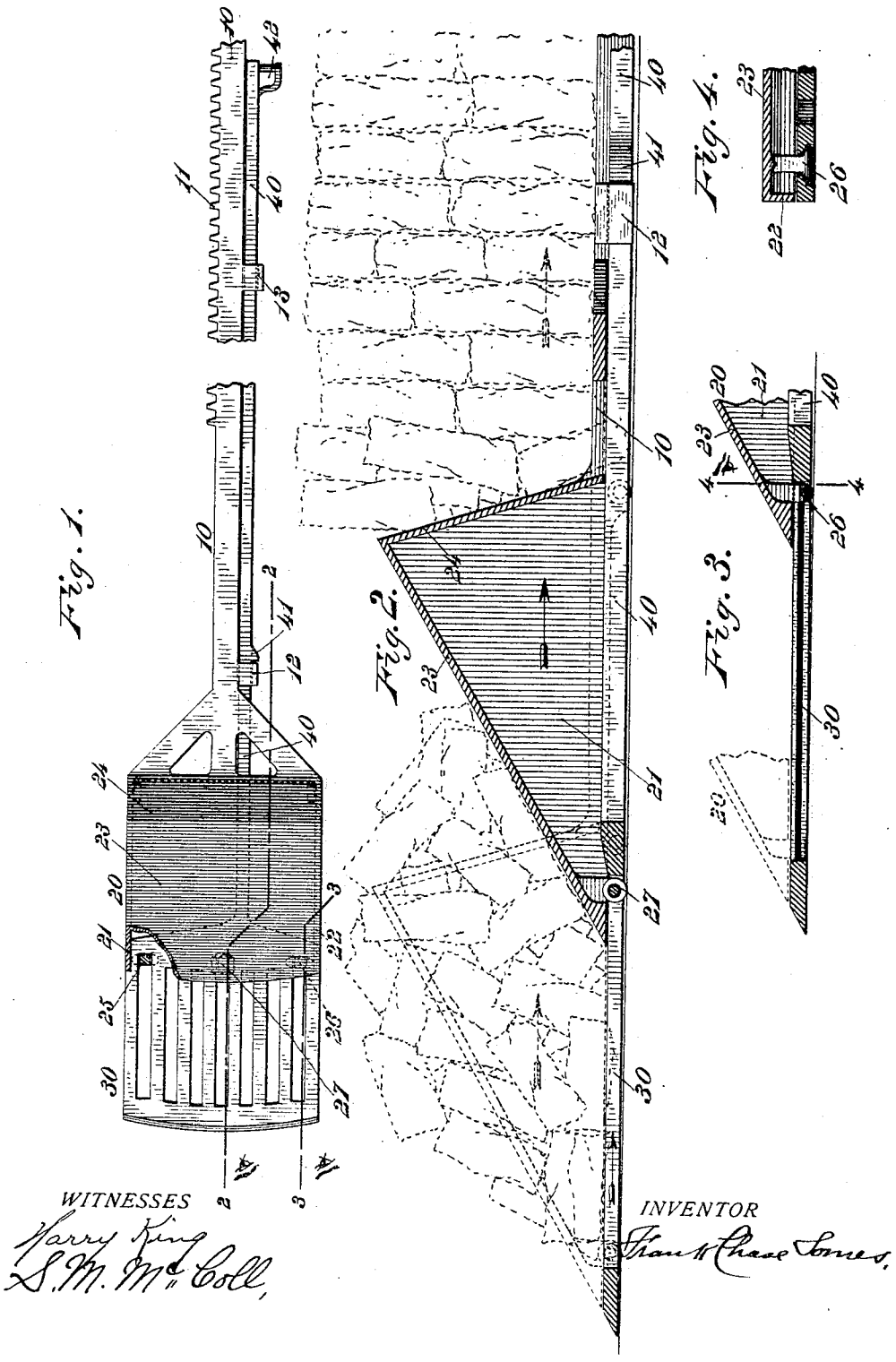
No. 775,197. PATENTED NOV. 15, 1904.

F. C. SOMES.

COKE PULLER.

APPLICATION FILED APR. 7, 1904.

NO MODEL.



No. 775,197. Patented November 15, 1904.

UNITED STATES PATENT OFFICE.

FRANK CHASE SOMES, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO JAMES ELLWOOD JONES, OF SWITCHBACK, WEST VIRGINIA.

COKE-PULLER.

SPECIFICATION forming part of Letters Patent No. 775,197, dated November 15, 1904.

Application filed April 7, 1904. Serial No. 202,048. (No model.)

To all whom it may concern:

Be it known that I, FRANK CHASE SOMES, a citizen of the United States of America, and a resident of Washington, in the District of Columbia, have invented certain new and useful Improvements in Mechanical Coke-Pullers, of which the following is a specification.

This invention relates to a coke-puller designed to be operated by machine for pulling coke from coke-ovens, and it is particularly adapted for discharging beehive coke-ovens.

In the manufacture of metallurgical coke the oven known as the "beehive oven," so called because of its dome-shaped form, has been generally adopted, being found to give the best results. In the burning and wetting of the coal the coke is produced in a caked mass having a vertical stratification or columnar crystallization, and it is desirable to avoid as far as possible breakage of the sticks extracted from the oven.

The object of the invention is to secure a quick and thorough discharge of the oven without unnecessary breakage of the coke.

The invention relates more particularly to an underworking wedge-like scraper movable over the bottom of the coke-oven and operative on its instroke to loosen the coke for withdrawal and on its outstroke to withdraw the so-loosened coke.

The invention consists principally in the combination, with the underworking wedge-like scraper operating to loosen caked coke on the instroke and withdraw loosened coke on the outstroke, of a sliding extension operative on the outstroke to withdraw the loosened coke directly over the scraper at the inner end of its stroke, or coke which may fall over the scraper during the outstroke, and means for actuating said sliding extension from the opposite end of the coke-puller bar.

Figure 1 of the accompanying drawings represents a plan view of one embodiment of this invention, parts being broken out and the sliding extension being in outward operative position. Fig. 2 represents, on a larger scale, a longitudinal vertical section of this coke-puller on line 2 2 of Fig. 1, showing the coke-puller on its outstroke, the coke behind the scraper, and also the coke which falls from the scraper onto the sliding extension. Fig. 3 represents, on a large scale, a longitudinal section of a portion of the coke-puller on line 3 3 of Fig. 1. Fig. 4 represents, on an enlarged scale, a transverse section of a fragment of the coke-puller on line 4 4 of Fig. 3, looking toward the left.

The same reference characters indicate corresponding parts in all the figures.

This coke-puller is designed to be mounted on a machine adapted to thrust it into and retract it from the oven and swing it laterally in either direction to enable it to engage the coke at the sides of the oven. The machine shown in the expired United States Patent No. 446,936 may be used for this purpose.

The coke-puller comprises an actuating-bar 10, which is preferably rigid throughout, the rear portion thereof having a rack-bar or rack-teeth 11, corresponding to the rack-bar *a'* of said patent. This bar is provided with guide-loops 12 and 13, preferably on one side.

A scraper 20 is disposed at the front end of the bar 10. This scraper, which may be hollow or otherwise, is of wedge-like form and of a breadth adapted to pass with facility through the door of the oven. The body of the scraper may be of any suitable form adapting it to perform the double function of loosening coke on the instroke and withdrawing it on the outstroke. The form shown in the drawings comprises two opposite side plates 21 and 22, a gradually-inclined top plate 23, adapted to act as a coke-loosening surface on the instroke, and an abrupt or upright rear plate 24, adapted to act as a coke scraping or pulling surface on the outstroke. These plates are made of thick metal or of refractory material adapted to withstand the heat of the oven. The scraper may be provided at its front end with dependent lugs, as 25, 26, and 27. The lower ends of these lugs have a rounded surface to enable them to ride with ease over the oven-bottom. This rounded

surface may be in the form of an antifriction-roller, as in the case of the central lug 27, or rigid, as in the case of the side lugs 25 and 26, as indicated in Fig. 3. One or more of the lugs may have lateral projections or heads, as shown in Fig. 4.

A sliding extension 30 serves to extend the coke-puller on the outstroke to receive coke which may have rested on or may fall over the inclined front of the scraper. This sliding extension may be in the form of a solid or skeleton plate disposed underneath the scraper and adapted to slide forward to extend the coke-puller or permit the scraper to move backward over it. This sliding extension-plate 30 is connected with a slide bar or shank 40, which extends backward parallel with the actuating-bar 10, as before indicated, and slides in the guide-loops 12 and 13 of the latter. The bar 40 is thrust outward to shift the sliding plate into extended position and retracted to bring said plate underneath the scraper, said bar being provided with a shoulder 41, which engages guide-loop 12 on the bar 10 and serves as a stop when the sliding plate is extended to full operative position. This bar 40 is provided at its inner end at a point convenient for the operator of the machine with a handle 42, which may be grasped by the operator to hold the extension-plate stationary.

Any suitable means may be employed for holding the extension 30 in connection with the scraper. In the form of the invention illustrated in the drawings the dependent studs 25, 26, and 27, projecting downward from the front portion of the scraper, engage slots in the sliding extension. The slots on opposite sides of the extension-plate 30 may be recessed on their under side to form a dove-tailed connection with the headed studs 25 and 26, as shown in Fig. 4.

In the use of this invention the coke-puller is thrust into the oven along the bottom thereof a sufficient distance to make a proper drawing of the coke. On its instroke the sliding extension-plate 30 is in closed position underneath the scraper 20, and the upper beveled front face 23 of the scraper operates like a wedge to lift the coke under which it passes and to loosen said coke from the caked mass of coke within the oven. The main portion of the so-loosened coke falls behind the scraper; but at the end of the instroke a small portion thereof overlies the scraper. The outstroke of the coke-puller bar 10 for the withdrawal of the coke is then made, and the operator grasps the handle 42 of the slide-bar 40, and thereby holds the extension 30 stationary while the scraper 20 moves backward over said extension and exposes it, the lugs, as 25, on the scraper engaging the rear bar of the extension or the guide-lug 12 on the bar 10 engaging the shoulder 41 on the bar 40, whereby the extension-plate is while in open position drawn out of the oven in unison with the outward movement of the scraper. The back plate 24 of the scraper pulls out the main body of loosened coke, but the coke which was immediately above the scraper at the end of the instroke falls forward in front of the scraper and is caught on the extension-plate 30, as shown in Fig. 3, and drawn from the oven.

I claim as my invention—

1. A coke-puller comprising an underworking scraper adapted to operate on its instroke to loosen coke for withdrawal and on its outstroke to withdraw loosened coke, a sliding extension-plate movable on said scraper and adapted to receive and hold the loosened coke which falls thereon on the outstroke, and means under the control of the operator for sliding said plate into extended position to receive coke falling from said scraper on the outstroke.

2. A coke-puller comprising an underworking scraper adapted to operate on its instroke to loosen coke for withdrawal and on its outstroke to withdraw loosened coke, a sliding extension-plate movable on said scraper and adapted to receive and hold the loosened coke which falls thereon on the outstroke, and means under the control of the operator for sliding said plate into closed position.

3. A coke-puller comprising an underworking scraper adapted to operate on its instroke to loosen coke for withdrawal and on its outstroke to withdraw loosened coke, a sliding extension-plate movable on said scraper and adapted to receive and hold the loosened coke which falls thereon on the outstroke, and means for sliding said extension-plate into open and closed positions.

4. A coke-puller comprising an underworking scraper adapted to operate on its instroke to loosen coke for withdrawal and on its outstroke to withdraw loosened coke, a sliding extension-plate at the bottom of said scraper provided with a longitudinal slot, a dependent headed stud on said scraper engaging said slot, and means for extending said plate to receive coke falling from the scraper on the outstroke.

5. A coke-puller comprising an underworking scraper adapted to operate on its instroke to loosen coke for withdrawal and on its outstroke to withdraw loosened coke which falls thereon on the outstroke, an actuating-bar provided with guide-loops and connected with said scraper for operating it, a sliding extension-plate movable on said scraper, a slide-bar supported outside said actuating-bar by said guide-loops and connected with said sliding extension-plate, and means for actuating said slide-bar.

6. A coke-puller comprising an underworking scraper adapted to operate on its instroke to loosen coke for withdrawal and on its outstroke to withdraw loosened coke which falls

thereon on the outstroke, an actuating-bar provided with guide-loops and connected with said scraper for operating it, a sliding extension-plate movable on said scraper, a slide-bar supported outside said actuating-bar by said guide-loops and connected with said sliding extension-plate, and a handle on said slide-bar within reach of the operator for actuating it.

FRANK CHASE SOMES.

Witnesses:
JAS. S. MCDONOGH,
S. M. MCCOLL.