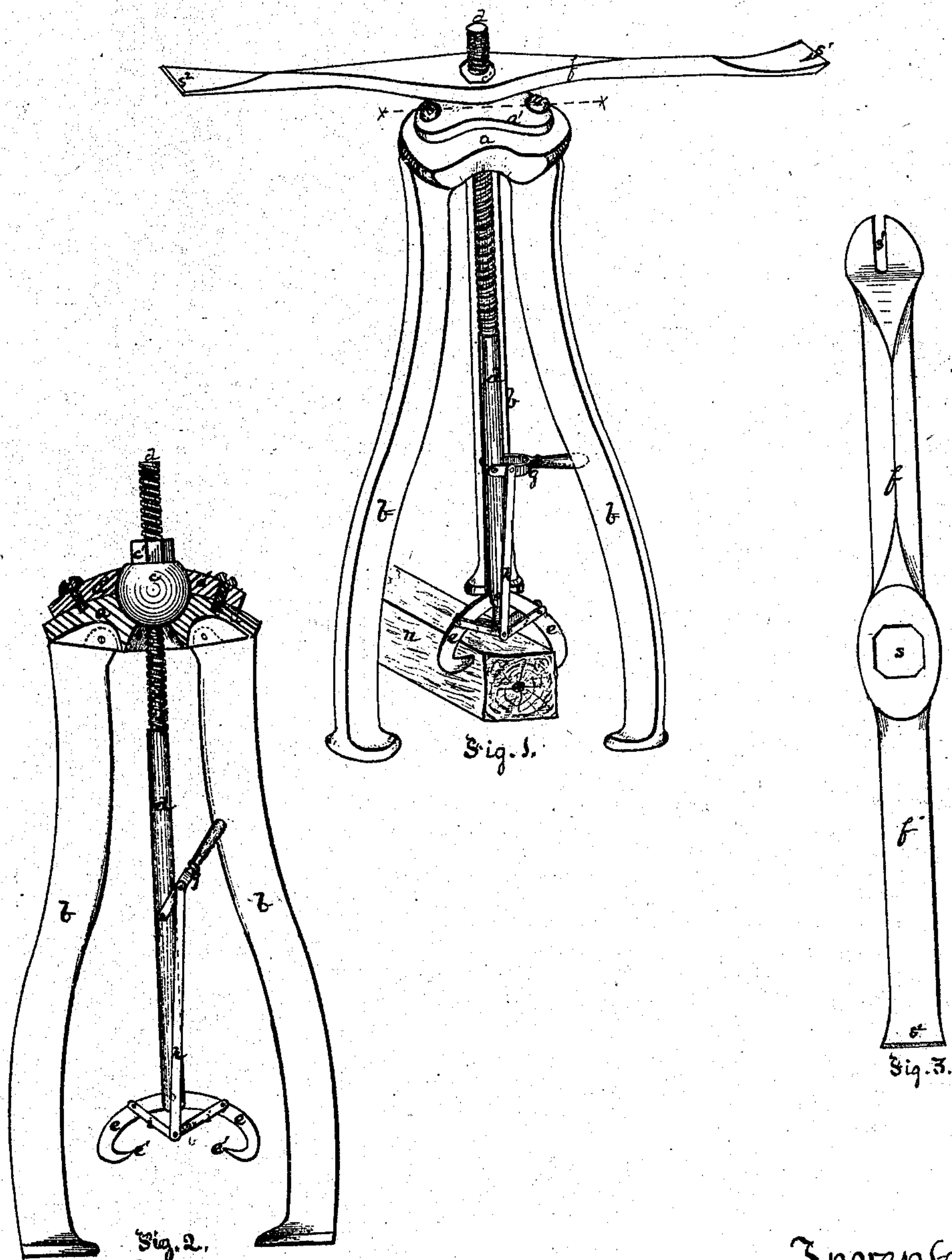


G.W. Windsor,

Lifting Jack.

No. 105,534.

Patented July 19, 1870.



Witnesses:
Thos. B. Kern
R. Wrenshaw

Inventor:
George W. Windsor,
by Bakewell & Christy
his Attys.

United States Patent Office.

GEORGE W. WINDSOR, OF ALLEGHENY CITY, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND JOHN F. BEILSTEIN, OF SAME PLACE.

Letters Patent No. 105,534, dated July 19, 1870.

IMPROVEMENT IN LIFTING-JACK.

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

To all whom it may concern:

Be it known that I, GEORGE W. WINDSOR, of Allegheny City, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Lifting-Jack; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a perspective view of my improved lifting-jack, with the jaws of the grapple engaging an object to be raised;

Figure 2 is a detached view of a portion of the same devices, with the grapple-jaws open; and

Figure 3 is a plan view of a bar designed for use as a wrench to operate the jack; also as a spike-puller and as a tamping or packing-bar.

Like letters of reference indicate like parts in each.

The nature of my invention consists in the construction of apparatus chiefly designed for raising railroad ties in ballasting up the track, though it may be applied also to other kindred uses. It has a tripod, which supports, in a cap or plate, a ball-and-socket joint. A threaded elevating-stem passes up through the ball, and is raised and lowered by a nut and wrench. The grapple is attached to the lower end of the elevating stem.

To enable others skilled in the art to make and use my improvement, I will proceed to describe its construction and mode of operation, with particular reference to its use in lifting railroad ties for the reballasting of the track.

The legs *b* of the tripod are connected by a common hinge-joint to the plate *a*. This plate *a*, in connection with a cap, *a'*, fastened thereto, by screws or otherwise, is so formed as to give a socket for the ball *c*, whereby is secured a ball-and-socket joint.

The ball *c* is perforated for a threaded elevating stem, *d*, to pass through, which stem is raiser or lowered either by tapping the hole or eye of the ball *c*, and turning it by a wrench applied to a head, *e'*, made thereon, or by a wrench and separate nut.

Hung to the lower end of the stem *d* is a grapple, which consists of a pair of jaws, *e*, made with re-entrant points, *e'*.

Between the ends of the jaws *e*, at any suitable point, is hinged a pair of bars, *i*, which are hinged to each other at their opposite ends, and also to a shifting-bar, *h*, the upper end of which is, in turn, hinged to a lever, *g*.

These devices are of such relative lengths and so arranged, substantially as shown, as that the elevating of the handle of the lever *g* shall throw the jaws *e* apart, and the depressing of the handle, forcibly or by its own weight, shall cause them to come together and take a secure bite on the tie *n*.

To raise a tie, I set up the tripod directly over it, lower the stem *d* to the proper point, open the jaws of the grapple, by means of the lever *g*, till a point, *e'*, engages each side of the tie; then drop the lever *g* and hoist away by power applied to the nut or head *e'*, by means of a wrench or lever, *f*. The greater the weight to be raised the more securely the jaws will retain their hold.

Ordinarily, the tie *n* needs to be raised but a short distance, and, practically, it should be raised exactly to a certain level, and there securely ballasted. This accuracy cannot be secured by prying up the ties with a lever, as is ordinarily done. By the use of the devices described, each tie can be raised to exactly the height required, and there held securely till it is properly ballasted. Or, the ties may be raised successively by one set of laborers in the gang, blocked up to the level required, and ballasted by another set of laborers who follow after.

For a combination tool, I have made the bar *f* with a wrench-hole, *s*, by means of which the nut or head *e'* is operated and the tie raised; also, with a claw, *s'*, in one end, for drawing spikes, and with a tamping-head, *s''*, at the other end, for packing the ballasting under each tie. This head should be made broad, and may be slightly curved in its flat faces, so as to be the more effective in working under the tie.

The opening *o* through the plate *a*, under the ball *c*, is made less in size, of course, than the horizontal diameter of the ball, but larger than the diameter of the stem *d*, so that the latter may work freely at all times, even though the tripod may be set out of level.

The devices described may be made of such size and weight as to be readily used and easily moved from tie to tie, or transported on a hand-car from place to place, and may be used for other purposes than those set forth.

A single man can operate it, and do the same work which heretofore, in prying up the ties, it has required two or three men to do.

It can be used entirely outside of the track, so that the work of raising and ballasting can be carried on with little or no regard to passing trains.

The perforated ball *c*, in connection with a socket or seat, in which it can move freely and adapt itself to the direction in which the elevating power should act, and also in connection with an opening in the seat under the ball somewhat larger than the size of the elevating stem, I also claim, by itself, as an improvement in elevating apparatus generally, and such devices I apply to lifting-eranes, timber-wheels, hoisting-derricks, and elevating apparatus generally.

I am aware that it is not new to operate a threaded elevating stem through a head-block to which are attached the legs of a tripod; but I am not aware of the

previous use of a ball-and-socket joint in such a connection as above described; nor do I claim the grapple by itself.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In the construction of a hoisting apparatus, a spherical ball, *c*, resting in a seat in a supporting-plate, in combination with a threaded elevating stem, *d*, and threaded nut or head *c'*, the aperture of the seat under the ball being larger than the stem, arranged substantially as described, and for the purposes set forth.

2. A lifting-jack, consisting of a tripod and ball-and-

socket joint, the ball being perforated for the stem *d*, to the lower end of which is hinged a grapple, provided with shifting-bar and lever, constructed substantially as hereinbefore set forth.

3. The combination, in the tool *f*, of wrench, claw, and tamping-head, substantially as shown and described.

In testimony whereof, I, the said GEORGE W. WINDSOR, have hereunto set my hand.

GEO. W. WINDSOR.

Witnesses:

A. S. NICHOLSON,
THOS. B. KERR.