

Weight Plate Loader

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Many weightlifters acquire unnecessary back injuries from manually picking up, moving and loading weight plates onto a barbell. To avoid these injuries, the Weight Plate Loader, a full-sized working robot prototype, was created, to replace manual handling techniques for loading weight plates. The Weight Plate Loader provides an automated method of moving plates from storage onto a barbell, where the weightlifter is waiting. It utilized a combination of levers and screws to move the plates through three dimensions. The Weight Plate Loader used an electrical, rather than hydraulic or pneumatic system, because an electrical system could be controlled more easily. All material used was cut, drilled and put together by me. The Weight Plate Loader was tested under training conditions and was found to be appropriate for the task, although it was thought to be rather large and bulky. It loaded and unloaded weights onto a barbell for use by the weightlifter, reducing inconvenience and possible injuries from loading the weights. Although it could be improved, the Weight Plate Loader will benefit athletes and coaches training in gyms and at weightlifting competitions. It will be an innovation in the weightlifting industry and will help to push the sport into the future, as well as having the potential for additional applications in other industries such as medical rehabilitation.