

971,779.

J. O. PARDUE.
MINE TIMBERING MACHINE.
APPLICATION FILED OCT. 14, 1909.

Patented Oct. 4, 1910.

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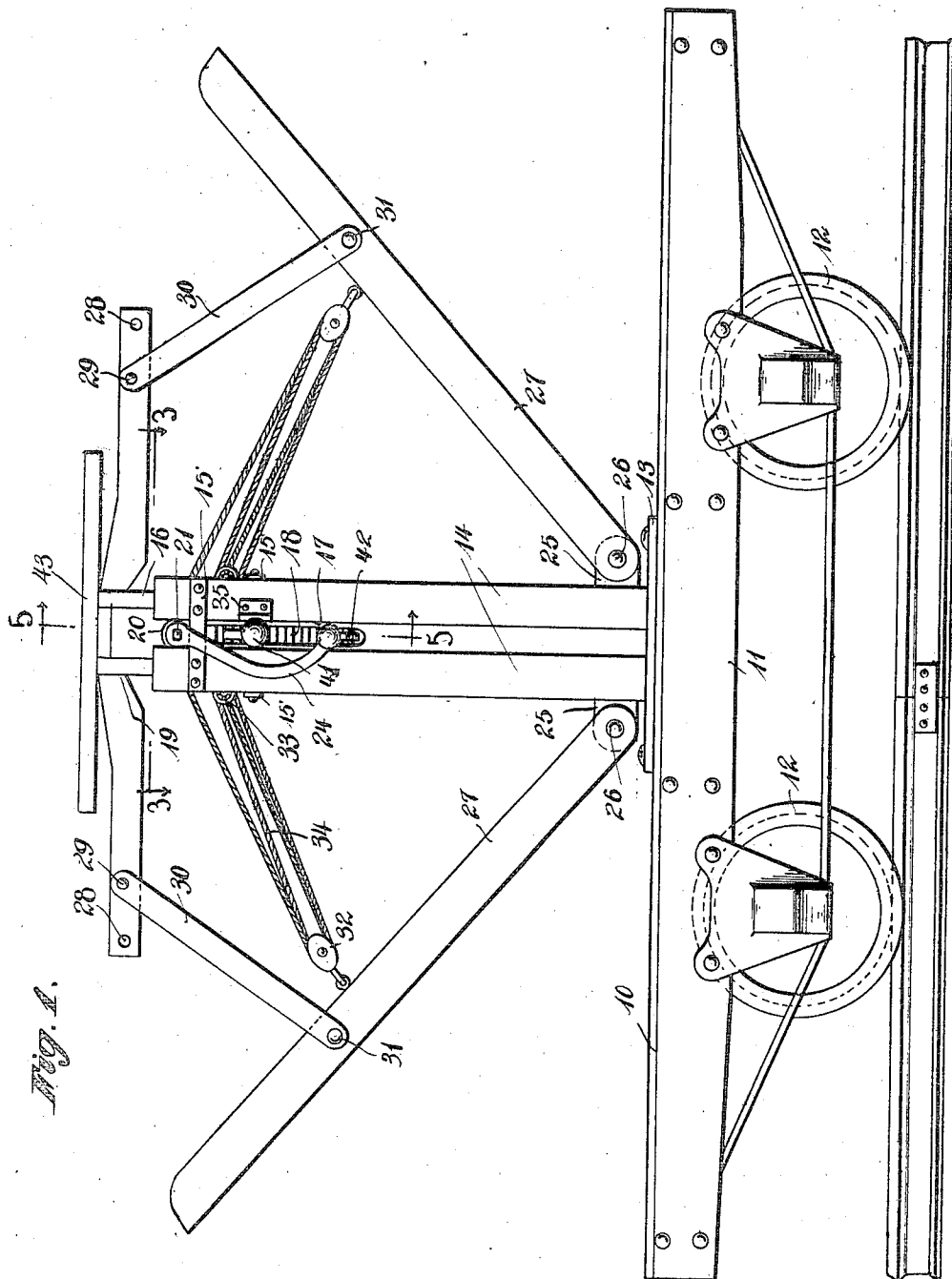


Fig. 1.

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By *Donald C. Hamble*

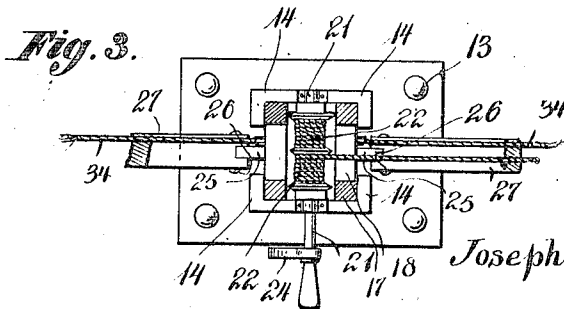
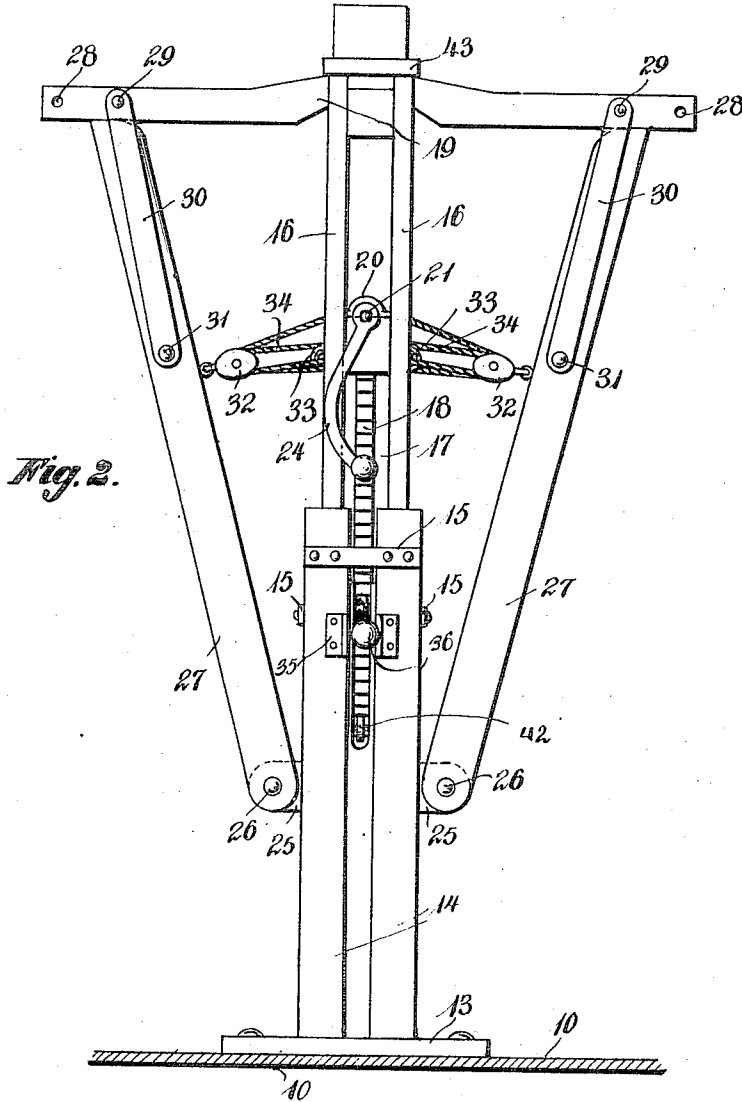
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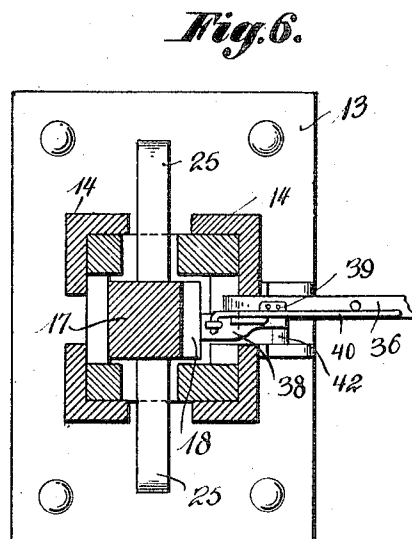
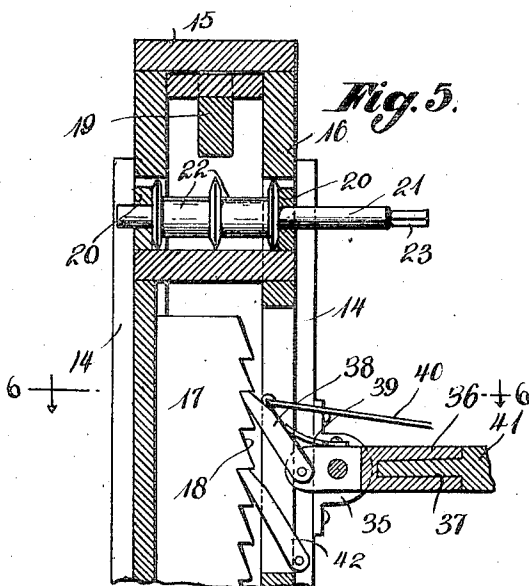
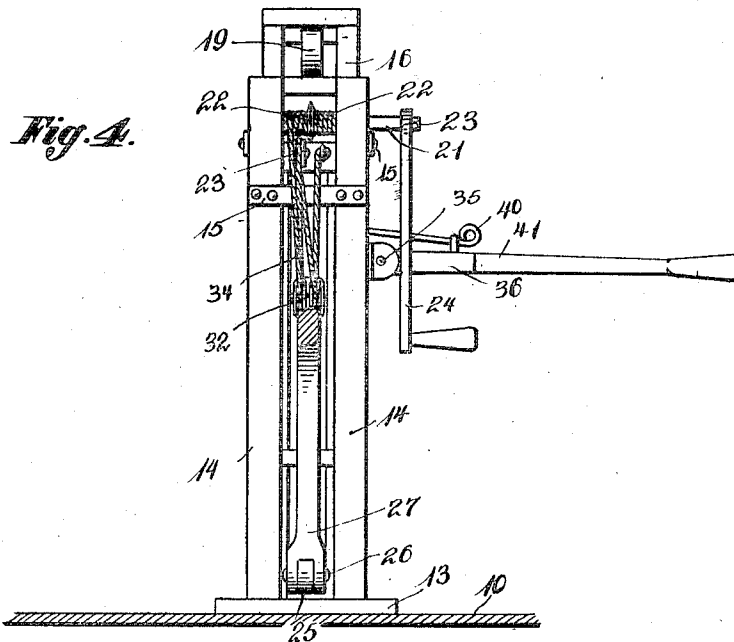
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3 SHEETS—SHEET 3.



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Joseph C. Pardue

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UNITED STATES PATENT OFFICE.

JOSEPH C. PARDUE, OF WILLOWTON, WEST VIRGINIA.

MINE-TIMBERING MACHINE.

971,779.

Specification of Letters Patent.

Patented Oct. 4, 1910.

Application filed October 14, 1909. Serial No. 522,608.

To all whom it may concern:

Be it known that I, JOSEPH C. PARDUE, a citizen of the United States, residing at Willowton, in the county of Mercer, State of West Virginia, have invented certain new and useful Improvements in Mine-Timbering Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to mine timbering and its object is to provide a novel form of machine which is preferably termed a mine timbering machine.

One object of the invention is the provision of a telescopic hoist especially arranged to place the head timbers across the passages of a mine and hold them in position during the placing of the struts.

Another object of the invention is to provide a mechanism of this class so arranged that it will occupy but little vertical space when collapsed and when extended will be adapted to retain the extended position.

With the above and other objects in view the invention consists in general of a device arranged for support upon a mine car and embodying a species of telescopic hoist or jack.

The invention further consists in certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawings, and specifically set forth in the claims.

In the accompanying drawings, like characters of reference indicate like parts in the several views, and:—Figure 1 is a side elevation of a mine car equipped with this invention, the invention being shown in the collapsed position. Fig. 2 is a view of the invention in extended position, only the floor of the car being shown. Fig. 3 is a section on the line 3—3 of Fig. 1. Fig. 4 is an end elevation of the device, certain parts being broken away the better to show the operation. Fig. 5 is a section on the line 5—5 of Fig. 1. Fig. 6 is a section on the line 6—6 of Fig. 5.

The numeral 10 indicates the floor of the mine car and this floor is supported on the usual frame 11 which is in turn supported on wheels 12.

Secured centrally of the mine car is a base 13 from which extend upward certain guides

14. These guides are in the form of L-shaped members and may, if desired, be made of angle iron. Furthermore, the guides are very firmly fixed to the base and are connected at their upper ends by means of brace members 15. Held within the guides 14 and slidable vertically with reference thereto is a frame 16 which in turn acts as a guide for a centrally disposed post 17 having a series of ratchet teeth 18 formed on one face. Upon the upper end of the frame 16 is carried a head 19 and upon the upper end of the post 17 is carried a pair of bearings 20 through which passes a shaft 21 having winding drums 22 securely keyed thereto between the bearings and being provided at one end with an angled portion 23 adapted to receive the socketed end of a crank 24.

Lugs 25 project outwardly through the guides from the post 17 and these lugs are perforated to receive pivot bolts 26. At 27 are shown certain struts which have bolt receiving openings at their lower ends and the bolts 26 pass through these openings and serve to secure the lower ends of these struts to the lugs 25. The head 19 is provided at each end with certain bolt holes 28 adapted to receive bolts 29, and links 30 have their upper ends attached to the head 19 by means of these bolts while their lower ends are pivotally connected to the struts 27 by bolts 31.

When the device is collapsed as in Fig. 1 the links and struts which are connected lie at angles to each other as can be clearly seen by reference to that figure while when the device is in elevated position the links and struts are substantially in alinement as can clearly be seen by reference to Fig. 2 and the length of the struts is such that they bear against the under side of the head and form very obtuse angles therewith so that they act to frictionally engage with the under side of said head and prevent the accidental dropping of the same.

For the purpose of bringing the struts and links into alinement each of the struts has connected thereto a block 32 and to the post adjacent its upper end are connected other blocks 33. Over these blocks passes a flexible cable 34 and the ends of these cables are wound upon the respective drums 22 in such manner that the rotation of the shaft in one direction or the other will operate either to simultaneously wind the cables on the drums

or to simultaneously unwind said cables. By this means a species of toggle or knuckle joint is formed and operated.

Secured to the guides 14 is a bracket 35 5 whereto is pivotally connected a lever 36 provided with a socket in the end thereof as indicated at 37 and to the inner end of this lever is pivoted a pawl 38 normally pressed toward the ratchet teeth 18 by means of a 10 spring 39 while a rod or wire 40 is connected to the free end of this pawl and serves to withdraw the same from engagement with the ratchet when desired. A handle 41 is 15 detachably attached to the lever 36, being provided with a reduced end arranged to fit within the socket 37 for the purpose of connecting the handle and lever. At 42 is a locking pawl which normally engages the ratchet teeth 18 and serves to hold the post 20 17 in raised position during the time of the upward movement of the handle 41.

Pivotally mounted on the head 19 is a bolster 43 adapted to receive a mine timber on its upper surface, the bolster being pivoted as noted, in order that this timber may 25 be swung to any position desired with relation to the center line of the car.

In the operation of this device the car is loaded with the timbers desired to be used 30 and run into the place where the timber operations are to begin. One of the timbers is then placed upon the bolster 43 and the crank 24 turned until the struts 27 are brought into alinement with the links 30 35 and the upper ends of these struts jammed firmly beneath the head 19. This, of course, will raise the head and frame 16 vertically. The timber may then be swung around to desired position and the crank 24 removed. 40 The handle 41 is then moved up and down after the manner of a pump handle and this causes the post 17 to rise and the rising of this post carries with it the head 18, struts 27 and all the other parts that have previously been in operation. When the timber 45 has been forced solidly against the roof the sill may be laid, if one is used, and the side timbers of the frame placed in position. The post 17 may then be lowered by again 50 operating the handle 41, the pawls 38 and 42 being alternately manually disengaged from the ratchet teeth 18. When the downward movement is finished the crank 24 may be applied to the squared end 23 and the struts 55 27 moved outward until the friction against the under side of the head 19 is overcome when the handle may be allowed to rotate backward and permit the parts to assume the position shown in Fig. 1.

It will be seen that by means of this device the operation of raising mine timbers to place may be very quickly and expeditiously performed while at the same time the device is of such nature that it may be operated by 65 the ordinary labor used in mines.

There has thus been provided a simple and efficient device of the kind described and for the purpose specified.

It is obvious that minor changes may be made in the form and construction of this 70 invention without departing from the material principles thereof. It is not therefore desired to confine the invention to the exact form herein shown and described, but it is wished to include all such as properly come 75 within the scope of the appended claims.

Having thus described the invention, what is claimed as new, is:—

1. In a device of the class described, a base, guides extending vertically from said 80 base, a frame held to slide in said guides, a post sliding in said frame, a head on said frame, links pivoted to said head, struts pivoted to the links and the lower part of the post, said struts and links forming tog- 85 gles, means to straighten said toggles and raise the frame in the guides, and other means to raise the post and frame as an entirety.

2. In a device of the class described, a 90 base, guides extending vertically therefrom, a frame held to slide in said guides, a post sliding in said frame, a head on said frame, links pivoted to said head, struts pivoted intermediate their ends to the links and at 95 their lower ends to the lower part of the post, said struts and links forming toggles, and the struts when in alinement with the links frictionally engaging the under side of the head, means to straighten said toggles 100 and raise the frame in the guides, and other means to raise the post.

3. In a device of the class described, a base, guides extending vertically therefrom, a frame held to slide in said guides, a 105 post sliding in said frame, a head on said frame, links pivoted to said head, struts pivoted intermediate their ends to the links and at their lower ends to the lower part of the post, said struts and links forming toggles, and 110 the struts when in alinement with the links frictionally engaging the under side of the head, and a bolster pivotally mounted on said head, means to straighten said toggles and raise the frame in the guides, and other 115 means to raise the post.

4. In a device of the class described, a base, guides extending vertically from said base, a frame held to slide in said guides, a 120 post sliding in said frame, a head on said frame, links pivoted to said head, struts pivoted to the links and the lower part of the post, said struts and links forming toggles, winding drums at the upper end of said post, blocks connected to the upper end 125 of said post, other blocks connected to said struts, cables extending over said blocks and having their free ends wound on the drums, a crank to rotate said drums, and means to raise the post and frame as an entirety. 130

5. In a device of the class described, a base, guides extending vertically therefrom, a frame held to slide in said guides, a post sliding in said frame, a head on said frame, links pivoted to said head, struts pivoted intermediate their ends to the links and at their lower ends to the lower part of the post, said struts and links forming toggles, and the struts when in alinement with the links frictionally engaging the under side of the head, winding drums mounted at the upper end of said post, blocks connected to the upper end of said post, other blocks connected to said struts, cables extending over said blocks and having their free ends wound on the drums, a crank to rotate said drums, and means to raise the post and frame as an entirety.

6. In a device of the class described, a base, guides extending vertically therefrom, a frame held to slide in said guides, a post sliding in said frame, a head on said frame, links pivoted to said head, struts pivoted intermediate their ends to the links and at their lower ends to the lower part of the post, said struts and links forming toggles, and the struts when in alinement with the links frictionally engaging the under side of the head, and a bolster pivotally mounted on said head, winding drums wound at the upper end of said post, blocks connected to the upper end of said post, other blocks connected to said struts, cables extending over said blocks and having their free ends wound on the drums, a crank to rotate said drums, and means to raise the post and frame as an entirety.

7. In a device of the class described, a base, guides extending vertically from said base, a frame held to slide in said guides, a

post sliding in said frame, a head on said frame, links pivoted to said head, struts pivoted to the links and the lower part of the post, said struts and links forming toggles, means to straighten said toggles and raise the frame in the guides, and other means to raise the post and frame as an entirety, said other means comprising ratchet teeth formed on said post, a lever pivoted to said guides, a pawl connected to the inner end of said lever and normally engaging said ratchet teeth, and a stop pawl pivoted to said guides and normally engaging said ratchet teeth.

8. In a device of the class described, a base, guides extending vertically therefrom, a frame held to slide in said guides, a post sliding in said frame, a head on said frame, links pivoted to said head, struts pivoted intermediate their ends to the links and at their lower ends to the lower part of the post, said struts and links forming toggles, and the struts when in alinement with the links frictionally engaging the under side of the head, means to straighten said toggles and raise the frame in the guides, and other means to raise the post, said other means comprising ratchet teeth formed on said post, a lever pivoted to said guides, a pawl connected to the inner end of said lever and normally engaging said ratchet teeth, and a stop pawl pivoted to said guides and normally engaging said ratchet teeth.

In testimony whereof, I affix my signature, in presence of two witnesses.

JOSEPH C. PARDUE.

Witnesses:

R. B. MILLER,

CHAS. McCauley.