

J. N. SMITH.
Machine for Dressing the Journals of Railway-Car
Axles.

No. 212,753.

Patented Feb. 25, 1879.

Fig. 5.

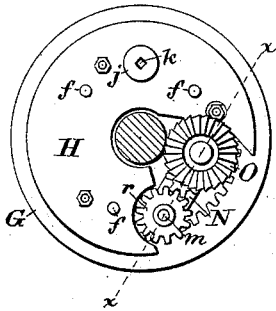


Fig. 6.

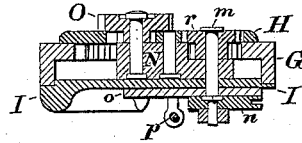
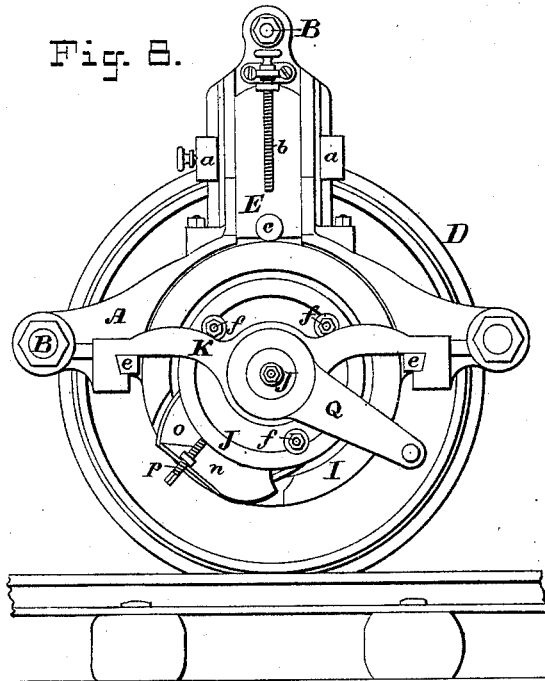


Fig. 7.



Fig. 8.



ATTEST:

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UNITED STATES PATENT OFFICE

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IMPROVEMENT IN MACHINES FOR DRESSING THE JOURNALS OF RAILWAY-CAR AXLES.

Specification forming part of Letters Patent No. **212,753**, dated February 25, 1879; application filed July 27, 1878.

To all whom it may concern:

Be it known that I, JOSEPH NOTTINGHAM SMITH, of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Machines for Dressing the Journals of Railway-Carriage Axles, of which the following is a specification, reference being had to the accompanying drawings, forming a part of the same, in which—

Figures 1 and 2, taken together, illustrate my complete machine in proper position for dressing the journals of a car-axle, Fig. 1 showing one dressing-head in mid-section, and Fig. 2 showing the other in elevation. Fig. 3 is an interior elevation, showing the rotative and feed mechanism. Fig. 4 is an elevation of the outer plate bearing the stop mechanism. Fig. 5 is an elevation of the inner face of the plate and cutter. Fig. 6 is a detached sectional view taken on the line *xx* in Fig. 5. Fig. 7 shows the countersink for making a socket for the center. Fig. 8 is an end elevation.

It has been customary heretofore when the journals of a railway-carriage axle have become untrue from irregular wear to remove the same from the truck to some point where it could be put in a lathe and the journals turned true again. This involves considerable trouble and expense.

With my machine, which is portable, it is only necessary to remove the axle from the car, when the dressing may be done without removing the wheels from the track.

Generally speaking, the machine embraces two dressing-heads constructed alike, and connected by rods or ties long enough to bring them into proper relative positions with respect to the journals. Both dressing-heads operate alike and independently and may be operated simultaneously by different operatives. One only, therefore, will be minutely described.

A A are end plates, bolted and tied firmly together by means of the rods *B B*. Arranged adjustably upon the plate *A* is a collar, *a*, bearing a foot-pad, *C*, to rest upon the tread of the wheel *D*. *E* is a carriage, arranged to play in vertical guides on the face of the end plate, and provided with an adjusting-screw, *b*. This carriage bears another carriage, *F*, which moves crosswise, and which

is also operated by a screw, *c*. This latter bears two rollers, *d d*, arranged to revolve on horizontal axes, as shown in Figs. 1 and 3. The purpose of these will be explained farther on.

G is a flanged rim provided with internal teeth. (Best seen in Figs. 3 and 5.) This rim has lugs *e e*, which engage guiding-grooves in the end plate *A*, and prevent the rim from rotating, while they permit it to move along the guides.

H is an inner and *I* an outer plate, between which are mounted the gears. *J* is a tubular flanged boss, arranged to turn in a cross-bearing, *K*, on the end plate and to bear a center, *L*. The slender tail or shank of this center, as well as that of the countersink illustrated in Fig. 7, is fitted with a tubular sleeve, held on by a nut, and this sleeve is threaded to fit internal threads in the boss *J*, so that by it the center or countersink may be fed in or out, as desired. In the flange of the boss *J* are rigidly secured feed-screws *f f*, which engage rotating toothed nuts *g g*, which have bearings in the outer plate, *I*. These nuts are driven uniformly in one direction by sundry idler-pinions *h h*, which derive motion from a pinion, *i*, attached to the driving-pinion *j*, which latter meshes with the internal teeth on the flanged rim *G*. The attachment of the pinions *i j* is by means of a sliding square or polygonal rod, *k*, which has a flanged head, the edge of which is arranged to engage a spirally-inclined groove in the edge of a handled disk, *l*, mounted upon the plate *I*, as shown. When the disk *l* is rotated the rod *k* is drawn part way out and the connection between the two pinions is broken, thus stopping the feed. This arrangement is clearly shown in Fig. 1.

With especial reference to Figs. 3, 4, 5, and 6, *m* is a shaft or axle-bolt bearing on one end, between a collar and nut, a plate, *n*, notched to receive the end of a feed-spring, *M*, secured to the plate *I*. On the same axle-bolt is mounted a scale-plate, *o*, interposed between the plate *n* and the plate *I*, and turning loosely on the bolt. This plate and the plate *n* are connected together by an adjusting-screw, *p*, and the former is kept pressed against a stud or stop, *q*, by the spring *M* when the cutter is not supported or resting upon the

axle. This device is for adjusting the depth of cut, and will be referred to again.

Secured to the bolt *m* on the inside of the plate *I* is a radius-bar, *N*, on which is mounted the cutter *O*, which may be provided with cutting-edges both on its faces and periphery. This cutter bears a pinion, which gears through an idler with a pinion, *r*, on the bolt *m*. The pinion *r* is compound, and its lesser part meshes with the teeth on the plate *G*, whereby it derives its motion and communicates it to the cutter.

Having described the mechanism so far, I will now describe its operation: The axle bearing the wheels is removed from the car, but left upon the track, if desired. The pads *C* being properly adjusted, the machine is set upon the wheels, as shown in the drawings.

The re-enforce *P* being less liable to demoralization than any other part of the axle outside of the wheel, and its diameter being known or ascertained, the rollers *d d* are lowered far enough to rest upon the said re-enforce and support the head in its proper relative position with reference to the center of the axle. Some horizontal as well as vertical adjustment will usually be necessary to effect this. This adjustment is made before the center *L* is put in.

The first operation is to dress the face of the button *s*, which is done by setting the cutter with respect to the button so that it will dress a light chip off its face. The feed is now thrown off by means of the grooved disk *l* being caused to act upon and draw out the square coupling-rod *k*.

To give the cutter the necessary amount of travel, the plate *o* must be properly adjusted with reference to the stop-pin or stud *q* and the plate *n*, or, what is the same, the indicator or pointer on the plate *n* adjusted with reference to certain understood marks or graduations on the plate *o* by means of the screw *p*. All being in readiness, the head is revolved by means of a crank, *Q*, or other equivalent device.

The stationary internal gear *G* imparts rapid rotary motion to the cutter *O*, while it is more slowly carried around the face of the button by the crank, and fed up to the work by the feed-spring *M*.

After the button has been faced off the countersink (shown in Fig. 7) may be run in for the purpose of enlarging and truing the original center, or for making a new one. Its work being done, it may be replaced by the center *L*. As soon as the center is in place the frame bearing the rollers *d d* may be lifted, they being no longer needed.

The cutter is now fed forward far enough to rest upon the flange of the button, and the stop or scale plate *o* adjusted to allow the cutter to take off just what is needed, and no more. The cutter having accomplished this, it is now fed forward far enough to take a light truing-cut down the inner face of the button-flange, being allowed to cut into the journal only deep

enough to effect a truing-cut, unless the journal is to be reduced in diameter, which may, of course, be done. Having run the cutter down to the proper depth and adjusted the scale-plate to prevent any deeper cut, the feed is put on, and the cutter is allowed to feed forward and traverse the journal at the same time that it rotates on its axis and travels around the journal.

After having dressed close up to the shoulder of the re-enforce the cutter may be lifted and the re-enforce be dressed.

The machine is readily removed by simply running back the centers.

Having thus described my invention, I wish it understood that I do not confine myself to the exact mechanical devices or elements of construction shown, as they may be varied considerably and other equivalents be substituted without materially affecting the essential principles of the invention; but

I claim as my invention—

1. A cutter, *O*, provided with cutting-edges, and having an axial rotation, also a rotation around the journal concentric therewith, in combination with a feed mechanism to carry it in a plane parallel with its axis, an automatic feed to keep it up to its work, and an adjustable stop mechanism, in connection with the latter feed, whereby the depth of cut may be regulated, all substantially as set forth.

2. The cutter *O*, in combination with the radius-bar *N*, feed-spring *M*, arranged to keep the cutter up to its work, axle-bolt *m*, compound pinion *r*, and plates *H I*, arranged to rotate concentrically around a common center, as shown, and the toothed rim *G*, all arranged substantially as set forth.

3. The cutter *O*, in combination with the plates *H I*, toothed rim *G*, having lugs *e e*, boss *J*, feed-screws *f f*, radius-bar *N*, pinion *r*, pinions *g g*, and spring *M*, arranged to feed the cutter up to its work, all arranged substantially as set forth.

4. The spring *M*, plate *n*, scale-plate *o*, screw *p*, pin or projecting stop *q*, in combination with the radius-bar *N*, secured to the plate *n*, and the cutter *O*, adapted to be fed to the work by the spring *M*, substantially as set forth.

5. The flanged and toothed rim *G*, provided with lugs *e e*, and arranged to slide or play in guides in the plate *A*, the boss *J*, provided with a bearing in some portion of the plate *A*, the plates *H* and *I*, the feed-screws *f f*, toothed nuts *g g*, intermediate pinions *h h*, pinions *i j*, and center *L*, combined and arranged to operate a rotary cutter, substantially as set forth.

6. The combination of the spirally or obliquely grooved lever *l*, the bolt *k*, pinions *i j*, toothed nuts *g g*, idler-pinions *h h*, and feed-screws *f f*, all arranged to operate substantially as and for the purposes set forth.

7. The combination of the two end plates *A*, secured together substantially as shown, the adjustable pads *C C*, arranged to rest upon the treads of the wheels, the cross-bearing *K*, and the toothed rim *G*, provided with lugs to

play in guides in the end plates, substantially as herein set forth.

8. The end plate A, arranged to be supported upon the wheel D, and provided with a carriage, E, arranged to play vertically thereon and to be adjusted by a screw, *b*, and another carriage, F, bearing rollers or wheels *d d*, to rest upon the re-enforce P, arranged to be adjusted horizontally on the carriage E, all combined and arranged to operate substantially as set forth.

9. The boss J, bored to receive the center L, internally threaded to receive the threaded collar on the same, and grooved longitudinally to receive a spline or lug on the center, in combination with the center L, provided with a slender shank and nut, a spline or lug, and a screw-threaded sleeve on its shank, all so arranged that the rotation of the boss J causes rotation of the sleeve and center, while rotation of the sleeve feeds the center longitudinally, substantially as and for the purposes set forth.

10. The combination of the boss J, the center L, provided with a tubular sleeve, screw-threaded to engage threads in the boss, and a spline or lug to engage a groove in the boss, the feed-screws *f f*, and nuts *g g*, toothed rim G, the cutter O, and suitable mechanism, substantially as shown, for causing the cutter to rotate on its axis as it is carried around the journal, all arranged substantially as set forth.

11. The countersink shown in Fig. 7, provided with a slender shank to fit the sleeve of the center L, a screw-threaded tip, and a lug

or spline to fit the groove in the boss J, in combination with the said boss J, the end plate A, carriages E F, and rollers *d d*, all arranged and combined substantially as set forth.

12. The combination of the end plate A, the wheels or rollers *d d*, arranged to be adjusted substantially as described, and the cutter O, arranged to rotate on its axis around the center L and to be fed from circumference to center of the journal, all arranged to be operated substantially as set forth.

13. The boss or hub J, in combination with the feed-screws *f f*, fixed thereto, pinions or toothed nuts *g g*, and suitable intermediate pinions, the pinions *i j*, lever *l*, bolt *k*, all fixed in suitable bearings, and the non-rotative rim G, all arranged to operate substantially as set forth.

14. The combination of the spring M, the plates *n o*, the screw *p*, and the stop *q*, or other equivalent device, arranged to operate substantially as set forth.

15. The end plates bearing the cutting or dressing heads, connected together by rigid rods or ties, and provided with adjustable pads to rest upon the wheels and adjustable rollers to bear upon the re-enforce, all substantially as and for the purposes set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOSEPH NOTTINGHAM SMITH.

Witnesses:

ARTHUR C. FRASER,
HENRY CONNETT.