No. 647,347. Patented Apr. 10, 1900.

S. T. & C. H. WELLMAN & J. W. SEAVER.

PUSHER FOR COKE OVENS.

(Application filed Mar. 29, 1898.)

(No Model.) 3 Sheets—Sheet 1.

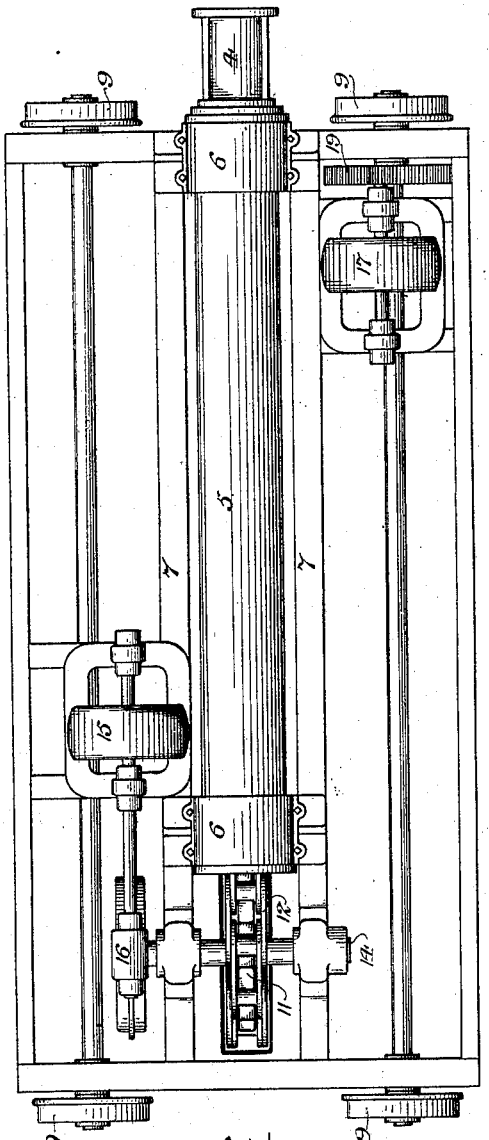

Fig. 2.

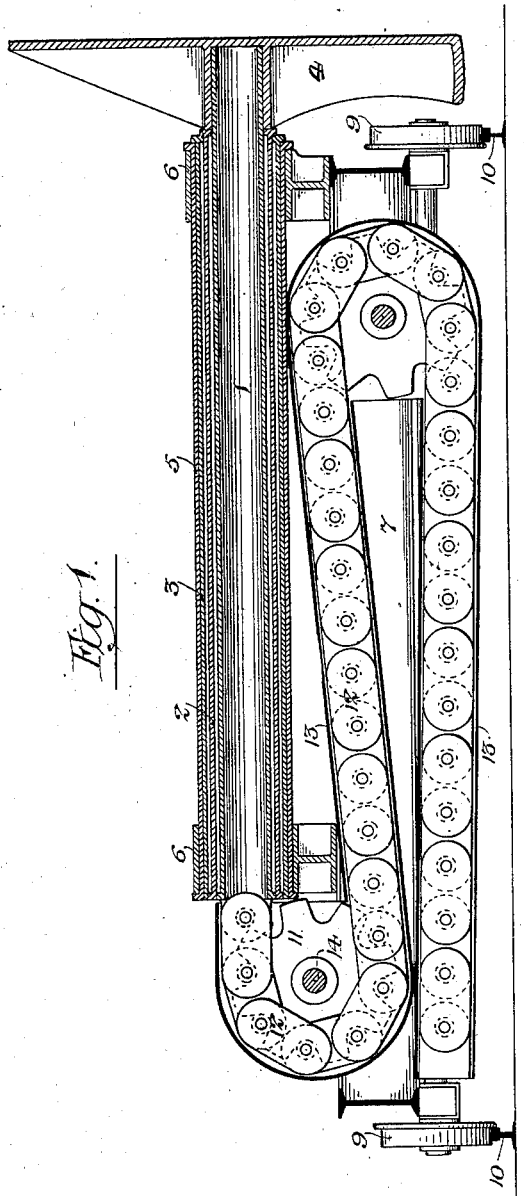

Fig. 1.

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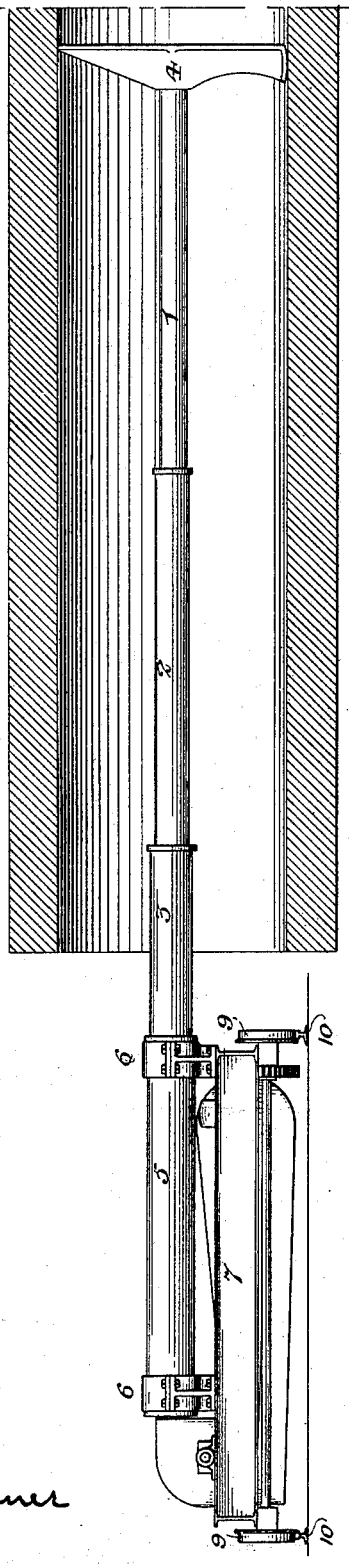
Fig. 2.



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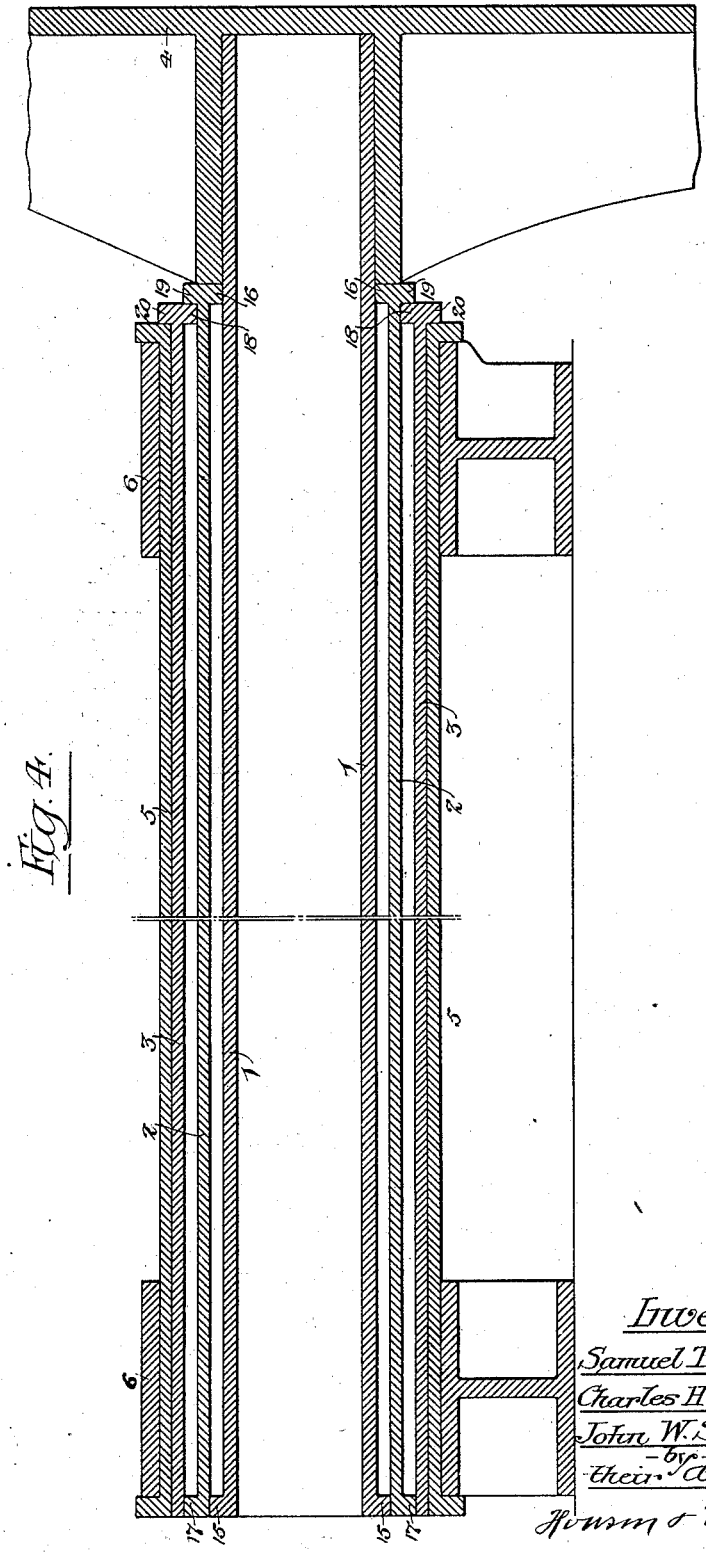

Fig. 4.

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UNITED STATES PATENT OFFICE.

SAMUEL T. WELLMAN, CHARLES H. WELLMAN, AND JOHN W. SEAVER, OF CLEVELAND, OHIO.

PUSHER FOR COKE-OVENS.

SPECIFICATION forming part of Letters Patent No. 647,347, dated April 10, 1900.

Application filed March 29, 1898. Serial No. 675,589. (No model.)

To all whom it may concern:

Be it known that we, SAMUEL T. WELLMAN, CHARLES H. WELLMAN, and JOHN W. SEAVER, citizens of the United States, and residents of Cleveland, Ohio, have invented certain Improvements in Pushers for Coke-Ovens, of which the following is a specification.

The object of our invention is to so construct a pusher for that class of retorts which are employed for the production of coke (or, as they are technically termed, "coke-ovens") that said pusher will occupy but a limited amount of space in front of the oven—that is to say, an amount of space much less than the length of the oven itself—an object which we attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a view, partly in longitudinal section and partly in elevation, of a pusher for coke-ovens constructed in accordance with our invention. Fig. 2 is a plan view of the same. Fig. 3 is a view illustrating the operation of the pusher, and Fig. 4 is an enlarged sectional view illustrating some of the details of construction of the pusher.

Modern coke-ovens are frequently as much as thirty feet in length, and the mechanical pushers heretofore employed for discharging the coke from such ovens have been such as to occupy an even greater space in front of the furnace. Hence the structures necessary to house the ovens and their appurtenances are necessarily expensive and the pushing appliances are cumbersome and difficult to handle. In order to overcome these objections, it is necessary to reduce the amount of space occupied by the pushing device and to facilitate the manipulation of the same; and with this object in view we have devised a pusher with a telescopic stem which when extended is capable of reaching throughout the length of the oven, but which when contracted occupies a space much less than the length of said oven.

The pusher shown in the drawings has a stem composed of three tubular sections 1, 2, and 3, the section 1 carrying the pusher-head 4 and sliding telescopically within the section 2, which, in turn, slides telescopically within the section 3, and the latter is mounted so as to slide telescopically within a tube 5, which is carried by standards 6 upon a truck 7, the latter having wheels 9, adapted to run upon rails 10, forming a track extending along the front of the row of ovens, so that the pusher can be readily moved from one to another of the latter.

The innermost section 1 of the pusher-stem has at the inner end an outwardly-projecting flange 15, adapted when said inner section 1 is projected to its full extent to engage with an inwardly-projecting flange 16 at the front end of the second section 2 of the pusher-stem, and the latter has at its inner end an outwardly-projecting flange 17, adapted when said section 2 is fully projected to engage with an inwardly-projecting flange 18 at the forward end of the section 3, so that, supposing the pushing force to be applied to the inner section 1 of the stem, it will as it is thrust into the oven carry the succeeding sections of the stem along with it, as shown in Fig. 3, until finally all of the sections of the stem are extended and the pusher-head has been carried completely through the oven.

The retraction of the various sections of the stem on the withdrawal of the pusher-head is effected by reason of said head striking the forward end of the section 2 of the stem and an external flange 19 upon the forward end of the latter striking the forward end of the outer section 3, an external flange 20 upon the forward end of the latter serving by contact with the forward end of the tube 5 to limit the rearward movement of the various sections of the pusher-stem. The outer tube 5 has flanges at each end, whereby it is longitudinally confined to the standard 6 of the carrying-truck.

As a means of projecting the inner section of the pusher we prefer to use a chain operated by a sprocket-wheel driven by a suitable electric motor. Thus, as shown in Figs. 1 and 2, 11 represents the sprocket-wheel, to which is adapted a chain 12, the forward link of which is connected to the rear end of the inner section 1 of the pusher-stem, a casing 13 receiving the chain when the pusher is retracted. The shaft 14 of the sprocket-wheel 11 is driven by an electric motor 15 through the medium of suitable worm-gears contained

in the casing 16, and a similar motor 17 drives, by means of suitable spur-gearing 19, one of the axles of the truck 7, so as to effect traversing of said truck across the front of the row of ovens in order to carry the pusher from oven to oven.

By suitably packing the flanges of the various sections of the pusher-stem air, steam, or other fluid under pressure may be used for projecting the pusher and may then be exhausted, so as to create a partial vacuum in order to effect the withdrawal of the pusher, or the latter operation may be effected by mechanical means, such as a rope or chain and windlass.

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

1. A coke-oven pusher having a stem composed of sections adapted to slide telescopically one within another, the innermost section carrying the pusher and the inner and intermediate sections each having at the rear an external flange for engaging with an internal flange at the forward end of the section surrounding it when the sections are being projected, and at the forward end an external flange for engaging with the forward end of the section surrounding it when the sections are being retracted, whereby power applied to the innermost section will effect the projection or retraction of the sections successively, a chain connected to said innermost section and serving both to advance and retract the same, and a sprocket-wheel engaging said chain, substantially as specified.

2. A coke-oven pusher having a stem composed of sections adapted to slide telescopically one within another, the innermost section carrying the pusher, and connections whereby the movement of an inner section is imparted to the section surrounding it, in combination with a chain connected to the innermost section of said stem, and composed of flat elongated links, a sprocket-wheel for actuating said chain, and provision for rotating said sprocket-wheel, substantially as specified.

3. A coke-oven pusher having a stem composed of sections adapted to slide telescopically one within another the innermost section carrying the pusher, and connections whereby the movement of an inner section is imparted to the section surrounding it, in combination with a chain connected to the innermost section of said stem, and composed of flat elongated links, a sprocket-wheel for actuating said chain, provision for rotating said sprocket-wheel, and a casing for receiving, confining and directing the chain, when withdrawn from the telescopic tube-sections, substantially as specified.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

SAMUEL T. WELLMAN.
CHARLES H. WELLMAN.
JOHN W. SEAVER.

Witnesses:
C. W. COMSTOCK,
JOHN MCGEORGE.