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L. ANTONELLI ET AL
MILLING MACHINE FOR INGOTS
Filed Feb. 20, 1942

Serial No.
431,768
2 Sheets-Sheet 1

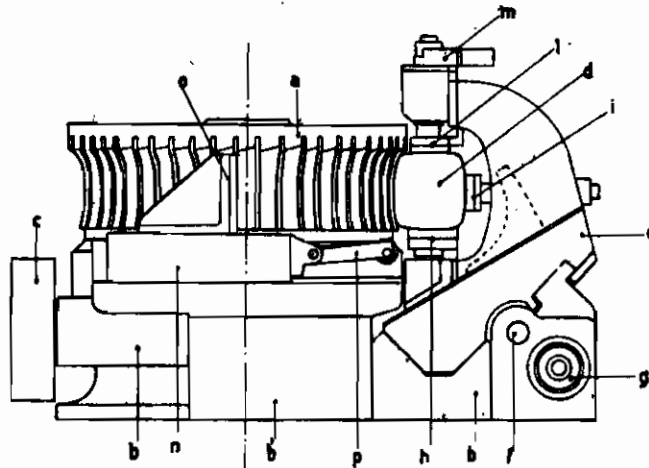


FIG. 1

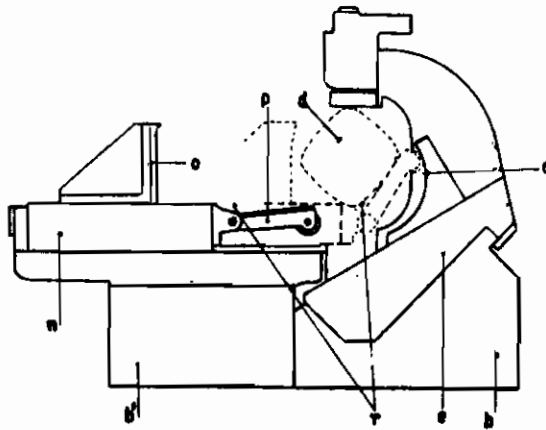


FIG. 2

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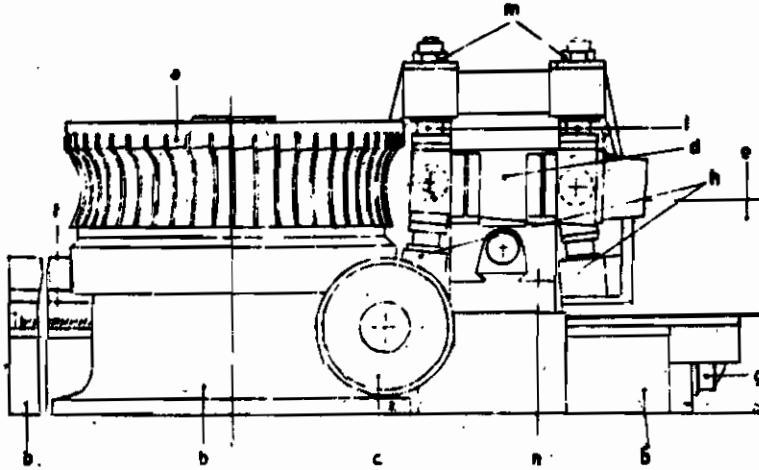


FIG. 2

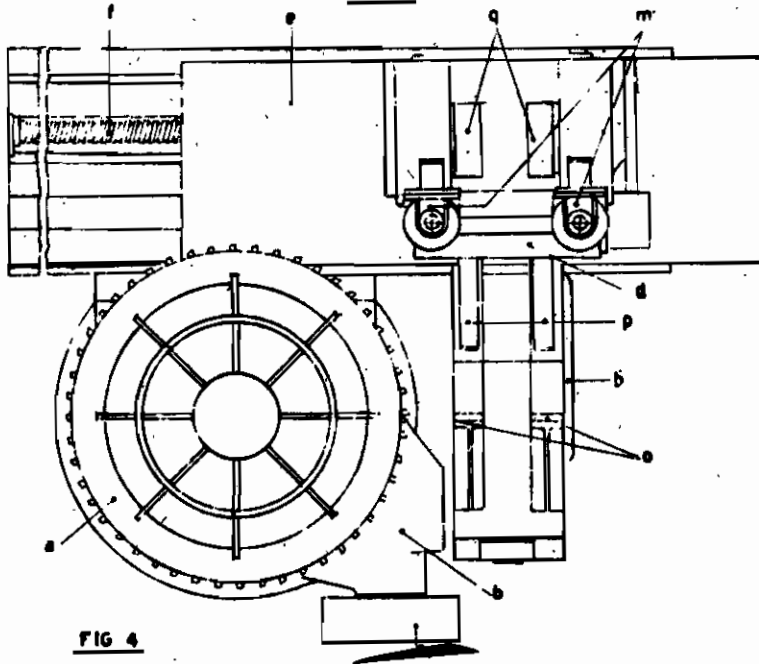


FIG. 4

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ALIEN PROPERTY CUSTODIAN

MILLING MACHINE FOR INGOTS

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Application filed February 20, 1942

The purpose of this invention is to free iron or steel ingots from slag, as well as superficial irregularity and impurities covering them, by removing a superficial layer of adjustable thickness (operation).

Removal takes place on ingots taken from ingot moulds at the temperature of 900/800°, but it can take place on material at a lower temperature too but with a smaller yield.

The operation is carried out on the machine which is the subject-matter of this invention and which can be considered as being made up of the following essential parts:

1. Large size special section cutter with the respective mechanism for its revolving.
2. Device to prop and block the ingots in a position decided on beforehand and true in regard to the cutter.
3. Mechanism for sending the ingots ahead with speed change reducer.
4. Mechanism for tilting the ingots for the purpose of laying the four sides open to be cut by the cutter one after the other.
5. Drive accessory mechanisms, for propping, etc.

The machine that makes the foregoing conditions an accomplished fact is schematically represented in Figures 1-2-3-4 of the annexed drawing and the specification which follows is to illustrate the working of the organs with reference to the designed construction, but it must be pointed out that the different sets of mechanisms could be arranged in a different way, although they will remain in the same interdependence between each other, or they can be made singularly in a different way, provided that the purpose for which they are intended is fulfilled, and all the foregoing is within the scope of this patent.

The cutter *a* of a large size, preferably with inserted blades, is shaped in such a way as to engage one side of the ingot *d* and furthermore one of the rounded corner-edges almost completely. Movement of the cutter is preferably given by an electric motor to pulley *c* and through a suitable reducer in stand *b*.

The ingot is supported by table *e*, whose lengthwise movement along the V-guide of bed *b* is given by screw *f*: the latter can receive the movement of the shaft of pulley *c* through a suitable speed change reducer of an ordinary type not illustrated in the figures, or it can be driven by motor *g*.

Table *e* supports the ingot indirectly through two sets (*h, i, l*) of hydraulic jacks rigidly fixed to the lengthwise table.

Each set is made up of a lower jack *n*, a side

jack *i* and an upper jack *l*: the latter is likewise a counterpart to put the ingot automatically in its place when it is placed for the first time and after each time it is turned; there is a mechanism *m* to correct blocking of the ingot for milling the last side, when it rests on jack *h* with the side already worked and therefore without the milled thickness.

After the milling of one side of the ingot, it is necessary to provide to tilt it and block it perfectly in the position required for milling a new side: this blocking is likewise necessary when the ingot is placed on the machine at the beginning of work.

With this end in view, a table *n* can run over the crosswise bed *b'* carrying of the surface a pair of slickers *o* with a suitably shaped wall and on the side a pair of loose arms *p* provided with roller slippers.

When table *n* is fed towards the right in the case of Figure 1 and Figure 3, the ingot *d* supported by the lower jacks *h* is raised by arms *p* which bend upwards, since the end roller slippers are guided by a pair of round rails *q* (Fig. 3) and since the corner edge of the ingot which is turned towards the bottom of the table *n* rests on the hollow on it and the ingot is compelled to tilt passing from the position of Fig. 1 to the intermediate position of Fig. 3 in which tilting is already taking place.

During this stage jacks *h, i, l* have been sent away to allow the ingot space for tilting.

Immediately after this operation and in the case of initial placing, after having rested the ingot on arms *p*, while the table *n*, which has reached the position of the end of the run, towards the right in the case of Figures 1-3, remains blocked there, the jacks begin to operate automatically; the horizontal jacks *i* first which move the ingot until it rests on the pair of slickers *o*, then the upper jacks *l* that established the height to which the ingot must go, and finally the lower jacks *h* which raise the ingot and block it in its exact operating position.

When blocking has been obtained, table *n* is sent away by making it run on its secondary bed *b'* until it reaches the normal working position shown in Fig. 1, and the milling work can begin on the side.

It is not considered advisable to describe the system of control and driving of the movements of work and of feed, or those of the semiautomatic drive foreseen for the hydraulic mechanisms; these movements can take place with mechanical or electrical means.

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