

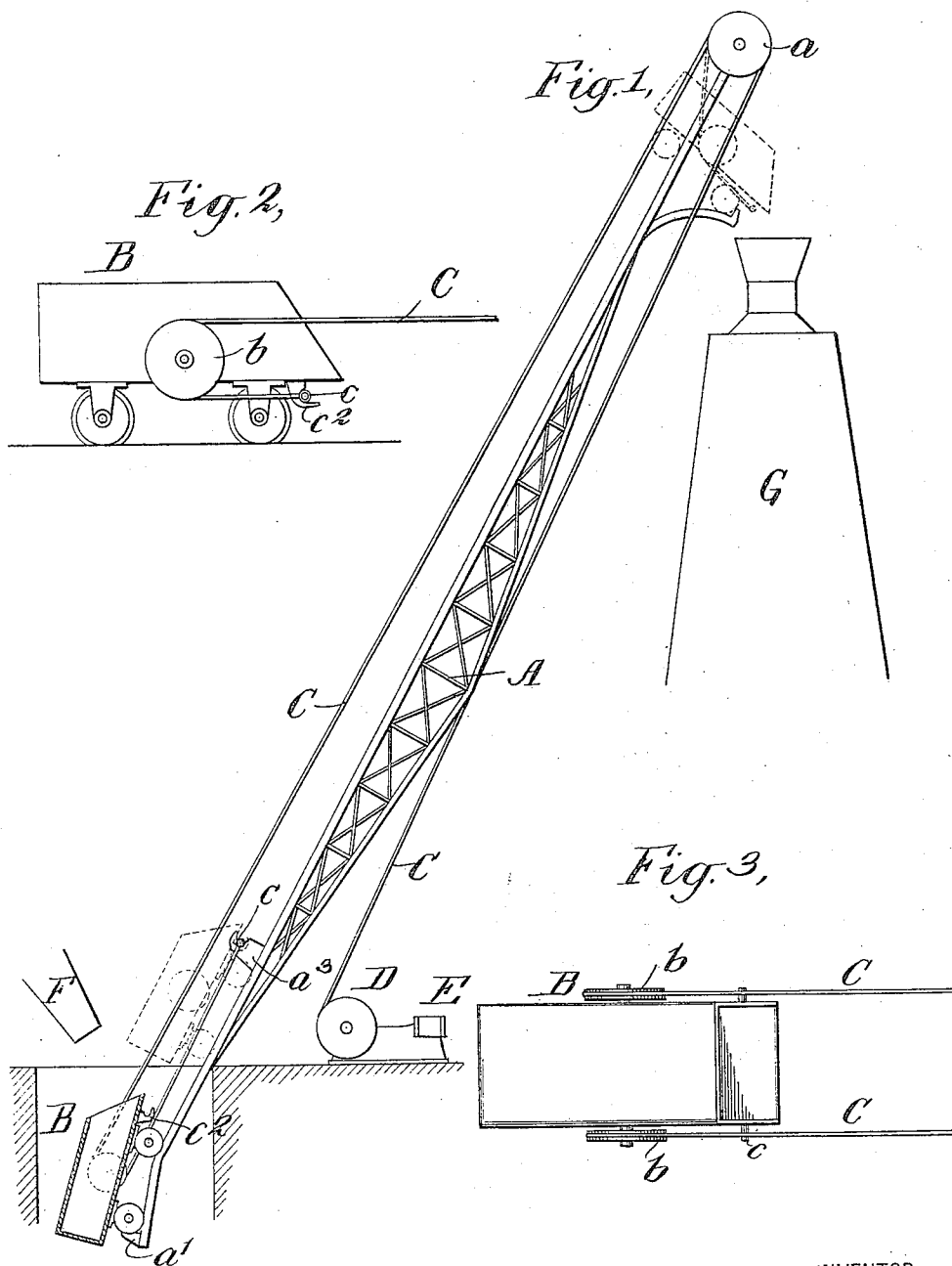
No. 817,790.

PATENTED APR. 17, 1906.

E. W. MARSHALL.

HOIST.

APPLICATION FILED JULY 13, 1903.



WITNESSES:

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HOIST.

No. 817,790.

Specification of Letters Patent.

Patented April 17, 1906.

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To all whom it may concern:

Be it known that I, ERNEST W. MARSHALL, a citizen of the United States, residing at Yonkers, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Hoists, of which the following is a specification.

My invention relates more particularly to hoists, and especially to that class of hoists used in connection with furnaces.

I will describe a hoist embodying my invention, and then point out the novel features thereof in claims.

In the accompanying drawings, Figure 1 is a diagrammatic view, partly in elevation and partly in section, of a hoist embodying my invention and certain other devices employed in connection with the hoist. Fig. 2 is a view in elevation of a car comprised in my invention. Fig. 3 is a top plan view of the car of Fig. 2.

Similar letters of reference designate corresponding parts in all the figures.

Referring to the drawings, A designates an incline which may be of any desired construction and material. B designates a car adapted for travel up and down the incline on the tracks, which, as here shown, are so arranged at the upper end of the incline as to cause the tilting of the car in the manner shown in dotted lines to discharge its contents into the furnace G. The travel of the car up and down the incline is here shown as being effected by means of a pair of cables C. One end of each cable is connected to a rod or bar c. They pass over sheaves or pulleys a, suitably journaled at the upper end of the incline. The other ends of the cables are connected to a drum D, which is rotated by an engine or motor E. The drum or engine may be rotated in one direction only by a motor and allowed to run free in the opposite direction by reason of gravity acting on the car. In the latter case a suitable brake should be employed to stop the rotation of the drum. A stop a' is shown at the lower end of the incline to limit the downward movement of the car. The lower end of the incline is also here shown as being of a different and steeper grade than the remainder of the incline, a purpose of which arrangement is to have the car in such position as to be conveniently filled from a chute F. This is an arrange-

ment in common use in hoists; but it is not necessary, and the lower end may be in the same grade as the remainder of the incline.

The engine or motor E may be of any desired type, and it is arbitrarily represented in the drawings. The drum may also be of any desired type, and any desired form of gearing may be employed between the engine or motor E and the drum. In order that the engine or motor may be started easily and quickly, I find it desirable under many circumstances, such as where the car is on a steep grade—as, for example, that shown in Fig. 1—or where the full power of the engine or motor employed for raising the car and load is not available at the starting of the engine or motor, to provide means for overcoming the inertia of the load and car with less initial pull. This may be accomplished by the means shown in the drawings, which, as here shown, consist of pulleys b, which are suitably journaled to the sides of the car. The cables C pass around these sheaves or pulleys, as shown in the drawings.

It will be apparent from the drawings that when the engine or motor is started but one-half the power is required to start the car up the incline than would be required if the sheaves or pulleys were not employed.

It is obvious that the car will travel at a speed equal to one-half the speed of the cable and that the slow speed of travel of the car will preferably be wholly or partially on the steepest grade of the incline.

In order that the sheaves or pulleys b may be availed of, I provide suitable stops a³ on the incline near the lower end thereof to engage the rod or bar c upon the descent of the car, as shown in full lines in Fig. 1. When the car is started up the incline, the sheaves or pulleys b are brought into play until the car reaches the position shown in dotted lines in Fig. 1 at the lower part of the incline, at which time hooks or other devices c², carried by the car, will engage the rod or bar c to release it from the stops a³ and cause the same to travel with the car up the incline. This action does not take place until the engine or motor has acquired sufficient momentum to raise the car and its load to the top of the incline without the use of the pulleys or sheaves b.

The advantage of the invention in the case

of two-cylinder engines will be readily seen, as in this type of engine only one cylinder is available in starting the car and its load.

While I have described my car in connection with hoists for furnaces, it will be understood that it may be employed wherever it is desired to overcome the inertia of a load with less initial pull than would otherwise be required. It will also be understood that I do not desire to be limited to the arrangement described, and shown in the drawings, as various changes may be made in the several parts described without departing from the spirit of my invention.

What I claim as my invention is—

1. The combination in a hoist, of an incline, a car adapted for travel up and down the incline, a motor and cable for effecting the travel of the car on the incline, and means for overcoming the inertia of said car and load with a lessened initial pull comprising a sheave or pulley carried by the car and around which the cable passes, and means situated near the starting-point of the car for holding the end of the cable.

2. The combination in a hoist, of an incline, a car adapted for travel up and down the incline, a motor and cables for effecting the travel of the car on the incline, and means for overcoming the inertia of said car and load with a lessened initial pull comprising a sheave or pulley carried by the car and around which the cables pass, and means situated near the starting-point of the car for holding the ends of the cables.

3. The combination in a hoist, of an incline, a car adapted for travel up and down the incline, a motor and cable for effecting the travel of the car on the incline, and means comprising a sheave or pulley around which

the cable passes, and a stop near the lower end of the incline for holding the end of the cable, whereby the inertia of said car and load is overcome with a lessened initial pull.

4. The combination in a hoist, of an incline, a car adapted for travel up and down the incline, a motor and cable for effecting the travel of the car on the incline, means comprising a sheave or pulley around which the cable passes, and a stop near the lower end of the incline for holding the end of the cable, whereby the inertia of said car and load is overcome with a lessened initial pull, and means carried by the car for carrying the end of the rope with it after it has started up the incline.

5. The combination in a hoist, of an incline, a car adapted for travel up and down the incline, a motor and cable for effecting the travel of the car on the incline, and means for starting said car at less speed than that of the cable and afterward moving the car at the same speed as that of the cable.

6. The combination in a hoist, of an incline, the lower end of which is in a steeper grade than the remainder of the incline, a car adapted for travel up and down the incline, a motor and cable for effecting the travel of the car on the incline, and means for starting said car at less speed than that of the cable when the car is on the steeper grade of the incline.

In witness whereof I have subscribed my name to this specification in the presence of two witnesses.

ERNEST W. MARSHALL.

Witnesses:

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HARRY E. KIRBY