No. 863,669. PATENTED AUG. 20, 1907.

A. SUCK.

HOISTING APPARATUS.

APPLICATION FILED JUNE 11, 1906.

3 SHEETS—SHEET 1.

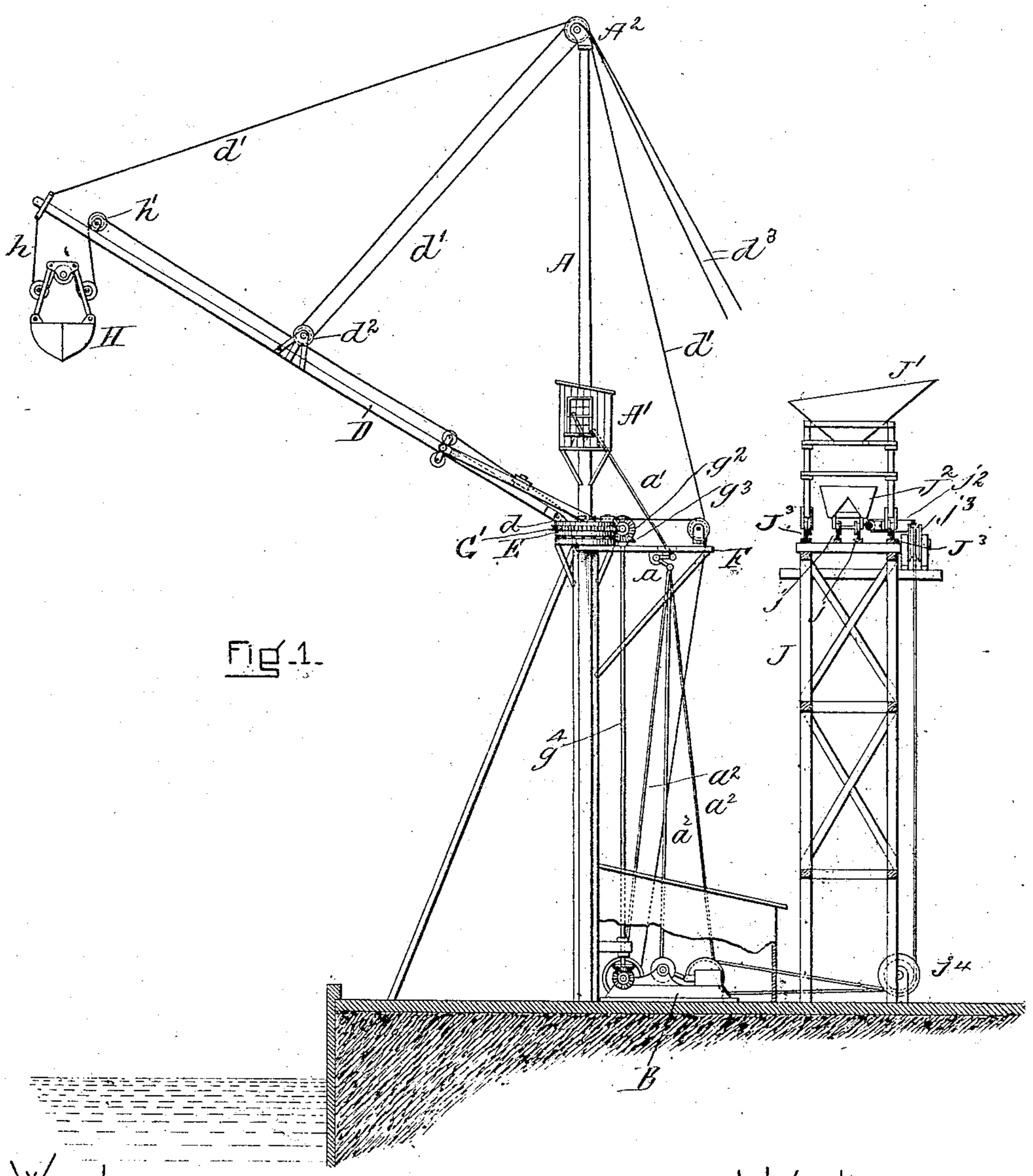

Fig. 1.

WITNESSES=

M. E. Flaherty.

M. V. Foley.

INVENTOR=

Adolph Suck

By

Church Kayser & Howson

his attorneys.

No. 863,669. PATENTED AUG. 20, 1907.

A. SUCK.

HOISTING APPARATUS.

APPLICATION FILED JUNE 11, 1906.

3 SHEETS—SHEET 2

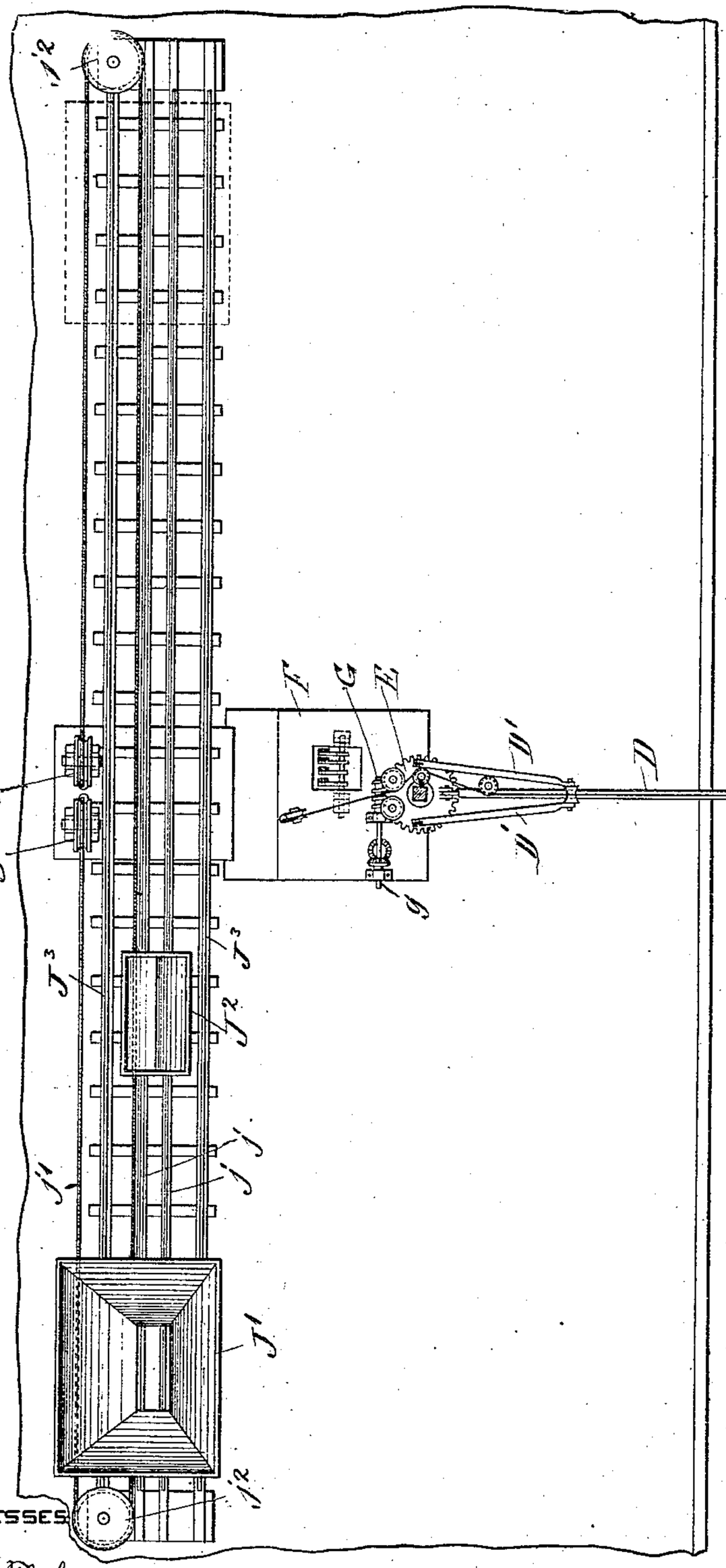

Fig. 2.

WITNESSES:

M. E. Flaherty.

M. V. Foley.

INVENTOR:

Adolph Suck.

By Howard Hayden Howard

his attorneys.

No. 863,669. PATENTED AUG. 20, 1907.

A. SUCK.

HOISTING APPARATUS.

APPLICATION FILED JUNE 11, 1906.

3 SHEETS—SHEET 3.

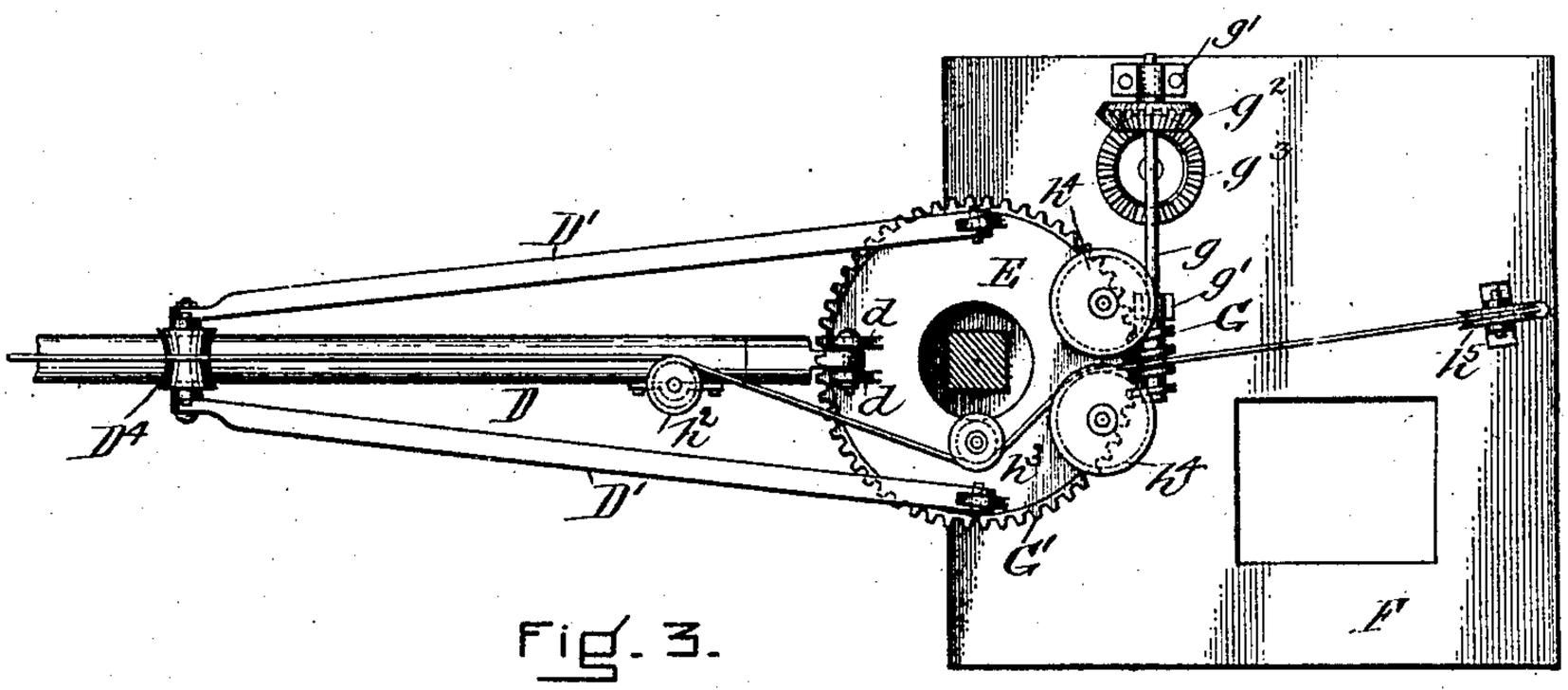

Fig. 3.

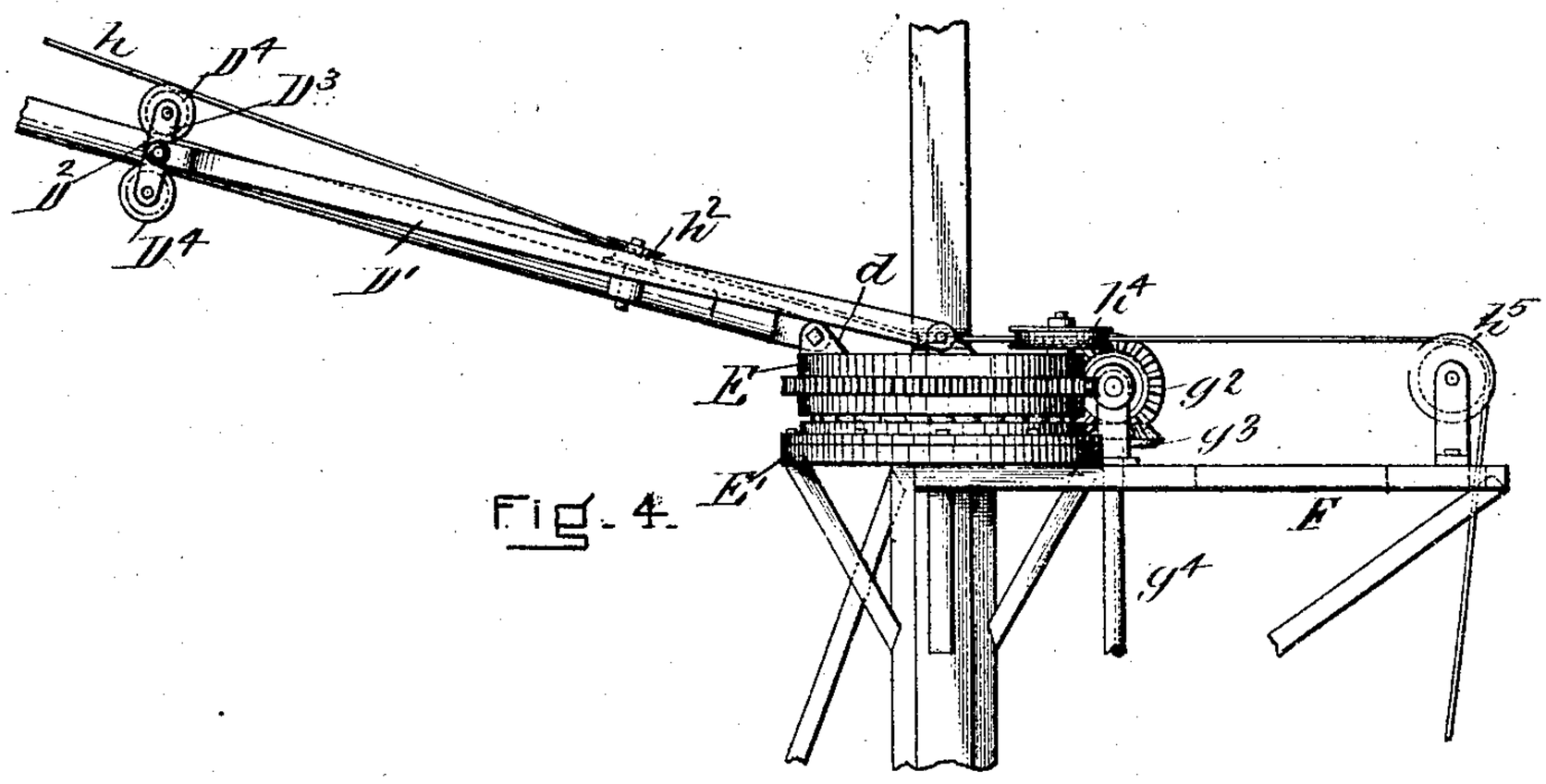

Fig. 4.

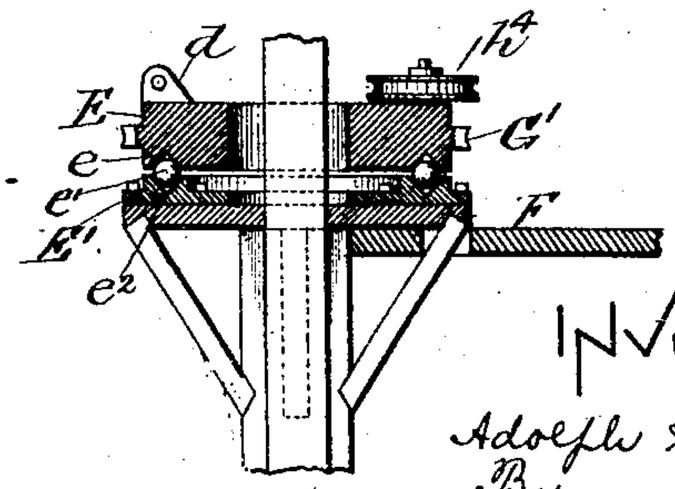

Fig. 5.

WITNESSES=

M. E. Flaherty.

M. V. Foley.

INVENTOR=

Adolph Suck.

By Clarke Kayton Moore

his attorneys

UNITED STATES PATENT OFFICE.

ADOLPH SUCK, OF BOSTON, MASSACHUSETTS.

HOISTING APPARATUS.

No. 863,669. Specification of Letters Patent. Patented Aug. 20, 1907.

Application filed June 11, 1906. Serial No. 321,091.

To all whom it may concern:

Be it known that I, ADOLPH SUCK, of Boston, in the county of Suffolk and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in Hoisting Apparatus, of which the following is a specification.

My invention can best be seen and understood by reference to the drawings in which—

Figure 1 is an elevation of an apparatus embodying my invention; Fig. 2 a plan; Fig. 3 an enlarged detail of plan; Fig. 4 a side elevation thereof, and Fig. 5 is a vertical section of a portion of the apparatus to which special reference will hereinafter be made.

A is a stationary mast. It carries an operator's house A^1 mounted on the mast above the rotatable table E which supports the lower end of a boom D. The boom and its support are located on the mast some distance above the ground in order that the boom may swing clear of sheds or other obstructions which might otherwise prevent its free movement. By reason of the high central location of the operator's house the operator has a commanding view of all the working parts. In the house A are located the necessary levers for controlling the hoisting engine located at B. The engine is provided with the necessary means for moving the boom, the grab and also a traveling hopper which is advantageously used with the apparatus as will hereinafter be explained. By reason of the operator's house being stationary the usual operating means may be employed and these are so well known to those skilled in the art that they are not described, neither are they shown in the drawings except that we have indicated at *a* a series of bell crank levers located on the under side of a platform F which assists in supporting the boom D, these bell crank levers being connected with operating levers in the house A by connecting rods a^1 and with operating levers at the engine B by the connecting rods a^2.

The lower end of the boom D is pivoted by a horizontal pivot in lugs *d*, *d* upon the rotary table E so that its upper end may be lifted and lowered according to the desired reach of the grab. It is raised and lowered by means of the rope d^1. One end of the rope d^1 is attached to the outer end of the boom and passes up through a sheave mounted in a swivel at the mast-head A^2, and down through the sheave d^2 and back over the sheave at the mast-head and down to a drum in the engine B. d^3 are guys running from the mast-head to a suitable place of attachment.

The table E has an annular groove *e* on its under side which rests upon balls e^1 in a corresponding groove e^2 in the support E^1 mounted on the platform F, so that the table and boom may be freely turned about a center.

The mechanism for turning the table E and boom D comprises a worm G which engages a gear G^1 forming the periphery of the table E. The worm G is mounted on the end of a shaft *g* moving in bearings g^1 on the platform F and carrying a beveled gear g^2 which meshes with the corresponding gear g^3 on the upper end of the vertical shaft g^4, the lower end of which is connected with suitable gearing in the engine and shifting mechanism, whereby the table E may be turned in either direction.

In order to steady the boom I provide braces D^1, D^1 which are pivoted at their lower ends to the table E so as to rise and fall as the boom is lifted or lowered and they turn with the table. They are connected at their outer ends by a carriage D^2 which rides up and down the boom D as the boom is lifted and lowered. This carriage comprises vertical cross-bars D^3 between which are rolls D^4, one located above and the other below the boom D. The cross-bars being supported by the braces D^1, D^1, hold the boom against lateral movement and the rolls serve as anti-friction rolls when the carriage is moved with relation to the boom as it is lifted or lowered, some such construction being desirable as the pivot of the boom D and braces D^1, D^1, are not in line.

H is a grab which may be of any desired construction, a single rope grab being preferably used as shown in the drawings. The grab-operating rope is marked *h*. This rope is attached at one end to the end of the boom D and runs over the sheaves h^1 and h^2 upon the boom, thence around the sheave h^3 and between the sheaves h^4, h^4 located on the table E and thence over the sheave h^5 down through the platform F to a drum on the engine B. By thus directing the grab-operating rope to run over the sheaves h^3, h^4, h^4, the grab-operating rope is maintained in constant operative connection with the grab whatever the position of the boom may be. The sheaves h^4, h^4 it will be noted are so arranged as to keep the grab rope properly upon the sheave h^3 whatever the position of the boom support may be.

To show the utility of using the apparatus in connection with a traveling hopper I have indicated at J a trestle carrying a hopper J^1 into which coal may be dumped from the grab H and directed into cars J^2 running on rails *j*. The hopper runs on rails J^3 and is moved along the rails by means of a cable j^1 passing around sheaves j^2 at each end of the trestle and down over sheaves j^3, j^4 to the engine where the cable is operated to pull the hopper in either direction, the engine being controlled from the operator's house as above described. When the boom is adjusted to the place from which the material is to be lifted by the grab the hopper can then be moved along the trestle J and receive the load of the grab without re-adjusting the angle of the boom.

What I claim as my invention is:—

1. In a hoisting apparatus of the character specified, a stationary mast, a boom, a support therefor, and an operator's house located on the stationary mast above said boom support.

2. In a hoisting apparatus of the character specified, a

stationary mast, a boom, a rotatable boom support, an operator's house mounted on said stationary mast above said boom support, and means whereby said support may be rotated controllable from said operator's house, as described.

3. In a hoisting apparatus of the character specified, a stationary mast, a boom, a rotary boom support mounted on said mast, an operator's house mounted on the mast above said boom support, and means for raising and lowering said boom controllable from said operator's house.

4. In a hoisting apparatus of the character specified, a boom, a rotatable boom support, a grab carried by said boom, a grab-operating rope, the sheave h^3 mounted on said boom support over which said rope renders, and sheaves h^4, h^4 also mounted on said boom support for keeping said rope properly on the sheave h^3 whatever the position of the boom support may be.

5. In a hoisting apparatus of the character specified, a stationary mast, a boom, a rotatable boom support mounted upon said mast, an operator's house mounted on said stationary mast above said boom support, a grab carried by said boom, a trolley, a traveling hopper, and means whereby said boom, grab and hopper may be controlled from said operator's house as described.

ADOLPH SUCK.

Witnesses:
M. E. FLAHERTY,
M. V. FOLEY.