

(No Model.)

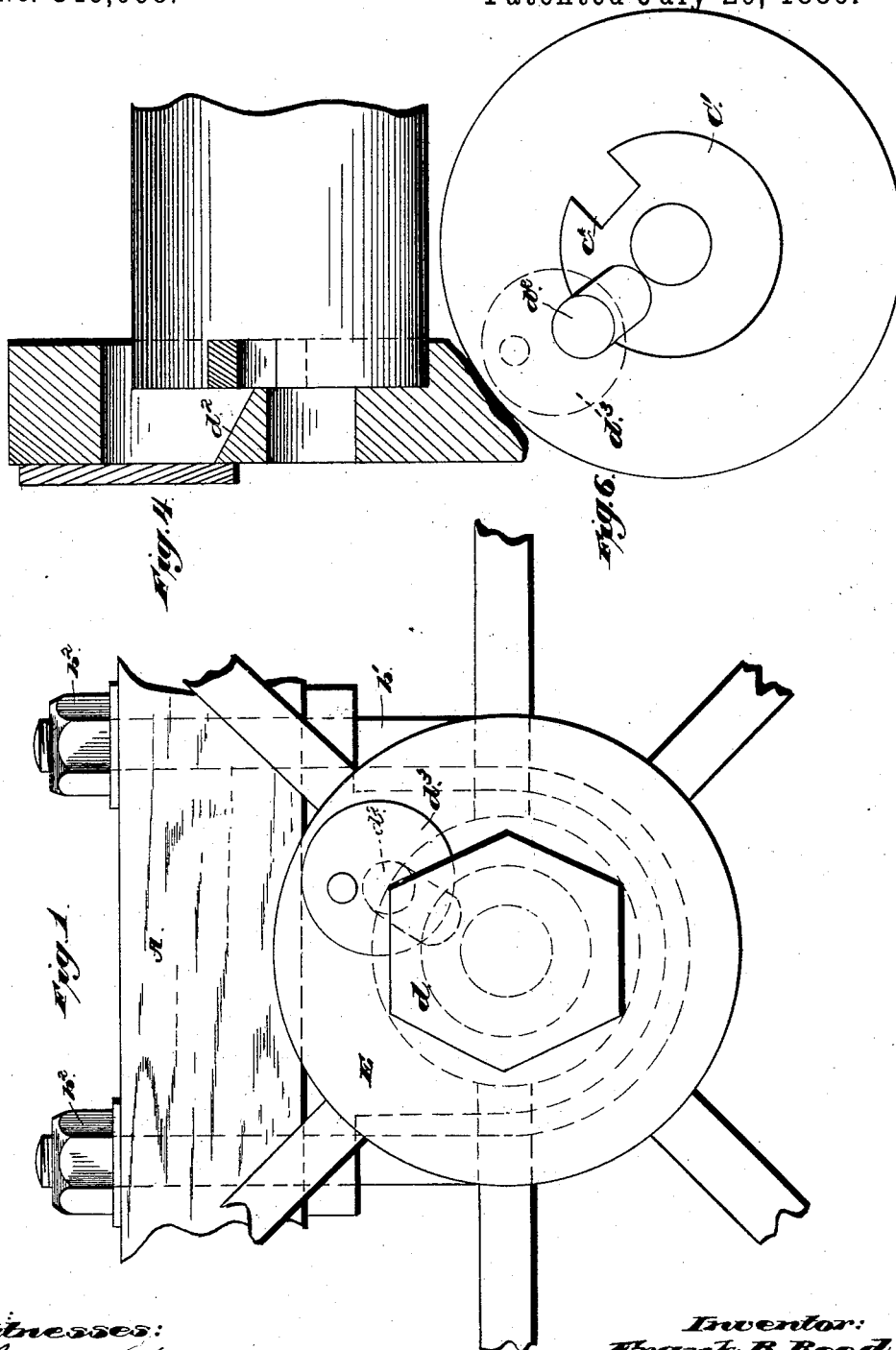
2 Sheets—Sheet 1.

F. B. REED.

CAR AXLE.

No. 346,068.

Patented July 20, 1886.



Witnesses:

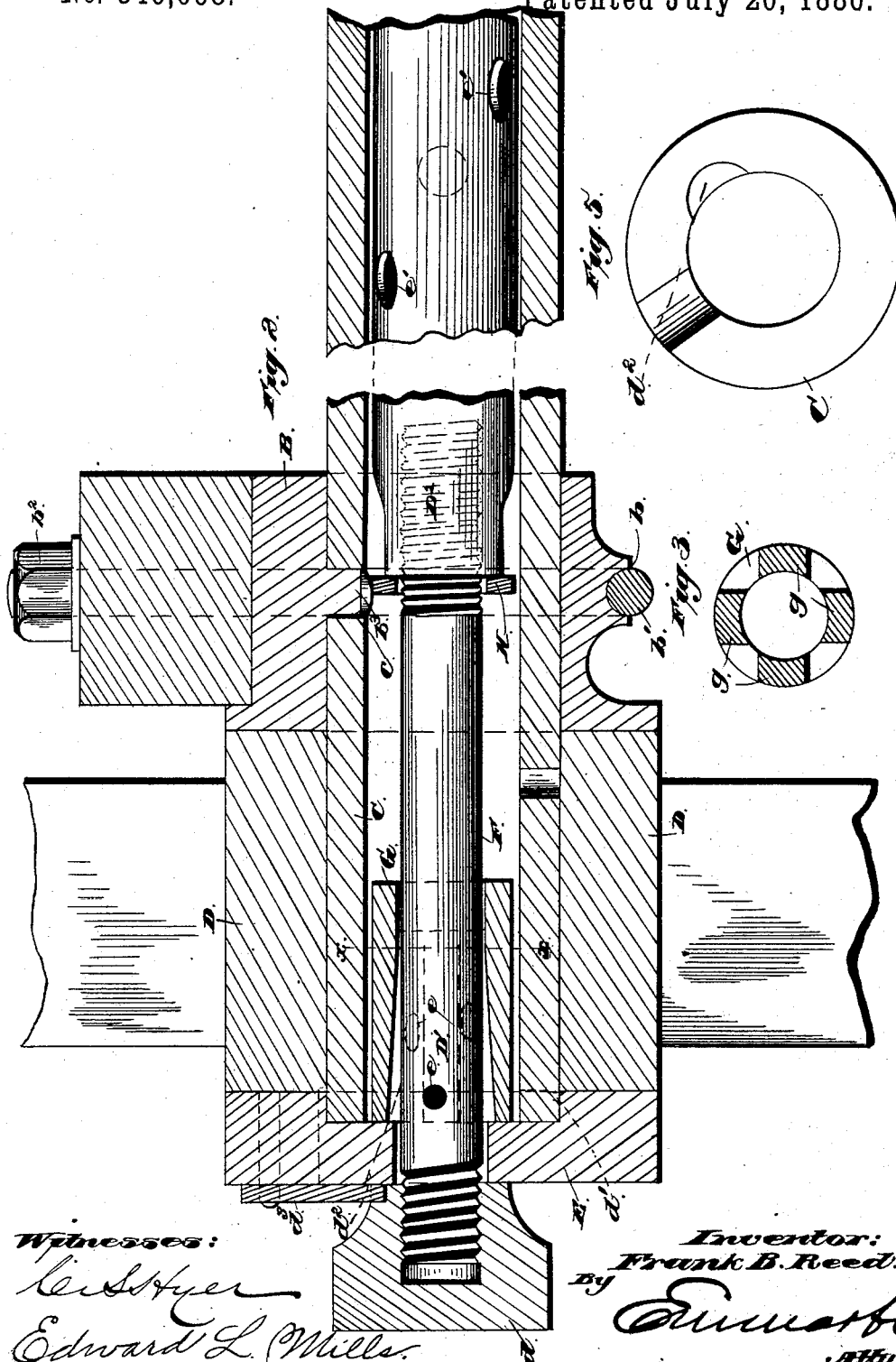
Edw. L. Mills.

Inventor:
Frank B. Reed.
by *Emmott*
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UNITED STATES PATENT OFFICE.

FRANK B. REED, OF CLEARFIELD, PENNSYLVANIA, ASSIGNOR TO BIGLER,
REED & CO., OF SAME PLACE.

CAR-AXLE.

SPECIFICATION forming part of Letters Patent No. 346,068, dated July 20, 1886.

Application filed May 11, 1886. Serial No. 201,850. (No model.)

To all whom it may concern:

Be it known that I, FRANK B. REED, a citizen of the United States, residing at Clearfield, in the county of Clearfield and State of Pennsylvania, have invented certain new and useful Improvements in Car-Axles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in axles for railway-cars; and the object of the invention is to provide, first, a simple and effective means for supporting the axle, and, second, to form a hollow axle having convenient means for holding and feeding a supply of oil, which shall be of simple and comparatively inexpensive construction.

My axle consists, in general, of a stationary tubular portion supported rigidly in boxes, and having journals for the car-wheels, in connection with an internal rod, either solid or tubular, which supports end caps for closing the end of the hollow portion and clamping-nuts for securing the parts together. These, together with peculiar lubricating devices, constitute the principal features of my invention, which is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of part of one of the longitudinals of a car-frame, showing a portion of a car-wheel in side elevation. Fig. 2 is a longitudinal section of the axle. Fig. 3 is a section on the line *xx* of Fig. 2. Fig. 4 is a section of the cap at end of axle. Fig. 5 is an end elevation of the hollow axle. Fig. 6 is an elevation of the axle-cap as seen from the inside.

In these drawings, A represents one of the longitudinal beams forming part of the framing of a car.

B indicates one of the axle-boxes, which is substantially semicircular or semi-elliptical in side elevation, and is provided with a peripheral groove, *b*. The box B is secured to the car-frame by a curved strap, *b'*, which fits the groove *b*, the ends of the strap passing through the beam A, and being secured by nuts *b''*.

C represents the hollow stationary axle of

the car, which passes through the box B, and is prevented from turning by a stout pin, *b''*, formed as a part of the box, which enters a hole, *c*, in the tubular axle. It will be understood that the construction is the same for both ends of the axle, though described with reference only to the parts illustrated in the drawings.

The tubular axle extends through the box and forms the stationary journal upon which revolves the wheel-hub D, said axle projecting a short distance beyond the hub. Over the end of the axle is fitted a recessed cap, E, of substantially the same diameter as the wheel-hub. This cap accomplishes two purposes: first, that of holding the wheel on the journal, and, second, of preventing the oil with which the axle is filled from escaping at the outer end of the bearing. The caps at both ends of the axle are held in place by a screw-threaded rod, F, which may be made solid and extend entirely through the tubular axle, but is preferably made hollow, and in two or more sections, for reasons which will be hereinafter set forth. Nuts *d* on the end of rod F clamp the caps firmly in position, and they are further prevented from displacement by projections *d'* on said caps, which enter slots or recesses *c'* in the axle, as shown in Fig. 6. An inclined oil-passage, *d''*, is formed in the cap, which conducts oil directly to the inside of the tubular axle, from which it escapes to the bearing by means of an oil-hole, *l*, in the bottom of the axle. A short sleeve, G, is slipped upon the inner rod, F, and a washer, H, is mounted upon said rod, by means of which a packing-space is formed, which is filled with waste to prevent the oil from feeding too rapidly. The oil-passage *d''* is covered by a pivoted cap, *d'''*, as shown.

I have thus far described the inner rod, D, as made solid—a construction which will produce good results in operation; but I prefer to make this rod also of tubular form, and in at least two sections connected by male and female threads, as shown in Fig. 2. Two important advantages result from this construction. In the first place, it is desirable that the end of the rod F should project to as slight an extent as possible beyond the hub, yet far enough to give a good

hold for the nuts d . By forming the rod in two sections, D' and D'' , the part D' may be partly unscrewed and caused to project a greater distance to receive its nut d . The nuts at both ends can then be tightened by holding one and turning the other, which will result in a movement on the inside threads and bring all the parts into their proper positions. In the second place, the tubular rods D' D'' may be used as auxiliary oil-reservoirs to supply oil more gradually to the bearing than would be the case were a solid internal rod used and all the oil fed directly. The oil which enters the hollow axle passes not only into the packing-chamber, but also through holes ee into the tube D' . It then passes into the tube D'' and escapes through holes $e'e'$ into the axle, and as the washer H does not entirely occupy the width of the axle the oil will pass around said washer into the waste and then be distributed to the bearing through the oil-hole in the axle. This causes the oil to be fed more gradually, and thus admits of a longer run of the same amount of oil.

The sleeve G is used to confine the waste in the packing-chamber. It is shown in cross-section in Fig. 3 as a ring having projections g g , which effectually prevent waste from covering the holes ee in the tube D .

This construction of axle is adapted more especially for light cars—such as are used for mining purposes; but it will be understood not only that it is applicable to all forms of railway-cars, but that the construction shown may be changed and varied in many particulars without departing from the spirit of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A car-axle composed of a stationary tubu-

lar portion, caps for closing the end thereof, and a stationary internal rod provided with nuts for securing said caps in position, substantially as described. 40

2. In combination with a car-frame and supporting-boxes, a stationary hollow axle having an oil-outlet hole, an internal rod, an oil-space between said rod and axle, and caps at each end of the axle, each having an oil-passage, substantially as described. 45

3. The combination, with the car-frame, of the box B , secured thereto, and having a projection, and a tubular axle having an opening to receive such projection, substantially as described. 50

4. The combination of the tubular axle, the internal tubular rod, an oil-passage to the interior of the axle, oil inlet and outlet openings in the internal rod, and an oil-passage from the hollow axle to the bearing, substantially as described. 55

5. In combination, the tubular axle, the internal tubular rod made in sections and screwed together, the end caps for the axle, and clamping-nuts on both ends of the internal tubular rod, substantially as described. 60

6. The combination of the tubular axle C , the internal threaded rods D' D'' , having oil-holes, the sleeve G , and the washer H , substantially as described. 65

7. The combination, with the car-frame, of the grooved axle-box B and the supporting-strap, constructed substantially as described. 70

In testimony whereof I affix my signature in presence of two witnesses.

FRANK B. REED.

Witnesses:

PAUL F. WEAVER,
JAMES I. ADAMS,