

(No Model.)

T. REED & J. HOLLOWAY.

ROLL FOR ROLLING MILLS.

No. 344,403.

Patented June 29, 1886.

FIG. 1.

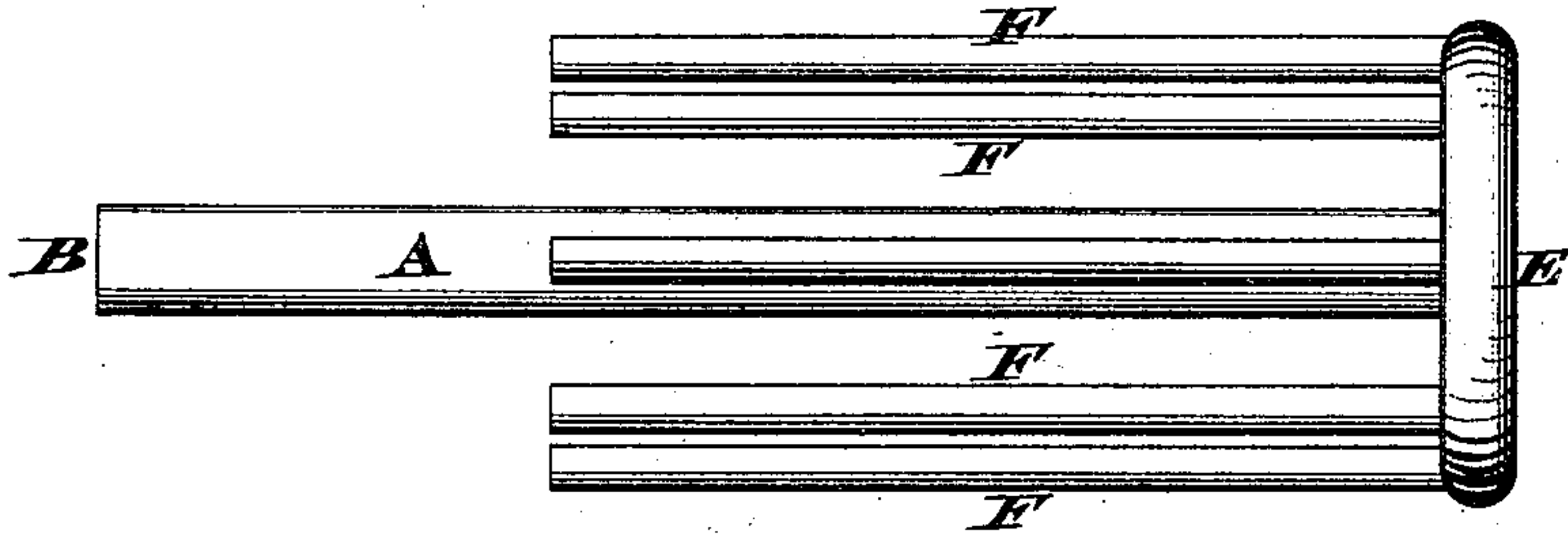


FIG. 3.

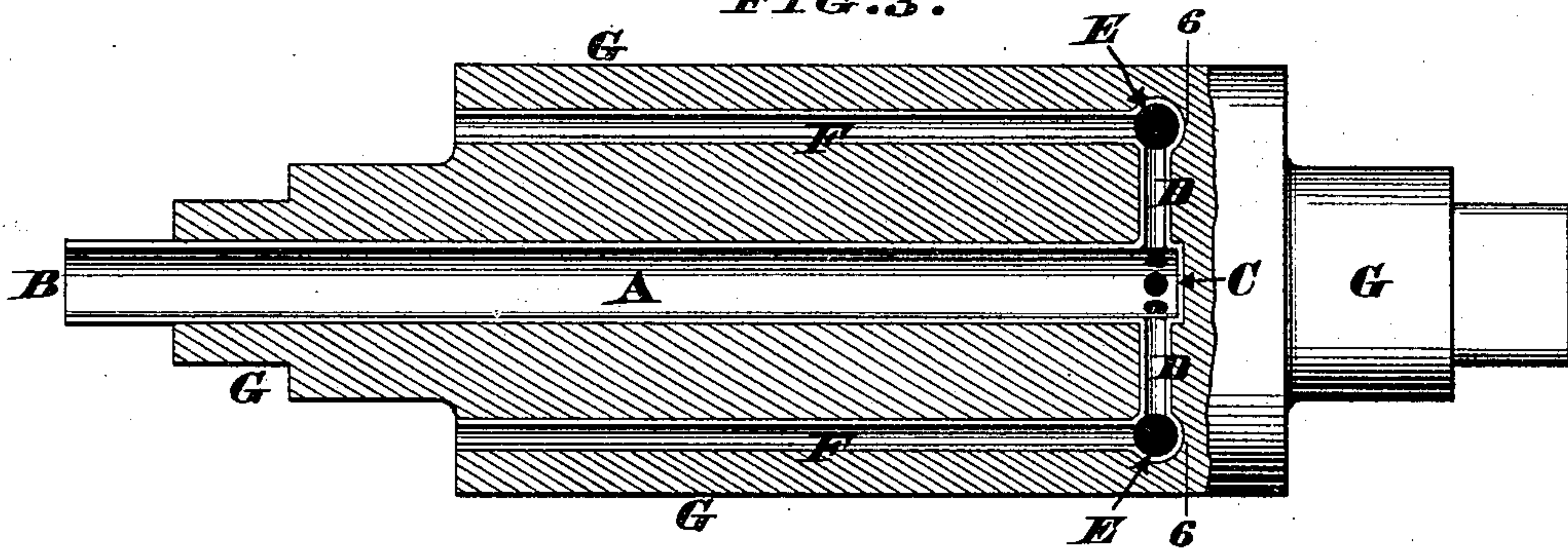


FIG. 2.

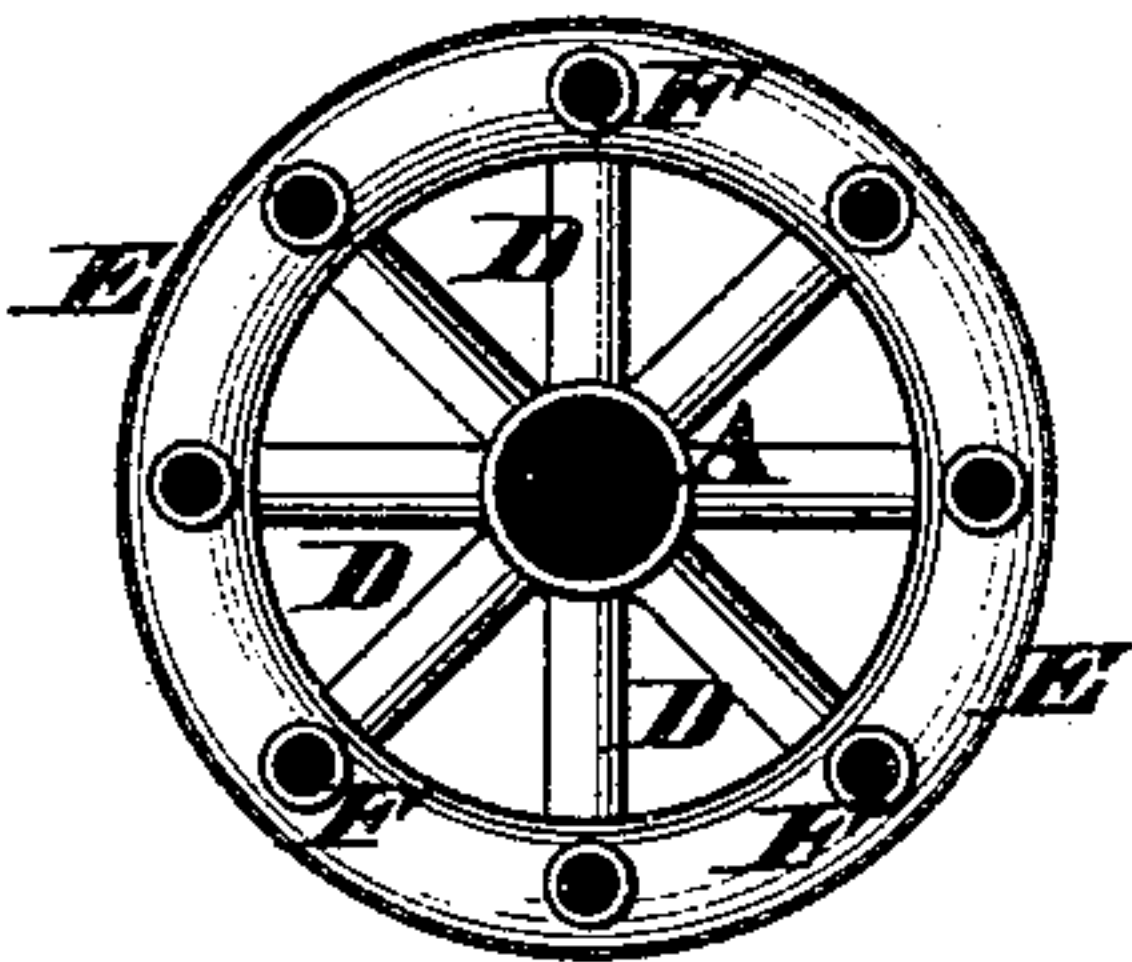


FIG. 4.

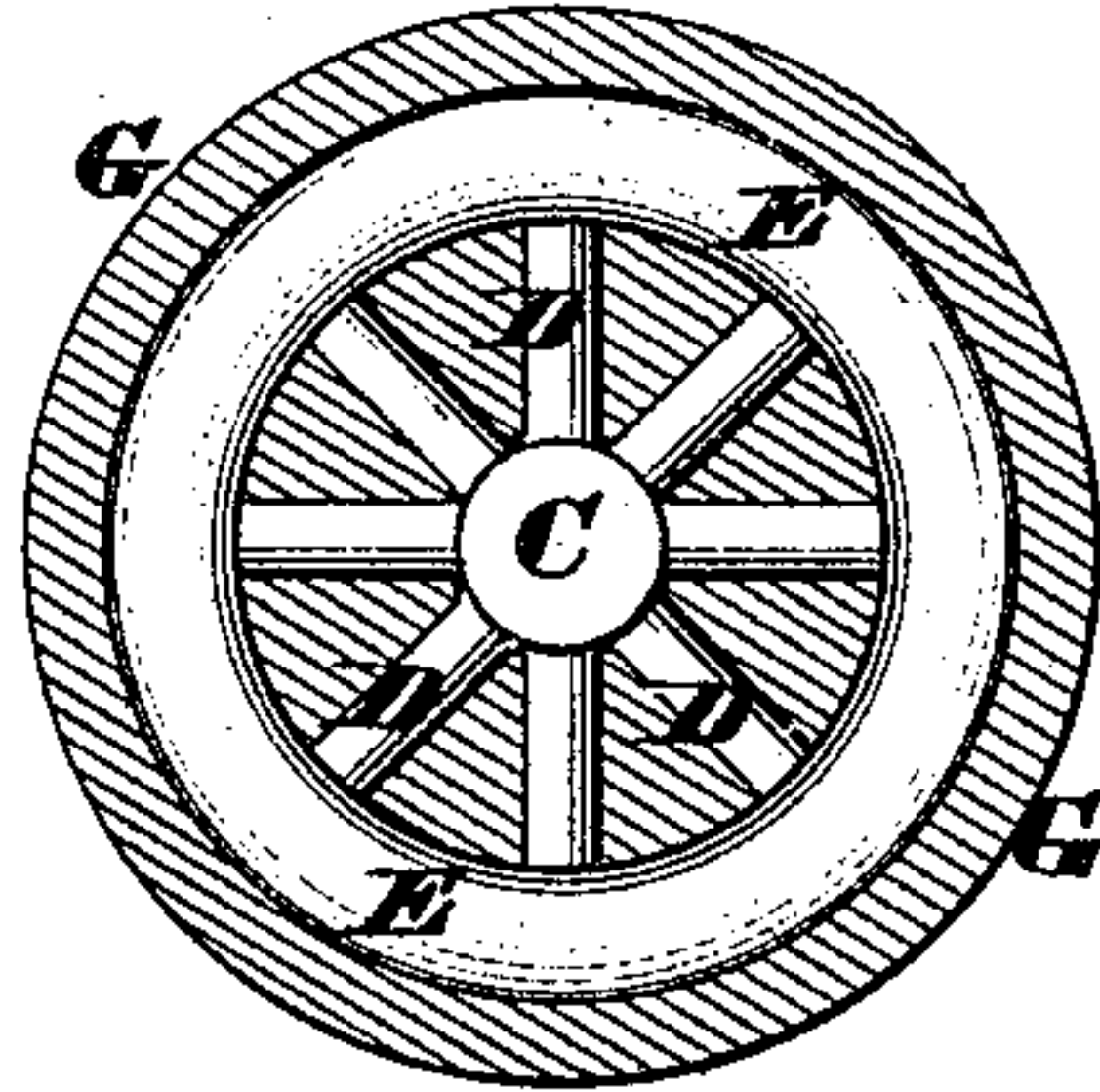
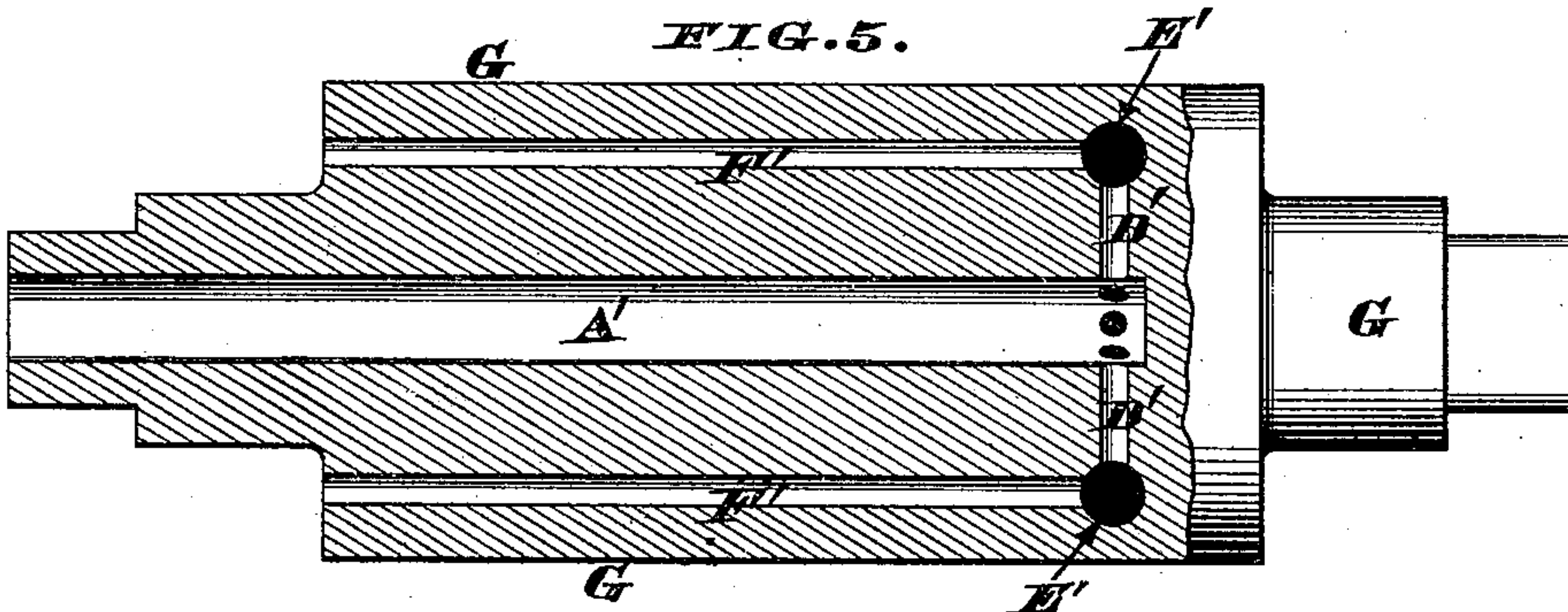


FIG. 5.



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# UNITED STATES PATENT OFFICE.

THOMAS REED AND JEREMIAH HOLLOWAY, OF COVINGTON, KENTUCKY.

## ROLL FOR ROLLING-MILLS.

SPECIFICATION forming part of Letters Patent No. 344,403, dated June 29, 1886.

Application filed March 20, 1886. Serial No. 196,040. (No model.)

*To all whom it may concern:*

Be it known that we, THOMAS REED and JEREMIAH HOLLOWAY, both citizens of the United States, residing at Covington, in the county of Kenton, State of Kentucky, have invented certain new and useful Improvements in Rolls, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to those rolls which are provided with internal channels for the passage either of air, steam, or water, where-with the casting is maintained at any suitable temperature; and the first part of our im-  
15 provements comprises a novel arrangement of such channels. Of these channels our main or inlet passage occupies the axis of the roll and is open at one end, but closed at the other end, where a series of radial or lateral pas-  
20 sages communicate with said inlet. These radial passages lead into an annular chamber, and the latter communicates with a series of return or branch channels running longitudi-  
25 nally of the roll and as near its periphery as the strength of the metal will permit. By this arrangement the tempering-current is first in-  
troduced along the axis of the roll, is then dis-  
persed outwardly, and finally escapes through the return or discharge passages, as herein-  
30 after more fully described.

The second part of our improvements con-  
sists in forming these various channels, pas-  
sages, &c., by a series of connected pipes or  
35 tubes, which pipes are placed in a mold, and the roll is then cast around them, as herein-  
after more fully described.

In the annexed drawings, Figure 1 is a side  
elevation of the aforesaid system of connected  
pipes. Fig. 2 is an enlarged end elevation  
40 thereof. Fig. 3 is an axial section of a roll  
cast around the pipes. Fig. 4 is a transverse  
section of said roll, taken at the line 6 6 of the  
preceding illustration. Fig. 5 is an axial sec-  
tion of a modification of our invention.

45 A represents a main pipe or tube open at  
the end B, but closed at the opposite end, C,  
where a series of smaller tubes, D, radiate  
from said main pipe. These radial tubes D  
communicate with a hollow ring or annulus,  
50 E, provided with branch pipes F. These  
branches are about parallel with the main pipe

A, but somewhat shorter than the latter, and  
their exposed ends are open, as seen in Fig. 3.  
Of these branches, as many may be used as  
circumstances suggest, from eight to twelve  
55 being employed for an ordinary sized roll.  
After these pipes have been securely fastened  
together, they are hung vertically within a  
suitable mold, and the roll G, (seen in Fig.  
3,) is cast around them. As a result of this  
60 procedure, the main pipe A occupies an axial  
position within the roll, while the hollow ring  
E is located near one end of the same; but the  
branch pipes F are comparatively near the pe-  
riphery of the roll, and the exposed ends of  
65 said pipes are seen at the end of the latter  
most remote from the hollow ring E. Fur-  
thermore, Fig. 4 shows that the metal compos-  
ing the roll completely surrounds the ring and  
the radial arms, thereby rendering the casting  
70 as rigid as though it were solid.

After the roll has been properly turned  
down it is journaled in a pair of housings in  
the usual manner, and it is at once ready for  
use as soon as a hose or other suitable connec-  
75 tion is coupled to the open end B of pipe A.

If the weather should be very cold, a cur-  
rent of steam or warm air can be first admitted  
through the pipe A for the purpose of gradu-  
ally heating the roll preparatory to using the  
80 same; but as soon as the hot bars, plates, or  
sheets are passed between the rolls the steam  
or heated air can be shut off and cold air or  
water be discharged through the various chan-  
nels to prevent the casting becoming too highly  
85 heated. Whether hot or cold air or steam or  
other vapor be employed the action is the  
same—that is to say, the air or water first  
traverses the axial pipe A, then flows through  
the radial tubes D into the hollow ring E, from  
90 which latter it escapes along the branch pipes  
F, and is finally discharged at the exposed  
ends of the latter. It will thus be seen that  
the cooling or warming of the roll first begins  
at the very axis of the same, and then pro-  
95 ceeds toward its periphery, thereby rendering  
the process a gradual and uniform operation  
and preventing the casting from becoming in-  
jured by suddenly changing the temperature  
of the same.

The above is a description of the preferred  
construction of our rolls; but it is evident the



details may be modified without departing from the spirit of the invention.

An obvious modification is seen in Fig. 5, where all the pipes, &c., are omitted, and channels A', D', E', and F' are substituted therefor, said channels being formed by casting the roll around cores which latter are subsequently removed.

We claim as our invention—

- 10 1. A roll provided with an axial inlet-channel, A', open at one end, but closed at the other end, where a series of passages, D', proceed from said inlet and lead into an annular chamber, E', with which latter communicates
- 15 a series of longitudinal branch channels, F', located comparatively near the periphery of the casting, by which arrangement the tempering-current is caused to enter at one end of the axis of the roll and then be conducted al-

most to the opposite end of said axis, whence it is deflected outwardly, and finally returns through the branch channels and escapes at the receiving end of said roll, as herein described.

2. As a new article of manufacture, a roll formed by casting metal around a main pipe, A, radial tubes D, hollow ring E, and branches F, which branches are located comparatively near the periphery of the casting, as herein described.

In testimony whereof we affix our signatures in presence of two witnesses.

THOMAS REED.  
JEREMIAH HOLLOWAY.

Witnesses:

JAMES H. LAYMAN,  
SAML. S. CARPENTER.