(No Model.) 2 Sheets—Sheet 1.

J. N. SMITH.

TOOL FOR DRESSING CAR WHEELS AND AXLES.

No. 259,728. Patented June 20, 1882.

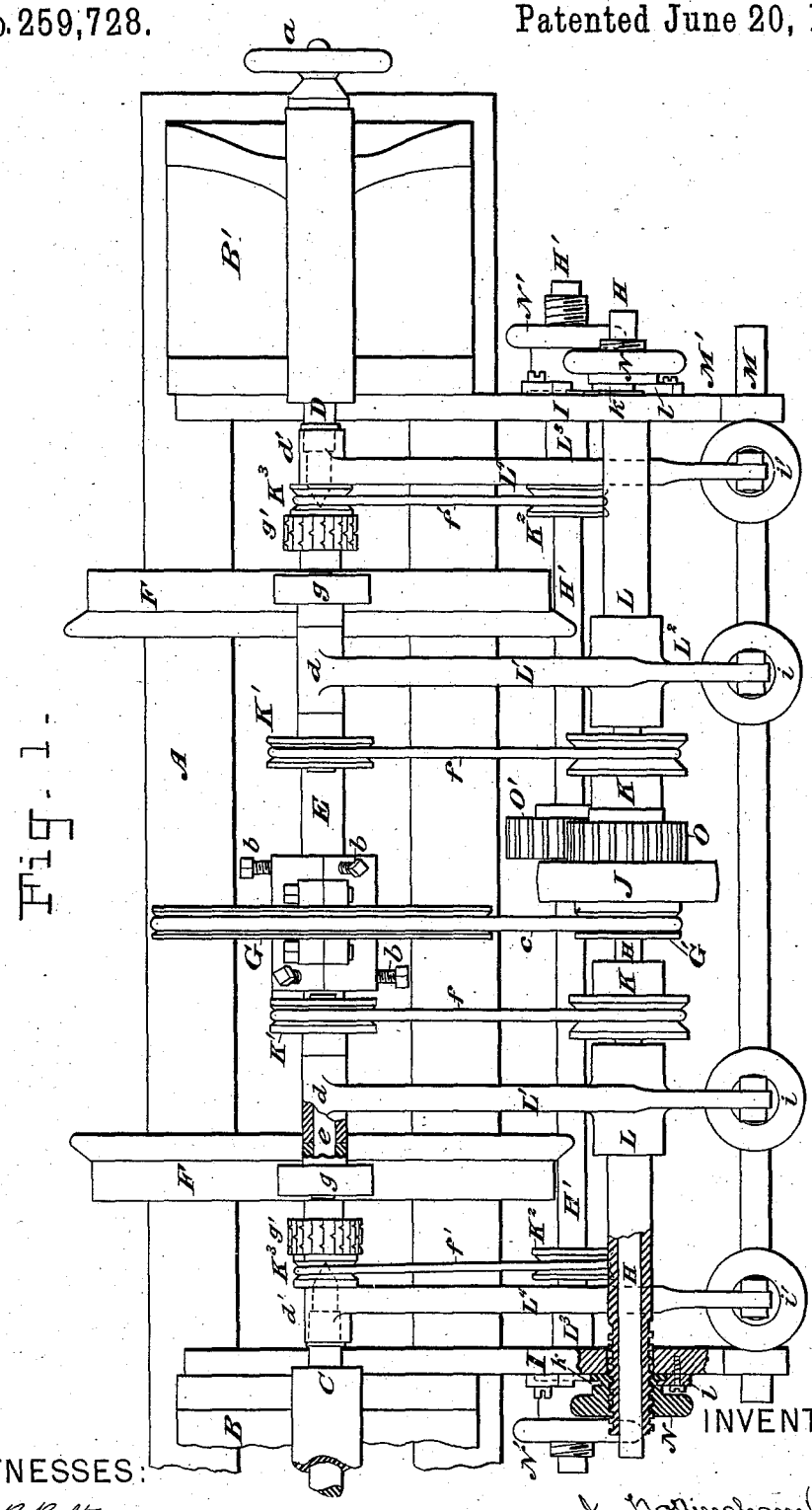

Fig. 1.

WITNESSES:

E. B. Bolton

Geo. Bainton

INVENTOR:

J. Nottingham Smith

By his Attorneys,

Burke, Fraser & Connett

(No Model.) 2 Sheets—Sheet 2.

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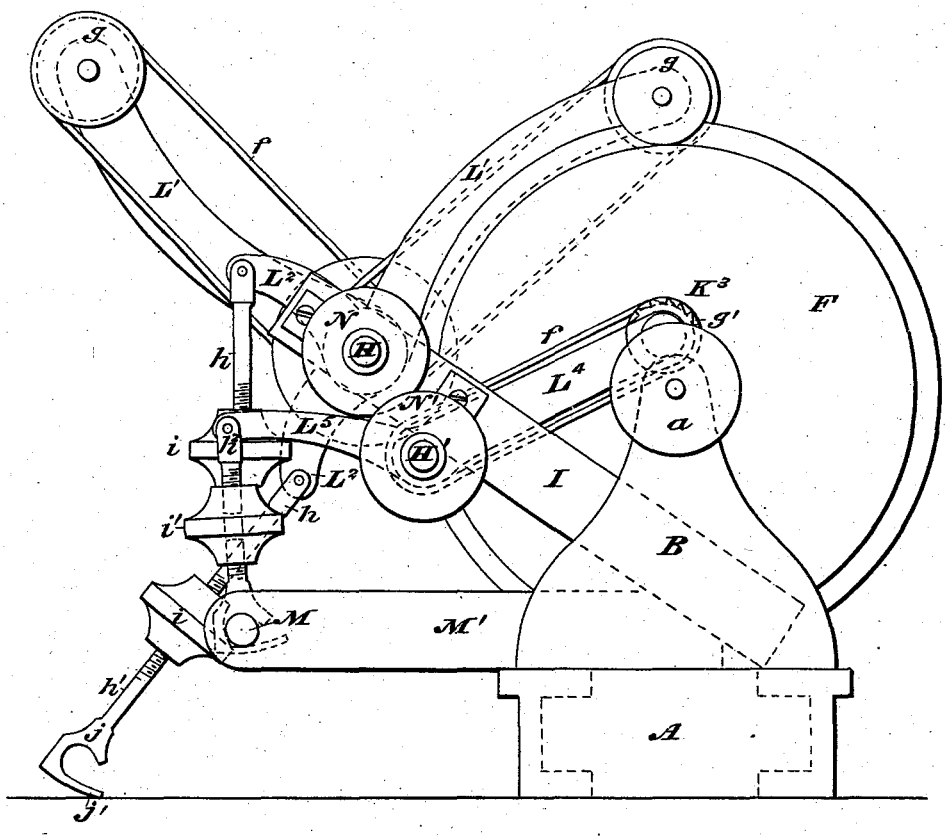
Fig. 2.



INVENTOR:

J. Nottingham Smith

By his Attorneys,

Burke, Fraser & Connett

WITNESSES:

E. B. Bolton

Geo. Gaunson

UNITED STATES PATENT OFFICE.

JOSEPH N. SMITH, OF NEW YORK, N. Y.

TOOL FOR DRESSING CAR WHEELS AND AXLES.

SPECIFICATION forming part of Letters Patent No. 259,728, dated June 20, 1882.

Application filed November 1, 1881. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH NOTTINGHAM SMITH, a citizen of the United States, residing in the city, county, and State of New York, have invented certain Improvements in Machines or Tools for Dressing the Journals of Car-Axles and the Treads of the Wheels, of which the following is a specification.

My machine contemplates the dressing of the two wheel treads and journals at one operation; but any of the cutters may be thr on out of operative connection when desired.

The novel features of the invention will be set forth in the claims.

In the drawings, Figure 1 is a plan of the tool, and Fig. 2 is an end elevation of the same.

A is a bed-plate, mounted upon which are bearings B B′ for the fixed or "dead" center C and the adjustable or "live" center D. The latter is provided with a hand-wheel, *a*, and screws into its bearing in the usual way with such centers.

E represents a car-axle, which is fixed between the centers, as in a lathe, and on which are fixed in the usual way the car-wheels F F.

On the car-axle E is fixed at the proper point a split pulley or sheave, G, the two halves of which are held together by bolts in a well-known way. The pulley may be secured to the axle by means of set-screws *b b*, which also serve to center it.

H is a shaft mounted rotatively in bearings in arms I I, which project out by preference from the bearings B B′. This shaft H bears a pulley, J, through which the shaft is rotated by a belt, a sheave, G′, which is connected by a belt, *c*, with the pulley G on the car-axle, and two sheaves, K K, which drive the rotating cutters hereinafter described. All of these pulleys are keyed or otherwise fixed on the shaft H.

I will now describe the cutting mechanism for dressing the treads of the wheels F, and as this mechanism is in duplicate, one cutter for each wheel, it will only be necessary to describe one set.

On the shaft H is fitted a sleeve, L, which carries an arm, L′. On the free end of this arm is a bearing, *d*, in which is rotatively mounted a shaft, *e*, on one end of which is fixed a sheave, K′, connected with the sheave K by a belt, *f*, while on the other end is fixed a cutting-wheel, *g*, preferably set with diamonds, as it is to dress the hardened tread of the wheel.

Rotation of the shaft H imparts slow rotation to the car axle and wheels through the sheaves G G′ and belt *c* and rapid rotation to the diamond cutting-wheel *g* through the sheaves K K′ and belt *f*.

To feed or move the cutter up to its work the following-described mechanism is employed. From the sleeve L there projects at the proper angle an arm, L^2, and to the free end of this is coupled a rod which is capable of adjustment as to length, and the lower end of which is connected removably to a bar, M, fixed in arms or projecting flanges M′ on the bearings B B′. The rod above referred to is composed of two sections, *h h′*, one of which has a right-hand and the other a left-hand screw-thread, a nut, *i*, being employed for coupling the two. On the free end of the section *h′* of the rod is formed a hook, *j*, to engage the bar M, and I prefer to make the lip *j′* of this hook elastic, so that in engaging the bar it must be slightly expanded until it is properly seated, when it returns to its normal position. This prevents the hook from being readily disengaged. The cutter *g* is fed up to or away from the tread of the wheel by turning the nut *i*, which lengthens or shortens the adjusting-rod, the result depending on which way it is turned. The rod in lengthening abuts on the bar M and lifts the arm L^2, thus pressing the cutter *g* down to its work. The shaft H being the center on which the cutter-arm L′ swings radially, it will be seen that no amount of movement of said arm will slacken the belt *f*.

I will now describe the mechanism for feeding the cutter transversely across the face of the work. To better illustrate the construction of these parts I have shown them in section at the left hand in Fig. 1. The sleeve L passes through the arm I, where it forms a bush around the shaft H, and its outer end beyond said arm is screw-threaded to receive a milled nut, N. This nut has a groove, *k*, formed in its neck or boss, which groove is engaged by a dog, *l*, on the arm I, whereby the said nut is permitted to turn freely, but is always kept up to its bearing against the arm I by said dog. By turning the nut N the sleeve

L is caused to move along the shaft, bearing the cutter *g* and its driving-wheel K′ along with it.

So far as described the operation is as follows: The car-axle, bearing the two wheels, is fixed between the two centers C and D as in a lathe. Any material difference in the length of axles and tram of wheels is compensated by moving and adjusting the bearing B′ on the bed-plate, the object of this being to bring the cutter properly over the work. As the arm I is mounted on the bearing B′, and the sleeve L must move with said arm when the bearing is moved, it will readily be understood how the movement of said bearing affects the position of the cutter. The axle being properly set, the split pulley G is fixed thereon at the proper place. A split pulley must be employed, as the car-wheels are fixed on the axle and prevent the slipping on of a pulley at the end of the axle. Several split pulleys may be at hand, of different sizes, so that the speed at which the axle is to rotate may be properly adjusted; but one size will generally be enough for all purposes. The belt *c* is now put in place, and the cutter adjusted to the work by the mechanism before described. By referring to Fig. 2, where I have shown one cutter thrown back, it will be seen that to accomplish this it is only necessary to disengage the hook *j* from the bar M. In setting the cutter to work the hook *j* is first engaged and the further adjustment of the cutter effected by means of the nut *i*. The wheel F turns slowly and the cutter *g* makes a spiral cut around its periphery. The cutter may be fed or adjusted by the nut N transversely on the tread as the wheel revolves.

As before stated, I employ two like dressing mechanisms, one for each car-wheel, and I have employed the same letters of reference in the drawings to designate like parts of each.

I also employ two like dressing mechanisms for truing up the axle-journals, and these are in substance the same as those for the treads; but as there is some difference in the arrangement of the parts I will briefly describe one of them. H′ is a shaft arranged parallel to the shaft H and rotatively mounted in bearings in the arms I. This shaft is driven through the medium of gears O O′, one fixed on the shaft H and one on the shaft H′. The shaft H thus becomes the driver. L^3 is a sleeve on the shaft H′. L^4 is the arm bearing the cutter. *d′* is the bearing for the cutter-shaft. *g′* is the cutting or milling wheel, which in this case may be of steel and of the usual kind. K^2 is the driving-sheave, and K^3 the sheave on the cutter-shaft, which is coupled to the driving-sheave by a belt, *f′*. N′ is the milled nut for adjusting the sleeve on the shaft, which is mounted in precisely the same way as that before described.

The mechanism for adjusting the cutter to the work is precisely the same as that before described, the two sections h^2 and h^3 of the adjusting-rod bearing the nut *i′* being coupled to the arm L^5, as shown in Fig. 2.

The shafts H and H′ are free to move lengthwise for a limited distance, but cannot move far enough to disengage the gear-wheels, partly because of the sheaves K impinging against the sleeves L and partly because the belts *c f f′* will tend to keep the sheaves in line. In practice the said shafts will remain in one position, or nearly so.

This machine may be set at any point within reach of power to run it, and its function is to true up journals and wheels that have become flattened, grooved, or otherwise untrue from use.

It is designed that all four of the cutters shall operate simultaneously so as to expedite the work; but it is not necessary that all should be in operation at once.

I claim as my invention—

1. In a machine for dressing cylindrical surfaces, the combination of the following elements, namely: a shaft mounted rotatively and a pulley fixed thereon, a sleeve mounted rotatively on said shaft and provided with a cutter-bearing arm and a cutter-moving arm, a cutter or dressing-wheel mounted rotatively on the cutter-bearing arm, and a pulley fixed on the cutter-arbor, a belt arranged to couple the driving-pulley with that on the cutter-arbor, mechanism for moving the cutter to and from the surface to be dressed, and mechanism for moving the cutter across the face of the work to be dressed, all constructed and arranged substantially as set forth.

2. A machine adapted for simultaneously dressing the two journals of a car-axle and the treads of the two wheels thereon, comprising bearings in which the axle is rotatively mounted, two diamond dressing-wheels for the wheel-treads, mounted on radial arms and driven from a shaft upon which said arms are mounted, two dressing-wheels for the axle-journals, mounted on radial arms and driven from a shaft upon which said arms are mounted, the shaft which bears and drives the axle-dressing mechanism being driven from the shaft which bears and drives the wheel-tread-dressing mechanism, and mechanism for feeding the cutters up to and across the face of the work, all constructed, combined, and arranged to operate substantially as set forth.

3. A machine for dressing cylindrical surfaces, comprising two centers in which to rotatively mount the object to be dressed, a shaft, H, rotatively mounted, a sheave, K, fixed on the shaft H, a sleeve, L, mounted loosely on the said shaft and provided with means for adjusting it longitudinally, an arm, L′, on the sleeve bearing the cutter-shaft, a cutter and sheave, K′, on the shaft, arranged to be driven from the shaft H, an arm, L^2, on the sleeve L, and a rod adjustable as to length, arranged to couple the arm L^2 with a fixed part of the machine, all combined and arranged to operate substantially as set forth.

4. In a machine for dressing car-axle journals and the treads of the wheels fixed thereon, the combination, with the bed-plate and cen-

ters for rotatively mounting the axle, of a split pulley adapted to be fixed and adjusted on the axle, the driving-shaft H, driving-pulley J, gear-wheel O, sheaves G and K′, belts *c f*, shaft H′, gear-wheel O′, sleeve L^3, arm L^4, bearing the cutter, the milling-wheel *g′*, sheaves K^2 K^3, belt *f′*, adjusting-nut N′, arm L^5, and a rod adjustable as to length, arranged to couple the end of the arm L^5 with some fixed part of the machine, all arranged to operate substantially as set forth.

5. The combination, with a shaft, H, and a sheave, K, fixed thereon, of the sleeve L, nut N, dog *l*, bearing-arm I, arm L′, cutter *g*, sheave K′, arm L^2, nut *i*, section *h*, and section *h′*, provided with a hook to engage a fixed part of the machine, all arranged substantially as and for the purposes set forth.

6. The combination, in a machine for dressing cylindrical surfaces, of a rotatively-mounted shaft, H, on which is fixed a sheave, K, the said sheave, a sleeve, L, bearing a radial arm, L′, said arm having a bearing in its free end for the cutting-wheel, the said cutting-wheel, the sheave K′, the belt *f*, the nut N, and the dog *l*, mounted on the sleeve-bearing and arranged to engage a groove in the nut, all arranged to operate substantially as and for the purposes set forth.

7. The combination, with the bed-plate and a bearing for the live center D, made movable along said bed-plate, the arm I, fixed on said bearing, the sleeve L, screw-threaded at its end and rotatively mounted in said arm, the nut N and dog *l*, the shaft H, extending through the sleeve L, and the cutting mechanism mounted on an arm projecting from said sleeve and arranged to be driven from the shaft H, all arranged substantially as shown, whereby the movement of the bearing of the center D imparts equal movement to the cutting mechanism, 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:
HENRY CONNETT,
ARTHUR C. FRASER.