

The Norton Ball-bearing Ratchet and Screw Jacks.

THE Norton Ball-bearing Ratchet Screw Jacks are constructed on an entirely different principle from any other Jacks in the world ; as will be seen by the cuts, they have a stationary standard and sliding sleeve fitting over the same. The standard has a removable nut (usually Phosphor Bronze) fitted within it and resting on a shoulder, in which the screw turns, (the standards are *hollow*, and can be *filled* with *oil*, thus keeping the screw constantly lubricated). To the upper end of the screw is fastened a steel gear ; a hardened tool steel plate encircles the *hub*, and rests on the body of said gear, on which are placed circular trains of hardened steel balls, held in place by rings between the rows (as shown in cut). In the top, or head of the sliding sleeve (which is bored to fit standard), is placed another hardened tool steel plate with a hole in the centre, through which the end of the screw projects.

When the Jack is assembled the sleeve slides down over the screw and standard, the bearing plate in the head resting on the balls on the plate on the gear, so that the whole weight is carried by the balls (between the steel plates), which act as a thrust-bearing between the screw and head of the sleeve, reducing the friction and increasing the lifting power of the Jack.

The sleeve which revolves on the standard, allowing the lever to be used from either side, carries the load, and is raised or lowered by the screw, which is turned by means of a gear on the ratchet shaft engaging with the gear on the screw, and operated by a reversible ratchet and lever having the *up* and *down*, or "*pump handle*" motion. This is the only screw Jack made having this motion of the lever. The sleeve at the lower end is provided with a "*stop dog*" or pawl, which prevents the screw from being run out of the nut.

The advantage of this sliding sleeve cannot be *over* estimated. It takes all the *side strain* off the screw, preventing it from *bending*, and also protecting all the working parts from *sand*, *coal-dirt* and *water*, making it the *only Jack suitable* to carry on *locomotives*.

All of the Norton Railroad Jacks are steel and malleable iron throughout.