

(No Model.)

M. SMITH.

VULCANIZING THE INSULATING COVERING OF ELECTRIC CONDUCTORS.

No. 343,084.

Patented June 1, 1886.

FIG. I.

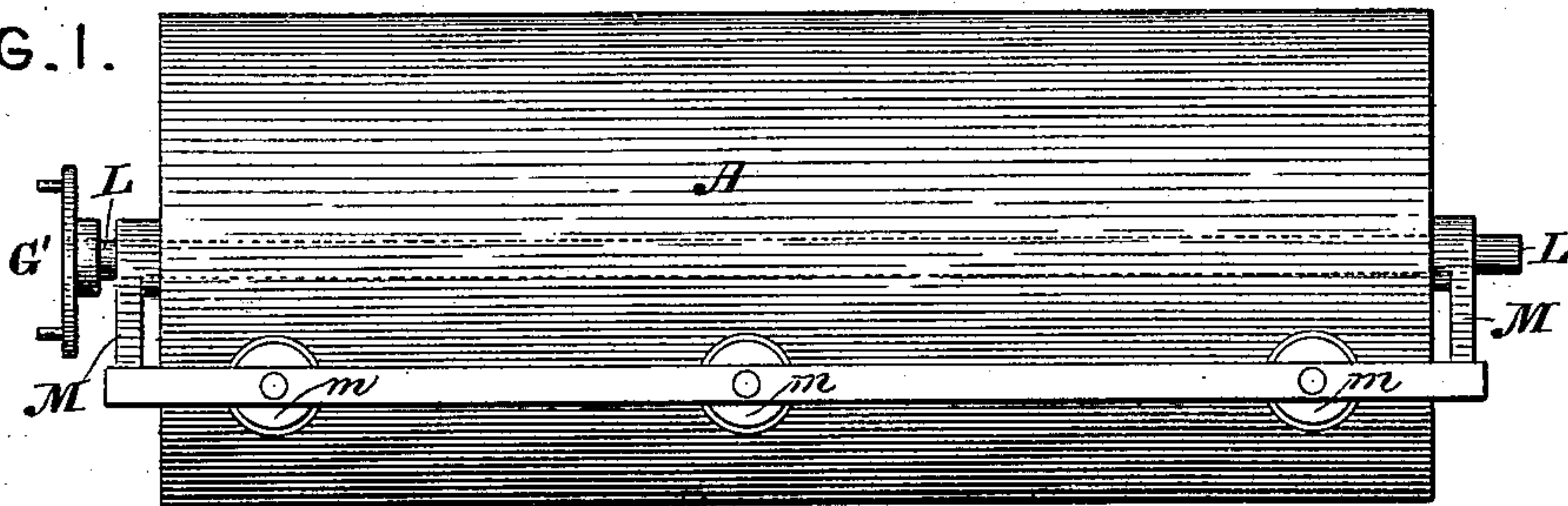


FIG. II.

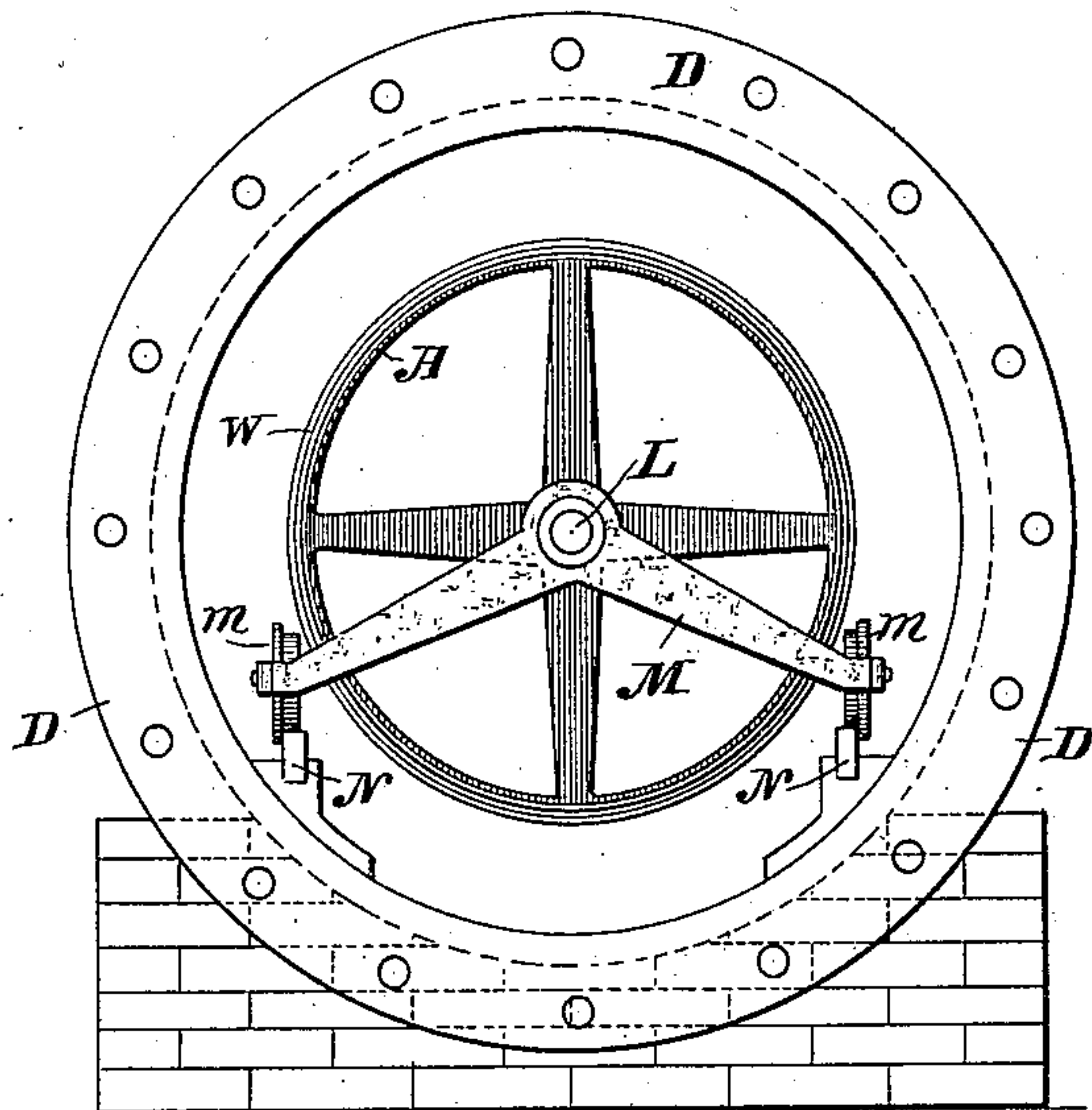
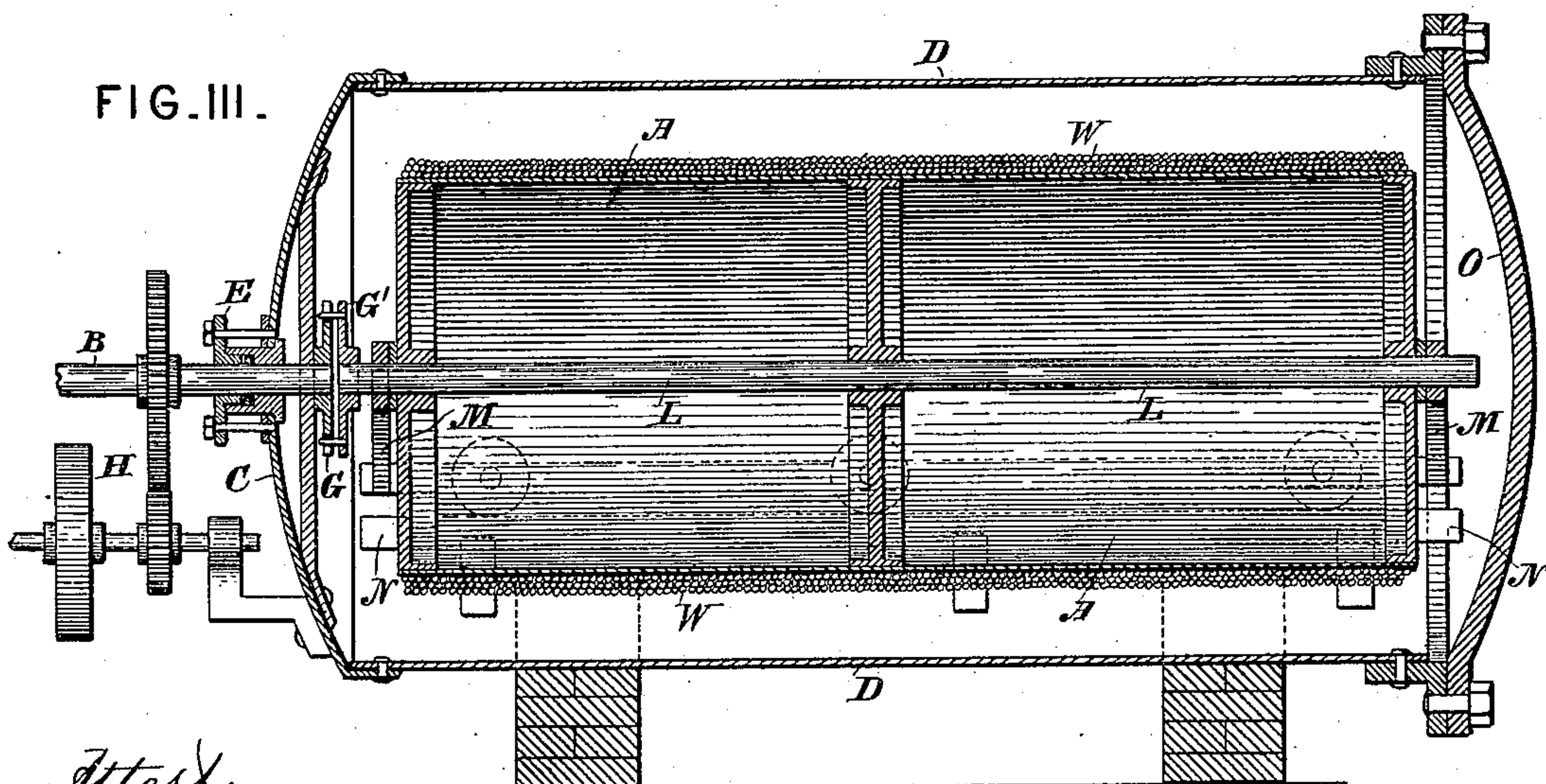


FIG. III.



Attest:

Geo. T. Smallwood.

F. A. Hopkinson.

Inventor:

Michael Smith.

13, Knight Bros.
attys

UNITED STATES PATENT OFFICE.

MICHAEL SMITH, OF PASSAIC, NEW JERSEY.

VULCANIZING THE INSULATING-COVERING OF ELECTRIC CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 343,084, dated June 1, 1886.

Application filed December 5, 1885. Serial No. 184,848. (No specimens.)

To all whom it may concern:

Be it known that I, MICHAEL SMITH, a citizen of the United States, residing at Passaic, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Vulcanizing the Insulating-Covering of Electric Conductors, of which the following is a specification.

The object of this invention is to prevent the dislocation of the metallic conductor from the center of the covering during the process of vulcanization.

When electric conductors are covered with vulcanizable compounds for insulation, it is still a very difficult operation to vulcanize such coverings and keep the conductor in its proper position in the center of the cover, especially when a continuous piece of several hundred feet is to be done. The heat required to accomplish vulcanization softens the compound considerably before the actual vulcanization takes place, in consequence of which the metallic conductor will, by its weight, press one side of the softened covering and thereby become dislocated from its central position, which is often detrimental to a perfect production. Many insulated-wire manufacturers who use vulcanizable insulation compounds resort to the laborious and difficult means of packing the covered conductors between dry soapstone powder in large metallic pans, thereby giving a sort of support to the covering and conductors. Others use a very stiff compound made so by large admixtures of oxides, &c., to prevent the softening of the compound. This is, however, injurious to good insulation. I have fully overcome this difficulty by my invention, which I will now describe. When the conductor is covered with the insulating compound, which may be done in the manner and by machinery as described in Letters Patent Nos. 276,724 and 276,725, issued to John J. C. Smith, May 1, 1883, also in Letters Patent No. 317,587, issued to J. J. C. Smith and myself, May 12, 1885, or in any one of the other known methods. Then the covered conductor is wound on a large metallic reel or drum in regular systematic spirals, so that two or three layers may be applied. Care must be taken that the conductor is wound on the drum in loose-lying coils—*i. e.*, no tension must be ap-

plied to the conductors while laid on the reel or drum. The reel or drum is made of light wrought-iron of such a size as the quantity of the conductor to be made at one vulcanization may require. A reel twelve feet long and four feet in diameter will hold about two miles when laid on in three courses.

The annexed drawings represent a vulcanizing-vessel and the reel, both of which are so arranged that the reel may be easily rolled into the vulcanizing-vessel and likewise removed after the operation.

Figure I is a side view of the reel in a frame provided with small wheels or rollers. Fig. II is a front view of the vulcanizing-vessel and reel with the cover of the former removed. Fig. III is a longitudinal vertical section of the vulcanizing-vessel with the reel inside in position for operation.

A shaft, B, extends through the rear end, C, of the vulcanizing-vessel D, which is provided with a stuffing-box, E. The shaft B has on the inside of the vessel a clutch, G, and is provided on the outside with gearing H, by means of which a slow rotary motion may be given to the shaft. The shaft L of the reel A is also provided with a clutch, G', at the end. When the reel is charged with a desired quantity of covered conductor, W, it is placed in the vulcanizing-vessel D.

To facilitate the introduction and removal of the reel and its rotation while in the vulcanizing-vessel, it is mounted in bearings in a carriage, M, having small wheels or rollers *m* running on corresponding rails, N, in the vessel. The clutches G and G' on shafts B and L lock together when they meet. The door or cover O of the vessel is closed, and the reel inside is set in rotary motion by means of the shaft B and its gearing. The reel should make only three or four revolutions per minute.

In the common mode of embedding covered wire in soapstone during vulcanization, the wire is not only subject to dislocation by the effect of gravity, but the longitudinal expansion of the conductor by heat during vulcanization is an additional and very serious cause of dislocation of the conductor from the center of the covering. With my improvement the covered conductor is, by the rotation of the reel, continually changed in its position as far

as the weight or gravity of the conductor is
concerned; hence the weight of the conductor
on its soft covering cannot gradually press it
aside as if it rested quietly, because the rota-
5 tion of the reel brings the conductor in a dif-
ferent position by every inch of rotary motion.
Furthermore, the metallic conductor has a
free chance for longitudinal expansion, being
spirally and loosely wound on a reel which is
10 kept in motion in the same direction as the
conductor is wound. The expansion is thus
gradually taken up by the slow rotary motion
of the reel as the heat lengthens the conductor.

I claim as new—

In the manufacture of insulated electric con- 15
ductors which are covered with a vulcanizable
insulation covering, the process of winding the
covered conductor on a reel or drum and slowly
rotating the same while in the vulcanizing-
vessel and during the process of vulcanization, 20
in the manner and for the purpose described.

MICHAEL SMITH.

Witnesses:

JOHN B. PUDNEY,
J. J. C. SMITH.