No. 643,153. Patented Feb. 13, 1900.

W. E. PAYNE & F. L. JOUBERT.

REVOLUBLE GRATE FOR BAGASSE FURNACES.

(No Model.) (Application filed Oct. 14, 1896.)

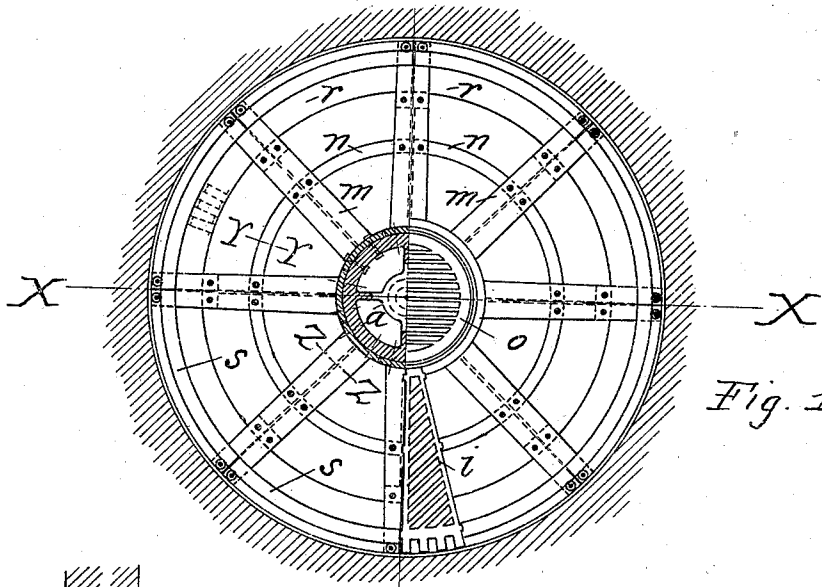
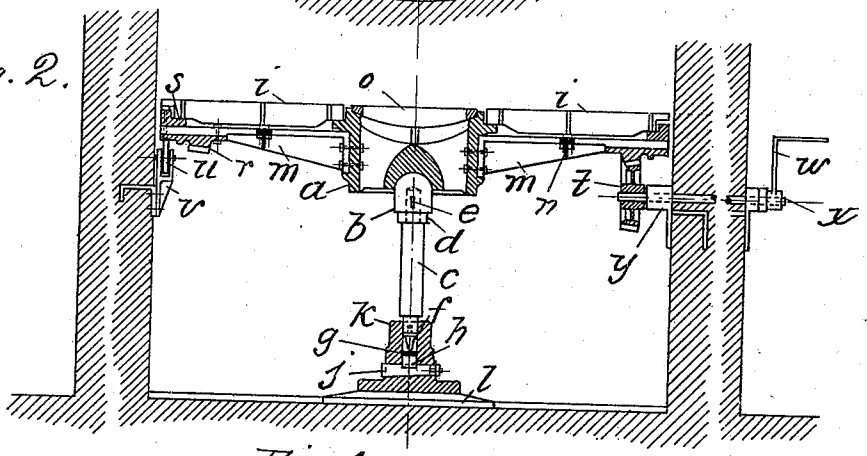


Fig. 1.

Fig. 2.



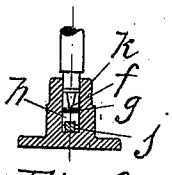


Fig. 3.

Fig. 4.

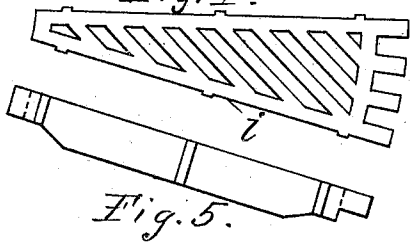


Fig. 5.

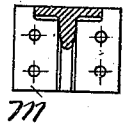


Fig. 6.

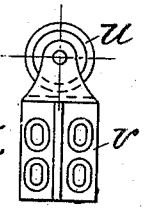


Fig. 7.

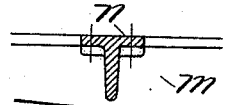


Fig. 8.

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REVOLUBLE GRATE FOR BAGASSE-FURNACES.

SPECIFICATION forming part of Letters Patent No. 643,153, dated February 13, 1900.

Application filed October 14, 1896. Serial No. 608,842. (No model.)

To all whom it may concern:

Be it known that we, WALTER E. PAYNE and FREDERIC L. JOUBERT, citizens of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented a new and useful Improvement in Grates for Bagasse-Furnaces, of which the following is a specification.

Our invention relates to such furnaces or ovens as are adapted to the combustion and utilization as steam fuel of the woody-fiber residue resulting from the extraction of the saccharine juices from the sugar-cane by the roller-mill process, said residue being known as "bagasse," "megass," &c., or such furnaces as are adapted to a similar utilization of any substance of a fragmentary character derived from wood, such as sawdust, bark, &c.

The object of our invention is to provide a fire-grate of a circular form operating in connection with a circular furnace or oven and of such construction that the grate may be rotated on its center at will, thereby bringing any portion thereof opposite any one of the openings provided in the furnace-walls, thus rendering it possible to keep the grate free from slag and other deposits of combustion, also facilitating a better distribution and more regular and thorough combustion of fuel than is possible with the means heretofore employed. We attain these objects by the construction shown on the accompanying drawings, in which—

Figure 1 is a partial plan and a partial horizontal section of our grate. Fig. 2 is a vertical section of same on the line X X. Fig. 3 is a section through the step-bearing *k*, taken at right angles to the line X X. Fig. 4 is a plan of one of the grate-bars Z. Fig. 5 is an elevation of same. Fig. 6 is a vertical section through one of the radial arms *m* on the line Z Z. Fig. 7 is an elevation of one of the rim-rollers *u* and brackets *v*. Fig. 8 is a section through the intermediate bearing-ring *n* on the line *y y*.

The construction and mode of operation of our grate are as follows:

The grate consists, essentially, of the central spider *a*, mounted upon the hemispherical stub *b*, which is itself carried by the spindle *c*. The collar *d* and key *e* serve to keep the stub *b* in position at the end of the spindle *c*. At the lower end of the spindle *c* the hardened-steel tapered pivot *f* is provided, which, with the hardened-steel disk *g*, forms the support for the entire grate and permitting its being rotated with least effort. The saddle *h* and wedge *j* serve to raise the disk *g* as the pivot-point *f* is worn away, thus keeping the grate at a constant height above the floor of furnace. The disk *g*, saddle *h*, and wedge *j* are severally situated in the step-bearing *k*. The wedge *j* is held in position horizontally by a nut and washer at the small end of wedge and bearing against a boss formed on the side of step-bearing *k*. The step *k* is bolted to the circular base-plate *l*, resting upon a foundation of masonry and suitably anchored thereto.

To the periphery of the central spider *a* are bolted the radial arms *m*, to which are attached the circular ring-sections *n*, the latter serving as a rest for the grate-bars *i* when they are drawn away from their support on the ledge, forming part of the periphery of the central spider *a*, the sections *n* being attached to the under sides of the radial arms *m*. The combination circular rack and rail sections *r* are fixed near the extremities of the radial arms *m* at their under sides and form, in connection with the pinion *t*, the means for revolving the grate whenever this is found necessary, the outer or rail portion forming a bearing for the rollers *u*, these being journaled in the adjustable brackets *v*, anchored in the walls of the furnace. The pinion *t* is operated by means of the crank *w*, both crank and pinion rotating with the shaft *x*, which works in the bearings *y y*, these being anchored in the furnace-walls. The grate-bars *i* are supported at their inner ends by a ledge formed on the periphery of the central spider *a* and at their outer ends by the ring formed of the segments *s*, the latter being bolted to the upper sides of the radial arms *m*. The circular central grate-piece *o*, resting upon a ledge formed on the inner side of the spider-rim, serves to complete the surface of the grate.

In setting the grate the practice is to drop both the pinion and the rollers slightly below the place of absolute contact with the rack

and rail, thereby allowing the grate to be overbalanced and tilted to any side, this being rendered possible by the spherical bearing at the center of grate. The greater portion of the weight is thus carried by the pivot *f*, thereby permitting rotation of the grate with the least amount of effort at the crank *w*.

As is shown in the several views, a space is left between the edge of the grate and the inner surface of the furnace-walls, its function being to admit of a current or blast of air, thereby preventing a gathering of slag or silica around the edge of the grate, these substances tending to cause the adhesion of the grate to the wall of furnace, such as would interfere with the turning of grate for the purposes set forth.

As it becomes necessary to remove the incombustible residue—such as clinker, slack, &c.—from different portions of the grate-surface, the same may be rotated in the manner heretofore described and any portion thereof be brought opposite any one of the furnace-doors, through which it may be withdrawn from the grate.

What we claim, and desire to secure by Letters Patent, is as follows:

The combination in a revoluble circular grate, of a bottom step-piece *k*, having a flange at its lower end, said flange being bolted to a suitable base-plate; step being bored to receive a vertical spindle *c*; the wedge-shaped bar *j* resting in a horizontal slot for adjusting the height of said spindle, the saddle *h* resting on said bar, and the disk *g* situated between the saddle and the spindle, substantially as described.

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