Dec. 27, 1949 F. C. GEIBIG 2,492,526

MULTINOZZLE ADJUSTABLE ATTACHMENT

Filed March 14, 1945

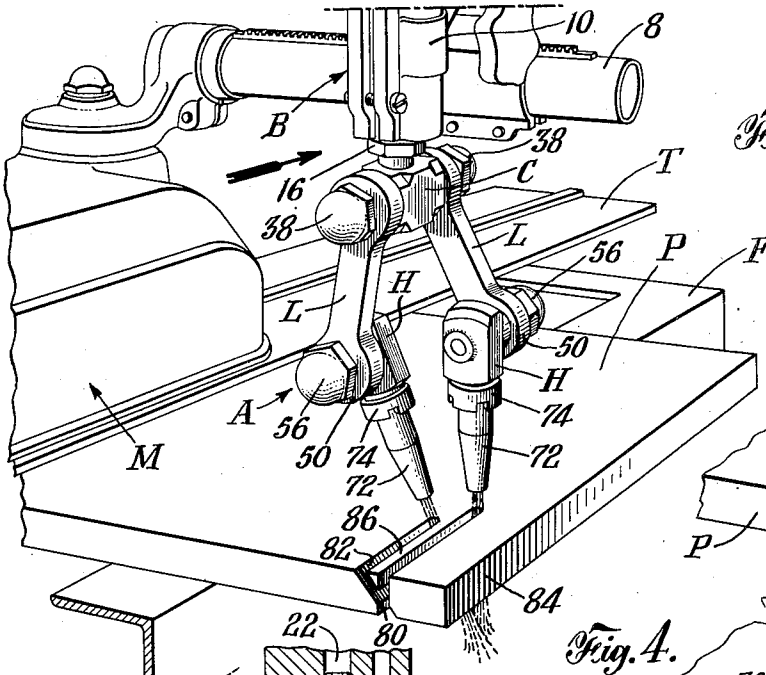


Fig. 1.

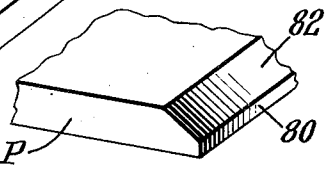


Fig. 3.

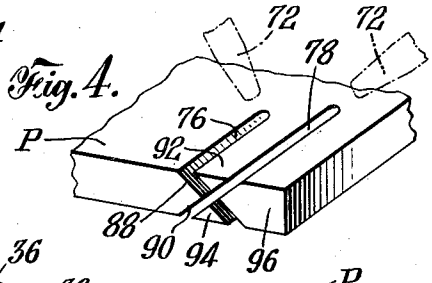


Fig. 4.

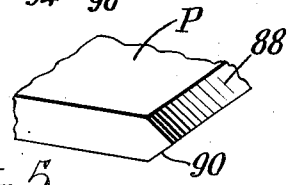


Fig. 5.

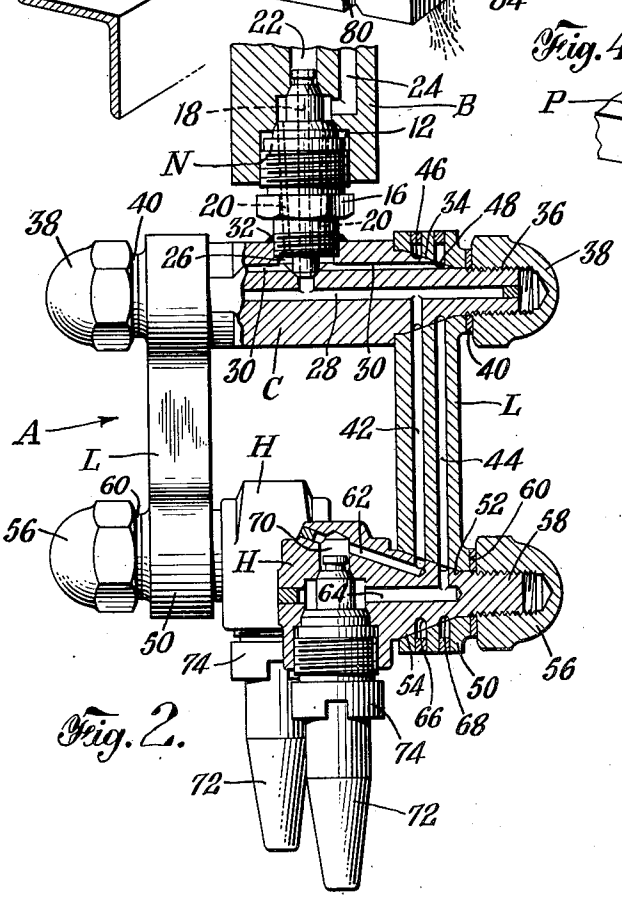


Fig. 2.

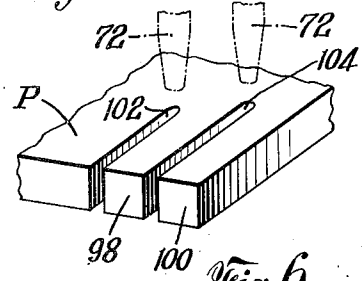


Fig. 6.

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MULTINOZZLE ADJUSTABLE ATTACHMENT

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2 Claims. (Cl. 158—27.4)

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This invention relates to oxy-fuel gas blowpipes, and more particularly multi-nozzle adjustable attachments for blowpipe machines.

In oxy-acetylene cutting it is often desirable to make two parallel cuts simultaneously with a single blowpipe. Special nozzle blocks for this purpose have been proposed, but they have disadvantages, to wit, lack of adjustability and difficulty of manufacture, or where maximum adjustability is attained, special long bent nozzles must be used.

The main objects of this invention are to provide an improved adjustable attachment which overcomes disadvantages of the prior art; is simple and economical in its parts; has added adjustments, increasing its scope of usefulness, is smaller, easier to adjust through a greater range, and stronger and more mechanically rugged than proposals of the prior art.

According to the invention a bi-nozzle adjustable cutting attachment is provided which is adapted to be connected to a conventional oxy-fuel gas cutting blowpipe body in place of a standard nozzle. The attachment includes a cross-block and, centrally located therein, a nipple having one end similar to a standard cutting nozzle for attachment to the blowpipe. The longitudinal axis of the cross-block is disposed at right angles to that of the nipple, a link is pivoted to each end of the cross-block for adjustment about the longitudinal axis of the cross-block, and a nozzle block is pivoted to the free end of each link for adjustment about an axis which is substantially parallel to that of the cross-block.

A standard oxy-fuel gas cutting nozzle is removably connected to each block, the longitudinal axis of the cutting nozzles being disposed on opposite sides of the longitudinal axis of the nipple, so that one nozzle may be arranged to act in advance of the other. The several parts contain separate oxygen and fuel gas passages so that such gases are fed to the nozzles from the blowpipe regardless of the adjustment of the attachment, although only one cutting nozzle may be used, if desired. In such case, the other nozzle block may be provided with a suitable closure which prevents any gas leakage from the oxygen and fuel gas passages of such nozzle block.

Referring to the drawing:

Fig. 1 is a fragmentary perspective view of a blowpipe cutting machine including a bi-nozzle adjustable cutting attachment exemplifying the invention;

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Fig. 2 is a view partly in side elevation and partly in vertical cross-section of the attachment; and

Figs. 3, 4, 5 and 6 are fragmentary perspective views of metal plates showing several cuts made by the attachment.

Referring to Fig. 1 of the drawing, the bi-nozzle adjustable cutting attachment A is connected to a machine cutting blowpipe body B which is mounted on a cutting machine M by means including an arm 8 and a bracket 10. The machine M is adapted to travel on a track T which, in this case, is disposed on a ferrous metal plate P which is, in turn, supported by a frame F.

The bi-nozzle adjustable cutting attachment A includes a nipple N, a cross-block C connected to the nipple, links L pivoted to the opposite ends of the cross-block for adjustment about a common axis, and nozzle blocks H pivoted to the free ends of the links for adjustment about axes which are substantially parallel to the common axis about which the links L are adjustable. The nipple N is adapted to fit a conventional nozzle socket 12 in the machine cutting blowpipe body B, the nipple being removably secured to the blowpipe by a hollow nut 16. With this arrangement the attachment A may be adjusted to any desired position about the longitudinal axis of the blowpipe body.

The nipple N contains a central cutting oxygen passage 18 and eccentric longitudinally extending fuel gas passages 20. The fuel gas may be a mixture of oxygen and acetylene or any other suitable combustible gas. The seating arrangement between the nipple and blowpipe B is such that the oxygen and fuel gas passages 18 and 20 in the nipple communicate with corresponding oxygen and fuel gas passages 22 and 24 in the blowpipe body.

The cross-block C is provided with a central socket 26 into which the lower end portion of the nipple N is threaded, the socket 26 being provided with suitable seats engaging corresponding seats of the nipple, so that the oxygen and fuel gas passages 18 and 20 of the nipple communicate with corresponding oxygen and fuel gas passages 28 and 30 in the cross-block C, without any cross-leakage. The threaded part of the nipple N may be united with the cross-block C by a suitable ring of solder 32.

The opposite end portions of the cross-block C are each shaped to provide a frusto-conical section 34 and a threaded section 36 for receiving a correspondingly shaped socket in one end of the link L, and a cap 38, respectively. A suit-

able washer **40** is disposed between the cap **38** and the link L, the arrangement being such that the cap may be adjusted to secure the link L in any desired angular position with respect to the longitudinal axis of the cross-block C.

Each link L is provided with oxygen and fuel gas passages **42** and **44** which are in communication with corresponding passages **28** and **30** of the cross-bar, regardless of the angular position of the link, by virtue of annular grooves **46** and **48** in the frusto-conical section **34** of the cross-block C.

The free end **50** of each link is provided with a socket **52** which is suitably shaped to receive the frusto-conical section **54** of a nozzle block H, the latter being secured in position by a cap **56** which is threaded to the end section **58** of the nozzle block H and engages the opposite side of the link, a washer **60** of suitable material being disposed between the cap and the link. The nozzle block H is provided with oxygen and fuel gas passages **62** and **64** in constant communication with the corresponding passages **42** and **44** in the link L by way of the annular grooves **66** and **68** in the frusto-conical portion **54** of the nozzle block H. Thus, each nozzle block H may be adjusted about an axis which is substantially perpendicular to that of the cross-block C.

Each nozzle block H is provided with a socket **70** for the reception of the inlet end of a conventional oxy-acetylene cutting nozzle **72** which is secured in place by a hollow nut **74**. Each oxy-acetylene cutting nozzle **72** is provided with a central cutting oxygen passage in communication with the oxygen passage **62** of the head, and a series of fuel gas passages in communication with the fuel gas passage **64** of the head. With this arrangement each nozzle **72** may be adjusted to any suitable angular position with respect to the longitudinal axis of the nozzle block H by simply turning the block H in the link L, and tightening the cap **56** to secure it in adjusted position.

The arrangement is such that the longitudinal axes of the nozzles **72** are disposed on opposite sides of the longitudinal axis, extended, of the nipple N. Thus, as shown in Fig. 1, one of the nozzles may act in advance of the other. This is especially desirable when the nozzles are used to cut overlapping kerfs **76** and **78** in the metal plate P, as shown in Fig. 4. When one nozzle slightly precedes the other, the flames and cutting oxygen of the different nozzles do not interfere while the cutting operation is in progress.

Fig. 1 shows the attachment suitably adjusted for cutting the plate P so as to provide a nose **80** and a top bevel **82** on the finished edge of the plate P, leaving scraps **84** and **86**. The finished plate is shown in Fig. 3. If desired, also, a single top bevel can be cut leaving no nose.

Fig. **4** shows a method of cutting the plate so as to finish it, as shown in Fig. 5, to produce a top bevel **88** and a bottom bevel **90** only along one edge of the plate P. This method leaves scraps **92**, **94** and **96**.

Fig. 6 shows how the plate P may be cut to provide strips or coupons **98** and **100**. In this case the bi-nozzle attachment A is adjusted to make two parallel straight line cuts **102** and **104** in one pass of the single blowpipe B. These cuts can be varied as to their spacing and relative angularity.

Since the connecting means between the attachment A and the blowpipe B is the same as that of a nozzle, it is possible to swivel the attachment A with respect to the blowpipe body as may be desired. One nozzle block H may be blocked, and the other nozzle can be positioned in a variety of ways, in case only a single cut is to be made.

What is claimed is:

1. In a blowpipe constructed and arranged to simultaneously cut two kerfs in a metal member, in combination, a single blowpipe nipple attachable to a blowpipe body and having passages for delivering a heating gas and a separate cutting oxygen stream; a cross-block laterally connected at its longitudinal center to said nipple and having longitudinal passages severally communicating with the passages in said nipple; a pair of links severally pivotally connected at their corresponding one ends to the opposite ends of said cross-block and angularly adjustable in planes perpendicular to and about the longitudinal axis of said cross-block; adjustable clamping means engaging each end of said cross-block for separately clamping each link in its selected adjusted position; a pair of cutting nozzle blocks severally pivotally connected to the free ends of said links and angularly adjustable about axes parallel to the longitudinal axis of said cross-block; adjustable clamping means engaging each nozzle block for separately clamping said nozzle blocks in their selected adjusted positions relatively to the links to which they are severally connected; and a pair of cutting oxygen nozzles severally connected to said nozzle blocks; each link having passages therein severally arranged to deliver heating gas and cutting oxygen from said cross-block to heating gas and cutting oxygen passages in said nozzle blocks and nozzles.

2. An adjustable oxy-fuel gas blowpipe cutting attachment comprising, in combination, a nipple having separate oxygen and fuel-gas passages, a cross-block connected to said nipple, said cross-block having separate oxygen and fuel-gas passages in communication with the corresponding passages in said nipple, links pivoted to the opposite ends of said cross-block for rotary adjustment about a common axis extending at right angles to the longitudinal axis of said nipple, said links having separate oxygen and fuel-gas passages communicating with the corresponding passages in said cross-block, and a nozzle block pivoted to the inner side of the free end of each link for rotary adjustment about an axis substantially parallel to said common axis, each nozzle block having separate oxygen and fuel-gas passages in communication with corresponding passages in its link.

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