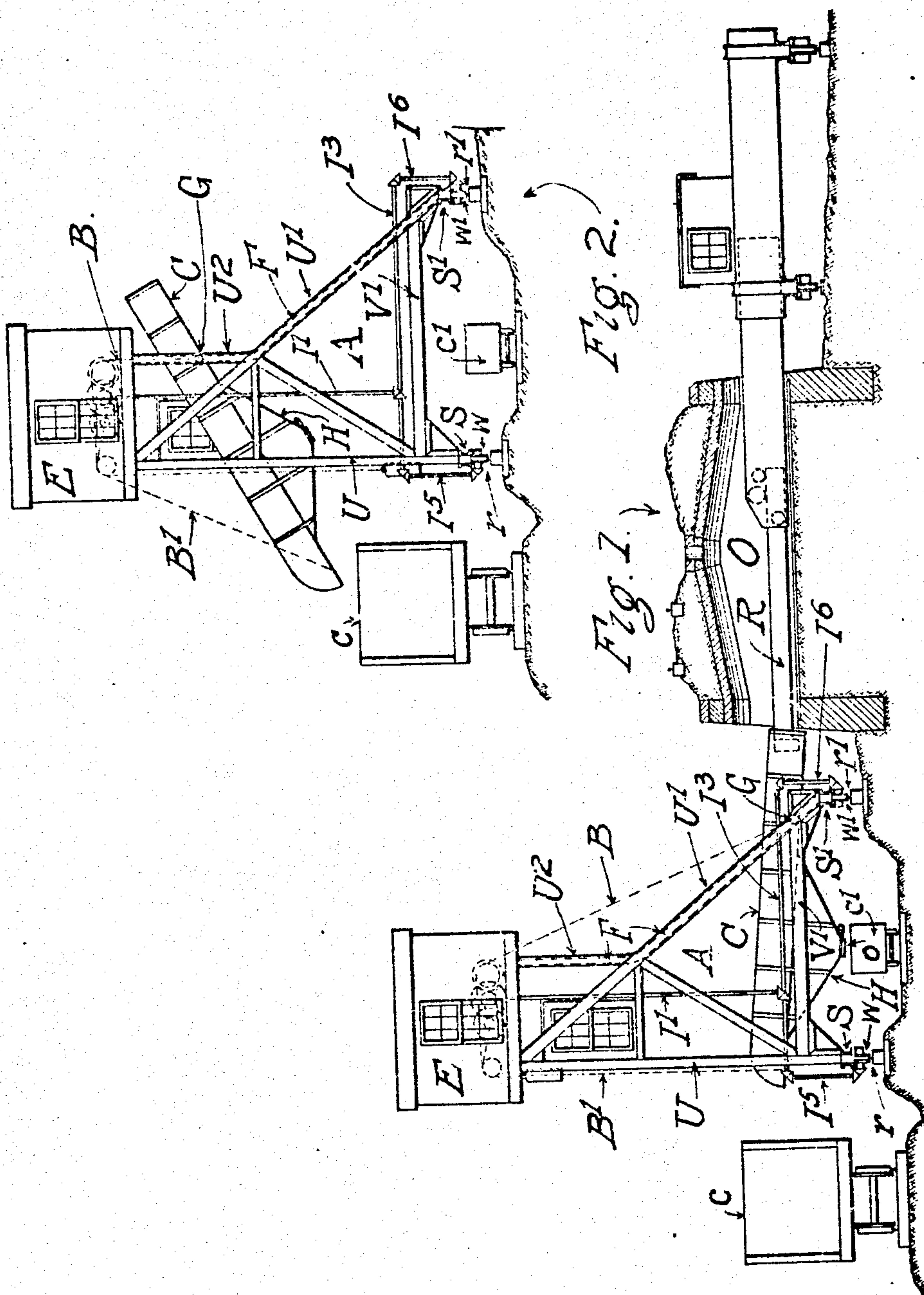


COKE LOADER.

Patented Aug. 17, 1909.

6 SHEETS--SHEET 1.

931,110.



WITNESSES:

L. Lippa
W. L. Whitcomb

INVENTORS

INVENTORS
Chas H. Wright.
Will. C. Monroe,
BY
George C. King.
THEIR ATTORNEY

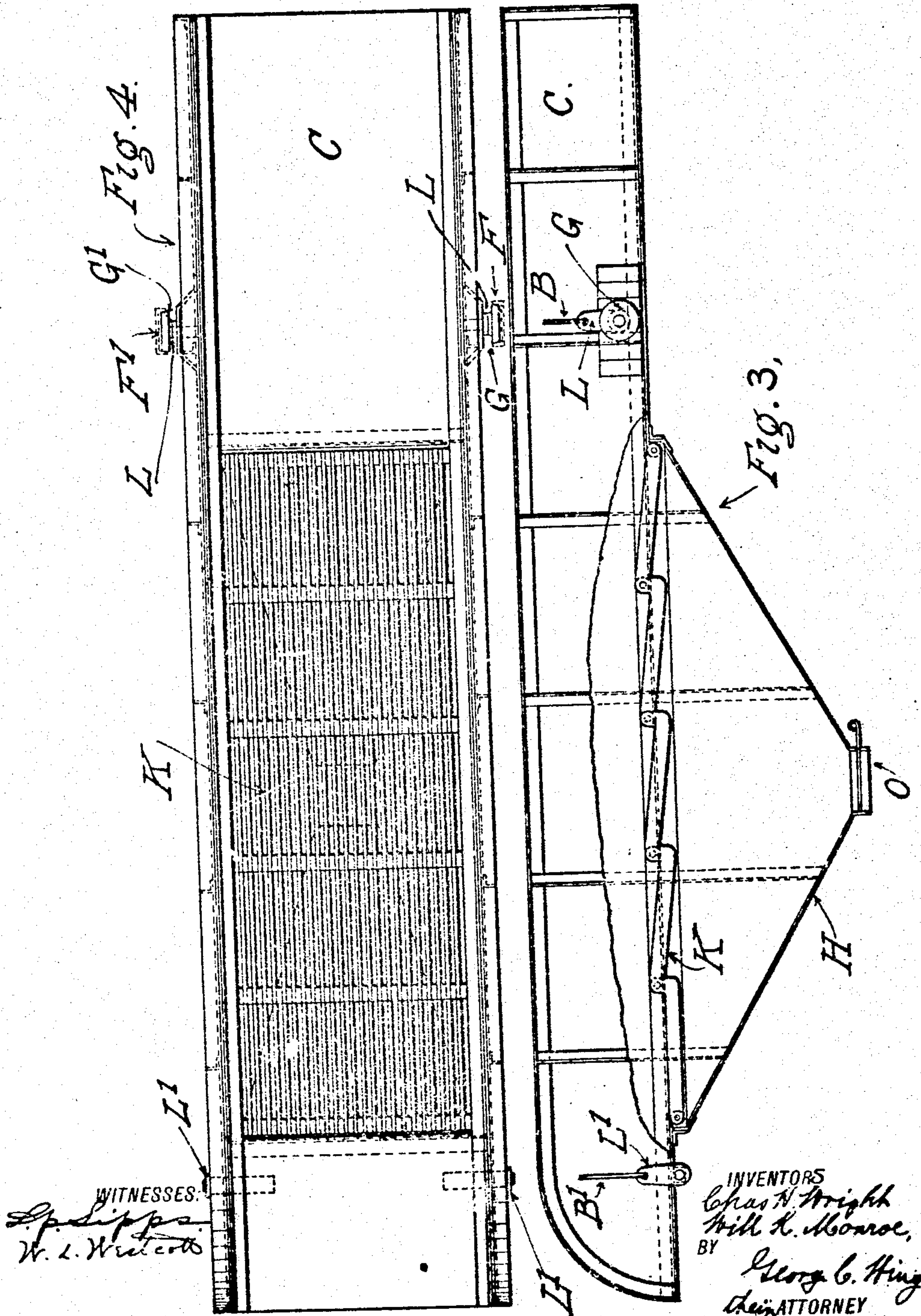
C. H. WRIGHT & W. K. MONROE.
COKE LOADER.

APPLICATION FILED JULY 28, 1908.

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6 SHEETS—SHEET 2.

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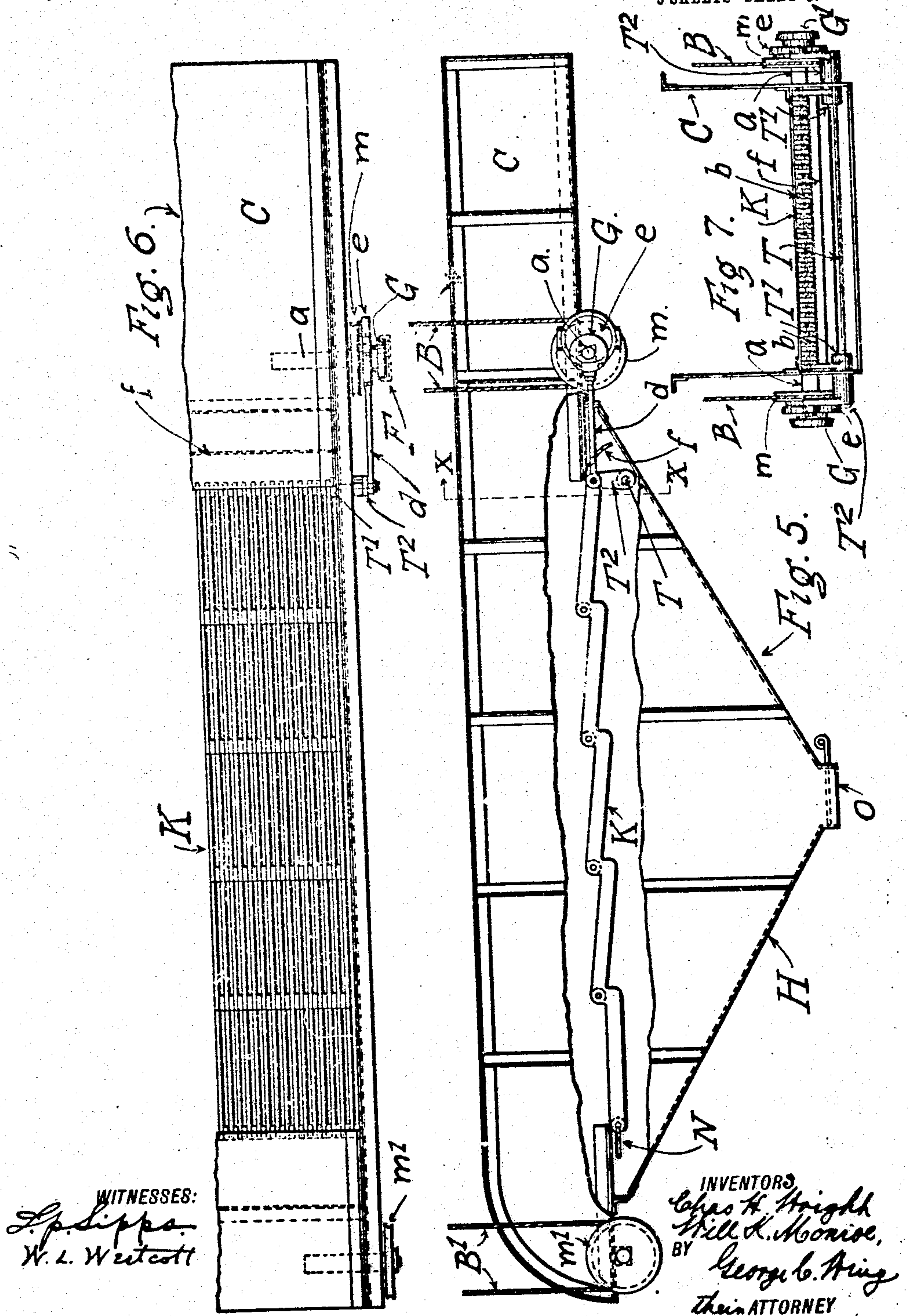


COKE LOADER.

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5 SHEETS—SHEET 3.

931,110.



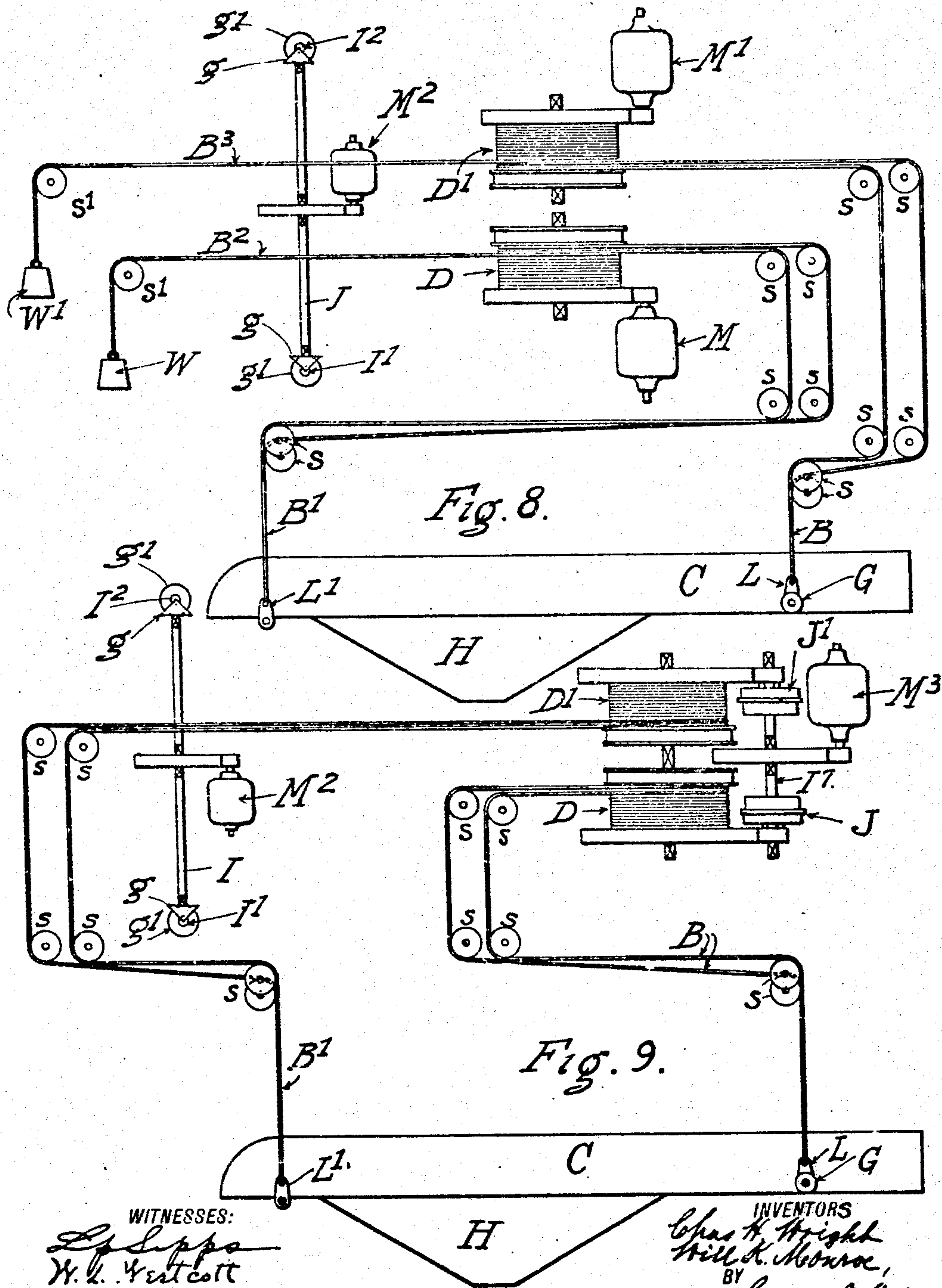
COKE LOADER.

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Patented Aug. 17, 1909.

5 SHEETS—SHEET 4.



WITNESSES:

W. L. Vestcott

INVENTORS

Thomas H. Wright
 Will H. Monroe,
 BY *George C. King*
 Their ATTORNEY

C. H. WRIGHT & W. K. MONROE.

COKE LOADER.

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5 SHEETS—SHEET 5.

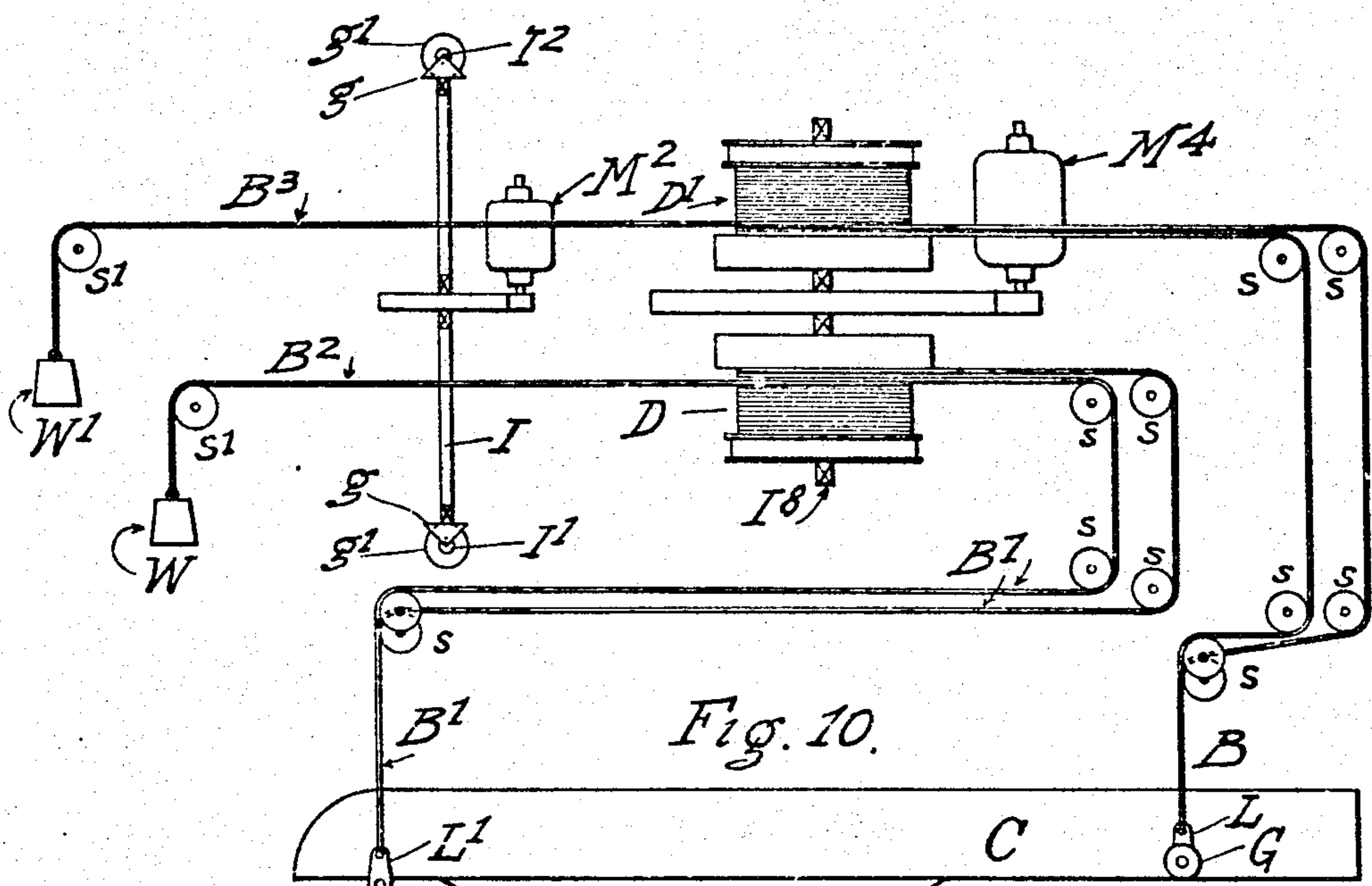


Fig. 10.

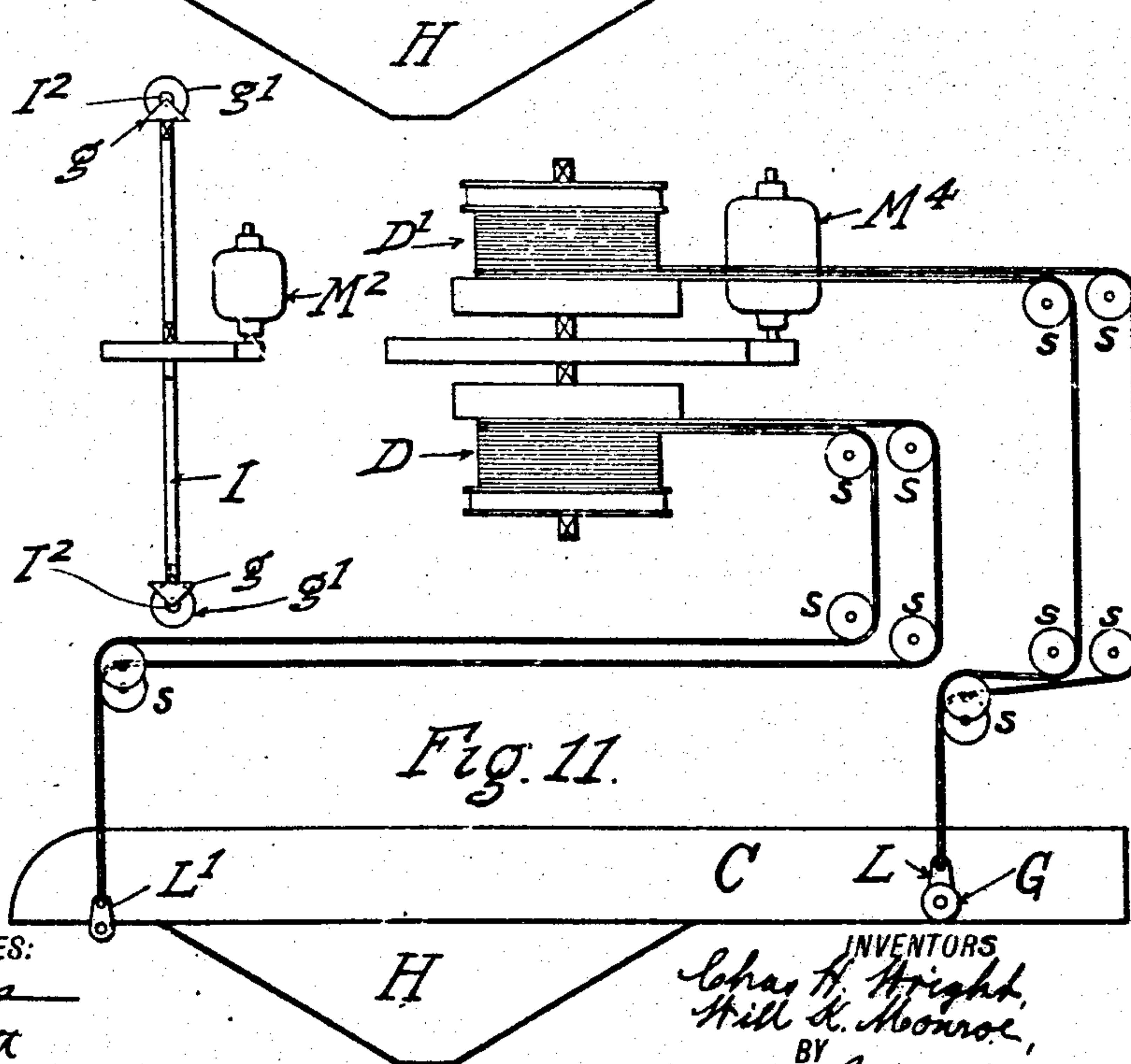


Fig. 11.

WITNESSES:

L. G. Lippa
W. L. Westcott

INVENTORS

Chas. H. Wright,
Will H. Monroe,
BY
George C. King
their ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES H. WRIGHT AND WILL K. MONROE, OF CLEVELAND, OHIO, ASSIGNORS TO THE BROWN HOISTING MACHINERY COMPANY, OF CLEVELAND, OHIO.

COKE-LOADER.

No. 931,110.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed July 28, 1908. Serial No. 445,846.

To all whom it may concern:

Be it known that we, CHARLES H. WRIGHT and WILL K. MONROE, both citizens of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have jointly invented certain new and useful Improvements in Coke-Loaders, as to which we hereby declare the following to be a full, clear, and exact description and such as will enable others skilled in the art to which it relates to make and use the same.

In the several drawings accompanying and making a part of these specifications similar parts, in each case, are indicated by similar letters.

It is the design of the present invention to provide a more flexible implement for the landing of a coke-charge into conveying cars, than, as now informed the state of the art accords.

Existing arrangements of this character, generally speaking, offer a hinged platform that receives such charge when pushed from the oven—and, thereafter, by its uplifting, shoots or slides the same into the cars that are brought up to the grade, or level thereof, or that require a fixed grade for the receiving train above which a platform of the above nature can traverse, and dump its load vertically thereon, or that necessitates special conveyers arranged to serve said pusher.

The subject of this application is an apparatus to accomplish the same purpose as the apparatus just referred to, but which is equally adapted to any grade or level of track or cars, into which the charge is to be unloaded, and which possesses other merits, of an economical and operative character, that render it useful and preferable.

Figure 1 shows, in side elevation, the apparatus in question, in position to receive the contents of a coke oven. Fig. 2, is a side-elevation of the same when in a discharging position. Fig. 3 is a like elevation of the platform portion of said apparatus, so broken as to expose certain internal details. Fig. 4 is a plan view of Fig. 3. Fig. 5 is a partial similar view as Fig. 4 with a special screen actuating device attached. Fig. 6 is a partial plan view of Fig. 5. Fig. 7 is a sectional view on the lines $x-x$ Fig. 5. Figs. 8, 9, 10 and 11 show, in diagram, different means of oscillating said platform, and of moving the machine itself.

In the drawings, O is the coke-oven, and R the ram or pusher-bar by which the charge is propelled outwardly.

A represents the coke-loader, as a whole, beside of which, at any convenient grade, cars c are brought up parallel to the face of the oven. Between the tracks for the cars and the face of the oven is located the loader A on supporting rails r and r' , that extend, of course, along the entire front of said ovens. Beneath and intermediate between said rails there is, preferably, laid a track-way for a car c' , to catch and carry away the screenings from the receiving platform, to be described. The loader A is made up of a frame-work rectangular in plan, mounted on wheels w and w' that travel respectively on the rails r and r' . Said frame-work includes the coke-receiving platform C, and the necessary mechanism for operating the same, as well as for moving the loader along the rails or tracks r and r' . At each forward corner of said frame-work, are uprights U, that rest on a sill S which extends between and connects the front wheels w , w' (Fig. 1). From the upper end of the uprights U, parallel struts, or brace-members, U' , extend downwardly, and diagonally, to the opposite rear corners, of a parallel sill S' , which is supported on and by parallel wheels w' corresponding with the front wheels w . Said uprights U and diagonal members U' , are further held in place, by the cross-pieces V' , and other longitudinal, transverse and lateral structural bracings. Surmounting said frame-work is an engine-house E, supported at its front end, by said framework, so far as described, and, at its rear end, by uprights U^2 , which meet, and are framed into respectively, the diagonals U' .

The platform C is open at both ends, so as to register with the channel of the oven from which a charge is to be received. Its features are readily understood—by particular reference, for instance, to Figs. 3 to 6. As said, with respect to the frame-work itself, the platform, also is rectangular, in plan, and, has floor plates at the front and rear. In the special forms shown in Figs. 3 to 6, intermediate between such floor plates, is a screen arrangement, represented by K that feeds into a hopper H, beneath the same, that is to receive the so-called breeze-coke and ashes from the screen above. A suitable

gate or opening *o* is at the bottom of the hopper. This screen, as depicted in Figs. 3 and 4, is immovably fixed in its place, but, as shown in Figs. 5 and 6, it is made to reciprocate, in a direction longitudinal of the platform, by means of certain details indicated. As a convenient manner of making up these screens, they are shown as consisting of a series of parallel, serrated bars, ranged lengthwise of said platform and duly spaced. On said platform near the rear end of the screen, on each side of the same, are guide-rollers *G* and *G'*, and at such points and corresponding points near the front end of the platform are links or connections *L* and *L'* to which are attached operating ropes *B*, *B'*, and *B''*, *B'''*.

On the inner sides of the uprights *U*², down and along the diagonals *U'* is a trackway, preferably of channel iron with the flanges intumed, and between which said rollers *G* and *G'* respectively bear and travel. These flange trackways are indicated by *F* and *F'* in Figs. 4 and 6, as is also the relative position of the rollers when thus in place. Manifestly substantially equivalent operative effects can be obtained by locating these trackways on the inclined or diagonal pieces *U* alone, instead of also on the uprights *U*², as shown.

The engine and other operating apparatus, both to move the loader along its track, and to actuate the several stated movements of the platform *C*, are located in the engine house *E*.

In Figs. 1 and 2 are indicated, in dotted lines, the platform-operating ropes *B* and *B'*, referred to above, the one end of which is fastened to said links *L* and *L'*, and, the other ends reaved around and fastened to the proper drums in said house provided for the purpose. Details of the special arrangements for variously operating said platform by means of said rope-connections, are diagrammatically illustrated in Figs. 8, 9, 10 and 11.

In Fig. 8 the ropes *B* and *B'* after tackling the platform *C*, as described, pass respectively over, or around a system of sheaves *s*, *s'*, to be secured to drums *D* and *D'*. The latter are each mounted on its own shaft and driven by its special motor *M* and *M'*. Around these drums, respectively, are reversely wound ropes *B*² and *B*³, which, passing over sheaves *s'*, *s'* are counterweighted by weights *W* and *W'*, at the outer terminals of said ropes. A motor *M*², for moving the loader *A* along its tracks, is located at any convenient point, with its pinion, as shown, in gear with a cross-shaft *I* that, preferably engages, at its ends, vertical shafts *I*¹ and *I*² through bevel-gearings *g*, *g'* at such points. Said vertical shafts, in turn, through suitable bevel-gearings at their lower ends, engage corresponding horizontal shafts *I*³ *I*⁴,

which, at their respective ends, by appropriate gearing, likewise engage vertical shafts *I*⁵ *I*⁶ that are geared to and connect with the axles of the wheels *20*. It is evident that, by this discretionary arrangement, if both drums are operated simultaneously, by the help of said counterweights, the platform *C* may be raised to any level that the receiving car *c* has, and that then, if the drum *D* is stopped, and braked against its counterweight, the rear end of the platform will continue to ascend until a tipping angle is reached that will expel or shoot the charge into said car, whereupon both drums may be reversed until the platform is in proper position before the oven to receive a new charge.

The mechanism illustrated in Fig. 9 differs from that of Fig. 8 in that the counterweight ropes *B*² and *B*³ are dispensed with. Here the drums are on the same shaft and driven by the same motor *M*², and, magnetic clutches *J*, *J'*, are indicated on an intermediate driving shaft *I*⁷. The same movements of the platform *C* are obtained by this arrangement by a manipulation of the apparatus in a manner that will be evident to those skilled in the art. In Fig. 10 the system of reaving and counterweights is similar to that of Fig. 8, but, here, a single motor *M*¹ is used, and the drums are idly mounted on a common driving shaft *I*⁸. They are necessarily controlled by independent friction clutches. The arrangement offered in Fig. 11 has the same system of reaving the ropes *B* and *B'* and of connection with the platform *C* as that shown in Fig. 10. The counterweights and their ropes, however, are omitted.

As to the special screen feature hereinbefore referred to and shown in Figs. 5 and 6, its automatic oscillation is obtained by engaging and supporting the front end, at each corner, in longitudinal slots *N*, and rear by a cross-bolt *b* that passes loosely through, or threads, the ends of the several bars making up said screen, as well as the apron *f* to be referred to, and is keyed to the rocker arms *T'*, at each side.

A shaft *T* is connected, near each end with the reciprocating-arms *T'*, to which are also connected or keyed second reciprocating-arms *T*², which pivotally engage rods *d* of eccentrics *e*, idly mounted on axes *a*, that carry said eccentrics. Said eccentrics *e* are parts of and integral with the sheaves *m*. Similar sheaves *m'*, for the operating ropes *B'*, are located at the sides of said platform in front of said screen. The operating ropes *B* and *B'* respectively loop around these sheaves from their drums above to anchorages near the top of the tower or loader *A*.

To prevent any back-flow or escape of coke on a forward reciprocation of the screen, we provide an arc-shaped apron *f*,

along the rear end and line of the screen. As shown, in this case, it contains a series of inwardly projecting recesses, alternating with the ends of the screen-bars, and into which the latter penetrate or mesh. It is manifest that, as thus prepared, on any winding in or out of the ropes B on their drum, the sheaves *m* will be actuated and with them the integral eccentrics *e* and thereby the screen itself: further, as to the platform C that, as said, a variety of movements or positions are obtainable, according to the will of the operator. For instance, when the arrangement of Fig. 8 is employed, the counterweights are of course contributory to the power, and the platform C may be raised either horizontally, or on one end more rapidly than the other, and the speed may be varied at any moment of the ascent. The same results are obtainable in the arrangement of Fig. 9, by regulating the relative speed of the drums by means of the magnetic clutches, in connection, of course, with the brakes customarily provided in such connections. Where a single motor, with the drums or a common shaft, as in Fig. 10, is used, a difference in speed, between the ends of the platform, is of course unattainable, and assuming that the pull of the counterweight is less than the loaded platform, the tipping necessary to employ said platform, is accomplished by throwing out the clutch for the front-end rope B', and setting the brake on its drum D, the other drum D' being kept in rotation. In Fig. 11 it is plain, that the ends of the platform will always move at the same pace, although, by the proper manipulation, one end can remain

stationary, or may be lowered while the other end is raised.

Having thus explained our invention and pointed out various methods of operating the same, what we claim and desire to secure by Letters Patent is:—

1. A coke-loader consisting of the combination of a frame-work or structure, a receiving platform flexibly suspended therein, with one end in and against inclined or diagonal guides or track-bearings, and means for raising and lowering said platform in and along the same, substantially as shown and described.

2. A coke-loader, consisting of the combination of a movable frame-work or supporting structure, a coke-receiving platform flexibly suspended therein at one end in and against up and down guides or track-bearings therefor, and means for raising and lowering said platform in and along said guides or bearings, substantially as shown and described.

3. In a coke-loader, the combination of a carriage mounted on suitable tracks and provided with driving mechanism, a coke-receiving platform flexibly suspended within said carriage, between and against inclined or diagonal track-bearings therefor, and suitable means, within said carriage, for driving the same, and raising said platform to a forward tipping position, substantially as shown and described.

CHARLES H. WRIGHT.
WILL K. MONROE.

In presence of—

L. P. LIPPS,
W. L. WESTCOTT.