Aug. 16, 1927.

1,639,328

C. J. COBERLY

TURRET TIP FOR TORCHES

Filed Nov. 8, 1924

Fig. 1.

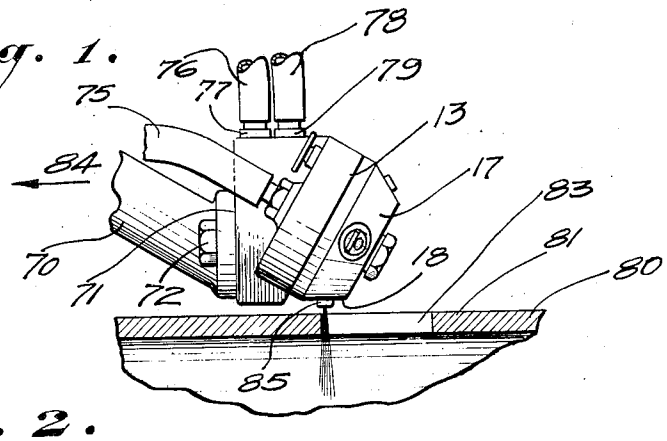


Fig. 2.

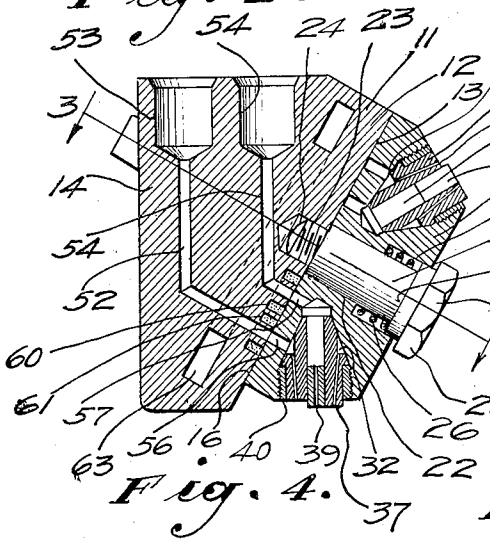


Fig. 3.

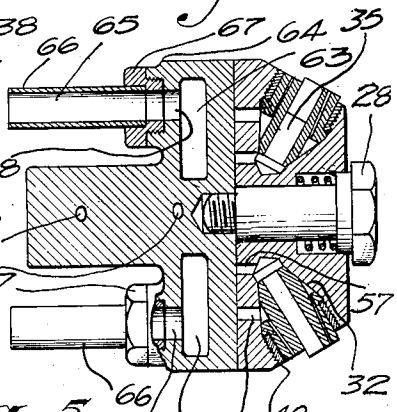


Fig. 4.

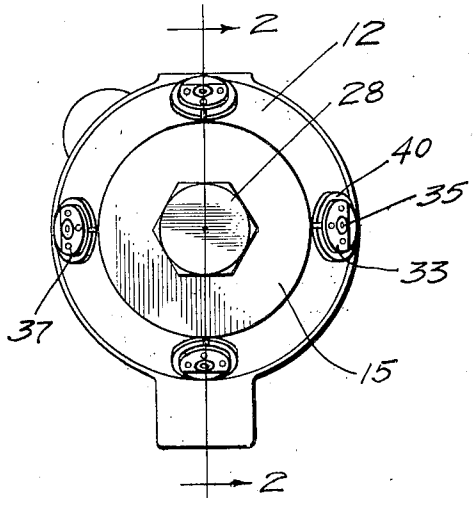
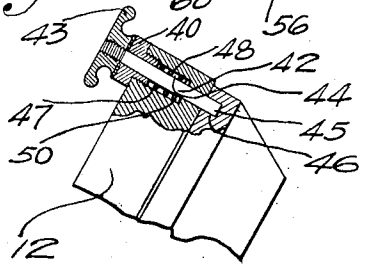


Fig. 5.



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Patented Aug. 16, 1927. 1,639,328

UNITED STATES PATENT OFFICE.

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TURRET TIP FOR TORCHES.

Application filed November 8, 1924. Serial No. 748,574.

This invention relates to welding apparatus, and relates particularly to the head portions of welding apparatus which carry the tips.

If an oxy-acetylene torch is continuously used for a period of time, slag which forms on the metal upon which the operation is being performed will adhere to the tip of the head. This will interfere with the flame of the tip, and will cause it to malfunction. This is especially true in regard to cutting tips, as the cutting is accomplished by the burning away of the metal. The oxygen or an equivalent gas stream flowing from the tip is combined with the metal being cut to effect the burning away thereof. This causes considerable slag, which frequently adheres to the tip and interferes with its function.

I have presented to the Patent Office an application entitled Pipe slotting machine, filed October 1, 1923, Serial No. 665,917. In this device I employ cutting tips which are arranged for continuous and automatic operation. A clogging and malfunctioning of one of these tips necessitates the shutting down of the complete machine until the malfunctioning tip is cleaned or replaced. When a cutting torch clogs, the operation thereof may be discontinued to clean it without creating an appreciable loss of time or expense, but when a machine must be cessated to clean one tip thereof, the stopping becomes expensive.

It is an object of this invention to provide a head of the character mentioned in which a substitution of an alternative tip for working tip may readily be accomplished without discontinuing the operation of the head. I accomplish this by providing a turret or rotatable member which carries a plurality of tips. By rotation, any of these tips may be selectively and separately brought into working position.

It is also an object of this invention to provide a head of the character described, in which the inactive tips may be cleaned while the active tip is in operation. This is possible due to the fact that only the working tip is in communication with the gas supply passages, and therefore removing or cleaning of the other tips in no way affects the action of the working or acting tip.

It is a further object of the invention to provide a means whereby leakage between the turret member and a supporting member is prevented.

It is another object of the invention to provide a means for preventing the overheating of the head.

It is a still further object of the invention to provide a means for releasably locking any of the plurality of tips in working position.

Other objects and advantages of the invention will be made evident hereinafter.

Referring to the drawing which is for illustrative purposes only,

Fig. 1 is a diagrammatic view illustrating the utility of my invention.

Fig. 2 is a vertical cross section of a head employing the features of my invention, this view being taken substantially as indicated by the line 2—2 of Fig. 4.

Fig. 3 is a section taken substantially as indicated by the line 3—3 of Fig. 2.

Fig. 4 is a side elevational view of the head taken substantially as indicated by the arrow 4 in Fig. 2.

Fig. 5 is a fragmentary sectional view showing the locking means employed in this modification of my invention.

As a supporting means, I provide a block 11, which comprises a circular portion 12, which is disposed on an angle as shown and presents a flat or plane face 13, which is likewise disposed on an angle relative to a vertical line, as is clearly shown in Figs. 1 and 2. Formed on the rear face of the circular portion is a triangular portion 13. A turret member in the form of a cylindrical member 15 is provided having a flat face 16 which engages the plane face 13 of the circular portion 12 of the block 11. A portion of the periphery of the turret member 15 is conical, as shown at 17. The angle of this face 17 relative to the axis of the turret member 15 is such that the extreme lower portion, as indicated at 18 in Fig. 1, extends in a horizontal plane. For rotatably securing the turret member 15 to the block 11 so that the faces 13 and 16 resiliently engage each other, I provide a bolt 20 having a pin portion 21 which extends into the central bore 22 of the turret member 15. The reduced threaded end 23 of the bolt 20 is arranged to be screwed into a threaded opening 24, provided in the face 13 of the block 11. In a counterbore 25 of the turret mem-

ber 15, there is placed a spring 26 which is compressed between the bottom of the counterbore 25 and a shoulder 27 provided by the bolt 20 adjacent to the head 28 thereof. It will be seen that this bolt construction permits a rotation of the turret member 15, and that by the provision of the spring 26, the plane face 13 of the block 11 is caused to be contacted by the flat face 16 of the turret member 15.

The turret member 15 is provided with a plurality of openings 32, which are disposed on axes perpendicular to the face of the conical portion 17, and in which openings are placed tips 33, each tip having an annular external mixed gas channel 34 and a central oxygen passage 35. Extending from the channel 34 to the outer end of the body 33 are mixed gas passages 37, and disposed in the outer end of the passages 35 are bushings 38 having oxygen orifices 39 extending axially therethrough. The bodies 33 are arranged to be retained in place in the openings 32 by means of tip nuts 40.

For releasably locking the turret member 15 against rotation, I provide means, as shown clearly in Fig. 5. This means comprises a plunger 42 having a head 43 secured thereto at the outer end thereof, the plunger 42 extending into an opening 44 in the circular portion 12 of the body 11. For holding the inner end 45 in one of a plurality of recesses 46 provided in the flat face 16 of the turret member 15, I provide a means which is in the form of a spring 47, which rests in the bore 48 of the circular portion 12. The spring 47 is retained in the bore 48 by means of a nut 49, the spring 47 exerting a pressure against a pin 50 carried by the plunger 42 in a manner to removably retain the end 45 of the plunger 42 in one of the recesses 46 in the face 16.

For supplying fuel to the tips 33, I provide a mixed gas supply passage 52 in the body 11, this passage extending, as shown clearly in Fig. 2, to the plane face 13. At the upper end of the triangular portion 14 I provide a connection receiving enlargement 53. Also in the block 11 I provide an oxygen supply passage 54, this passage also extending to the face 13 adjacently to the passage 52, and also having a connection receiving enlargement 54 similar to the enlargement 53 and being situated adjacent thereto. From each of the tips 33 to the surface 16 of the turret member 15, I provide intercommunicating mixed gas passages 56, and intercommunicating oxygen passages 57.

As will be seen from Fig. 2, the passages 56 have connection to the openings 32 at a point adjacent to the annular mixed gas channel 34 of the adjacent tip, and each of the oxygen intercommunicating passages 57 extends to the opening 32 in a manner to be in communication with the central oxygen passage 35 of the adjacent tip 33. The passages 56 and 57 extend to the surface 16 at a point so that when they are rotated into position of the lowermost or working tip, shown in Fig. 2, they will align with the passages 52 and 54, respectively. From this it will be seen that only one tip 33 is in communication with the gas supply through the passages 52 and 54 at a time.

To prevent a possible leakage of gas from the passages 52 and 54 between the faces 13 and 16, I provide circular gasket members 60 and 61, which are imbedded in the surface 13 around the passages 54 and 52, respectively.

In order to prevent an overheating of the head, due to the heat provided by the flame of the active tip, I provide a cooling means which comprises a substantially circular chamber 63, which is provided in the circular portion 12 of the body 11. Connected with this chamber 63 and extending from the rear face 64 of the circular portion 12, as clearly shown in Fig. 3, are nipples 65, which are in the form of tubes 66 having nuts 67, by which they are secured in the openings 68 of the circular portion 12, so as to be in communication with the cooling chamber 63. Water may be introduced to one of these nipples 65 and may egress through the other of the nipples 65.

With reference especially to Fig. 1, the operation of my device is as follows:

It is arranged that the device be secured to a movable bracket 70, this bracket being preferably secured to the back face 71 of the triangular portion 14, by means of a bolt 72. Water hoses 75 are placed on the tube portions 66 of the nipples 65 through which the cooling water is circulated through the head. A mixed gas supply tube 76 is secured in the receiving enlargement 53 by means of a suitable connector 77, and an oxygen supply tube 78 is secured in the enlargement 54 by means of a suitable connector 79. As is seen from Fig. 1, the head is disposed above a member to be cut, such as a pipe, indicated at 80. It will be seen that the head is in such a position that the extreme lower portion 18 of the conical face 17 rests in a horizontal plane, and that the surface 81 of the member 80 on which the cutting operation is to take place is also disposed in a horizontal plane. In other words, the faces 18 and 81 rest in parallel planes. Mixed gas, being supplied to the tip through the tube 76 and the passages 52 and 56, provides a preheating flame which emanates from the working tip through the passages 37.

When the metal to be cut is sufficiently preheated, oxygen is introduced to the working tip through the tube 78 and the passages 54 and 57. The oxygen passes through the

central passage 35 and through the central orifice 39 of the bushing 38. The oxygen passing through the orifice 39 in a stream combines with the heated metal in a manner to produce a cut, as indicated at 83 in Fig. 1. As the metal is burned away the head is moved parallel to the surface 81 in the direction indicated by the arrow 84 of Fig. 1.

In the event that the working tip, as shown at 85 in Fig. 1, should be caused to malfunction, either of the inactive tips may be readily and quickly substituted therefor. This is conveniently accomplished by first moving the plunger 44 outwardly so that the end 45 thereof will be removed from the recess 46 in the turret member 15. This allows the turret member to be rotated. The plunger is then allowed to be forced inwardly against the face 16 and will ride therealong as the turret member is rotated until another of the recesses 46 aligns therewith. At this time the end 45 of the plunger 42 will enter the adjacent slot 46 and prevent rotation of the turret member 15. It should be understood that the recesses 46 are so located as to bring any of the tips 33 into its proper working position when desired.

From the foregoing description it will be seen that by the use of a head of this character, one type may be substituted for another type without necessitating shutting down of the machine. It will also be seen that the locking means shown provides a convenient manner for releasing or locking the turret member in a position to bring the desired tip into working posture. The head will not become overheated because of the cooling means and leakage between the faces 13 and 16 will be reduced to a minimum by the provision of the gasket members 60 and 61. It will further be seen that the novel construction of the head member of my invention permits the cleaning of the inactive tips during the operation of the active tip. In this manner it will be seen that there is absolutely no necessity of shutting down the head or a machine on which it is used to clean any of the tips.

I claim as my invention:

1. In a device of the class described: a supporting member having a gas supply passage and an oxygen supply passage; and a turret member rotatable relative to said supporting member and having a plurality of gas passages and oxygen passages selectively communicable with said gas supply passage and said oxygen supply passage respectively, said gas passages and oxygen passages retaining their separate identity throughout their continuance in the said turret member.

2. In a device of the class described: a supporting member having a gas supply passage and an oxygen supply passage; a turret member rotatable relative to said supporting member and having a plurality of gas passages and oxygen passages selectively communicable with said gas supply passage and said oxygen supply passage respectively, said gas passages and oxygen passages retaining their separate identity throughout their continuance in the said turret member; and means for cooling said supporting member.

3. In a device of the class described: a supporting member having a gas supply passage and an oxygen supply passage; a turret member rotatable relative to said supporting member and having a plurality of gas passages and oxygen passages selectively communicable with said gas supply passage and said oxygen supply passage respectively, said gas passages and oxygen passages retaining their separate identity throughout their continuance in the said turret member; means for cooling said supporting member; and means for releasably locking said turret member to said supporting member against rotation.

4. In a device of the class described, the combination of: a supporting member, said supporting member having a flat face and having gas supplying passages extending to said face; a turret member having a face arranged to engage said face of said supporting member and having a plurality of passages extending to said face of said turret member and being separately communicable with said gas supplying passages; means for rotatably securing said turret member to said supporting member; and a plurality of removable tips carried by said turret member, said tips being in communication with said intercommunicating passages.

5. A device as in claim 4 in combination with means for resiliently retaining said faces in contact.

6. A device as in claim 4 in combination with means for preventing leakage of gas from said passages between said faces.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 31st day of October, 1924.

CLARENCE J. COBERLY.