N. W. AKIMOFF.

HINGE CONNECTION.

APPLICATION FILED AUG. 12, 1920.

1,389,728. Patented Sept. 6, 1921.

Fig. 1.

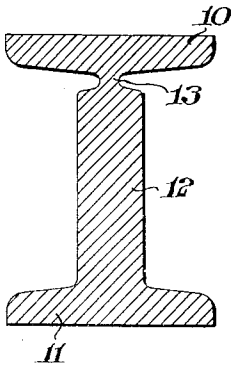


Fig. 2.

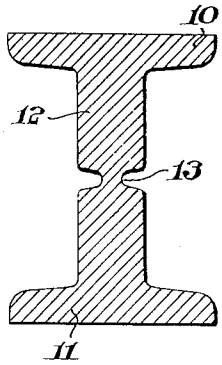


Fig. 3.

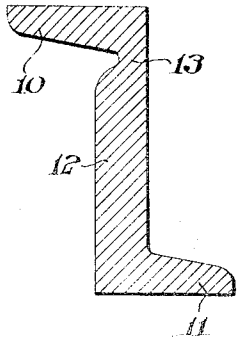


Fig. 4.

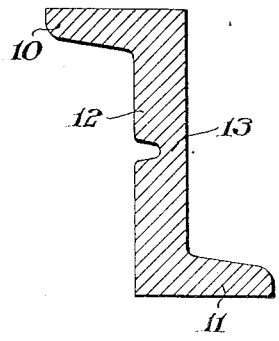


Fig. 6.

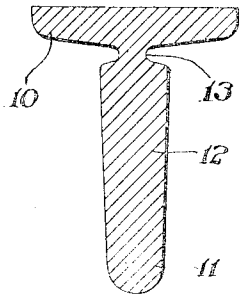


Fig. 7.

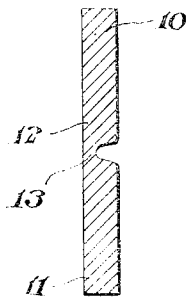
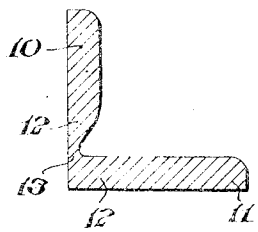


Fig. 5.



Inventor:
Nicholas W. Akimoff.
By Jas. C. Notsmith
Attorney.

UNITED STATES PATENT OFFICE.

NICHOLAS W. AKIMOFF, OF WYNNEWOOD, PENNSYLVANIA, ASSIGNOR TO GENERAL MACHINERY FOUNDATIONS COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF DELAWARE.

HINGE CONNECTION.

1,389,728. Specification of Letters Patent. Patented Sept. 6, 1921.

Application filed August 12, 1920. Serial No. 403,120.

To all whom it may concern:

Be it known that I, NICHOLAS W. AKIMOFF, a citizen of the United States, residing at Wynnewood, in the county of Montgomery and State of Pennyslvania, have invented certain new and useful Improvements in Hinge Connections, of which the following is a specification.

My invention relates to hinge connections, that is to say, to an article of manufacture which is adapted for use as a hinge joint for machine parts having relative angular movement about an axis with respect to each other, and of small angular amplitude. More specifically considered, my invention relates to a rolled metal shape, which is adapted to be embodied in a variety of forms, and which will be found to have many practical applications. For example, a short length of the same may be used as a connection for pendulums used in various scientific tests where the motion must be uniplanar, or as a component part of apparatus for investigating vibratory motion, or as a component part of apparatus which is constructed and arranged for supporting machinery in such manner as to minimize transmitted vibratory effects.

The principal object of my present invention is to provide a new article of manufacture having valuable characteristics for the aforesaid purposes, which will be relatively inexpensive, yet durable and efficient for its intended purposes.

The nature and characteristic features of my invention will be more readily understood from the following description taken in connection with the accompanying drawings forming part hereof, in which,

Figure 1 is a transverse section of a rolled metal shape embodying the main features of my invention;

Fig. 2 is a similar view of a modified form of the shape shown in Fig. 1;

Fig. 3 is a transverse section of another form or embodiment of my invention;

Fig. 4 is a similar view of a modified form of the shape shown in Fig. 3; and

Figs. 5, 6 and 7 are transverse sections of other forms or embodiments of my invention.

Referring now more particularly to Fig. 1 of the drawings, my invention is therein shown as embodied in a rolled section, preferably made of steel or steel alloy, and comprising a top flange 10, and a bottom flange 11, which flanges are provided for the purpose of attaching a suitable length of the rolled shape to the machine elements or parts in connection with which the same is to be used. Extending between the flanges 10 and 11, is a web portion 12, which is made relatively heavy except for a short portion thereof where the same is reduced in cross-section, as at 13.

The form shown in Fig. 2 is substantially similar to that shown in Fig. 1, except that the reduced portion 13 is located intermediate the flanges 10 and 11, instead of contiguous to one of said flanges. It will be noted that the forms shown in Figs. 1 and 2 are somewhat similar to the ordinary rolled I beam section, except for the differences therein, as above noted, which are provided for the purposes of my invention.

In Figs. 3 and 4, there are shown embodiments of my invention in forms similar to the ordinary Z-bar rolled section, with the exception, as in the preceding forms, that the connecting web 12 is relatively heavy, and that at one portion thereof there is provided the reduced portion 13, which may be arranged contiguous to one of the flanges 10, as in Fig. 3, or intermediate the flanges 10 and 11, as in Fig. 4.

In Fig. 5, there is shown a form or embodiment of my invention similar to the ordinary rolled angle section. For the purpose of explanation, the portions thereof adjacent the corner of the angle may be regarded as functionally similar to the web 12, which extends between the flanges in the previous forms, so that the same may be regarded as having attaching flanges 10 and 11, with the web portion 12 of relatively heavy cross-section interposed therebetween, which web portion 12 is provided with the reduced portion 13.

In Fig. 6 there is shown a form or embodiment of my invention in a shape similar to the ordinary T bar rolled section having an attaching flange 10. The outer end of the leg of the T bar section may be regarded as the attaching flange 11, and the portion of said leg adjacent the flange 10 may be regarded as the connecting web 12

of relatively heavy cross-section, and having a reduced portion 13, preferably located contiguous to said flange 10.

In Fig. 7 there is shown another form or embodiment of the invention, comprising a flat bar, in which, for the purpose of explanation, the ends thereof may be regarded respectively as the attaching flanges 10 and 11, and the intermediate portion thereof may be regarded as the connecting web 12 of relatively heavy cross-section, with a reduced portion 13 provided therein.

It will be seen that in all of the various forms or embodiments of my invention, the same are characterized by having attaching members or flanges 10 and 11, which are connected to each other by a web portion of relatively heavy cross-section, which web portion is provided with a reduced portion of relatively small linear dimension. By this arrangement, the web portion of relatively heavy cross-section will prevent deformation of the section which would result in sidewise movement of an objectionable character, and will limit the movement to an angular character about an axis located within the area of the reduced portion.

When a suitable length of the rolled section of any of the forms shown is interposed between two machine parts which are designed to have small angular motion with respect to each other the reduced portion 13 will constitute a fulcrum for angular movement which, on account of the relative motion being small, will be substantially frictionless, as it will be readily apparent to those skilled in the art that the only friction existing will be that of a molecular character, resulting from the stretching and compressing of the fibers of the metal at the reduced portion, and it may be demonstrated that, for the intended purposes of the invention, such molecular friction is substantially negligible; and in any event, there is provided a hinge connection or fulcrum, which will be far superior, for the intended purposes, to any of the forms of pivot joints or rocker bearings at present in use.

It will also be noted that by making the hinge connection of my invention of a rolled section, instead of machining the same from a solid bar, a beneficial effect will be obtained in that the better molecular condition of the fibers of the metal near the surface will exist substantially throughout the area of the reduced portion 13, thus increasing the durability of the section in use, notwithstanding the small angular motion between the machine parts in connection with which the device is used.

Having thus described the nature and characteristic features of my invention what I claim as new and desire to secure by Letters Patent, is:

1. A new article of manufacture comprising a rolled metal shape having attaching members, and a web portion connecting said attaching members, said web portion being in the main relatively heavy, but having a reduced portion forming a fulcrum for angular motion of parts to which the shape is attached.

2. A new article of manufacture comprising a rolled metal shape having attaching members, and a web portion connecting said attaching members, said web portion being in the main relatively heavy, but having a reduced portion forming a fulcrum for angular motion of small amplitude of parts to which the shape is attached.

3. A new article of manufacture comprising a rolled metal shape having attaching members, and a web portion connecting said attaching members, said web portion being in the main relatively heavy, but having a reduced portion of small linear dimension forming a fulcrum for angular motion of parts to which the shape is attached.

In testimony whereof I have hereunto signed my name.

NICHOLAS W. AKIMOFF.