cally the one-way version **132** of electrical actuator **130** simply comprises a slide **134** that is guided by a slide or track **136** and smart muscle wire **138** that contracts when heated and expands when cooled. Wire **138** is fixed to spaced electric terminal **140** and **142** at its respective ends and looped around a drive member **144** that is attached to slide **134** at the left hand end as shown in FIG. **3**. When wire **138** is heated, wire **138** contacts moving slide **134** to the right from the phantom line position to the solid line position shown in FIG. **3**. Slide **134** in turn may be connected to the unlatching lever of a closure latch (not shown) or the like to move the unlatching lever to the unlatching position.

[**0017**] Wire **138** preferably includes one or more coils **146** between terminal **140** and pin **144** and one or more coils **148** between terminal **142** and pin **144** to increase the length of wire **138** in a small space with the increased length increasing the movement or stroke of slide **134**. As best shown in FIG. **5**, the lengths of wire forming the coils **146** and **148** may be moveably disposed in flexible tubing **150**, similar to a bowden cable, to prevent entanglement of the wire in the coils. A wire guide **151** may also be provided.

[**0018**] Smart muscle wire **138** typically has a high electrical resistance and consequently can be heated electrically by a suitable electric circuit connected to terminals **140** and **142** such as circuit **50** that is schematically shown in FIG. **3** and that includes an electrical power source **52** and a switch **54**.

[**0019**] One-way version **132** can be converted to a two-way version by using a second smart muscle wire that is connected to a second set of terminals and looped around a drive pin at the right end of slide link **134** to pull slide link **134** to the left when the second wire is heated. Actuator **130** may include both a one-way version and a two-way version.

[**0020**] Referring now to FIG. **5**, a schematic drawing of yet another electrical actuator **230** of the invention is illustrated. Actuator **230** is also designed to operate a an unlatching lever of a closure latch (not shown) or the like which typically includes a return spring for the unlatching lever. Consequently actuator **230** is a one-way version **232** for operating the typical unlatching lever of a closure latch or the like that also reduces the space requirements of the actuator **30** which includes lever **34**. Basically the one-way version **232** of electrical actuator **230** comprises a slide link **234** that is guided by a slide or track **236** and smart muscle wire **238** that contracts when heated and expands when cooled. Wire **238** is fixed to spaced electric terminal **240** and **242** at its respective ends and looped around a drive pin **244** that is attached to slide link **234** at the left hand end as shown in FIG. **5**. When wire **238** is heated, the wire contacts moving slide link **234** to the right as shown by the solid position of slide link **234** in FIG. **5**. Slide link **234** in turn may be connected to the unlatching lever of a closure latch (not shown) or the like to move it from one operative position to another.

[**0021**] Wire **238** preferably includes one or more loops between terminal **240** and drive pin **244** and one or more loops between terminal **242** and pin **244** to increase the length of wire **238** in a small space with the increased length increasing the movement or stroke of slide link **234**. Actuator **230** includes at least one reel **246** that is located between the terminals **240** and **242** and the slide link **234**. Wire **238** is wound around reel **246** between terminal **240** and drive pin **234** and wound around reel **246** between terminal **242** and drive pin **244**. Reel **246** preferably has a helical groove **252** to separate loops of wire wound on the reel as best shown in FIG. **6**. Reel **246** is also preferably made of a low friction material allowing the wire **238** to slide in the helical groove **252**. Reel **246** may also be pivotally mounted on a pivot pin **250**.

[**0022**] Smart muscle wire **238** typically has a high electrical resistance and consequently can be heated electrically by a suitable electric circuit connected to terminals **240** and **242** such as circuit **50** that is schematically shown in FIG. **3** and that includes an electrical power source **52** and a switch **54**.

[**0023**] The one-way version **232** of actuator **230** can be converted to a two-way version by using a second smart muscle wire that is connected to a second set of terminals looped around a drive pin at the right end of slide link **234** to pull slide link **234** to the left when the second wire is heated.

[**0024**] While the smart muscle wires have been disclosed as being of round solid cross section, other cross sections are possible such as oval or rectangular. Moreover, the smart muscle wires can be tubular rather than solid. Furthermore, the smart muscle wires can be coiled wires.

[**0025**] Many embodiments and adaptations of the present invention other than those described above, as well as many variations, modifications and equivalent arrangements, will be apparent from or reasonably suggested by the present invention and the foregoing description, without departing from the substance or scope of the present invention. Accordingly, while the present invention has been described herein in detail in relation to preferred embodiments, it is to be understood that this disclosure is only illustrative and exemplary of the present invention and is made merely for purposes of providing a full and enabling disclosure of the invention. The foregoing disclosure is not intended or to be construed to limit the present invention or otherwise to exclude any such other embodiments, adaptations, variations, modifications and equivalent arrangements, the present invention being limited only by the following claims and the equivalents thereof.

I claim:

1. An electrical actuator comprising:

a drive member;

a moveable member engaged with said drive member;

at least one smart wire made of a shape memory alloy having two ends, wherein said smart wire is looped around said drive member; and

a electrical terminal connected to each of two said smart wire ends, wherein said terminals are adjacent to each other and spaced from said drive member;

wherein said smart wire has at least one coil located between said electrical terminals and said drive member.

2. The electrical actuator of claim 1 wherein said smart wire is comprised of a nickel-titanium alloy, said smart muscle wire contracts when heated by direct application of electrical current and returns to its original shape upon cooling.