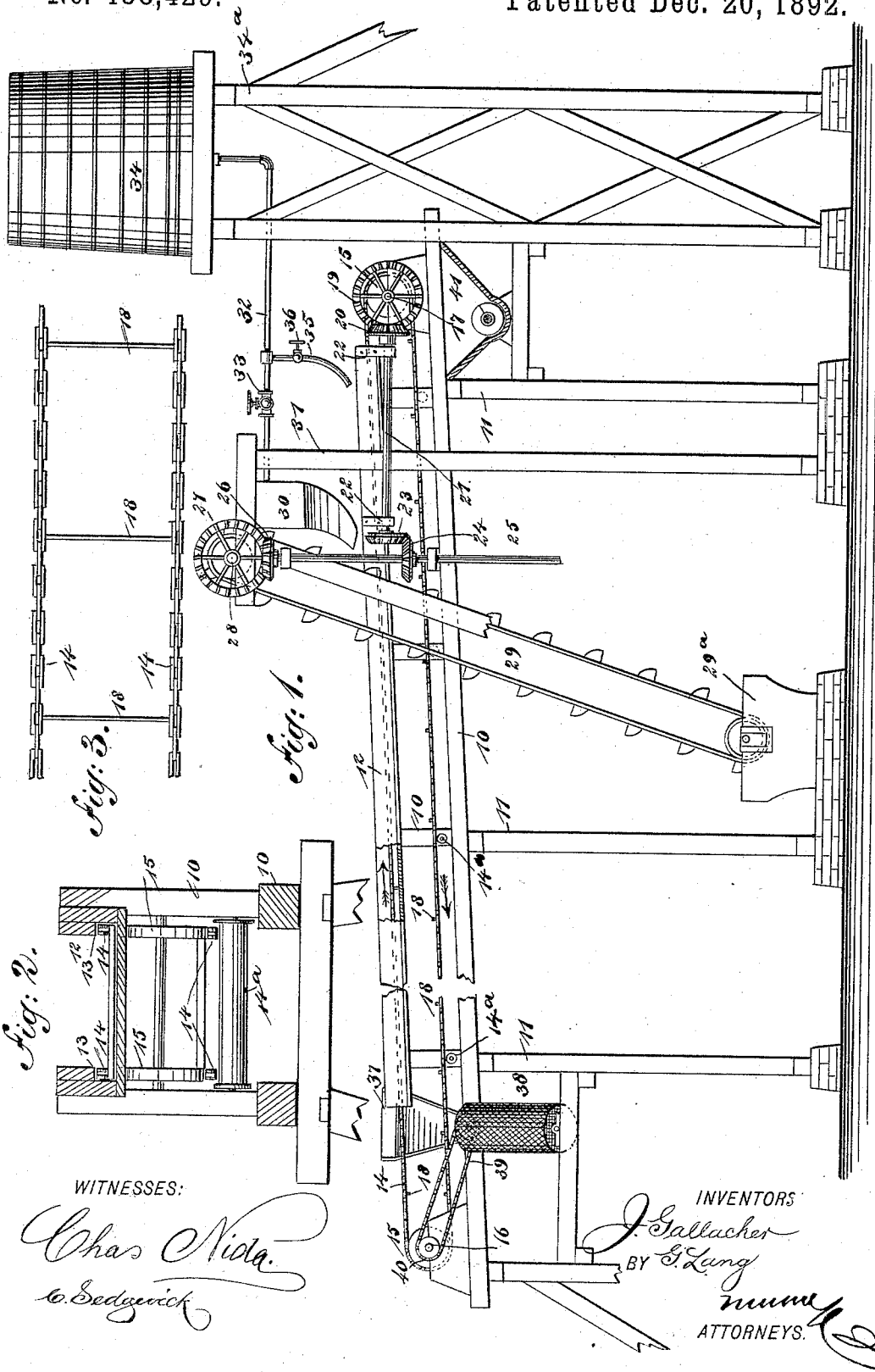


(No Model.)

J. GALLACHER & G. LANG.
COAL WASHING MACHINE.

No. 488,429.

Patented Dec. 20, 1892.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JAMES GALLACHER AND GEORGE LANG, OF CHICKASAW, ALABAMA.

COAL-WASHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 488,429, dated December 20, 1892.

Application filed July 1, 1892. Serial No. 438,675. (No model.)

To all whom it may concern:

Be it known that we, JAMES GALLACHER and GEORGE LANG, both of Chickasaw, in the county of Walker and State of Alabama, have invented a new and Improved Coal-Washing Machine, of which the following is a full, clear, and exact description.

Our invention relates to improvements in machines for washing coal as it comes from the mine, and the object of our invention is to produce a simple machine of cheap first cost, which may be economically operated, which consumes a comparatively small amount of water, which thoroughly washes the coal, which has a very large capacity, and which also thoroughly separates the dirt and refuse from the coal.

To this end, our invention consists in a coal washing machine, the construction of which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a broken side elevation, partly in section, of the entire apparatus; Fig. 2 is an enlarged cross section through the washing trough; and Fig. 3 is a broken plan of the chains and scrapers which move through the trough.

The machine is provided with a long inclined framework 10, which is supported upon trestles 11, and which carries at the top an open-ended trough 12, which is best shown in Fig. 2, and which has slots or grooves 13 in the sides and at the bottom in which the chains 14 run. These chains move longitudinally through the trough and beneath the same, the lower strands of the chains being held to run on rollers 14^a which are journaled in the frame 10. The chains are carried by sprocket-wheels 15 at the ends of the trough, the sprocket wheels being carried by shafts 16 and 17, which are journaled in suitable supports at the ends of the trough. The chains are provided at intervals with transverse scrapers 18, which fit against the bottom of the trough 12, and which move upward on the trough bottom so that the dirt and finer particles of refuse which settle to the bottom of the trough are carried upward, while the coal is carried downward over the scrapers by the water.

The shaft 17 is provided with a gear wheel 19, which meshes with a bevel gear wheel 20 on a shaft 21, and the latter extends nearly parallel with the trough 12, being held to turn in suitable supports 22, and has at one end a bevel gear wheel 23, which meshes with a bevel gear wheel 24 on a vertical driving shaft 25, and the latter extends upward above the trough 12, and has a gear wheel 26 at its upper end meshing with a gear wheel 27, and the latter is carried on a shaft 28 which operates a common form of elevator 29. The elevator 29 extends upward from a point near the ground and delivers the coal and slack into a chute 30, the upper end of the elevator and the chute being both supported on a framework 31, and the chute 30 has a reduced lower end and delivers into the trough 12, near the upper end of the trough. It will be understood that any form of an elevator may be used, and that any suitable driving mechanism may be employed for operating the elevator and the chains 14. A water pipe 32, which is controlled by a valve 33 delivers into the chute 30, the pipe leading from a tank 34, which is held on a framework 34^a at a height above the chute, but the pipe may be connected with any suitable water supply. Provision is thus made for letting the water and coal into the trough together, and a branch pipe 35, which is controlled by a valve 36, leads from the pipe 32 and delivers into the extreme upper end of the trough 12, and by turning on the water through the pipe 35, any coal which has passed upward above the chute 30, will be washed back and a complete separation of the coal and refuse effected. The lower end of the trough 12 delivers into a chute 37, and this delivers into an inclined rotary screen 38 of the usual kind, this screen being driven by a chain 39 connected with a sprocket wheel 40 on the shaft 16. It will be seen then that the coal will be thoroughly washed and also properly screened, so that the pea coal may be separated from the fine slack. The upper end of the trough 12 delivers into a conveyer 41, which is arranged at right angles to the trough, and which carries the refuse off to a suitable dumping place.

The operation of the machine is as follows: The coal as it comes from the mine is delivered in the usual manner into a hopper 29^a, at

the foot of the elevator 29, and the elevator delivers the coal in a constant stream to the chute 30. The water is also turned into the chute through the pipe 32, and into the upper
5 end of the trough 12 through the pipe 35. The chain 14 and scrapers 18 will be in constant motion, the upper members of the chain moving upward through the trough 12, and the constant stream of water and coal which is
10 delivered through the chute 30 will be carried downward through the trough 12 and will meet the downwardly moving scrapers 18. As a result, the coal will be washed over and over and thoroughly cleaned and finally de-
15 livered into the chute 37 and screen 38, while the dirt and refuse will settle to the bottom and be scraped upward by the scrapers 18 and delivered into the conveyer 41.

It will be seen then that the machine will
20 operate very rapidly, and that there is nothing about it to get out of repair.

Having thus described our invention, we claim as new, and desire to secure by Letters Patent,—

25 1. The combination with the inclined trough

having grooves 13 in its sides, of the endless chains arranged in said grooves, one portion of the chains traveling upward over the bottom of said trough while the other portion travels reversely or downward beneath the
30 trough, scrapers attached to the chains and projecting downward therefrom, whereby they work in contact with the trough bottom, and the chute and pipe arranged at the upper end of the latter, all as shown and described. 35

2. The combination with the inclined trough, the upwardly-moving scrapers arranged to move through the trough, and the coal and water-delivering mechanism adapted to discharge into the trough, of a receiving
40 screen and chute arranged at the lower end of the trough, and a conveyer arranged beneath the upper end of the trough, substantially as described.

JAMES GALLACHER.
GEORGE LANG.

Witnesses:

A. M. OAKLEY,
GEORGE ANDERSON.