

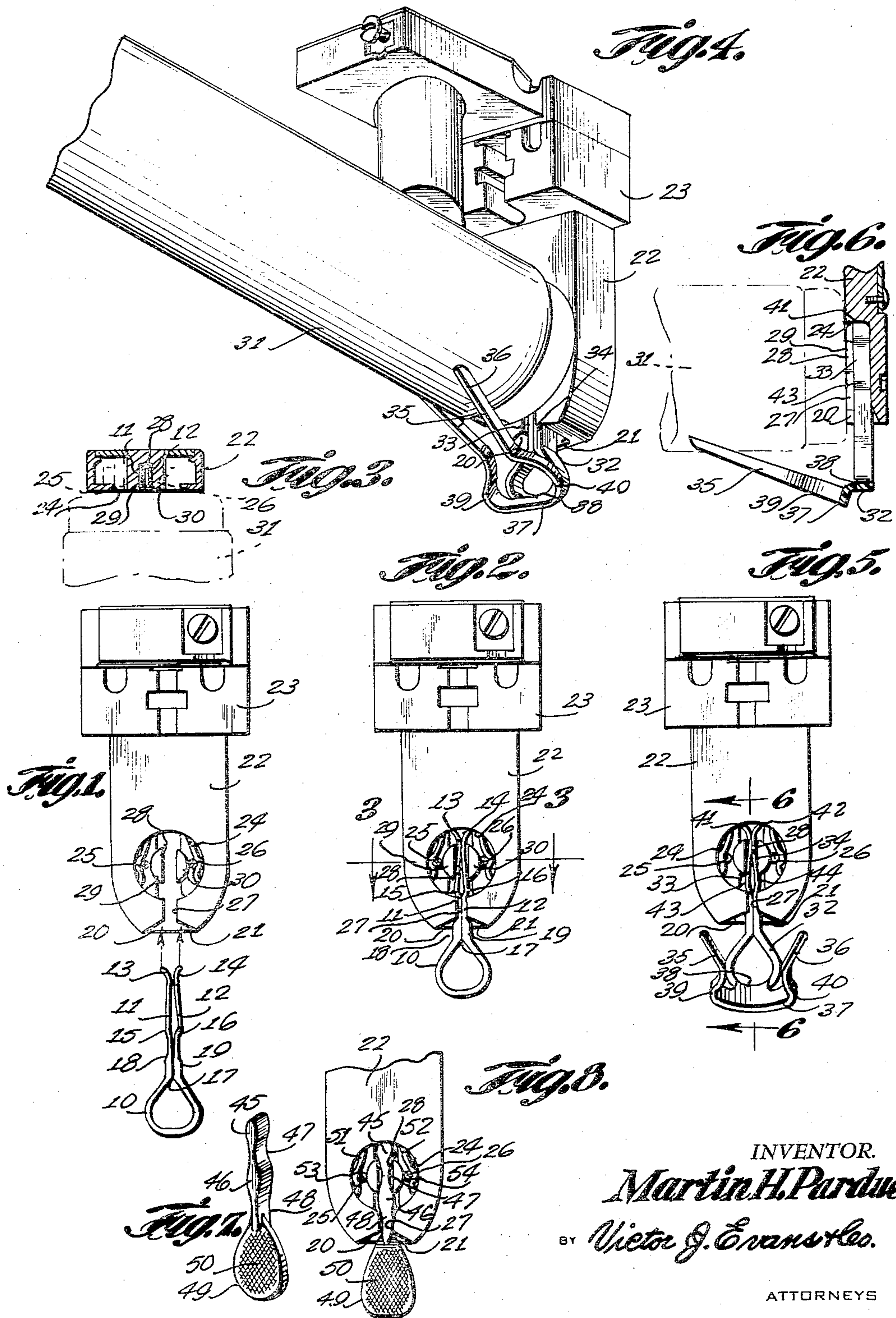
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M. H. PARDUE

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FLUORESCENT TUBE LOCK PIN

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INVENTOR.
Martin H. Pardue
BY **Victor J. Evans & Co.**

ATTORNEYS

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FLUORESCENT TUBE LOCK PIN

Martin H. Pardue, Nashville, Tenn.

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2 Claims. (Cl. 339—54)

This invention relates to safety locking devices for retaining fluorescent tubes in fixtures to prevent tubes accidentally dropping from sockets, and in particular, a key adapted to be inserted through the slot of a tube retaining socket whereby after placing pins on the ends of tubes through said slots and turning the tubes with the pins through an angle of 90 degrees a key is inserted in the slot to prevent the tubes being accidentally rotated to such positions that the pins may pass downwardly through the slots.

The purpose of this invention is to provide a locking key for preventing turning of fluorescent tubes in sockets to prevent accidental displacement of the tubes in which means is provided for frictionally or resiliently retaining the keys in position.

Various types of locking devices have been provided for preventing accidental displacement of fluorescent tubes from lighting fixtures, however, some of such locking devices require changes in the fixtures or tubes and where keys are freely positioned in the slots they are adapted to be displaced by shock, jars, or vibrations, such as are common in building structures. With this thought in mind, this invention contemplates a locking key adapted to be inserted in a vertically disposed slot of a fluorescent light tube fixture in which means is provided for extending the width of the key above and below the centrally positioned section of the socket or in the circular slot in which the pins of the tube are positioned.

The object of this invention is, therefore, to provide means for providing enlarged sections in a key for securing fluorescent light tubes in fixtures in which the enlarged sections are positioned to register with the circular slot in which the pins are turned in mounting a tube in a fixture.

Another object of the invention is to provide a locking key for retaining fluorescent light tubes in fixtures in which the key is adapted to be inserted in slots of fixtures now in use without changing the fixtures or tubes.

Another important object of the invention is to provide a key adapted to be inserted in a slot of a socket of a fluorescent light tube fixture for preventing accidental displacement of the tube in which a pair of arms extend from the head of the key to provide supporting means below the end of a tube which is held in a fixture in which the key from which the fingers extend is positioned.

A further object of the invention is to provide a safety key for securing fluorescent light tubes in fixtures in which the key is of a simple and economical construction.

With these and other objects and advantages in view, the invention embodies a key having a shank extended from a head with portions of the shank enlarged and with the enlarged portions positioned to correspond with the circular slot of a fixture in which pins on the end of a tube travel whereby the key is adapted to be retained in position in a vertically disposed slot in the socket of a fixture until the key is manually withdrawn from said slot.

Other features and advantages of the invention will ap-

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pear from the following description, taken in connection with the drawing, wherein:

Figure 1 is an exploded view looking toward the inner surface of a fixture adapted to support an end of a fluorescent light tube showing a key for retaining the tube in the fixture withdrawn and positioned below the fixture.

Figure 2 is a view similar to that shown in Figure 1 showing the key in the fixture.

Figure 3 is a cross section taken on line 3—3 of Figure 2 also showing the key positioned in a slot of the fixture.

Figure 4 is a perspective view illustrating a fixture for retaining fluorescent light tubes showing a modification in which a key for locking a tube in a fixture is provided with angularly disposed arms whereby with the arms positioned below a tube the tube will drop into the arms upon accidental displacement thereof from the fixture.

Figure 5 is an elevational view similar to that shown in Figure 2 showing the key, illustrated in Figure 4, in the socket of the fixture.

Figure 6 is a vertical section through the fixture shown in Figure 5 illustrating the positions of the arms which extend below the tube and showing a tube in the fixture, the tube being shown in broken lines.

Figure 7 is a perspective view illustrating a key of a modified design wherein the key is adapted to be frictionally retained in a slot of the fixture.

Figure 8 is a view, similar to that shown in Figure 2, showing the key illustrated in Figure 7 positioned in the fixture.

Referring now to the drawing, wherein like reference characters denote corresponding parts, the improved fluorescent light tube locking key of this invention includes a head 10 having a shank formed with arms 11 and 12 in which the ends of the arms are provided with arcuate flanges 13 and 14, respectively, and the intermediate parts are provided with enlarged portions 15 and 16.

With the parts formed as illustrated in Figures 1, 2, and 3, the key is formed with a strip of material bent, at a point midway of the length thereof, to form the loop 10 which provides a head and, from the head, the arms of the strip of material contact at a point 17 and extend from the point 17 to the tips 13 and 14. The arms may also be provided with shoulders 18 and 19 that are positioned to engage lower surfaces 20 and 21 at the lower end of an arm 22 of a fixture 23, the inner face of the arm 22 being provided with an annular recess 24 in which pins 25 and 26, extended from the end of a fluorescent tube, are adapted to turn.

In assembling a tube in a fixture, the pins 25 and 26 are positioned in a vertical plane whereby the pins are adapted to extend through a slot 27 in the lower end of the arm 22 and also through a slot 28 between segments 29 and 30 of a core, or the like, positioned in the center of the recess 24.

With the parts formed as illustrated and described, the arms of the key are inserted through the slots 27 and 28 whereby the flanges 13 and 14 spread into the circular groove 24, as shown in Figure 2, with the enlargements 15 and 16 positioned to bulge into the recess and with the shoulders 18 and 19 positioned to substantially engage the inclined surfaces 20 and 21.

With the flanges 13 and 14 positioned in the annular recess 24 above the segments 29 and 30 and with the enlarged portions 15 and 16 extended into the annular recess below the segments 29 and 30, the key is secured in position and with the key positioned, particularly as shown in Figure 2, it will be impossible for the pins 25

and 26 to work into positions above the slot 27 so that a tube may drop from a fixture.

The key, therefore, definitely secures a fluorescent tube, such as that indicated by the numeral 31, in position in a fixture.

In the design illustrated in Figures 4, 5 and 6, a key, having a head 32 similar to the head 10, and having arms 33 and 34, similar to the arms 11 and 12, is provided with outwardly extended arms 35 and 36 which extend from ends of a web 37 and with the web positioned, as shown in Figure 6, the arms 35 and 36 extend below a fluorescent tube, such as the tube 31, whereby upon failure of parts in the brackets or fixtures, the tube drops upon the arms 35 and 36 and is retained in position thereby. The web 37 is integrally connected to the head 32, as shown at point 38, and the arms are provided with outwardly bulging sections 39 and 40 similar to the sides of the loop or head, as indicated by the numeral 10. It will be understood, however, that the arms 35 and 36 may be of any suitable design.

With the key formed, as illustrated in Figures 4, 5 and 6, the arms 33 and 34 are inserted in the slots 27 and 28 of a fixture, as shown in Figure 1, with flanges 41 and 42 extended into the upper parts of the annular recess 24 of the arm 22 of the fixture and enlargements 43 and 44 extended into the lower portion of the recess similar to the parts 15 and 16 of the design shown in Figures 1, 2 and 3. By this means the extended arms 35 and 36 are supported by the arms of the key and the arms of the key are retained in end portions of a fixture with resiliency inherent therein and with the flanges 41 and 42 and enlarged portions 43 and 44.

In the design illustrated in Figures 7 and 8, the key is formed of a solid piece of plastic, or other suitable material, having an enlarged portion 45 positioned to snap into the upper part of the circular recess 24 of the arm 22 of a fixture, an enlarged portion 46 positioned to correspond with the lower part of the circular recess, a thin intermediate portion 47 connecting the portions 45 and 46, and a thin lower portion 48 connecting the lower end of the key to a head or tab 49 having knurled surfaces as indicated by the numeral 50. With the parts 45 and 46 having slightly greater width than the width of the slots 27 and 28, the key may readily be snapped into position and with the parts 45 and 46 in the open areas of the annular recess 24 the key will be retained in position, as shown in Figure 8, thereby preventing rotation of the pins 25 and 26, or turning movements of the tube.

The arm 22 of the light fixture is provided with spring clips 51 and 52 which are provided with notches 53 and 54, respectively, and upon rotation of a fluorescent tube with pins in the circular recess 24, the pins 25 and 26 snap into the notches 53 and 54 whereby the tube is retained in position with the pins 25 and 26 in a substantially horizontal plane. The pins 25 and 26 of a tube are inserted through the slot 27 with the upper pin passing through the slot 28 and upon rotation of the tube the pins snap into the notches 53 and 54 of the spring clips. With the tube in this position, the key is inserted through the slots 27 and 28, such as shown in Figures 2, 5, and 8 wherein the clips or flanges at the upper end of the stem or shank of the key spread into the upper part of the annular recess with the enlarged portions, such as the parts 15 and 16, or the section 46

in the lower part of the annular recess. By this means the key is retained in position and with the key in position it is substantially impossible for the pins 25 and 26 to work out of the openings of the arm 22 of the fixture.

5 The keys, therefore, prevent rotation of the fluorescent tube to such an extent that the tube may drop from a fixture.

In the design illustrated in Figures 4, 5 and 6, the arms 35 and 36, which extend from the lower end of the key, are adapted to receive a tube, should ends of a fixture be spread or should the end of the tube be removed from the depending arms of the fixture or recess therein.

Thus, it will be seen that there has been provided a new article of manufacture wherein there is provided a locking key for retaining a fluorescent tube in a fixture, and wherein the locking key is shaped to include a looped portion which defines an enlarged head 10, Figure 1. A pair of similar side sections 11 and 12 extend from the head 10, and the free ends of the side sections terminate in outwardly flaring oppositely extending end portions 13 and 14. The side sections further include enlarged portions 15 and 16, and the enlarged portions 15 and 16 are arranged intermediate the ends of the side sections. The side sections are provided with shoulders 18 and 19, and these shoulders are arranged contiguous to the head.

As shown in the drawings such as Figures 4, 5 and 6 there is further provided a support member which is indicated by the numeral 37, and the support member 37 includes a curved web which is secured to the head of the locking key, and arms 35 and 36 extend from this web, the arms being provided with intermediate offset portions 39 and 40.

It will be understood that modifications, within the scope of the appended claims, may be made in the design and arrangement of the parts without departing from the spirit of the invention.

What is claimed is:

1. As a new article of manufacture, a locking key for retaining a fluorescent tube in a fixture, said locking key being shaped to include a looped portion which defines an enlarged head, a pair of similar side sections extending from said head, the free ends of said side sections terminating in outwardly flaring oppositely extending end portions, said side sections further including enlarged portions, said enlarged portions being arranged intermediate the ends of the side sections, said side sections being provided with shoulders, said shoulders being arranged contiguous to said head.

2. The structure as defined in claim 1 and further including a support member which includes a curved web secured to said head, and arms extending from said web, said arms being provided with intermediate offset portions.

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