(No Model.)

B. E. WAUGAMAN.

BULL WHEEL FOR OIL WELLS.

No. 454,787. Patented June 23, 1891.

Fig. 1.

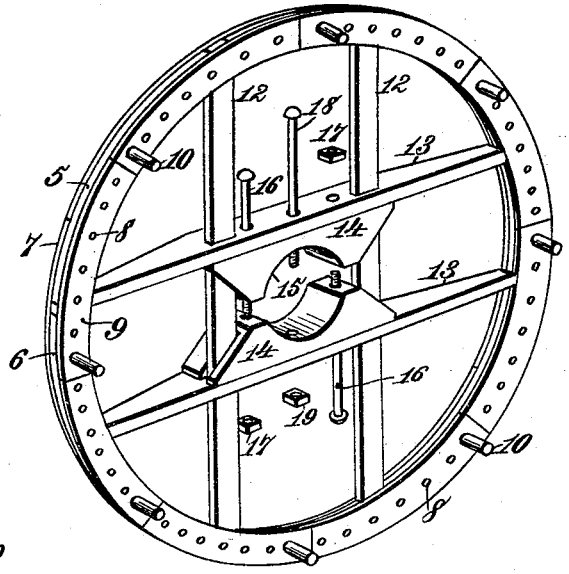


Fig. 2.

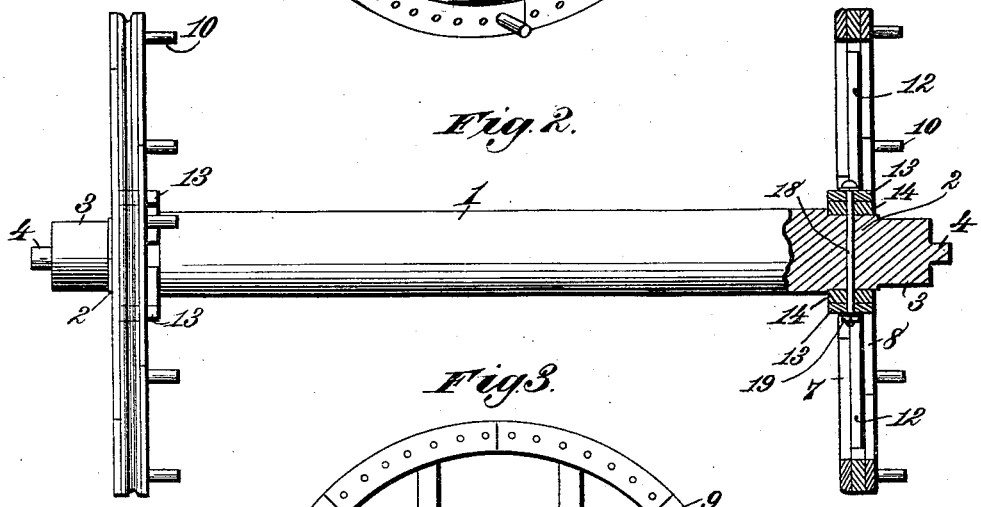
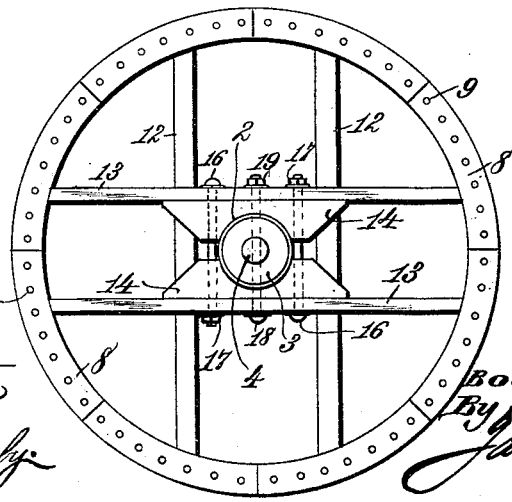


Fig. 3.



Witnesses.
Robt Everett.
Dennis Sunby.

Inventor.
Boaz E. Waugaman.
By James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

BOAZ E. WAUGAMAN, OF NORTH CLARENDON, PENNSYLVANIA.

BULL-WHEEL FOR OIL-WELLS.

SPECIFICATION forming part of Letters Patent No. 454,787, dated June 23, 1891.

Application filed March 21, 1891. Serial No. 385,879. (No model.)

To all whom it may concern:

Be it known that I, BOAZ E. WAUGAMAN, a citizen of the United States, residing at North Clarendon, in the county of Warren and State of Pennsylvania, have invented new and useful Improvements in Bull-Wheels for Oil-Wells, of which the following is a specification.

It is the purpose of my invention to provide certain novel improvements in the construction of bull-wheels for oil-wells, whereby said wheels shall be easily and quickly attached to and removed from the shaft to permit the transportation of said parts separately, and to adapt the wheel, also, to be removed from an old decayed or injured shaft, whereby the bull-wheel, which is by far the more expensive of the two parts, may be mounted upon two or more different shafts in succession, or until it becomes practically worn out.

It is my further purpose to provide a bull-wheel which may be readily clamped and centered upon the shaft and tightened thereon as the wood of the shaft shrinks, the construction being such that the wheel may be fitted to shafts of varying size.

The invention consists in the several novel features of construction and new combinations of parts hereinafter fully set forth, and then particularly defined in the claim following this specification.

To enable others skilled in the art to make, construct, and use my said invention, I will proceed to describe the same in detail, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of one of the bull-wheels removed from the shaft, showing the bolts partly withdrawn. Fig. 2 is a sectional side elevation of a set of bull-wheels mounted on the shaft. Fig. 3 is an end elevation of the parts shown in Fig. 2.

Most of the bull-wheels in general use at this day are permanently mounted upon the shaft or connected thereto in such a way that they cannot readily be removed, and in nearly all instances the separation temporarily of the shaft and wheel is neither contemplated nor possible. From this cause the removal of the rig from one place to another is rendered more or less difficult as regards the bull-wheels and shaft, although easy enough as to the other parts, and when situated upon hilly or broken ground or among the woods the difficulties encountered are greatly increased. Moreover, it is well known that the shaft of a set of bull-wheels will more or less frequently wear out or become disabled some time before the bull-wheels become incapable of service, and as the shaft is easily replaced at about one-fourth the cost of the complete set it will be seen that a large saving may be effected by rendering the bull-wheels detachable from and attachable to the shaft, both for the purpose of facilitating the transportation of the set and for the further purpose of enabling the user to remove a worn, decayed, or injured shaft and substitute therefor a new one, instead of compelling the user to purchase a complete set of bull-wheels when the shaft breaks down. My invention is intended to remedy these defects and also to provide a bull-wheel which may be clamped upon and positively connected with the end of the bull-wheel shaft, giving a simple, durable, strong, and rigid connection, by which the wheel may be readily removed and attached, centered, and tightened upon the shaft as the latter shrinks.

Referring to the drawings, the reference-numeral 1 indicates the bull-wheel shaft, which consists of a cylindrical wooden beam of the usual form, having at or near each end a seat 2 turned downward to a somewhat less diameter than the shaft and having a width sufficient to receive the clamps upon the bull-wheel. The ends of the shaft outside these seats are turned down to a diameter less than that of the seats 2 to form bearings 3 for the bands upon the cast-iron gudgeons, the outside diameter of said bands being less than that of the seats 2 for the clamps to permit the latter to pass readily over them. The rims of the bull-wheels are formed usually of three or more series of sectional parts, breaking joints one with another, the middle series consisting of long and short portions 5 and 6, the former lying between the ends of adjacent intersecting arms of the wheel and the latter between the ends of the parallel arms. The parts of the inner series 7 and outer series 8 are usually of different length, in order that there may be no coincident joints. These several series are united by nails, spikes, or

other suitable devices 9. A groove is formed in the periphery of the central series in the tug or draw wheel, the brake-wheel being flush throughout the three series. The hand-holds 10 are inserted in any preferred manner.

The numeral 12 denotes two of the arms of the wheel, which are preferably formed of strips or bars having a thickness equal, or substantially so, to the thickness of the central series of rim-sections, between the ends of which the ends of said arms are inserted, their outer flat faces lying against the inner faces of the outer rim-sections, one of the rivets or other fastenings 9 being passed through both outer sections and each end of the arm. These arms are parallel and are separated by a space somewhat greater than the exterior diameter of the bull-wheel shaft. At right angles with the arms 12 are arranged two parallel arms 13, formed of flat plates or flattened bars having their greatest width arranged transverse to the rim of the wheel. Said arms are provided with mortises through which the arms 12 pass, and their ends are mortised into or set between the ends of the central series of rim-sections. Upon the outer face of the bull-wheel the edges of the arms 13 are preferably flush with the corresponding face of the wheel; but upon the opposite edges said arms are widened toward the central portions, upon which are rigidly mounted clamp-blocks 14, having slots in their ends through which the arms 12 pass. Said blocks are provided with semicircular seats 15, cut upon the same or substantially the same radius as the seats 2 of the shaft. Through the clamp-blocks 14 and through the arms 13 are passed bolts 16, lying upon opposite sides of the seats 15, their projecting ends receiving nuts 17. The extremities of the clamp-blocks 14 are notched to receive the parallel arms 12 in such manner that the arms constitute abutments for the clamp-blocks, and thereby brace and support the latter against any tendency to move longitudinally along the parallel arms 13. By this means the clamp-blocks are maintained in proper relative position for their correct engagement with the bull-wheel shaft. The clamp-blocks have rectilinear faces that rest directly against the faces of the parallel arms 13, the engagement being such as to provide a strong, durable, and efficient structure, which is very desirable in a bull-wheel. The wheels are placed upon the shaft with the clamp-blocks 14 upon the seats 2, and the nuts 17 are turned up until the seats 15 are drawn closely against the shaft. A bolt 18 is also passed through the arms 13 through the central portions of the blocks and diametrically through the end of the shaft 1, a nut 19 being turned upon the end of the bolt.

It will readily be seen that the construction described enables the user to remove the bull-wheel from the shaft and replace it either upon the same or a similar shaft with ease and rapidity. As the shaft shrinks also, the clamping-blocks may be tightened thereon and the support they afford resists the tendency to split by the torsional strain of the central bolt 18.

What I claim is—

The bull-wheel herein described, consisting of the sectional rim, the parallel arms 13, clamped between the sections of the rim and each provided with a pair of mortises, the parallel arms 12, extending through the mortises at right angles to the mortised arms and clamped between the sections of the rim, the clamp-blocks 14, interposed between and resting directly against the adjacent faces of the mortised arms and having their extremities provided with notches with which engage the arms that pass through the mortises to prevent displacement of the clamp-blocks longitudinally of the mortised arms, the clamping-bolts passing through the mortised arms and clamp-blocks, the bull-wheel shaft extending between the clamp-blocks, and the center bolt extending through the mortised arms, the clamp-blocks, and the shaft, substantially as described.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of two subscribing witnesses.

BOAZ E. WAUGAMAN. [L. S.]

Witnesses:

HIRAM SIMPSON,

E. H. BRADLEY.