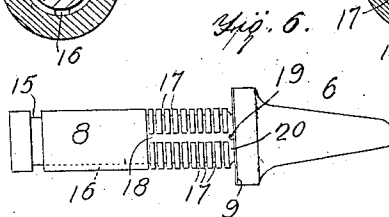
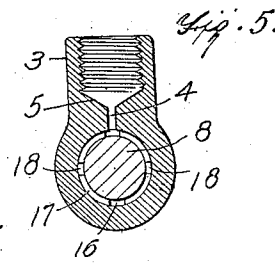
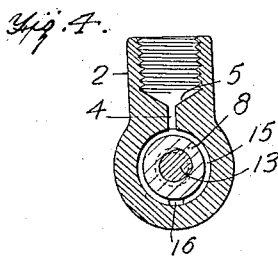
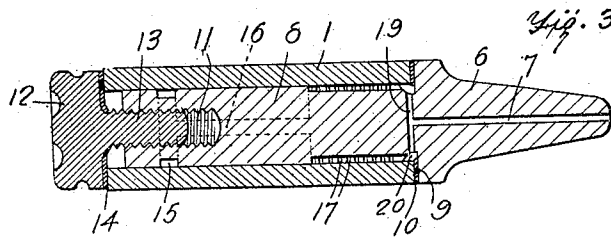
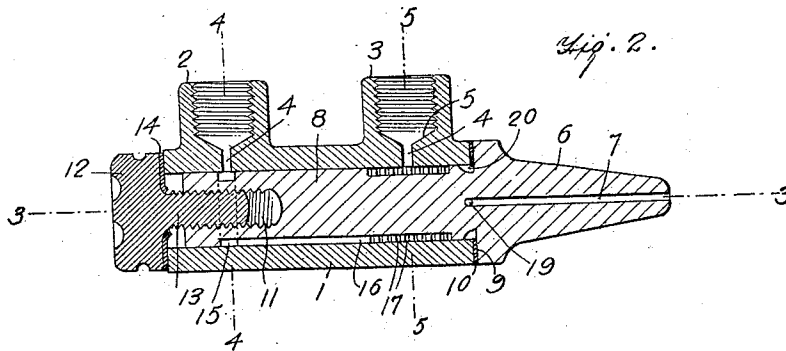
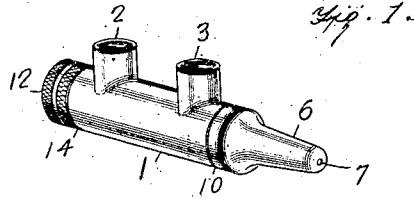


J. D. FREAR.
ACETYLENE OXYGEN WELDING TORCH.
APPLICATION FILED MAY 10, 1912.

Patented Dec. 31, 1912.

1,049,222.



WITNESSES

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UNITED STATES PATENT OFFICE.

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ACETYLENE-OXYGEN WELDING-TORCH.

1,049,222.

Specification of Letters Patent.

Patented Dec. 31, 1912.

Application filed May 10, 1912. Serial No. 696,444.

To all whom it may concern:

Be it known that I, JOHN D. FREAR, a citizen of the United States, and a resident of Centerville, in the county of Linn and State of Kansas, have invented a new and useful Improvement in Acetylene-Oxygen Welding-Torches, of which the following is a specification.

My invention is an improvement in acetylene-oxygen welding torches and has for its object the provision of a simple, inexpensive device of the character specified, for receiving and mixing the gases, wherein means is provided for thoroughly mixing the said gases as they pass to the outlet and without delaying their passage.

In the drawings:—Figure 1 is a perspective view of the improved torch; Fig. 2 is a longitudinal section; Figs. 3, 4 and 5 are sections on the lines 3—3, 4—4 and 5—5, respectively of Fig. 2; and Fig. 6 is a top plan view of the nozzle detached.

The present embodiment of the invention comprises a barrel or casing 1 of cylindrical form, open at each end, and provided with a pair of spaced laterally extending nipples 2 and 3, each of which is internally threaded as shown in Fig. 2. Each nipple communicates with the bore of the casing by means of a reduced opening 4 and the bottom or inner end of the interior of each nipple is funnel shaped or inclined toward the opening, as indicated at 5.

The nozzle comprises a tip 6, of approximately conical form and provided with a longitudinal bore or passage 7, and a body or stem 8 of cylindrical form fitting closely within the barrel. The body is of smaller diameter than the largest portion of the tip and is of somewhat less length than the barrel. The body or stem 8 is received within the barrel, and an annular shoulder 9 is formed between the body and the tip which fits against the adjacent end of the barrel. A gasket or packing ring 10 is arranged between the shoulder and the end of the barrel, and the bore 7 extends as far inward as the shoulder. The end of the stem remote from the tip is longitudinally recessed, as shown at 11, and a cap 12 closes the opposite end of the barrel, and is provided with a threaded stem 13 for engaging the recess 11, and a gasket or packing ring 14 is arranged between the cap and the adjacent end of the barrel.

The stem or body is provided with an annular groove or passage 15 near the cap 12, and with a longitudinal groove or passage 16, leading from the groove 15 toward the shoulder 9. The said body is also provided with a series of spaced parallel annular grooves or passages 17, adjacent to the shoulder, and extending approximately half the distance between the shoulder and groove 15. The body or stem is provided with four longitudinal grooves or passages 18 at the series 17, arranged at angular distances of 90°, and each of the said grooves 18 intersects all of the grooves of series 17. At the junction of the body and the shoulder 9, the said body is provided with a transverse or diametrical passage 19, intersecting bore 7, and the body is cut away annularly to form a groove or passage 20 of greater depth than the grooves of series 17, and with which the ends of passage 19 communicate. One of the grooves or passages of series 18 is a continuation of passage 16, and each of the passages 17 intersects this continuation. When the body 8 is in place in the barrel, each of the grooves of series 17 is a separate and independent passage, because of the fact that the body 8 fits the barrel closely. The same statement applies to all of the grooves or passages.

The nozzle may be separated from the barrel, for cleaning or any other purpose, by unscrewing the cap 12. When the stem 13 is disengaged from recess 11, the nozzle and cap may be removed. The opening 4 of nipple 2 communicates with groove or passage 15 when the cap and nozzle are in place, and the opening of nipple 3 communicates with the grooves of series 17.

One of the gases enters at nipple 2 and the other at nipple 3. The gas from nipple 2 passes through the opening 4 into passage 15, and travels along passage 16 to passages 17. The other gas enters the said passages, and is broken up into a number of separate streams as many as there are grooves in series 17, and each stream strikes the other gas in that passage 18 which is the continuation of passage 16.

It will be evident from the description that the mixing of the gases is very thorough and complete, and the gases finally reach the bore 7 of the tip in a very intimate mixture. Each of the passages 17 assists in the mixing, since the partially mixed gases may

travel laterally at each of the said passages in both directions.

Should it be necessary for any reason to separate the parts, this may be easily done by unscrewing the cap. When the cap is released from the body of the nozzle, both may be withdrawn from the barrel, and since the bore of the barrel is of uniform cross section every part of the said bore is accessible.

I claim:—

1. A torch of the character specified, comprising a barrel having spaced laterally extending nipples, each communicating with the interior of the barrel by a reduced opening, a nozzle having a conical tip and a body fitting within the barrel, said nozzle having an annular shoulder between the body and tip for engaging the adjacent end of the barrel, the body having a longitudinal recess at the end remote from the tip, a cap fitting against the opposite end of the barrel and having a threaded stem engaging the recess of the body, a gasket at each end of the barrel, said body having an annular groove registering with the opening of one nipple and a series of spaced annular grooves registering with the other nipple and a longitudinal groove leading from the first groove and cutting the grooves of the series, the nozzle having a central bore extending from the end of the tip to the shoulder and a diametrical passage opening into a groove of the series at each end, the body having a plurality of spaced longitudinal grooves intersecting each groove of the series.

2. A torch of the character specified, comprising a barrel having spaced laterally extending nipples, each communicating with the interior of the barrel by a reduced opening, a nozzle having a conical tip and a body fitting within the barrel, said nozzle having an annular shoulder between the body and tip for engaging the adjacent end of the barrel, the body having a longitudinal recess at the end remote from the tip, a cap fitting against the opposite end of the barrel and having a threaded stem engaging the recess of the body, a gasket at each end of the barrel, said body having an annular groove registering with the opening of one nipple and a series of spaced annular grooves registering with the other nipple and a longitudinal groove leading from the first groove and cutting the grooves of the series, the nozzle having a central bore extending from the end of the tip to the shoulder and a diametrical passage opening into a groove of the series at each end.

3. A torch of the character specified, comprising a barrel having lateral nipples spaced apart from each other and communicating with the barrel, a nozzle comprising a tip and a body fitting within the barrel, the nozzle having an annular shoulder be-

tween the tip and the body for engaging the end of the barrel, said body having an annular groove registering with the nipple remote from the tip, and a series of annular grooves registering with the nipple adjacent to the tip, and a longitudinal groove leading from the groove and cutting each groove of the series, the tip having a longitudinal bore and the nozzle having a transverse passage intersecting the bore at its inner end and communicating at its ends with the outermost groove of the series, and a cap engaging the opposite end of the barrel from the tip and having an inwardly extending threaded stem, the nozzle having a recess for engagement by the stem.

4. A torch of the character specified, comprising a barrel having lateral nipples spaced apart from each other and communicating with the barrel, a nozzle comprising a tip and a body fitting within the barrel, the nozzle having an annular shoulder between the tip and the body for engaging the end of the barrel, said body having an annular groove registering with the nipple remote from the tip, and a series of annular grooves registering with the nipple adjacent to the tip, and a longitudinal groove leading from the groove and cutting each groove of the series, the tip having a longitudinal bore and the nozzle having a transverse passage intersecting the bore at its inner end and communicating at its ends with the outermost groove of the series, and a cap engaging the opposite end of the barrel from the tip and having a detachable connection with the nozzle.

5. A torch of the character specified, comprising a barrel having lateral nipples spaced apart from each other and communicating with the barrel, a nozzle comprising a tip and a body fitting within the barrel, the nozzle having an annular shoulder between the tip and the body for engaging the end of the barrel, said body having an annular groove registering with the nipple remote from the tip, and a series of annular grooves registering with the nipple adjacent to the tip, and a longitudinal groove leading from the groove and cutting each groove of the series, the tip having a longitudinal bore and the nozzle having a transverse passage intersecting the bore at its inner end and communicating at its ends with the outermost groove of the series, and means for holding the nozzle in place.

6. A torch of the character specified, comprising a barrel having lateral nipples spaced apart from each other and communicating with the barrel, a nozzle comprising a body fitting the barrel and a tip extending outside the barrel, said body having an annular groove registering with one nipple and a series of annular grooves registering with the other nipple, and having a passage

leading from the groove and intersecting all of the grooves of the series, the tip having a bore communicating with the grooves of the series.

5 7. A torch of the character specified, comprising a barrel having lateral ports, a nozzle fitting within the barrel and having an annular groove registering with one port and a series of annular grooves registering

with the other port and having a passage 10 leading from the groove and intersecting all of the grooves of the series, the nozzle having a tip provided with a bore communicating with the grooves of the series.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."