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SATURATING AND CRUSHING MACHINE.

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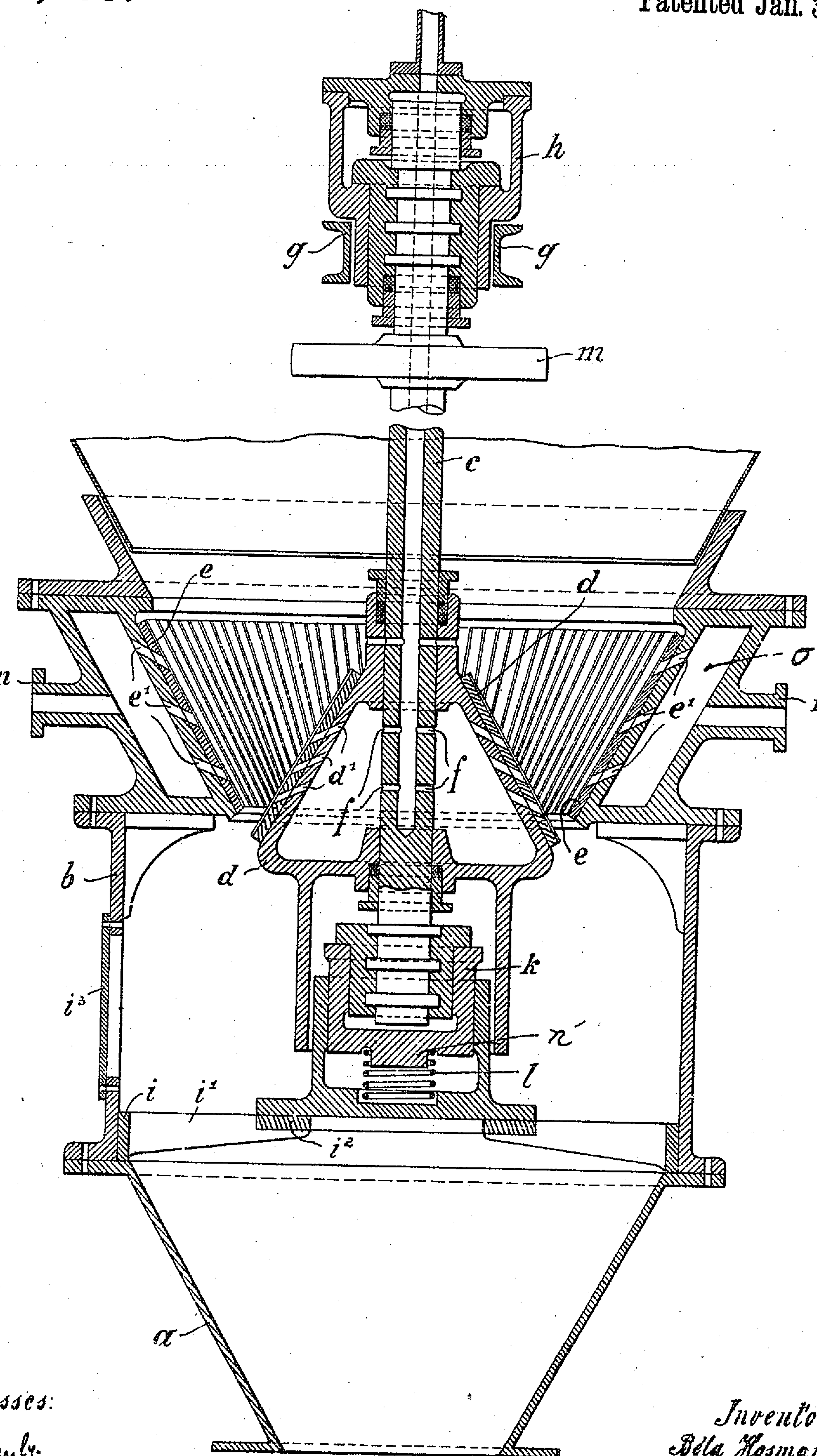
983,055.

Patented Jan. 31, 1911.



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UNITED STATES PATENT OFFICE.

BÉLA HOSMANN, OF TOKOD, AUSTRIA-HUNGARY.

SATURATING AND CRUSHING MACHINE.

983,055. Specification of Letters Patent. **Patented Jan. 31, 1911.**

Application filed July 28, 1909. Serial No. 510,128.

To all whom it may concern:

Be it known that I, BÉLA HOSMANN, a subject of the Emperor of Austria-Hungary, and resident of Tokod, Austria-Hungary, have invented Improvements in and Relating to Saturating and Crushing Machines, of which the following is a specification.

The subject of the present invention concerns improvements in saturating and crushing machines, and is intended more especially for the treatment of material used for filling up exhausted shafts and the like in coal mines.

It was formerly customary to mix sand in a hopper, wherein the sand was also sprayed with water, but in the case where sand was not obtainable and other materials were employed these latter had first to be crushed in a suitable machine, and then transported by another means to the hopper or the like where they were saturated. The present invention effects both these operations.

The essential features of the invention consist in the provision of a hopper, a crushing surface, and a removable crushing cone revolubly situated in said hopper, and means for admitting water to the material being crushed.

The present invention has the advantage that it takes up no more room than the former saturating machines, and that it can be used for treating all kinds of material, such as sand, marl, slate, and like material. In winter this invention can be used for treating clods of frozen sand and clay or earth, without regard to the weather.

The present invention also obviates the use of two machines and requires no transporting means, for big lumps of material can be crushed and saturated on this machine. The crushing cone is preferably removably mounted so that it can be removed, whereby the machine serves as a saturater only.

In order that the invention may be fully understood reference is made to the accompanying drawing, wherein the device is shown in sectional elevation.

The funnel *a* from which the saturated material is led to the required part of the mine, forms the lower part of the machine. The hopper *b* is secured in position above said funnel *a* by means of screws or the like. This latter contains a crushing, breaking or similar device of suitable construction, and consists preferably of a crushing mill similar to that illustrated in the accompanying drawing, which is constructed as follows:— Passing down the center of the machine is a shaft *c*. This shaft carries a hollow crushing cone *d*, which if desired could be made integral with said shaft. The upper inner wall of a chamber *o* forms the crushing surface *e*. Said shaft *c* is hollow, and is fitted with suitable openings *f*, so that if the upper end of said shaft be connected with a water pipe or the like, the water will pass through said openings *f* into the cone *d*, and through openings d^1 in the latter, to the material being crushed. The upper end of said shaft is revolubly mounted in vertically movable bearings *h* and carrier *g*. The lower end of said shaft is revolubly mounted in a foot-step bearing *k* in such a manner that it is both dust proof and water-tight. Said bearing *k* is supported by an annular ring *i* which is stamped out in such a way that it forms a series of ribs i^1 having intervening spaces. Said ring *i* is situated in the lower part of said hopper *b* and is firmly fastened to the inner wall of the latter. The inner end of the ribs i^1 are joined to a ring i^2 upon which the bearing *k* rests. Access can be had to the interior of the hopper by removal of the cover-plate i^3 situated on the side of said hopper *b* and secured thereto by suitable screws.

The bush n^1 of the bearing *k* is supported by means of a spring *l* resting on the bed of the stand *p* of the bearing. This spring *l* serves to absorb any shocks caused when crushing very hard stones, thus preventing damage to the crushing cone. The shaft *c* carries a pulley *m*, said pulley being firmly keyed to said shaft, whereby the latter can be turned by means of suitable belting connected with a source of power.

The upper part of hopper *b* is fitted with a chamber *o* in which the pipe supports *n* terminate. The interior wall of said chamber forms the crushing surface *e* which is fitted with openings e^1. Thus when the water enters through pipe supports *n* it flows into the chamber *o* formed in the upper part of said hopper *b*, then through the openings e^1 to the material.

The operation of the machine is as follows:—The upper part of the hopper *b* is filled with the material to be crushed. The latter passes down between the surface *e* and the revolving cone *d*, whereby said material is crushed while at the same time

it is saturated by the water coming through the openings f, d^1 and e^1 respectively. Through this operation the material is thoroughly mixed and saturated and then passes down between the ribs i^1 into the funnel a from whence it passes by means of suitable pipes (not shown) to the required place.

This machine has the great advantage that the material becomes uniformly saturated throughout whereas with the hitherto known types it often happened that only a part of the material became saturated and this frequently led to stoppages.

For the purpose of saturating material which does not require crushing, the shaft, bearing h and crushing cone d, are lifted out of the foot-step bearing, after loosening the packing, and removed from the hopper b. After re-insertion of the shaft and cone the operation of crushing and saturating goes on as before.

Having fully described my invention, what I claim and desire to secure by Letters Patent is:—

Improvements in and relating to saturating and crushing machines, comprising in combination, a funnel, a hopper supported in position by said funnel, a chamber situated on the upper part of said hopper, pipe supports terminating in the latter, a crushing surface integral with said chamber and having openings which serve as inlets whereby the water entering by said pipe supports can pass to the material, a ring situated in the lower part of said hopper, ribs integral with said ring, a second ring jointed to the ends of said ribs, a foot-step-bearing supported by said ring, a hollow shaft revolubly mounted in said bearing and being provided with openings, a hollow crushing cone carried by said shaft having outlets so that the water coming down said shaft and passing through the openings therein, is led to the material to be crushed, bearings in which the upper end of said shaft is revolubly mounted, and a pulley keyed to said shaft, whereby the latter and said cone can be rotated, substantially as described and shown, and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

BÉLA HOSMANN.

Witnesses:

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