

No. 727,790.

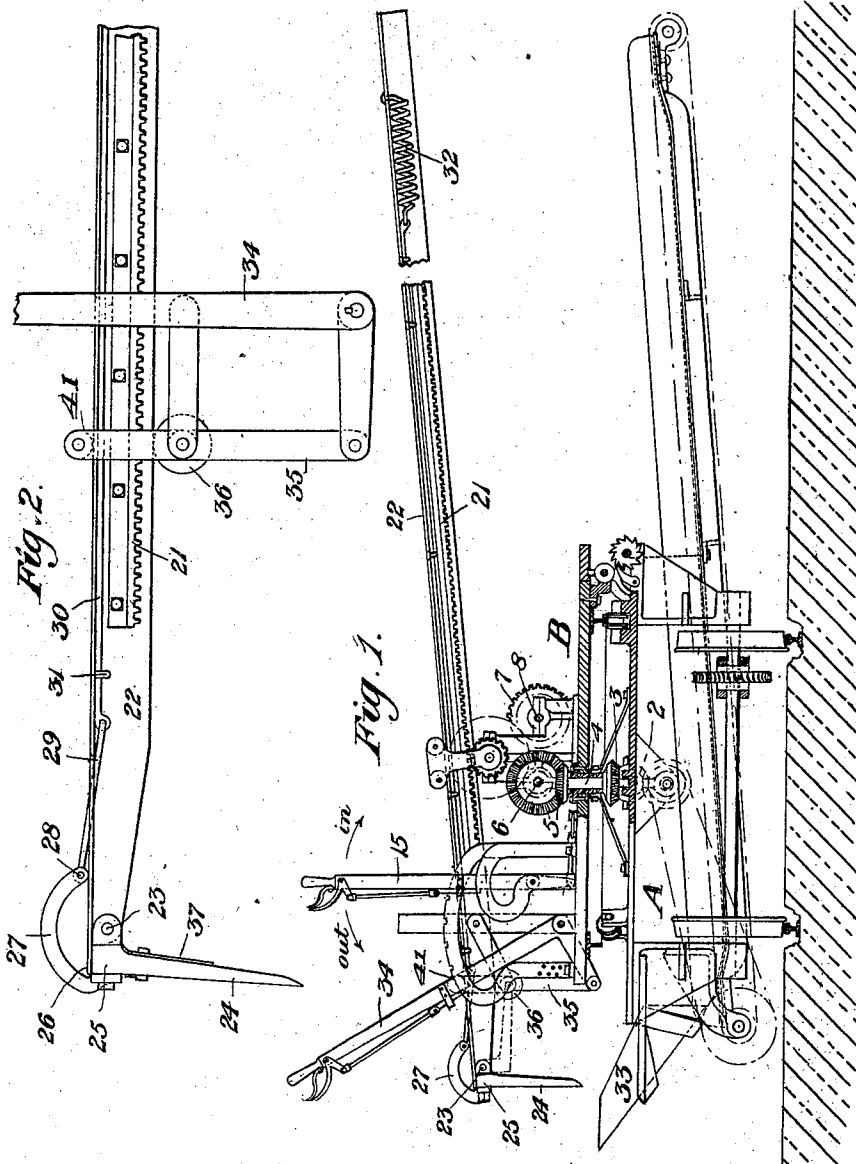
PATENTED MAY 12, 1903.

J. A. HEBB.  
COKE DRAWING MACHINE.

APPLICATION FILED OCT. 5, 1900.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses:  
*J. A. Hebb.*  
*R. H. Fayman*

Inventor:  
*John A. Hebb.*  
*C. M. Clarke*  
his Attorney.

No. 727,790.

PATENTED MAY 12, 1903.

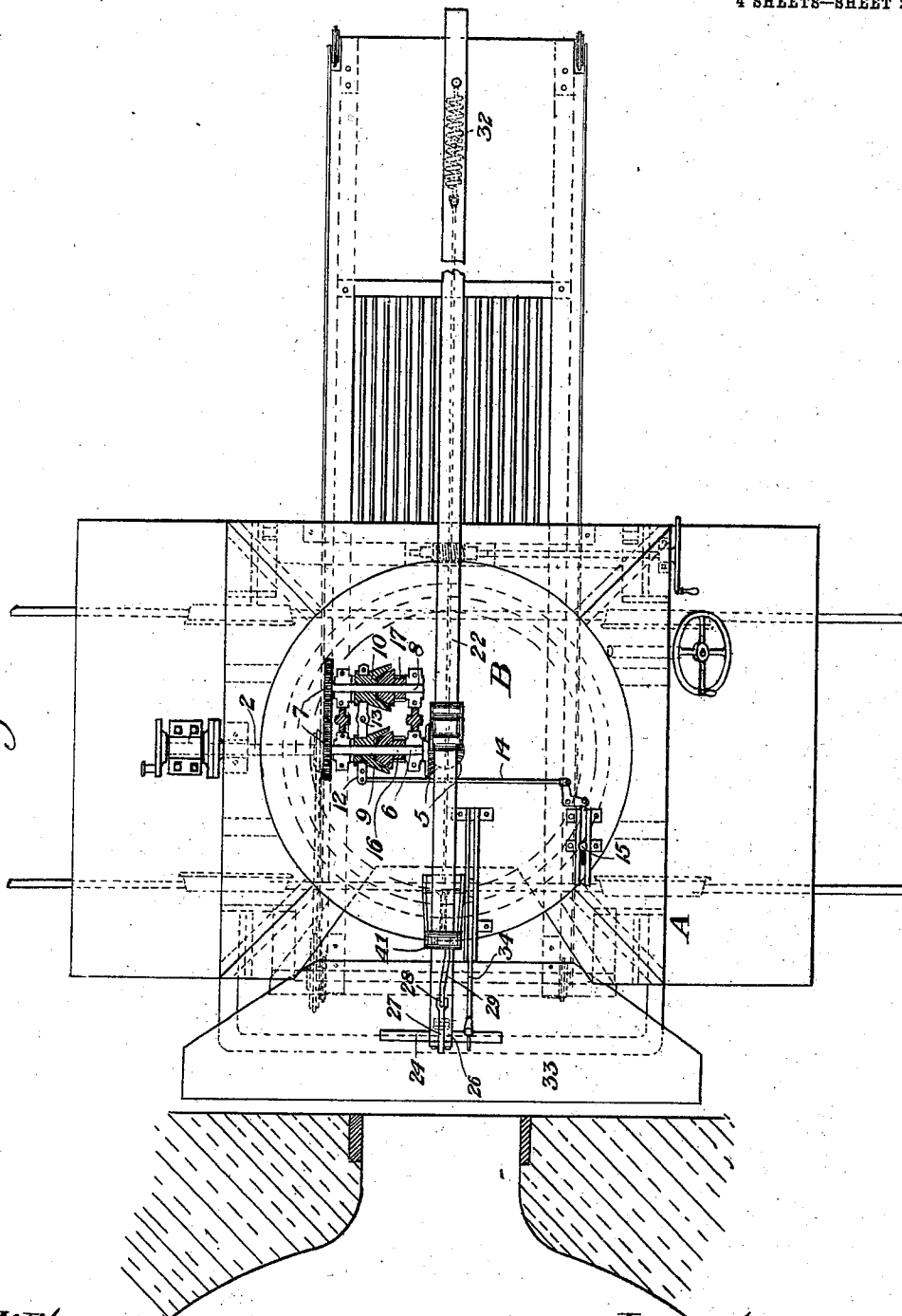
J. A. HEBB.  
COKE DRAWING MACHINE.

APPLICATION FILED OCT. 5, 1900.

NO MODEL.

4 SHEETS—SHEET 2.

Fig. 3.



Witnesses:  
J. A. More.  
R. H. Jayman.

Inventor:  
John A. Hebb  
by C. M. Clarke  
his Attorney

J. A. HEBB.  
COKE DRAWING MACHINE.

APPLICATION FILED OCT. 5, 1900.

NO MODEL.

4 SHEETS—SHEET 3.

Fig. 4.

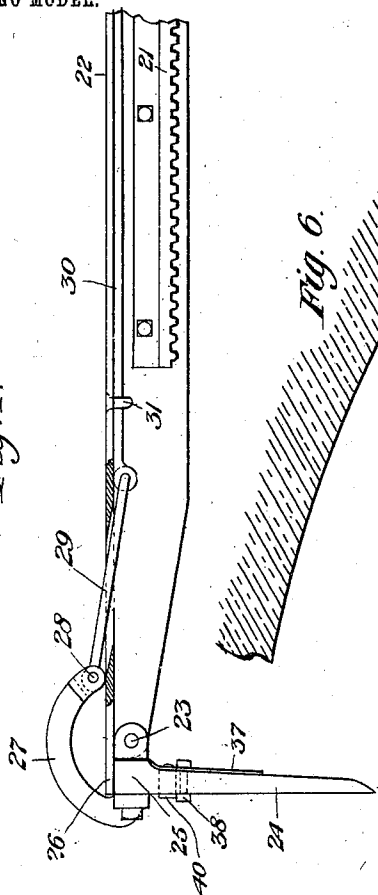


Fig. 5.

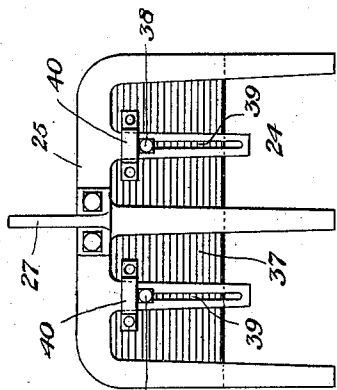


Fig. 6.

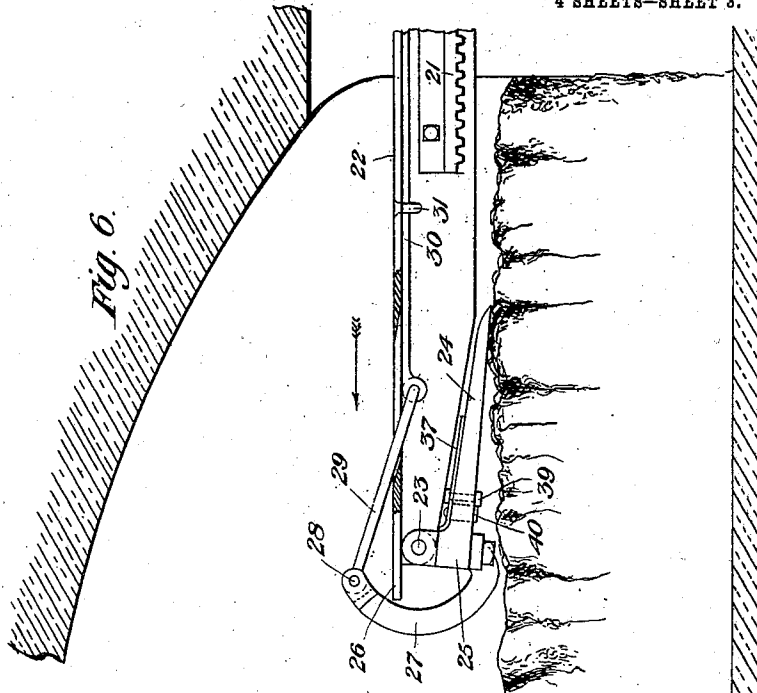
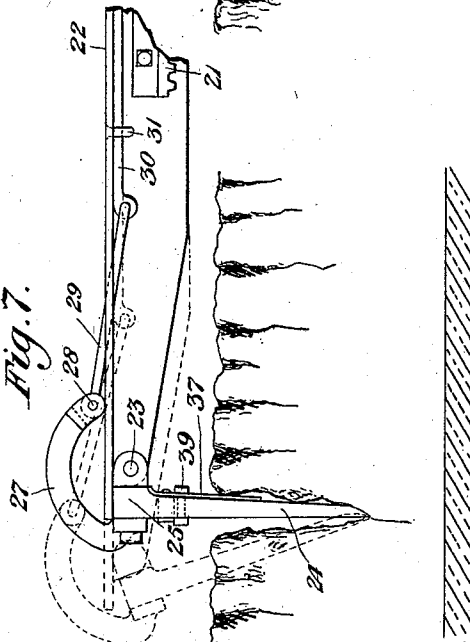


Fig. 7.



Witnesses:

J. D. Moore.  
R. H. Jaymen

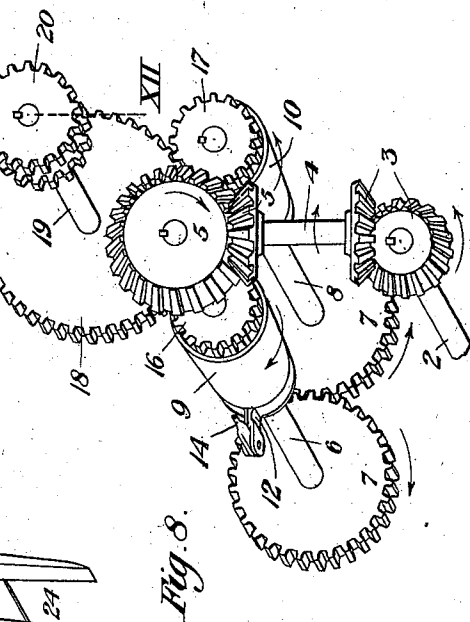
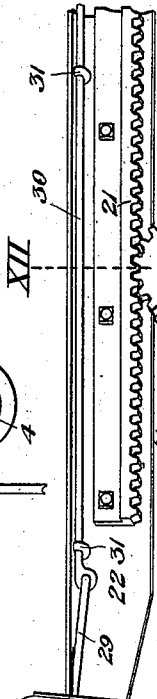
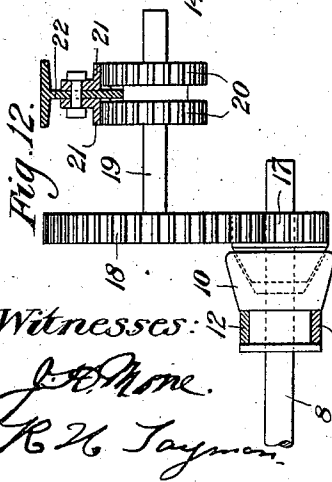
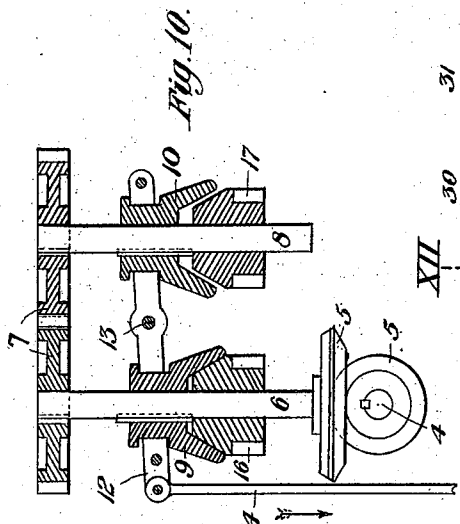
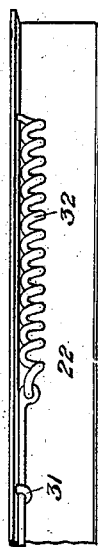
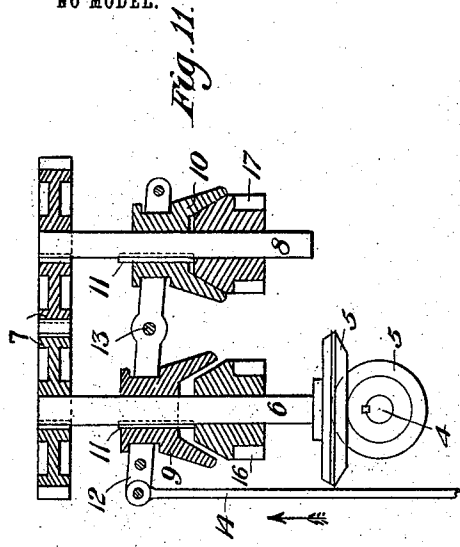
Inventor:

John A. Hebb  
by C. M. Clarke  
his Attorney

J. A. HEBB.  
COKE DRAWING MACHINE.  
APPLICATION FILED OCT. 5, 1900.

NO MODEL.

4 SHEETS—SHEET 4.



Witnesses:  
*J. A. Hebb*  
*R. H. Jayman*

Inventor:  
*John A. Hebb*  
by *C. M. Clarke*  
his Attorney

# UNITED STATES PATENT OFFICE.

JOHN A. HEBB, OF SMOCK, PENNSYLVANIA, ASSIGNOR TO HEBB COKE DRAWER COMPANY, OF UNIONTOWN, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

## COKE-DRAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 727,790, dated May 12, 1903.

Application filed October 5, 1900. Serial No. 32,100. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN A. HEBB, a citizen of the United States of America, and a resident of Smock, county of Fayette, State of Pennsylvania, have invented certain new and useful Improvements in Coke-Drawing Machines, of which the following is a specification, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a view in side elevation, partly in section, of a coke-drawing machine embodying the features of my invention and showing the machine in position for operation with relation to a coke-oven. Fig. 2 is a detail view of the raising and lowering lever. Fig. 3 is a plan view of Fig. 1. Fig. 4 is an enlarged detail view, in side elevation, of the forward end of the rake-beam with the hinged rake thereon. Fig. 5 is a face view of the rake. Fig. 6 is a view similar to Fig. 3, showing the beam in the act of entering the oven, the rake being folded up underneath by contact with the coke. Fig. 7 is a similar view showing the beam in position to draw, with the rake entering downwardly into the charge of coke. Fig. 8 is a perspective view of the beam, partly broken away the rake, and the means for advancing, withdrawing, and imparting reciprocating action to it. Figs. 9, 10, and 11 are sectional plan views of the driving and clutch mechanism, showing the parts in positions of rest, to impart inward travel, and to impart outward travel, respectively. Fig. 12 is a cross-sectional detail view indicated by the line XII XII of Fig. 7.

My invention relates to mechanical means for drawing coke from the oven, and relates more particularly to the rake-beam, the rake, and the means for operating these parts.

In general the machine consists of a beam provided at the end with a rake which is adapted to collapse up under the lower side of the beam to admit of entrance through the oven-door and to automatically assume an operative position, together with mechanism for raising, advancing, withdrawing, or reciprocating the rake at the will of the operator, and in other details of construction, as shall be more fully hereinafter specifically set forth.

While I have illustrated my invention as mounted upon and adapted to a traveling foundation provided with conveying, rotating, and various other manipulating mechanism, such parts are simply shown as a suitable structural embodiment for the parts I have referred to, and do not properly form any part of the present invention.

Referring now to the drawings, A represents the foundation of a portable carriage, upon which is supported for the purpose of providing lateral range a turn-table B, upon which are carried the various operative and manipulative portions of the machine. At any suitable location on the carriage is mounted a power-shaft 2, driven by an engine (not shown) or any suitable prime mover, from which shaft through bevel-gearing 3 3, central shaft 4, and gearing 5 5 motion is transmitted to the constantly-revolving shaft 6, and from it through pinion-gearing 7 7 to shaft 8. These shafts 6 and 8 are located in suitable bearings. They constantly rotate in opposite directions, and upon the shafts are mounted longitudinally-movable friction or other clutches 9 10 in spline engagement with the shafts by keys 11, Fig. 11. A shifting lever 12, pivoted at 13, engages the clutches and is operated through rod 14 and its connections and hand-lever 15 by the operator, either to hold both clutches out of engagement, as in Fig. 9, or either of them, in engagement, as in Figs. 10 and 11.

Loosely mounted on shafts 6 and 8 are pinions 16 17, provided with portions adapted to interfit and make driving contact with the clutches 9 10, both pinions intermeshing with a driven wheel 18, mounted on shaft 19, provided with pinions 20, in engagement with the teeth of a rack 21, secured to the fork-beam 22. Through such mechanism either forward or back movement may be imparted to the rake-beam by throwing either of the clutches into gear, or it may be allowed to remain stationary by leaving the mechanism in a midway position, or by rapidly changing the connection from one clutch to the other a rapid reciprocating action may be imparted to the beam, and all of these movements may be imparted by the operator at will through

the clutch-lever 15. At its forward end is pivotally secured to the beam at 23 the rake 24, which is of any suitable construction, although I have secured good results from a rake provided with alternating teeth of varying length. The head 25 of the rake, Fig. 2, is adapted to bear upwardly against a limiting extension 26 of the beam, whereby it is braced in the distended position, and to the head is secured a curved arm 27, passing over and back of the pivotal joint 23, where it is connected at 28 and through connection 29 to a tension-rod 30. This rod extends longitudinally of the beam in suitable bearings 31 to within a short distance of its rear end, where it is connected to a tension-spring 32, by which construction the spring is placed at a point remote from the injurious action of the heat of the oven. By this means a constant tension is exerted on the rake-head by which it is normally held in an extended position, while it is free to fold inwardly and upwardly against the beam in entering the limited vertical space at the door of the oven, as clearly shown in Fig. 6. When the beam has been advanced sufficiently far into the oven to engage a section of the coke, the end of the beam is raised, permitting the rake to spring out, when it is lowered upon the top of the coke. The operator then imparts to the beam a reciprocating motion by rapid alternate engagement of the clutches, throwing the upper end of the rake forward and back, when the points by reason of the flexible joint 23 will rapidly work downwardly into the crevices of the coke for the full depth of the tines, owing to the weight of the rake and beam, when the operator will throw the lever 15 forward, engaging wheel 17 and through pinions 18 and 20 and rack 21 imparting outward motion to the beam. The rake will draw a section of the coke outwardly through the oven-door, discharging it into the chute 33, from which it is conveyed to any point of delivery. The forward end of the beam is raised and lowered by the operator through handle-lever 34 and upright bars 35, carrying a roller 36, upon which the beam rests, and an upper roller 41, between which the beam travels in or out, the lever 34 being capable of being set at any desired angle or held at will during the inward or outward travel of the beam. Inward movement of the beam is imparted by reversing the lever 15, throwing clutch 9 into engagement, when the operation is repeated and continued until the oven is drawn.

For the purpose of engaging the finer coke the rake is provided with an apron 37 of sheet metal loosely and slidingly mounted by means of bolts 38, passing through slots 39, and retaining-clips 40, passing around the intermediate tines upon the back face of the fork. The apron will be forced upwardly to the top when working in large coke, but will drop by gravity and engage the finer particles on the floor in the manner of a hoe.

The advantages of my invention will be

appreciated by those skilled in the art, and while I have illustrated it as embodied in combination with certain other supporting, manipulating, and transporting apparatus it is obvious that such parts may be changed or varied from or entirely eliminated without departure from my invention, since I do not claim such parts broadly.

What I do claim, and desire to secure by Letters Patent, is—

1. In apparatus for drawing coke, the combination with a reciprocating beam, of a pivotally-attached rake adapted to be folded backwardly by contact with the coke, a spring device located remotely from the rake, and connections between the spring device and rake by which the rake is extended.

2. In apparatus for drawing coke, the combination with a reciprocating beam, of a pivotally-attached rake adapted to be folded backwardly by contact with the coke, and spring-controlled means located remotely from the rake for normally holding it extended.

3. In apparatus for drawing coke, the combination with a reciprocating beam, of a pivotally-attached rake adapted to be folded backwardly by contact with the coke, provided with an apron, and spring-controlled means for normally holding the rake extended.

4. In apparatus for drawing coke, the combination, with a reciprocating beam and means for raising and lowering the end of the beam, of a rake pivotally attached to the end of the beam, adapted to be folded backwardly by contact with the coke, and spring-controlled means for normally holding the rake-head extended.

5. In apparatus for drawing coke, a beam provided with a pivotal bearing and a limiting-shoulder at the forward end, a rake pivotally secured in the bearing, adapted to be depressed backwardly by contact with the coke, and spring connections adapted to normally hold the rake in an extended position against the limiting-shoulder, substantially as set forth.

6. In apparatus for drawing coke, a beam provided with a pivotal bearing and a limiting-shoulder at the forward end, a rake pivotally secured in the bearing adapted to be depressed backwardly, an arm extending from the rake-head, a spring connected to the rear end of the beam, and intervening connections between the spring and the arm, substantially as set forth.

7. In apparatus for drawing coke, the combination with a reciprocating beam, of a pivotally-attached rake, adapted to be folded backwardly by contact with the coke, means for normally holding the rake extended, and an apron slidingly mounted on the inner side of the rake.

8. In apparatus for drawing coke, the combination with a beam provided with a rack and a pivotally-attached rake adapted to be folded

backwardly by contact with the coke, and spring-controlled means for normally holding the rake extended; of a pinion in engagement with the rack and means for alternately rotating the pinion.

5 9. In apparatus for drawing coke, the combination with a beam provided with a rack and a pivotally-attached rake adapted to be folded backwardly by contact with the coke, and  
10 means for normally holding the rake extended; of a pinion in engagement with the rack, a driving-shaft therefor provided with a second pinion, two driving-pinions loosely mounted on oppositely-rotating shafts and in en-  
15 gagement with such second pinion, and clutch devices in spline engagement with the shaft, with means for operatively connecting the clutch devices with the driving-pinion.

20 10. In apparatus for drawing coke, the combination of a beam, means for imparting a reciprocating motion to the beam, a pivotally-attached rake-head adapted to be depressed backwardly by contact with the coke, and an apron slidingly mounted on the rake, sub-  
25 stantially as set forth.

11. In apparatus for drawing coke, the combination of a beam, means for raising and

lowering the beam, means for imparting a reciprocating motion to the beam, a pivotally-attached rake-head adapted to be depressed 30 backwardly by contact with the coke, with means for extending the rake-head, substantially as set forth.

12. Apparatus for drawing coke, consisting of a rotatable supporting-platform, a reciprocating beam mounted thereon, means for rais- 35 ing and lowering the beam, a rake pivotally attached to the end of the beam adapted to be folded backwardly by contact with the coke, means for normally holding it extended, 40 and means for reciprocating the beam.

13. In apparatus for drawing coke from coke-ovens, the combination of a beam provided with a rake-head pivotally carried thereby and means for imparting to the up- 45 per part of the rake-head a to-and-fro horizontal movement while the head is in engagement with the coke in the oven.

Signed at Pittsburg, Pennsylvania, this 3d day of August, 1900.

JOHN A. HEBB.

Witnesses:

PETER J. EDWARDS,  
C. M. CLARKE.