

No. 774,788.

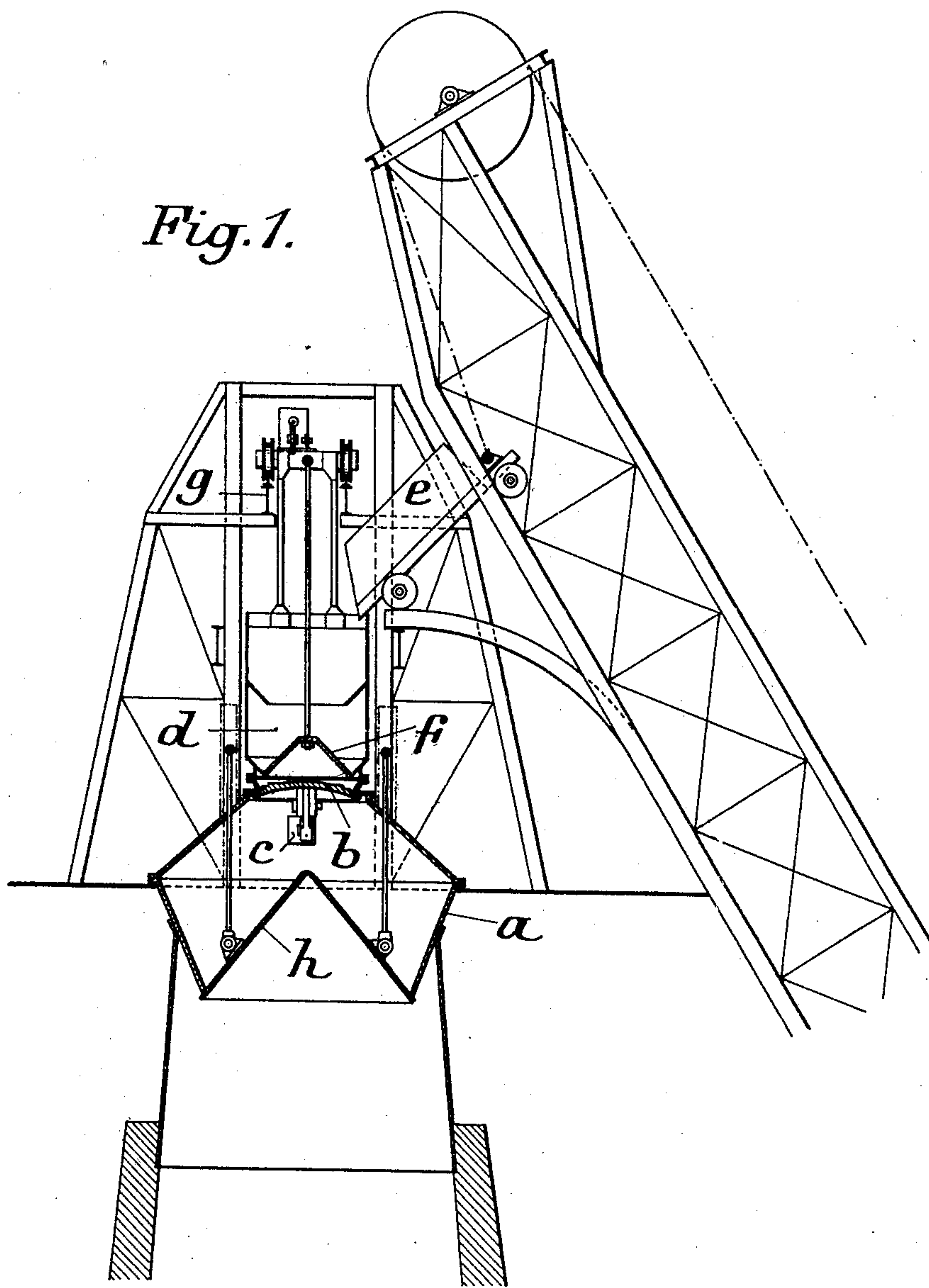
PATENTED NOV. 15, 1904.

K. SCHNEIDER.
CHARGING APPARATUS FOR BLAST FURNACES.

APPLICATION FILED DEC. 7, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES

Chas J O'Neill

E. C. Schuermann.

INVENTOR:

Karl Schneider,
by Lemuel M. DeBorough
ATTORNEYS.

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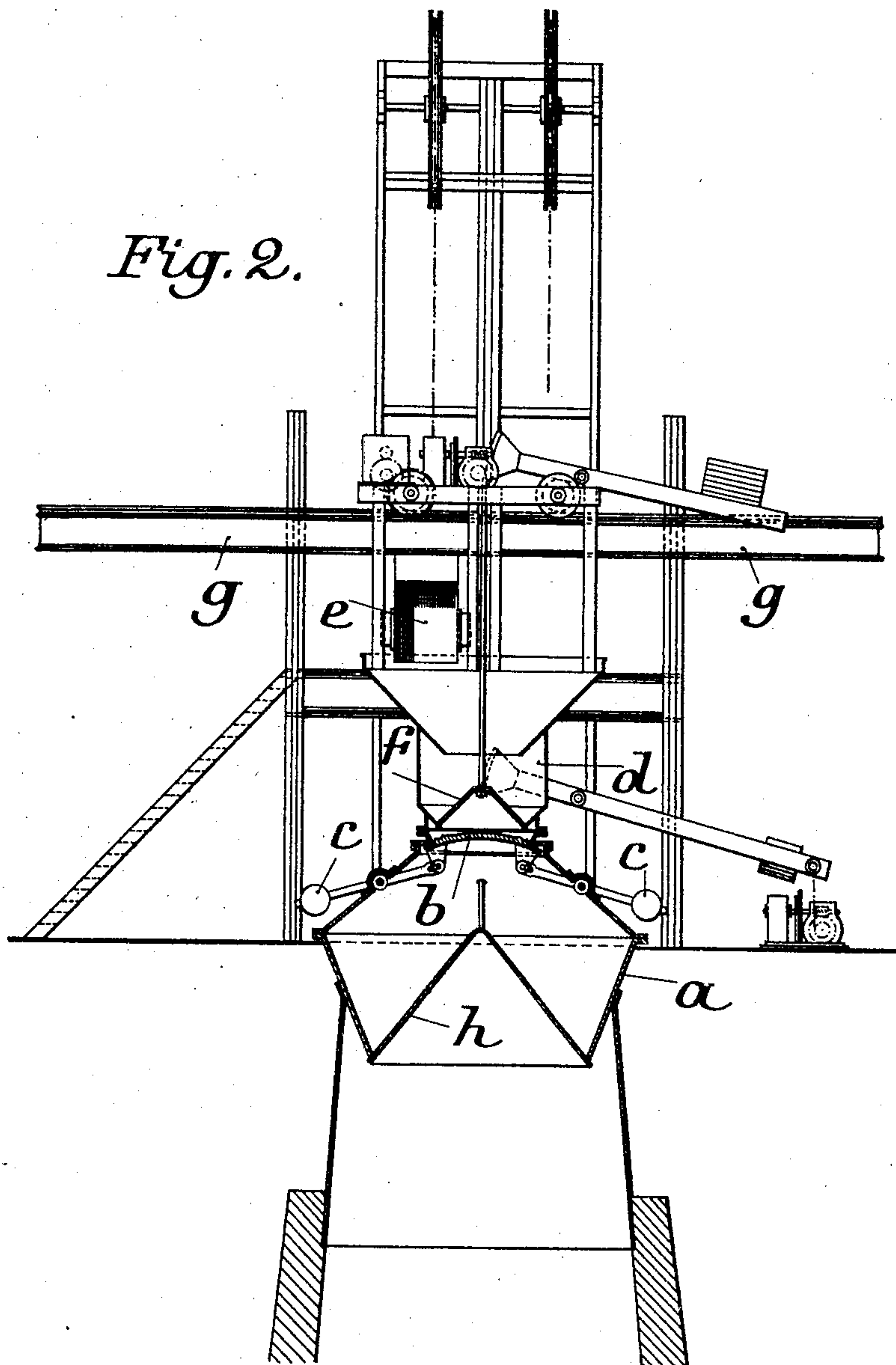
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3 SHEETS—SHEET 2.



WITNESSES

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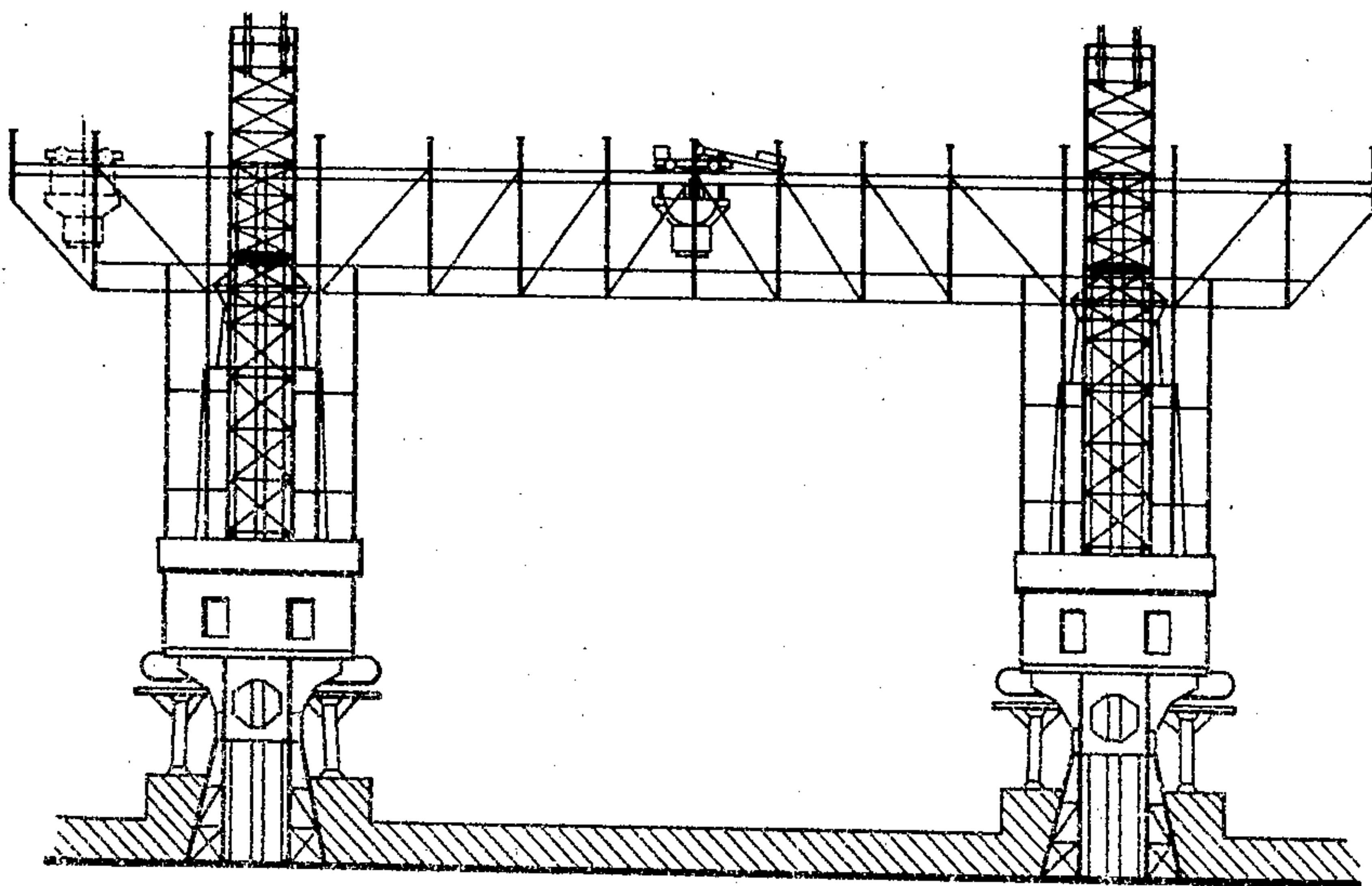
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3 SHEETS—SHEET 3.

Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

KARL SCHNEIDER, OF KOBLENZ, GERMANY.

CHARGING APPARATUS FOR BLAST-FURNACES.

SPECIFICATION forming part of Letters Patent No. 774,788, dated November 15, 1904.

Application filed December 7, 1903. Serial No. 184,176. (No model.)

To all whom it may concern:

Be it known that I, KARL SCHNEIDER, engineer, a subject of the Emperor of Austria-Hungary, residing at 6 Rheinzollstrasse, Koblenz, Germany, have invented a certain new and useful Improvement in Charging Apparatus for Blast-Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

In blast-furnaces with inclined skip-hoists the great disadvantage arises that if the hoist gets out of order the charging of the furnace can only be effected with the greatest difficulty. It has therefore been proposed to arrange the entire inclined lift to be capable of lateral displacement, so that when it gets out of order it can be moved to one side and the furnace be fed by the movable lift apparatus of an adjacent blast-furnace.

The present invention consists in obviating the said disadvantage by connecting the furnace-tops of two contiguous furnaces by means of a conveying device, by means of which the ores and other materials can be conveyed from the mouth of a furnace whose hoist is in working order to a contiguous furnace whose hoist is out of order. For this purpose there may be employed a bucket suspended from a traveling crane that can be run over the tops of both furnaces, which receptacle can be lowered into the hopper of each furnace. The materials are dumped by the hoist into this bucket, which is then lifted by the traveling crane and run by same to the mouth of the furnace whose hoist is out of order. According to another arrangement the feeding-hoppers of the blast-furnaces are themselves made transportable. This arrangement is shown on the accompanying drawings, in which—

Figure 1 shows a sectional side elevation, and Fig. 2 a sectional front elevation. Fig. 3 represents in elevation two furnaces, a bridge, a runway on the bridge, and a movable receptacle on the runway, the arrangement being such that either of the furnaces can be supplied from the inclined skip-hoist of the other by means of the said movable receptacle.

The closing device of the furnace-mouth

here shown is a "Parry" hopper *a*; but any other closing device is applicable. Above this hopper is provided an arched plate *b*, serving as second gas-seal, which is caused by counterweights *c* to bear against a packet-ring. These parts of the closing apparatus are fixed to the furnace-mouth. On the other hand, the upper charging-hopper *d*, into which the skip *e* of the hoist discharges its contents, is made transportable. This hopper is closed by a bell *f* by means of an electrically-actuated winch and balance-weight, which devices are also arranged on the transporting apparatus. The charging-hopper is therefore a movable part of the furnace-top.

With two contiguous blast-furnaces there may be arranged a line of rails *g*, extending over both furnaces, on which the charging-hopper described above can be run by means of suitable driving-gear. By this means it is possible to feed a blast-furnace by means of the hoist of a contiguous furnace, the charging-hopper *d* being run with its charge from the furnace whose hoist is in working order to the furnace whose hoist is out of order, and when arrived there the bell *f* is lowered and in pressing down the gas-seal *b* (which is only held closed by balance-weights) discharges the contents of the hopper on the main bell *h* of the furnace-mouth. When the bell *f* of the charging-hopper *d* is raised again, the gas-seal *b* follows, actuated by its counterweights up to its closing position. The bell *f* being closed again, the charging-hopper is moved back to its position over the first blast-furnace.

The apparatus can also be arranged as a truck instead of as a traveling crane. Instead of filling the bucket by the skip-hoist of an adjacent furnace it may also be filled by means of ordinary charging-barrows at an adjacent furnace or at a suitably-arranged vertical hoist. With the described arrangement it is also possible to have a charging-hopper such as described in reserve for several blast-furnaces.

Having thus described the nature of my said invention and the best means I know of carrying the same into practical effect, I claim—

1. The combination with adjacent blast-furnaces, of apparatus adapted to supply both of said furnaces from a single hoist, said appa-

ratus consisting of a combined charging-receptacle and conveyer receiving the charge of material from the hoist and normally occupying a position above the top of one of the furnaces, and a runway for said receptacle-conveyer leading to a corresponding position above the top of the other furnace; substantially as described.

2. The combination with adjacent blast-furnaces, whose tops are provided with double gas-seals, of apparatus adapted to supply both of said furnaces from a single hoist, said apparatus consisting of a wheeled truck, a hopper suspended therefrom, a bottom bell for said hopper, and lowering and raising gear for the bottom bell, said hopper receiving the charge of material from the hoist and normally occupying a position above the top of

one of the furnaces, and a runway for the hopper-truck leading to a corresponding position above the top of the other furnace; substantially as described.

3. A blast-furnace plant, comprising two blast-furnaces, a runway leading from the top of one furnace to the top of the other, a skip-hoist for each furnace, and a charging-conveyer upon said runway adapted to receive its charge from either hoist and discharge it into the top of either furnace; substantially as described.

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

KARL SCHNEIDER.

Witnesses:

WILHELM RUPPERS,
GUSTAV E. GRIER.