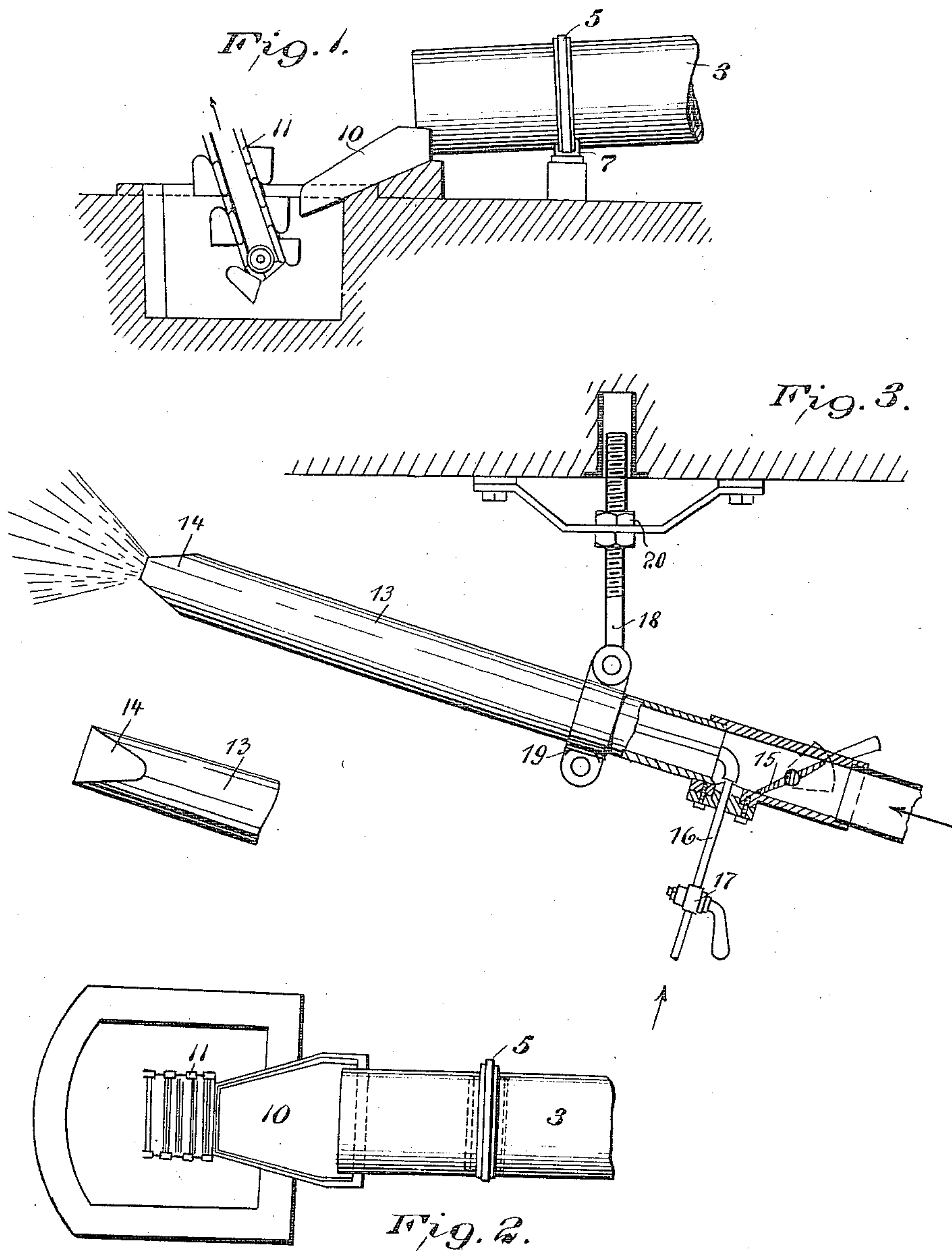


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 APPARATUS FOR ATOMIZING LIQUID SLAG.
 APPLICATION FILED DEC. 22, 1909.

982,964.

Patented Jan. 31, 1911.

2 SHEETS—SHEET 1.



Witnesses:
 H. Kirk
 Milton Ottenberg.

Inventor:
 Georg Jantzen
 by Foster Freeman Watson & Co.
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Fig. 1a

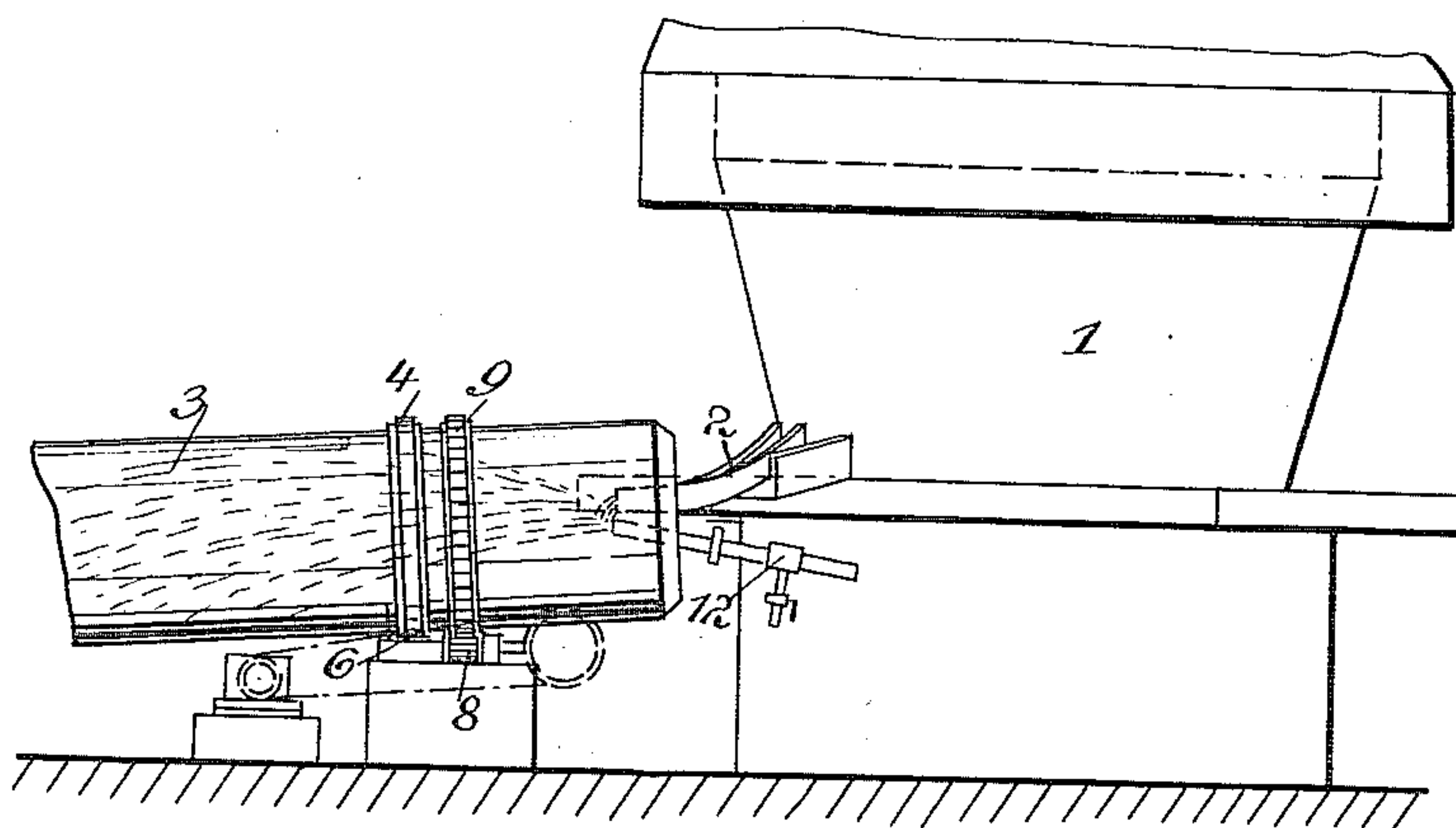
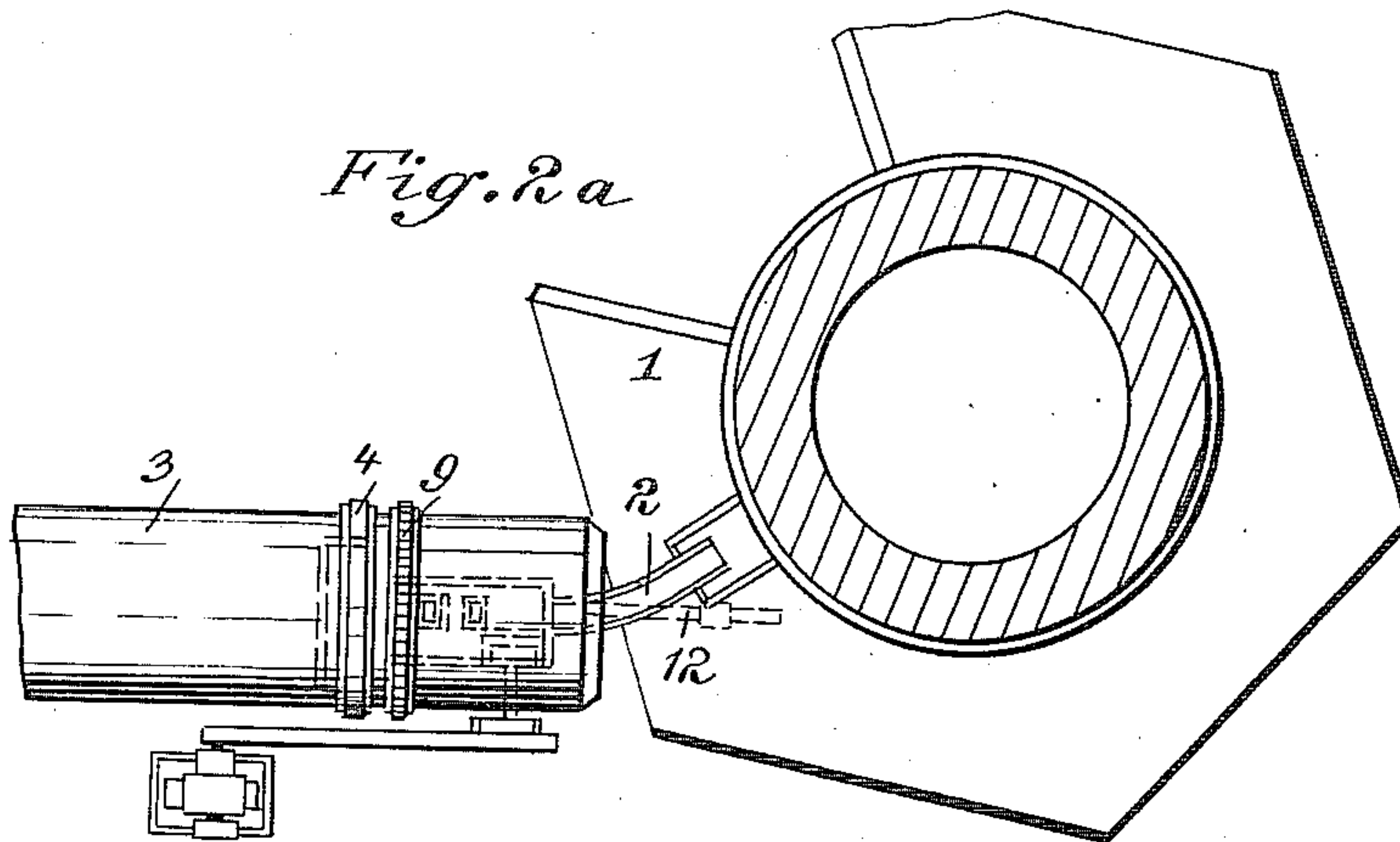


Fig. 2a



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UNITED STATES PATENT OFFICE.

GEORG JANTZEN, OF WETZLAR, GERMANY, ASSIGNOR TO THE FIRM OF BUDERUS'SCHE EISENWERKE, OF WETZLAR, GERMANY.

APPARATUS FOR ATOMIZING LIQUID SLAG.

982,964.

Specification of Letters Patent.

Patented Jan. 31, 1911.

Application filed December 22, 1909. Serial No. 534,549.

To all whom it may concern:

Be it known that I, GEORG JANTZEN, a subject of the German Emperor, and a resident of Wetzlar, Germany, have invented certain new and useful Improvements in Apparatus for Atomizing Liquid Slag, of which the following is a specification.

Atomizing apparatus for converting liquid slag into solid form, hitherto known, all possess various disadvantages. Such apparatus are all provided with stationary cooled walls against which the sprayed or atomized slag is caused to impinge. In spite of the cooling of the said walls, slag adheres to them, more particularly in the case of atomizing or spraying large quantities in constant working, as the grains of slag still remain so hot, that they, for the most part, are able to cake together again on the walls, form lumps there and fall down as such on reaching a greater weight. The final product is therefore an irregularly sealed, partly incandescent slag, the size of the particles of which varies from that of a sand grain to a large lump.

This invention relates to an apparatus for spraying or atomizing liquid slag, which does away with the above mentioned disadvantages and is particularly adapted for working on a large scale and continuously. This apparatus is arranged according to this invention in such manner that the spraying is effected by a dry process and the slag is converted into the form of small loose sand grains which are so cool and dry that they may be at once submitted to a further treatment, for instance, for cement manufacture.

A construction according to this invention is illustrated by way of example in the accompanying drawing.

Figure 1 is a side elevation of the discharge end of an apparatus embodying the present invention; Fig. 1^a is a side elevation of the lower portion of a smelting furnace and the adjacent end of the improved apparatus; Fig. 2 is a plan of the parts shown in Fig. 1; Fig. 2^a is a plan partly in section of the parts shown in Fig. 1^a. Fig. 3 shows the atomizing device used, partly in section.

1 is the bottom portion of a smelting furnace, which is adjoined by a slag notch or channel 2. The latter merges at its front end into a cooling and conveying or transport drum 3 mounted by means of rings 4 5

on roller bearings 6 7 on which it can rotate. The drum 3 is rotated by means of a spur wheel 8 driven in any suitable manner and engaging with a toothed ring 9 mounted on the drum 3. Under the end of the drum, which is away from the slag notch 2, is arranged a discharge channel or chute 10, and in front of the same a hoist or elevator 11. The atomized slag escaping from the drum 3 and passing over the discharge chute 10, passes into the dipping buckets of the hoist 11 and is conveyed by the latter to a collecting point.

Directly under the slag notch 2 is arranged an atomizing or spraying device 12. The latter is connected to a piping from which air, steam or both steam and air are admitted into the atomizing device under pressure. The atomizing device consists, as shown in Fig. 3, of a pipe 13, which, at the end facing the slag notch 2, passes into a nozzle 14. At the bottom end of the pipe in question is placed a throttle valve 15 intended for opening or closing or regulating the flow of medium (air, steam or both) supplied to the nozzle 14. In front of the throttle valve 15 is introduced into the pipe 13 a small pipe 16 which faces with its orifice the nozzle 14 and is intended for admitting a liquid. The said small pipe 16 is provided with a cock 17 for opening or closing or regulating the admission of liquid.

The atomizing device is suspended by means of a bolt 18 and a ring 19 pivoted to the latter and surrounding the pipe 13, for the exact adjustment to the slag jet, in such manner that it can be easily adjusted both laterally and vertically. In order to enable the atomizing device to be adjusted also as regards its vertical level, the bolt 18 is threaded and two set nuts 20 are screwed thereon.

The operation of the device will be readily understood. The atomizing device 12 is directed with its outlet nozzle against the orifice of the slag notch 2. The air, steam, or both, flow therefore against the liquid slag escaping from the notch 2, and atomize the same in the manner shown in Fig. 1. The atomized fine grained slag passes, owing to the rotation of the drum 3 arranged in an oblique position, into the discharge channel 10 and from the latter into the elevator 11. If necessary, the drum 3 could be constantly cooled by water.

I claim:

1. A device for atomizing or spraying liquid slag, consisting of a cooling and conveying drum to which the liquid slag is supplied by a slag notch opening into the same, of a spraying or atomizing device arranged under the slag notch and carried with its nozzle to the orifice thereof and atomizing the liquid slag by means of a suitable medium escaping from the nozzle, and an elevator arranged at the discharge end of the transport or conveying drum, which elevator receives the converted slag and conveys it to a collecting point.
2. In an apparatus for the purpose described, the combination of a rotary conveyer or drum, means for supplying liquid slag to the conveyer, and means for discharging fluid under pressure into the stream of slag.
3. In an apparatus for the purpose described, the combination of a rotary conveyer or drum, means for supplying liquid slag to the conveyer, and a pipe for conducting fluid under pressure and terminating within the conveyer in a nozzle adapted to deliver such fluid into the stream of slag.
4. In an apparatus for the purpose described, the combination of a rotary conveyer or drum, means for supplying liquid slag to

the conveyer, a pipe for conveying fluid under pressure into the conveyer and discharging it in the stream of slag, and means for regulating the flow of fluid through the pipe.

5. In an apparatus for the purpose described, the combination of a rotary conveyer or drum, means for supplying liquid slag to the conveyer, a pipe for conveying fluid under pressure into the conveyer and discharging it in the stream of slag, and an auxiliary pipe of less diameter extending into said pressure pipe and adapted to convey liquid thereto.

6. In an apparatus for the purpose described, the combination of a rotary conveyer or drum, means for supplying liquid slag to the conveyer and a nozzle for discharging fluid under pressure into the stream of slag entering the conveyer, said nozzle being bodily adjustable both vertically and laterally.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORG JANTZEN.

Witnesses:

FRANZ HASSLACHER,
ERWIN DIPPEL.