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METHOD FOR DAMPING VIBRATIONS WHICH IS CHIEFLY APPLICABLE TO
BLOWPIPE APPARATUS FOR THE CUTTING OF METALS AND APPARATUS
WHEREIN THE SAID METHOD IS CARRIED INTO EFFECT
Original Filed Sept. 6, 1927

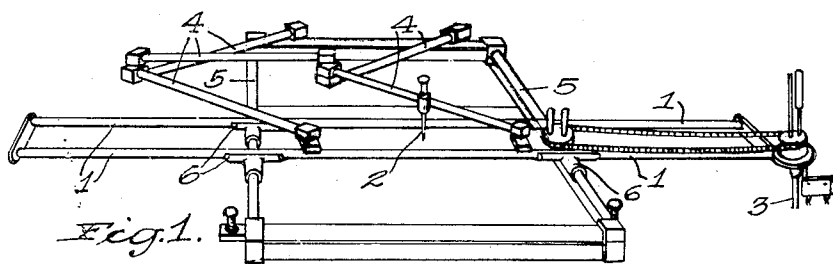


Fig. 1.

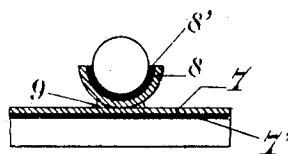


Fig. 2.

Fig. 3

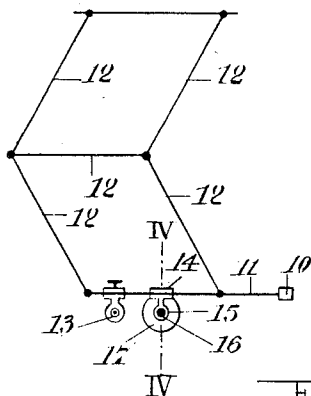


Fig. 4

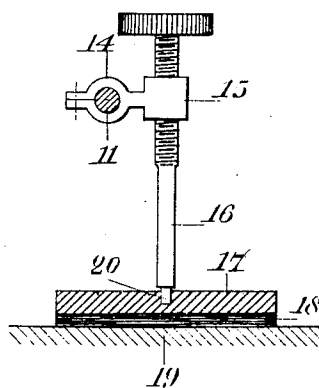
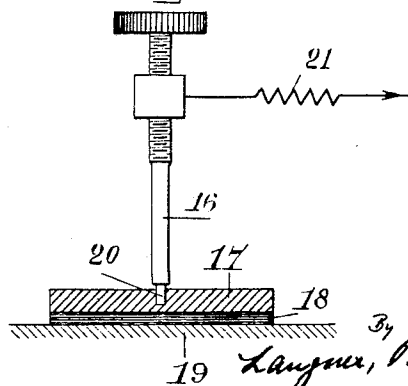


Fig. 5



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METHOD FOR DAMPING VIBRATIONS WHICH IS CHIEFLY APPLICABLE TO BLOWPIPE APPARATUS FOR THE CUTTING OF METALS, AND APPARATUS WHEREIN THE SAID METHOD IS CARRIED INTO EFFECT

Application filed September 6, 1927, Serial No. 217,856, and in France September 9, 1926. Renewed February 25, 1931.

The present invention relates to a method for damping vibrations, which is chiefly applicable to blowpipe apparatus for the cutting of metals.

5 The idea is already old of placing a fatty material between two elements movable with respect to one another, either for the purpose of decreasing the wear of the two elements or for the purpose of restraining the relative movement of these elements.

10 It has been found that the interposition of certain fatty materials between the blow pipe carrier and its support in a cutting apparatus, allows the securing of a truly extraordinary uniformity of speed of displacement of the blow pipe carrier upon its support, and it has been found that the interposed matter should have a certain deformability, doubtless to follow the differences of level of the facing surfaces of the blow pipe carrier and its support, and a certain porosity, probably to serve as a reservoir for the fatty material and to maintain between this material and at least one of the elements a liquid layer of fatty material. It has been found that this interposition allows the obtaining of a regularity of cut which makes unnecessary a subsequent straightening operation.

20 It is shown by experience that the interposed substance may consist to advantage of greasy leather, india rubber, or suitable plastic substances which may be substituted for the same, but on the contrary it is observed that asbestos, textile fabrics and felt, even when lubricated, will not offer satisfactory results.

25 It is found that when the blowpipe is faced with greasy leather or india rubber, the forward motion of the blowpipe holder becomes much slower, and the force required for this purpose must be much greater than if other factors being equal no such facing were employed. However the forward motion of the blowpipe holder becomes very regular, and all vibrations are eliminated.

30 It is very difficult to give a scientific explanation of this action which has been observed by experience, but the effect might be explained as follows. The aforesaid substances which prove satisfactory are capable

of maintaining between the surface of the guide or like portion and the blowpipe holder a thin film of viscous substance without leaving any space between these parts so that the surfaces in contact will have a strong adhesion, and an easy sliding upon the lubricant will be obtained.

The following description with reference to the appended drawings which are given by way of example shows various embodiments of the invention.

Fig. 1 is a view in perspective showing a preferred form of plan view of an apparatus according to the present invention. Fig. 2 is a side view of a facing member. Fig. 3 is a diagrammatic plan view of a modification, and Fig. 4 is a corresponding section on the line IV—IV of Fig. 3. Fig. 5 is a diagrammatic view of a modification in which the propelling effort is transmitted to the blowpipe carrier by means of a spring.

In the example shown in Fig. 1, the blowpipe holder comprises a rod 1 upon which is mounted the blowpipe 3. As in all of the known apparatus, the pointer is disposed upon one of the elements of the pantograph 4. The rod 1 carrying the blowpipe is supported at two points by the rigid stationary frame 5. Between the rod 1 and the frame 5 are disposed the guides 6 which are faced with leather on their friction surfaces, thus offering a greasy friction whereby all vibrations will be eliminated.

The said facing herein consists as shown in Fig. 2 of two semi-cylindrical members 7 and 8 which are connected together at 9 and are faced in the interior by the leather or india rubber pieces 7' and 8'; one of the said members 7 is in contact with one of the uprights of the frame 5, and in the other member 8 is disposed the rod 1. In the present device, the various rods consist of metallic tubes. One to this double facing, the blowpipe 3 may be moved in all directions without any jarring action.

In another construction which is shown in Figs. 3 and 4, the blowpipe holder rests upon a guiding table through the medium of a flat member, such as a disc 17. The blowpipe is mounted upon one of the ele-

ments 11 of a pantograph 12, whose pointer is shown at 13. Upon the element 11 (Fig. 4) is mounted by means of a clamping collar 14 a bracket 15 carrying the rod 16 whose pointed end 20 actuates the disc 17 whose lower face is provided with a facing which consists of soft leather, india rubber or the like. The said disc 17 is slidable on the smooth surface of the table 19 and serves as a shock-absorbing brake.

In these various cases, I prefer to propel the blowpipe whether by hand or by mechanical means through the medium of an interposed traction spring. The driving effort on the pantograph 12 or on the rod 16 is not exercised upon the blowpipe-carrying element in a direct manner but through the medium of a spring 21, so that the variations in the driving effort are taken up in the first place by the spring 21 and then by the material 18 which is placed between the disc 17 and the table 19. This improvement forms a valuable feature, and especially in the case of hand control.

It should be further noted that my said invention comprises all blowpipe cutting apparatus provided with a brake consisting of a disc which slides by friction upon a smooth lubricated surface.

My said method and apparatus may be employed for damping or absorbing the vibrations of all movable elements in which all the vibrations are to be eliminated, and as an example, I may mention the various engraving devices which are mounted on a pantograph support.

Having now particularly described my invention and in what manner the same is to be performed, I claim as my invention:

1. Cutting apparatus comprising a blow torch, a support, and means for making uniform the speed of motion of the said blow torch relative to its support, said means consisting of a deformable and porous material placed between said blow torch and its support, and of fatty material filling the pores of said deformable porous material and forming a fatty layer.

2. In a cutting apparatus comprising a table, a plate moving on said table, a blowpipe integral with said plate, a fat reservoir placed between said plate and said table, said reservoir being formed of a deformable and porous material.

3. In a cutting apparatus comprising a table, a plate moving on said table, a blowpipe integral with said plate, a fat reservoir placed between said plate and said table, said reservoir being formed of a layer of leather.

4. In a cutting apparatus comprising a table, a plate moving on said table, a blowpipe integral with said plate, a fat reservoir placed between said plate and said table, said reservoir being formed of a layer of sheep-skin.

In testimony whereof I have affixed my signature.

Signed at Paris this 25th day of August, 1927.

MAURICE CLAUDE.

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