(No Model.) 2 Sheets—Sheet 1.

H. C. LORD.

HUB ATTACHING DEVICE.

No. 496,265. Patented Apr. 25, 1893.

FIG. 3.

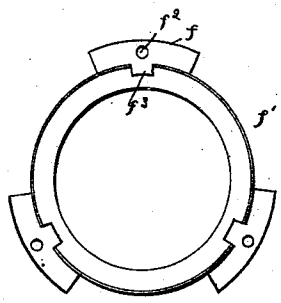


FIG. 1.

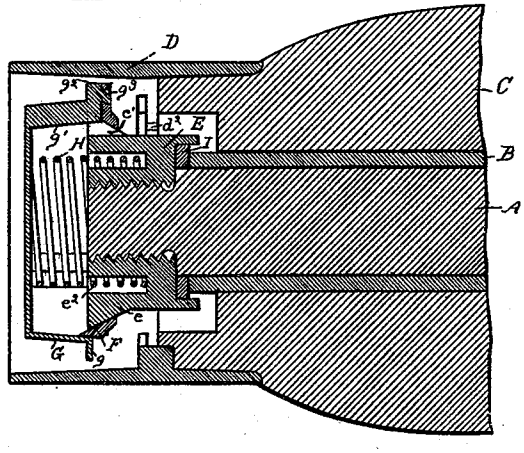
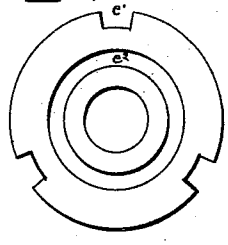


FIG. 4.



Witnesses
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(No Model.) 2 Sheets—Sheet 2.

H. C. LORD.

HUB ATTACHING DEVICE.

No. 496,265. Patented Apr. 25, 1893.

Fig. 5.

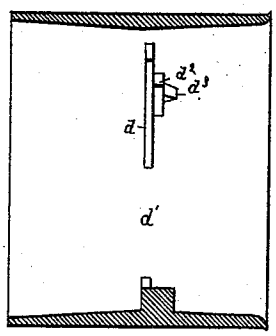
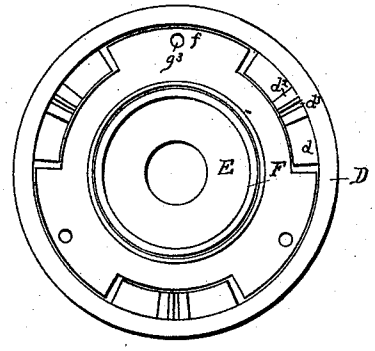


Fig. 2.



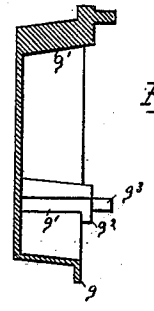


Fig. 6.

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UNITED STATES PATENT OFFICE.

HUGH C. LORD, OF ERIE, PENNSYLVANIA.

HUB-ATTACHING DEVICE.

SPECIFICATION forming part of Letters Patent No. 496,265, dated April 25, 1893.

Application filed December 27, 1892. Serial No. 456,456. (No model.)

To all whom it may concern:

Be it known that I, HUGH C. LORD, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Hub-Attaching Devices; 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.

This invention relates to hub attaching devices, and consists in certain improvements in the construction thereof, as will be hereinafter fully described and pointed out in the claims.

The invention is illustrated in the accompanying drawings, as follows:

Figure 1 is a side view in vertical section through the center of the hub and axle with my device in place. Fig. 2 is an elevation of the hub end of a detached hub band with my device in place therein. Fig. 3 is an end elevation of the tapered sleeve, F, the point of view being to the left of Fig. 1. Fig. 4 is an end elevation of the axle nut, E, the point of view being to the left of Fig. 1. Fig. 5 is a section of the hub band, D, the section being the same as in Fig. 1. Fig. 6 is a section of the cap, G, the section, being the same as in Fig. 1.

The construction is as follows: A marks the axle spindle; B, the hub box; C, the hub; D, the outer hub band; and E, the axle nut. The nut has the usual cavity in its inner end to receive a washer, I, and is attached to the axle by a threaded screw, as are those now in most general use. The nut is round, and has at its outer end, the cone shaped shoulder, e. The three segmental slots, e', pass through this shoulder. The sleeve, F, having the same taper on its inner surface as the shoulder, e normally rests against said shoulder. It has the three protruding segmental projections, f, and segmental slots, f', between said projections. The flanged cap, G, is attached to the sleeve, F. The flange, g, fills, as nearly as is practical, the hub band, D, so as to hide the grease accumulations on the end of the hub, and also, that it may form a dust cap for the bearing. On the inside of this cap are the three segmental shoulders, g', which slide through the slots, e', and lock the cap and attached parts against axial movement on the nut. These shoulders are extended over the flange, g, and form the shoulders, g^2, thereon. Extending from these shoulders, are the rivet lugs, g^3. The projections on the sleeve, F, are perforated at f^2, and the slots, f^3, are cut into the sleeve to the plane of the projections, to allow the projections to rest on the shoulders, g^2, of the cap. When the cap and sleeve are put together, the lugs, g^3, are passed through the holes, f^2, and upset. A coil spring, H, is tensioned against the cap and the nut. It is seated in an annular groove, e^2, in the nut, and the number and size of its coils are such that when fully contracted, it is wholly contained in the groove. On the inner surface of the band, D, and resting against the hub, are the segmental shoulders, d^2. Protruding from these and driven into the wood, are the spurs, d^3, which hold the band against turning on the hub. In front of the shoulders, d^2, extending circumferentially beyond them and forming wings thereto, are the segmental projections, d, between which are the segmental slots, d'. The arcs of the projections f and d, are such that they will readily pass through the slots, d' and f', respectively. The arcs of the shoulders, d^2 and g^2, are much less than the projections and are nearly equal. They are of such thickness, that the projections f, will easily pass axially between the projection, d, and the hub, and the projection, d, will pass between the projection, f, and the flange, g, of the cap. I prefer the arc of the projection, d, longer than the arc of the projection, f, as the projection, d, will then contact the shoulder, g^2, and receive the strain, while the projection, f, will not contact the shoulder, d^2. This relieves the rivet lugs, g^3, of any shearing strain.

The operation of the device is as follows: To take off the wheel, the cap, G, is pressed in with the fingers, and the wheel turned backward. When the projections, f, come opposite the slots, d', they pass through and around back of the projections, d. This keeps the cap from springing out, and the pressure may

be removed from the cap. The projections, *d*, contact the shoulders, g^2. Continuing the turning of the wheel, unscrews the nut. The nut is firmly held against the hub box, and the projections, *f*, against the backs of the projections, *d*, by the tension of the spring, so that when the wheel is removed, the parts remain in the hub band, and the nut is in place to re-engage the thread on the axle. To replace the wheel, the wheel is placed on the spindle, and turned forward. The thread in the nut will enter the thread on the spindle. The friction, exerted by the spring, between the projections, *d* and *f*, is usually sufficient to carry the nut to the shoulder of the spindle, and is always sufficient to start it. After the threads are entered, the projection, *d*, may be reversed against the opposite shoulders, g^2, by exerting a quick pressure on the cap, or, by allowing the wheel to run, until the cap snaps out and then pressing it in again, and engaging the projections against the opposite shoulders. Continuing the turning of the wheel sets the nut. A slight turn backward releases the projections and the recoil of the spring snaps, and holds, them out of engagement. If it is desired to adjust the washer or remove the nut for other purposes, the cap is pressed in and turned with the fingers after the nut has been unscrewed from the spindle. This disengages the projections, and releases the nut.

The object in making the shoulder, *e*, on the nut, wedge or cone shaped, and the inner surface of the sleeve F, tapered, is that the pressure of the spring may bring these parts to a perfectly tight fit and thereby prevent rattling. This is a very desirable feature in a device of this kind.

I am aware that by putting a taper sleeve on the ordinary nut, and using a spring with graduated coils so that it will contract within itself, and attaching the projections, *d*, to the hub separately from the hub band, a device embodying the leading features of my invention may be used with an ordinary nut and hub band. Hence, while I prefer the mechanical arrangement shown, I do not confine myself to it.

What I claim as new is—

1. In a hub-attaching device, the combination with the hub and the axle-nut of a clutching device, carried by the nut and normally out of engagement with the hub, that is adapted to engage the hub and cause the nut to revolve with, and to be retained by, the hub, substantially as and for the purposes set forth.

2. In a hub-attaching device, the combination with the hub, the axle-nut and a clutching device, carried by said nut and normally out of engagement with the hub, that is adapted to engage the hub and cause the nut to revolve with the hub of a cap covering said nut and serving as a means for operating said clutch device.

3. In a hub attaching device, the combination with the hub, the axle nut and a clutch device, carried by said nut and normally out of engagement with the hub, that is adapted to engage the hub and cause the nut to revolve with the hub of a dust cap covering said nut and serving as a means for operating said clutch device.

4. In a hub attaching device, the combination with means of locking the axle-nut with the hub, of a tapered shoulder on said nut carrying an oppositely tapered sleeve, for the purposes set forth.

5. In a hub-attaching device, the combination with segmental winged lugs attached to the hub, of a locking device attached to the axle-nut and adapted to lock the nut in self retaining engagement with said lugs.

6. In a hub attaching device, the combination with segmental winged lugs carried by the axle nut, of means for bringing said lugs into self retaining engagement with the hub for the purposes set forth.

7. In a hub-attaching device the combination with segmental winged lugs attached to the hub, of a sleeve on the axle nut, locked against axial movement thereon, and segmental winged lugs on said sleeves, adapted to be interlocked in self retaining engagement with the lugs of the hub.

8. In a hub attaching device, the combination with a hub and segmental lugs attached thereto, of an axle, an axle-nut thereon, a shoulder at the outer end of said nut, a sleeve on said nut, normally resting against said shoulder, and free to move longitudinally on said nut, means for locking said sleeve against axial movement on said nut, segmental projections on said sleeve, normally out of engagement, but adapted to be brought into engagement with the lugs on the hub and a spring opposingly tensioned against the nut and the sleeve.

9. In a hub attaching device, the combination with a hub and segmental lugs attached thereto, of an axle, an axle-nut thereon, a shoulder at the outer end of said nut, a sleeve on said nut, normally resting against said shoulder and free to move longitudinally on said nut, means for locking said sleeve against axial movement on said nut, segmental projections on said sleeve, normally out of engagement, but adapted to be brought into engagement with the lugs of the hub and a spring seated in a containing groove in the nut and opposingly tensioned against the nut and the sleeve.

10. In a hub attaching device, the combination with the axle, A, hub box, B, and hub, C, of a hub band, D, segmental winged lugs, formed of projections, *d*, shoulders, d^2, and spurs, d^3, axle-nut, E, having the spring containing groove, e^2, therein, tapered shoulder, *e*, on said nut with segmental grooves, *e'*, therein, tapered sleeve, F, normally resting against the shoulder, *e*, segmental projec-

tions, *f*, on said sleeve, cap, G, attached to the sleeve, F, shoulders, *g'*, therein, adapted to slide longitudinally through the grooves, *e'*, and lock said cap and attached parts against axial movement on said nut, flange, *g*, thereon and spring, H, opposingly tensioned against the nut and cap.

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

HUGH C. LORD.

Witnesses:
HENRY E. FISH,
WM. MARLES, Jr.