

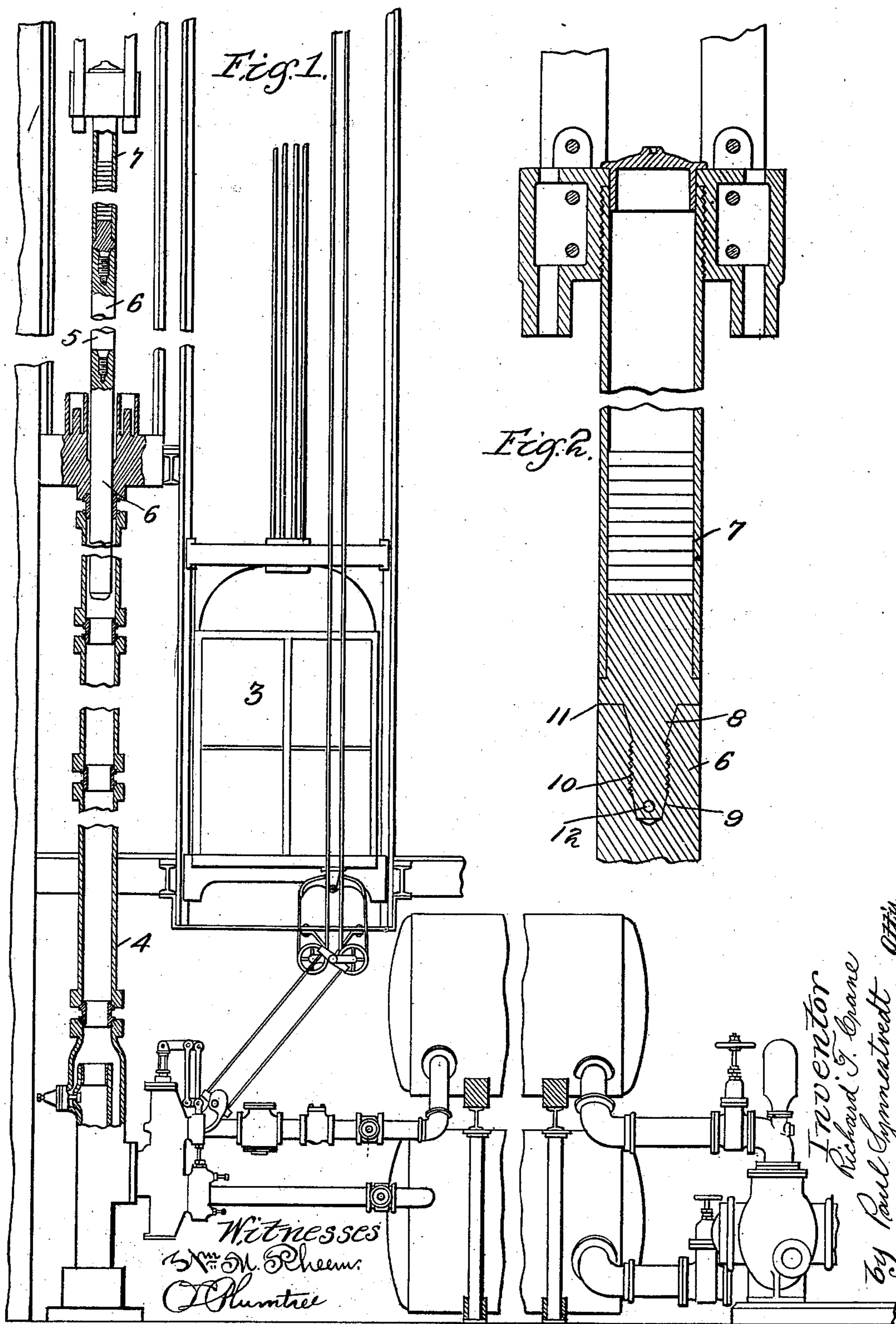
No. 661,576.

Patented Nov. 13, 1900.

R. T. CRANE.
HYDRAULIC ELEVATOR RAM.

(Application filed Oct. 8, 1897.)

(No Model.)



UNITED STATES PATENT OFFICE.

RICHARD T. CRANE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE OTIS ELEVATOR COMPANY, OF NEW JERSEY.

HYDRAULIC-ELEVATOR RAM.

SPECIFICATION forming part of Letters Patent No. 661,576, dated November 13, 1900.

Application filed October 8, 1897. Serial No. 654,510. (No model.)

To all whom it may concern:

Be it known that I, RICHARD T. CRANE, a citizen of the United States, residing at Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Hydraulic-Elevator Rams, of which the following is a specification.

My invention relates particularly to the type of elevator which employs a weighted plunger or ram operating within a vertical cylinder and connected to the hoisting-cables of the car, said ram serving as a counterweight for the car; and the invention has especial reference to the means employed for regulating the amount of such weight and the construction of joint used to hold the various sections of the plunger or ram together. It is not infrequently discovered after an elevator is put into operation that the average load it is required to lift is either greater or less than it was designed to carry—most frequently the latter. In such case it is highly desirable to be able to change the capacity of the machine to more nearly equal the requirements of the service performed, for thereby it can be operated much more economically. To alter or replace entirely any of the larger parts of an elevator after it is erected is necessarily an expensive and troublesome undertaking. I therefore aim to construct a machine the capacity of which can be readily varied to suit these different conditions. In other words my invention has for its object the construction of a hydraulic elevator ram of a number of sections, parts of which are solid and parts hollow, and adapted to receive variable weights, the various sections being secured together by a novel construction of joint, which while perfectly strong and safe will at the same time present a smooth bearing-surface on the outside of the ram adapted to pass through the packing of the stuffing-box without injuring the same.

To better understand the nature of my improvements, reference may now be had to the accompanying drawings, in which—

Figure 1 is a vertical section or diagrammatic representation of an elevator having my invention applied thereto; and Fig. 2 is a sectional view, on an enlarged scale, of a portion of the plunger or ram proper.

Referring now more particularly to Fig. 1, it will be seen that I have shown a car 3, with a cylinder 4 and operating mechanism of the kind commonly used in this type of machine. The plunger 5 is composed of a number of sections, the number of course depending upon the height of the building, some of the sections (marked 6) being solid and some (marked 7) hollow.

In constructing elevators of this type it has been found that the best results are obtained by making the diameter of the ram such that the weight of the water displaced by it per foot of travel will bear a certain ratio to the weight of the cables per running foot, as this does away with the need of a counterbalance-chain, the hydraulic head of the water-column in the cylinder taking its place. This being the case it is of course impossible to regulate the weight of the ram properly to suit the load by simply changing its diameter. I have therefore constructed my improved plunger with a portion only of its sections solid, leaving the rest hollow and open at the top for the insertion or removal of such weights as are necessary to accurately secure the balance desired.

To secure the various parts of the ram together, I have provided joints of the form shown in Fig. 2, comprising a male and female portion, having two tapered surfaces 8 and 9 and a thread 10 between the same, and having the outer parts of the ends squared, as at 11, so as to abut firmly against each other, so that when turned true after being put together the outer surface of the ram will present a smooth and practically-continuous surface, which will not cut the packing through which it must pass. Finally, to make the whole still more secure I insert a pin 12, which prevents all possibility of the parts unscrewing.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a hydraulic elevator of the vertical-cylinder type, the combination with a car and its operating-cylinder, of a ram connected to the hoisting-cables of the car and operating in said cylinder, said ram built up of removable sections secured together, some of said

sections being solid and some hollow, as and for the purpose set forth.

2. In a hydraulic elevator of the vertical-cylinder type, the combination with a car and its operating-cylinder, of a ram connected to the car-hoisting cables and operating in said cylinder, said ram being composed of interspersed removable solid and hollow portions, the hollow portions adapted to receive a variable weight, as and for the purpose set forth.

3. In a hydraulic elevator of the vertical-cylinder type, the combination with a car and its operating-cylinder, of a ram connected to the car-hoisting cables and operating in said cylinder, said ram composed of removable solid and hollow sections, said sections being secured together by a joint comprising a threaded socket formed in the end of one section and having tapering portions on either side of the threaded portion, and a threaded pin or projection on the adjacent end of the next section, said pin or projection being correspondingly threaded and tapered, as and for the purpose set forth.

4. In an apparatus of the class described, a

counterbalancing hoisting-ram composed of interspersed solid and hollow sections secured together by a joint comprising a threaded socket formed in the end of one section and a threaded pin or projection in the adjacent end of the next section adapted to be received in said socket, and a pin for securing said threaded projection in said socket, as and for the purpose set forth.

5. In an apparatus of the class described, a counterbalancing hoisting-ram, composed of removable solid and hollow sections, said sections being provided with squared abutting ends, one of the sections having a threaded socket, and tapering walls on opposite sides of the threaded portion, and the adjacent end of the other section provided with a correspondingly threaded and tapered projection adapted to be received in said socket, as and for the purpose set forth.

RICHARD T. CRANE.

Witnesses:

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