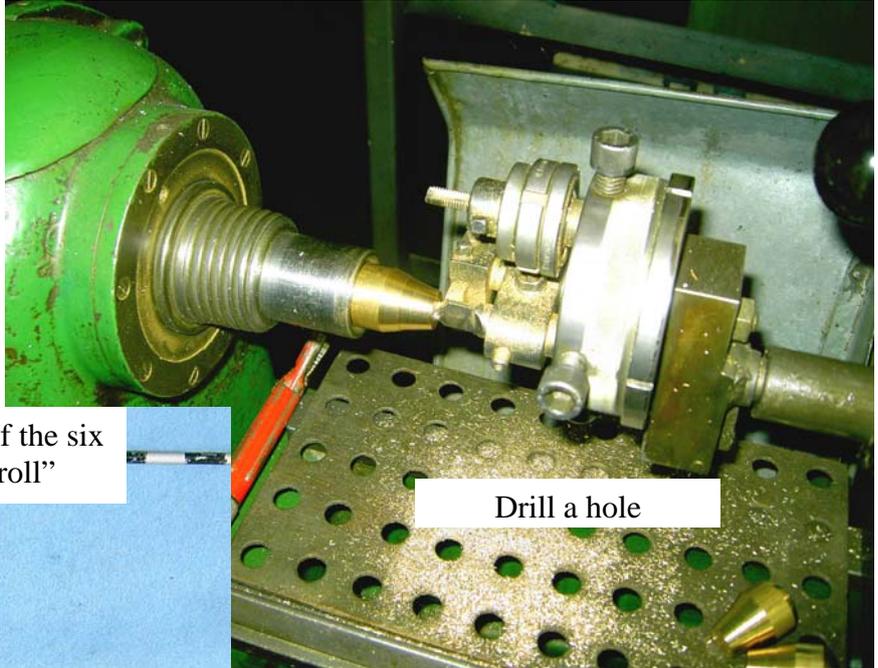
# 2008-01  
Jan. 7, 2008



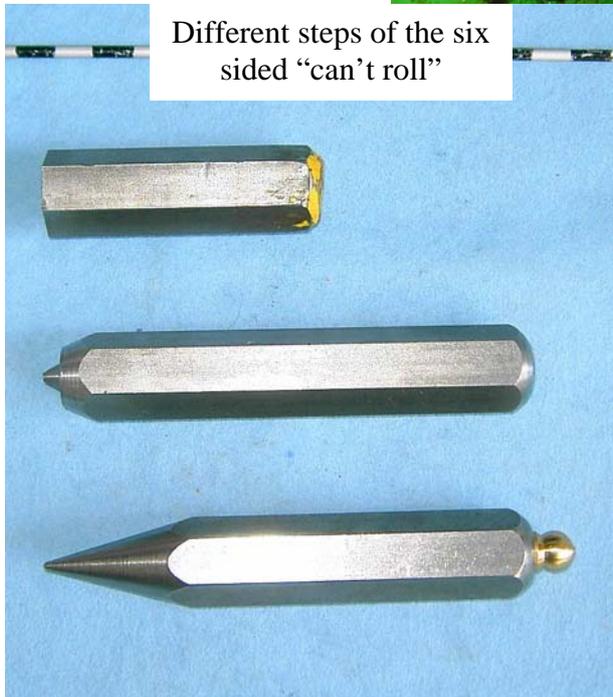
## Information for plumb bob collectors

Edited by Wolfgang Ruecker Germany

plumbbobwolf@t-online.de



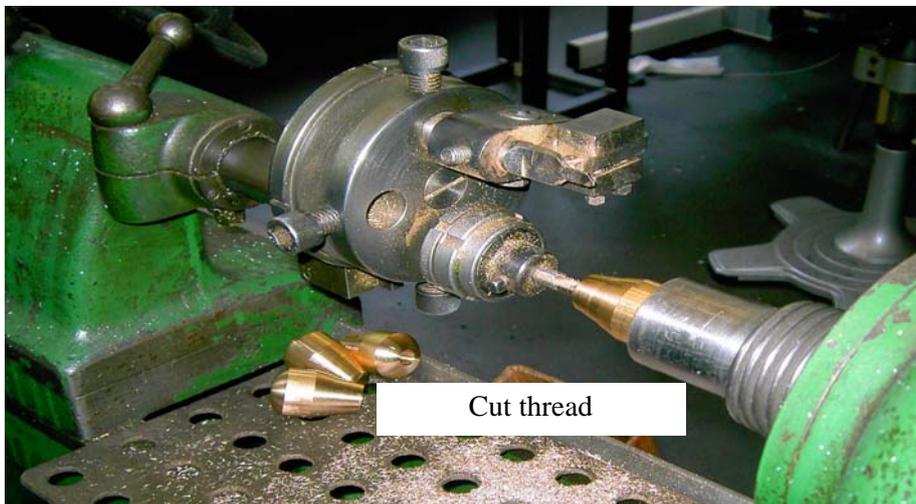
Drill a hole



Different steps of the six sided "can't roll"



Screw in steel Tip



Cut thread

# WR PLUMB BOB NEWS

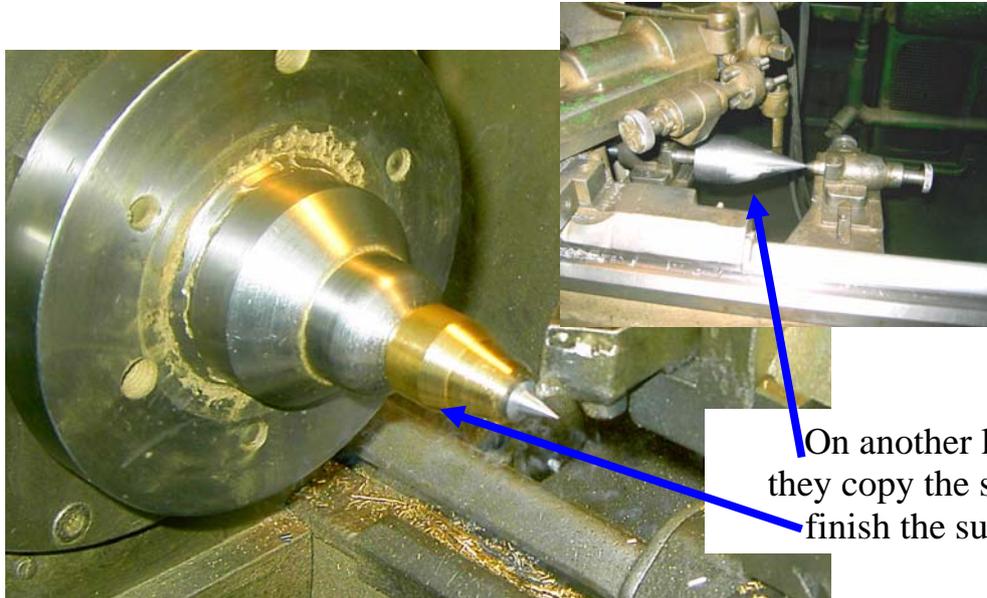
# 2008-01  
Jan. 7, 2008



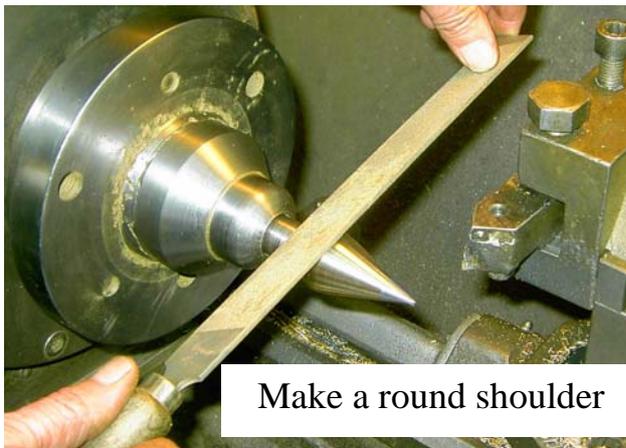
## Information for plumb bob collectors

Edited by Wolfgang Ruecker Germany

plumbbobwolf@t-online.de



On another lathe:  
they copy the size and  
finish the surface



Make a round shoulder



Ready !



In the same steps and method are  
also produced these CENTER  
PLUMB BOBS and the ENGLISH  
ONION SHAPE



# WR PLUMB BOB NEWS

# 2008-01  
Jan. 7, 2008



## Information for plumb bob collectors

Edited by Wolfgang Ruecker Germany

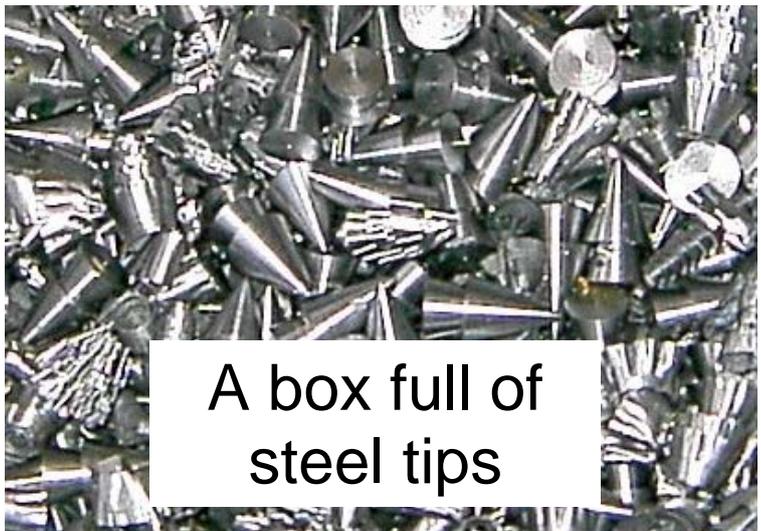
plumbbobwolf@t-online.de

### 4) ZINC-DIE-CAST

Now we see a method that is used since 1970. DIE CAST with ZINC. It arrives in ingots.



raw material  
ZINC in ingots



A box full of  
steel tips

This German Standard Plumb Bob has an integrated steel tip.



# WR PLUMB BOB NEWS

# 2008-01  
Jan. 7, 2008



## Information for plumb bob collectors

Edited by Wolfgang Ruecker Germany

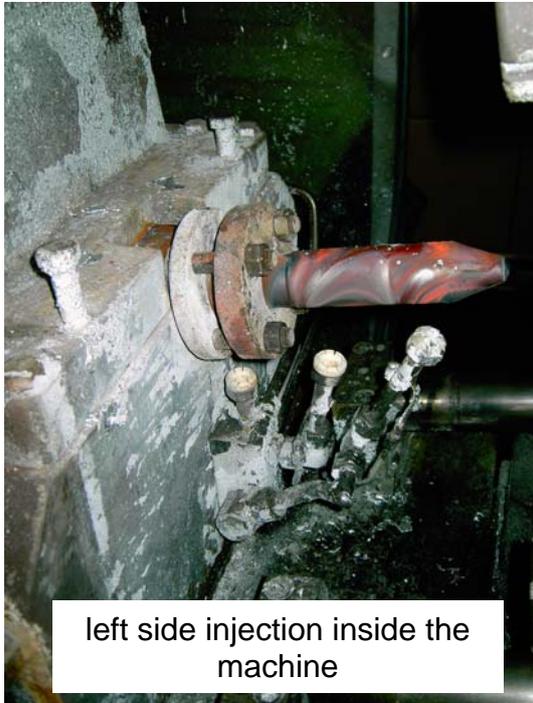
plumbbobwolf@t-online.de



input of ZINC



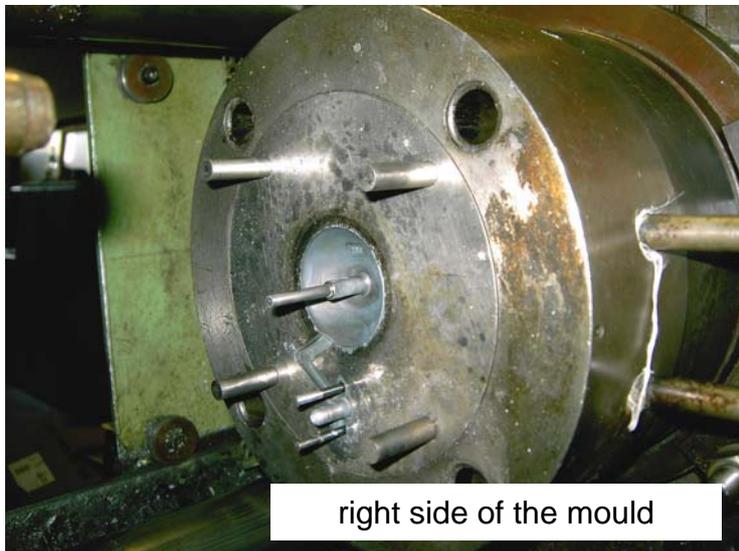
ZINC die cast machine. back



left side injection inside the machine



left side of the mould



right side of the mould



# WR PLUMB BOB NEWS

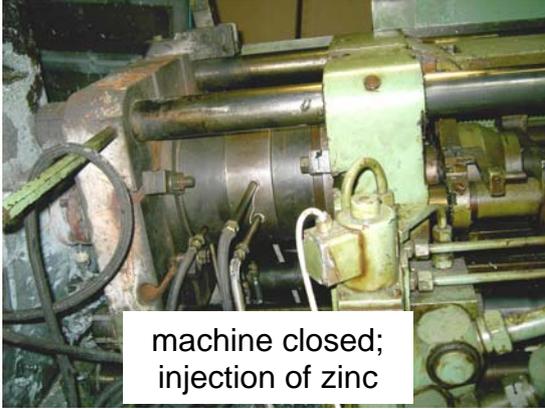
# 2008-01  
Jan. 7, 2008



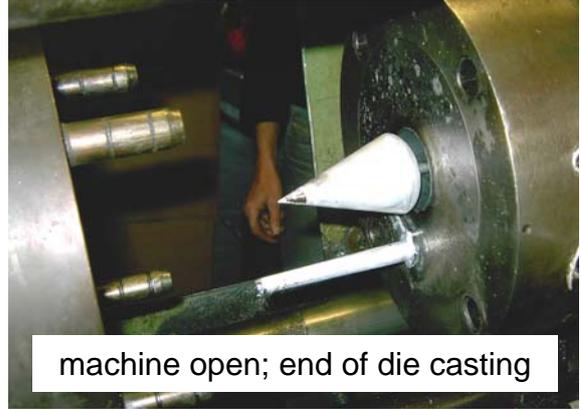
## Information for plumb bob collectors

Edited by Wolfgang Ruecker Germany

plumbbobwolf@t-online.de



machine closed;  
injection of zinc



machine open; end of die casting



Ready, but not polished



ceramic stones for  
cleaning



machine for cleaning and polishing



box of top screws



different tops



die cast with  
steel tip



cut through  
plumb bob



Cheaper version  
without steel tip



# WR PLUMB BOB NEWS

# 2008-01  
Jan. 7, 2008



## Information for plumb bob collectors

Edited by Wolfgang Ruecker Germany

plumbbobwolf@t-online.de

Before shipping the plumb bobs get by hand a **client mark** with a marker and a hammer.



Here are some of the marks.  
I made a photo directly from the marker and than I turned the photo left to right. So you can better see the mark.



The **original look:**



At the end of the production line the box gets a client label. This factory NEVER marked with its own name or label, but they sold also plumb bobs without marks!

A problem today with the increasing prices for the raw material is that the factory can't reduce the weight of the plumb bob. 12 oz plumb bob weight = 12 oz material. ☹

So the countries with high salaries have problems to produce and to sell any longer these products.



*More moulds you can see on page 24 of "THE PLUMB LINE CONTINUUM" edited by Nelson Denny.*

### Remark:

*If you have any comment, feedback or further information about the theme of this issue, please let me know. Thank you. Wolfgang*