Aug. 11, 1925. 1,549,721

H. T. KRAFT

CONNECTING DEVICE

Filed April 26, 1922

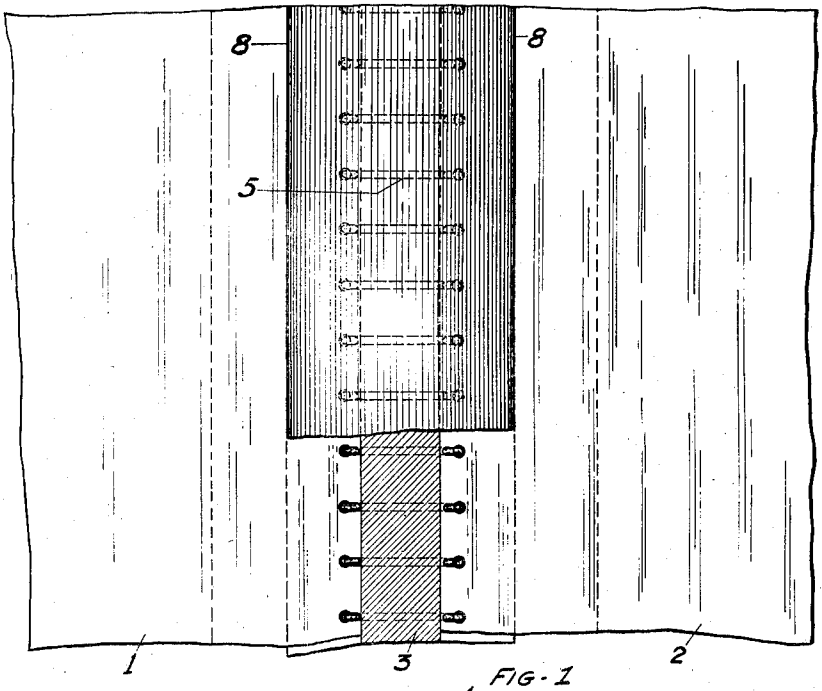

FIG-1

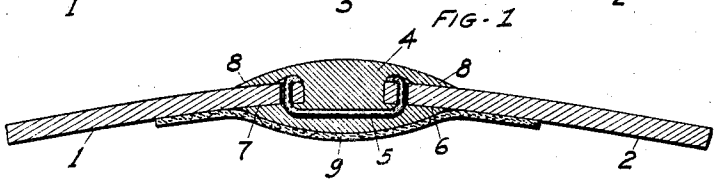

FIG-2

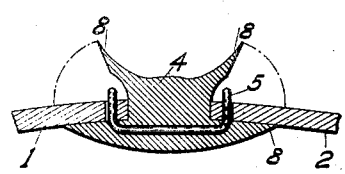

FIG-3

INVENTOR
HERMAN T. KRAFT.
BY
R. S. Trogner.
ATTORNEY

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UNITED STATES PATENT OFFICE.

HERMAN T. KRAFT, OF AKRON, OHIO, ASSIGNOR TO THE GOODYEAR TIRE & RUBBER COMPANY, OF AKRON, OHIO, A CORPORATION OF OHIO.

CONNECTING DEVICE.

Application filed April 26, 1922. Serial No. 556,811.

To all whom it may concern:

Be it known that I, HERMAN T. KRAFT, a citizen of the United States, and a resident of Akron, Ohio, have invented new and useful Improvements in Connecting Devices, of which the following is a specification.

My invention relates to connecting devices and it has for its primary object the provision of a device which may be utilized to effectively connect plates, or similar members, in such manner as to seal the joint and make it gas-tight.

It has been proposed heretofore to construct gas bags for dirigibles of metal, and, although this is recognized as being a highly desirable feature because of its greatly increased factor of safety over the customary construction of fabric, no very practical method or means of construction has been sugested heretofore. It will be appreciated that the manner of connecting the plates, forming the gas bag, is of primary importance, inasmuch as a gas-tight seal must be provided in the event that inner containers of gas are not utilized.

The device of my invention is simple in construction and in its method of application, and may be utilized in constructing all metal gas bags for dirigibles whether they are to be utilized in conjunction with interior gas containers or the gas confined in the metal bag itself.

One object of my invention resides in providing a connecting device which shall afford a joint having a low wind resistance, be non-inflammable, not subject to corrosion and which obviates the development of excessive strain by imparting a high degree of flexibility to the structure.

With these and other objects in view, the invention will be more fully described, illustrated in the drawings, in which like numerals indicate like parts, and then more fully pointed out in the appended claims.

In the drawings:

Fig. 1 is an elevational view, with parts broken away and partly in section, which illustrates a connecting device constructed and applied in accordance with my invention;

Fig. 2 is a transverse sectional view of the device shown in Fig. 1; and

Fig. 3 is a similar view illustrating the manner of applying the connecting device.

In practicing my invention, I construct a connecting device by utilizing a flexible material in which metallic connecting members are embedded and utilized to clampingly engage members to be connected. The flexible material is provided with channels in its opposite edges to receive the members to be connected and partially enclose them, whereby an effective seal is realized in the joint. If it is desired to further insure gas-tightness of the joint, a non-porous material may be applied to one side of the joint over the connecting device.

In order to insure a clear and accurate understanding of my invention, reference may be had to the drawings in Fig. 1 of which is shown a plurality of plates 1 and 2 that are secured together by a connecting device 3. The device comprises a body portion 4 of flexible material, such as non-inflammable rubber, in which metallic connecting members 5 are embedded. The material 4 is provided with oppositely disposed channels 6 and 7, which have walls tapering to relatively thin edge portions 8. The ends of the metallic connecting members 5 project into the channels and are thereby adapted to be engaged with the members to be connected.

As shown in the drawings, a plurality of plates may be effectively connected by disposing their edges, which are previously provided with regularly spaced openings, in the grooves or channels 6 and 7 of the strip of flexible material 4. The edges 8, adjacent the free ends of the connecting members 5, are flexed or bent to permit access to the ends of the members 5, which are disposed in the openings provided in the plates 1 and 2 and bent over to clampingly engage the plates. The edges are then released and, by reason of the inherent flexibility of the material, closely engage the plates and insure a gas-tight seal. However, if greater assurance is desired of preventing gas leaking through the joint, a strip 9 of non-porous material, such as gold-beater's skin, may be applied to the interior side of the joint by utilizing any suitable adhesive material. The strip 9 should, of course, be of sufficient width to overlap the edges of the connecting device.

It will be appreciated that the connecting device may be made of any desired length, or it may be manufactured in relatively long strips and such strips cut to provide the de-

sired lengths for application. It will be observed that the edges of the flexible material closely engage the members that are connected, and any gas pressure imposed upon the joint tends to increase the effectiveness of the seal. It is for this reason that the edges are tapered to relatively thin sections in order to attain great flexibility at such points. The additional covering of non-porous material is not essential to obtain a gas-tight joint, but since it may be readily applied and necessarily increases the effectiveness of the joint, it may be utilized to advantage. It will be further observed that the only metallic parts utilized in the connecting device, which are the spaced connecting members, are completely covered and consequently are not subjected to the effects of the elements.

A further advantage residing in my invention that is of considerable importance is the flexible character of the joint. A metal bag of a dirigible is certain to be subjected to forces which will impose unusual strains upon the various parts. It is highly desirable, consequently, to afford every possible relief from such conditions. Although the device of my invention premits of relative movement of the connected members, thereby affording relief from undue strain, it maintains a secure, gas-tight joint.

Although I have shown and specifically described a connecting device constructed in accordance with my invention and set forth a particular application of the device, it is obvious that minor changes may be made in its construction and a variety of applications found therefor without departing from the spirit or scope of my invention, and I desire, therefore, that no limitations shall be imposed except such as are indicated in the appended claims.

What I claim is:

1. A connecting device comprising a body portion formed of flexible material having oppositely disposed channels provided therein and a metallic connecting membr embedded in the material with its ends projecting into the channels.

2. A connecting device comprising a strip of flexible material having channels in its opposite edge portions and a plurality of metallic members embedded at intervals in the strip with their ends projecting into the channels.

3. A connecting device comprising a strip of flexible material having channels in its opposite edge portions, said edge portions being tapered and a plurality of metallic members embedded at intervals in the strip with their ends projecting into the channels.

4. A connecting device comprising a strip of rubber having channels in its opposite edge portions and metallic members embedded at intervals in the strip with their ends projecting into the channels.

5. A connecting device comprising a non-inflammable flexible material having grooved edge portions adapted to receive members to be connected and means embedded in the material for clamping the members in place.

6. A connecting device comprising a strip of rubber provided with oppositely disposed channels having walls tapered to relatively thin edge portions and metallic members embedded at regularly spaced intervals in the strip with their ends projecting into the channels.

7. A connecting device comprising a strip of rubber provided with oppositely disposed channels having walls tapered to relatively thin edge portions, metallic members embedded at regularly spaced intervals in the strip with their ends projecting into the channels and a non-porous material attached to one side of the strip overlapping its edge portions.

8. A connecting device comprising a metallic link adapted to secure adjacently disposed members together, and a body portion of flexible material forming a unitary impervious structure with said link and adapted to completely cover said link and the adjacent ends of the members connected.

9. In a gas container for balloons comprising a plurality of metallic plates disposed in end to end relationship, means for connecting adjacent plates comprising a flexible material having grooved edge portions adapted to receive said plates and means embedded in the material for securing the plates together.

10. A liquid proof connecting device comprising yieldable material adapted to contact with members to be connected and means entirely covered by the yieldable material for clampingly engaging the members.

11. The combination of two opposing members, of flexible material adapted to engage the members to form a fluid tight joint and metal fasteners for securing the members together completely surrounded in contacting relationship by the material.

In witness whereof I have hereunto signed my name.

HERMAN T. KRAFT.