Jan. 17, 1956 A. C. ROWLEY 2,730,900

LOAD SUPPORTING THERMOSENSITIVE LINKAGE

Filed Feb. 10, 1953

FIG. 1.

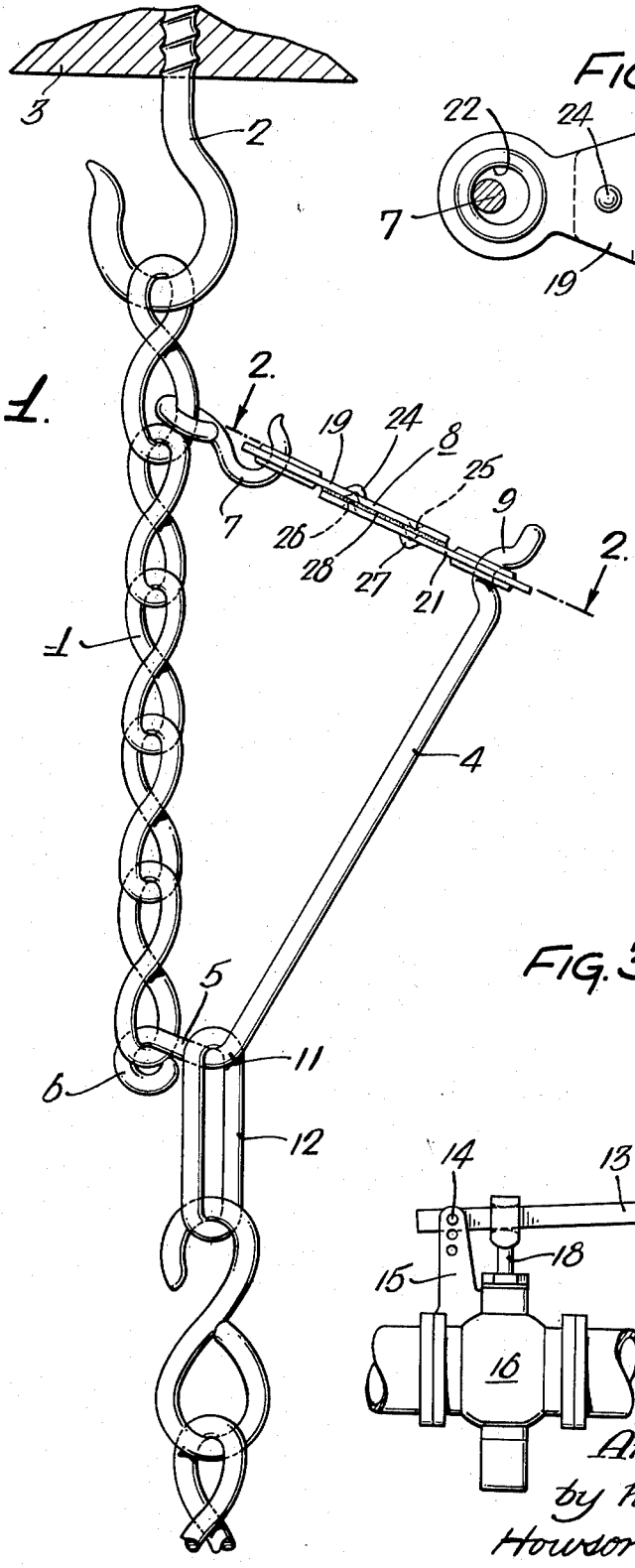


FIG. 2

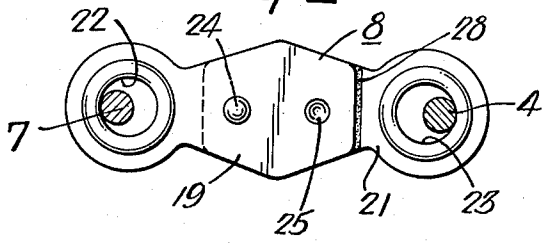
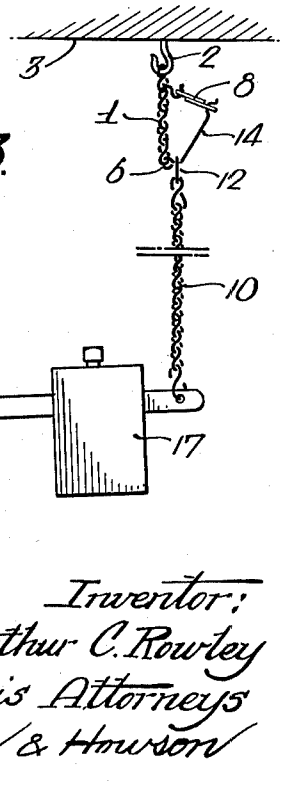


FIG. 3.



Inventor:
Arthur C. Rowley
by his Attorneys
Howson & Howson

United States Patent Office 2,730,900 Patented Jan. 17, 1956

2,730,900

LOAD SUPPORTING THERMOSENSITIVE LINKAGE

Arthur C. Rowley, Drexel Hill, Pa., assignor to Globe Automatic Sprinkler Company of Pennsylvania, Philadelphia, Pa., a corporation of Pennsylvania

Application February 10, 1953, Serial No. 336,055

2 Claims. (Cl. 74—2)

A principal object of this invention is to provide a simple, inexpensive, efficient and foolproof thermally responsive linkage device for supporting loads, said device providing for release of the load automatically under predetermined elevated temperature conditions.

Another object of the invention is to provide a device of the stated character which may be readily installed in desired position.

Still another object is to provide a thermosensitive device of the stated character which utilizes a favorable linkage or lever system to reduce the load imposed upon the thermosensitive element.

With reference to the attached drawings:

Figure 1 is a side view of a linkage made in accordance with the invention;

Figure 2 is a sectional view on the line 2—2, Figure 1; and,

Figure 3 is a reduced side elevational view showing a practical application of the linkage.

With reference to the drawings the device consists essentially of a member 1 adapted for suspension from a suitable support structure and which, in the present instance, takes the form of a section of link chain. In the present instance also the upper end of this member is supported by a hook 2 which is screwed into a support structure 3. The device comprises also an elongated lever 4 having an angularly offset end portion 5 which is pivotally connected by means of an integral eye 6 to the lowest link of the member 1.

Attached to the member 1 at a relatively elevated point, in the present instance to the top link of the chain, is a hook 7 and this hook constitutes a means for attaching to the member 1 a thermosensitive link 8. The other end of this link is attached to the lever 4 at a point remote to the offset end 5 and in the present instance the lever is provided at the remote end with a hook like offset 9 for retention of the link 8. The angular juncture 11 between the offset end 5 and the body of the lever 4 forms a socket which receives a depending link 12, this link being freely movable longitudinally of the lever but being supported in a stable position in the socket 11 when the lever is held by the link 8 in the generally upright position shown in the Figure 1.

The link 12 constitutes a load-supporting element and is shown in the present instance, see Figure 3, supporting the free end of a weighted arm 13 which is pivotally attached at 14 to a bracket arm 15 on a valve case 16. A chain 10 connects the link 12 to the lever. The outer end of the lever carries an adjustable weight 17, and at a point relatively close to the pivot 14 the lever 13 supports a valve stem 18 and a valve, in the casing 16, which is connected to said stem. When the linkage is in operation, as illustrated in the drawings, the lever 13 is held in an elevated position and the valve is open, but if by reason of elevated temperatures the link 8 releases the lever 14 the weight which depends therefrom will cause the lever to fall downwardly about the pivotal connection 6 and the link 12 will then slide downwardly on the lever, which now occupies a vertical depending position below the chain 1, and will thereby permit the lever 13 under action of the weight 17 to move downwardly about the pivot 14 and to thereby close the valve.

The link 8 may take a variety of forms of which one is

illustrated in Figures 1 and 2. The link comprises two separable plate elements, 19 and 21 respectively, each of these elements having an eye, 22 and 23 respectively. These eyes receive the hook 7 and the lever 4, as illustrated. Each of the levers has two pressed out bosses projecting at opposite sides respectively of the link, the bosses on the element 19 being indicated by the reference numerals 24 and 25, and the bosses on the element 21 by the reference numerals 26 and 27. In assembly the boss 26 seats within the recess of the boss 24, and the boss 25 assumes a similar relation to the boss 27. Between the link elements 19 and 21 is a layer 28 of fusible composition which normally cements the two parts of the link together. The cementing action of the composition is augmented by the mechanical connection afforded by the nested bosses described above so that the major pull of the lever 4 upon the link is taken by the bosses, the fusible composition thereby functioning primarily to cement the two links together in the face to face relation in which the bosses are mechanically interlocked. Fusion of the composition 28 under the effects of a predetermined elevated temperature releases the elements of the link and permits them to separate. Lever 4 is then free to drop downwardly about the pivotal connection 6 to the substantial vertical dependent position below the chain 1 and the link 12 then falls freely down the link to release the supported load, as described above.

It is to be noted particularly that the device takes advantage of the favorable leverage resulting from the application of the load at a point close to the pivot point 6, and the attachment of the lever-retaining thermosensitive link to the outer end of the lever at a point remote to the pivot point and to the point where the load is supported on the lever. With this arrangement the tensional strain of the load upon the thermosensitive element 8 is relatively small as compared with the value of the load itself. At the same time release of the lever 4, as described above, effects a positive release of the load.

The device herein described is subject to modification in detail without departure from the invention, and is applicable generally to the support of loads where automatic load release under elevated temperature conditions is desirable.

I claim:

1. A load supporting thermally responsive linkage unit comprising in combination a flexible support member and means for suspending said member from a supporting structure, a rigid lever having an offset end portion relatively short as compared with the remaining body of the lever and pivotally connected to the lower end of said support member, said lever normally assuming a pendant position below the said member, a thermosensitive link attached detachably at one end to the said member at a point above the said pivotal connection of the lever, and means for detachably attaching the other end of said link to the free end of the lever so as to support the said free end in an elevated position wherein the angular juncture between the said offset end portions and the body of the lever forms a load-supporting socket in proximity to the pivotal connection and relatively remote to the said free end of the lever.

2. A load supporting unit according to claim 1 wherein the flexible support member consists of a section of chain, said thermosensitive link and the said lever being connected respectively to the terminal links of said chain.

References Cited in the file of this patent

UNITED STATES PATENTS

1,485,002	Wilson	Feb. 26, 1924
2,287,989	Griffith	June 30, 1942
2,493,608	Willett	Jan. 3, 1950
2,602,333	Hughes	July 8, 1952