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HARDWARE AND METAL FITTINGS[1/]

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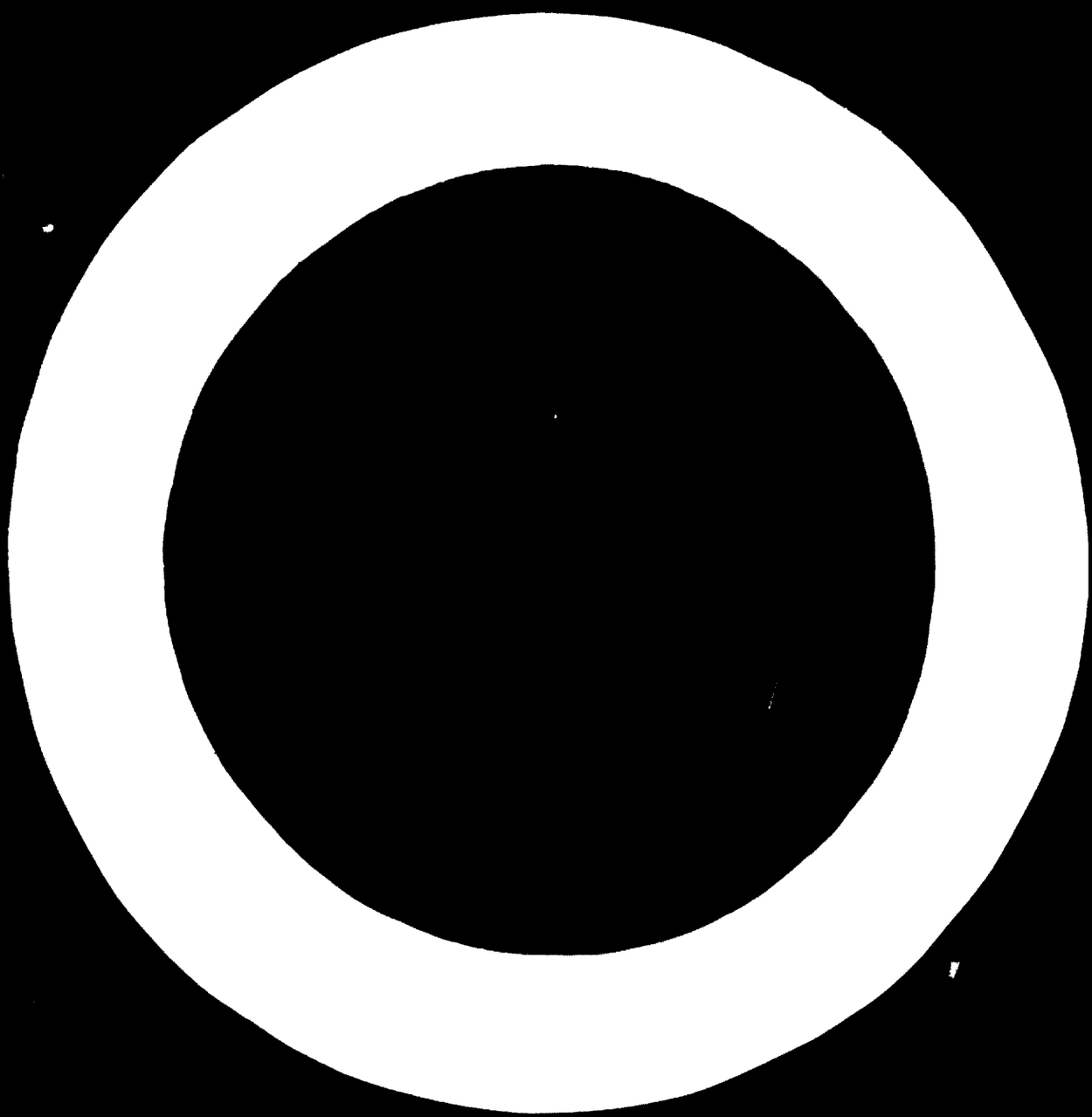


HARDWARE AND METAL FITTINGS

Seppo Aho

15.1 General

Wood has traditionally been the main material in the furniture industry although even iron and stone have been solely used for making e.g. chairs. But a real "crossbreed" of metal and wood is rather young, because we can meet more serious attempts in this direction just in the 1850's in England. For readers interested more in the historical development we can recommend Helana Hayward's book World Furniture (Verona 1965)

It was the metallurgical development that contributed to succesful combining of steel and wood and later on it was backed by an architectural school called functionalism so that roughly from the 1920s on we can meet metal and wood together in the same furniture.

In the next chapter "Hardware" and "Metal Fittings" are dealt with separately the former being divided into Furniture Hardware and Hardware used in Joinery Industry.

15.2 Hardware

In the Finnish context, hardware -especially building hardware includes a wide range of products from lever and door handles, locks, hinges and door bells to espagnolettes, door stops and curtain rail brackets.

15.2.1 Materials

A very common material in hardware is brass, which is used both as sheet, profile and pressure cast. The consistence of the commonly used brass alloy is roughly 63 per cent Cu and 37 per cent Zn.

Mazak (Zamac is also zinc alloy consisting of 3,5 - 4,3 per cent Al, 0,5 - 1,0 Cu, 0,3 - 0,8 Mg, Fe, Pb, Cd and Sn max 0,1 each the rest being Zn. It is used in pressure cast articles and is today very popular due to the fact that its price is roughly 2/3 of the brass price and under good conditions its use does not differ from the use of brass. Mazak is always used chromeplated.

Aluminium was prior to mazak and thanks to its price, relatively common in use, but today the significance of it as a hardware material is decreasing with the exception of cheap solutions. However, it is still used as sheets, profile and pressure cast.

Steel is used mainly as sheets, in which case certain articles are pressed out of the sheet material.

15.2.2 Finishes

Finishing is an essential part of hardware because it contributes most to the final appearance and protects the material against corrosion and wearing.

Finishes are in this connection divided into mechanical (such as painting and polishing), electro-chemical (chrome- and nickelplating) and chemical (anodizing and oxidizing).

15.2.2.1 Polishing

Most of the hardware is polished before the final finishing e.g. to remove possible scratches due to prior phases of work but polishing itself can also be the final finishing as it is sometimes in brass and aluminium articles. Polishing can be done with certain rough brushes after which the article gets a dim surface.

15.2.2.2 Painting

Painting which is usually done electrostatically is mainly a decorative finish, because its corrosion resistance and durability are not extremely good but the easiness of work many alternatives and renewing possibilities together with new plastic component paints support its use.

15.2.2.3 Chrome-, nickel- and copper-plating

Chrome-plating is the most important galvanostegical finish which gives the object good corrosion resistance, durability against mechanical wearing and on top of these several different surfaces, of which bright, satin and black chrome are used in Finland. Chrome is usually deposited on steel, masak and brass.

According to standards used in the Finnish Hardware Industry, here are usually deposited two layers of copper, one (or two) nickel and finally one layer of chrome on the object, the layer thicknesses being 8-10 u m Cu, 16 u m Ni, and 0,2 μ m Cs. If it is question of black chrome there will be deposited one additional -black- layer on the fourth layer.

Nickel plating and copper-plating are brought out the same way i.e. electrolytically, and thus discontinuing the chroming process.

15.2.4 Anodizing

Aluminium can be electrolytically treated so that the surface is oxidized to be porous and into these pores there is impregnated certain pigments, the pores are shut and thus is produced a coloured, decorative surface, which can be used in places where there does not exist much mechanical wearing.

15.2.5 Oxidizing

Brass can be oxidized using different oxidizing media and thus a decorative dark surface can be brought out.

15.2.6 Zinc- and aluminium-plating

Hardware made of steel can be mechanically coated so that they are dipped in melted Zn- or Al-metal. By so doing they will be covered with a thick layer of the metal in question which resists corrosion very well.

Copper and brass can also be used as the covering metal.

15.2.3 Qualifications for material and finish considering the use and milieu

When choosing hardware for a certain purpose and object there has to be taken into consideration a few relevant points. Thus in the open industrial air or near the sea brass hardware is used whereas in the clean air and indoors mazak and steel hardware can be used.

Likewise in the objects, which are subject to heavy wearing - e.g. door handles - chrome-plating is preferred to painting or zinc-plating, which on the other hand are suitable for more sheltered places as e.g. mortised locks and espagnolettes.

Appearance of the milieu can sometimes demand certain finish and thus we are here in Finland used to combining polished or brushed brass to so-called coloured wood e.g. teak, mahogany etc.

15.2.4 Examples of Building Joinery Hardware

- door and lever handles
- window hardware
- locks
- hinges
- miscellaneous hardware

15.2.5 Examples of Furniture Hardware

- handles
- hinges
- locks
- miscellaneous hardware

15.3 . Metal Fittings

Metal fittings is a subject which is here dealt from the Furniture Industry's point of view, because the building sector usually demands special work. The main objects will thus be legs, arms and back of chair, tables and their legs together with bodies of chairs and sofas.

15.3.1 Materials

The material used most by the Furniture Industry is tubular steel, the profile of which can be round, square, oval, flat pressed or some combination of these.

Aluminium is used as tube and profile and likewise brass. Also parts pressed of Al-, brass- and steel sheet or cast of the same materials are used. Besides these main materials some additional alloys may come into question.

15.3.2 : Finishes

The finish of metal fittings is at least as essential as on hardware and - taking into consideration their design nature - maybe more so.

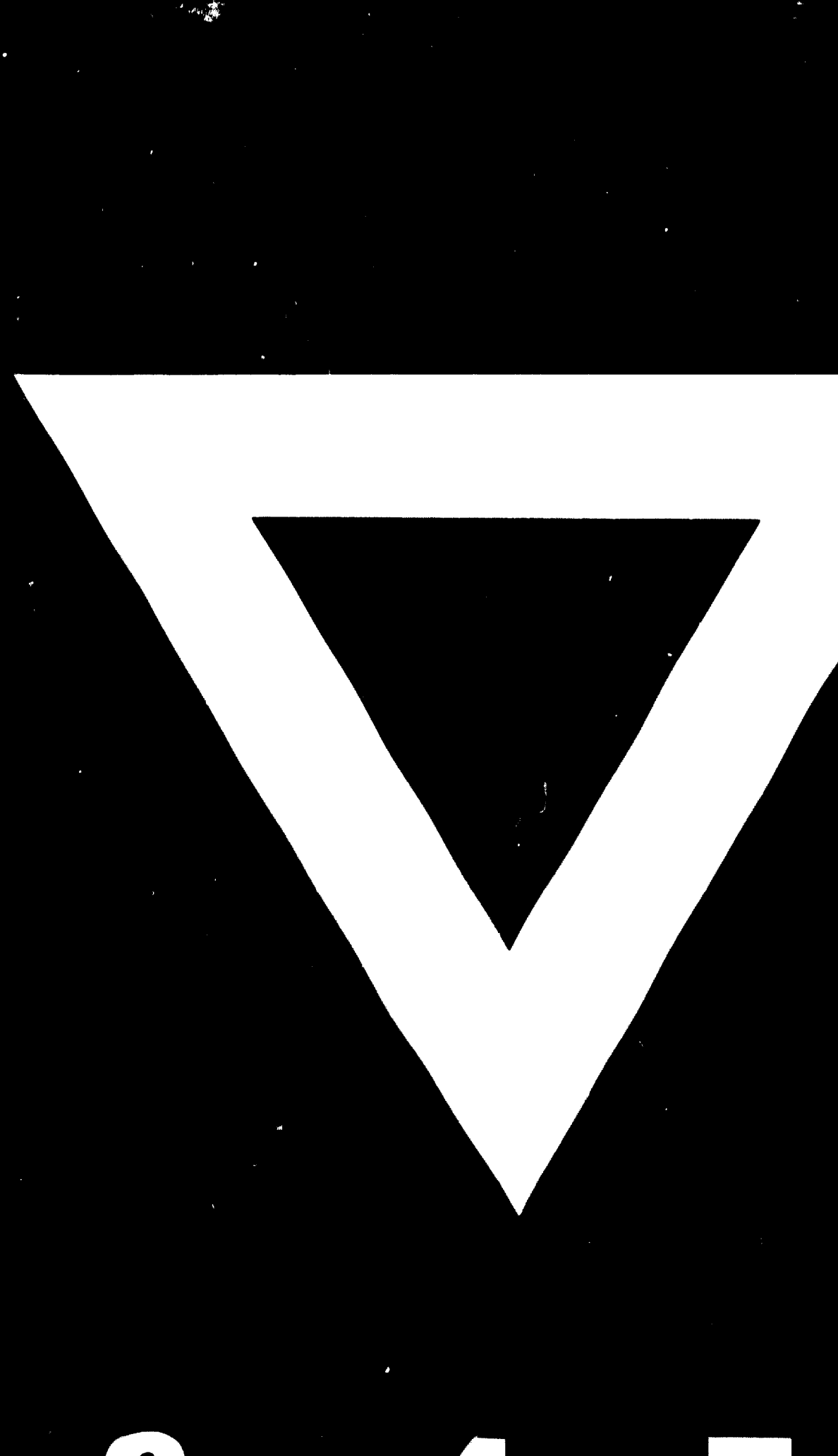
The most common finish is chrome-plating (bright or satin chrome), but quite near comes also painting because new paints and methods enable the production of more resistant surfaces.

Other finishes (221-226) can also be used with the exception that the surfaces are somewhat thinner than hardware surfaces due to indoor use.

4 Future views

New raw materials are tested continuously and at the moment glass fiber and various plastics offer the best possibilities. Plastic has made a debut in the hardware industry in lever and door handles, light hinges, pulls etc., and both glass fibre and plastic are used in the bodies and upholsterings in the furniture industry.

The latest material which has proved successful is asbestoscement, which has been used as raw material in various chairs and benches.



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