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PATENTED JUNE 23, 1908.

T. J. MITCHELL & J. A. McCREARY.

APPARATUS FOR COKE OVENS.

APPLICATION FILED JAN. 30, 1908.

2 SHEETS—SHEET 1.

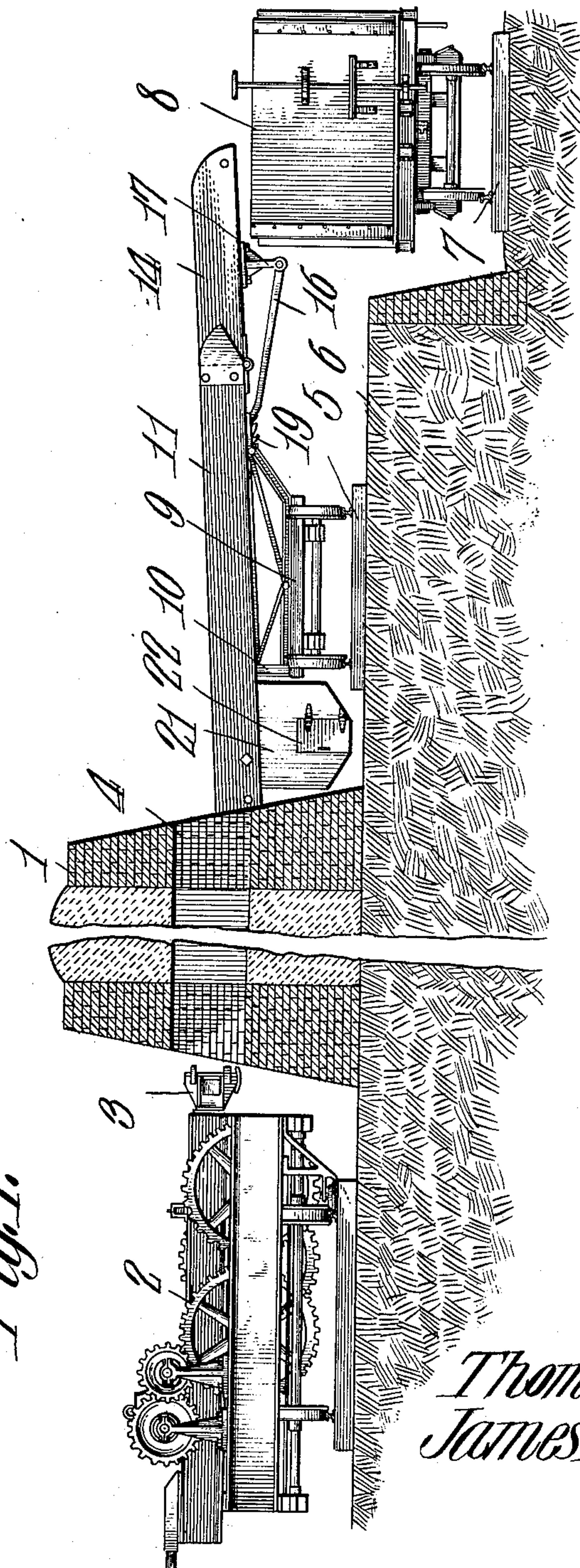


Fig. 1.

Thomas J. Mitchell
James A. McCreary,

Inventors

Witnesses

E. J. [Signature]
H. T. Chapman.

By

C. A. Snow & Co.

Attorneys

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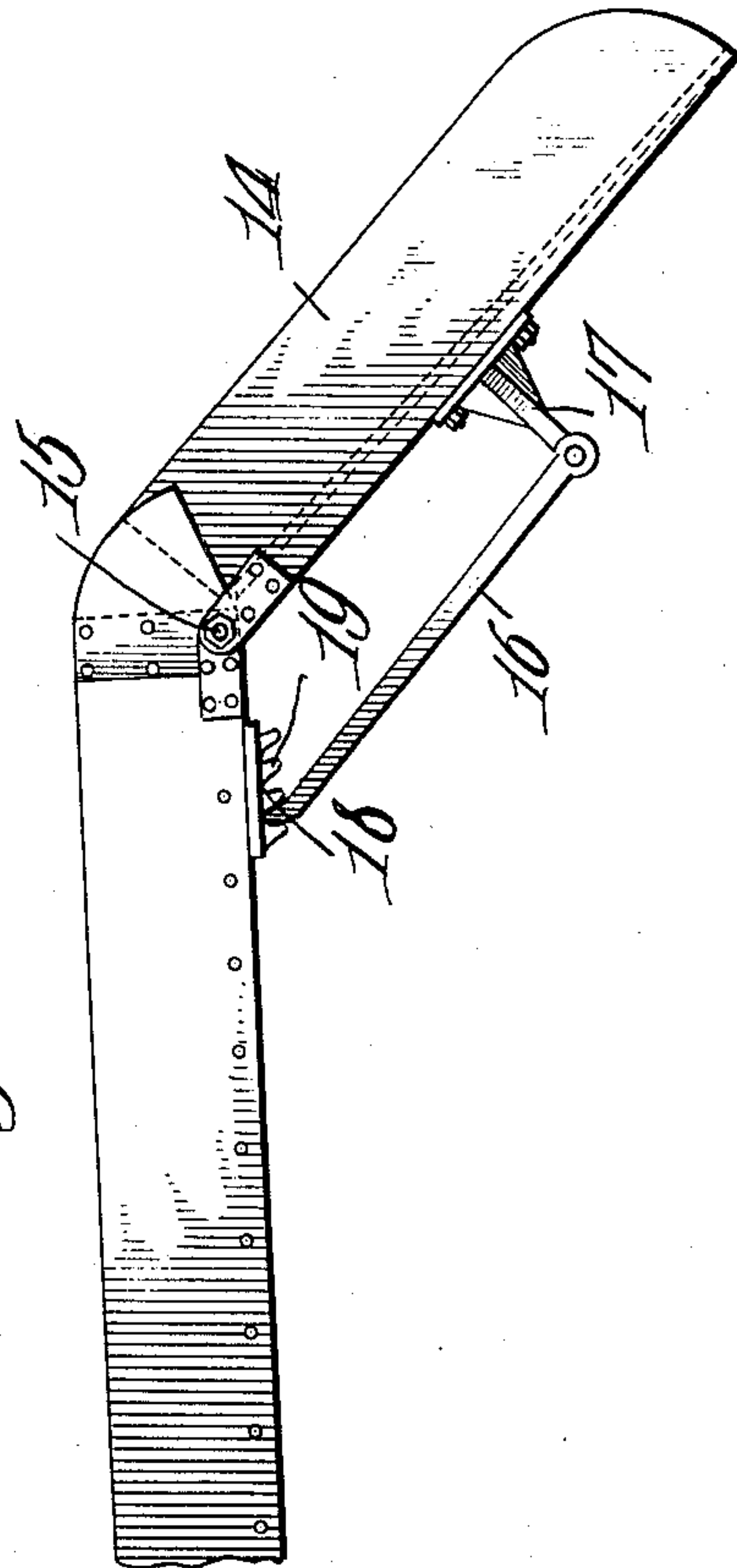
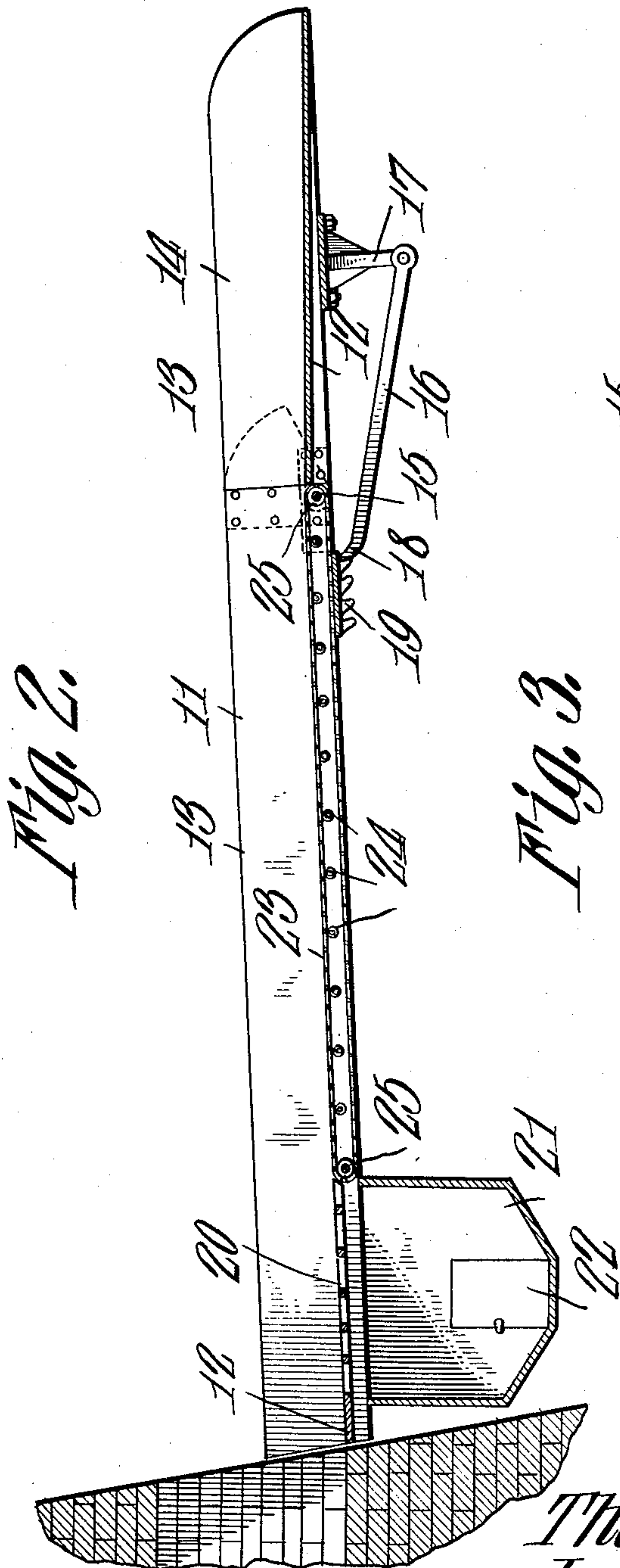
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Thomas J. Mitchell
James A. McCreary ^{and}

Inventors

Witnesses

E. J. Stewart
H. J. Chapman

By

C. A. Snow & Co.

Attorneys

UNITED STATES PATENT OFFICE.

THOMAS J. MITCHELL AND JAMES A. McCREARY, OF UNIONTOWN, PENNSYLVANIA.

APPARATUS FOR COKE-OVENS.

No. 891,355.

Specification of Letters Patent.

Patented June 23, 1908.

Application filed January 30, 1908. Serial No. 413,485.

To all whom it may concern:

Be it known that we, THOMAS J. MITCHELL and JAMES A. McCREARY, citizens of the United States, residing at Uniontown, in the county of Fayette, State of Pennsylvania, have invented a new and useful Apparatus for Coke-Ovens, of which the following is a specification.

This invention has reference to improvements in apparatus for coke ovens, and is designed more particularly for facilitating the removal of the coked charge from the oven and the deposition thereof into cars or other suitable receptacles.

In large coke oven plants, the ovens are arranged in a long series, and usually have immediately adjacent to them car tracks for the ready deposition of the coke, when removed from the ovens, into freight cars for transportation to distant points.

I have devised means which form the subject matter of another application for Letters-Patent, whereby the entire contents of a coke oven after the coking operations have been completed is pushed out at one operation from the ovens, so that the coked mass is maintained in as large lumps as possible for reasons which need not be set forth herein.

The present invention relates more particularly to means whereby the conveying of these large masses of coke from the ovens to cars is greatly facilitated and the invention comprises a conveyer structure mounted upon a truck movable upon tracks immediately adjacent to the series of coke ovens, and this conveyer is constructed to receive the entire charge of the coke oven at one time and to convey such amount thereof as may not be readily contained upon the conveyer into a gondola car. The conveyer is constructed to operate with either a high or low type of cars, and may be moved from oven to oven in order, and co-acts with a suitable mechanism adapted to push the coked charge at one operation from the oven. The structure of the conveyer is such that it may receive the charge directly from the oven and permit a portion thereof to fall into a suitably placed car, then when moved to the next oven, receive the next charge which under the action of the pushing mechanism at the front end of the oven will push that portion of the coke remaining on the conveyer into the car and the newly ejected charge will replace the one first pushed out upon the conveyer.

In order to facilitate the passage of the heavy mass of coke over the conveyer, an endless conveyer structure may be used, and further, in order to prevent the conveying of coke dust and such matters to the cars, a part of the bottom of the conveyer, either adjacent to the exit opening of the oven, or at any other suitable point in the length of the conveyer, may be formed with a suitable screen through which fine particles will gravitate into a receptacle from which they may be removed from time to time.

The invention will be best understood on reference to the accompanying drawings forming a part of this specification, in which drawings,—

Figure 1 is a longitudinal section through a coke oven showing the conveyer in place at the exit end of the oven, and the pushing apparatus in place at the front end of the oven, and, also, showing a car in position to receive the coke. Fig. 2 is a longitudinal section through the conveyer, showing it in position for depositing coke in a deep gondola car, and Fig. 3 is a similar view showing the conveyer in position to deposit coke in a shallow gondola car or box car.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

Referring to the drawings, there is shown a coke oven, which may be of preferred type, and is of suitable shape and length, but in itself forming no part of the present invention; this coke oven is broken in two and only the ends are illustrated. On one side of the oven there is shown a pushing apparatus 2, which in itself forms no part of the present invention, but is made the subject matter of another application, and need not be specially described, further than to state that it is provided with a pushing head 3 and a telescoping carrier therefor, so arranged as to enter and pass entirely through the coke oven to push or force the charge after the coking operation is finished out through the other end opening 4 of the oven.

Within a suitable distance of the exit end of the oven series, it being understood that these coke ovens are arranged in a series of many ovens, there is arranged a track 5 parallel with the series of ovens and within suitable proximity thereto. This track is upon an elevation or plateau 6, at the end of which is located another track 7 connected

with some railway system and designed for the reception of suitable cars 8, which may be of the gondola or box type.

The track 5 is adapted to receive a truck 9 upon which is formed a super-structure 10, designed to receive a conveyer 11, which latter may have its outer end, that is the end remote from the oven, somewhat higher than the oven end. The conveyer structure 10 may be similar to ordinary conveyers, that is, it comprises a bottom 12 with spaced side members 13, so that when the lower end of the conveyer is in coincidence with the floor of the oven and opposite the exit opening 4, then the charge of coke forced out from the oven under the impulse of the pushing apparatus 2 is received upon the conveyer and travels along the same until ultimately it drops off of the end of the conveyer into the car 8. In order to adapt the conveyer to cars of different heights, the discharge end may be formed of a section 14 hinged to the main portion of the conveyer, as shown at 15, and any suitable means, for holding this hinged end 14 in position and adjusting the same, may be utilized. In the drawings this is conventionally shown as a latch link 16 hinged to a bracket 17 fast on the section 14 and having its free end formed into a tooth 18 arranged to engage against any one of a number of teeth 19 fast on the under side of the bottom of the conveyer 11. By this means the free end of the conveyer may be maintained in line with the main body of the conveyer, or may be tilted downwardly, as shown in Fig. 3, so as to bring the discharge end of the conveyer close to a low gondola or box car, and then the heavy masses of coke will fall but a comparatively short distance before reaching the car.

There is a liability of there being in the mass of coke material more or less coke dust or dirt, or ashes, and in order to prevent this from being carried to the car, the bottom of the conveyer at the end immediately adjacent to the discharge end of the oven, as indicated in the drawings, or some other part of the conveyer, if so desired, may be formed with slots, as shown at 20, too small to permit the coke falling through them, but allowing the dust and dirt to readily gravitate from the conveyer. To prevent the dust and dirt so extracted from the mass of coke from accumulating along the track 5, the conveyer may be provided with a compartment 21 dependent from said conveyer coincident with the slots or grating 20, and this compartment may be normally closed at each end by a door 22, so that its contents may be readily removable at will.

It is of advantage to reduce the frictional engagement of the coke with the bottom of the conveyer as much as may be, and for this purpose the conveyer may be provided

immediately above its bottom section 12 with an endless belt 23 of any suitable type, say with endless chain supports at the two edges, passing over rollers 24 and returning beneath the floor 12, the belt being supported at each end upon suitable drums 25. This belt need extend only through the main body of the conveyer, and will practically eliminate the friction between the coke and the bottom of the conveyer.

When a charge has been forced out of an oven, the material portion thereof will remain upon the conveyer, and only a comparatively small portion of the first charge will pass from the end 14 into the car 8. The second charge, however, will force the remainder of the first charge from the conveyer, and a certain portion of the second charge will, also, fall into the car. Of course, under these conditions the truck 9 is moved from one coke oven to the next, and the car or cars 8 are appropriately moved until the car is filled, provided each car 8 is too large to be filled by a single oven charge. When the ovens are large enough to contain each a charge sufficient to fill a car, then the cars may remain stationary, while the conveyer is moved from oven to oven.

What is claimed is:—

1. In an apparatus for coke ovens, a conveyer body mounted upon a truck, a fixed grate in the bottom of the conveyer body, a refuse receptacle carried by the conveyer body beneath the grating, and a free endless belt extending lengthwise of the body between the grating and the end of said body.

2. In an apparatus for coke ovens, a conveyer body mounted upon a truck, a fixed grating in the bottom of the conveyer body, and a refuse receptacle carried by the conveyer body beneath the grating, the said grating and the remainder of the coke-receiving surface of the conveyer body being in the same plane.

3. In an apparatus for coke ovens, a conveyer body mounted on a truck, a fixed grating in the bottom of the conveyer body at the receiving end thereof, a refuse receptacle carried by the conveyer body beneath the grating, and a free endless belt extending from the grating toward the delivery end of the conveyer, the active surface of the belt being in the same plane as the top surface of the grating.

4. In an apparatus for coke ovens, a conveyer body mounted on a truck, a fixed grating in the bottom of the conveyer body and the receiving end thereof, a refuse receptacle carried by the conveyer body beneath the grating, and a free endless belt extending from the grating toward the delivery end of the conveyer, the active surface of the belt being in the same plane as the top surface of the grating and the conveyer body being provided with a hinged section beyond the belt.

5 5. In an apparatus for coke ovens, a conveyer body having a fixed grating at the bottom thereof in the path of coke moving along the conveyer, and a refuse receptacle carried by the conveyer below the grating, said receptacle being provided with a closure permitting the removal of the contents of the receptacle.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses. 10

THOMAS J. MITCHELL.
JAMES A. McCREARY.

Witnesses:

CHARLES T. CRAMER,
JAMES M. SMITH.