No. 891,863. PATENTED JUNE 30, 1908.

R. RÜCKELS.

LID LIFTING APPARATUS FOR PIT FURNACES.

APPLICATION FILED AUG. 6, 1907.

Fig. 2.

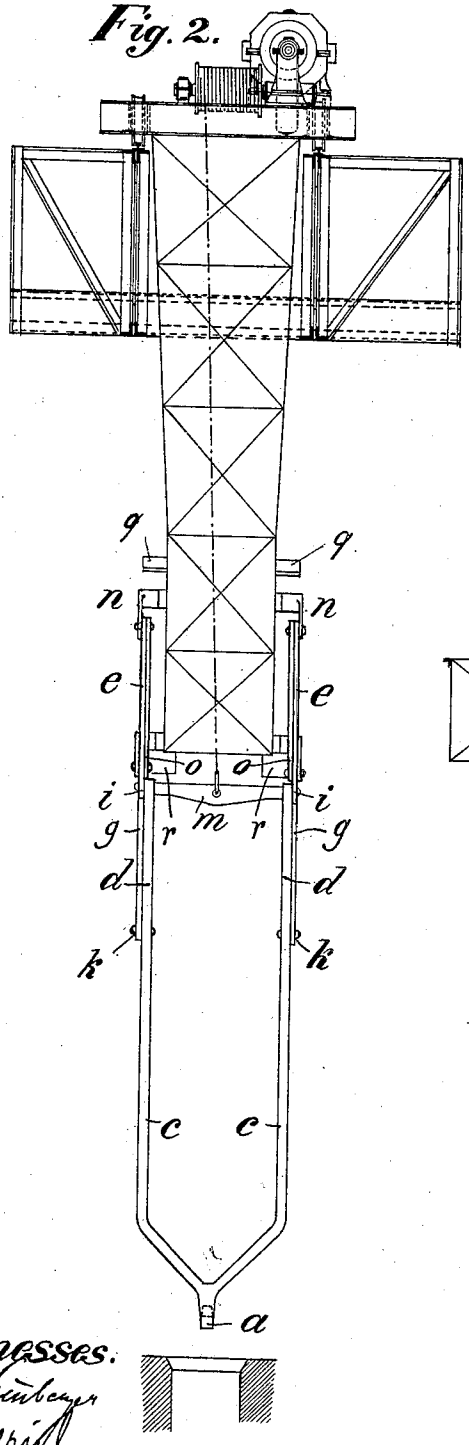
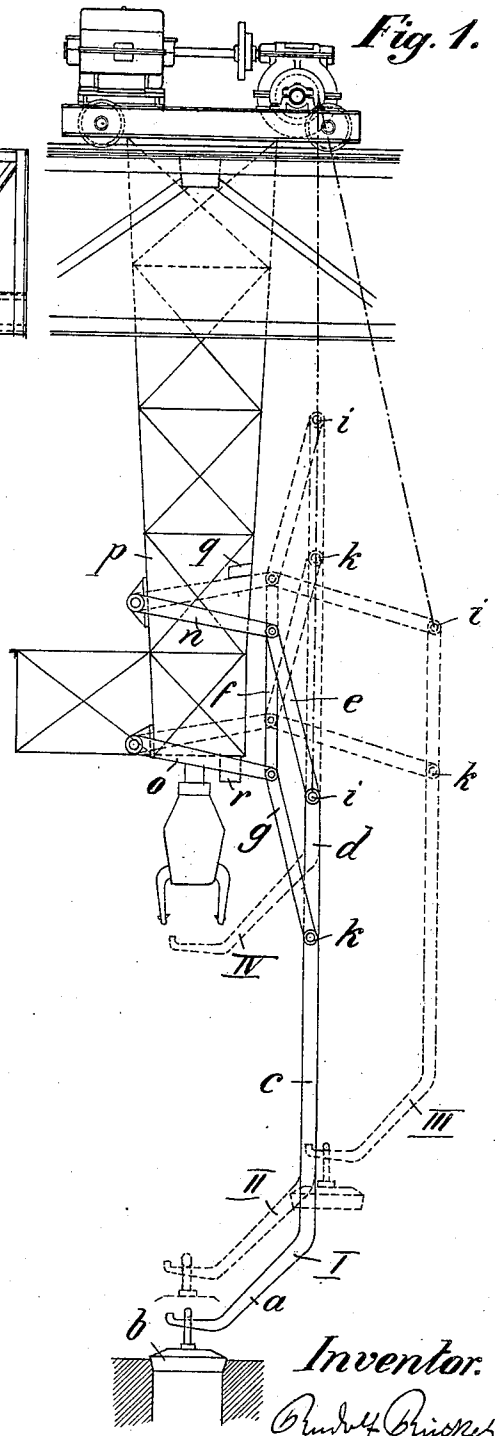


Fig. 1.



Witnesses.

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UNITED STATES PATENT OFFICE.

RUDOLF RÜCKELS, OF DUSSELDORF, GERMANY.

LID-LIFTING APPARATUS FOR PIT-FURNACES.

No. 891,863. Specification of Letters Patent. Patented June 30, 1908.

Application filed August 5, 1907. Serial No. 387,148.

To all whom it may concern:

Be it known that I, RUDOLF RÜCKELS, a subject of the King of Prussia, and resident of Dusseldorf, in the Province of the Rhine, German Empire, have invented certain new and useful Improvements in Lid-Lifting Apparatus for Pit-Furnaces, of which the following is an exact specification.

My invention relates to improvements in lid lifting apparatus for pit furnaces. This apparatus is especially intended to work in connection with cranes and charging machines which lift the blooms from or into the pit-furnace.

According to my invention the lid-lifting apparatus is attached to a parallelogram of levers or similar device which is constrained to move in the direction of the center line of the pit. This constrained movement may be regulated through rods connecting the parallelogram with the crane-structure or other suitable support and revolving about the latter or by guiding between fixed rails, that portion of the parallelogram, which is situated opposite the rod, which carries the hook.

In the drawing, Figure 1 is a side elevation of the lid-lifting device as connected with a pit-crane and showing in dotted lines several different positions of the lid-lifting member; and Fig. 2 is an end elevation of the same.

The hook *a* which carries the lid *b* is connected to fork *c*, which is suspended from above at *i* and *k* in such a way as to form parts of parallelograms *d*, *e*, *f*, *g*.

Points *i* are joined by a distance-piece *m*, to which the end of the lifting rope is attached. The parallelograms *d*, *e*, *f*, *g* are also connected to the crane-structure *p* by means of connecting rods *n* and *o*. The projecting pieces *q* and *r* limit the stroke of *n* and *o*.

After the lifting motion has been started the hook *a* and lid *b* are caused to rise vertically until rod *n* strikes the projecting piece *q* as shown by dotted lines in position II. As the lifting motion continues the parallelogram opens and the lid is caused to move sidewise into position III.

After the bloom has been taken from or put into the pit the off going hoisting rope will allow the lid to return into place. Hook *a* will first return into position II and the lid will sink vertically as fork *c* and the hoisting rope will form one vertical line. During that part of the motion rod *n* leaves piece *q* and moves downwards until the lid closes the pit.

The highest position IV, which corresponds to position II, will allow of passing over obstacles while the crane is traveling through the shop.

Having thus fully described the nature of my invention, what I desire to secure by Letters Patent of the United States is:

1. In a lid-lifting apparatus for pit furnaces, the combination with a support; of a parallelogram of levers movable thereon in a direction parallel to the center-line of the pit; and a hook connected with one of the levers forming said parallelogram.

2. In a lid-lifting apparatus for pit furnaces, the combination with a support; of a double parallelogram of levers movable thereon in substantial parallelism to the center-line of the pit; and a hook formed at the junction of the extensions of two homologous sides of the double parallelogram.

3. In a lid-lifting apparatus, the combination with the crane support; of a collapsible skeleton parallelepiped of levers having two of its parallel levers extended to form a hook connecting rods each pivoted at one end to the crane support and at the other to the parallelepiped; and a hoisting rope supporting the parallelepiped.

4. In a lid-lifting apparatus, the combination with the crane support; of two parallelograms of levers having two of the homologous sides extended and united at their outer ends to form a hook; a distance piece connecting the two parallelograms in such manner as to maintain the homologous sides of the same parallel to each other; a hoisting rope attached to the distance piece; and means permitting the parallelograms to be raised and lowered upon the crane support.

The foregoing specification signed at Dusseldorf this twenty-sixth day of March, 1907.

RUDOLF RÜCKELS.

In presence of—

ALFRED POHLMEYER,

M. ENGELS.