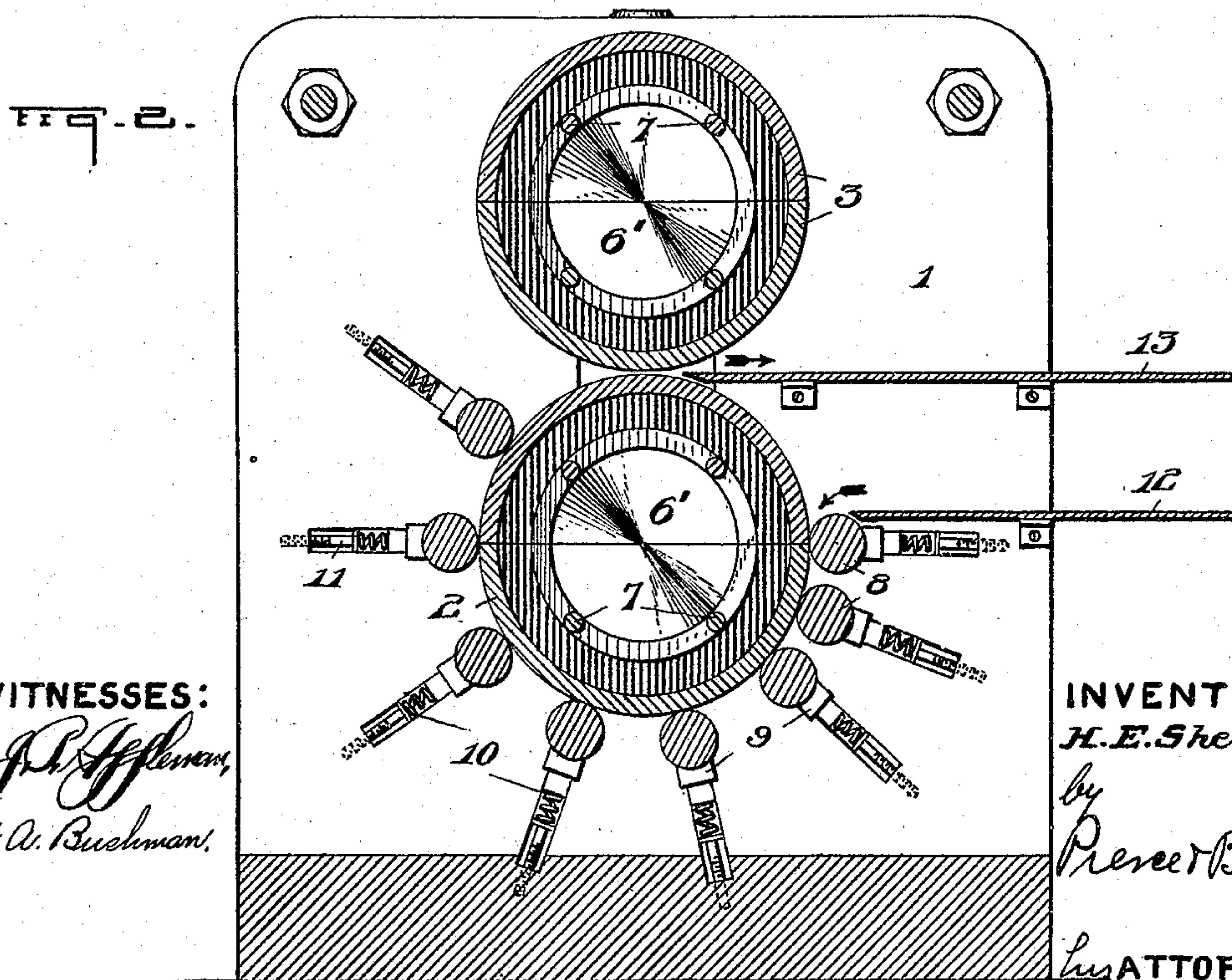
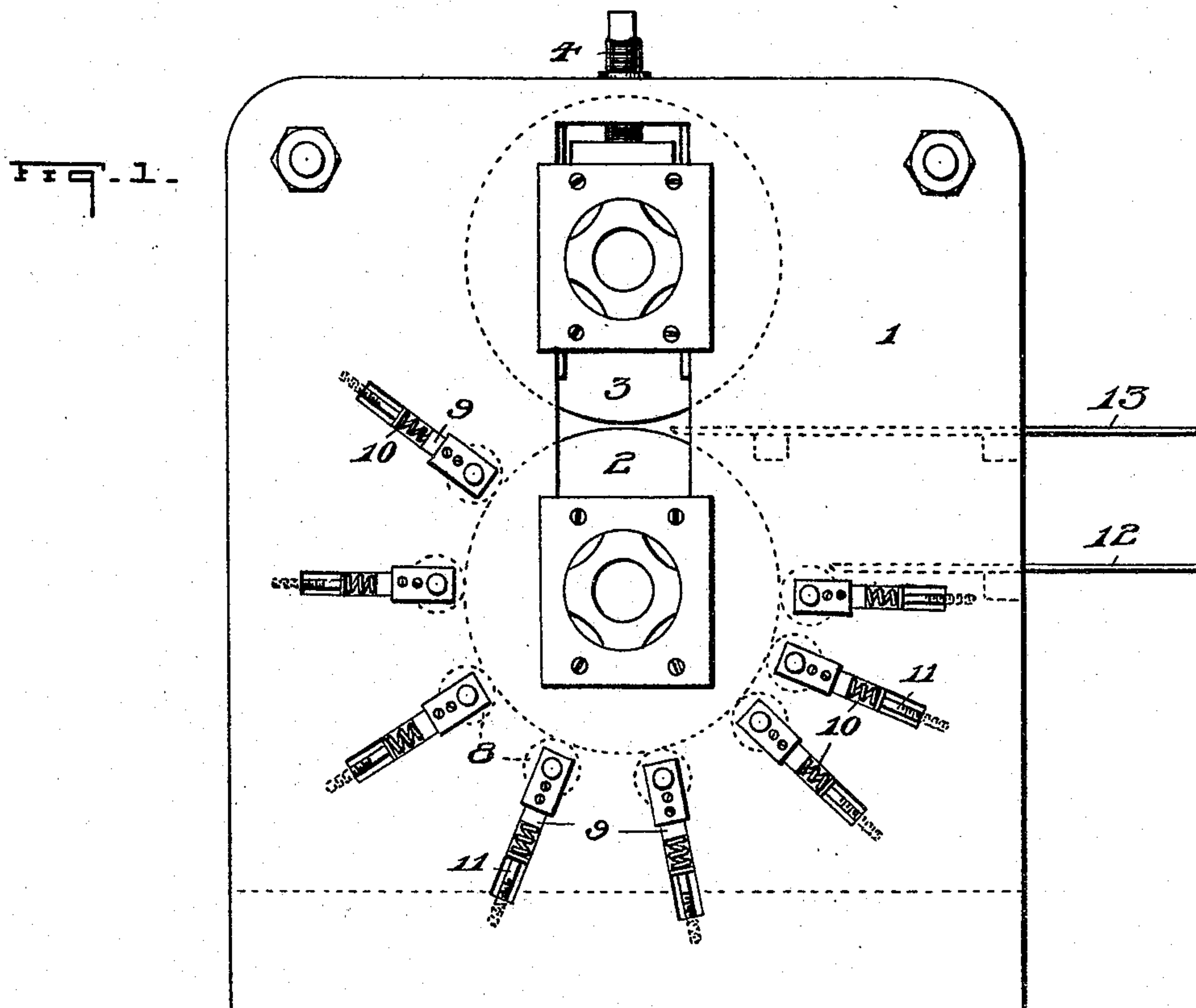


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 APPARATUS FOR BLUING METAL SHEETS.
 APPLICATION FILED DEC. 6, 1904.

932,587.

Patented Aug. 31, 1909.
 3 SHEETS—SHEET 1.



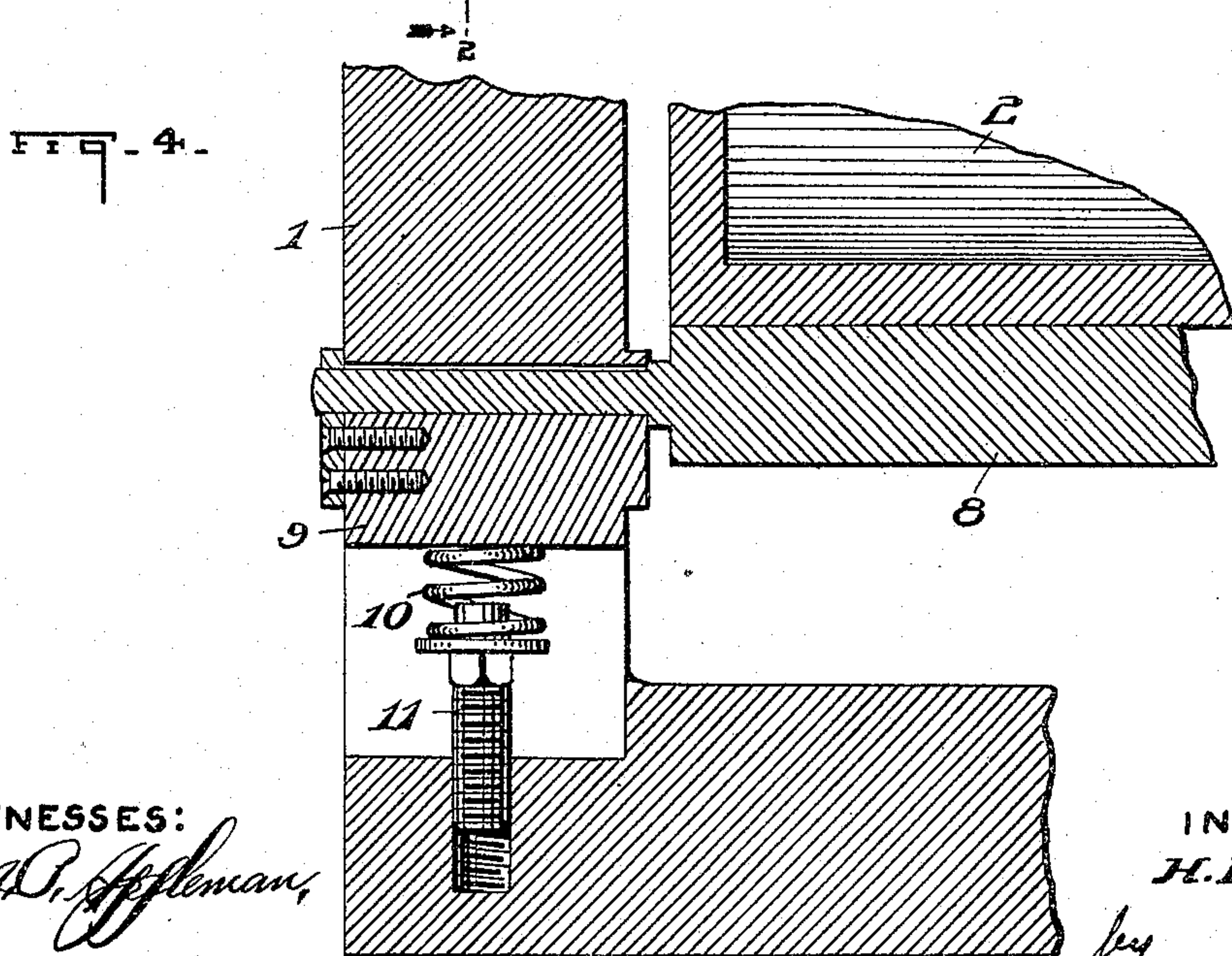
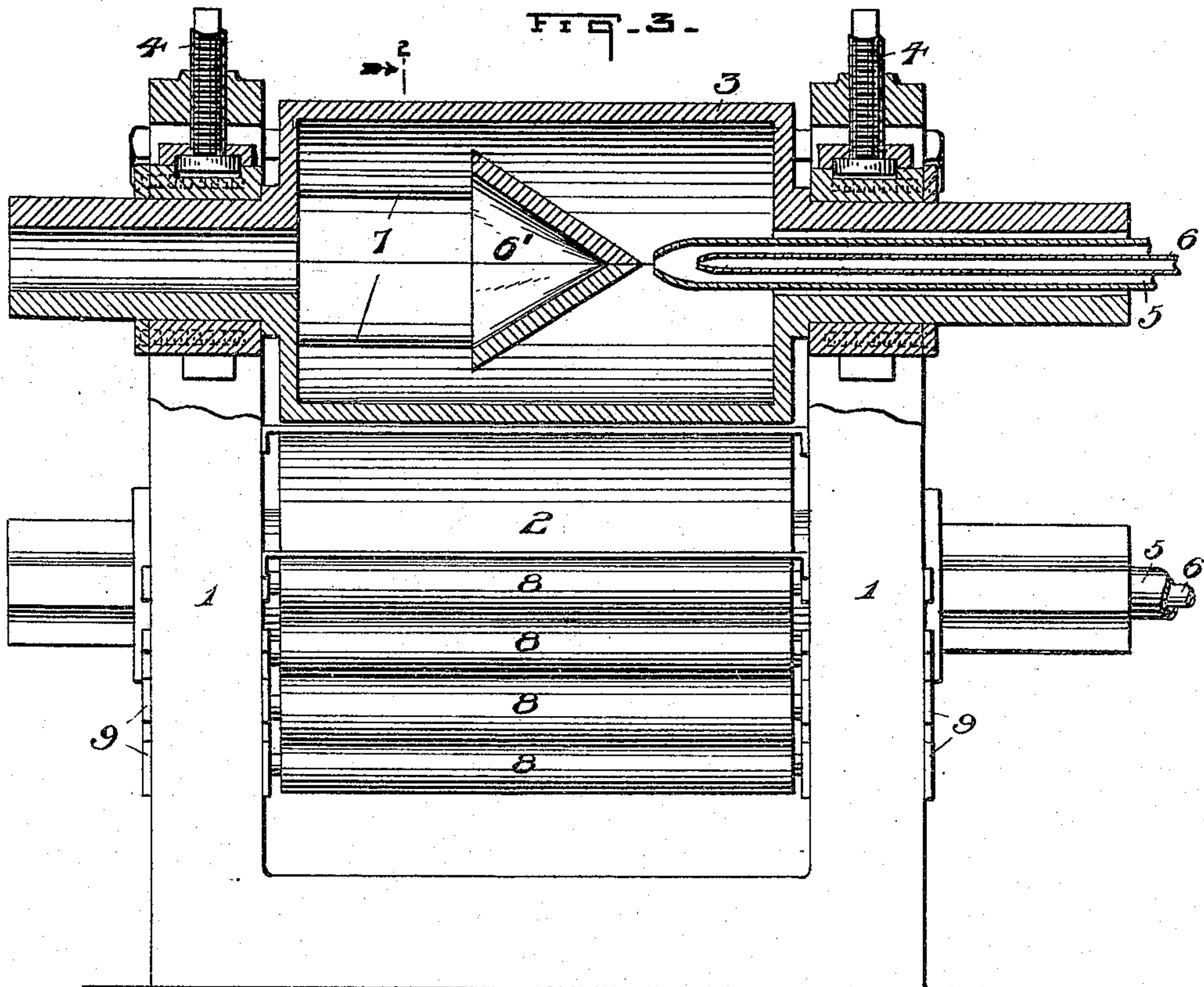
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WITNESSES:

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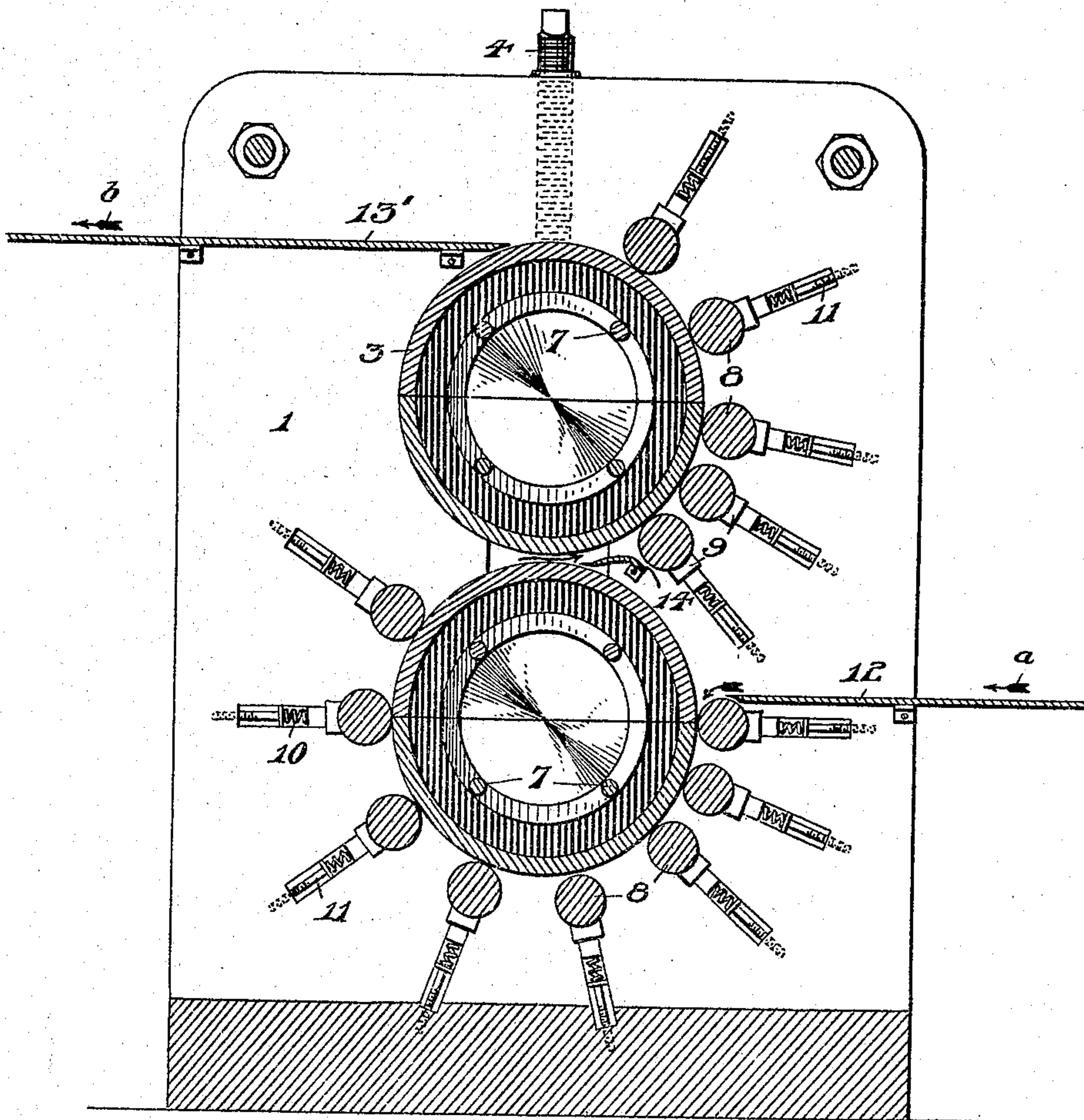
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 3 SHEETS—SHEET 3.

FIG. 5.



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UNITED STATES PATENT OFFICE.

HARRY E. SHELDON, OF PITTSBURG, PENNSYLVANIA.

APPARATUS FOR BLUING METAL SHEETS.

932,587.

Specification of Letters Patent. Patented Aug. 31, 1909.

Application filed December 6, 1904. Serial No. 235,761.

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 Apparatus for Bluing Metal Sheets, of which the following is a specification.

My invention relates to apparatus for bluing metal sheets, and its object is, generally stated, to give to metal sheets a dark, smooth, glossy finish.

Referring to the drawings, Figure 1 is an end view of my invention; Fig. 2, a vertical cross-section thereof; Fig. 3, a combination view, the upper part being in longitudinal vertical section and the lower part in front elevation; Fig. 4, a detail sectional view showing one way of mounting the auxiliary rollers; Fig. 5, view similar to Fig. 2, but showing a modification thereof.

Referring to Figs. 1 to 4, I provide suitable standards 1 in which I mount the two horizontal rolls 2 and 3, the upper one being adjustable vertically toward or away from the lower by screws 4. The rolls 2 and 3 are provided with suitable means for heating them red hot. The means employed may be variously devised and the precise means is by no means important, provided it be efficient for the purpose. I have illustrated the roll 3 on Fig. 3 with one form of heating means. This roll is hollow and has hollow trunnions or necks. Through one trunnion I extend an air tube 5 which incloses a gas tube 6, the two tubes constituting a burner. In front of the burner I arrange a cone 6' with its apex toward the burner. The base of the cone is supported on posts 7. The roll 2 has a burner of the same or any other suitable kind. The cones serve to spread the flame within the rolls, but other means may be devised or no means at all used for this purpose, if desired and found practicable. Around the lower rolls 2 I arrange a series of auxiliary rolls 8, which I have shown solid. They may be heated or not as found best suited to the work required. The rolls 8 are mounted in journal blocks 9 adjustable in slots arranged radially with respect to the rolls 2 and are held up to the rolls 2 or the metal sheets by means of the springs 10 seated between the blocks 9 and the end of the screws 11 adjustable in the standards 1. At one side of the rolls 2 and 3 I provide two

feed the sheets in the pass between the roll 2 and the leading auxiliary roll 8 and the latter to receive the sheets as they pass through the rolls 2 and 3. The sheets pass from table 12 around the roll 2 and between the latter and the rolls 8, finally passing between the rolls 2 and upon the table 13. The arrows on Fig. 2 show the course of the sheet.

The sheets after being thoroughly cleaned are fed in the manner described, the large rolls being at a red heat. I have found that if the roll 3 be omitted or raised so as to be out of use, the sheets will have a good mottled finish suitable for use, but I have found that I get a more uniform finish or blued surface when the rolls 2 and 3 cooperate on the sheets. I am also able to produce a fair product by the use of the two rolls 2 and 3 alone.

An advantage of the present apparatus is in having feeding and receiving tables both on the same side of the rolls, as one workman can both feed and carry away the sheets, which he could not do where the two tables are on opposite sides thereof.

In the construction shown in Fig. 5, the sheets are fed in as shown by the arrow *a* around the roll 2, as in Fig. 2, and then between the roll 3 and a set of rollers 8 arranged about a portion thereof. After the sheets leave the upper roller 8, they pass into the receiving table 13' as indicated by the arrow *b*. The guide 14 strips the sheets from the roll 2 just after they have passed between the rolls 2 and 3 and directs them into the pass between the roll 3 and the rollers 8.

The apparatus shown in Fig. 5 provides for a longer pressure and contact of the sheets with the hot rolls and delivers the sheets in a more advantageous position for manipulation in a continuous mill where the sheets are to be handled by other persons beside the feeder.

Having described my invention, I claim:—

1. As a complete machine, an apparatus for bluing metal sheets consisting of means at the feeding-out terminus of the apparatus for producing a line of pressure upon a portion thereof and causing the said line of pressure to travel over the sheets and means for heating the sheets at the said line so as to become sufficiently hot to blue the said sheets.

2. As a complete machine, an apparatus for bluing metal sheets consisting of means at the feeding-out terminus of the apparatus for producing a line of pressure upon a por-

tion thereof and causing the said line of pressure to travel over the sheets and means for heating the pressing means, whereby the sheets become sufficiently hot at the said line
5 to blue the said sheets.

3. As a complete machine, an apparatus for bluing metal sheets consisting of a pair of rolls constituting a feeding-out terminus of the machine, and means for heating the same
10 to such a degree that when metal sheets are fed therebetween they will have a Russia finish.

4. In an apparatus for bluing metal sheets a pair of sheet working rolls, means for heating the rolls and a series of auxiliary pressure
15 rolls arranged to form a pass around one of the pair of sheet-working rolls and to hold the sheets close to the said sheet-working roll, whereby they will absorb sufficient heat
20 from the said one sheet-working roll to assist the pair of sheet-working rolls to blue the sheets.

5. In an apparatus for bluing metal sheets a pair of sheet working rolls, means for heat-

ing the rolls internally, and a series of aux- 25
iliary pressure rolls arranged to form a pass around one of the pair of sheet-working rolls and to hold the sheets close to the said sheet-working roll, whereby they will absorb sufficient heat from the said one sheet-working
30 roll to assist the pair of sheet-working rolls to blue the sheets.

6. In an apparatus for bluing metal sheets a hollow roll, a conical deflector in front of the heat producing means for producing heat
35 therein and means for distributing the heat therein.

7. In an apparatus for bluing metal sheets, a hollow roll, means for heating the same evenly, and means for retaining the sheets in
40 contact with the roll for a substantial portion of its circumference.

Signed at Pittsburg, this second day of December, 1904.

HARRY E. SHELDON

Witnesses:

F. N. BARBER,
M. A. BUSHMAN.