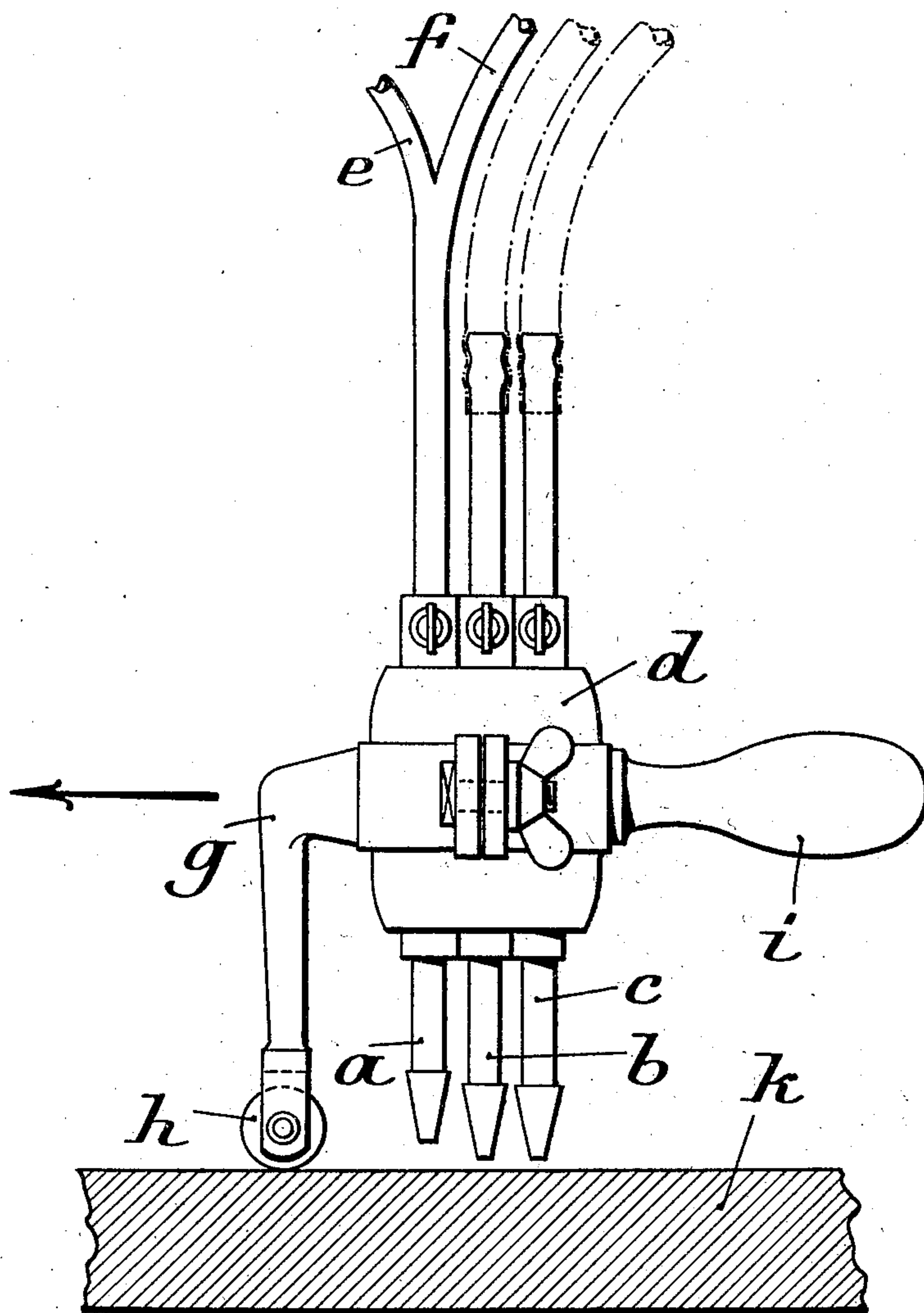


A. TESCHEMACHER & A. STURMO.
 PROCESS FOR CUTTING METAL OBJECTS.
 APPLICATION FILED APR. 6, 1909.

934,235.

Patented Sept. 14, 1909.



WITNESSES

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ALBERT TESCHEMACHER AND ANGELO STURMO, OF ELLER, NEAR DUSSELDORF,
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PROCESS FOR CUTTING METAL OBJECTS.

934,235.

Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed April 6, 1909. Serial No. 488,160.

To all whom it may concern:

Be it known that we, ALBERT TESCHEMACHER, manager, a subject of the German Emperor, residing at 31 Balmstrasse, Eller, near Dusseldorf, Germany, and ANGELO STURMO, foreman, a subject of the King of Italy, residing at Eller, near Dusseldorf, Kirchstrasse, Germany, have invented certain new and useful Improvements in Processes for Cutting Metal Objects; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

In the British specification 28807/1904 a process is described according to which metal objects are cut by means of two blow-pipes connected together and following each other at a small distance which are guided over the object to be cut along the cutting-line. The preceding of these blow-pipes furnishes a reducing heating flame containing oxygen, preferably a mixture of oxygen and hydrogen, whereas the succeeding blow-pipe sends a jet of oxygen upon the object prepared in this manner, whereby the metal is transformed into oxid which is blown away by the effect of the jet of oxygen.

The main purpose of the described process is to obtain perfectly smooth cuts such as are obtained by a saw, and to prevent the fusion of the metal, which occurs in other known processes. In practice, however, it has been found that difficulties are met with in carrying out the described process, when very thick metal objects are to be cut and deep cuts to be made. In cutting such pieces, instead of a narrow slit, an opening will result which enlarges as it becomes deeper. Also the slit advances much less rapidly than in plates of medium thickness so that it is impossible to cut even as much as 20 to 30 cm., in a minute in a thick object. These inconveniences are avoided by the present process and the apparatus which will be described in the following.

In carrying out this process besides the jet of heating gas (hydrogen-oxygen mixture) and the jet of oxygen a separate jet of non-oxidizing or inert gases, hydrogen for instance of the same pressure is conducted onto the piece to be cut. By means of this separate jet the slit is kept equal in breadth from top to bottom, no cavities are

formed by fusion, or parts surrounding the slit melted. The material cut out is burned up altogether and thrown as pure oxid. To carry out the process described a third tube is added to the apparatus behind the pipe for the oxygen.

A burner according to the present invention is shown in the accompanying drawing. The burner consists of three blow-pipes *a*, *b*, *c*, which are connected together by a claw *d*. The first blow-pipe *a* feeds the heating gas, consisting for instance of a mixture of hydrogen-oxygen. The components of the heating gas are fed to pipe *a* through pipes *e* and *f* respectively. Pipe *b* projects a jet of oxygen under pressure, and pipe *c* a jet of an inert or reducing gas, hydrogen for instance.

g is a bifurcated piece, on the lower parts of which guiding wheels *h* are arranged.

i is a handle to operate the burner. When the plate *k* of iron is to be cut the jet of hydrogen-oxygen mixture is first sent alone against the plate and ignited. When the part below pipe *a* has become sufficiently heated, oxygen is fed through pipe *b* and hydrogen through pipe *c*. The burner is then moved over the plate in the direction shown by the arrow. The oxygen flowing through pipe *b* upon the place which has been heated before by the heating flame of pipe *a*, oxidizes the iron which is thrown away by the pressure of the gas, whereas the heating flame of pipe *a* is advanced to heat the part of the plate immediately in front. The same operation is continued as described on moving the burner along the cutting-line. The gas of pipe *c* prevents the iron parts at the sides of the cutting-line being melted away by the oxygen.

With the described process and burner we have cut for instance a plate of steel of about 250 mm. thickness and 1080 mm. in length in 7 minutes, the slit being 8 mm. wide at the top and only 9 mm. at the bottom. Experiments in cutting according to the known process *i. e.* without the employment of a third pipe conducting hydrogen, gave much worse results. It takes much more time to cut the same distance and the cut enlarges more toward the bottom. It would seem therefore that the energy of the gases acts principally sidewise on the walls of the cut instead of in a forward direction as intended.

We claim:

1. Process for cutting metal objects, which consists in projecting onto the piece to be cut along the cutting line a heating flame
5 formed of a mixture of a burning gas with oxygen, then blowing upon the heated part a jet of oxygen followed immediately by a jet of a non-oxidizing gas, substantially as described.

10 2. Process for cutting metal objects, which consists in heating the piece to be cut to the temperature at which the metal will burn in

oxygen and then guiding along the cutting line a jet of oxygen followed by a jet of a non-oxidizing gas. 15

In testimony, that we claim the foregoing as our invention, we have signed our names in presence of two subscribing witnesses.

ALBERT TESCHEMACHER.
ANGELO STURMO. [L. s.]

Witnesses:

OTTO KÖNIG,
PAUL KLEMER.