

No. 636,239.

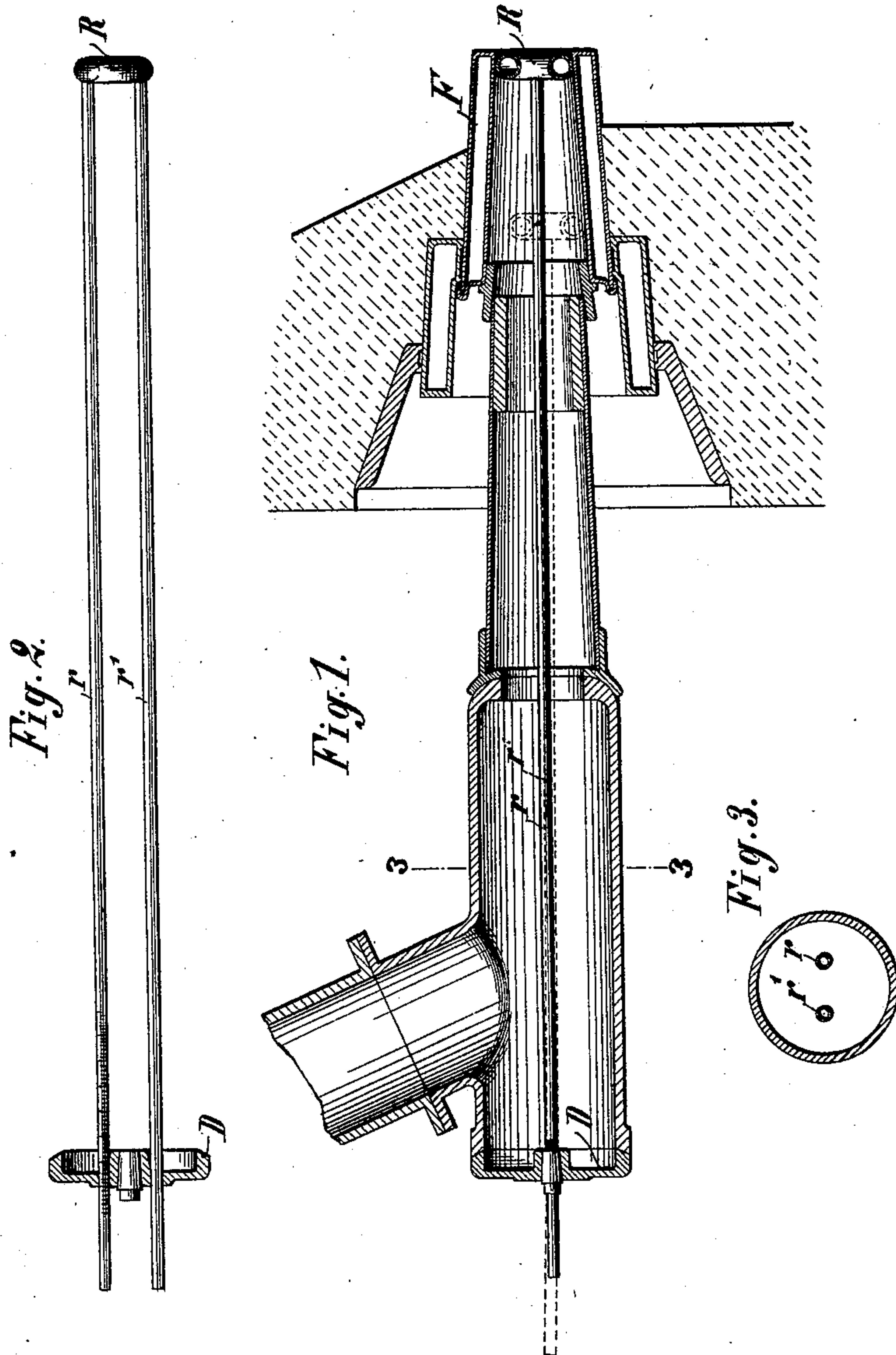
Patented Nov. 7, 1899.

P. BENNI.

APPARATUS FOR REGULATING DISCHARGE AREA OF FURNACE TWYERS.

(Application filed July 16, 1898.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

PAUL BENNI, OF OSTROWIEC, RUSSIA.

APPARATUS FOR REGULATING DISCHARGE AREA OF FURNACE-TWYERS.

SPECIFICATION forming part of Letters Patent No. 636,239, dated November 7, 1899.

Application filed July 16, 1898. Serial No. 686,122. (No model.)

To all whom it may concern:

Be it known that I, PAUL BENNI, a subject of the Czar of Russia, residing at Ostrowiec, in the Empire of Russia, have invented certain new and useful Improvements in Apparatus for Regulating the Area of Free Inlet in Air-Tubes for Furnaces, (for which I have applied for patents in England, dated June 4, 1898, No. 12,570; in France, dated June 6, 1898, No. 266,416; in Belgium, dated June 6, 1898, No. 106,250; in Sweden, dated June 4, 1898, No. 912, and in Germany, dated May 31, 1898,) of which the following is a specification.

15 The present invention relates to an apparatus for the regulation of the area of free inlet in air-tubes for furnaces.

The apparatus obviates very considerable inconvenience, because, as is well known, the alteration of the area of the blast-inlets is necessary at intervals from twice monthly to once weekly in order to secure the regularly satisfactory operation of the blast-furnace. This operation is under the present conditions—
25 namely, the changing of the cast-iron lining—only attainable by stopping the blast-furnace for from half an hour to two hours. This stoppage, however, again causes irregularity in the working of the blast-furnace, and consequently reduction in the production. On this account the frequent alteration of the inlet area is often omitted and the importance of it disputed.

My invention remedies all the drawbacks and renders necessary neither a stoppage of the blast-furnace nor any inconveniences in the operation, because the alteration can be effected without difficulty by hand.

Referring to the accompanying drawings,
40 Figure 1 shows the apparatus as constructed for blast-furnaces in section, and Fig. 2 is a sectional view of the regulating device. Fig. 3 is a cross-section transverse to the length of the cooling-tubes.

45 In the nozzle F of the blast-furnace twyer of ordinary construction is placed a hollow ring R. This ring is provided with the tubes

r and r' , which pass through the cover D of the inlet and serve to convey water to the ring R. This water flows through the tube 50 of the ring R into the hollow of the ring and flows out through the tube r' . The ring R, with its tubes r and r' , can be adjusted in the nozzle of the twyer and can be moved backward or forward, as desired. Its outside diameter is equal to the smallest internal diameter of the conical twyer-nozzle, and consequently the ring when in the end position shown in the drawings will fill the nozzle and there will remain as free aperture for the 60 blast only the opening of the ring. If, however, the ring is drawn farther back—as, for instance, into the position shown in dotted lines in the drawings—the free area of inlet for the blast will be increased by the amount 65 of the space between the inside of the nozzle and the outer periphery of the hollow ring. This space is the greater the farther the ring is drawn back and can be altered from zero to a maximum, which latter is substantially indicated by the position of the ring shown in 70 dotted lines, the said ring R being moved backward or forward by means of the water-tubes.

The total area of free inlet corresponding 75 to each position of the hollow ring is shown on a scale which is attached to the tube r near the covering-lid D.

What I claim, and desire to secure by Letters Patent of the United States, is— 80

In an adjustable twyer the combination of a tapered nozzle or inlet, a hollow annulus of size to fit and partially close the nozzle or inlet, and combined adjusting and cooling pipes movable substantially longitudinally of 85 the said nozzle or inlet, and secured to the said annulus, and guides through which the said pipes pass substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two witnesses. 90

PAUL BENNI. [L. S.]

Witnesses:

HERMAN

KAROL BUGDAN.