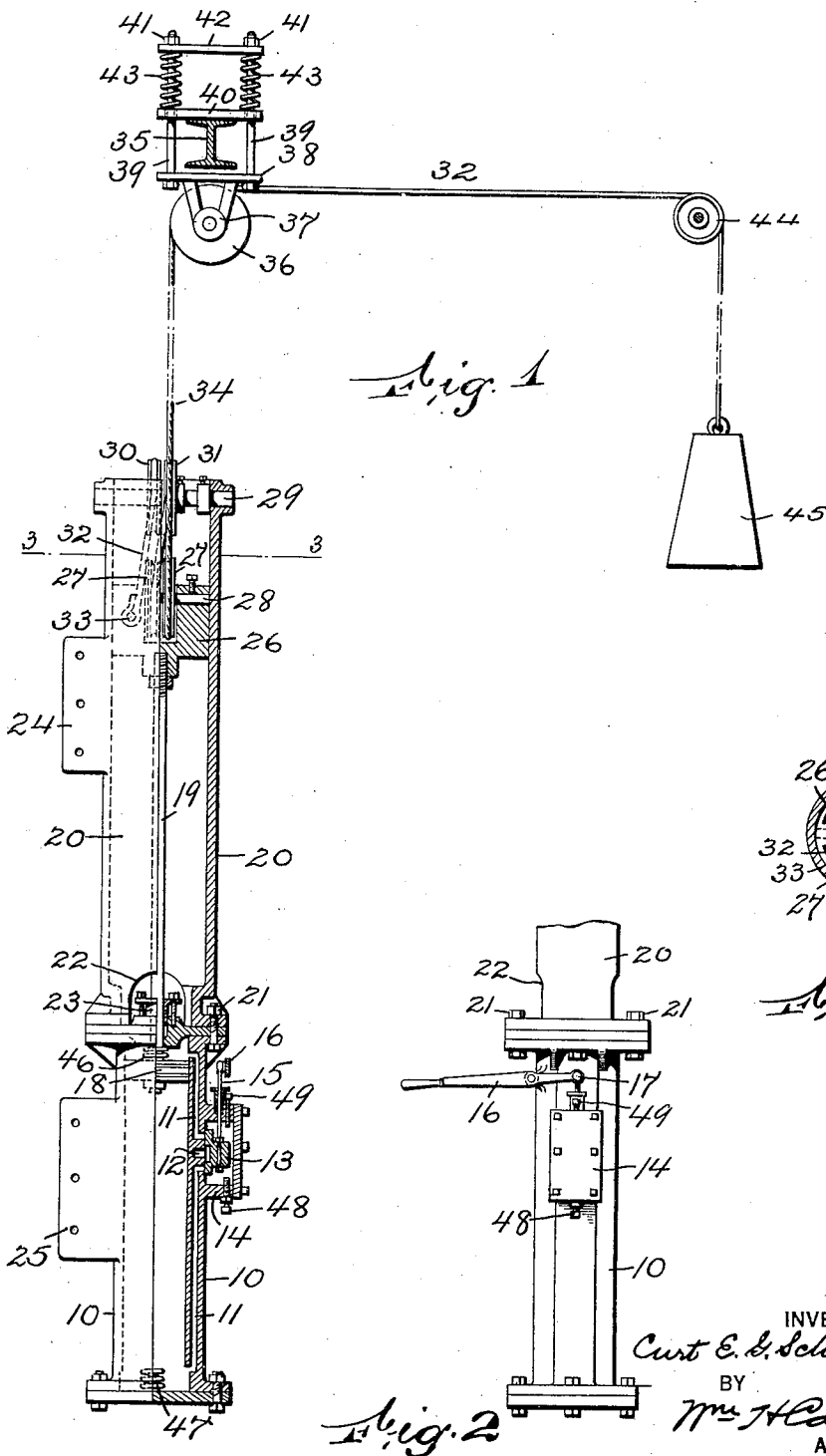


C. F. G. SCHOENKNECHT.
HOISTING APPARATUS.
APPLICATION FILED MAY 10, 1920.

1,361,909.

Patented Dec. 14, 1920.



INVENTOR

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To all whom it may concern:

Be it known that I, CURT E. G. SCHOENKNECHT, a citizen of the United States, and a resident of Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Hoisting Apparatus, of which the following is a specification.

This invention is designed to provide a hoisting apparatus which can be used for many different purposes, but which is primarily designed for both hoisting a weight quickly and causing the quick descent of the weight by release of the hoisting apparatus, it being particularly designed to permit the dropping of heavy weights in such places as gas houses and the like, for the breaking up of large particles, such as residue, the present apparatus for this purpose being cumbersome, requires expert manipulation and usually takes up a great deal of room proportionate to the work they accomplish.

The present invention takes up but little floor space, being vertically disposed, and is operated by a single lever which controls the admission of fluid under pressure, usually steam, to the operating cylinder, which in turn operates a cross-head which is connected by sheaves with a cable, so that the movement of the piston is multiplied so as to quickly raise a comparatively heavy weight.

The invention further consists in a readily adjustable means for controlling the movement of the manually operated steam-control mechanism so that the speed of movement can be limited.

The invention is further designed to provide a device of this kind, the major portion of which is incased so that flying fragments or the like will not be apt to damage any of the parts, and further consists in various details which will be hereinafter more fully described and finally embodied in the claim.

The invention is illustrated in the accompanying drawing, in which Figure 1 is a view, one half of the cylinder and the casing above it being shown in section, the view also illustrating the preferred form of cable support beyond the hoisting apparatus. Fig. 2 is a front view of the lower portion of the device shown in Fig. 1, and Fig. 3 is a section looking downward, taken on the plane indicated by line 3—3 in Fig. 1.

The device comprises a cylinder 10 which is actuated by fluid under pressure, the

form shown being a steam cylinder which has the entrance ports 11 and an exit port 12 controlled in the usual way by a slide 13 in the steam chest 14. The slide has a projecting stem 15 which is operated by a manual means, such as the lever 16, which is pivoted at a proper point to the device and is hinged, as at 17, to the stem 15.

It will be evident that as the slide 13 is slid one way or the other, it will admit steam first to one end and then to the other end of the cylinder, the end not so supplied being in communication, through its port 11, with the exhaust port 12. In this way the direction of movement of the piston 18 is controlled.

The piston 18 is connected to a piston rod 19 which operates inside the tubular casing 20 which is secured to the top end of the cylinder by suitable means, such as the bolts 21, and forms a cylindrical casing and has the openings 22 to give access to the stuffing box 23 at the top of the cylinder.

The device is held upward by attaching it to a suitable support, the form shown including plates 24 on the cylindrical casing 20, and 25 on the cylinder 10, by means of which the device is bolted to a wall or to a column in a building. At the top of the piston rod 19 is a cross-head 26 which slides freely in the casing and is provided with sheaves 27 rotatable on the shaft 28 in the cross-head. The top of the casing forms a support for the shaft 29, on which are mounted the sheaves 30 and 31. The cable 32 has one end secured, in the form illustrated this securing means being a bolt 33 in the cross-head, the cable then passing over the sheaves 30, under the sheave 27, over the sheave 31 and under the other sheave 27, and then extends upward, as at 34, to the point where it is to support a weight or the like.

I have devised a well adapted form of pulley for taking up slack and relieving the shock of the stoppage of the piston, the form shown comprising a support, such as an I-beam 35, from which is suspended the pulley 36, over which the cable 32 passes, the pulley 36 being mounted in a bearing 37 suspended from a plate 38 which has the bolts 39 extending up through the plate 40, which rests on the I-beam 35, these bolts sliding freely through the plate 40 and being fastened, as by nuts 41, to a top plate

42. Springs 43 surround the bolts 39 and give them a limited resiliency toward the hoisting apparatus.

From this point the cable goes usually over a pulley 44 and suspends a suitable weight 45. To take up the shock within the apparatus I arrange buffer springs 46 and 47 at the ends of the cylinder so that the piston, on dropping its limit of movement, will engage such springs 46 and 47 so as to give relief to the whole mechanism from shock.

In order to provide for a desired amount of steam being admitted to the cylinder at one time I limit the movement of the slide 13 in the steam chest, such limiting means being adjustable. In this connection I show a screw 48 at one end of the steam chest and a screw 49 at the other end, these screws being disposed so that the steam chest will engage them in its movement, the screw 48 controlling the amount of steam that can be admitted through the upper port 11, and the screw 49 controlling that which can be admitted through regulating the proportion of the opening of the lower port 10 that is uncovered.

It will be evident that when the lever 16 is operated to push the slide 13 downward, steam is admitted above the piston 18, and the piston is forced downward, the speed thereof being, of course, controlled by the amount of steam admitted, which in turn is controlled by the position of the screw 48, it being assumed that an ordinary workman will move the handle to its limit of movement at the outset of the operation. This movement of the piston pulls down the cross-head 26 since they are both secured to the piston rod 19, and the multiplication of movement, due to the sheaves, causes the cable, with the insulation illustrated, to advance about four times the movement of the piston, so that with a three foot stroke of

the piston the weight 45 will be raised about 12 feet. This raising is quickly accomplished and the lever 16 is then swung so as to uncover the lower port 11 and the piston is then rapidly forced upward, which permits the weight to fall and can be used for crushing or other purposes.

It will be evident that the "weight" included in this specification is merely shown and described for the purpose of making the invention clear, as other mechanisms than a weight can be the element influenced by the hoisting apparatus.

It will be readily understood that, if desired, the number of sheaves can be altered, and if only one of the sheaves 30 or 31 is to be employed, the movement would be three-fold, and if only one sheave is placed on the shaft 29 and only one sheave on the shaft 28, the movement of the weight would only be double that of the stroke of the piston.

It will be readily understood that as the piston reaches each end of its stroke the springs 46 and 47, whichever was engaged, would take up the shock of the stoppage of the piston.

I claim:

A hoisting apparatus comprising a steam cylinder with a piston rod projecting therefrom, a cylindrical casing mounted on the cylinder, a cross-head in the casing and traveling with the piston rod, sheaves secured in the cross-head, a shaft at the top of the casing, sheaves on the shaft, a cable with one end secured and then passing over the sheaves, a steam chest with a slide therein, means for manually operating the slide, and readily adjustable means for limiting the movement of the slide.

In testimony that I claim the foregoing, I have hereto set my hand, this 8th day of May, 1920.

CURT E. G. SCHOENKNECHT.