

One of the first questions we had with wheel hub design was how the screws or threaded rods would attach to the plate to provide a secure connection between the hub and the wheel. While many of our benchmarking research had designs for directly mounting the bolt into the hub assembly or welding threaded rods into place, we were concerned with the integrity of this connection if the whole part is to be made from milled aluminum. Patent No. 8,950,824 B2 is a wheel hub nut retainer plate that solves this problem.

This product is marketable to any manufacturer or consumer that is involved in the design of off-road vehicles. This product would be most attractive to hub designers that are pushing the material limits of the part while trying to reduce weight and maintain the structural integrity and safety for the vehicle. The market power for this patent is preventing other designers or manufacturers from using a rigid steel plate for securing the bolts into the wheel hub for added rigidity.

The patent resists invalidation efforts by making claims for the hub to be designed to hold the wheel onto a rotating axis where the axle nuts have a keyed or noncircular shape. The axle nut and receiver with this type of geometry are fixed so they rotate together. Several claims outline the shape and definitions for the nut or keyway receiving portion. This hub plate must be located in the center of the wheel base and the number of arms match the number of bolts or lugs for the wheel. The holes in each hub arm have a loose fit for the threaded rods that comprise the lugs to attach to the wheel. Another claim on this patent is that the plate hub arms reach radially outward from the central portion where they are attached to the axle. Other claims cover other parts of the wheel assembly, retaining plates and geometries that involve components that are generally purchased from commercial suppliers and other commercial sources.

Many of the claims for this patent cover general specifications that would need to be satisfied for any design of a wheel hub on a vehicle of this type. The most descriptive and unique aspects of this design are the use of keyways or non-circular channels to secure the fasteners in place against the part. After this primary claim, it would be nearly impossible to design a part that does not infringe on some of the lesser claims. This patent is a good source for brainstorming however, and informs some of our design decisions.

This patent has been issued to Brian Eck of Bemidji, MN and Reid Anderson of Thief River Falls, MN. Reid Anderson worked as a manufacturing engineer at Bobcat before moving on to Arctic Cat as a design engineer for their ATV team when the patent was filed. The filing date for this patent was September 4, 2012, so it is potentially valid until 2022. The patent was issued on Feb 10, 2015, and the 3.5 year maintenance fee was paid on August 10, 2018, so this patent is still enforceable.