

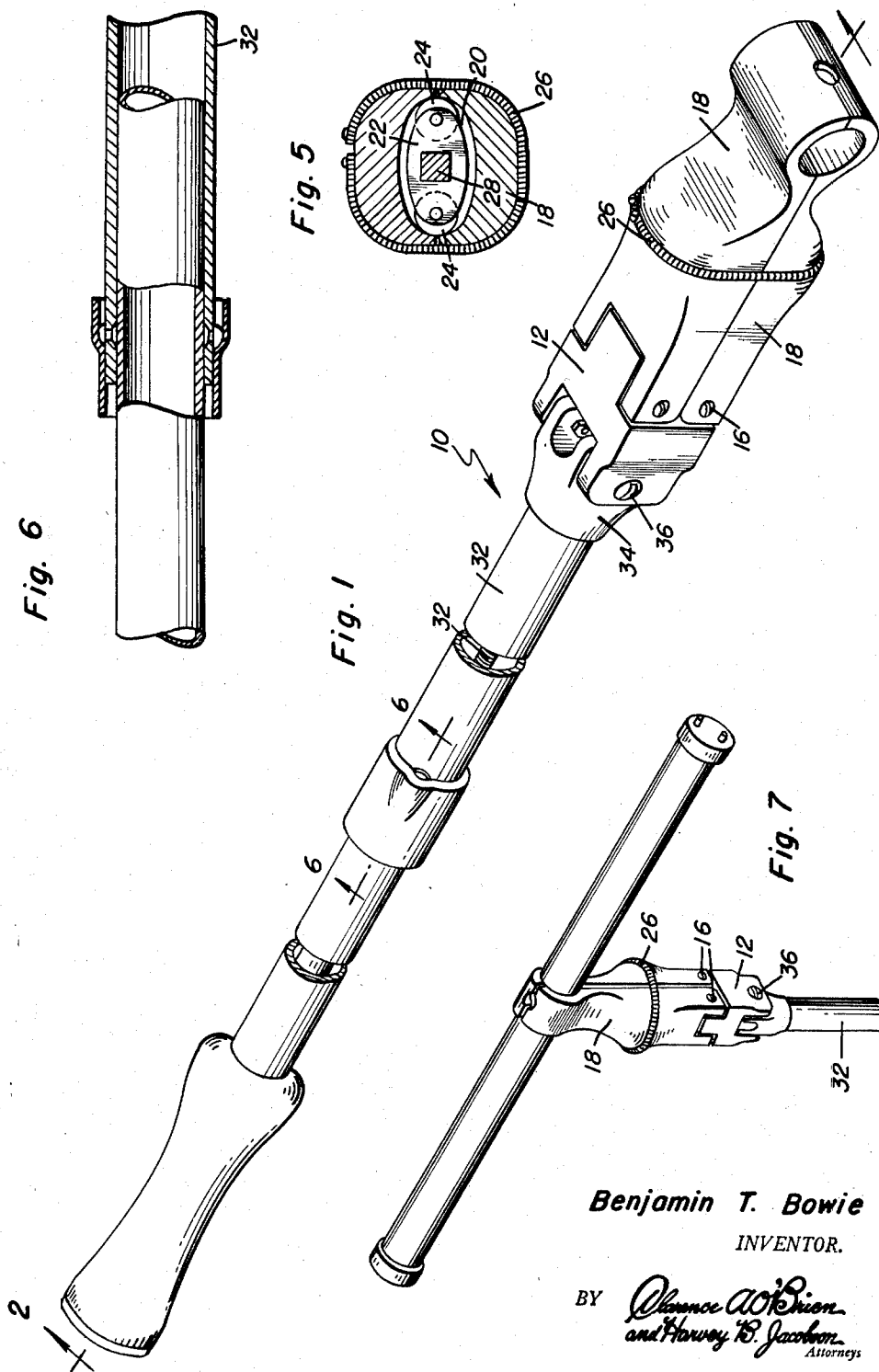
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B. T. BOWIE
BULB CHANGING DEVICE

2,669,478

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2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 2

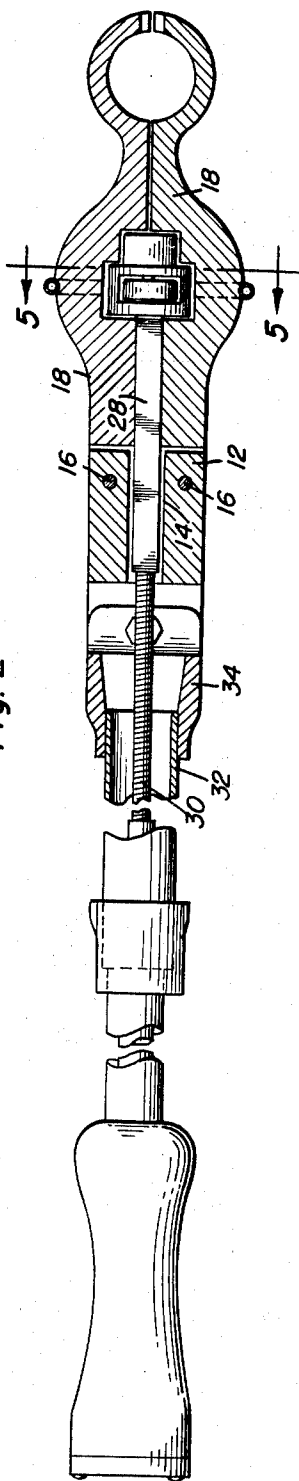
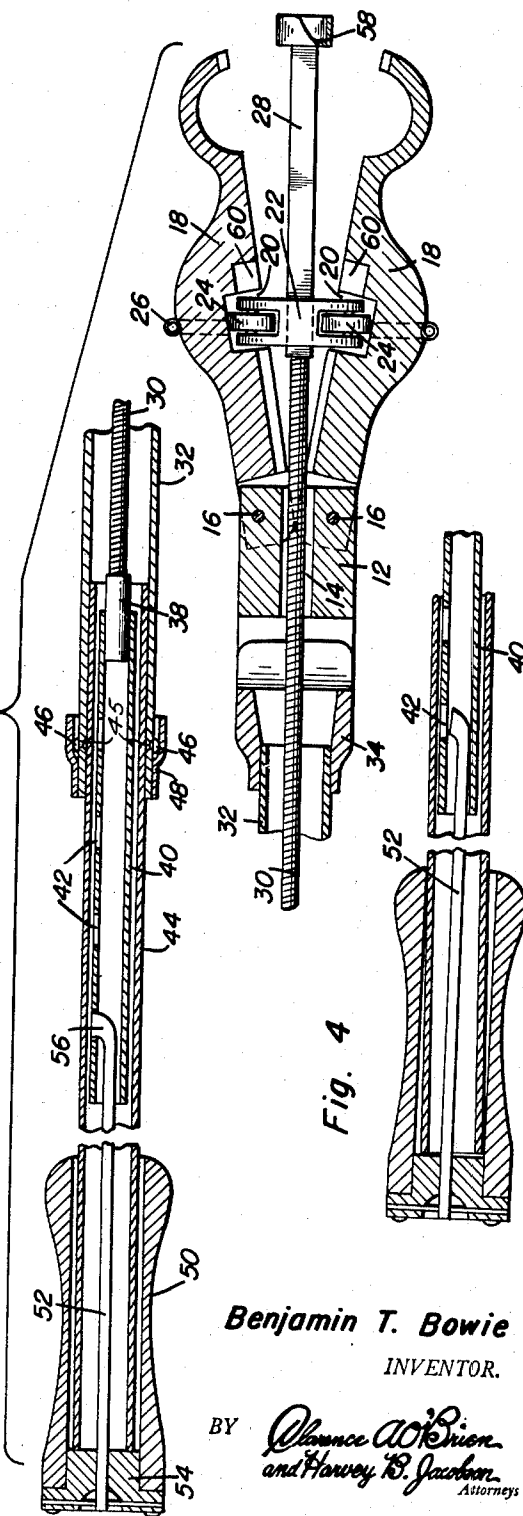


Fig. 3



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BULB CHANGING DEVICE

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7 Claims. (Cl. 294—20)

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This invention relates to a bulb changing device for facilitating the maintenance and repair of fluorescent lighting fixtures and more particularly to a device of this kind having a pole with jaws for grasping the fluorescent light at its outer end.

An object of this invention is to provide a device having a pair of opposed jaw members thereon for grasping a fluorescent bulb when it is desired to change the same, and which jaw members are actuated by positive means including a flexible shaft operated cam.

A further object of this invention is to provide means operable with the cam actuating means for selectively removing the starter fuse of the fluorescent lamp from its position.

Still further objects of the invention reside in the provision of an elongated mechanism capable of use in removing fluorescent lamps from their fixtures when the fluorescent lamps are in difficult places to reach or otherwise inaccessible.

Still further objects of the invention reside in the provision of a bulb changing device that is strong, durable, highly efficient in operation, simple in construction and manufacture, capable of being used by even an untrained laborer, and which will be quite inexpensive.

These, together with the various ancillary objects of the invention which will become apparent as the following description proceeds, are attained by this bulb changing device, a preferred embodiment of which has been illustrated in the accompanying drawings, by way of example only, wherein:

Figure 1 is a perspective view of the bulb changing device comprising the present invention;

Figure 2 is a sectional view showing the jaw members in a closed position, the sectional view being taken along the line 2—2 in Figure 1;

Figure 3 is an enlarged sectional view of the device comprising the present invention showing the members in an open position;

Figure 4 is a sectional detail showing the position of the handle elements and latching rod in a position different from that shown in Figure 3;

Figure 5 is a vertical sectional view as taken along the line 5—5 of Figure 2;

Figure 6 is a sectional detail as taken along the line 6—6 of Figure 1;

Figure 7 is a perspective view showing the device comprising the present invention in operative engagement about a fluorescent bulb.

With continuing reference to the accompanying drawings wherein like reference numerals

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designate similar parts throughout the various views, reference numeral 10 generally designates the present invention which includes a housing 12 having a central aperture 14 and to which there is pivotally attached by means of pins 16 opposed jaw members 18 which are mirror images of each other.

The jaw members 18 are provided with central recesses 20 in which a cam 22 having rollers 24 rotatably mounted thereon is adapted to work and engage the jaw members. There is provided a coil spring 26 which extends about the jaws 18 and continuously urges them together.

The cam 22 is actuated by a square shaft 28 which extends through a central aperture in the cam. Obviously, when the cam 22 is rotated so that the major axis of its elliptical configuration is in line with the rollers in engagement with the jaw members, the jaws will be opened as shown in Figure 3. However, when the major axis of the elliptical cam 22 is in such alignment, the spring 26 will urge the jaw members together.

Connected to the square shaft 28 is a flexible shaft 30 which is preferably made from a resilient coil spring and which extends through a first tubular shaft 32 of cylindrical shape which is pivotally connected to the housing 12 by means of an attachment 34. Threaded pins 36 are used to effect this pivotal attachment.

The flexible shaft 30 terminates in a cylindrical member 38 which is rigidly secured to a tubular sleeve 40. The tubular sleeve 40 is provided with a plurality of spaced slots 42, the purpose of which will be henceforth disclosed.

A tubular shaft 44 concentric with the tubular sleeve 40 is positioned so as to readily slide within the first shaft 32. The shaft 32 is provided with apertures 45 therethrough adjacent its end remote from the jaw members and headed pins 46 are loosely positioned in the apertures 45 in order that a clamping ring 48 may be positioned so as to cause the pins to rigidly engage the tubular shaft 44 and hold the shafts 32 and 44 in an adjusted and desired position.

The tubular shaft 44 extends into a central recess in a handle member 50 and a latching rod 52 is secured to the backing member 54 of the handle 50. The latching rod 52 is provided with an upwardly extending detent 56 which can be selectively engaged within one of the recesses 42. Hence, as the tubular sleeve 40 is slidable within the tubular shaft 44 the latching rod 52 may engage the sleeve 40 within one of the slots 42 in order to enable the sleeve 40

to be rotated which hence rotates the flexible shaft 30 which, in turn, rotates the shaft 28 which turns the cam 22. Further, upon the locking of the latching rod 52 with the sleeve 40 it is able to urge the shaft 28 outward of the jaws when they are open so as to enable the starter fuse engaging element 58 mounted on the end of the shaft 20 to extend outward of the jaws and be able to perform its function of removing the starter fuse from the lamp fixture when such is necessary. A recess 60 is formed in each of the jaw members for housing the starter fuse engaging member.

As can be readily seen from an inspection of Figure 4, the central recess of the handle member 50 is of greater diameter than the tubular shaft 44 which enables the handle member to be rocked thus disengaging the latch rod 52 from the slots 42. Thus, it is possible to move the latching rod 52 into engagement with another of the slots depending on whether or not it is desired to actuate the rod 28 to urge the starter fuse engaging member outward of the jaws. The clamping ring 48 enables the device to be extended within the desired limits so as to enable the user to reach lamp fixtures in difficult or remote positions. In order to remove a starter fuse, the cup-like element 58 is placed over the starter fuse, urged upwardly and twisted thereby releasing the fuse which then rests in the cup-like element 59.

Since from the foregoing the construction and advantages of this bulb changing devices are readily apparent, further description is believed to be unnecessary.

However, since numerous modifications will readily occur to those skilled in the art after a consideration of the foregoing specification and accompanying drawings, it is not intended to limit the invention to the precise embodiment shown and described, but all suitable modifications and equivalents may be readily resorted to which fall within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. A gripping device comprising a housing, jaw members pivotally attached to said housing, spring means urging said jaw members together, cam means engaging said jaw members and actuating the same, a first shaft slidably connected to said cam means and adapted to extend through said housing, a tubular rod pivotally attached to said housing, a flexible shaft extending into said housing, said flexible shaft being secured to said first shaft, said flexible shaft being partially encompassed by said rod, starter fuse engaging means on the free end of said first shaft, said starter fuse engaging means constituting a stop to prevent withdrawal in one direction of said first shaft from said cam means, said flexible shaft being secured to a tubular sleeve, said tubular sleeve having a plurality of spaced slots therein, a handle provided with a tubular shaft in which said tubular sleeve is slidably disposed, a latch rod secured to said handle, said latch rod selectively engaging said sleeve within one of said slots for rotating said tubular sleeve to actuate said cam means and to slide said tubular sleeve toward said housing to urge said starter fuse engaging means outward of said jaw members.

2. A gripping device comprising a housing, jaw members pivotally attached to said housing, spring means urging said jaw members together,

cam means for actuating said jaw members and engaging said jaw members, a first shaft slidably connected to said cam means and adapted to extend through said housing, a tubular rod pivotally attached to said housing, a flexible shaft extending into said housing, said flexible shaft being secured to said first shaft, said flexible shaft being partially encompassed by said rod, starter fuse engaging means on the free end of said first shaft, said starter fuse engaging means constituting a stop to prevent withdrawal in one direction of said first shaft from said cam means, said flexible shaft being secured to a tubular sleeve, said tubular sleeve having a plurality of spaced slots therein, a handle, a latch rod secured to said handle, a tubular shaft extending into said handle and slidably disposed in said rod, said latch rod selectively engaging said sleeve within one of said slots for rotating said tubular sleeve to actuate said cam means and to slide said tubular sleeve within said tubular shaft toward said housing to urge said starter fuse engaging means outward of said jaw members.

3. A gripping device comprising a housing, jaw members pivotally attached to said housing, spring means urging said jaw members together, cam means for actuating said jaw member members and engaging said jaw members, a first shaft connected to said cam means and adapted to extend through said housing, a tubular rod pivotally attached to said housing, a flexible shaft extending into said housing, said flexible shaft being secured to said first shaft, said flexible shaft being partially encompassed by said rod, said flexible shaft being secured to a tubular sleeve, said tubular sleeve having a plurality of spaced slots therein, a handle, a latch rod secured to said handle, a tubular shaft extending into said handle, said tubular sleeve being selectively slidable within said tubular rod and said tubular shaft, said latch rod selectively engaging said sleeve within one of said slots for rotating said tubular sleeve to actuate said cam means, said cam means including a substantially elliptical member, and rollers rotatably mounted on said elliptical member, said rollers engaging said jaw members.

4. A gripping device comprising a housing, jaw members pivotally attached to said housing, spring means urging said jaw members together, cam means for actuating said jaw members and engaging said jaw members, a first shaft connected to said cam means and adapted to extend through said housing, a tubular rod pivotally attached to said housing, a flexible shaft extending into said housing, said flexible shaft being secured to said first shaft, said flexible shaft being partially encompassed by said rod, starter fuse engaging means on the free end of said first shaft, said starter fuse engaging means constituting a stop to prevent withdrawal of the first shaft in one direction from the cam means, said jaw members having opposing recesses therein, said cam means seating in said recesses, and said fuse engaging means seating in said recesses when the jaws are in closed position, said flexible shaft being secured to a tubular sleeve, said tubular sleeve having a plurality of spaced slots therein, a handle provided with a tubular shaft in which said tubular sleeve is slidably disposed, a latch rod secured to said handle, said latch rod selectively engaging said sleeve within one of said slots for rotating said tubular sleeve to actuate said cam means and to slide said tubu-

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lar sleeve toward said housing to urge said starter fuse engaging means outward of said jaw members, said cam means including a substantially elliptical member, and rollers rotatably mounted on said elliptical member, said rollers engaging said jaw members.

5. A gripping device including a housing, opposing, complementary jaw members pivoted to one end of the housing, resilient means urging said jaw members toward closed position, an actuating rod non-circular in cross-section passing through said housing and having one end terminating between said jaw members, said jaw members having opposing recesses therein, a cam disposed in said recesses and slidably mounted on said actuating rod and a stop on said one end of said actuating rod preventing withdrawal in one direction of the rod from the cam, rotation of the rod and cam opening said jaw members, said stop being adapted for extension beyond said jaw members when the same are open, said stop constituting a starter removing element, and means for rotating and sliding said actuating rod.

6. A gripping device including a housing, opposing, complementary jaw members pivoted to one end of the housing, an actuating rod non-circular in cross-section passing through said housing and having one end terminating between said jaw members, said jaw members having opposing recesses therein, a cam disposed in said recesses and slidably mounted on said actuating rod and a stop on said one end of said actuating rod preventing withdrawal in one direction of the rod from the cam, rotation of the rod and cam opening said jaw members, resilient means surrounding said jaw members yieldingly opposing their opening movement, said stop being adapted for extension beyond said jaw members when the same are open, said stop constituting a starter removing element, and means for rotating and sliding said actuating rod.

7. A gripping device including a housing op-

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posing, complementary jaw members pivoted to one end of the housing, resilient means urging said jaw members toward closed position, an actuating rod non-circular in cross-section passing through said housing and having one end terminating between said jaw members, said jaw members having opposing recesses therein, a cam disposed in said recesses and slidably mounted on said actuating rod and a stop on said one end of said actuating rod preventing withdrawal in one direction of the rod from the cam, rotation of the rod and cam opening said jaw members, said stop being adapted for extension beyond said jaw members when the same are open, said stop constituting a starter removing element, and means for rotating and sliding said actuating rod, said rotating and sliding means including handle means connected to one end of said rod, a sleeve secured to the other end of said actuating rod and extending into said handle means, said sleeve having a plurality of longitudinally spaced apertures therealong, a latch bar on said handle adapted to seat in a selected one of said sleeve apertures for rotating said actuating rod.

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