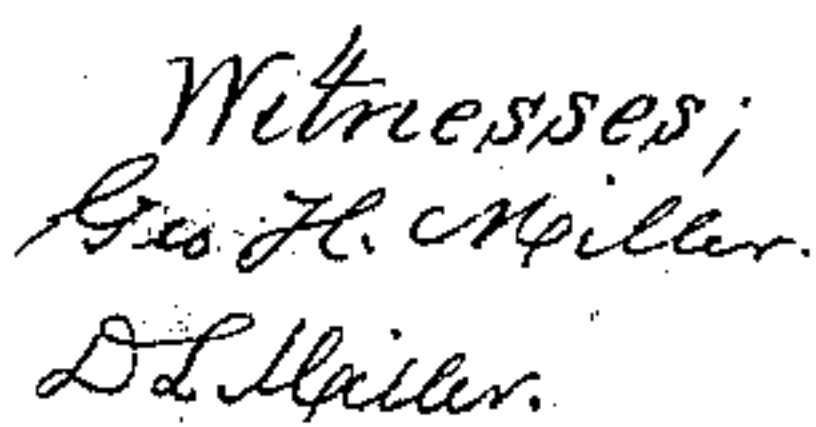


## Hydraulic Jack,

*Patented July 7, 1868.*



Inventor;  
A. R. Wellman  
Per Thos H. Dodge Atty



# United States Patent Office.

SAMUEL K. WELLMAN, OF NASHUA, NEW HAMPSHIRE.

*Letters Patent No. 79,710, dated July 7, 1868.*

## IMPROVEMENT IN HYDRAULIC CRANES.

*The Schedule referred to in these Letters Patent and making part of the same.*

### KNOW ALL MEN BY THESE PRESENTS:

That I, SAMUEL K. WELLMAN, of Nashua, in the county of Hillsborough, and State of New Hampshire, have invented certain new and useful Improvements in Hydraulic Cranes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a side view of a crane having my improvements applied thereto.

Figure 2 represents a vertical section on line C D.

Figure 3 represents a horizontal section on line A B, fig. 1.

Figure 4 represents, upon an enlarged scale, a vertical section through the joint or connection at the bottom of the crane-post.

Figure 5 represents a section on line A B as it would appear if the post were made round; and

Figure 6 represents a vertical section through the peculiarly-constructed elastic cushion used for easing the draught upon the crane.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

In the drawings, *e* is the crane-post, made, in this instance, in rectangular shape, said post to be properly supported at top and bottom. The base of the post *e* has a front projection, *b*, to the top of which is fitted the cylinder *c*, in the bore of which fits the piston H, fastened to the husk-case or shell *d*, which is fitted to slide up and down on the post *e*; the crane-arm *r*, and its truss-rods *ff* and brace *g g*, being connected with the husk *d*, so that when the latter is raised or lowered they will be raised and lowered.

The bottom of post *e* is supported upon a permanent and secure base, A, a tube, B, being screwed into the bottom thereof. Nut 1 is slipped on tube B, before the latter is screwed into the bottom of post *e*.

The lower end of tube B is provided with shoulders 2 and 3, and the nut 4 is slipped on to the lower end of tube B, and screwed on to the lower end of nut 1, after which a leather packing, 5, is slipped on to the end of tube B, and the knee *a* is then screwed into the lower end of nut 4, until it presses the outer edge, 6, of the leather packing firm against the shoulder 7 in the nut 4.

The hole in the upper end of the knee *a* is cored or bored out larger than the tube B, whereby the leather packing 5 is allowed to occupy the relative position, as fully shown in fig. 4 of the drawings.

It will be seen that the effect of the pressure of the water, as it is forced into the cylinder *c* through pipe 8, knee *a*, and pipe B, will be to close the packing 5 upon the end of the tube, and up against the shoulder 3, and thus make a tight joint, while at the same time the pipe B is left free to turn with the crane-post *e*.

The water may be conveyed from the base of the crane-post to the cylinder *c*, by a side pipe, 9, or any other suitable arrangement may be employed for that purpose.

In fig. 1, the crane-post is represented in rectangular form, but it may be made round, as shown in fig. 5, in which case the husk would be made of corresponding shape, as shown in the same figure.

When cranes are used to support large masses or bars, C, of metal during the operation of forging the same, or a part thereof, under large hammers, much injury results to the iron and other portions of the crane, in consequence of the jarring occasioned by the strokes or blows of the hammer.

To remedy the said objections, I make the bottom, 11, of the carriage *n* in the proper form to receive the case O of the cushion O', in which is placed, first, a layer of rubber, *t*, then a metal piece, *u*, then another disk of rubber, and on the top piece of rubber is placed the strong metal cap R. The rod P, which supports the windlass S, passes up through the rubber and metal disks, and is held by a strong nut, which rests upon the cap-piece R, whereby there is an elastic medium interposed between metal C, which is supported by endless chain T and the crane-arm *r*.

The practical result of the foregoing arrangement is to relieve the crane from the injury which has heretofore resulted from the action of the hammer upon the metal resting upon chain T.

Carriage *n* is combined with an arrangement of chain pulleys and gearing for running it back and forth to bring the metal bar or mass *C* into the desired position to be forged or to be unloaded.

When the crane-arm is to be raised, water is pumped into the cylinder *c*, thereby forcing up the piston *H*, together with the husk or case *d*, crane-arms, and the mass or bar of metal *C*, supported by the windlass *S*, (see red lines, fig. 1.)

It requires but little expense to fit a base for supporting the post of a hydraulic crane made according to my invention, while it is not liable to get out of order, and the post itself can be supported in a very firm and substantial manner.

My improved hydraulic crane has been put to a practical test, and has proved highly satisfactory, so much so that the United States Government have adopted it.

Having described my improved hydraulic crane, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. The combination, with the revolving post *e*, of the projection *b* and the cylinder *c*, substantially as shown and described.
2. The combination, with the crane-post and its husk-case or shell, of the piston *H* and cylinder *c*, substantially as and for the purposes set forth.
3. The combination, with the tube *B*, attached to the lower end of the crane-post, of the nuts 1 4, knee *a*, and leather packing 5, said parts being arranged in relation to each other, substantially as described, and as shown in fig. 4 of the accompanying drawings, and for the purposes set forth.
4. The combination, with the part 11 of the carriage *n* and windlass *S*, of the cushion *O'*, as shown and described.

SAM'L K. WELLMAN.

Witnesses:

AUGUSTUS WILBER,  
FRANKLIN MUNROE.