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APPARATUS FOR MANUFACTURING METAL SHEETS AND STRIPS

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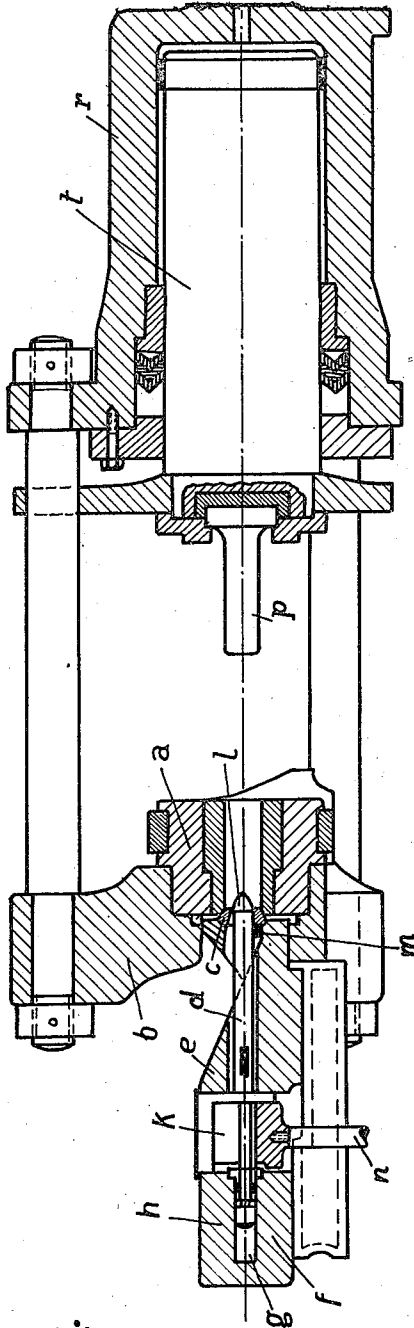


Fig. 1.

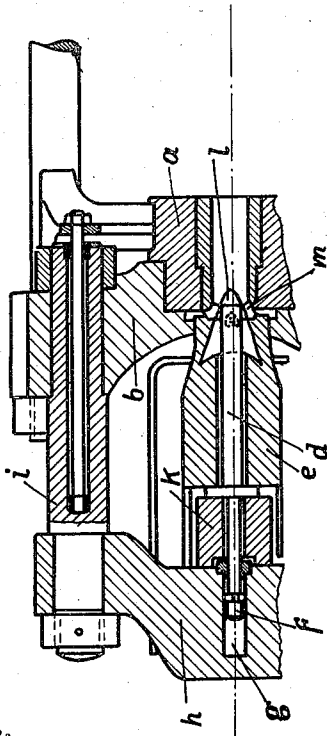


Fig. 2.

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APPARATUS FOR MANUFACTURING METAL SHEETS AND STRIPS.

Application filed December 22, 1923. Serial No. 682,264.

To all whom it may concern:

Be it known that we, FRIEDRICH BARMÉ and FRITZ MAHNERT, residing at Elberfeld and Nierenhof, near Langenberg, both in Germany, respectively, have invented certain new and useful Improvements in an Apparatus for Manufacturing Metal Sheets and Strips, of which the following is a specification.

This invention relates to a process for the production of metal sheets and bands by means of presses. The conversion of a hollow metal block into a tubular strip by a press and then by cutting and flattening into a band is known. This known process is, however, not suitable for, and is not intended for, the purpose of producing sheets or broad bands.

According to this invention a metal block which is enclosed in a known way in a hollow cylindrical container, is pressed through an annular slot, which is formed in a combined tool in front of the block container, and in any known way, a metal separating member (for instance a knife) is arranged in alignment with the direction of the press action so that the tubular strips formed by the slot are split and flattened. The formation of the annular slot through which the metal is pressed, in a tool positioned in front of the block container enables the outer diameter of the ring slot to be made as large or nearly as large as the outer block diameter. Further the whole content of the block container is used in the treatment of the block, which can therefore be solid. Accordingly the diameter of the pressed tubular strip and the metal mass for disposal in the block container are sufficiently large to enable broad strips that is sheets to be endlessly produced. If the outer diameter of the annular slot is somewhat smaller than the outer block diameter a further advantage is obtained in that by pressing the block through the annular slot the dirty outer film of the block (oxide film) is scraped off, so that the resulting band or sheet has clear surfaces without further treatment.

The apparatus for carrying out the process is shown by way of example in the accompanying drawings, in which:

Fig. 1 shows a longitudinal section of the apparatus, and

Fig. 2 shows a longitudinal section of part

of the apparatus taken at right angles to Figure 1.

In the drawings, *a* is a container provided inside with a casing for receiving the metal block (not shown) which is preferably solid. *c* is a ring shaped matrix secured at the mouth of the container *a* and *l* is an inner part projecting into this matrix, which together with the matrix *c* makes up the combined tool forming the annular slot. The inner press part *l* forms, in the constructional example shown, the free end of a punch *d*, which is provided with a knife *m* to separate the metal pressed through the ring slot. This knife *m* or any suitable separating member, can however be situated in the annular slot itself or at any other desired place in alignment with the direction of the press action.

p is a plunger secured to the piston *t* of a hydraulic press cylinder *r*. This plunger presses the block held in the container *a* through the annular slot between the matrix and the inner part *l*, so that with the assistance of the separating member *m* the block is formed into a tubular metal strip. This in known manner is guided by a member *e* preferably trough shaped, so that the metal proceeds in the form of a sheet or a broad band.

The actual form and construction of the remaining parts of the press are not essential to the invention.

In order that the general construction of the constructional parts illustrated may be properly understood, the following further description is given.

The block container *a* is adjustably attached to a cross beam *b*, which is connected by rods with the hydraulic press cylinder *r*. The punch *d* is guided through the trough-member *e* and can be moved backwards and forwards by a hydraulic piston *f* moving in a cylinder *g*. In the construction shown the punch *d* is prevented from moving backwards by a wedge *h*. The pressure exercised on the punch is taken by a cross member *k* which is held to the cross beam *b* by two rods *i*.

A block is placed in the container *a*, the press plunger *p* moved forward and the block in the manner described above is pressed through the annular slot between *c* and *l*. By this means the outer oxide film of the block is removed by the matrix *c*.

When the pressing is finished the metal block is converted almost without any waste remaining into the form of a tubular strip and this is converted into a sheet or band whilst

5 by loosening the wedge *k* by the aid of the rod *n* the punch *d* and the inner part *l* can be moved into such a position that the sheet edge on the finished band after completion of pressing can easily be separated.

10 Claims.

1. Apparatus for carrying out the process, comprising a block container, a ring shaped press matrix secured thereon, an inner press member supported outside the block container which forms with the matrix the annular slot, a separating member to split the tubular strip for separating the block in alignment with the direction of the press action to form a tube and a member which

20 flattens the tubular strip.

2. In an apparatus as claimed in claim 1

in which the diameter of the press matrix and therefore the outer diameter of the annular slot is somewhat smaller than the outer diameter of the metal block.

3. In an apparatus for the manufacture of metal sheets or strips by forcing a metal block through an annular space and spreading out the formed tubular strip, the combination wherein a matrix is fixed to the mouth of the block receiving cylinder and a mandrel arranged in front of the receiving cylinder forming an annular space between the mandrel and the said matrix and means for splitting and flattening the tubular strip.

In testimony whereof we affix our signatures in presence of two witnesses.

FRIEDRICH BARMÉ.
FRITZ MAHNERT.

Witnesses:

ELLY KEIMKEIT,
MARTHA GESTER.