(No Model.) 2 Sheets—Sheet 1.

J. KELLEY.

SPOKE EXPANDER AND WHEEL TIGHTENER.

No. 606,014. Patented June 21, 1898.

Fig. 1.

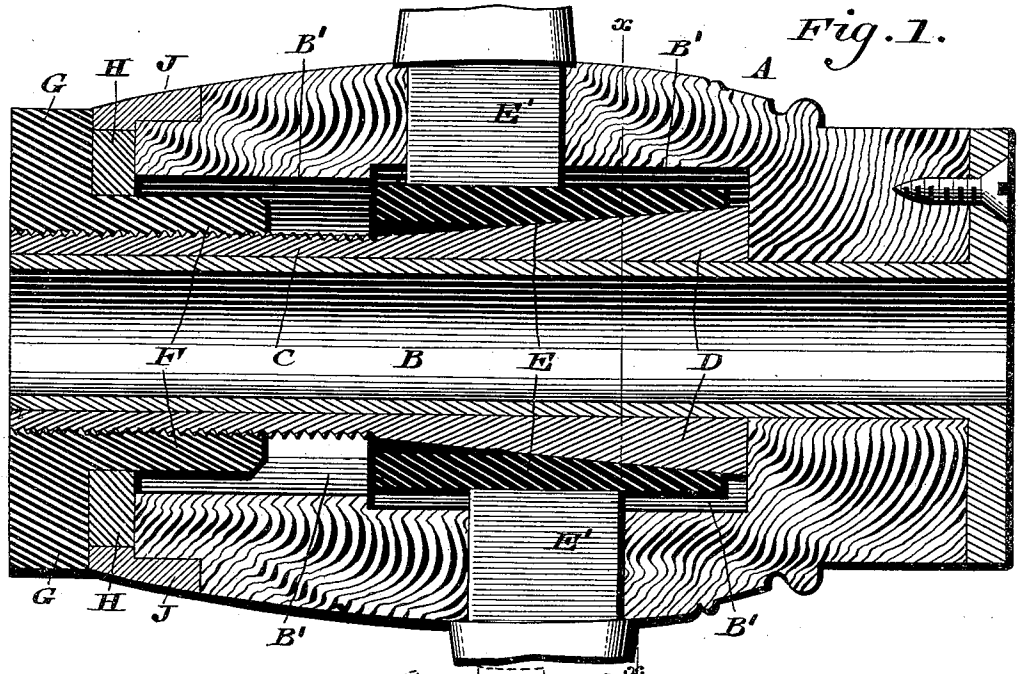


Fig. 2.

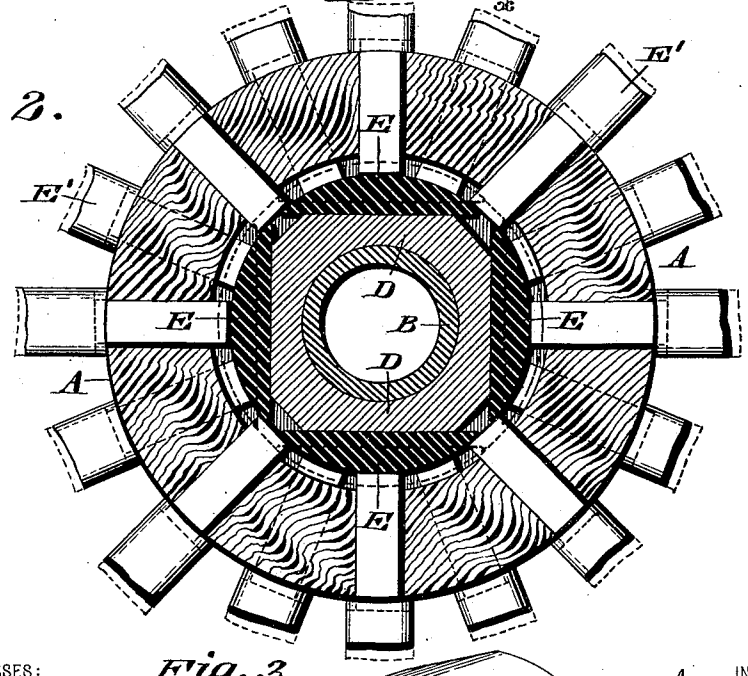
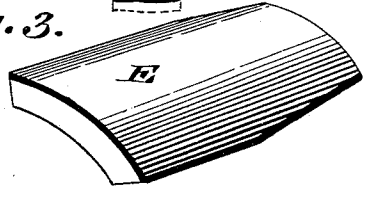


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

J. KELLEY.

SPOKE EXPANDER AND WHEEL TIGHTENER.

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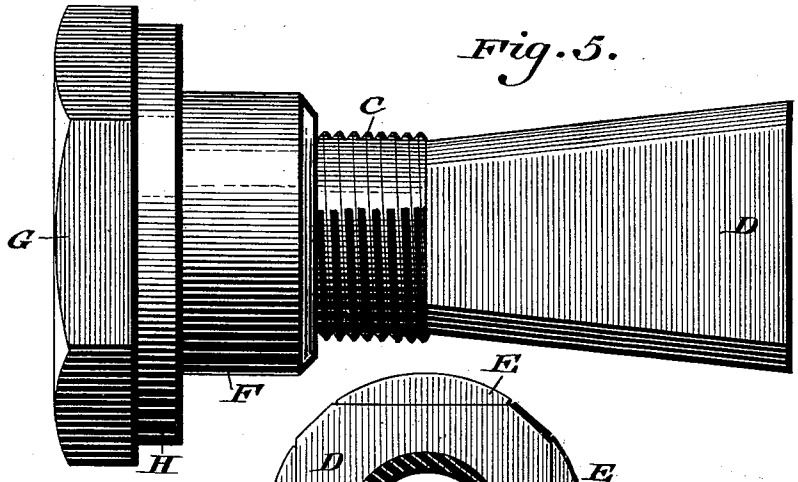
Fig. 5.



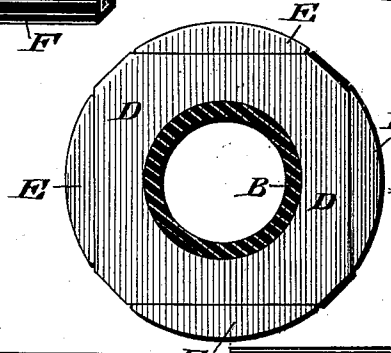


Fig. 6.

Fig. 4.

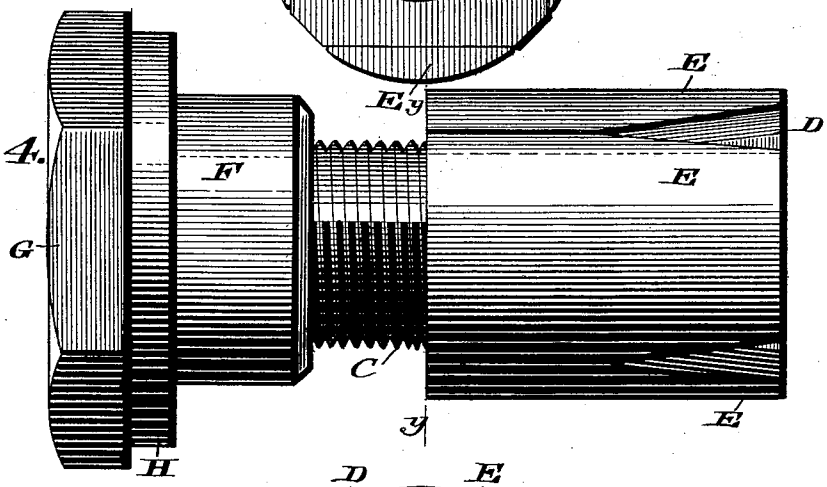
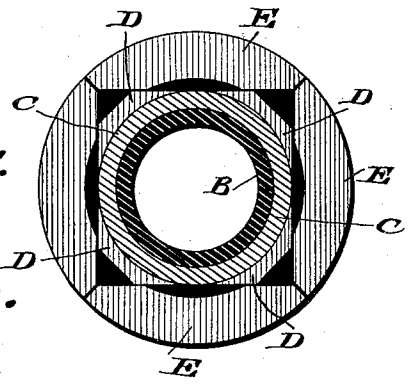


Fig. 7.



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SPOKE-EXPANDER AND WHEEL-TIGHTENER.

SPECIFICATION forming part of Letters Patent No. 606,014, dated June 21, 1898.

Application filed February 16, 1897. Serial No. 623,593. (No model.)

To all whom it may concern:

Be it known that I, JOHN KELLEY, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Spoke-Expanders and Wheel-Tighteners, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists in providing a hub of a wheel with means for forcing out the spokes thereof and tightening the wheel, especially when the parts are worn in service, as will be hereinafter described, the novel features of the same being pointed out in the claims that follow the specification.

Figure 1 represents a longitudinal section of a spoke-expander and wheel-tightener embodying my invention. Fig. 2 represents a transverse section thereof on line *x x*, Fig. 1. Fig. 3 represents a perspective view of one of the plates employed. Fig. 4 represents a side elevation of the expanding and tightening device removed from the hub. Fig. 5 represents a side elevation of a portion of the device seen in Fig. 4. Fig. 6 represents an end view taken from the right hand of Fig. 4. Fig. 7 represents a section on line *y y*, Fig. 4.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates a hub, and B the box thereof, said hub having the recess B′ within the same around said box.

C designates a sliding sleeve, which is freely fitted on a portion of the box B and has the inner end thereof of the form of a pyramidal wedge D, around which are arranged the separate plates E, which form bearings for the inner ends of the spokes E′, which are fitted in the openings of the hub, as usual, it being noticed that the plates E are wedge-shaped in their longitudinal direction and occupy a deepened portion of the recess B′, so as to be held more reliably in place, being guided radially therein.

F designates a nut, which is internally threaded and engages with threads on the exterior of the sleeve C, said nut having a head G, which is accessible on the exterior of the hub, said hub having its inner face bear against the washer or annulus H and collar or rim J, which latter parts are concentric on the end of the hub, as plainly shown in Fig. 1, whereby, as said collar and rim are formed of metal, there is no direct wearing action of the head G against the end of the hub by the turning of the nut.

The operation is as follows: When the parts are in the position shown in Figs. 1 and 2, the nut is rotated so as to draw out the sleeve, and as the wedge follows the motion thereof the plates E are forced out radially from said wedges and their pressure is exerted against the spokes, the effect of which is an outward motion of the spokes and consequent tightening of the wheel. As the parts wear away the nut is again rotated, and thus the wedge expands or spreads the plates to a greater extent, the effect of which is evident.

When the wheel is in use, the plates E receive the thrust of the spokes, and as said plates rest solidly on the wedge D and the latter is immovable, excepting, however, when the nut F is properly operated, the wheel will be of a firm and rigid construction. Again, as the washer H is interposed between the collar J and the shank of the nut F the strain on the adjacent portion of the box B is received by said washer and so transmitted to the collar J, which, being a fixture on the hub, resists said strain and so retains the relative parts in firm and compact condition regardless of the joints of the same.

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

1. In a spoke-expander and tire-tightener, a sliding sleeve having a wedge connected therewith, a loose annulus and a rim concentric on the outer end of the hub, in combination with a nut which engages said sleeve and has its head bearing against said rim and annulus.

2. A hub having a metal rim on its end, and a recess around the box thereof, a threaded sleeve with a pyramidal wedge connected therewith, adapted to slide on said box, wedge-shaped plates on said wedge adapted to have the spokes bear thereagainst, a nut engaging said sleeve, and a rotatable metallic annulus freely fitted within said rim and surrounding said nut, the latter having a tread whose inner surface rides on said annulus and rim.

JOHN KELLEY.

Witnesses:
JOHN A. WIEDERSHEIM,
WM. C. WIEDERSHEIM.