J. A. HODEL.

Machine for Straightening Car-Axles.

No. 208,601. Patented Oct. 1, 1878.

Fig. 1.

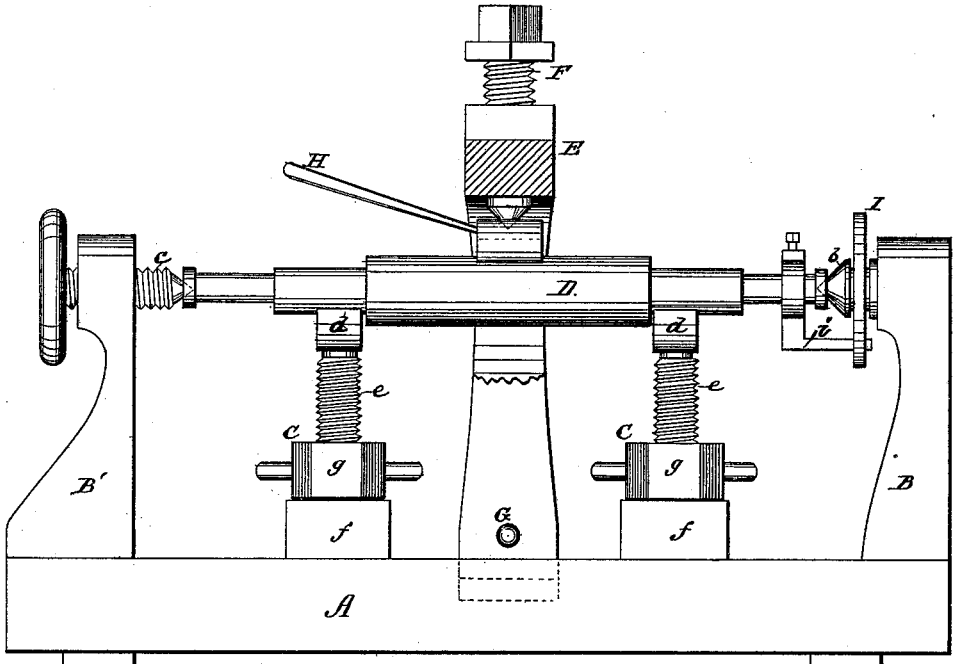

Fig. 2.

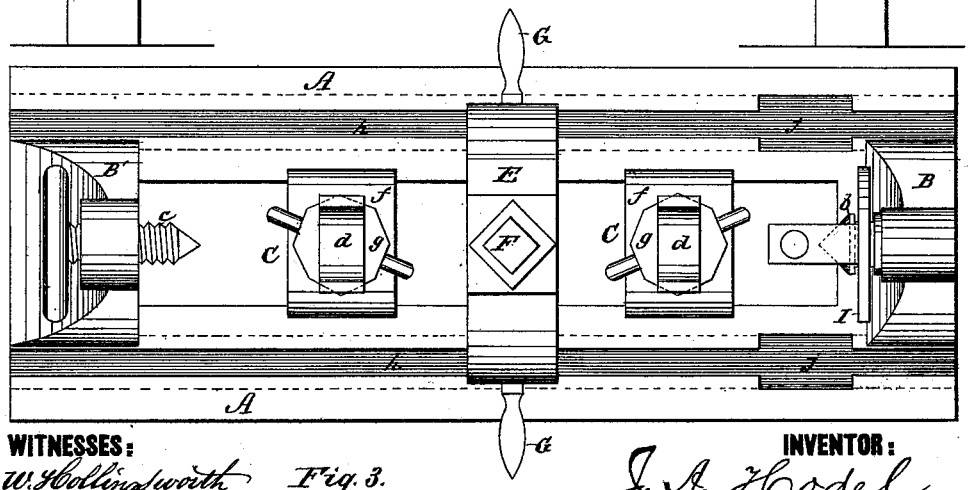

Fig. 3.

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JOSEPH A. HODEL, OF CUMBERLAND, MARYLAND.

IMPROVEMENT IN MACHINES FOR STRAIGHTENING CAR-AXLES.

Specification forming part of Letters Patent No. **208,601**, dated October 1, 1878; application filed August 24, 1878.

To all whom it may concern:

Be it known that I, JOSEPH A. HODEL, of Cumberland, in the county of Alleghany and State of Maryland, have invented a new and Improved Device for Straightening Car-Axles; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a side elevation with the yoke partly broken away. Fig. 2 is a plan view; Fig. 3, a detail.

My invention relates to an improved device more particularly designed for straightening car-axles which have become bent, but applicable also to straightening other rods, bars, or pieces of shafting.

The invention consists in combining a set of centering devices for the axle with two longitudinally-adjustable jacks and a longitudinally-adjustable yoke carrying a counter-screw, which presses upon the axle or bar to be straightened upon the opposite side from the jacks, the longitudinal adjustment of the jacks and yoke with counter-screw permitting the bend to be taken out of any portion of the axle without strain puon the centering devices, and without bending or interfering with the portion of the axle which is already straight.

In the drawing, A represents the bench or frame of the apparatus, which is supported upon legs *a*, and is constructed in a strong and substantial manner. From each end of this bench rise pillars B B′, in the upper ends of which are arranged the centering devices. These centering devices consist of a stationary pointed projection, *b*, attached to the side of the upper end of the pillar B, and a pointed screw, *c*, provided with a hand-wheel, and arranged to be adjusted in a female screw in the upper end of the pillar B′ by turning, so as to take the center of the axle or bar to be straightened, and hold it, in connection with the pointed projection *b*, in true central position.

I have shown this form of centering device as one means for centering the axle; but I do not confine myself to the same, as I may employ other forms of centering devices for this purpose.

C C are two jacks, arranged in a longitudinal slot in the bench, so as to be adjusted beneath the axle D along its length when the latter is held in the centering devices. These jacks consist each of a seat, *d*, for the axle attached to the upper end of a screw, *e*, a shouldered base block or bolster, *f*, resting in the slot of the bench, and a nut, *g*, with handholds, which rests upon the top of the base-block, and by its revolution raises or lowers the screw.

E is the yoke, carrying a counter-screw, F, which bears upon the opposite side of the axle from the jacks. The lower ends of this yoke are formed with shoulders, which rest in undercut grooves *h* in the bench on each side of the slot. These grooves are arranged parallel with each other and with the slot in which the jacks slide, and are undercut to receive the upward strain of the yoke when the pressures of the screws are applied.

G are handles for adjusting the yoke, and H is a hand-tool, which is applied between the upper surface of the axle and the lower end of the counter-screw F, so as to act as a step for the latter in transmitting the pressure of the screw to the axle.

In operating the device the following adjustments are made: If the bend in the axle is in the middle or larger portion of the axle, as is often the case when the cars are wrecked, the jacks are placed at the ends of the larger portion, the yoke and counter-screw adjusted to the point of greatest bend, the jacks tightened up to relieve the centering devices of strain, and the pressure then applied through the counter-screw to straighten the bend. If the bend is at the end or at the smallest part of the axle, the jacks are adjusted one at the extreme end and the other upon the opposite side of the narrrow portion and near the larger portion of the axle, the yoke being between, with the counter-screw upon the opposite side from the jacks. Pressure now applied to the counter-screw will correct the bend without bending or interfering with the portion of the axle which is already straight.

I am aware of the fact that an axle-straightening device has been heretofore constructed in which the axle was only sustained at its ends, where the centering device held it, and a single jack was employed. This device is

not reliable, however, for it is not possible with it to take the bend out of an axle without putting another bend into a portion which is already straight. Thus, if the axle be bent in the center, which is its largest portion, a device holding the axle at its ends and applying pressure at the middle will not take the bend out of the larger middle, but will put a reverse bend in the weakest part of the axle, which is near the ends. On the other hand, if the axle is bent at the end, this device may, instead of correcting this bend, put another reverse bend into the other narrow end of the axle.

By my system of adjustable jacks and yoke with counter-screw, it will be seen that I confine the straightening strain to the part that is already bent without affecting the other parts of the axle.

The object of the centering device is to discover the bend or deviation from the true axial position, so that the other devices may correct the same. This is done by turning the axle on its centers and noting the eccentric portion of the same. To facilitate the turning of the axle, a swiveling disk or hand-wheel, I, is loosely placed upon the center projection, *b*, and from this disk one or more dogs, *i*, project laterally, and are provided with set-screws, which are screwed down to the axle and made to bind the disk to said axle, the disk or hand-wheel thus giving a better leverage for turning the axle.

For lifting the axle to its position between the centering devices I prefer a hoisting-chain with pulleys sustained upon a traveling wheel at the top and connected by a yoke to the axle, this device being convenient and easily managed by one man.

If it is desired to straighten an axle with the wheels attached, the yoke, with counter-screw, is pushed to one end of the bench, where an outlet, *j*, in the grooves permits the yoke to be lifted out and placed around the axle between the wheels, when the yoke may be readjusted to its grooves and the axle to its centers.

For adapting the seats *d* of the jacks to fit other sizes or shapes of metal besides car-axles, a set of adjustable seats are provided, as shown in dotted lines in Fig. 3.

Having thus described my invention, what I claim as new is—

The longitudinally-adjustable jacks C C and the longitudinally-adjustable yoke E, carrying counter-screw, combined with each other and with the frame carrying centering devices, substantially as described.

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Witnesses:

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