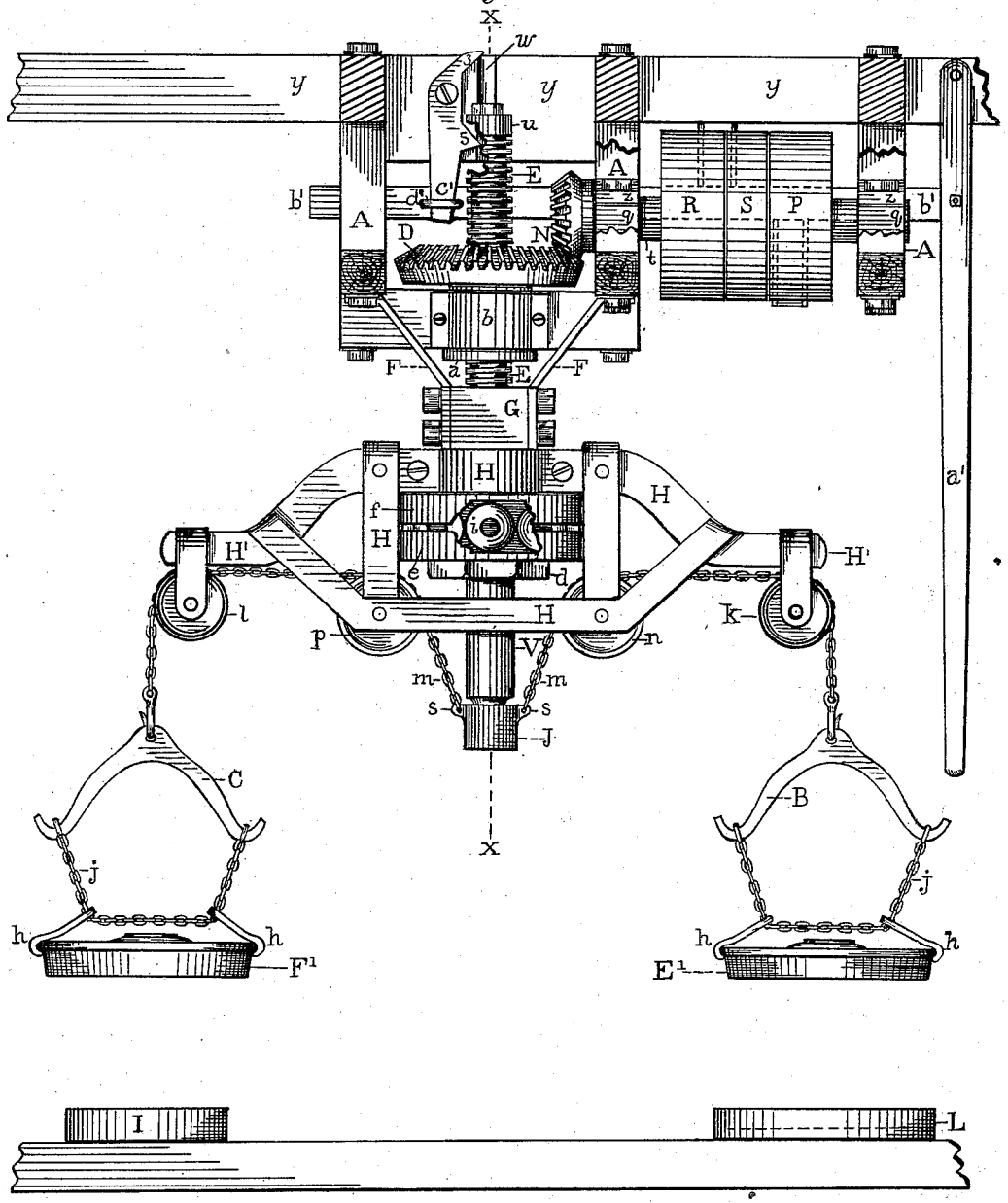
2 Sheets—Sheet 1.

W. M. DAVIS.

Crane for Hoisting Car-Wheel, &c.

No. 209,236. **Patented Oct. 22, 1878.**

Fig. I.



—Witnesses:—
Charles E. Lewis.
A. C. Eades

—Inventor:—
William M. Davis
By his Atty
Chas B. Mann

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

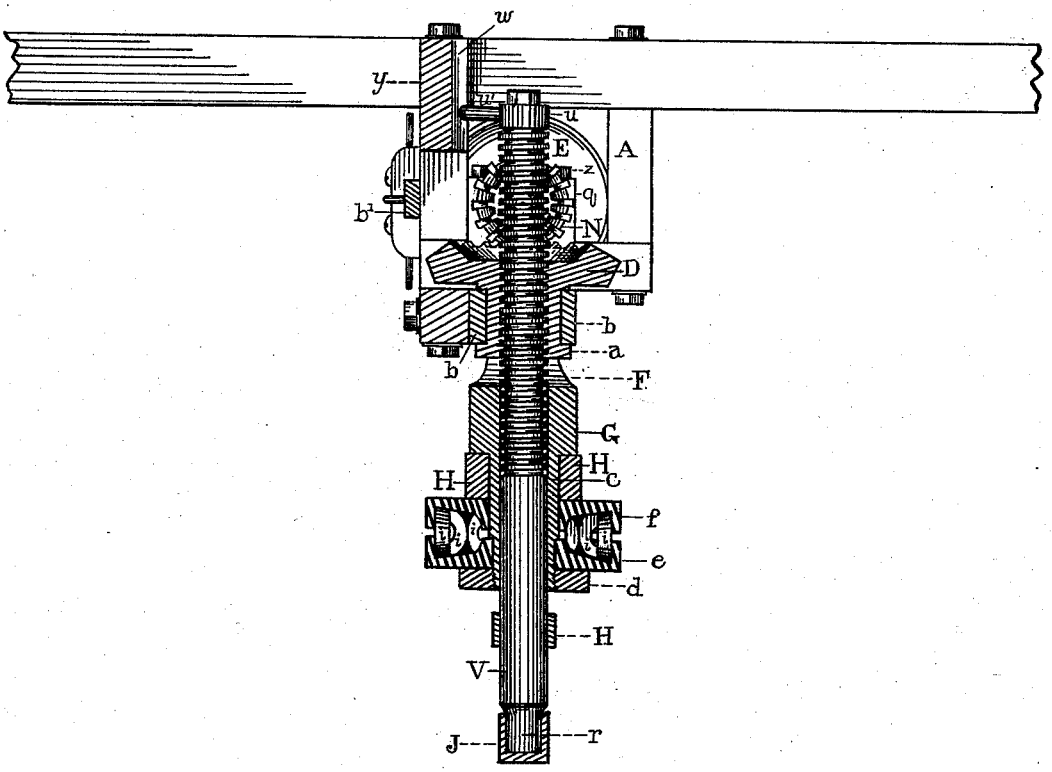
2 Sheets—Sheet 2.

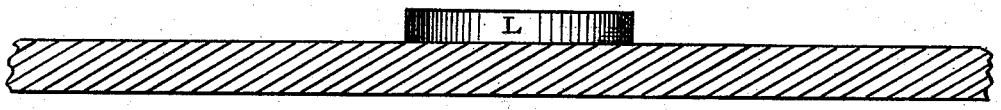
W. M. DAVIS.

Crane for Hoisting Car-Wheel, &c.

No. 209,236. Patented Oct. 22, 1878.

Fig. 2.





—Witnesses:—
Charles E. Lewis.
A. E. Eaden

—Inventor:—
William M. Davis
By his Atty
Chas. B. Mann

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM M. DAVIS, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN CRANES FOR HOISTING CAR-WHEELS, &c.

Specification forming part of Letters Patent No. **209,236**, dated October 22, 1878; application filed August 27, 1878.

To all whom it may concern:

Be it known that I, WILLIAM M. DAVIS, of Baltimore, in the county of Baltimore and State of Maryland, have invented a new and useful Improvement in Car-Wheel Hoisting and Conveying Attachments for Boring-Mills, of which the following is a specification:

My invention relates to a device for the purpose of expeditiously handling car-wheels at boring-mills, the object being to supersede cranes, differential pulleys, sweep-levers, and other like contrivances heretofore employed for this purpose.

Figure 1, Sheet 1, of the drawing is an elevation of my improved apparatus. Fig. 2, Sheet 2, is a transverse vertical section of same, taken through *x x* of Fig. 1.

The apparatus is secured by any suitable framing, A A A, to the girders of the shop, and should be high enough above the floor for the bails B C when at the lowest point to clear the top of boring-spindle, in relation to which the apparatus should be located so that the center of one of the bails when turned in position shall come in a vertical line with the center of the chuck-plate of the boring-mill.

D is a beveled wheel, revolving in a horizontal position, and having a hub, *a*, the outside of which forms a journal that works in the box *b*, bolted to the framing. Through this hub a thread is chased, to which the vertical screw E is fitted.

F F are stays or hangers, secured to the framing which sustains the lower part of the apparatus and the weight of the car-wheels. These hangers are secured to the box G, from which depends the hollow spindle *c*, (shown in Fig. 2,) the lower end being threaded to receive the nut *d*. This latter sustains the stationary circular plate *e*, above which is a circular turn-plate, *f*, which revolves around the spindle and rests on friction-rollers *i*, placed between the two plates, which, in Fig. 1, are broken away to show rollers.

H is the conveyer or hoisting-frame, which is suitably braced and resting on and secured to the turn-plate *f*, with which it revolves. Its arms H′ are provided on the extremities with sheaves *k l*, and at suitable places intermediate with sheaves *n p*. The lower part, V, of vertical screw E is not threaded, but is a plain shaft, and without turning passes up and down freely through the box G and hollow spindle *c*. The end of this shaft terminates in a spindle, *r*, on which is placed the step J. This latter is provided with two eyes, *s*, to each of which a chain, *m*, is attached, which passes respectively over the sheaves *n* and *k* on one side of the hoisting-frame or conveyer, and *p* and *l* on the opposite side, the ends of the chains being secured to the wheel-lifting bails B C.

N is a bevel-pinion, working into the bevel-wheel D, and is secured on the end of the counter-shaft *t*, which works in boxes *q*, (seen in Fig. 1,) part of the framing being broken away to show them. These boxes are secured by the bolts *z z*. On this counter-shaft are two loose pulleys, P and R, and between them a tight pulley, S. Two belts run from a pulley on the main-line shaft, one open and the other crossed. The open belt runs onto loose pulley P, and the crossed belt onto loose pulley R. To the top of the vertical screw E is fixed a collar, *u*, having on one side a projecting pin, *w′*. As the screw moves up and down this pin plays in a vertical groove, *w*, here shown as cut in the girder *y*. This groove, however, may be formed by two bars of iron arranged vertically, with space between sufficient for the groove, and bolted to the girder.

The hoister is set in motion by the lever *a′*, which operates the horizontally-sliding rod *b′* of the belt-shifter, which is of any well-known construction. The machine is arranged to stop automatically by the action of the shifting-lever *c′*, pivoted to the girder on one side of the groove *w*. The lower arm of this lever is connected, by a staple, *d′*, to the sliding rod *b′*, while one edge of the upper part of the lever is provided with two projecting lugs, designated by the Figs. 3 and 5, which are readily seen in the drawing, Fig. 1, where a part of the screw is broken away. The edges of these lugs are slanting toward each other, and the points extend across the groove *w*. The result of this arrangement is that as the vertical screw E moves either up or down, the projecting pin *w′*, moving in the groove *w*, comes in contact with one of the slanting lugs, 3 or 5, as may be, of the shifting-lever *c′*, which will be moved thereby, thus moving

the rod b' and shifting the belts and automatically stopping the hoister.

It will be seen the projecting pin w' serves two functions, one being to prevent the screw E from turning, and the other to act on the shifting-lever c' to stop the hoister at both extremes of its play.

The car-wheels are designated by the letters E′ and F′, and are hoisted by the hooks h and chains j, made fast to the bails B and C. I is a block upon which an unfinished wheel is placed, and L represents the location of the chuck-jaws of the boring-mill.

The operation of the hoister and conveyer is as follows: One wheel being in the mill and another on the block I, the hooks h are placed in position to grapple the flange of the wheels. By means of the starting-lever a', the belt is shifted from pulley R to pulley S, and the screw is set in motion downward, carrying the step j, to which the chains m are attached, thereby lifting both wheels at same time, until the descent of the screw is stopped by the automatic shifting-lever c'. Both wheels are now suspended, and the workman may give one of them a slight push, which will have the effect to swing the hoisting-frame or conveyer H around, carrying the finished wheel to the block and the other to the mill. Now, by means of the starting-lever a', shift the belt from pulley P to pulley S, which will set the screw in motion upward until the wheels are lowered in their places, when it stops automatically.

By the use of my apparatus a very great saving is effected in both time and labor in handling car-wheels.

By a modification, which I will now briefly describe, one complete apparatus and the revolving conveyer portion of another may serve two mills in the same shop. To enable this to be done, an eye or loop should be secured to the upper end of screw E. To this eye a suitable chain should connect and pass over a sheave on the girder, and thence to another sheave above the other partial apparatus, which should consist of the hangers F, box G, spindle c, conveyer-frame H, and the sheaves, chains, and lifting-bails. The chain first referred to should pass down through the hollow spindle c, (no screw being used,) and connected with the two chains m, which, in this case, should pass under rollers n and p instead of over them, as when working with the screw. Thus when the main chain is drawn by lowering the screw of the complete apparatus, it will serve to hoist the car-wheels for the second mill.

Having described my invention, I claim and desire to secure by Letters Patent—

1. The combination of the horizontal wheel D, having the extended hub a, the outside of which forms a journal, and internally is screw-threaded, the vertical screw E, step J, chains m, and the frame H, having arms H′, extended in opposite directions and provided with sheaves, substantially as shown and described.

2. The combination of the horizontal wheel D, screw-threaded through the hub, box G, sustained by the hangers F, and having the depending hollow spindle c, through which the lower part of vertical screw E passes freely, step J, to which the chains m are attached, and the frame H, having arms H′, extended in opposite directions, and provided on the extremities with sheaves, substantially as shown and described.

3. The combination of the hollow spindle c, stationary circular plate e, turn-plate f, adapted to revolve around the spindle, with or without the intermediate friction-rollers, and the conveyer H, secured so as to revolve with the turn-plate, and with arms extending in opposite directions, which are provided with sheaves, substantially as shown and described.

4. The screw E, adapted to have a vertical movement, and terminating in a spindle, r, on which is placed the step J, having the chains m attached, in combination with the sheaves secured to the extremities of the arms H′ of the conveyer, which is sustained by the hollow spindle c, and adapted to revolve, substantially as shown and described.

5. In combination, the horizontal wheels D, internally screw-threaded screw E, adapted to have a vertical movement, and provided at its upper end with a horizontally-projecting pin, w', which plays in the vertical groove w, as shown and described, and for the purpose specified.

6. In combination, a projecting pin fixed to the vertically-moving screw E, the shifting-lever c', pivoted midway between the projecting lugs 3 and 5, the edges whereof slant toward each other, and with its lower arm connected to the sliding rod b' of the belt-shifter, substantially as shown and described.

WILLIAM M. DAVIS.

Witnesses:
CHARLES E. LEWIS,
JNO. T. MADDOX.