Foot-Assisted Torque Amplifier

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My aging and fiercely independent grandfather lives on a farm. Age has reduced his strength, resulting in the removal of wheel studs from machinery to become an increasingly frustrating challenge. Various options were considered as a solution which would enable him to apply the required torque to remove the wheel studs from farm machinery more easily. Design considerations included current market products such as power impact wrenches and manual solutions with additional leverage were investigated. My unique solution is a Foot Assisted Torque Amplifier with a non-slip pedal which causes the required torque to be applied easily and safely. Imbedded in the device is a socket holder for handy storage of sockets and a motorised end enabling quick removal of loosened studs. With an increasing number of females in farming, this torque amplifier can be applied to removal of wheel studs, from a wide range of machinery; previously requiring an extension to increase the Moment Force. Older individuals not only benefit from the foot assisted torque amplifier but it can also assist healthy, partially physically compromised or disabled individuals to release wheel studs. The device offers a vast advantage over handheld wrenches and has applications apart from farming machinery to markets such as the army and transport markets where the sales potential is vast. Combining these components into one product achieves an economically attractive, unique solution superior to other existing products and appealing to a diversity of users and wide range of industrial and domestic applications.

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