

Global Action Programme on Education for All Youth Project

Metal 2



UNEVOC

INTERNATIONAL CENTRE
for Technical and Vocational
Education and Training

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97*

Learning and Working

Motivating for Skills Development: A Campaign Package

Version February 2006

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Booklet 7.03 – METAL 2

This booklet complements the video clip on “Metal 2” on DVD 1. It gives a short summary of the content of the video and contains illustrations followed by technical texts, which will make it easier to understand and recall the activities shown in the video. The booklet can be copied and handed out to participants, so that they can make notes on them or use them as a reference for later.

A transcript of the soundtrack of the video is included at the back of the booklet. Whenever the locally spoken language is different from the language used in the video, the facilitator may wish to use this text transcript as a basis for comments and explanations in the local language.

Comments and Observations

The video shows how aluminium can be recycled and used for the production of useful items such as saucepans. The process of recycling is not easy and might not be suitable for everyone. Furthermore, it should be pointed out that the process requires a lot of firewood, which in some regions is a very scarce resource and should be used with moderation.

The facilitator should be aware that this activity might not be relevant in areas where cheap, industrially produced aluminium cooking utensils are easily available, since the products might not be marketable.

Occupational Health and Safety

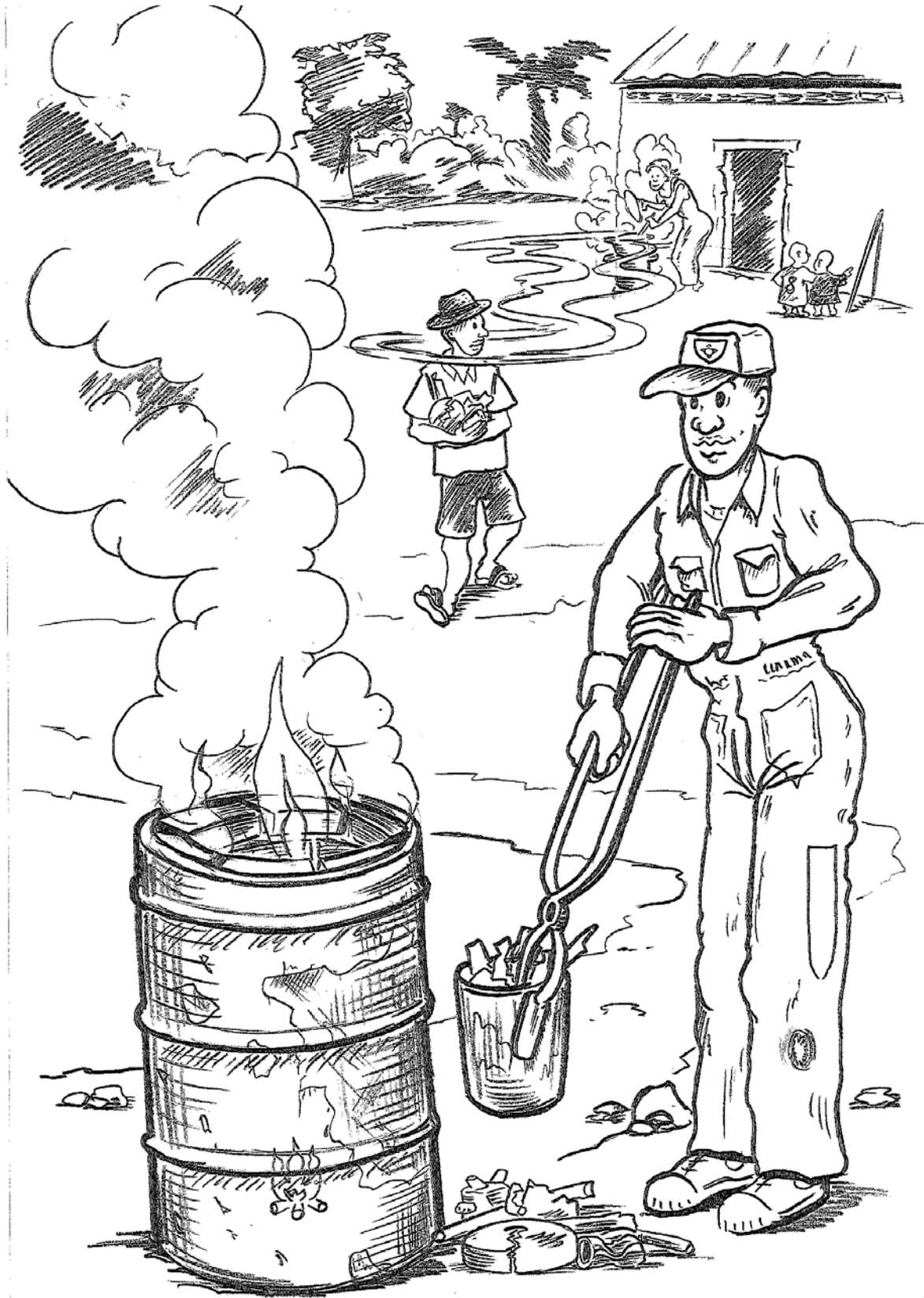
Some scenes in the video show unsafe working methods and conditions. Handling burning liquid or molten metal is a dangerous task that requires extreme caution on behalf of the worker.

It is the facilitator’s task to draw the participants’ attention to these potentially dangerous situations and provide them with information on how to “be safe” when working with metal, for example by wearing protective clothes, gloves and shoes.

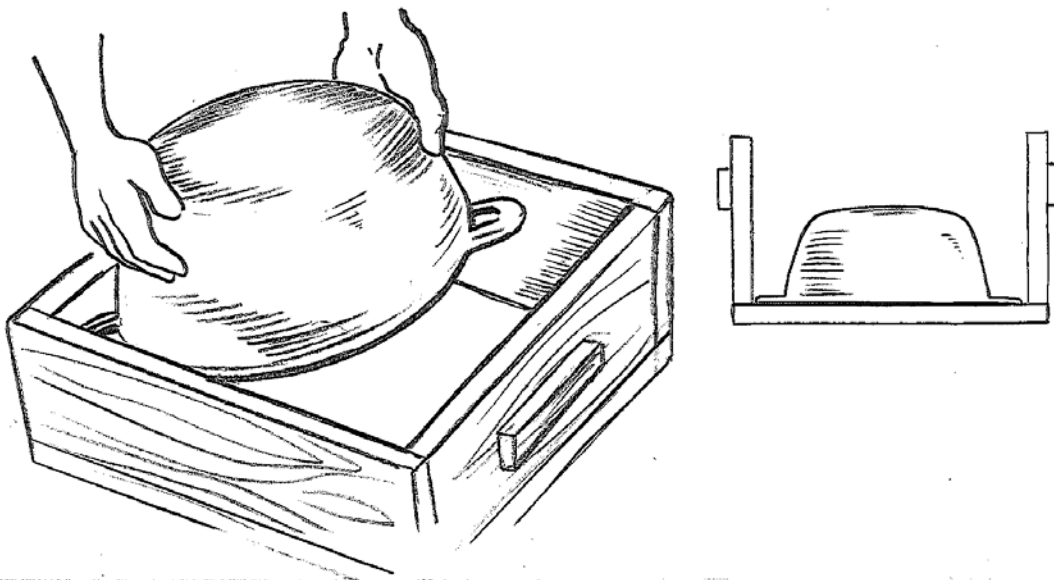
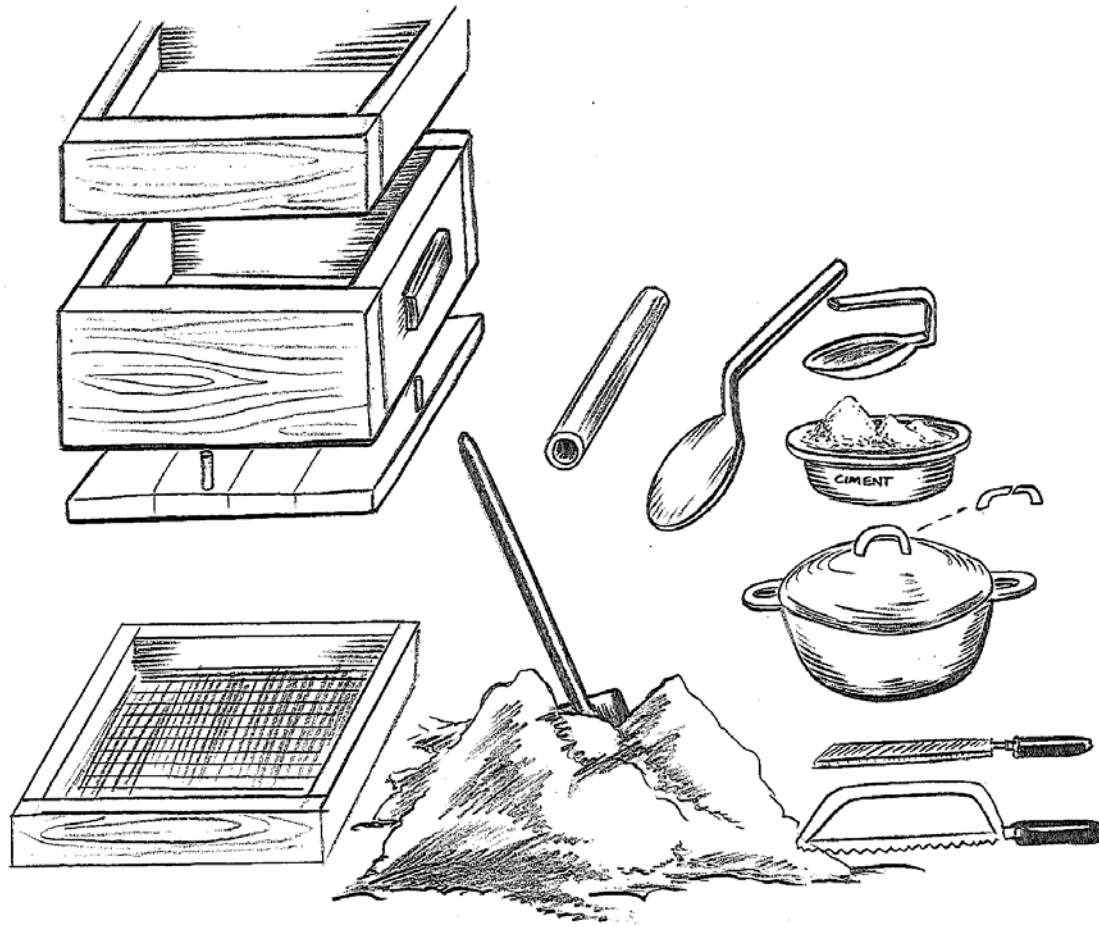
Video METAL 2: Summary

This video describes a range of small activities that are for all those who are interested in working with metal.

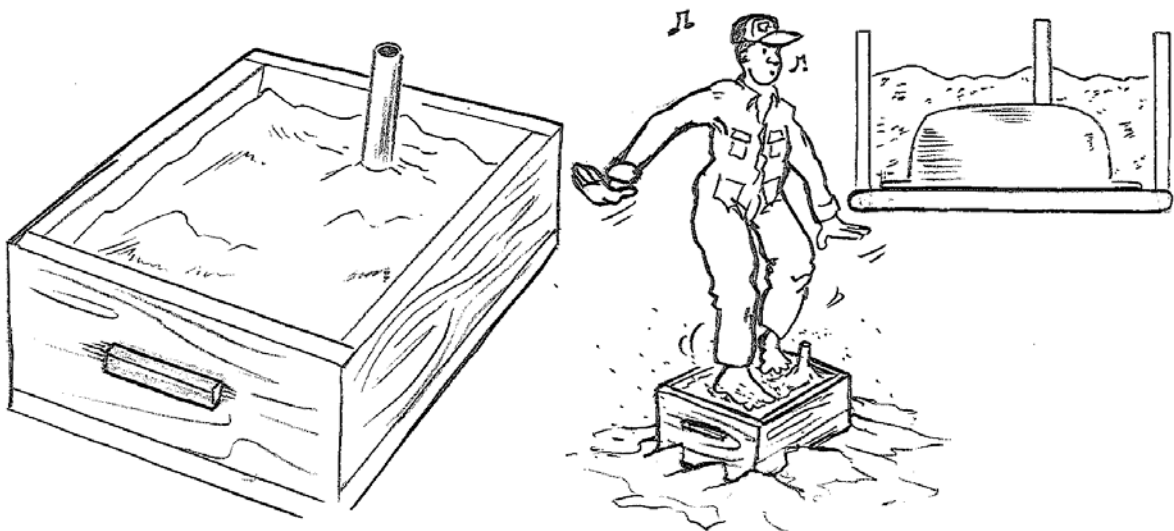
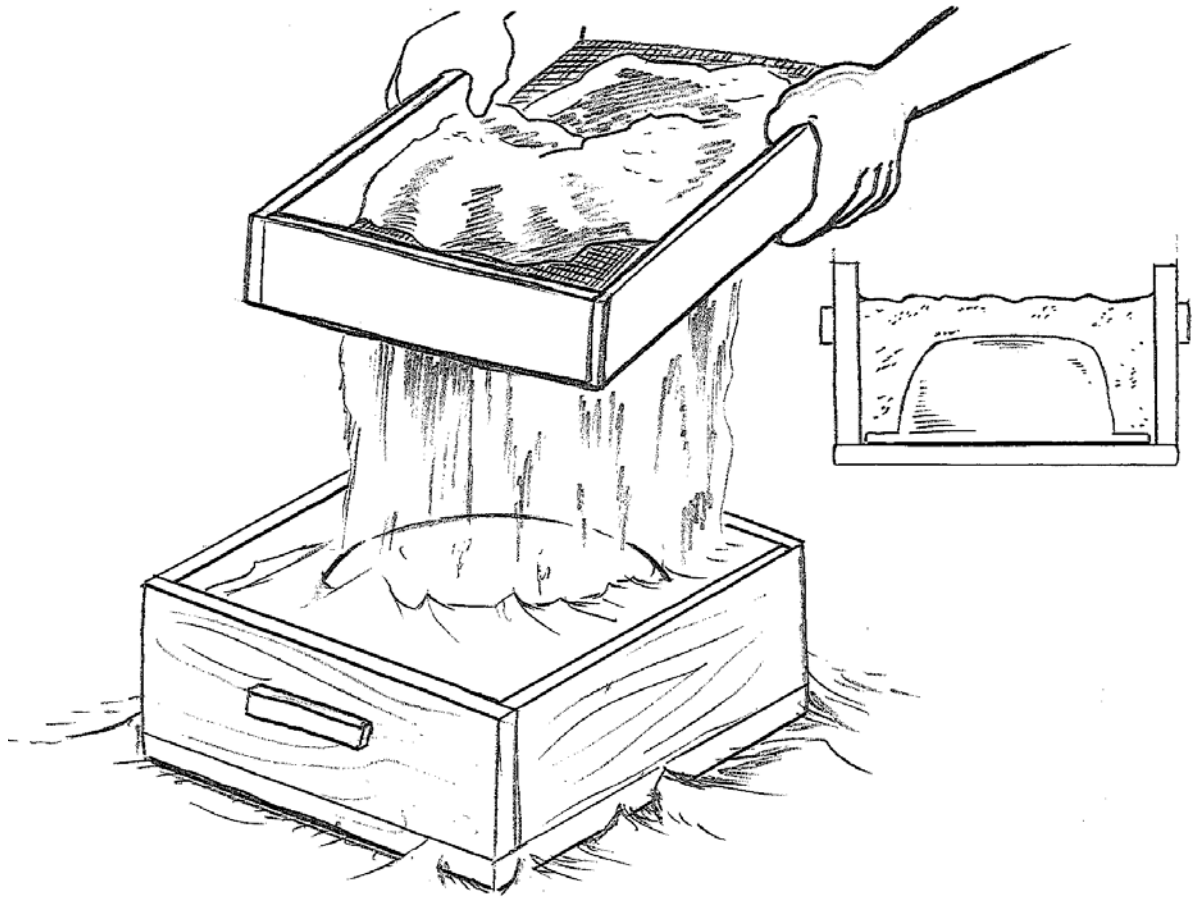
It shows how metal is recycled to make wheelbarrows; tins are changed into oil lamps, and recovered aluminium is melted to make cooking pots, saucepans or watering cans.



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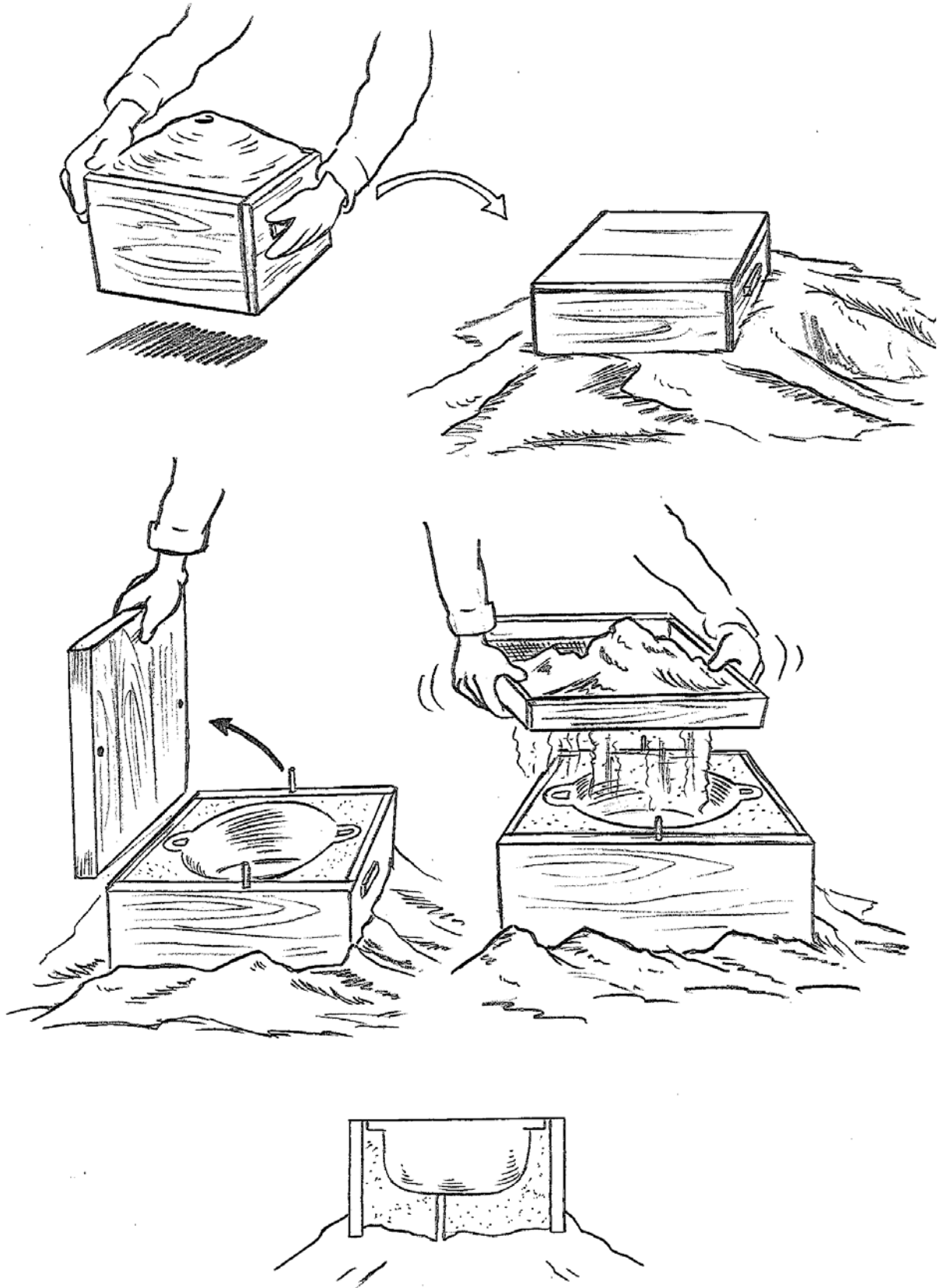
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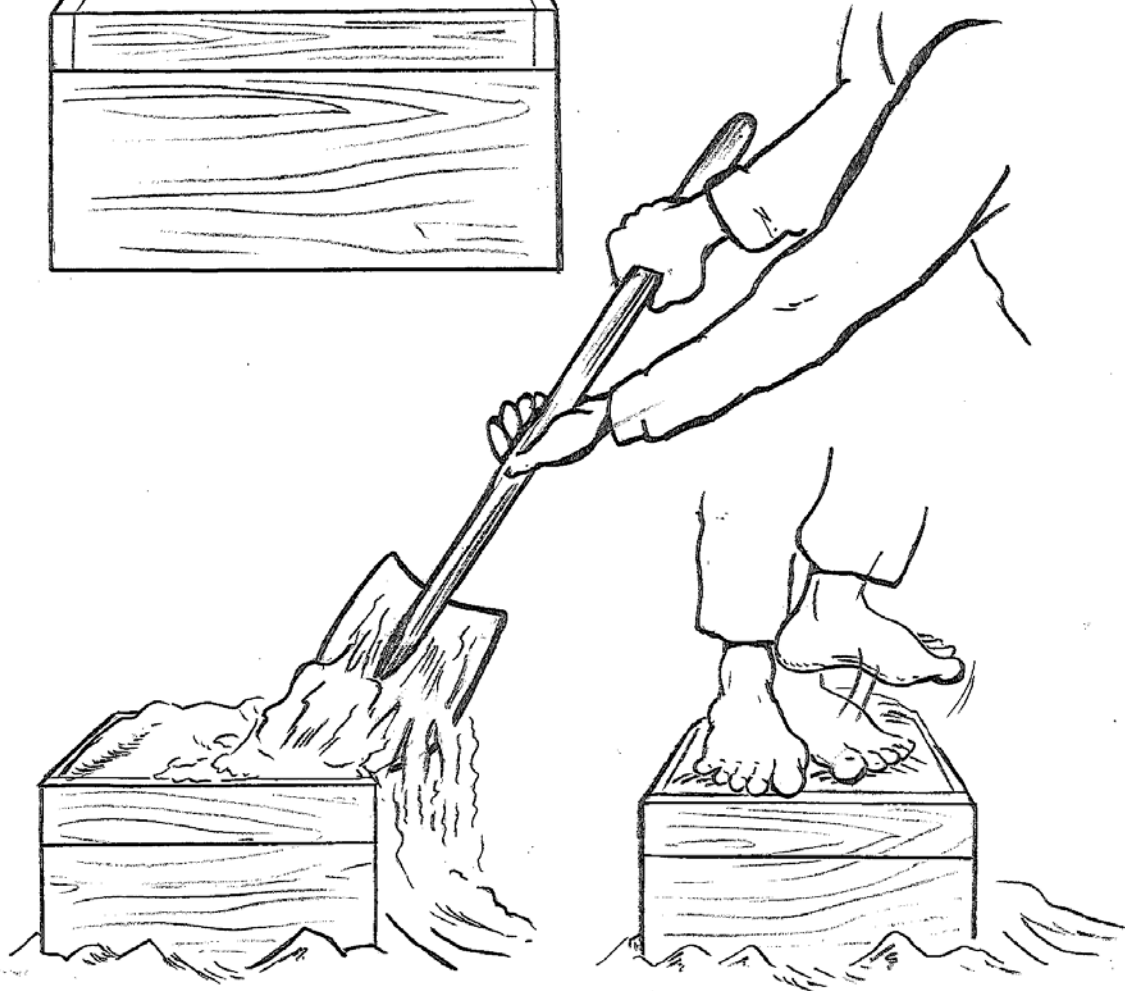
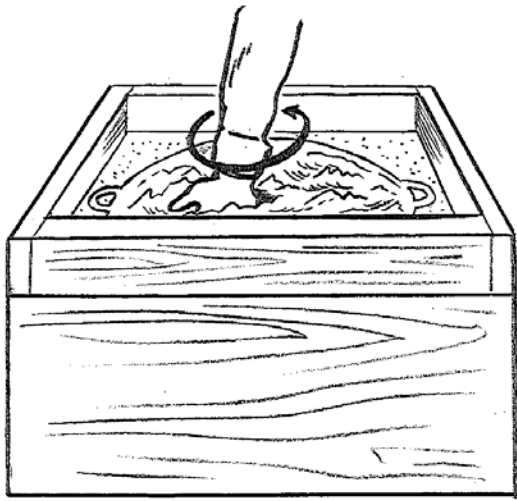
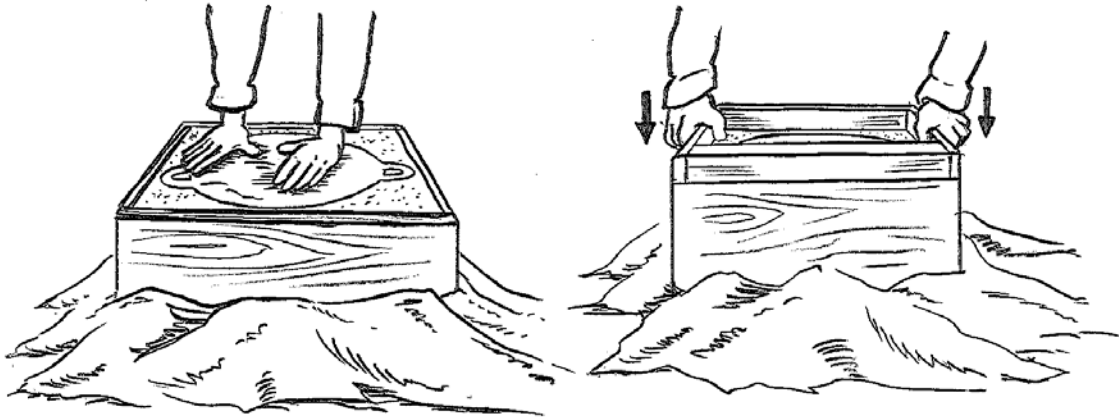
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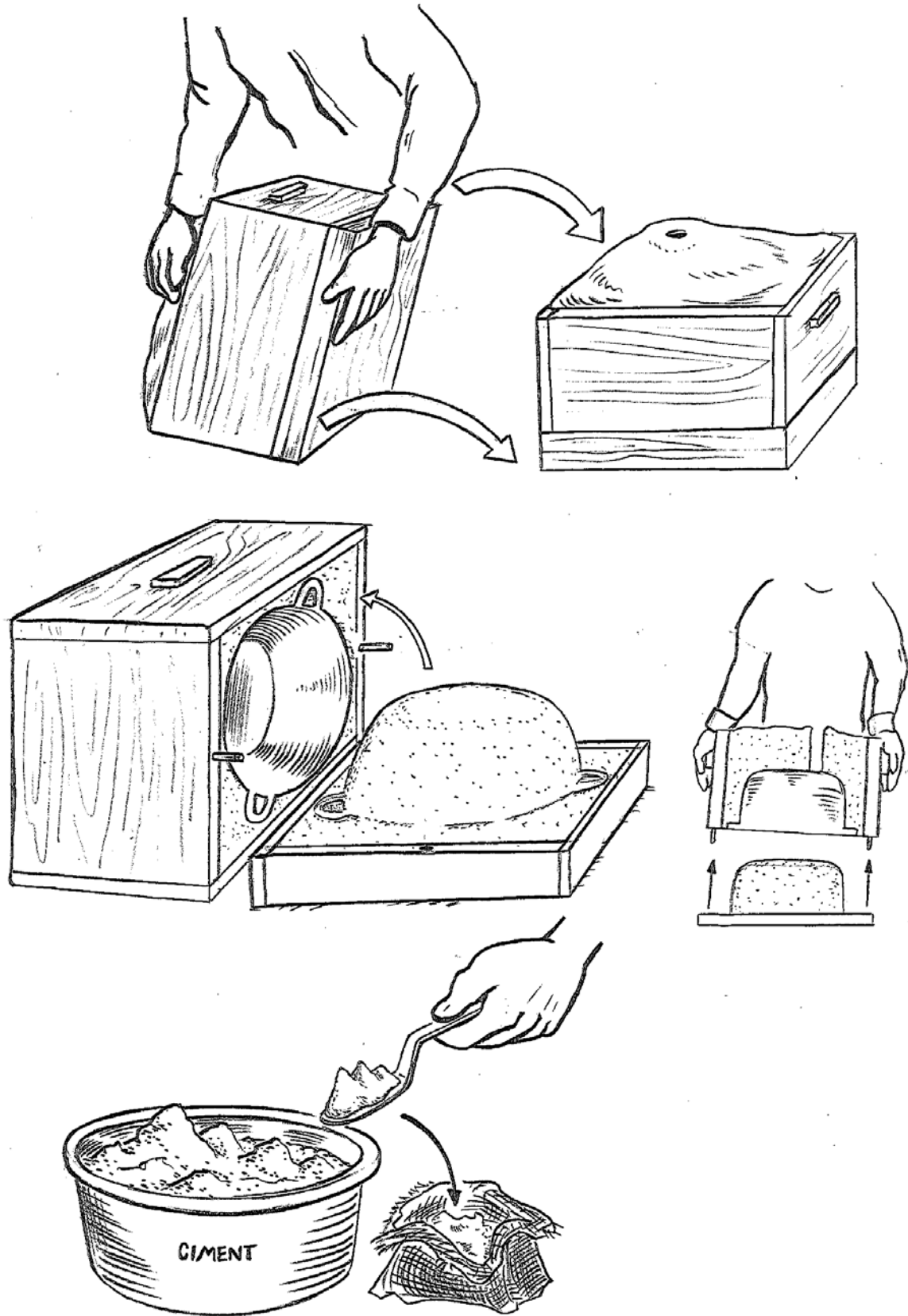
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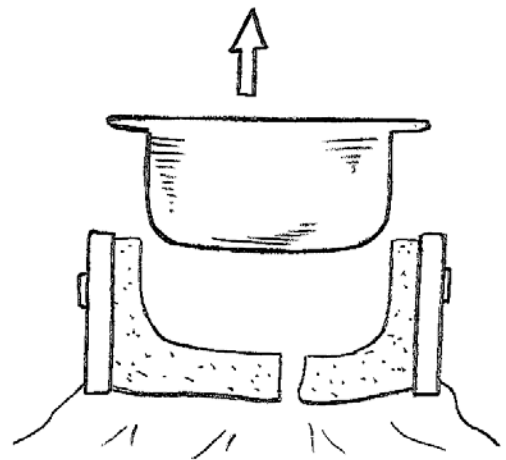
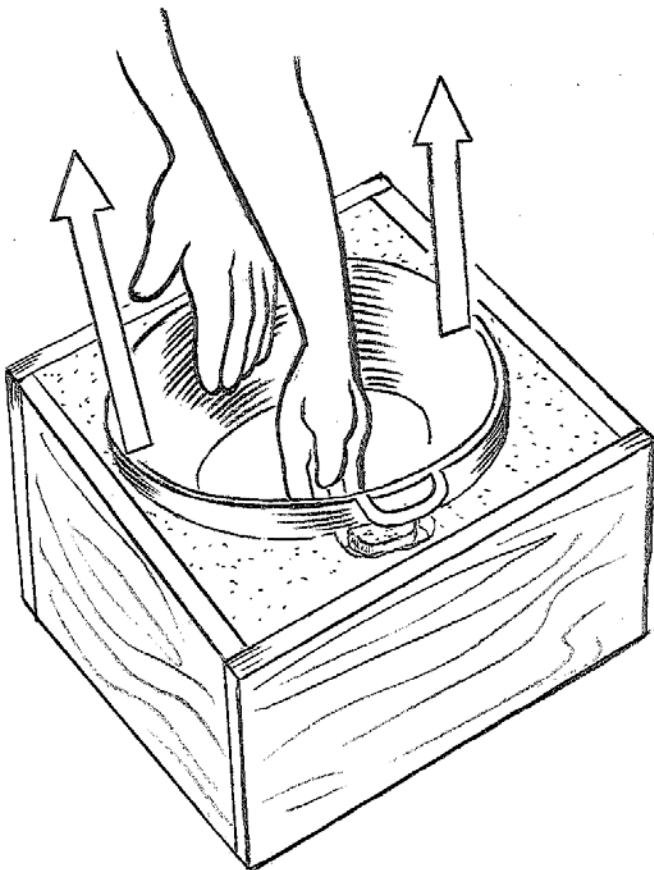
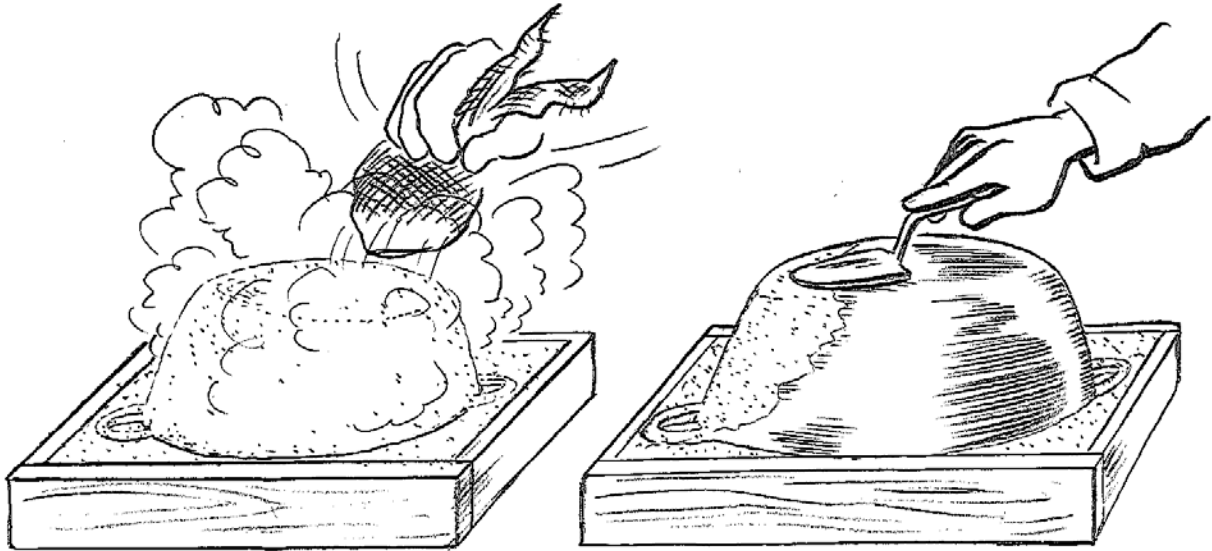
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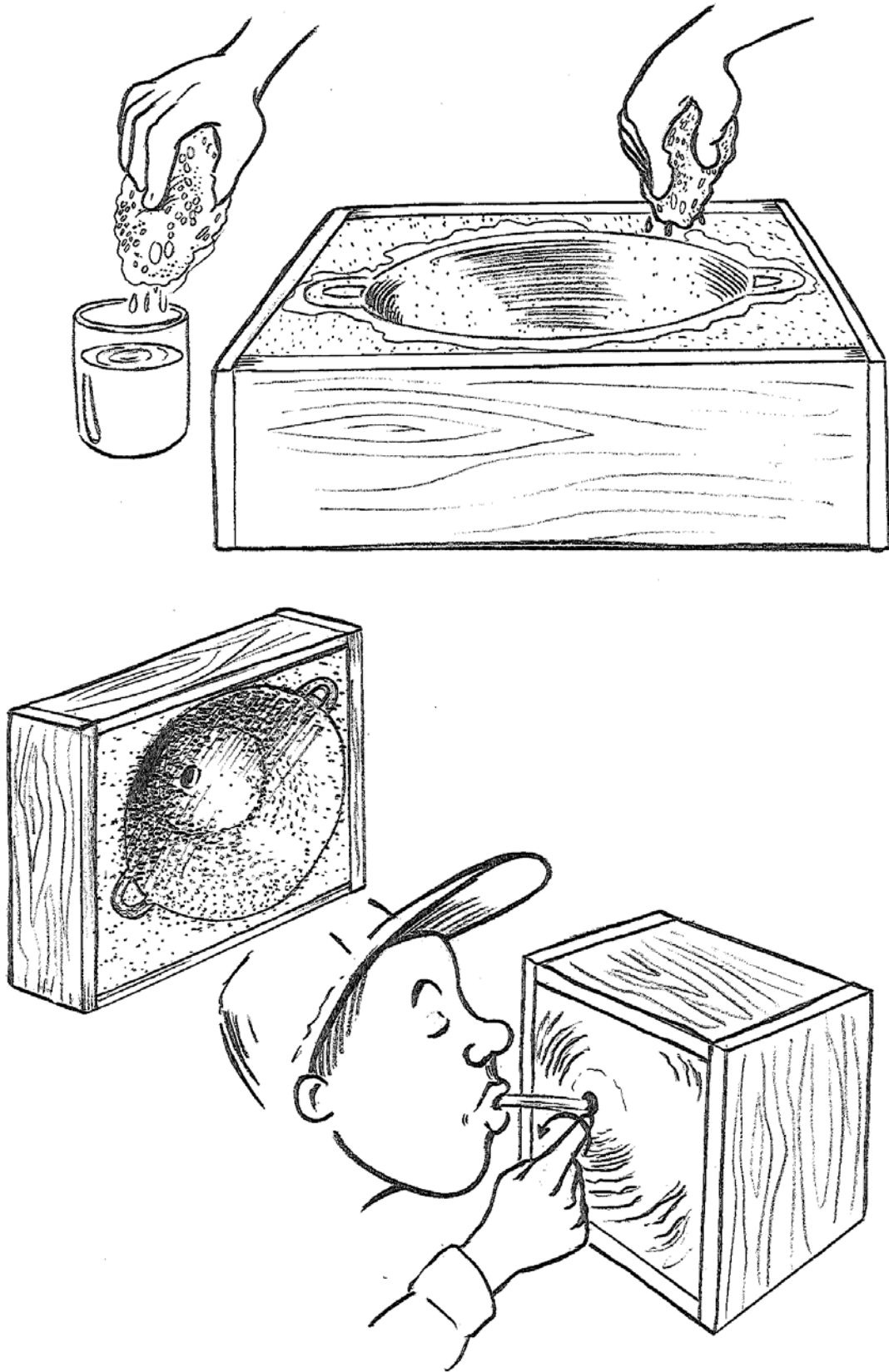
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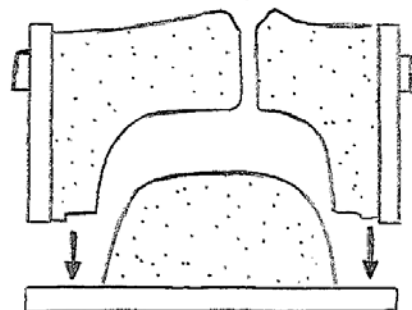
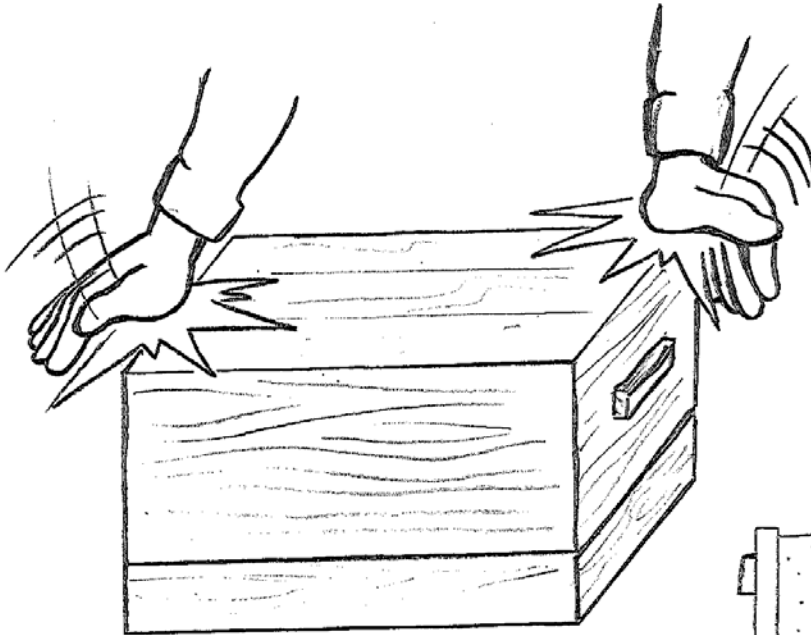
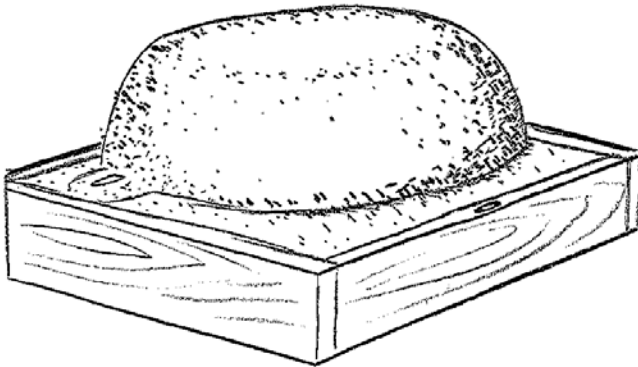
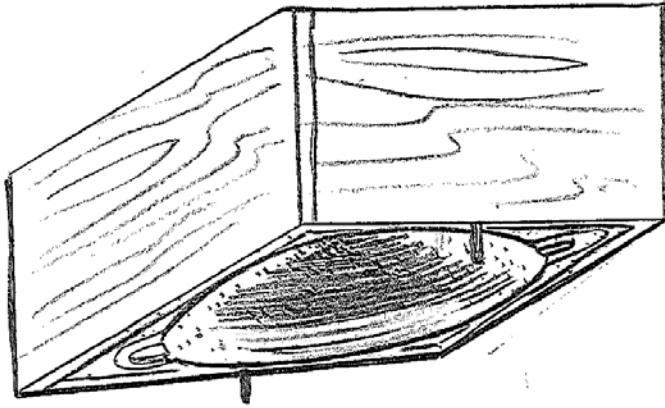
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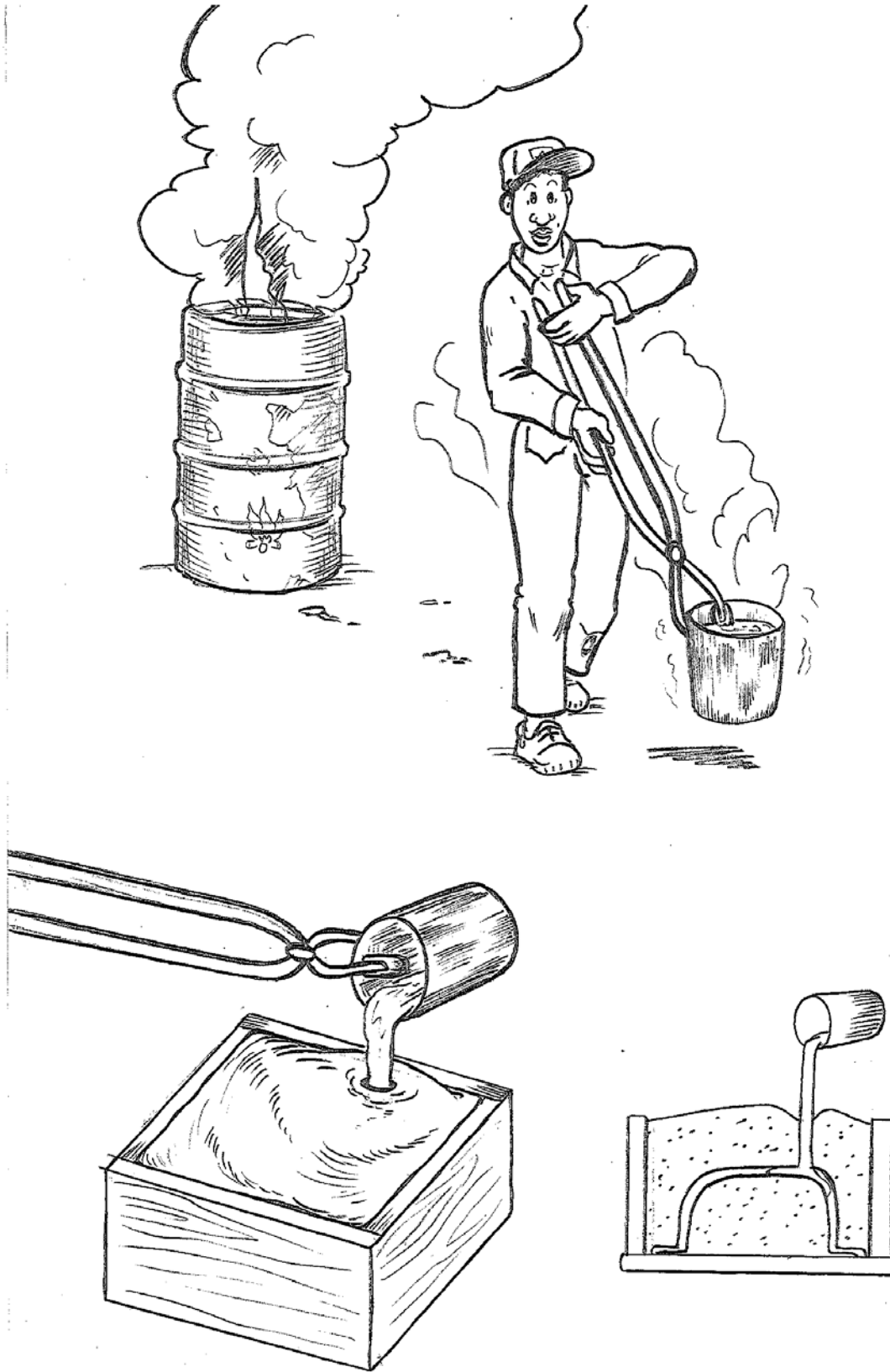
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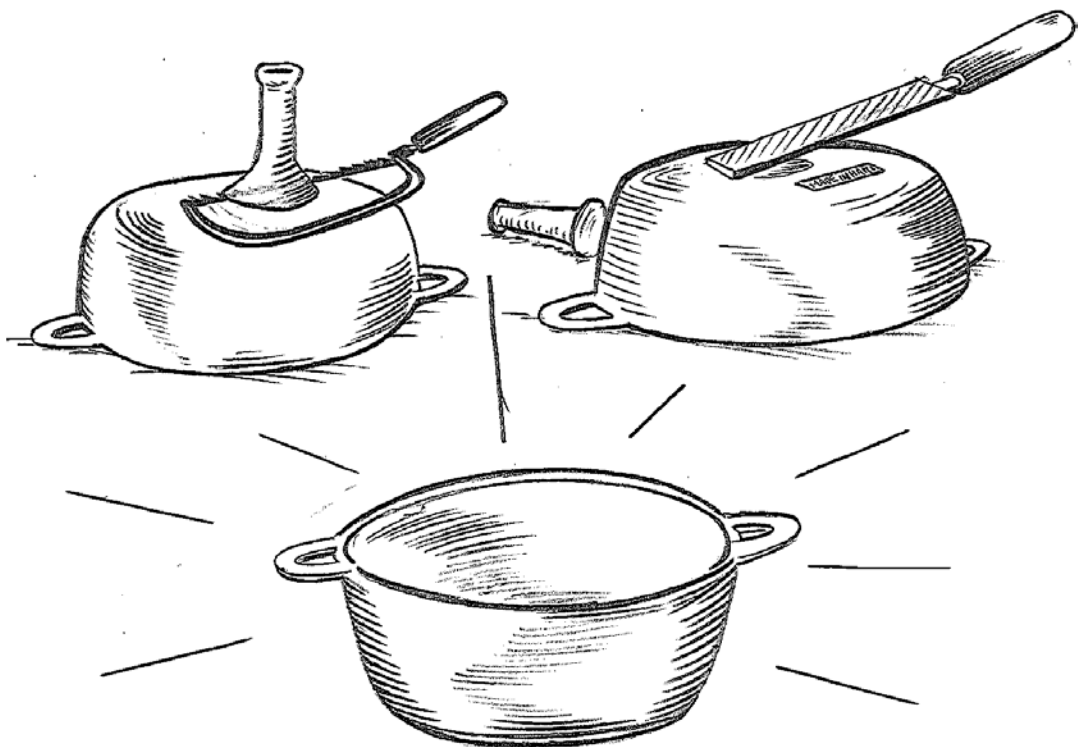
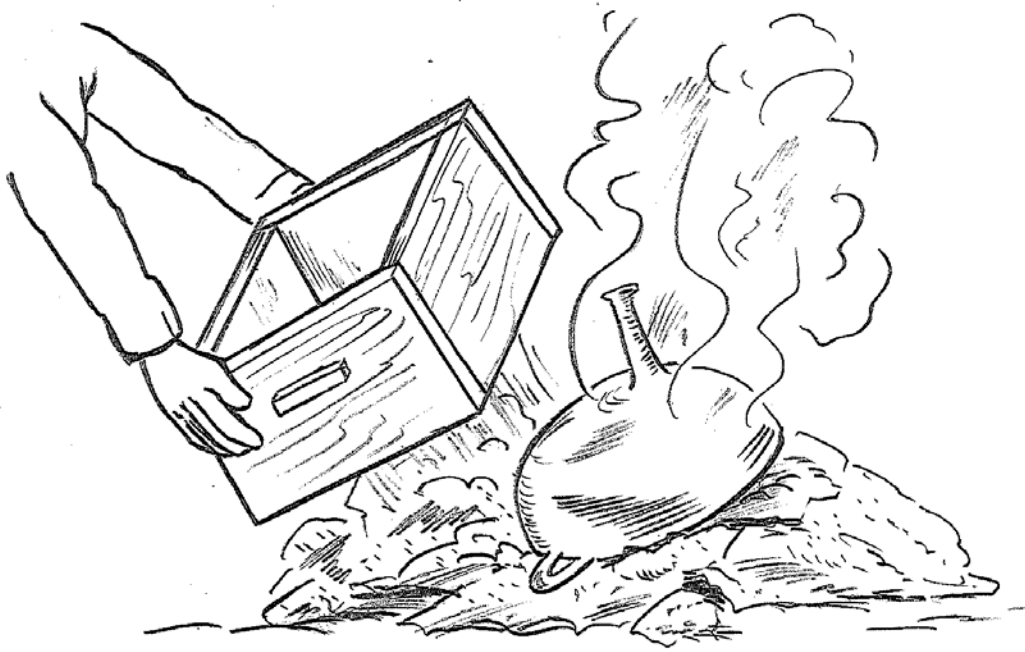
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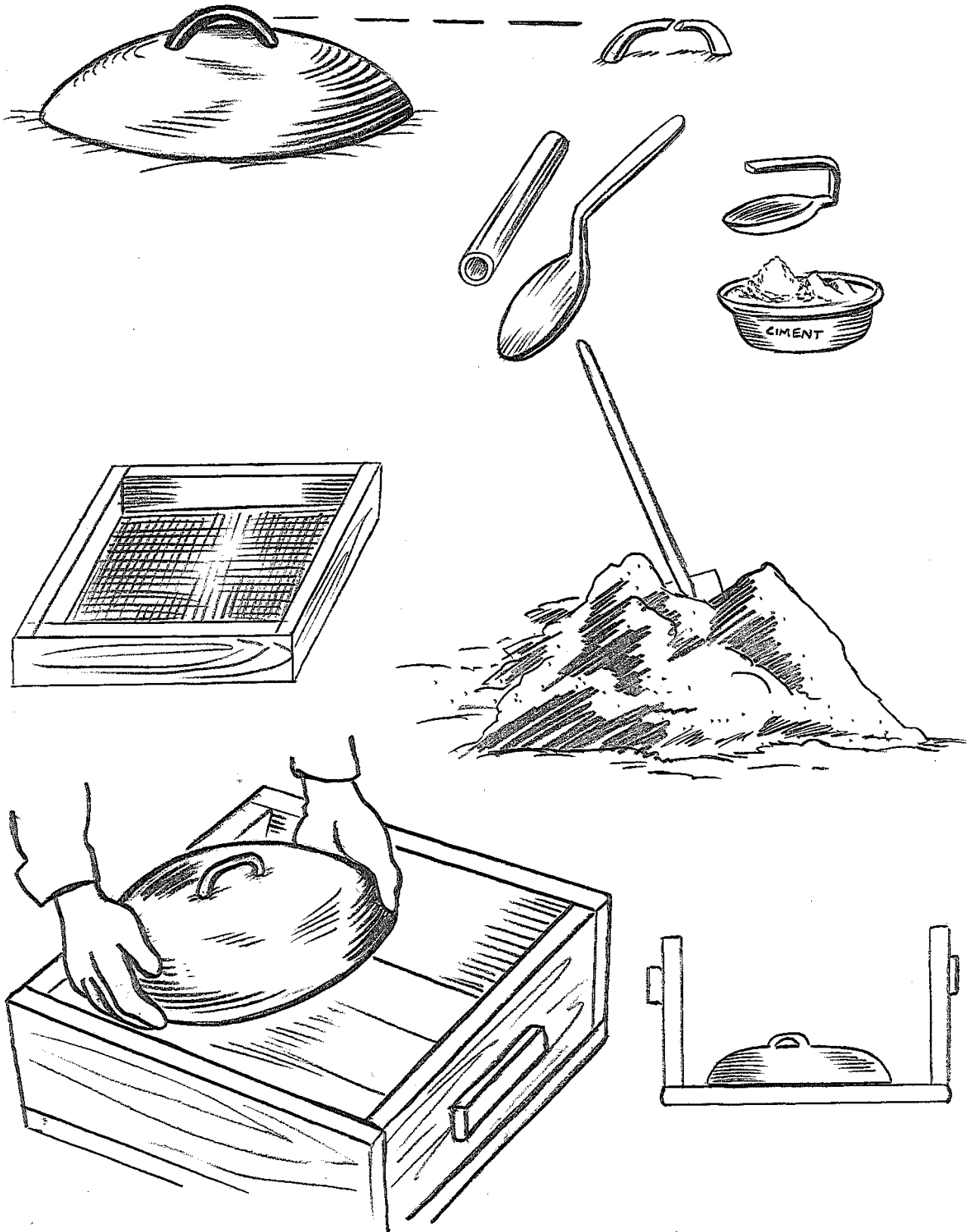
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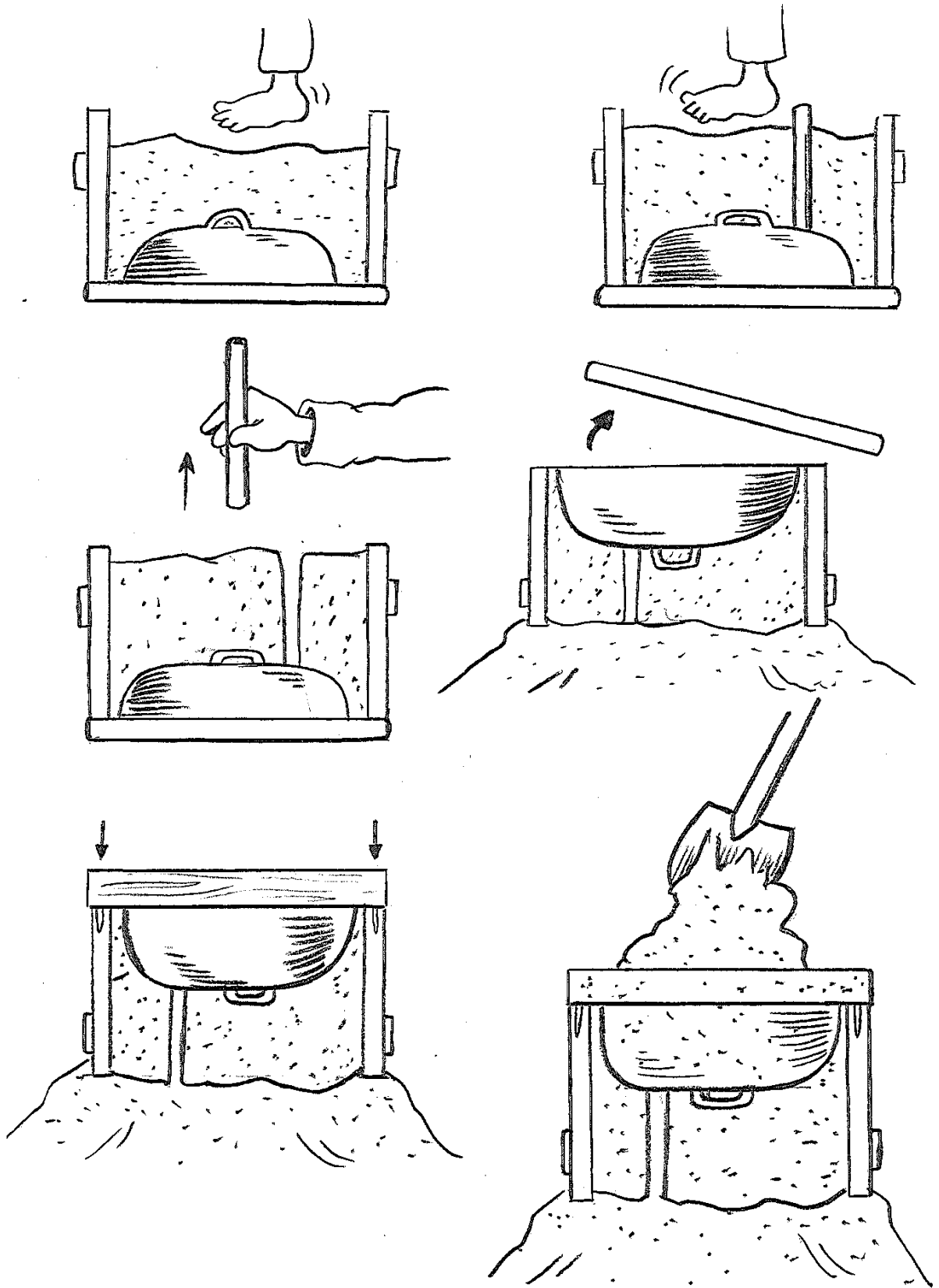
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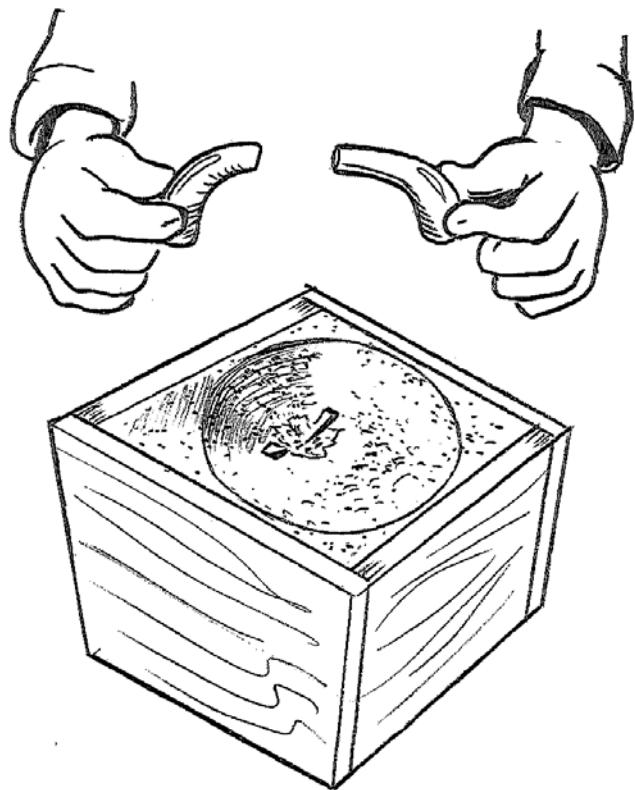
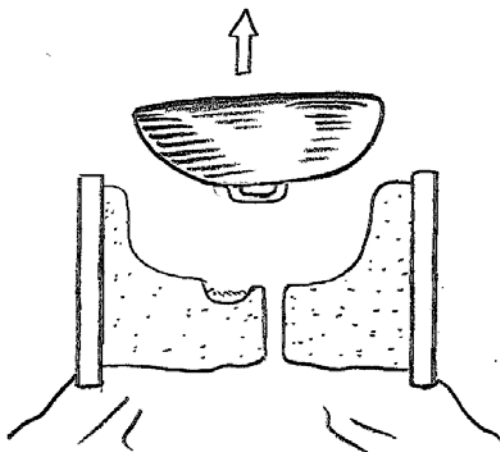
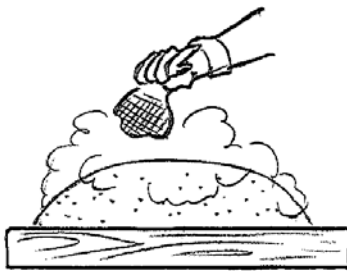
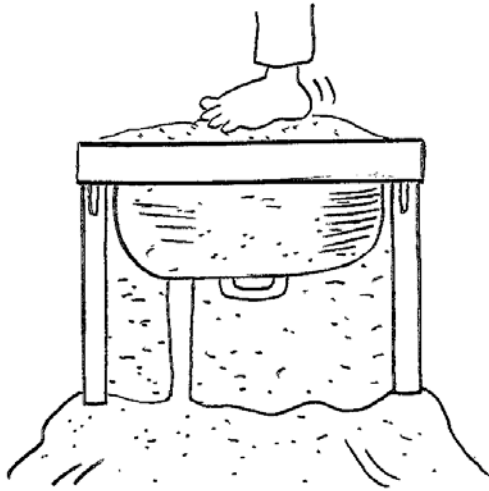
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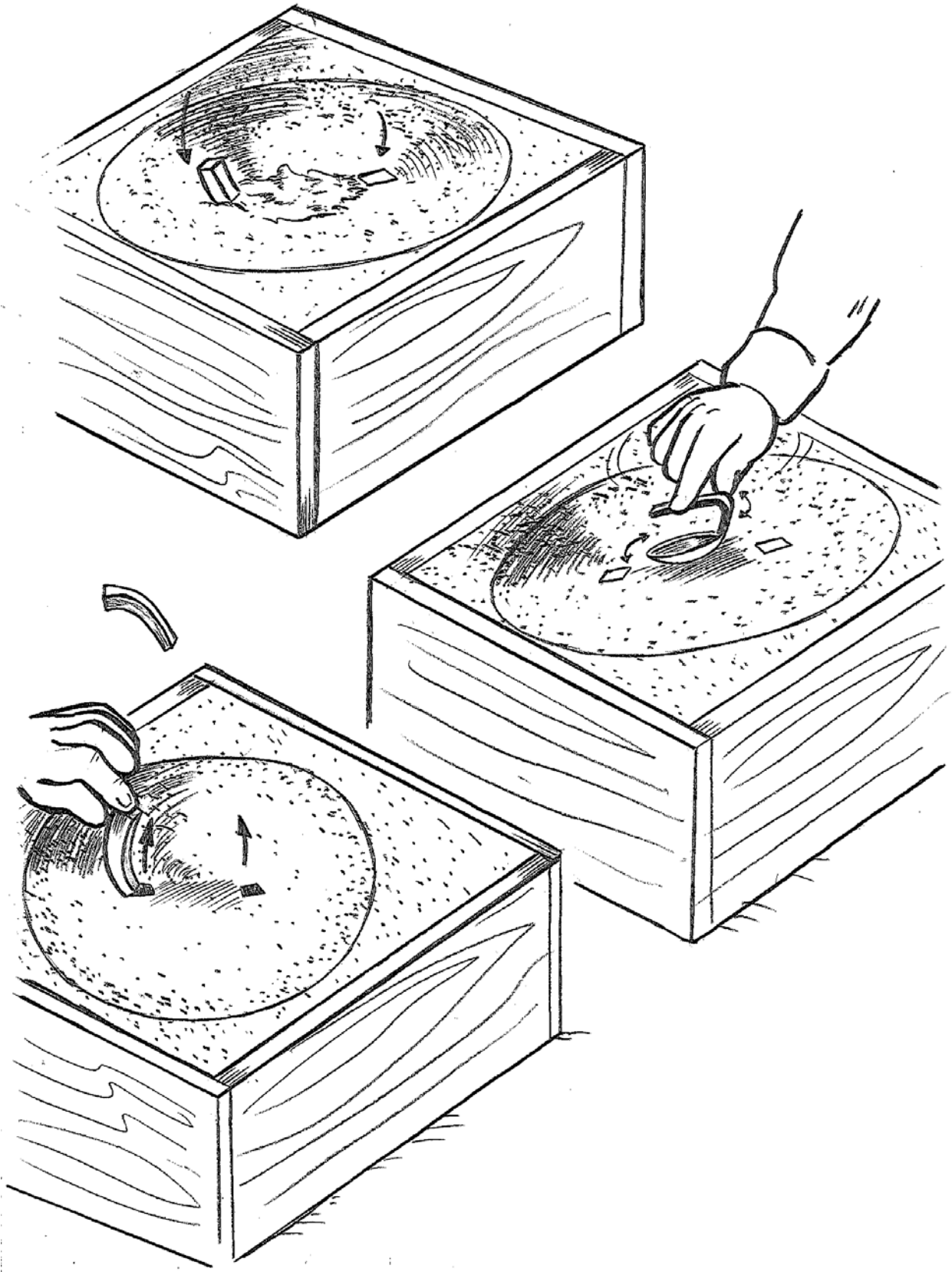
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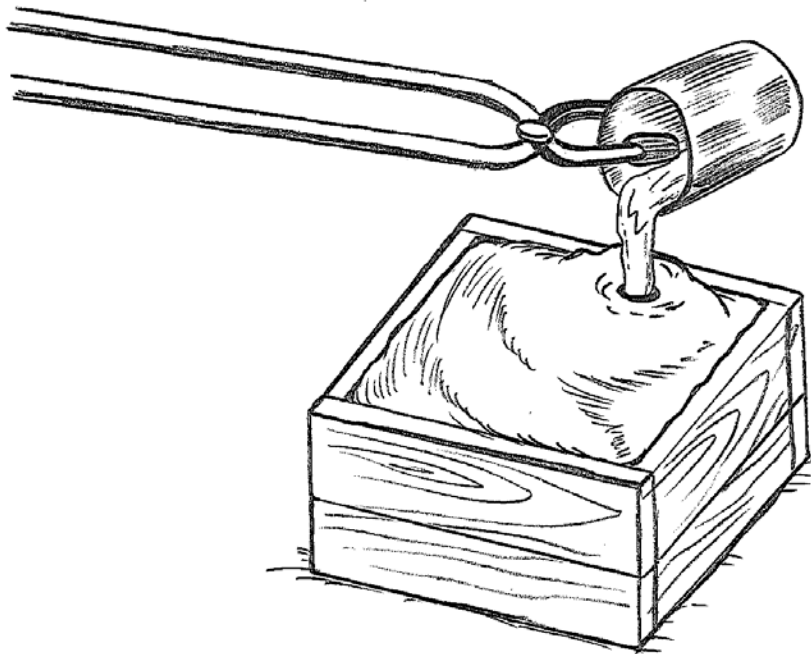
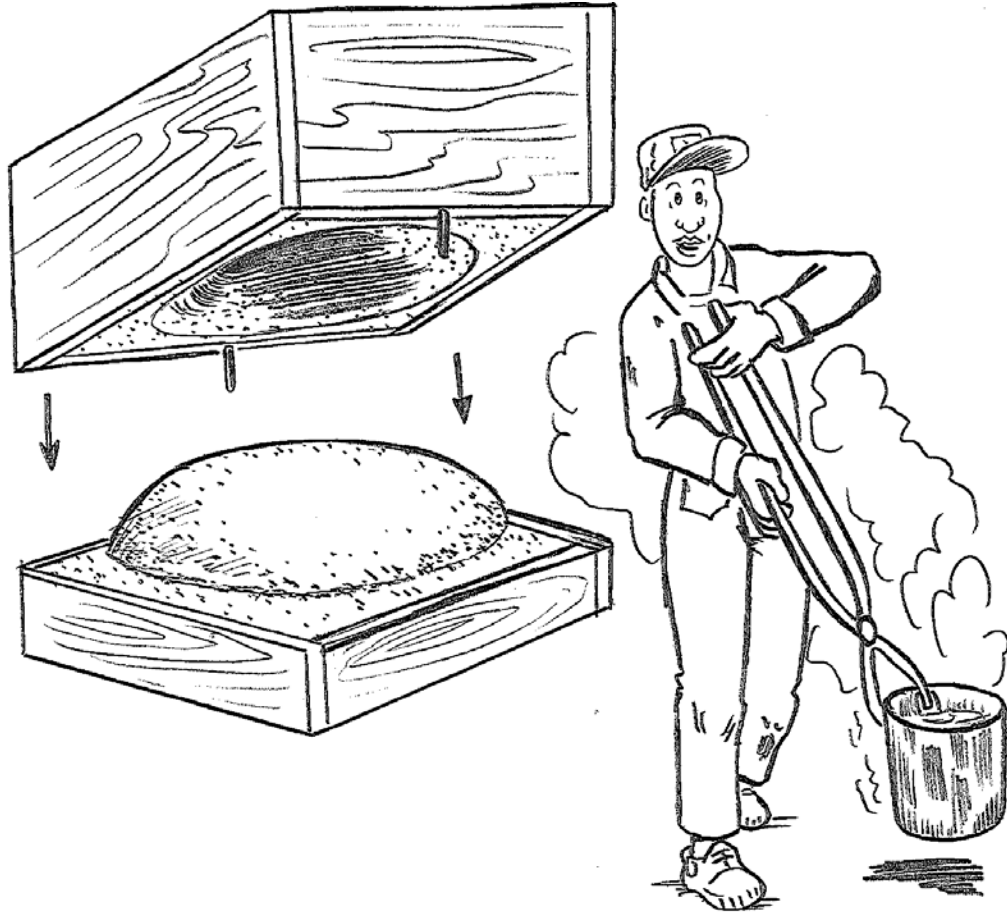
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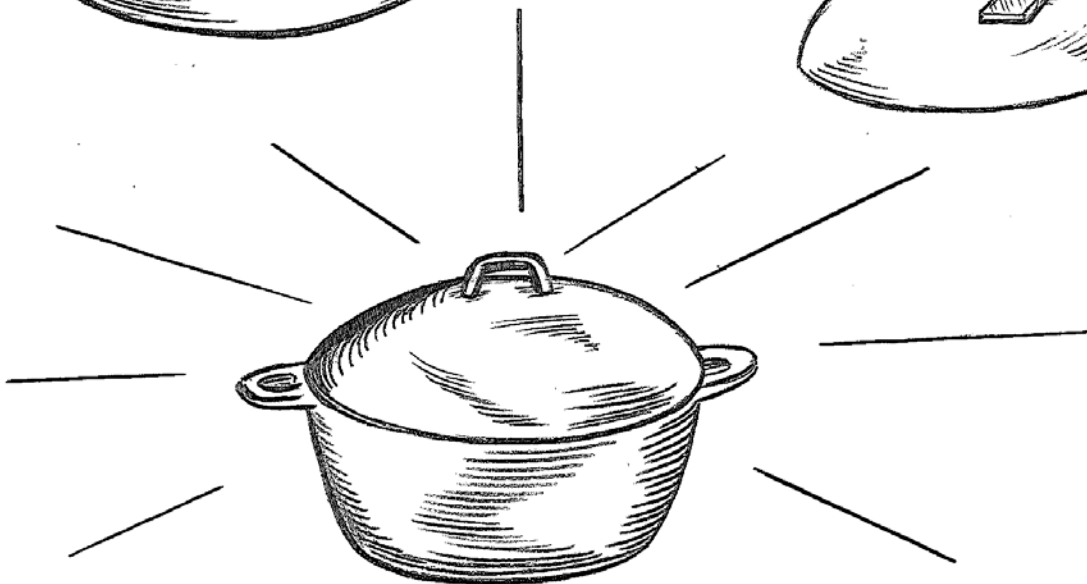
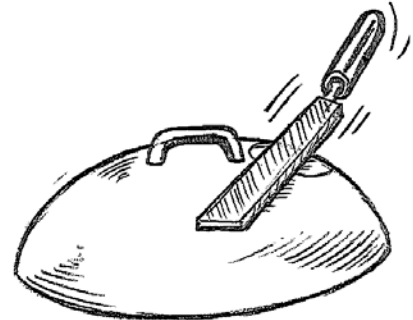
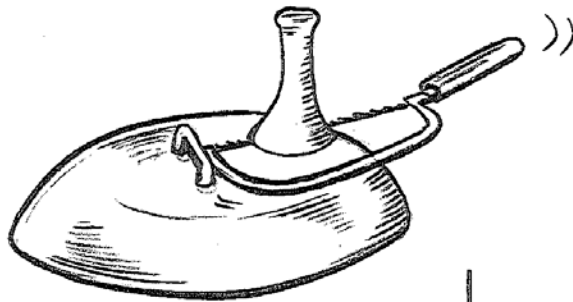
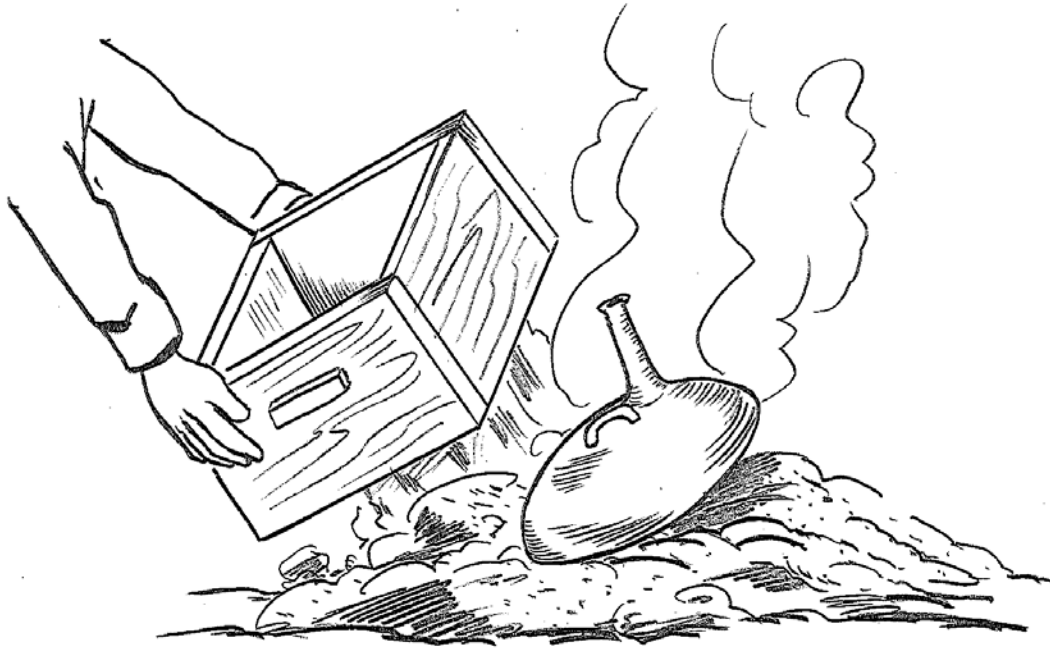
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Video METAL 2: Technical Information

Making an Aluminium Saucepan

Material

Scraps of aluminium, old tins and even cylinder heads of cars.

Tools

- A gas bottle cut into two serves as crucible that will contain the recovered material. A small oven built of heat-proof bricks is used as furnace.
- A wooden box
- A sieve
- Clay sand
- A model saucepan with its lid
- Two half bits of a handle
- A spoon
- A small sack with cement
- A long pair of pliers
- A file.

How to work

Make a fire and put the crucible, filled with recovered material you want to get melted, into it. This procedure takes more than an hour, and requires a lot of wood.

While you are waiting, prepare the moulds; a wooden box with two metallic spikes on its edges as reference points; a model saucepan that is placed upside down in the middle of the case, and sieved clay sand.

Fill the case with sand. Use a piece of a pipe as a funnel to pour the melted metal.

Turn it around and compact the edges, then put a second wooden case on top, fill it with sand and compact it.

Separate the inside mould of the outside mould.

With a sack filled with cement you have now to sprinkle the inside shape to ensure the saucepan is smooth.

The model saucepan finally is withdrawn from the case, leaving the shape in the sand.

The sand between the mould and the edges of the case is then wetted to compact the structure.

Clean the funnel through which the aluminium will be poured.

Lid

Repeat the same procedure to make the lid as you have done for the saucepan. For the handle, you need two half bits of handles, a spoon and some sand.

Take out the two pieces slowly; smooth the inside with the cement powder, and the moulds are ready.

When the metal is melted (at 600°C), pour it into the funnel.

After some minutes, you can take the moulds off. Then cut off the funnels and file the excess aluminium down. That's it.

Video METAL 2: Text of Soundtrack

Enamelled iron used as gutters and other water receptacles can be found in many small shops and market stores around Port au Prince. It is made into watering cans or cake and bread tins.

Easy to cut with a pair of pliers or wire cutters, it can be given any shape. With the pliers you bend the edges. Then you hammer them down to avoid the need for welding.

Aluminium saucepans are often used in Haiti, and are made out of metal turnings, old tins, and even car cylinder heads. The inhabitants of Fort Dimanche in Port-au-Prince have become specialists in the making of pans. Let us follow Pierre who is going to show us his way of working. A gas bottle cut in two serves as a crucible. It holds the material to be melted down. A small oven built out of heat proof bricks acts as a furnace. You make a fire inside the bricks, and then place the crucible full of metal into the flames. This operation, which lasts more than an hour, requires a lot of wood.

Meanwhile, Pierre prepares his mould – a wooden case with two metal points on the edges as reference points. A model saucepan placed upside-down in the middle of the case, and clay sand, which is sifted.

He fills the case with sand.

A piece of pipe is used as a funnel to pour in the melted metal. He packs down the sand with his feet, and finishes off the outside of the mould.

He turns it over packing down the edges, and then he places a second wooden case on top. This he also fills with sand, which he compacts.

Then you have to separate the inside mould from the outside mould.

Pierre takes a canvas bag full of cement and sprinkles the inside shape to ensure the saucepan is smooth.

The model saucepan is then carefully withdrawn from the case, leaving a perfect shape in the sand. The sand between the mould and the edge of the case is then wetted to compact the structure.

You then clean the funnel, which serves to pour in the aluminium to make sure that no sand falls in.

The outside mould is placed on the inside mould.

For the cover, the same operation is repeated as for the saucepan.

For the handle, two half bits of handles, a spoon, and some sand are used.

Slowly the two bits are withdrawn. The inside is covered in cement powder, and the moulds are finished.

The aluminium reaches a temperature of six hundred degrees. With a long pair of tongs, Pierre takes hold of the crucible of melted metal and pours it into the funnel of the moulds.

The heat from the melted metal is so intense that it even burns the wood. It has to be cooled down with water.

The moulds can be taken off several minutes later. The saucepan is ready – the cover too. The funnels can be cut off, and the excess aluminium filed down.

Scrap metal can also be recycled to make wheelbarrows. Lamps can be made out of old boxes. In Haiti a form of art has been created from recycling old barrels. From scrap sheets of metal, Serge uses a hammer and a punching tool to cut out mystical figures inspired by the sea and Haitian legends.

Other lesser-known artisans also cut out metal along the roads of Haiti. Like Maxim and Emanuel, who create flowers and animals out of old barrels.

Further Notes

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The Campaign Package

This Campaign Package has been developed and provided by the UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training, Bonn, Germany. Its purpose is to facilitate the organisation of campaigns for mobilisation and motivation of young people, and for providing them with vocational orientation and guidance. The focus is on marginalised youth in the informal sector of least developed countries.

The package consists of eight components.

The current pilot version is being provided in English only. It will be evaluated in the field. Depending on the feedback that UNESCO-UNEVOC will receive, the package will be developed further.

The activities presented in this Campaign Package are not a guarantee of monetary success. The content is based on research, examples and advice from experts. Every attempt was made to ensure accuracy, and neither the authors nor the UNESCO-UNEVOC International Centre can be held responsible for incorrect information or changing circumstances.

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Booklets accompanying the Video Series "Learning and Working"

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