No. 686,839. Patented Nov. 19, 1901.

C. C. G. R. BACHMANN.

PROCESS OF MAKING GRANULATED CAST IRON.

(Application filed July 8, 1901.)

(No Model.)

Fig. I

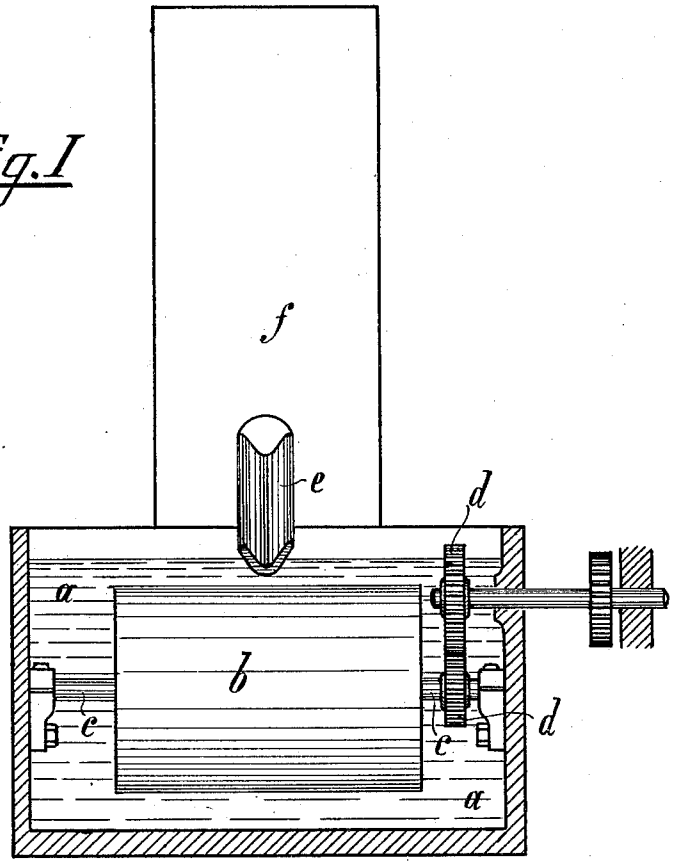
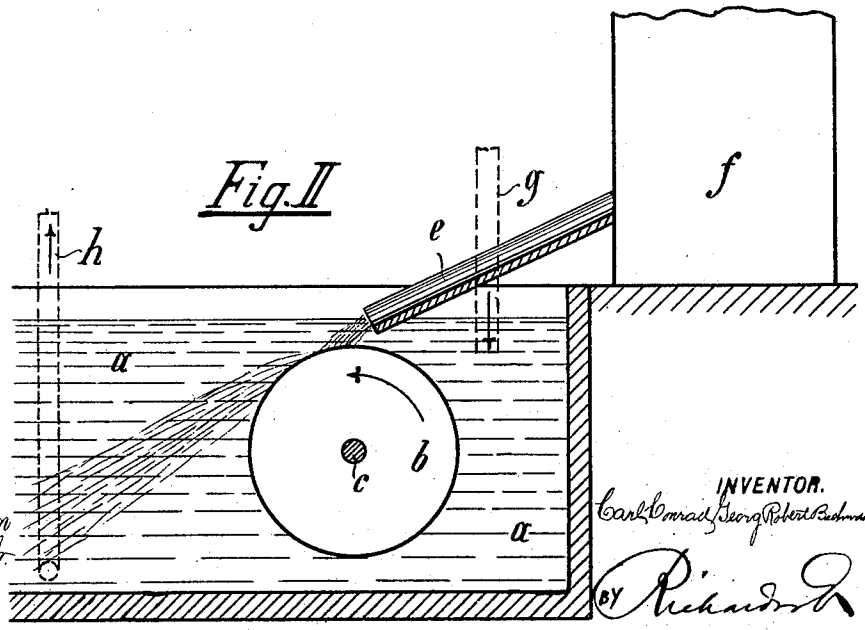


Fig. II



WITNESSES:

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UNITED STATES PATENT OFFICE.

CARL CONRAD GEORG ROBERT BACHMANN, OF LEIPSIC, GERMANY.

PROCESS OF MAKING GRANULATED CAST-IRON.

SPECIFICATION forming part of Letters Patent No. 686,839, dated November 19, 1901.

Application filed July 8, 1901. Serial No. 67,486. (No specimens.)

To all whom it may concern:

Be it known that I, CARL CONRAD GEORG ROBERT BACHMANN, a subject of the German Emperor, and a resident of Leipsic, in the Empire of Germany, have invented certain new and useful Improvements in Processes for Making Granulated Cast-Iron, of which the following is a specification.

In the manufacture of granulated cast-iron serving for grinding and cutting stones, glass, and the like the process of casting molten ore into water has been adopted, as the cast-iron broken up by the water forms sharp-edged flakes, and thus is capable of a good grinding action. On the other hand, however, a drawback has been found in that an insufficient breaking up of the cast-iron took place by this method, but that comparatively large pieces were always formed, so that a very great stamping or crushing operation was necessary subsequently for the complete breaking up of the pieces. The attempt is made to avoid this drawback by the present invention by the arrangement of a drum of comparatively large diameter rotating beneath the surface of the water in the vessel into which the fluid or molten iron falls and is broken up directly after its contact with the water—that is to say, while still in a somewhat fluid condition—and this fluid-iron in consequence of the centrifugal action of this drum is broken up and spread out widely. By this means irregularly-shaped flat flake-like pieces are formed which contain white iron and have no gray core, which usually results in the case of large pieces. By reason of its sheet-like form the material cast in water is very suitable for further breaking up by means of stamps and is also good for hardening.

An apparatus for carrying out this improved process is shown in the accompanying drawings.

Figure 1 is a vertical section, and Fig. 2 a sectional view at right angles to Fig. 1 of one form of construction.

A drum *b* of strong sheet-iron is arranged in the water-tank *a* beneath the level of the water, which drum has as large a diameter as possible. The shaft *c* of this drum is set in revolution by means of gear-wheels *d* either by motor-power or by hand, in the latter case by means of a crank-handle. Above the drum the free end of a chute or channel *e* extends into the water-tank, the other end of which chute is connected with a cupola-furnace *f*, arranged at the end of the water-tank. The cast-iron reduced in this cupola-furnace to a liquid condition flows through the channel *e* into the water-tank, and as soon as it has passed through the layer of water above the drum and been broken up by contact with the water into small pieces it encounters the surface of the drum. According to whether the iron has a greater or less heat the thickness of this layer of water must be varied in order that the cast-iron may reach the surface of the drum still in an approximately fluid or pasty condition. The small pieces into which the fluid iron is divided on its contact with the water are therefore pulled out by the rotary drum by centrifugal force into sheet-like pieces of irregular form. The latter are in consequence of the rotation of the drum thrown from its surface tangentially into the water. On account of the considerable diameter of the drum the iron formed into flakes is distributed over a large space in the water-tank, so that too great a heating of the water and any evolution of gas and steam does not take place, such as formerly gave rise to explosions. A large diameter for the drum is therefore necessary in this improved process in order to obtain a good hardening of the granulated cast-iron. Of course sufficient water must remain beneath the drum to allow of the further cooling down of the resulting material on the bottom of the tank. In order to keep the water constantly cold, it is preferable to allow fresh water to constantly flow through a pipe *g* into the tank and the warm water to be discharged therefrom by means of a pipe *h*. A constant inflow of cold water is also necessary in order to pre-

vent the sheets of iron from caking on the surface of the drum.

According as it is desired to obtain large or small flakes of iron the rotation of the sheet-metal drum may be accelerated or retarded.

I declare that what I claim is—

The herein-described process of making granulated cast-iron consisting in running the molten iron into water and then separating the metallic particles by centrifugal action, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

CARL CONRAD GEORG ROBERT BACHMANN.

Witnesses:
RUDOLPH FRICKE,
CHAS. J. BURT.