

Enjoyment of the mold survey

1. Encounter

One day when I was still working in a company, I received a call from the CEO of DJK (at the time), Mr. Iwai. He asked me to attend the "Celluloid Conference" because a person named Lauer wanted to meet me. I almost forgot but he was the director of the American Museum of Plastics (at the time), and I had visited there ⁽¹⁾. Mr. Lauer is a leading researcher on celluloid and he was invited to Japan as the main-speaker.

It was that conference where I first learned about Celluloid House (it was located in Tsunashima at that time). I was interested so I visited the place later and was overwhelmed by the amazingness of the collection. Since I specialize in plastic processing technology, I was particularly interested in molds. I felt that there was something different about the way celluloid was done compared to the plastic and my work. This led to this research.

2. Characteristics of the mold

In terms of accounting, molds are positioned between assets and consumables. It is usually assumed that the useful life is two years. When a product is no longer in operation at the end of production, it is discarded. For this reason, there are only few examples of old molds remaining and not discarded.

The mold is deeply related to the forming technology. Engineers on the forming side and the mold side work together to build the technology. Various ideas are put into this process. This kind of know-how will be handed down and accumulated only between the parties concerned, but will not be leaked outside the company.

Plastic and celluloid molding technology can be learned from books and magazines, education, and academic activities, but only about the basic technology. In the worksite of the molding field, the key to differentiation is how much technology can be accumulated on top of the basic knowledge.

In this sense, it is significant that the molds that were actually used has remained. If the research is done well, there is a possibility that the depth of the molding technology and know-how can be approached.

3. Mold of Celluloid House

The molds in the Celluloid House collection have the following characteristics.

- (1) As many as about 3000 types
- (2) A wide variety of molding methods
- (3) Many of them were used in the 1940s and 1950s

Many celluloid products are daily necessities, and production was restricted during the war. The metal molds that were no longer used were forced to be donated due to the metal recovery order, and there are no more left. In addition, the use of celluloid rapidly

decreased due to the toy ban movement in the U.S. in 1955, followed by the introduction of synthetic plastics due to the operation of petrochemicals.

Therefore, this collection is from a time when celluloid processing was mature. This period was also the preparatory period for the creation of the plastic age, and it is significant in the history of technology to know the molding technology of this age through molds.

4. Status of survey

The collection includes molds of various forming ⁽²⁾. Different molding methods have different functions and operating principles. Therefore, we first organized them by molding method, and then investigated the appearance and dimensions of each mold to create a database. In the age of plastics, compression molding shifted to injection molding. Molds from this period were also in the collection, so they are summarized in a different file.

The ear-cutting jig for press-molded products is also deeply related to molding, so it is listed. Table 1: Outline of mold list

Punching cutters with slightly different functions (with celluloid plates punched out in various shapes) with cardboard or plastic sheet are not listed, but punching experiments are carried out and punching samples are preserved.

A summary of the current database is shown in Table 1. The number of molds is counted at that time of the event, and may increase or decrease depending on its progress.

This list introduces the dimensions, appearance photograph, features, etc. of each mold.

The data is an excel file, and one line for each mold are allocated. An outline of each type of mold is shown. As for the compression molds, the entire information could be seen on the excel screen, so the list is not prepared.

Mold	Number of types
Crushing	2089
Mold clamping	39
Blowing	158
Transition period	150
Selvage jig	144

For the mold clamping mold, blowing mold, and molds in the transition period were evaluated, and they were reported.

5. References

- (1) Celluloid Salon No.162 (<http://www.celluloidhouse.com/salon162.pdf>)
- (2) Celluloid House Yokohama Museum research report No.45 (<http://www.celluloidhouse.com/kenkyu45.pdf>)
- (3) Celluloid House Yokohama Museum research report No.51 (<http://www.celluloidhouse.com/kenkyu51.pdf>)
- (4) Celluloid House Yokohama Museum research report No.54 (<http://www.celluloidhouse.com/kenkyu54.pdf>)
- (5) Celluloid House Yokohama Museum research report No.55 (<http://www.celluloidhouse.com/kenkyu55.pdf>)
- (6) Celluloid House Yokohama Museum research report No.56 (<http://www.celluloidhouse.com/kenkyu56.pdf>)
- (7) Celluloid House Yokohama Museum research report No.67 (<http://www.celluloidhouse.com/kenkyu67.pdf>)
- (8) Celluloid House Yokohama Museum research report No.68 (<http://www.celluloidhouse.com/kenkyu68.pdf>)
- (9) Celluloid House Yokohama Museum research report No.69 (<http://www.celluloidhouse.com/kenkyu69-r1.pdf>)
- (10) Celluloid House Yokohama Museum research report No.70 (<http://www.celluloidhouse.com/kenkyu70.pdf>)
- (11) Celluloid House Yokohama Museum research report No.72 (<http://www.celluloidhouse.com/kenkyu72.pdf>)

Attached photo



Broach molds (for compression molding)



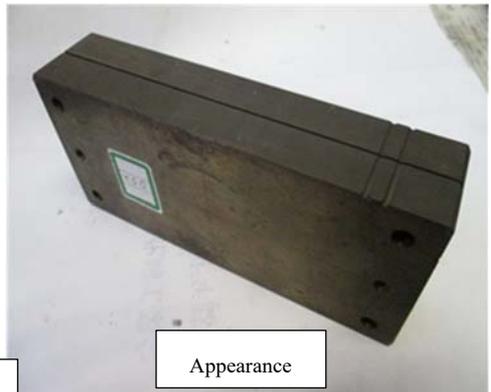
Jewel box mold (for mold clamping)



Lucky sea bream mold (for blow molding and compression molding)



Cavity



Appearance

Examples of transition era mold



Semi-finished product Holding jig Jig body

Burr cutting jig



Punch sample