

No. 692,280.

Patented Feb. 4, 1902.

A. E. HAMMER.
RAMMER.

(Application filed Apr. 6, 1901.)

(No Model.)

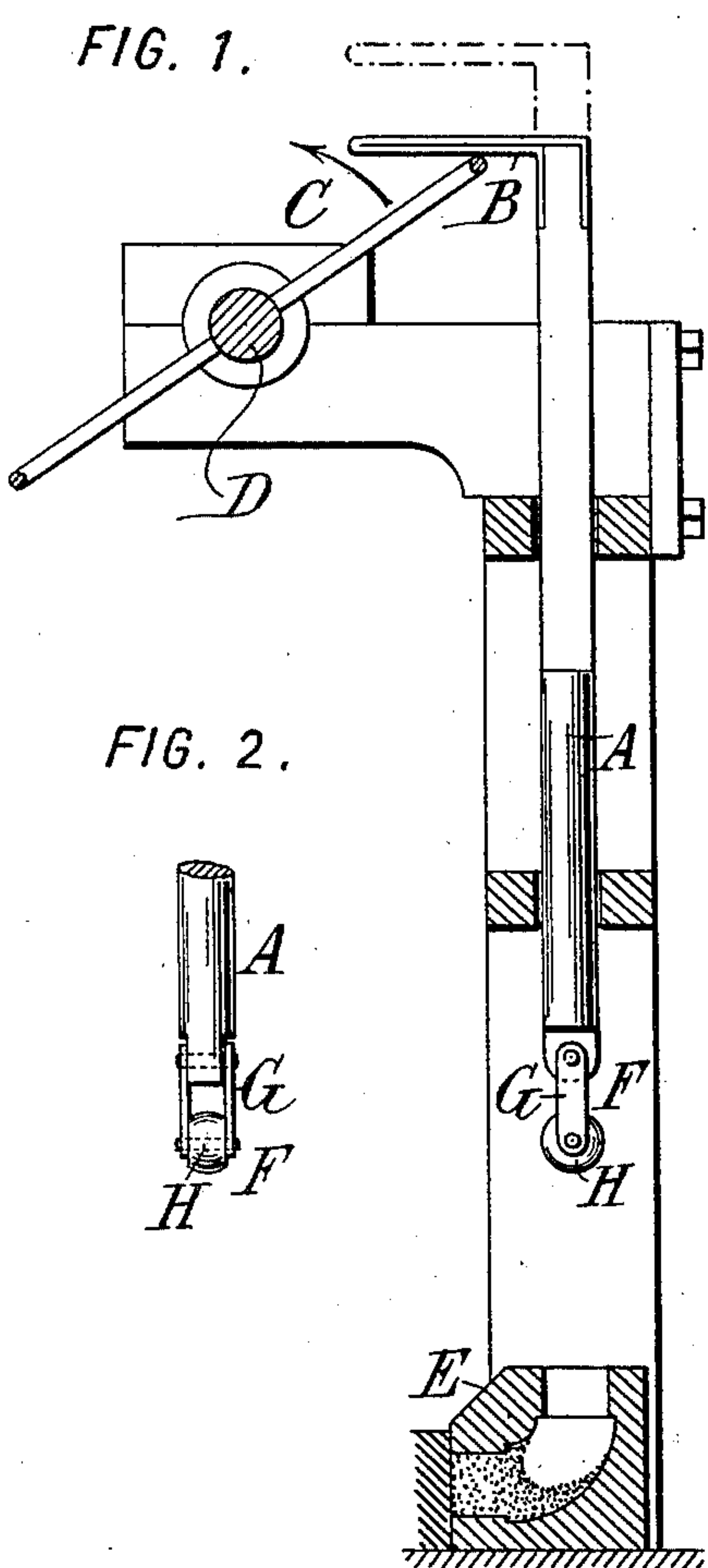


FIG. 2.



FIG. 3.

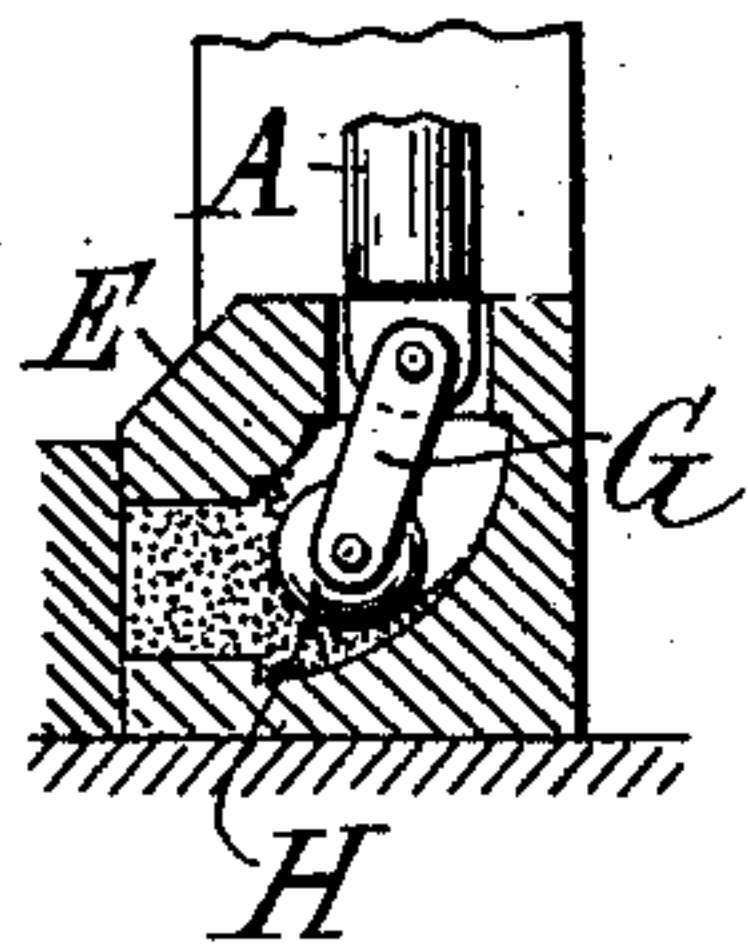


FIG. 4.

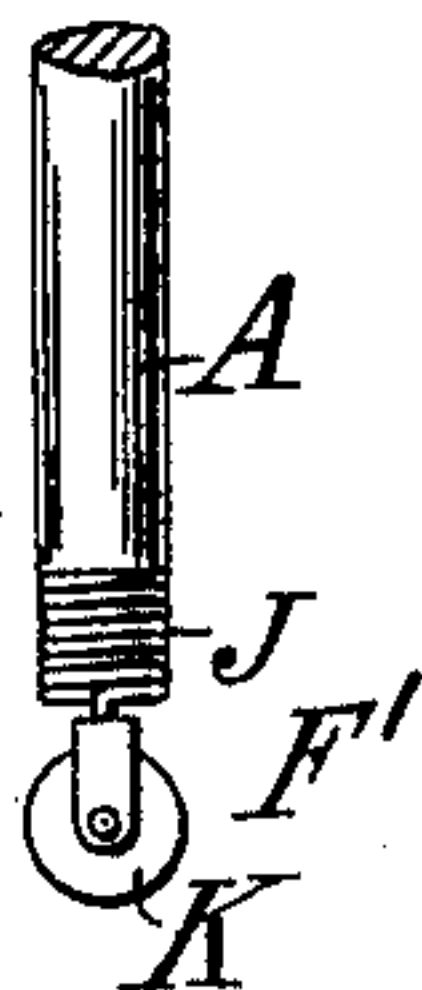


FIG. 5.

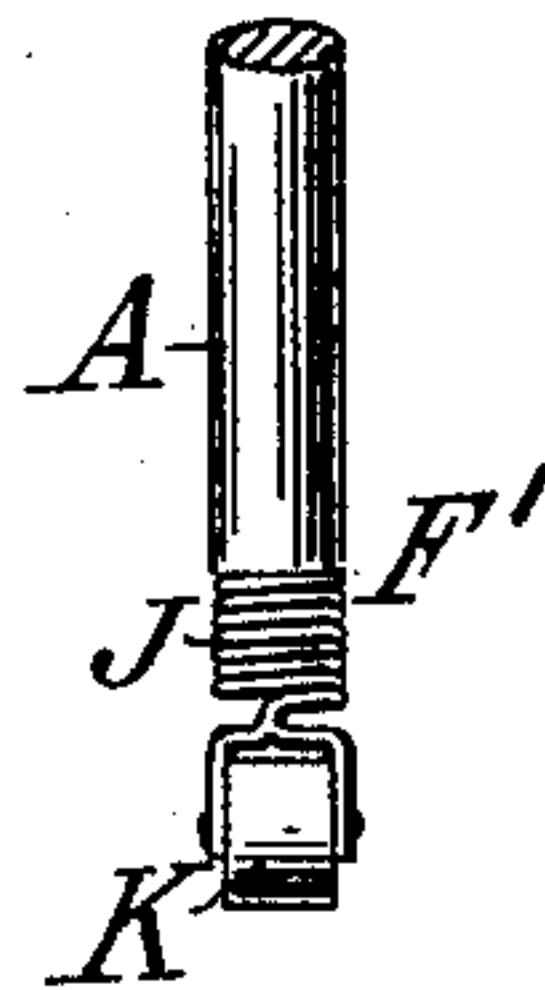


FIG. 6.

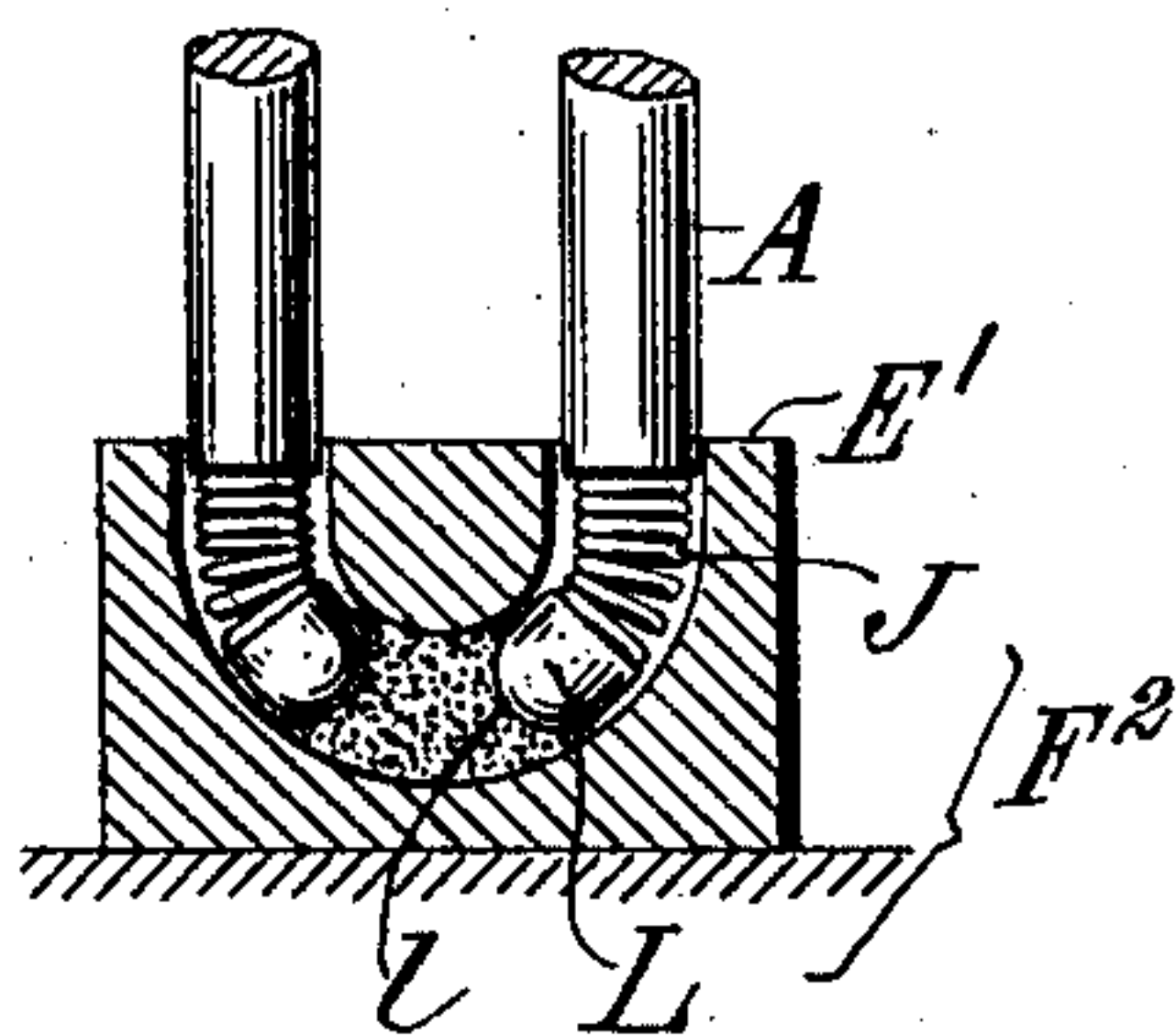


FIG. 7.

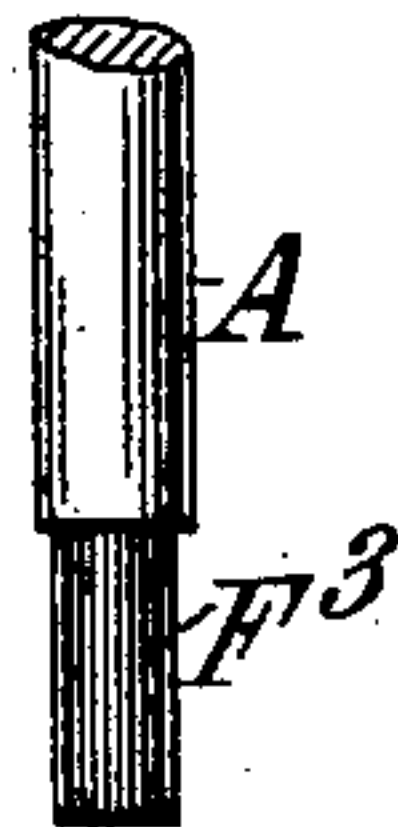


FIG. 8.

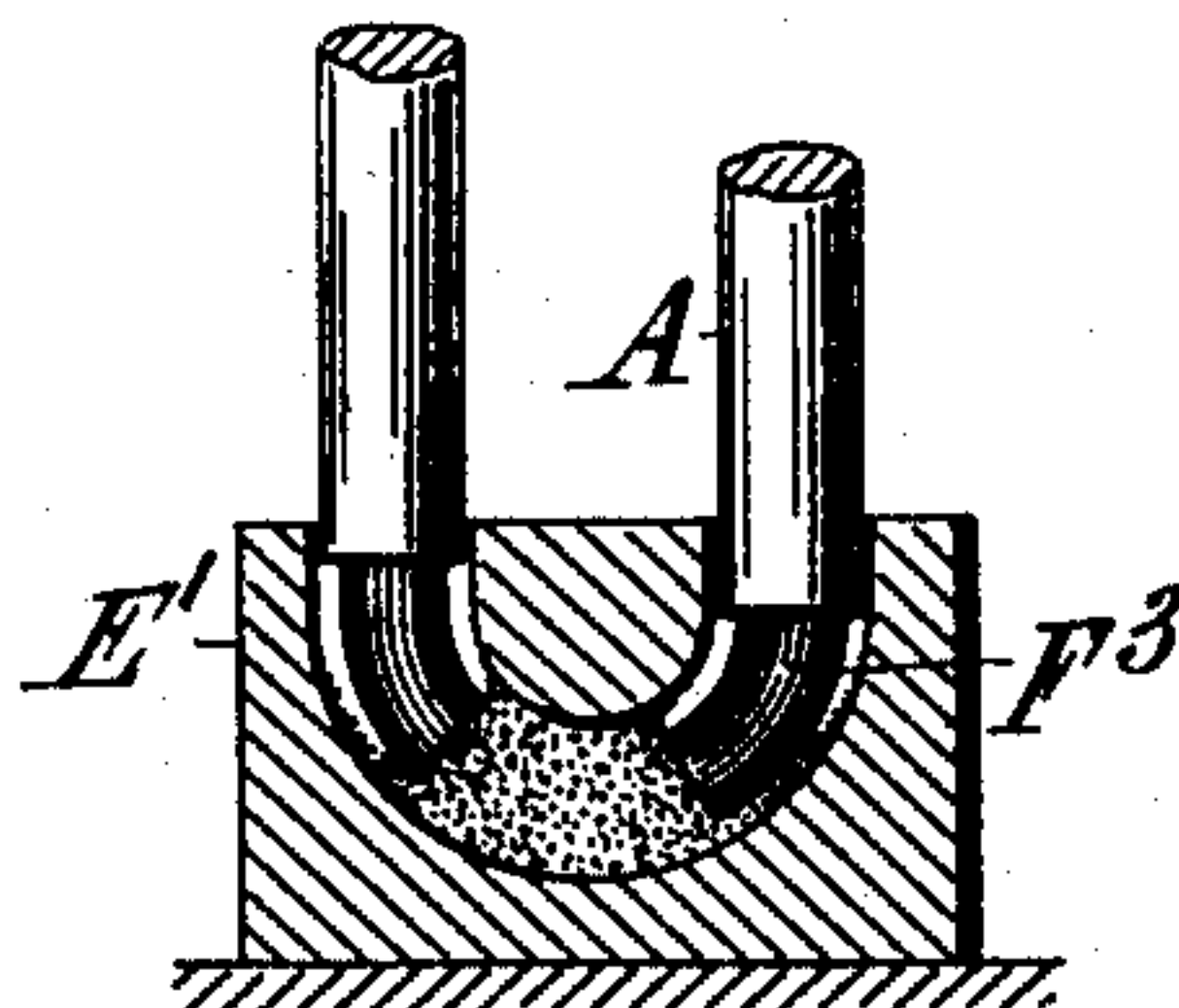


FIG. 9.



FIG. 10.

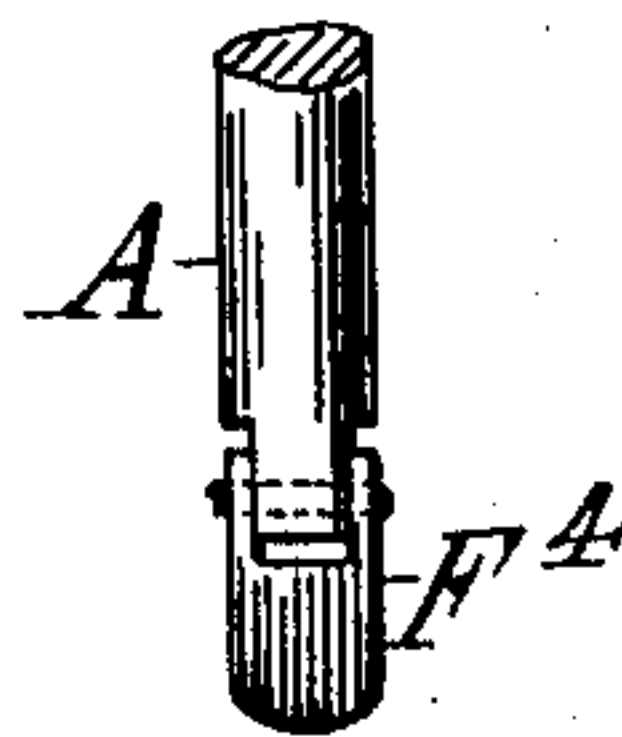
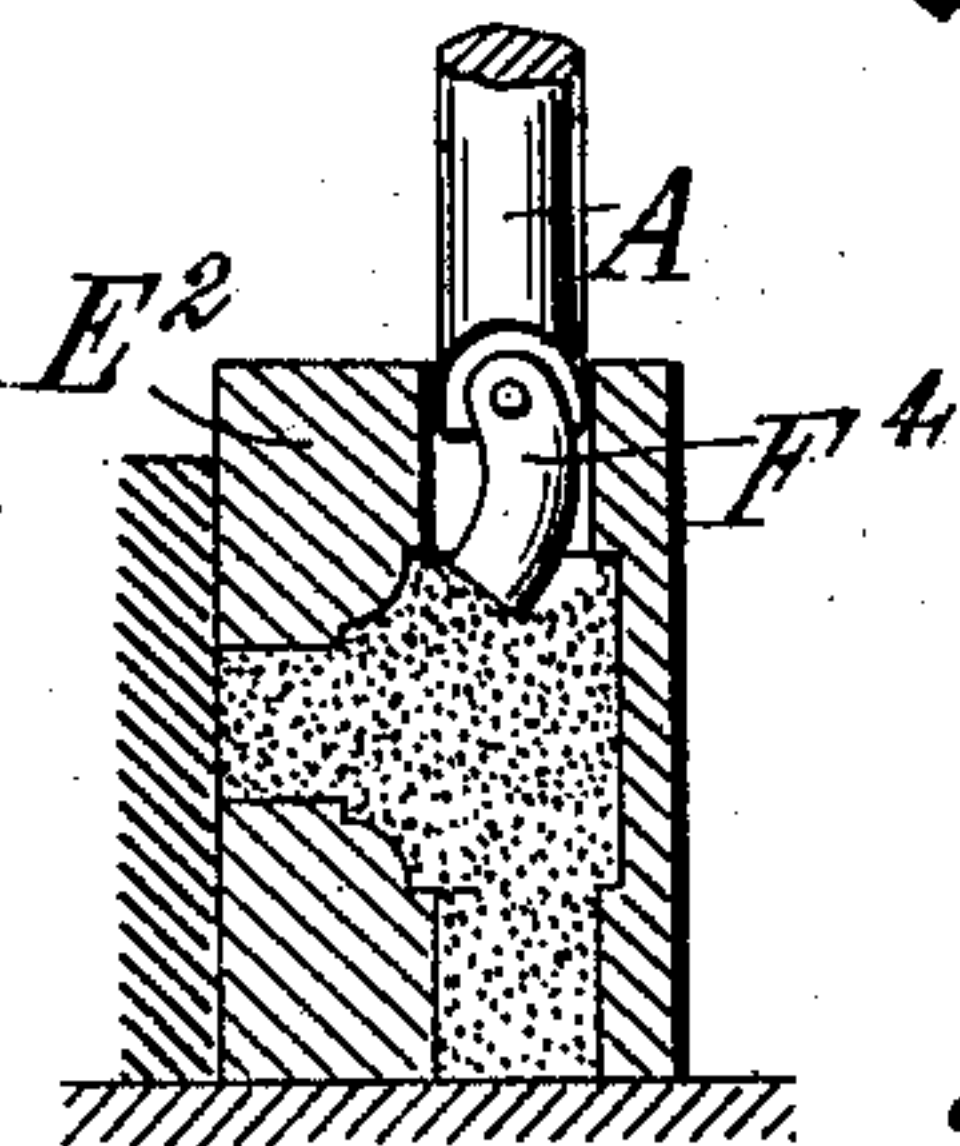


FIG. 11.



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ALFRED E. HAMMER, OF BRANFORD, CONNECTICUT.

RAMMER.

SPECIFICATION forming part of Letters Patent No. 692,280, dated February 4, 1902.

Application filed April 6, 1901. Serial No. 54,648. (No model.)

To all whom it may concern:

Be it known that I, ALFRED E. HAMMER, a citizen of the United States, residing at Branford, in the county of New Haven, in the State of Connecticut, have invented certain new and useful Improvements in Rammers, of which the following is a specification.

In Patents Nos. 506,226, 506,227, and 506,228, dated October 10, 1893, I have shown machines for making cores for casting pipe-fittings of various shapes. In these machines the core is made in a core-box in which the sand is compressed by means of a reciprocating rammer. My present invention provides improvements upon machines of the class shown in said patents whereby bent portions of the core—such as curves or angles, which would be uncompacted or but slightly compacted by the ordinary rammer—may be closely compacted. My invention provides also various other features of improvement, as will be indicated hereinafter.

Referring to the accompanying drawings, illustrating certain embodiments of my invention, Figure 1 shows one form of my improvement, together with a mold and a rammer-operating means, the rammer being out of the mold. Fig. 2 is a side view of the end of the rammer and a ramming-head carried thereby. Fig. 3 shows the same form, the rammer being in the mold. Figs. 4, 5, and 6 show a second form of my improvement out of and in a mold, the end pieces being different in Figs. 4 and 5 and in Fig. 6, respectively. Figs. 7 and 8 show a third form out of and in a mold. Figs. 9, 10, and 11 show a fourth form out of and in a mold.

Any form of core-box—such, for example, as the elbow, U, or T forms shown—may be used in connection with my invention, its special usefulness being in compacting parts of the core which would be uncompacted or but slightly compacted by the ordinary reciprocating action of the rammer. Also any means of operating the rammer may be used, Fig. 1 showing that disclosed in my patents above referred to.

According to my invention I employ a rammer which rams a deflectable ramming-head into the core-box, the head being preferably carried on the end of the rammer. By this means when the rammer is reciprocated the

ramming-head follows more or less closely the shape of the core-box, so as to compact the core thoroughly at all points. Preferably, also, I employ a roller pivoted transversely to the direction of movement of the rammer in the end of the ramming-head and of cylindrical, spherical, or similar shape, which assists in guiding the head to follow the shape of the core-box.

Referring to the drawings, A represents a rammer having an arm B and which is lifted and dropped by means of an arm on a rotating shaft D in a well-known way to compact the core in a core-box E or in core-boxes E' E² or the like.

The ramming-head is indicated as a whole at F, F', F², F³, and F⁴ in the several figures. In the ramming-head F deflectability is obtained by means of a connecting link or links G, transversely pivoted to the lower end of the rammer A. The forward end of the ramming-head may be of any suitable form and construction and is preferably a roller transversely pivoted in the end of the link G—as, for example, the spherical roller H—or deflectability may be secured by means of the ramming-head F' or F², in which a flexible spring, such as the closely-wound spiral spring J, is used, the upper end of which is attached to the rammer A. The forward end may be the same as in any of the other modifications shown or may be a cylindrical roller K or a plug L, which may have a curved or rounded end l, or the deflectable element may be a solid cylindrical rubber head F³, directly attached to the rammer A, which may be modified as desired, or the form shown at F⁴ may be used, in which the ramming-head consists of a curved cylinder F⁴, linked at its upper end to the rammer A.

It will be seen that by my invention I provide a simple means for obtaining a much stronger core than is obtainable by the apparatuses now in use and that my improvement is capable of ready adaptation to machines now in use. It is obvious also that my invention is capable of embodiment in a great variety of forms in addition to those hereinbefore set forth and that it is adapted for use in a great variety of machines other than that set forth without departure from the actual invention. I do not wish to be understood,

therefore, as limiting myself to any or all of the embodiments or to the particular machine set forth.

5 What I claim, therefore, and desire to secure by Letters Patent, are the following-defined novel features and combinations:

1. A deflectable ramming-head for use in ramming bent cores, comprising a deflectable member and a roller at the end thereof jour-
10 naled transversely thereto.

2. The combination with a bent-core box, of a reciprocable rammer and a ramming-head curved at its lower end and transversely deflectable so that it may follow the shape of
15 the box when rammed into the same.

3. The combination with a bent-core box, of a reciprocable rammer and a ramming-head deflectable to follow the shape of the box when rammed into the same, and a roller
20 in the end of said ramming-head journaled transversely thereto.

4. The combination with a bent-core box,

of a reciprocable rammer and a ramming-head deflectable to follow the shape of the box when rammed into the same, said head 25 comprising a roller H and a link G connecting said roller to said rammer, said roller being journaled transversely to said link.

5. A rammer for use in ramming bent cores, carrying a deflectable ramming-head, and a 30 roller in the end of said head journaled transversely thereto.

6. A rammer for use in ramming bent cores, carrying a deflectable ramming-head, said head comprising a roller H and a link G, said 35 roller being journaled transversely to said link.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ALFRED E. HAMMER.

Witnesses:

CHRISTIAN B. GRAVES,
HERBERT E. THATCHER.