

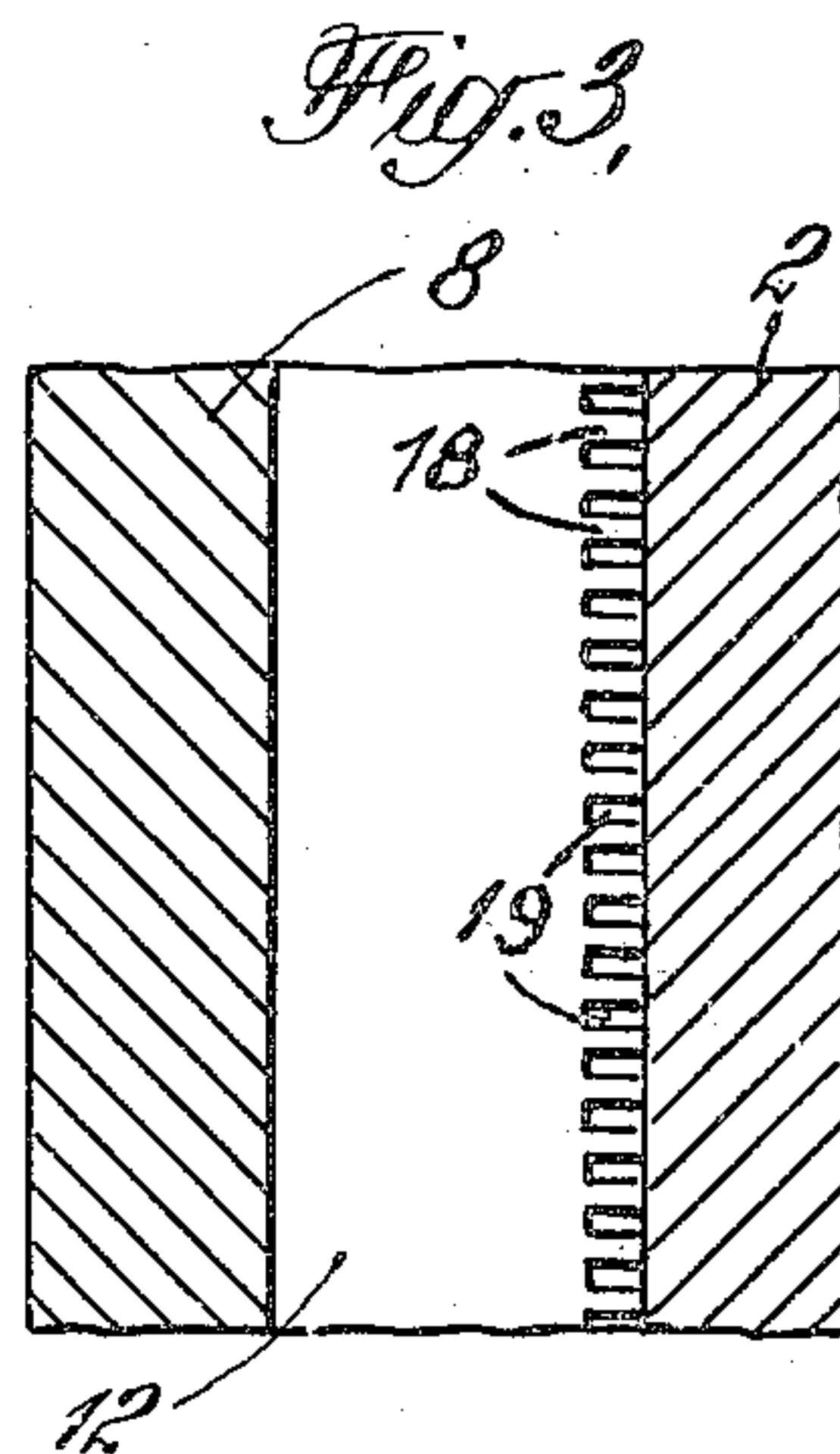
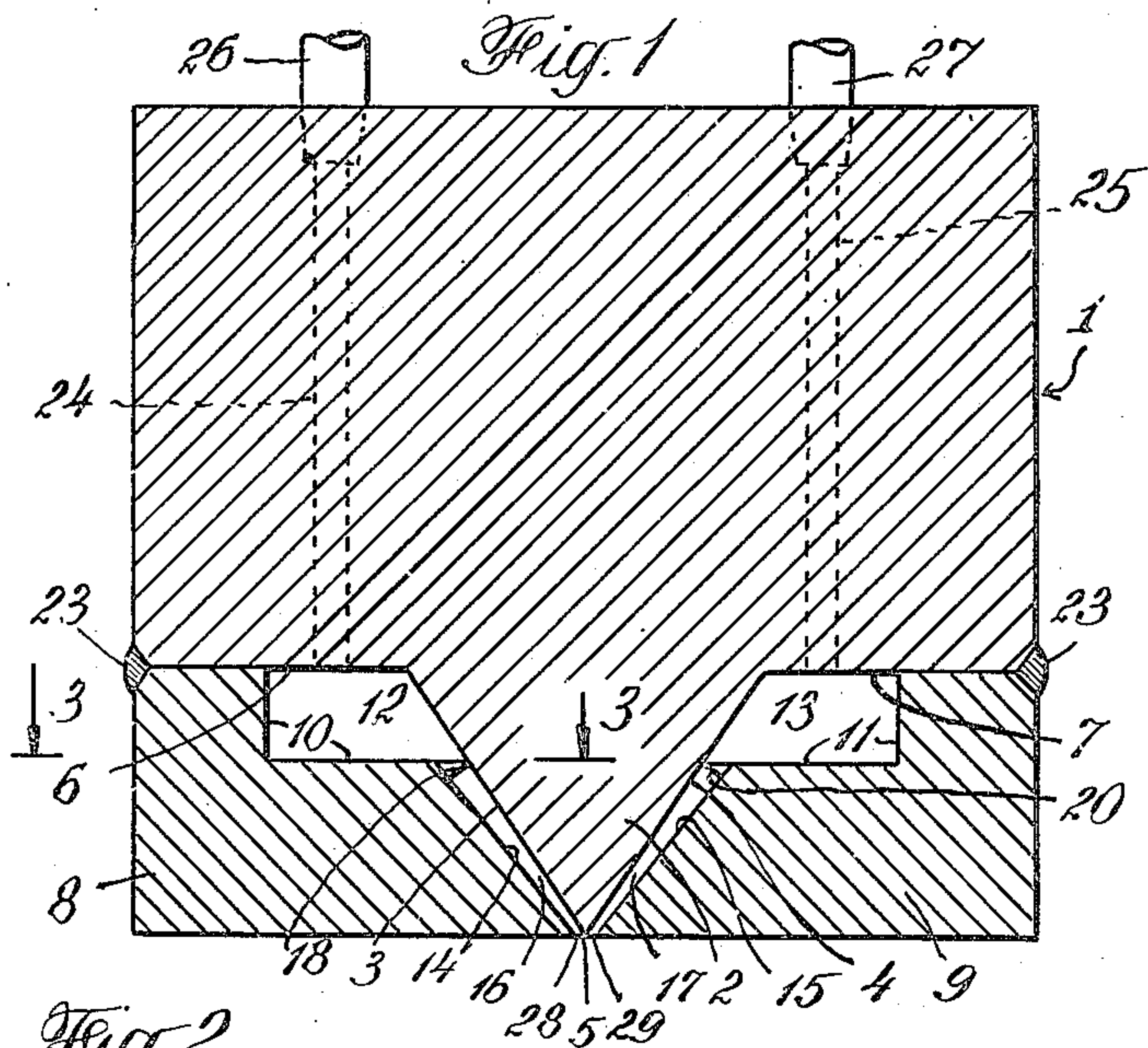
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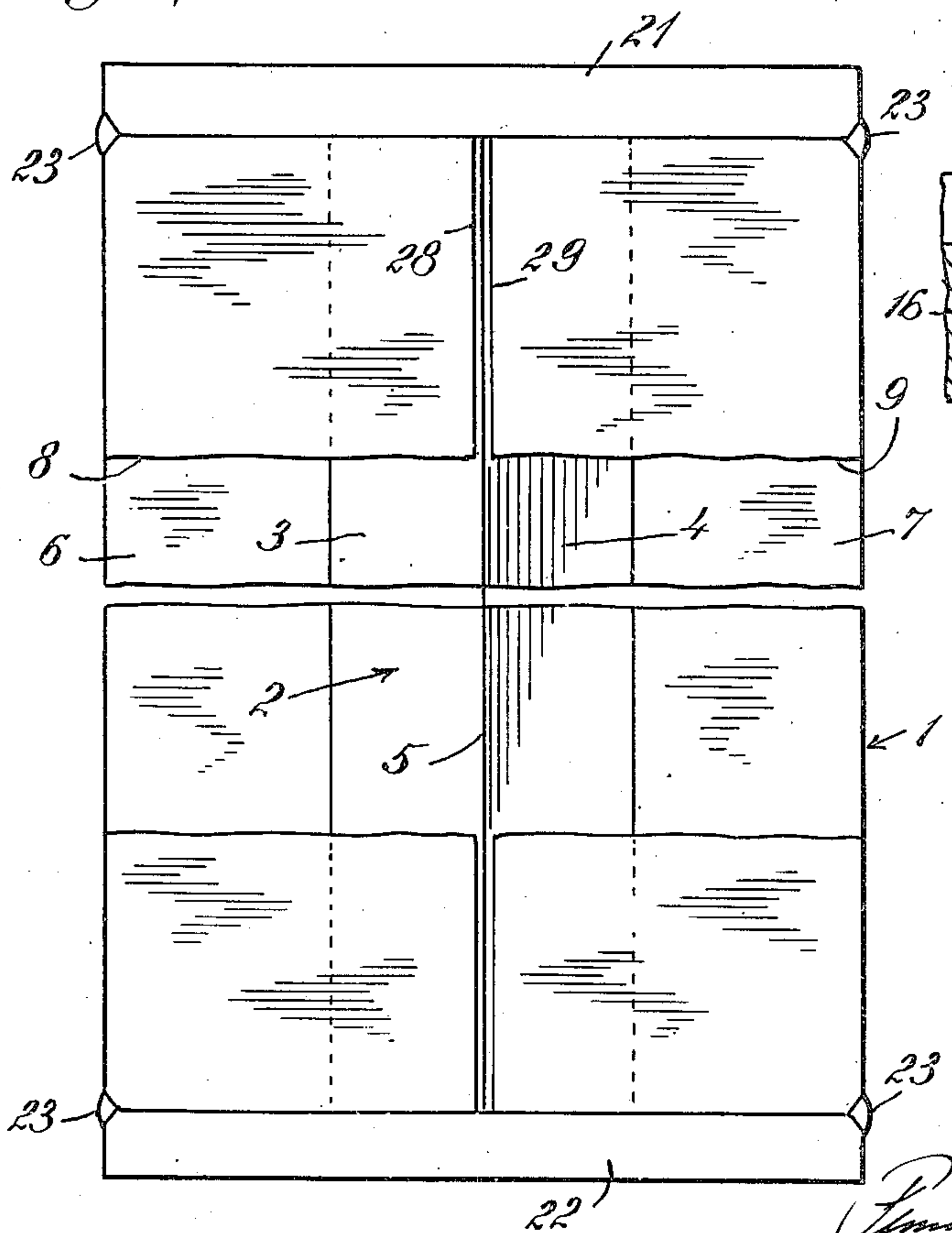
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TORCH TIP

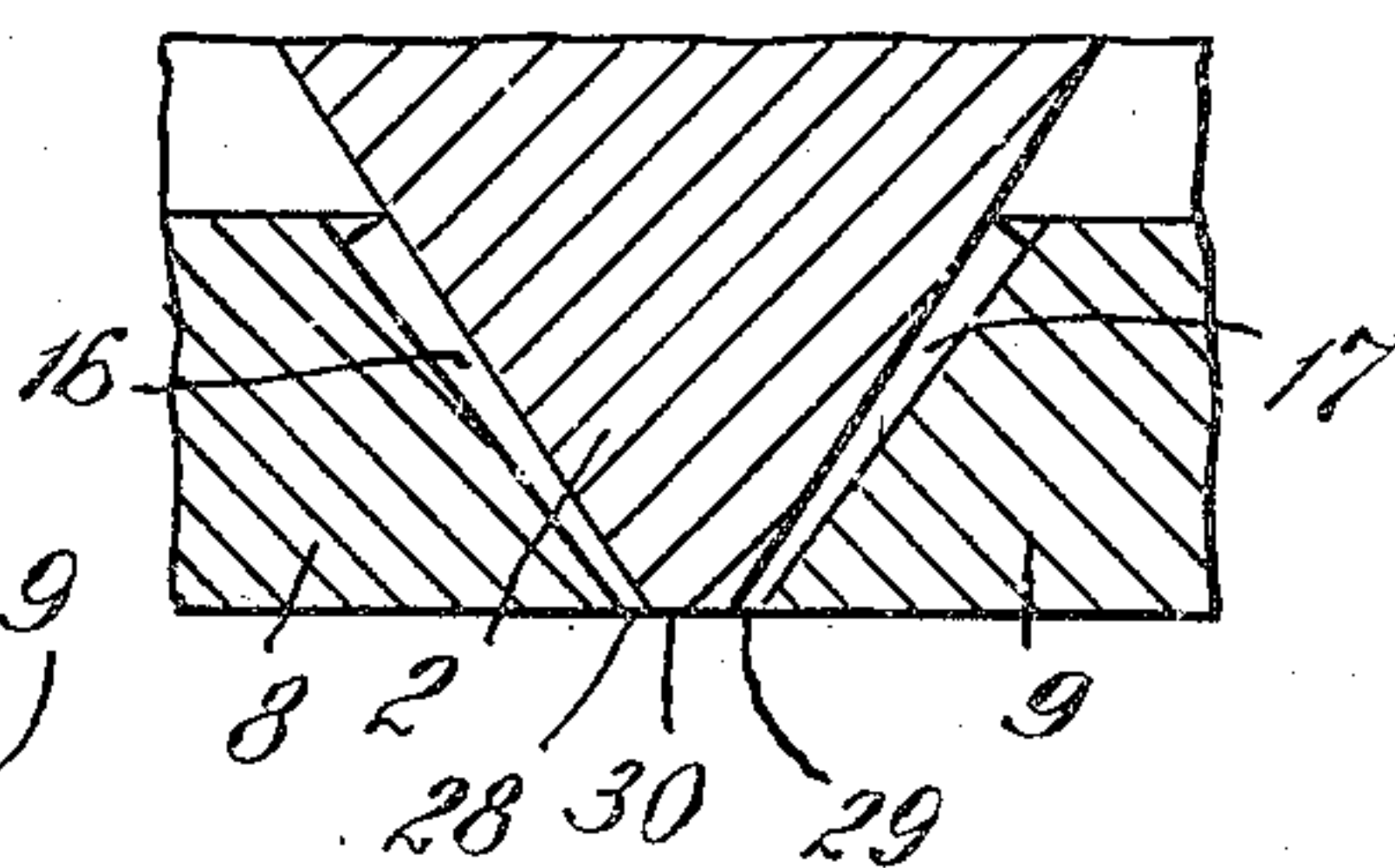
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*Fig. 2*



*Fig. 4*



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## TORCH TIP

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This invention relates to torch tips of the block type, i. e. the type that have a number of jet passages for the gases formed directly in a block of metal, as distinguished from the nozzle type of torch tip.

The jet passages of block-type tips are usually formed by drilling into the block from that face of the block which is to constitute the discharge face. The jet passages are usually in one or more rows extending longitudinally of the block and the jet passages of each row all communicate with a longitudinal bore within the block which constitutes a distributing chamber for delivering gas simultaneously to all of the jet passages of a row. Sometimes each jet passage has a metering port through which the gas flows in passing from the distributing chamber into the jet passage. The drilling must be done very carefully, especially that which is required to form the jet passages and metering ports, and is therefore time consuming and increases the cost of making the tips.

Among the objects of the invention are to provide an improved block-type torch tip that is relatively inexpensive to manufacture and whose parts are so constructed and assembled that no drilling is required to form the jet passages and metering ports or the gas distributing chambers.

According to the invention the tip is made up of five principal pieces, namely, a main body portion comprising an elongated block having a longitudinally extending ridge projecting from and located centrally on its bottom face and which has side walls that converge from the base of the ridge towards its crest to give the ridge a generally V-shaped cross-section; a pair of identical bottom members positioned against the ridged face of the body portion at opposite sides of the ridge and which are so shaped as to form with the body portion a pair of gas distributing chambers at opposite sides of the ridge and to form with the opposite converging faces of the ridge a pair of converging slot-type jet passages for the oxygen and fuel gas; and a pair of identical end plates which close the opposite ends of the distributing chambers and the jet passages.

A torch tip embodying the invention is illustrated in the accompanying drawing, in which

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Figure 1 is a transverse vertical section through the tip;

Fig. 2 is a bottom plan view of the discharge face of the tip, portions of the two bottom members being broken away to expose the ridged bottom face of the body portion;

Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 1; and

Fig. 4 shows in transverse vertical section a modified type of ridge that may be used on the body portion.

The main body portion of the tip comprises an elongated metal block 1 having on its bottom face a centrally located ridge 2. As best shown in Fig. 2 the ridge extends longitudinally of the block, and as best shown in Fig. 1 has side faces 3 and 4 which converge from the base of the ridge towards its crest 5 so that the ridge is V-shaped in cross-section. The body portion 1 has flat face portions 6 and 7 at opposite sides of the ridge.

A pair of identical bottom members 8 and 9, each of which may be generally L-shaped in cross-section as shown in Fig. 1 and has a length corresponding to the length of the body portion 1 as shown in Fig. 2, are positioned against the body portion at opposite sides of the ridge 2. These members fit against the flat faces 6 and 7 of the body portion and their longitudinal notches 10 and 11 form with the body portion a pair of longitudinally extending gas distributing chambers 12 and 13 (Fig. 1). The members 8 and 9 have inclined faces 14 and 15 which cooperate with the sloping faces 3 and 4 on the central ridge to form a pair of converging slot-type jet passages 16 and 17. The two faces that cooperate to form each jet passage may be substantially parallel, divergent, or convergent, depending upon the desired velocity of the issuing jets. The preferred relation is the convergent relation shown in the drawing.

At the upper edge of the inclined face 14 of the bottom member 8 there is a milled serrated lip 18 which projects towards the ridge 2. The teeth of the lip contact with the sloping face 3 of the ridge. The spaces 19 between the teeth constitute metering ports between the distributing chamber 12 and the jet passage 16. A serrated lip 20 at the upper edge of the inclined face 15 on the other member 9 functions in a



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similar manner to provide metering ports between the distributing chamber 13 and the jet passage 17.

The ends of the distributing chambers 12 and 13 and the ends of the slot-type jet passages 16 and 17 are closed by end plates 21 and 22 (Fig. 2) that fit against opposite ends of the body portion 1 and opposite ends of the two bottom members 8 and 9. The bottom face of each end plate is flush with the bottom faces of the members 8 and 9. The different parts of the tip may be secured together by silver soldering as indicated at 23 or in any other suitable way.

Oxygen and a fuel gas such as acetylene are separately delivered to the distributing chambers 12 and 13 by means of gas passages 24 and 25 in the body portion of the tip (Fig. 1). Pipes 26 and 27 leading to the torch tip supply the gases to these passages. The oxygen passes through one of the slot-type jet passages and the fuel gas passes through the other and the two gases issue at the discharge face of the tip through the slot outlets 28 and 29 at the discharge ends of the jet passages and are brought together and mixed. When ignited they produce a flame jet which extends throughout the length of the torch tip. In Figure 1 the jet passages cause the gases to mix substantially at the plane of the discharge face of the tip. If desired, the crest 5 of the center ridge 2 may be located somewhat above the plane of the discharge face of the tip, in which case the tip would be of the internal mixing type. By providing the ridge 2 with a land at its crest as shown at 30 in Fig. 4, the outlet slots of the jet passages will be spaced apart a distance equal to the width of the land and cause the gases to mix at a region which is spaced away from the discharge face of the tip. In this case the tip is of the external mixing type.

The tip may be used on torches intended for any of the usual heating operations such as welding, descaling, heat-treating metal surfaces and the like.

It will now be seen that the tip is made up by assembling a few parts of simple construction and that no drilling is required to form the gas distributing chambers or the jet passages or their metering ports.

I claim:

1. A torch tip of the block type comprising an elongated block constituting a body portion, the bottom face of the body portion having a central longitudinally extending ridge with converging side faces, a pair of bottom members secured to the body portion at opposite sides of said ridge and forming with the body portion a pair of longitudinally extending gas distributing chambers at opposite sides of the ridge, said bottom members having inclined faces cooperating with the sloping faces of the ridge to form a pair of slot-type jet passages, means for closing the opposite ends of the distributing chambers and the jet passages, and means for supplying different gases separately to the distributing chambers for mixing by the converging jet passages.

2. A torch tip of the block type comprising an elongated block constituting a body portion, the bottom face of the body portion having a central longitudinally extending ridge with converging side faces, a pair of bottom members secured to the body portion at opposite sides of said ridge and forming with the body portion a pair of longitudinally extending gas distributing chambers at

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opposite sides of the ridge, said bottom members having inclined faces cooperating with the sloping faces on the ridge to form a pair of converging jet passages of the slot type, a pair of plates at opposite ends of the tip and serving to close the opposite ends of the distributing chambers and the jet passages, and means for supplying different gases separately to the distributing chambers for mixing by the converging jet passages.

3. A torch tip of the block type comprising an elongated block constituting a body portion, the bottom face of the body portion having a central longitudinally extending ridge with converging side faces, a pair of bottom members secured to the body portion at opposite sides of the ridge and forming with the body portion a pair of longitudinally extending gas distributing chambers on opposite sides of the ridge, said bottom members having inclined faces cooperating with the sloping faces of the ridge to form a pair of slot-type jet passages, a serrated lip at the upper edge of the inclined face of each bottom member, the teeth of the serrated lip contacting with the adjacent sloping face on the ridge so that the spaces between the teeth constitute metering ports at the entrance to the corresponding slot-type jet passage, means for closing the opposite ends of the distributing chambers and the jet passages, and means for supplying different gases separately to the distributing chambers for mixing by the converging jet passages.

4. A torch tip of the block type comprising an elongated block constituting a body portion, the bottom face of the body portion having a central longitudinally extending ridge with converging side faces, a pair of L-shaped bottom members each of which is secured to the body portion with one of its arms abutting against the bottom face of the body portion and with its other arm projecting toward said ridge, the bottom members thus forming a pair of longitudinally extending gas distributing chambers at opposite sides of the ridge, the faces of said L-shaped members adjacent the ridge being inclined and cooperating with the sloping faces on the ridge to form a pair of converging jet passages of the slot type, means for closing the opposite ends of the distributing chambers and the jet passages, and means for supplying different gases separately to the distributing chambers for mixing by the converging jet passages.

5. A torch tip of the block type comprising an elongated block constituting a body portion, the bottom face of the body portion having a central longitudinally extending ridge with converging side faces, a pair of L-shaped bottom members each of which is secured to the body portion with one of its arms abutting against the bottom face of the body portion and with its other arm projecting toward said ridge, the bottom members thus forming a pair of longitudinally extending gas distributing chambers at opposite sides of the ridge, the faces of said L-shaped members adjacent the ridge being inclined and cooperating with the sloping faces on the ridge to form a pair of converging jet passages of the slot type, a serrated lip at the upper edge of the inclined face of each L-shaped member, the teeth of the serrated lip contacting with the adjacent sloping face on the ridge so that the spaces between the teeth constitute metering ports at the entrance to the corresponding slot-type jet passage, means for closing the opposite ends of the distributing



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chambers and the jet passages, and means for supplying different gases separately to the distributing chambers for mixing by the converging jet passages.

6. A torch tip of the block type comprising an elongated block constituting a body portion, the bottom face of the body portion having a central longitudinally extending ridge with converging side faces, a pair of bottom members secured to the body portion at opposite sides of said ridge and forming with the body portion a pair of longitudinally extending gas distributing chambers at opposite sides of the ridge, said bottom members having inclined faces cooperating with the sloping faces of the ridge to form a pair of slot-type jet passages, means for closing the opposite ends of the distributing chambers and the jet passages, and means for supplying gas to the distributing chambers for delivery by them to the jet passages.

7. A torch tip of the block type having two members provided with opposing faces forming a slot-type jet passage, distributing chamber means in communication with said jet passage, a serrated lip at the upper edge of one of said faces, the teeth of the serrated lip contacting with the other face so that the spaces between the teeth constitute metering ports at the entrance to the slot-type jet passage, and means for supplying gas to said distributing chamber means for de-

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livery to the slot passages through said metering ports.

8. A torch tip of the block type having three members, two of said members each having a face disposed opposite a face on the third member to form two slot-type jet passages, a serrated lip at the upper edge of each of the faces of said two members, the teeth of the serrated lips contacting with the opposing faces on said third member so that the spaces between the teeth constitute metering ports at the entrance to each of the slot-type jet passages, and means for supplying different gases for delivery to the slot-type passages through said metering ports, said slot-type jet passages being disposed to mix said gases at substantially the exit of such passages.

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