No. 744,316. PATENTED NOV. 17, 1903.

C. EITLE.

APPARATUS FOR CHARGING FURNACES.

APPLICATION FILED OCT. 4, 1901.

NO MODEL.

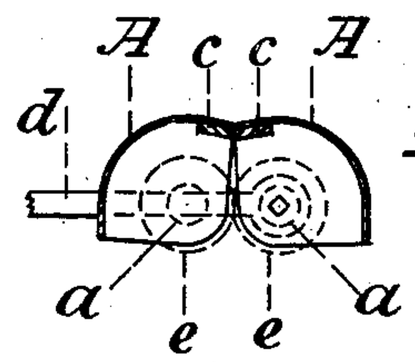

Fig. 4.

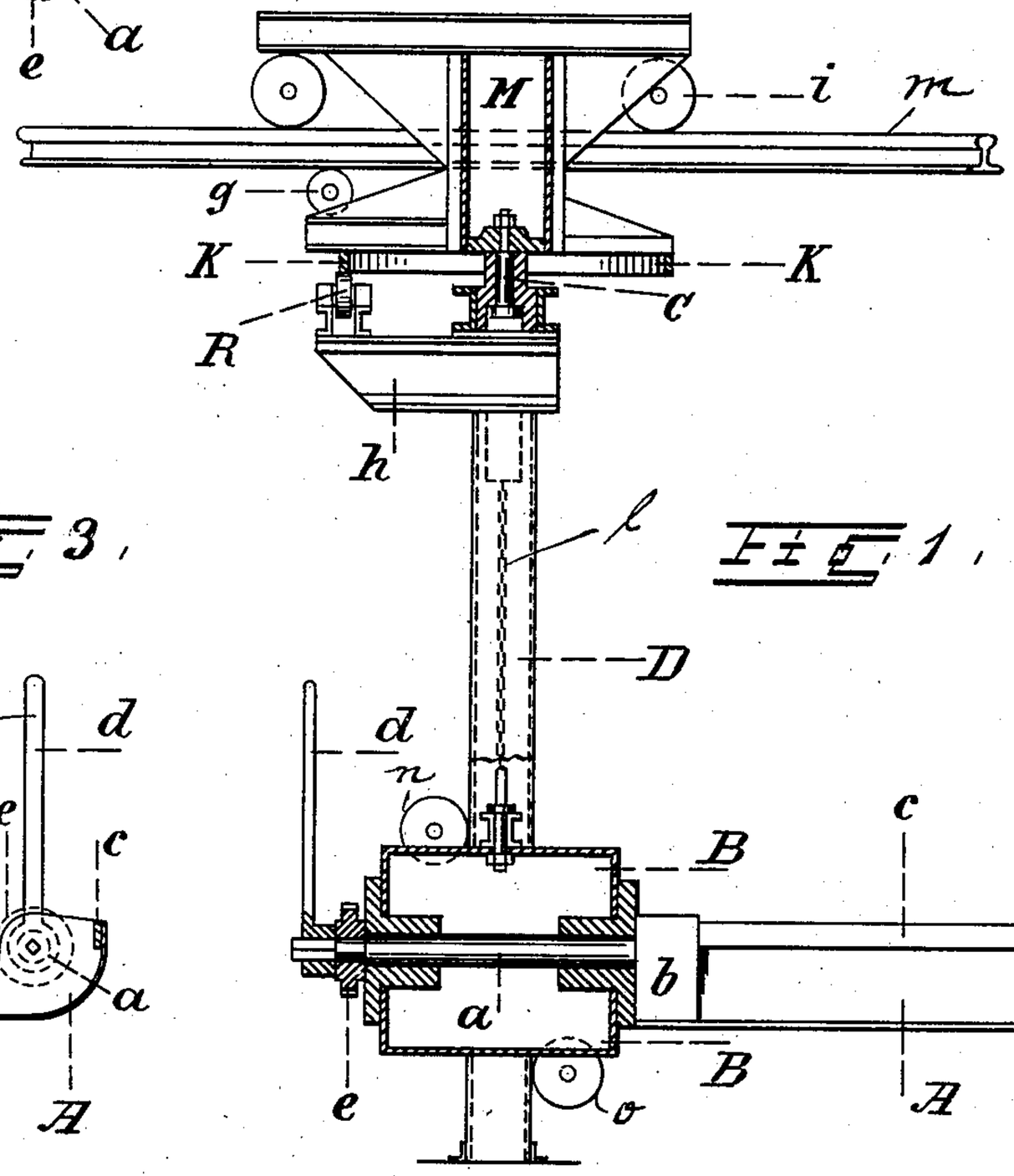

Fig. 3.

Fig. 1.

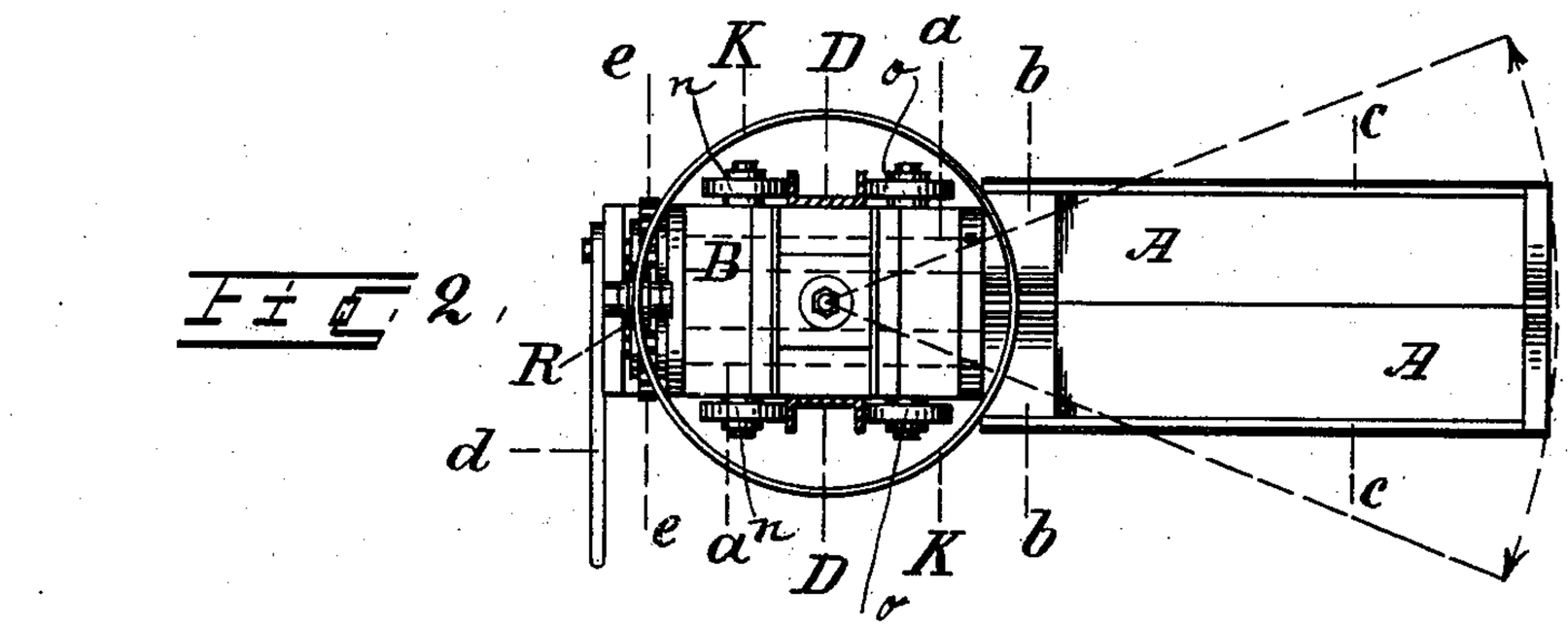

Fig. 2.

Witnesses:
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No. 744,316. Patented November 17, 1903.

UNITED STATES PATENT OFFICE.

CHRISTIAN EITLE, OF STUTTGART, GERMANY.

APPARATUS FOR CHARGING FURNACES.

SPECIFICATION forming part of Letters Patent No. 744,316, dated November 17, 1903.

Application filed October 4, 1901. Serial No. 77,535. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN EITLE, a subject of the King of Würtemberg, residing at Rosenbergstrasse, Stuttgart, in the Kingdom of Würtemburg, Germany, have invented certain new and useful Improvements in Apparatus for Charging Furnaces and the Like, of which the following is a specification.

This invention relates to apparatus for charging furnaces, retorts, and the like with materials, and is chiefly intended for chemical purposes; and it consists in an improved arrangement or combination of the parts of said apparatus.

The improved apparatus consists of a trough shaped longitudinally-divided charging-scoop, a vertically-movable carriage containing bearings for the same and suspended in a frame which can turn on a pivot and is provided with a cantaliver and antifriction-roller, and is intended for mechanically charging furnaces, retorts, muffles, or the like, hereinafter called "furnaces," placed at different levels, into which the material has to be charged, so as to fill their entire cross-section as fully as possible and to be distributed evenly over the entire length of the furnace, while at the same time the walls of the furnace are not to be touched by the charging apparatus.

On the drawings appended hereunto the improved apparatus is shown by Figure 1 in elevation, and by Fig. 2 in plan, Fig. 3 showing a cross-section of the scoop in its closed, and Fig. 4 the same in its opened, position.

The two halves A A of the scoop are for the purposes stated above fixed to carrying-bars *c c*, which are attached only at one end to the bosses *b b* of the shafts *a a* and free at the other ends. The two shafts *a a* are connected by spur-wheels *e e*, gearing with each other. After the scoop has been introduced into the furnace the two parts of the scoop, the shape of which is adapted to that of the furnaces to be charged, can by means of a handle *d*, placed upon the squared end of one of the shafts *a a*, be moved instantaneously and simultaneously to both sides, and if the shafts are placed at a suitable distance from each other with a small and uniform distance from the walls of the furnace till they have attained the position shown by Fig. 4.

The carriage B, containing the bearings for the shafts *a a* of the overhanging scoop A A and the mechanism for turning them, is arranged to be adjustable in height in the frame D in any convenient manner—for instance, by a lifting-chain *l*—for charging retorts placed at different levels. It is guided by wheels or rollers *n o* or in any other suitable way.

In order to assure an exactly central introduction of the charging-scoop into the retorts, which is necessary in order to protect the walls from contact with the scoop and from the damage and disadvantages that may result therefrom, the said frame D is suspended on a pivot C, so that it can be turned, and is provided with a cantaliver *h*, carrying an antifriction-roller R in suitable bearings, which travels on an annular track K, fixed to a crab M, running on overhead girders *m*, which may be fixed or form part of a traveling or swing crane, according to the arrangement of the furnaces or retorts the apparatus is intended for. The crab M is provided with a wheel *g*, by which and the wheel I, the cantaliver *h*, and roller R the pressure of the load on the scoop is transferred to the said girders *m*.

The essential characteristics of this invention are the longitudinal division of the scoop and the simultaneous motion of the two parts of the same to both sides and upward along the walls of the furnace and the support of the same from one end in a carriage vertically adjustable in a frame capable of being turned, as well as in the transfer of the pressure of the load in the scoop by means of a roller R, mounted on a cantaliver *h*, an annular track K, fixed to a crab, and wheels *g* and *i* on the crab to overhead girders *m* for the purpose of protecting the walls of the furnace from injurious contact with the scoop.

I claim as my invention—

1. A longitudinally-divided scoop for charging furnaces and the like, the two halves A, A of which are each carried by a bar *c* fixed at one end only to a boss *b* of a shaft *a*, said shafts being parallel and connected by spur-wheels fixed thereon.

2. In apparatus for charging furnaces and the like, the combination of a carriage B adapted to be raised and lowered on a frame

D and provided with wheels *n*, *o* running on said frame, two parallel shafts *a*, *a* mounted in bearings in said carriage, spur-wheels *e* on the shafts gearing with each other, bosses *b* on said shafts to which bars *c*, *c* are fixed, each of which supports one-half A of a scoop divided longitudinally in the center of its bottom, and a handle on one of said shafts.

3. In apparatus for charging furnaces and the like, the combination of a carriage B carrying from one end a longitudinally-divided scoop, with a frame D suspended revolubly on a pivot fixed in a crab M adapted to travel on overhead girders *m*, an annular track K fixed to said crab, a cantaliver *h* fixed to said frame and carrying in bearings a roller R running on said track, wheels *i*, *g* on the crab above and below the said girders *m* adapted to transfer the pressure of the charged scoop to the girders, and means for guiding, raising and lowering said carriage on said frame.

4. In apparatus for charging furnaces and the like, the combination of a scoop divided longitudinally in the center of its bottom, bars *c*, *c* each carrying one-half A of the said scoop, parallel shafts *a*, *a* with bosses *b*, *b* to which said bars are fixed at one end, spur-wheels *e e* on said shafts in gear with each other, a carriage B supporting said shafts in bearings, a vertical frame D suspended revolubly on a pivot C, rollers *n*, *o* mounted on the carriage and adapted to travel on said frame and guide the carriage B, a crab M adapted to travel on overhead girders *m* and having said pivot fixed to it, an annular track K fixed to said crab, a cantaliver *h* fixed to said frame and a roller R mounted in bearings thereon and adapted to travel on said annular track, and wheels *g*, *i*, mounted on said crab and adapted to transfer the pressure of the charged scoop to the overhead girders.

5. In a device for charging furnaces, a longitudinally-divided two-part scoop, rotatable supports to which the two parts are connected, means for rotating said supports to swing apart the two parts of the scoop to discharge its contents, and a vertically-movable carriage carrying the supports of the scoop, substantially as described.

6. In a device for charging furnaces, a longitudinally-divided two-part scoop, rotatable supports to which the two parts are connected, means for rotating said supports to swing apart the two parts of the scoop to discharge its contents, a vertically-movable carriage carrying the supports of the scoop, and a rotatable frame to which the carriage is connected, substantially as described.

In testimony whereof I have hereunto subscribed my name in the presence of two witnesses.

CHRISTIAN EITLE.

Witnesses:
CARL DIEM,
H. E. REICHARD.