Top 3 Patents:

**Weightlifting spotting machine-7,585,259**

A weightlifting apparatus that supports a free weight barbell when activated using two counter-weight controlled support arms that are mechanically attached to a vertical support on a bench press system. The vertical supports each have a slide rail that is mechanically coupled to a locking assembly that acts to release the support arms using buttons. The support arms are attached to independent counterweights or springs by means of a cable. When released by a foot pedal these support arms are elevated by the counterweights. The support arms hold the barbell and prevent it from downward movement via the one-way locking assembly mounted to the support arms. The support arms work independently of one another so that a user may reset each support arm independently.

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| *Inventors:* | *Turner; Joseph Scott (San Antonio, TX)* |
| *Assignee:* | *Maxrep Benchcrafters LLC (San Antonio, TX)* |

This system is uses a kick plate to engage a lifting apparatus for spotting. This method is useful in that it is reliable due to the lack of electronic logic being used to initiate lifting sequence.

**Apparatus and method for facilitating the safe lifting of free weights-7,591,771**

A free-weight bench is provided having a safety assist device for preventing injury to a weight lifter who repetitively lifts a barbell weight including a weight bar. The safety assist device includes a pair of spaced apart arms oriented to permit the bar to move along the length thereof, and a bar-sensing apparatus comprising a plurality of sensors on the arms as well as a processor programmed to determine at least one parameter related to the velocity of the bar as it moves along the arms. Respective extensible supports comprising fluid-actuated piston and cylinder assemblies are located adjacent corresponding arms and are controlled by the processor. In the event that a lifter loses control of the barbell weight causing the latter to rapidly descend, the processor receives bar-position signals from the sensors and calculates a velocity-related parameter; the processor then initiates operation of the supports in order to arrest the downward descent of the barbell weight to prevent injury to the lifter.

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| *Inventors:* | *Rullestad; Korey W. (Kansas City, MO), Boone; Nathaniel J. (Tonganoxie, KS), Shull; Jeremiah K. (Hughesville, MO)* |
| *Assignee:* | *Redding; Julia A. (Kansas City, MO)* |

This system uses an IR curtain and hydraulics to spot a user. This system relies on wireless sensor data to determine when the user needs help and a hydraulic system to cheaply lift a large load.

**Barbell and dumbbell safety spotting apparatus-7,374,515**

A dumbbell clamp for a barbell and dumbbell safety spotting apparatus utilizes two spaced-apart plates each having a notch for retaining the grip of a dumbbell. A spring-biased lock bar locks the dumbbell grip in the notches during normal use. A clamp bore is provided for secure the dumbbell clamp to a cable by use of a hook. A hand switch receptacle provides an electrical connector from a hand switch on the dumbbell clamp to the safety spotting apparatus.

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| *Inventors:* | *Slawinski; Michael D. (Suwanee, GA), Olsson; Mikael L. E. (Hoschton, GA)* |

This device uses a hand switch on the bar to activate a lifting mechanism.

Our Solution:

Our solution is similar to patent 1 in purpose alone. The differences between the two devices are that our machine autonomously provides the decision to spot the user rather than a user activated spot and that our machine uses a cable and pulley system rather than a counter weight system.

Our solution is similar to patent 2 in that it uses sensors to track the bar, a microcontroller to process the data and decided to spot, and then an armature based lifting apparatus to spot. Our device differs in that it doesn’t use a wireless sensor and that the lifting apparatus isn’t hydraulic.

Our solution is similar to patent 3 in that it spots a user. This device is similar to patent 1 in that it is user activated rather than autonomous like our device.

Our solution should be patentable in that it uses a unique set of sensors to achieve bar tracking, as well as a unique algorithm for spotting logic and a different lifting mechanism than most other patented devices.

Sustainable Competitive Advantages:

Different ways we could make our product difficult to imitate would be applying a patent to protect the idea for 20 years. This seems to be the only feasible way to protect the device since no trade secrets could really be employed. This type of system is easily reverse engineered. In 20 years, hopefully, the device would have created a name for itself and established brand recognition that would make entry into the market difficult for competitors.