H. E. SHELDON.

METHOD OF BLUING METAL.

APPLICATION FILED APR. 18, 1904. RENEWED FEB. 14, 1905.

936,821. Patented Oct. 12, 1909.

FIG. 1.

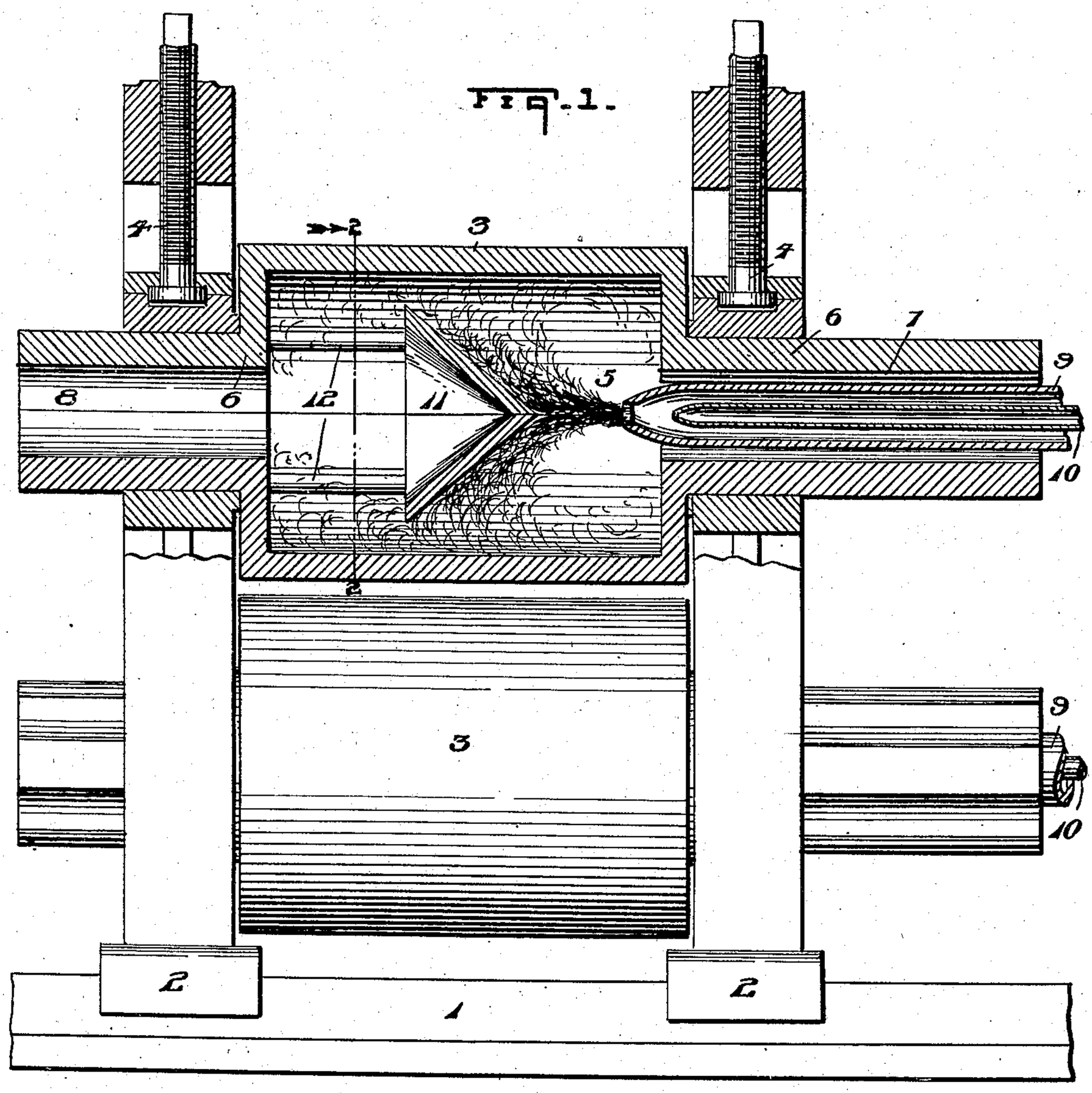
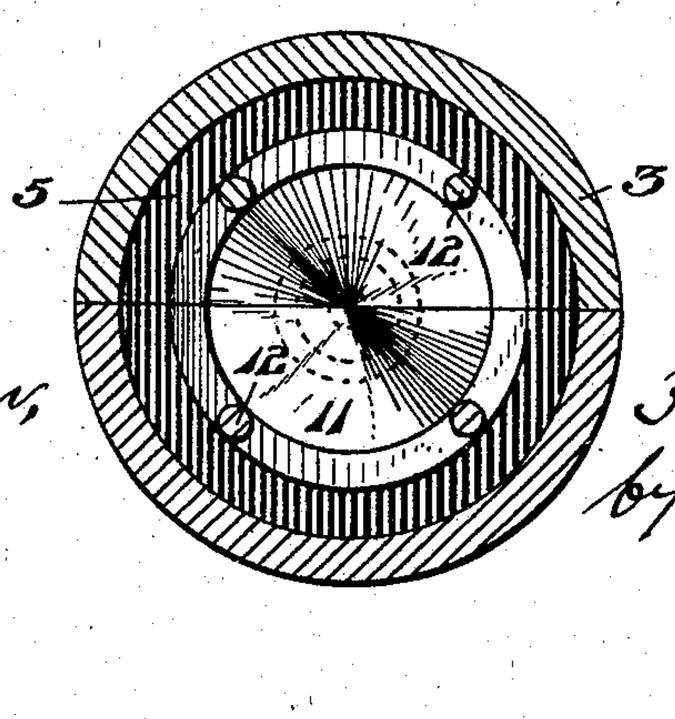


FIG. 2.



WITNESSES:

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METHOD OF BLUING METAL.

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Application filed April 18, 1904, Serial No. 203,616. Renewed February 14, 1905. Serial No. 245,583.

To all whom it may concern:

Be it known that I, HARRY E. SHELDON, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered new and useful Improvements in Methods of Bluing Metal, of which the following is a specification.

My invention relates to the process of producing on sheet metal a highly finished surface possessing the characteristics to a greater or less degree of what is known as Russia or planished iron. Such a surface is dark and somewhat blue and the process of producing such surfaces is often called bluing. Metal finished according to my process has a Russia finish which protects it from the oxidizing action of the air and presents an exceedingly high polish or glossy appearance, making it very pleasing to the eye and attractive to the trade.

There are many processes for oxidizing the surfaces of metal sheets, wherein various chemical re-agents are used and wherein a slow oxidizing of the surfaces is provided. I have discovered that if the plates to be blued are simultaneously heated and pressed, the sheets will have blue polished surfaces. There are many ways by which the pressure and heat may be made to act simultaneously on the sheet.

Out of the many methods by which my process may be performed, I have selected the one now to be described.

Referring to the drawings which form a part of my specification, Figure 1 is a view partially in front elevation and partially in vertical section, showing a pair of rolls by which my method may be performed. Fig. 2 is a section taken on the line 2—2 of Fig. 1 looking in the direction of the arrow.

Describing now my invention in detail, 1 designates one of the usual shoes on which the housings of rolling-mills usually rest. The housings 2, which rest on said shoes, carry two horizontal rolls 3, the upper roll being adjustable vertically in any suitable manner, as by the screw 4.

I make the rolls hollow as shown in Fig. 2 and the upper portion of Fig. 1, which hollow is designated by the numeral 5. The necks 6 of the rolls are hollow as shown on Fig. 1, the right hand hollow being designated 7 and the left hand one 8. In the hollow 7 I place an air conveying tube 9 and within the tube 9 I locate a gas conveying tube 10, the tubes 9 and 10 extending toward the center of the roll 3 and having their inner ends open and arranged in the usual manner of a blow-pipe. Within each roll I provide preferably a conical deflector 11 supported on one end of the hollow 5 by means of the posts 12.

The operation is as follows:—Air is blown through the tube 9 and gas is forced through the tube 10 at such speeds and proportions as to make as complete combustion as possible when the mixed gas and air are ignited. The burning gases as they issue from the mouth of the blow-pipe impinge against the conical exterior surface of the deflector 11, whereby the heat is spread and somewhat detained in that part of the roll where the gases enter. The burning gases escape around the margin of the circular deflector 11 into the other portions of the hollow roll and escape by way of the hollow 8. The rolls are heated to a temperature varying from 400° to 800° C., but at any event the roll must be heated to such a degree that as the plates pass between the rolls under the pressure given to them they will become sufficiently blued. The amount of pressure required will be readily determined for a specific lot of plates as also will the particular degree of heat required. It may be necessary to pass the sheets two or more times between the rolls or between more than one set of rolls arranged in a series or otherwise.

It will be understood that my invention being a process is not limited to any specific apparatus but includes all apparatus which secures the result which I seek by means of pressing the sheet simultaneously with the imparting thereto of a sufficient degree and amount of heat to accomplish the desired result. Therefore, the rolls may be internally heated by other means than that shown as by filling or partially filling the rolls with combustible matter, as charcoal and burning the same with or without a blast of hot or cold air.

Having described my invention what I claim is:—

1. The process of bluing metal sheets which consists in causing a final rolling pressure to progress along the surface of the sheet and heating said sheet as it so progresses to such a temperature as will produce a blue finish thereon.

2. A final step in the process of bluing metal sheets which consists in causing a line of pressure to progress along the surface of the sheet and simultaneously heating said sheet along such line as it so progresses to such a temperature as will produce a blue finish thereon.

Signed at Pittsburg this 11th day of April, 1904.

HARRY E. SHELDON.

Witnesses:
F. N. BARBER,
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