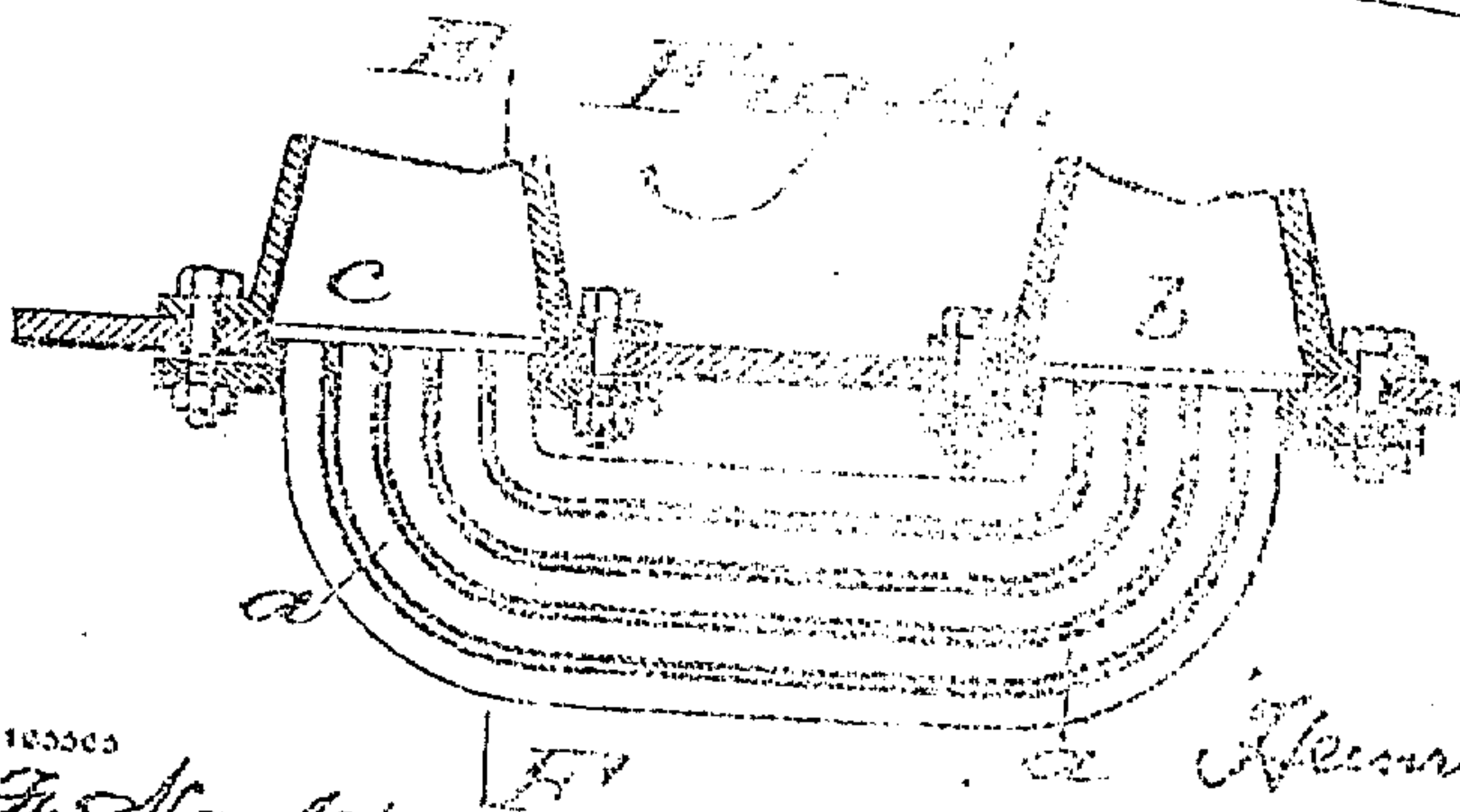
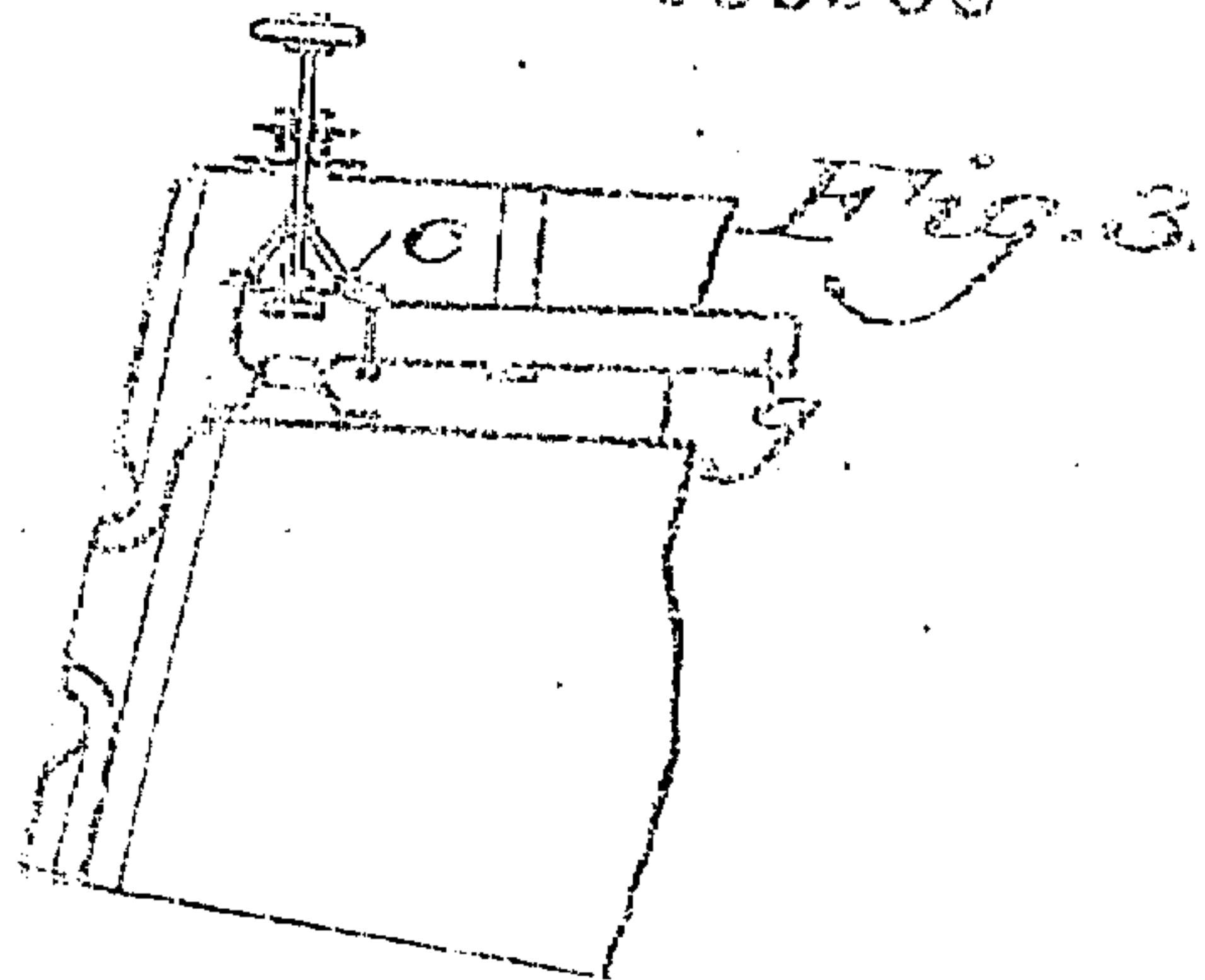
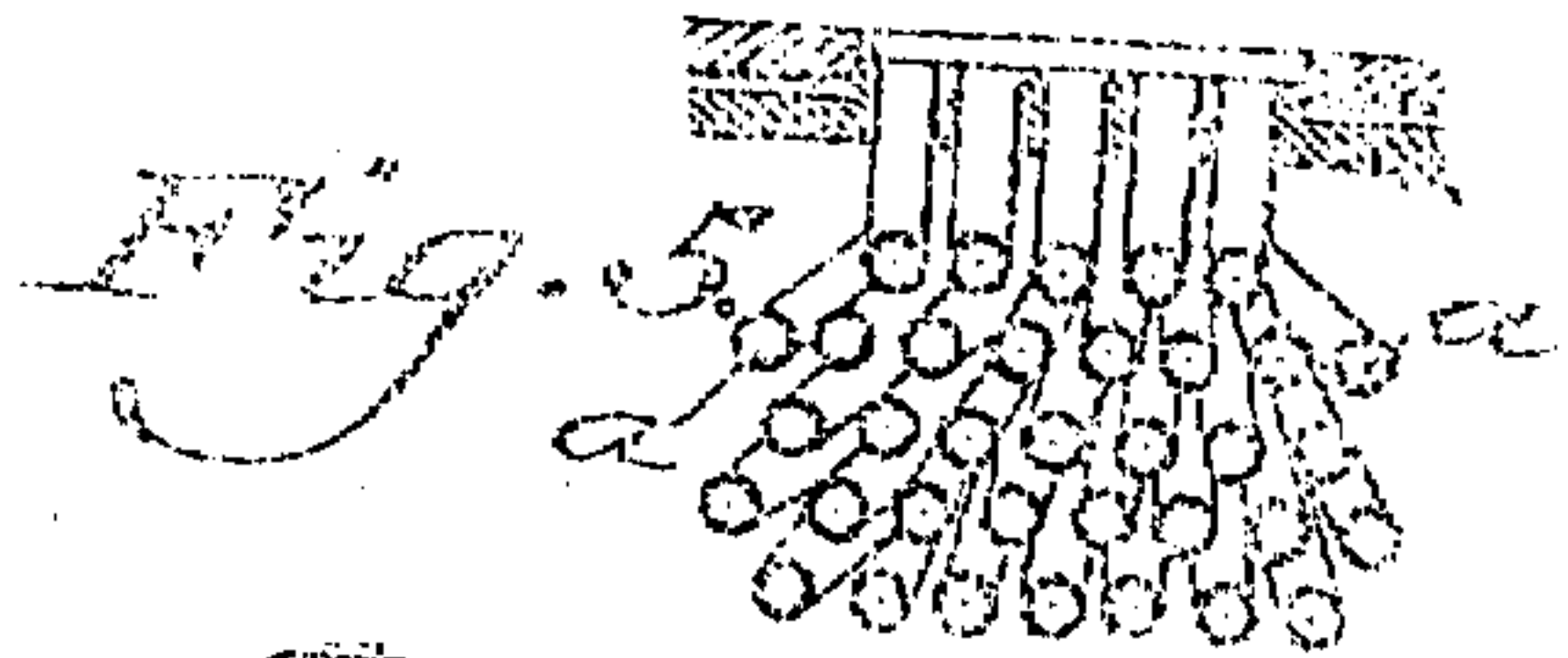
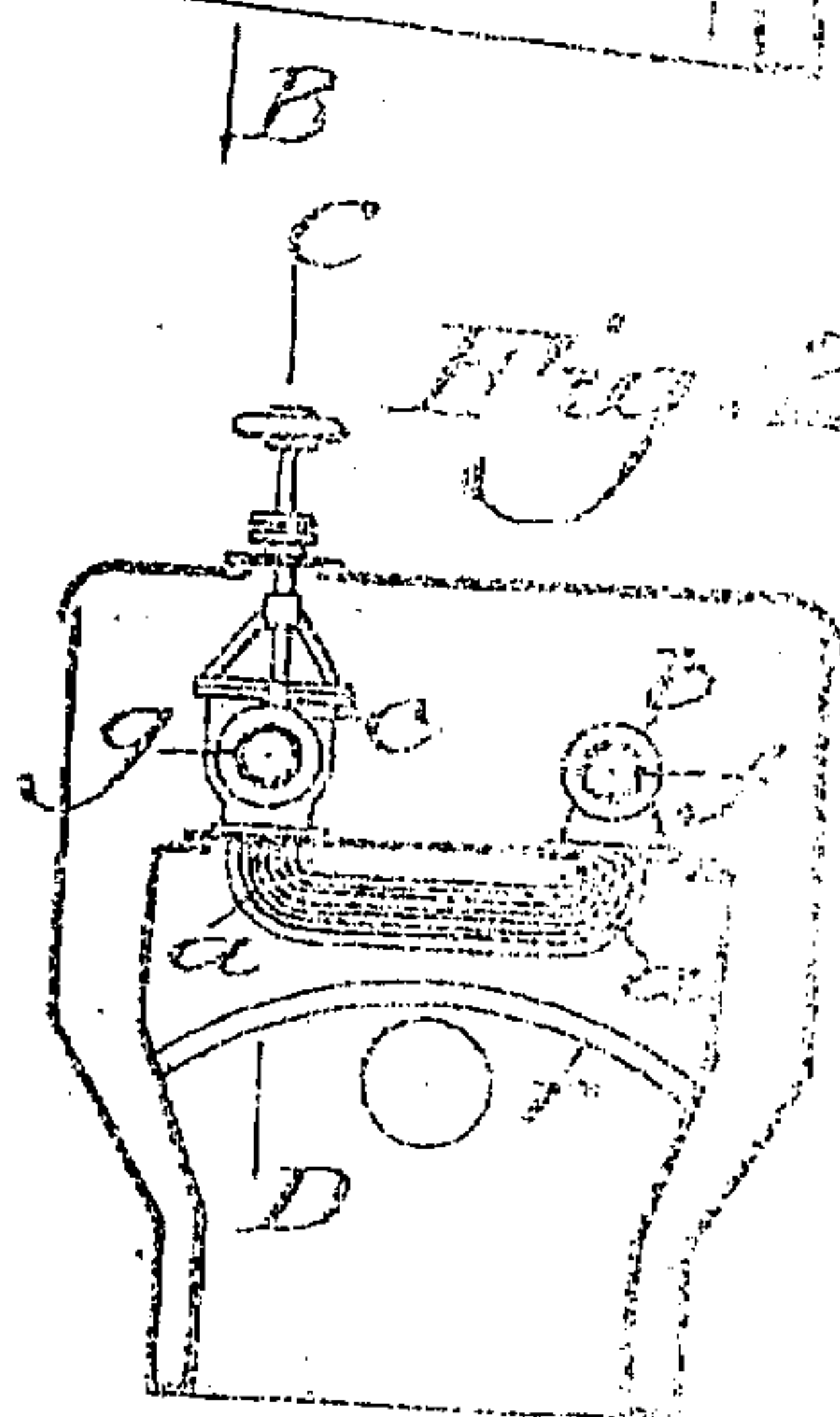
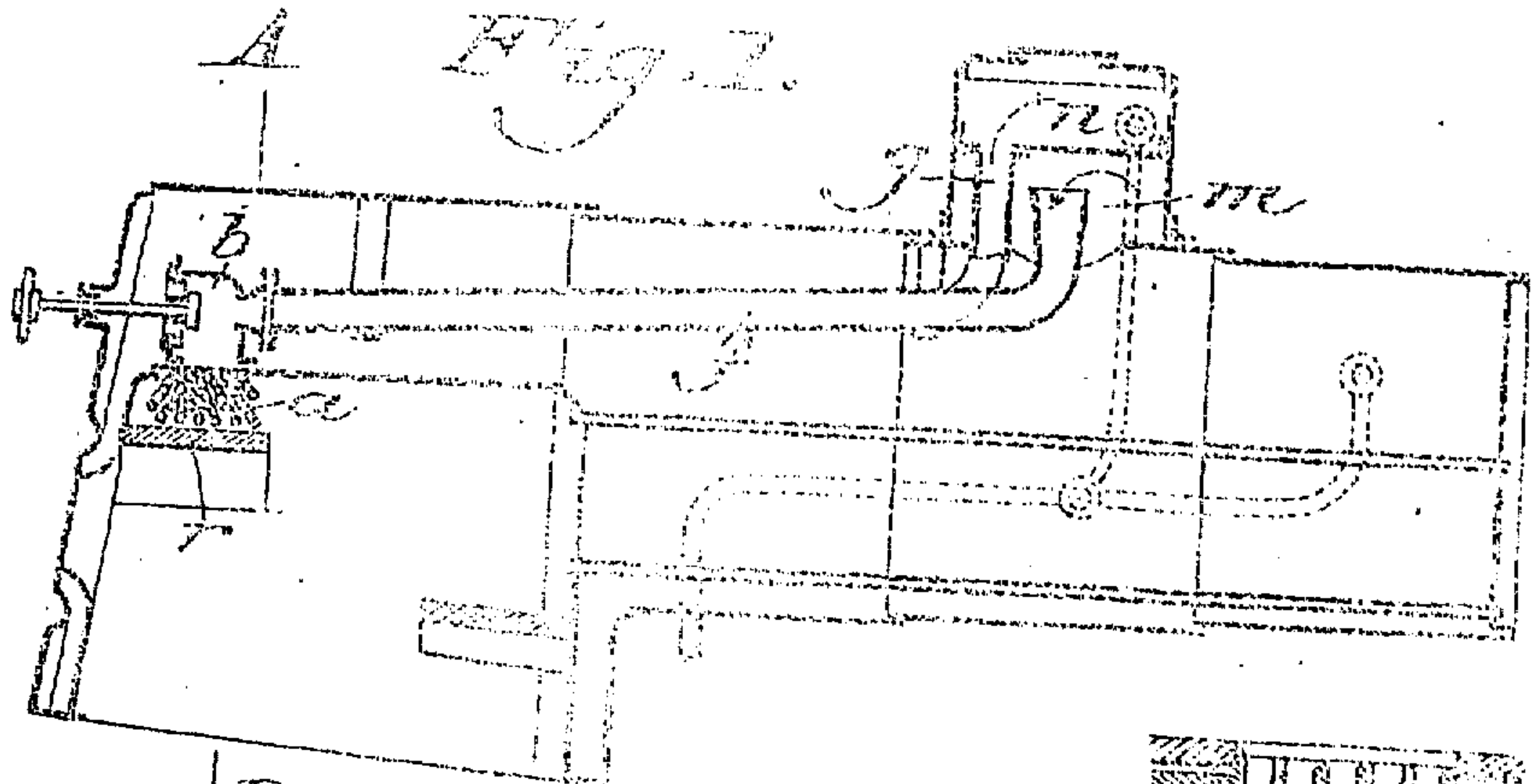


No. 843,842.

PATENTED FEB. 5, 1907.

H. LANGER.
SUPERHEATER.
APPLICATION FILED DEC. 5, 1906.



Witnesses
P. H. Nagle.
C. S. McVay

Inventor
Hennrich Langer,
By
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Attorneys

UNITED STATES PATENT OFFICE.

HEINRICH LANGER, OF VIENNA, AUSTRIA-HUNGARY.

SUPERHEATER.

No. 843,342

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed December 5, 1905. Serial No. 290,431.

To all whom it may concern:

Be it known that I, HEINRICH LANGER, engineer, a citizen of the Empire of Austria, residing at Vienna, Austria, have invented certain new and useful Improvements in Superheaters for Locomotives and Locomotive-Boilers, of which the following is a specification, reference being had therein to the accompanying drawings.

My present invention relates to superheaters adapted to be located in the fire-box of locomotives or locomotive-boilers, and consists of a novel construction of a superheater in which the tubes forming the same are assembled and correlated in a novel manner, said tubes in the present instance being located in a portion of the fire-box which is outside of the jet flames.

My invention farther consists of other novel features of construction, all as will be fully hereinafter set forth.

In Figure 1 of the accompanying drawings a boiler provided with the superheater is illustrated in longitudinal section. Fig. 2 is a section on the line A B of Fig. 1. Fig. 3 is a section on the line C D of Fig. 2. Figs. 4 and 5 show the superheater separately in longitudinal section and in vertical section on the line E F of Fig. 4.

On the cover of the fire-box a bundle of tubes *a* is arranged next to the fire-door transversely of the boiler, Fig. 4. The cut-off and regulating-valves *b* and *c* of the superheater are arranged in prolongations upon both sides of this latter. The superheater is protected from the direct action of the fire by providing beneath it a chamotte arch *r*, or it may be directly covered with refractory material. The remainder of the arrangement is preferably such that the wet steam is taken at an appropriate part of the wet-steam chamber *m* and conducted to the superheater *a*, through a pipe *f*, inclined relatively thereto. From the superheater *a* the steam passes through a second pipe *g*, running parallel with the pipe *f*, into a chamber *n*, separated from the wet-steam chamber. It then passes, in the known manner, through the regulator to the slide-valve chest. If the superheater is filled with wa-

ter before the boiler-furnace is kindled, it likewise serves to hasten the generation of steam.

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

1. In a device of the character described, a fire-box, a boiler, a superheater located in the rear of the angle of said fire-box and removed from the direct action of the flame, refractory material intermediate said fire-box and said superheater, and connections between said superheater and said boiler.

2. In a device of the character described, a fire-box, a boiler having a plurality of chambers, a superheater located above said fire-box, refractory material between said fire-box and said superheater, a conduit leading from said superheater to one of said boiler-chambers; and a conduit leading from said superheater to the other of said chambers.

3. In a device of the character described, a fire-box, a boiler having a plurality of chambers, a superheater located above said fire-box, refractory material between said fire-box and said superheater, a conduit leading from one of said chambers to said superheater, a valve therefor, a conduit leading from the other of said chambers, and a valve for the last-mentioned conduit.

4. In a device of the character described, a fire-box, a boiler having a plurality of chambers, superheater-tubes located above said fire-box, refractory material between said fire-box and said superheater-tubes, a valved conduit leading from one of said boiler-chambers and communicating with said tubes, and a valved conduit leading from the other of said boiler-chambers and communicating with said superheater.

5. In a device of the character described, a fire-box, a boiler having a plurality of chambers, superheater-tubes located above said fire-box and transversely of said boiler, refractory material between said fire-box and said superheater-tubes, a valved conduit leading from one of said boiler-chambers and communicating with said tubes, and a valved conduit leading from the other of said boiler-chambers and communicating with said superheater.

6. In a steam-superheater for locomotive
and locomobile boilers, a fire-box, a boiler,
an assemblage of superheater-tubes located
in the rear upper angle of the fire-box and re-
5 moved from the direct action of the flames,
and connections leading from said super-
heater-tubes to said boiler.

In testimony whereof I hereunto affix my
signature in presence of two witnesses.

HEINRICH LANGER.

Witnesses:

FRIEDRICH BINDER,
ALVESTO S. HOGUE.