G. A. STANTON.

TALC ORE ROASTER.

APPLICATION FILED SEPT. 21, 1910.

988,396. **Patented Apr. 4, 1911.**

3 SHEETS—SHEET 1.

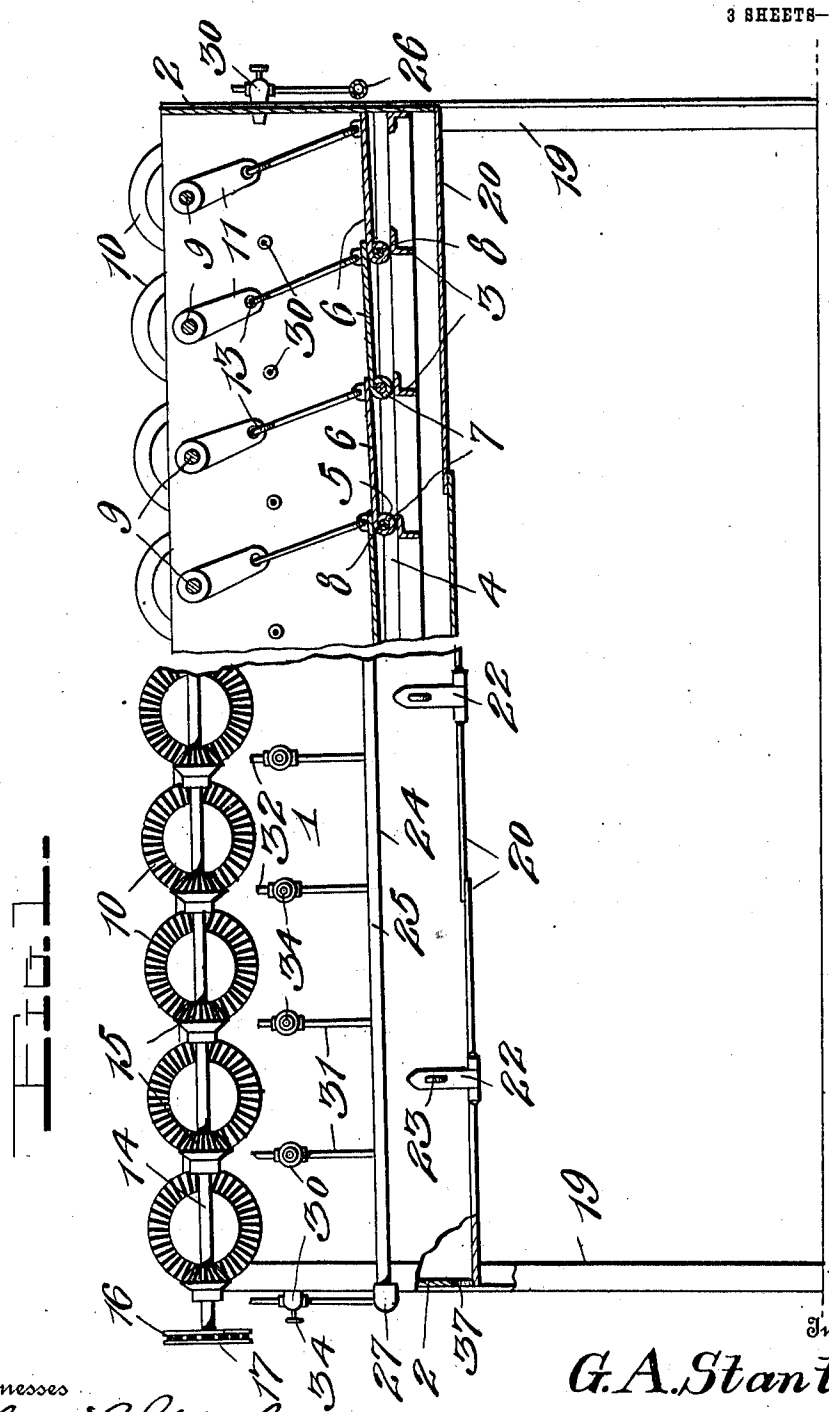

FIG. 1.

Witnesses

Chas. L. Griesbauer.

M. F. Peeler.

Inventor

G. A. Stanton,

By Watson E. Coleman.

Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

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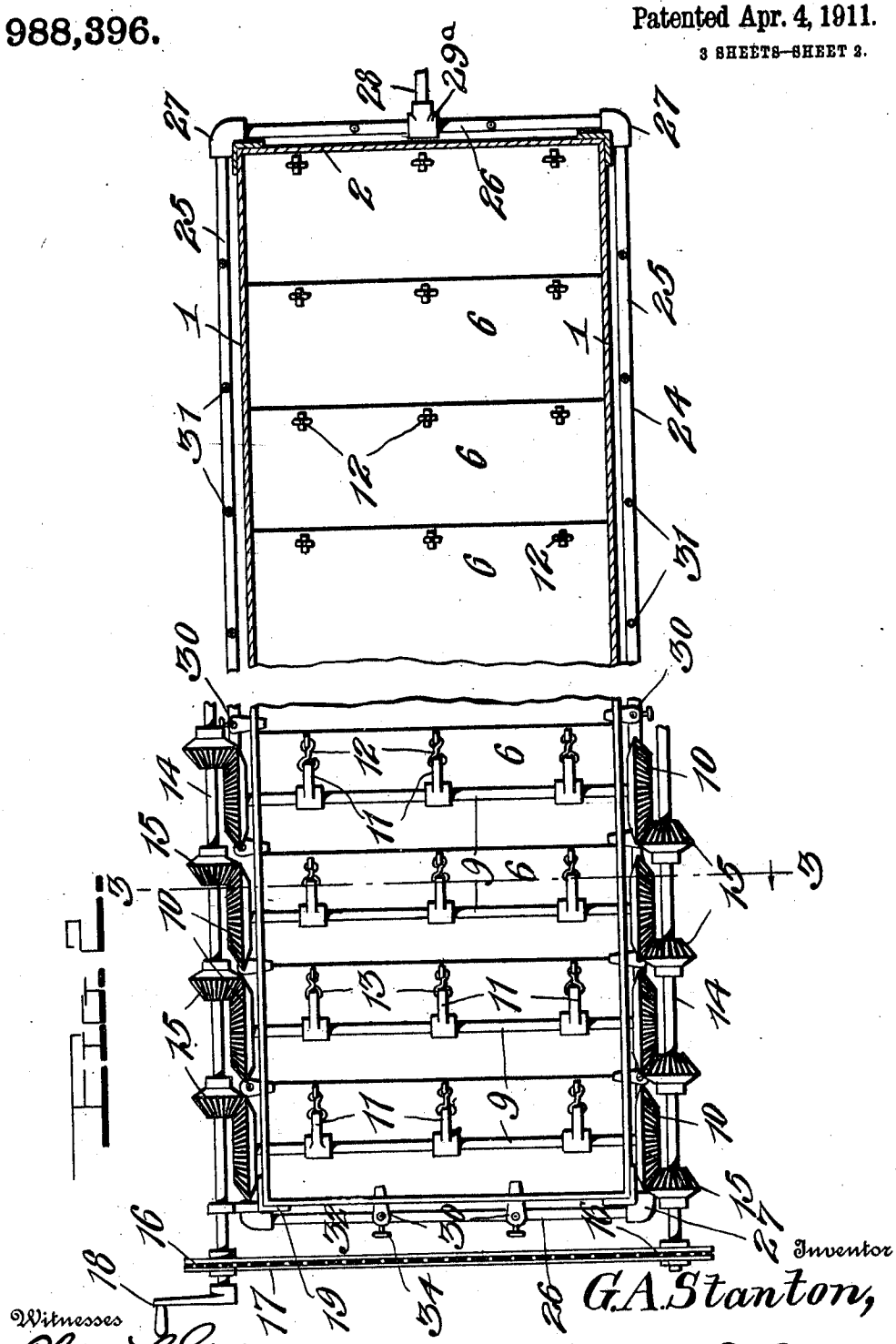

Witnesses

Alex. L. Friesbauer

H. H. Pecaut.

Inventor

G. A. Stanton,

By Watson E. Coleman.

Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

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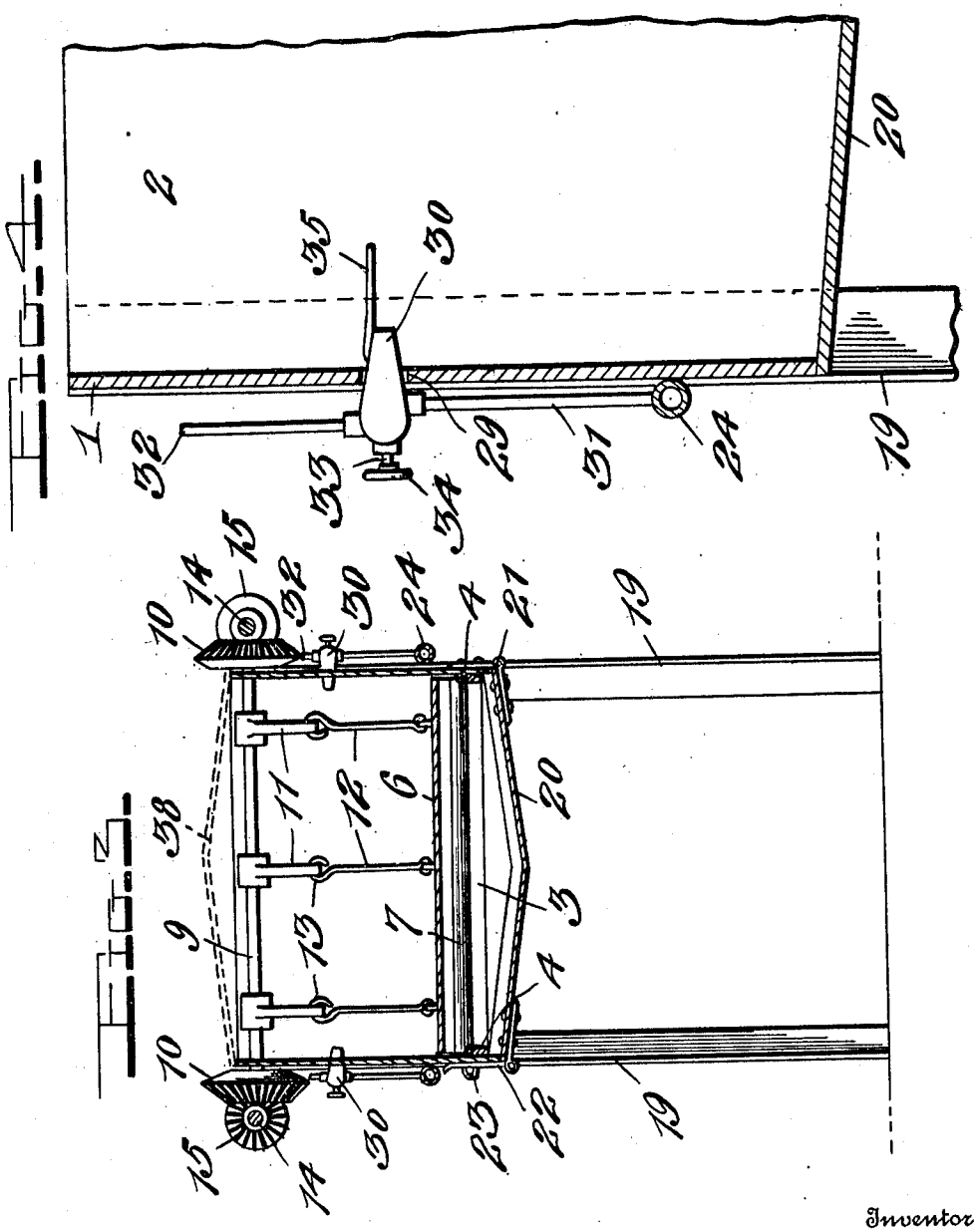

Inventor

G. A. Stanton,

Witnesses

Chas. L. Griebauer.

M. F. Reeder

By Watson E. Coleman.

Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE A. STANTON, OF CHICO, CALIFORNIA.

TALC-ORE ROASTER.

988,396. Specification of Letters Patent. Patented Apr. 4, 1911.

Application filed September 21, 1910. Serial No. 583,069.

To all whom it may concern:

Be it known that I, GEORGE A. STANTON, a citizen of the United States, residing at Chico, in the county of Butte and State of California, have invented certain new and useful Improvements in Talc-Ore Roasters, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in ore roasters, and especially to improvements in roasters for treating talc and other finely comminuted ores for recovering metal, especially gold therefrom, the invention consisting in the construction, combination and arrangement of devices hereinafter described and claimed.

In the accompanying drawings,—Figure 1 is partly a side elevation, and partly a vertical longitudinal central sectional view of an ore roaster constructed in accordance with my invention. Fig. 2 is partly a plan and partly a horizontal sectional view of the same on the plane indicated by the line *a*—*a* of Fig. 1. Fig. 3 is a vertical transverse sectional view of the same, on the plane indicated by the line *b*—*b* of Fig. 2, and, Fig. 4 is a detail section.

The body of my improved roaster comprises a pair of vertical side plates 1 and a pair of vertical end plates 2. Transverse angle bars 3 connect the side plates and are disposed near the bottom of the body, and are spaced appropriately apart, the said cross bars 3 supporting longitudinally disposed bars 4, which extend from end to end of the body and are also appropriately spaced apart. The said bars 4 are provided in their upper sides with bearing notches 5. Bottom plates 6 are each provided at one side with a bearing portion 7 formed by bending the said side of the plate around a stiffening rod 8. The said bearing portions of the said bottom plates are disposed in the bearing notches 5 of the bars 4, so that pivotal connections are effected between the said bottom plates and the said bars 4, and the free side of each bottom plate partially overlaps the bearing portion of the next bottom plate as shown in Fig. 1, so that the bottom plates, when closed, are disposed in partial overlapping relation as well as being pivotally mounted. Above each bottom plate 6 is a transversely disposed rock shaft 9 which is journaled in bearings in the sides of the body near the top thereof. Each of the said rock shafts is provided at its ends with oppositely disposed beveled gears 10, and each of the said rock shafts is also provided with a series of crank arms 11. Rods 12 have their lower ends connected to the plate 6 at points near the free sides of said plate and their upper ends hooked as at 13 to the said crank arms. A pair of shafts 14 which are mounted in suitable bearings are disposed longitudinally of the body on opposite sides thereof and are provided with bevel gears 15 which engage the gears 10 of the rock shafts 9. The said shafts 14 are provided near their ends with sprocket wheels 16 which are connected together by endless sprocket chains 17. Cranks 18 are here indicated for turning the shafts 14. It will be understood that when either of the said shafts 14 is turned, corresponding motion will be communicated to the other and the said shafts being geared to the rock shafts 9 will turn the said rock shafts and hence cause the crank arms and rod connections hereinbefore described between the said shafts and the said bottom plates to raise or lower the said bottom plates according to the direction in which said shafts 9 are turned, so as to either close the bottom plates or else dispose them in an inclined position to open the spaces between them and cause material thereon to be dumped or discharged by gravity therefrom.

In the embodiment of the invention here shown, supporting posts 19 are employed at the corners of the roaster to support the same at the desired elevation, the said supporting posts being constructed of angle iron, the webs of the said posts bearing against the side and end plates of the roaster at the corners thereof, as shown in Fig. 2.

Doors 20 which are disposed in partial overlapped relation with respect only to length, are employed to close the bottom of the body of the roaster. The said bottom doors are made of metal plates bent to form downwardly converging sides so that the said plates are substantially trough-shaped and each of the said bottom doors or plates is connected to one side of the body of the roaster, by means of a hinge 21, and is provided at the opposite side with a hasp 22 for engagement with a staple 23 which projects from one side of the body of the roaster, said hasps and staples serving to secure the bot-

tom doors in closed position as shown in Fig. 3, and enabling them to be swung downwardly to open position.

An oil supply pipe 24 extends around the body of the roaster at a suitable distance from the lower side thereof, and comprises side sections 25, and end sections 26 which are connected together by angle bends or unions 27. A feed pipe 28 is connected to one of the end sections by means of a tee 29^a. The side and end plates 1, 2 of the body of the roaster are provided with openings 29 at a suitable elevation and above the bottom plates 6, and through each of the said openings extends the inner end of an oil burner 30 which is supplied with oil from the pipe 24 by a branch pipe 31 and is supplied with air by a pipe 32. Each of the said burners is provided with a valve 33 operated by means of a hand wheel 34.

While I have herein termed the pipe 24 an oil pipe, it may in fact be a pipe to supply oil, gasolene, or other suitable liquid hydrocarbon to the burners for use thereby as fuel. It will be understood that the burners which I employ are of a type which is well known, and which serves to mix air and the vapor of liquid hydrocarbon to produce a highly inflammable mixture which is directed by the burners through the openings 29 into the body or oven of the roaster. Suitable deflectors indicated at 35 are in practice employed in connection with the burners to direct the flame from the burners against the body of ore on the bottom plates so as to cause the burners to act as blow-pipes and melt the mineral in the ore. The melted mineral is disposed from the bottom plates into the trough shaped bottom doors 20, and these being disposed in partial overlapped relation are slightly one below another, so that they form an inclined trough extending from end to end of the roaster, and hence the melted ore is discharged from the lower end of the said inclined trough through an opening 37. The plates 6 may be moved from time to time by the means hereinbefore described, to stir the body of ore thereon and present new ore surfaces to the action of the flames and may be elevated or inclined to the required extent to discharge the ore therefrom. The bottom doors 20 admit of the final discharge of the ores from the roaster.

A cover or top for the roaster is indicated at 38 in dotted lines in Figs. 2 and 3.

The transverse angle bars 3 which support the bars 4 at points directly under the bearing portions 8 of the bottom plates 6, greatly strengthen the construction of the roaster and enable the bars 4 and the bottom plates to sustain the weight of the ore and prevent said bars and bottom plates from becoming warped and distorted.

I claim:—

1. An ore roaster of the class described comprising an oven or body provided with a series of bottom plates disposed in partial overlapped relation and mounted for angular movement in a vertical plane, and means for operating said bottom plates, each of said bottom plates having a bearing portion and the said roaster being provided with longitudinally disposed supporting bars having notches in their upper sides, engaged by the said bearing portions of said bottom plates, and cross bars connecting the sides of the roaster and bearing against the under sides for supporting the said supporting bars.

2. An ore roaster of the class described comprising an oven or body, bottom doors therefor removable therefrom, and disposed in partial overlapped relation, the said doors being substantially trough-shaped and by reason of their overlapping relation forming an inclined trough under and extending from end to end of the oven, bottom plates in the oven disposed in partial overlapped relation and mounted for angular movement in a vertical plane, means to operate said bottom plates and burners to direct jets of flame into the oven above the said bottom plates.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

GEORGE A. STANTON.

Witnesses:
A. VAUGHAN,
J. A. MCMANUS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."