

No. 625,733.

Patented May 30, 1899.

A. BARNES.

MEANS FOR APPLYING SILVERING OR GILDING SOLUTIONS TO GLASS, PORCELAIN, &c.

(Application filed Nov. 29, 1898.)

(No Model.)

3 Sheets—Sheet 1.

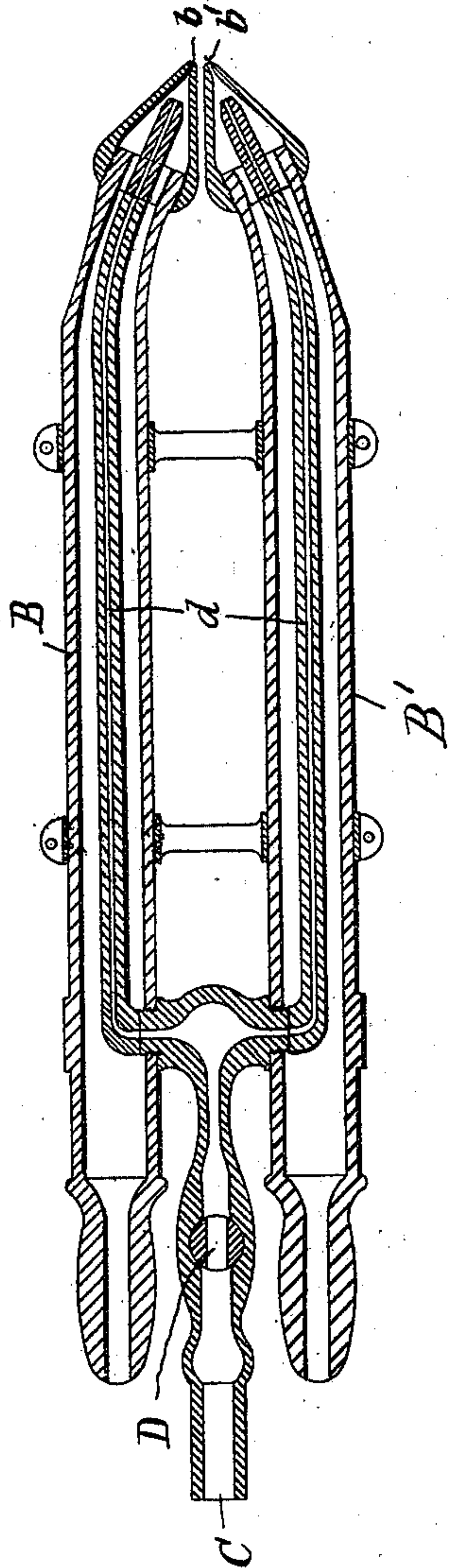


Fig. 1.

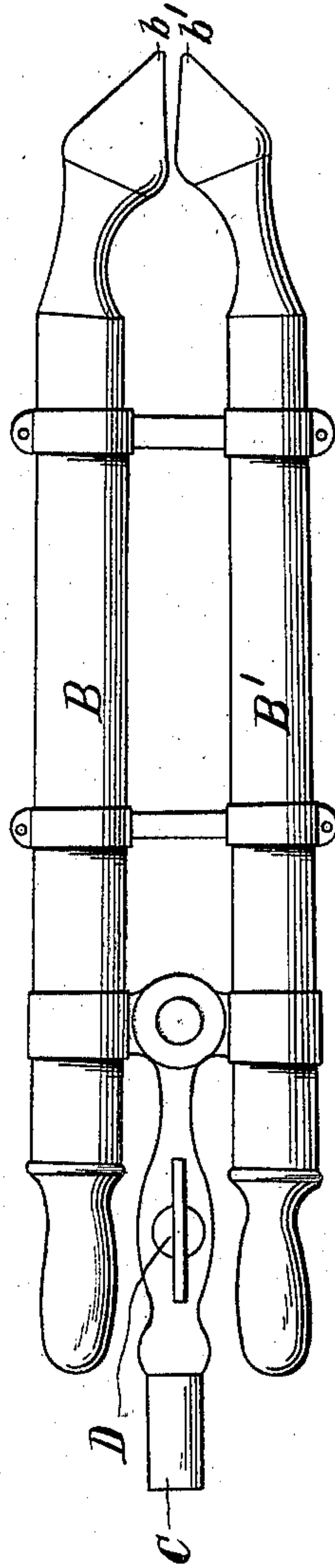


Fig. 2.

Attest
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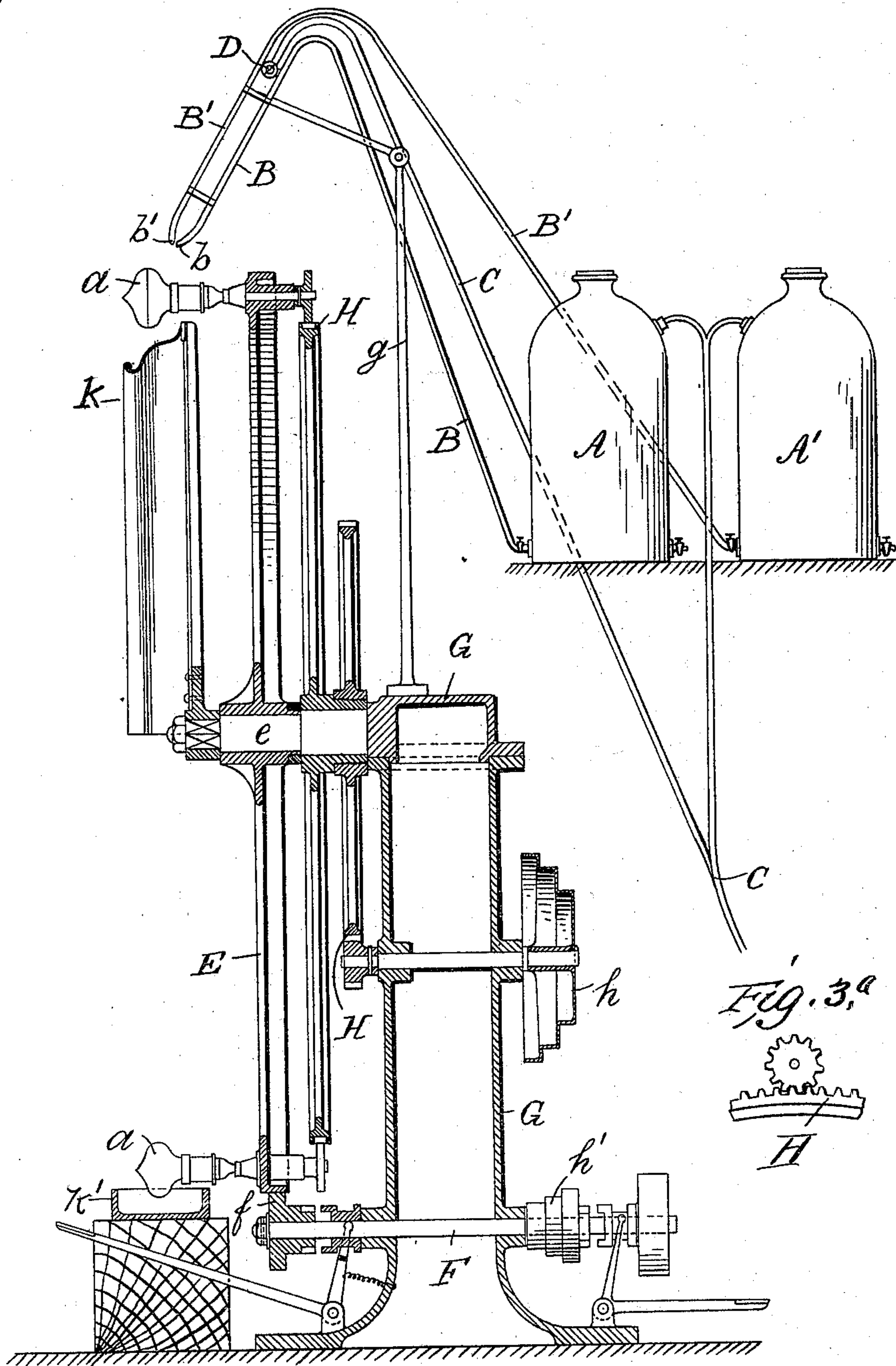


Fig. 3.

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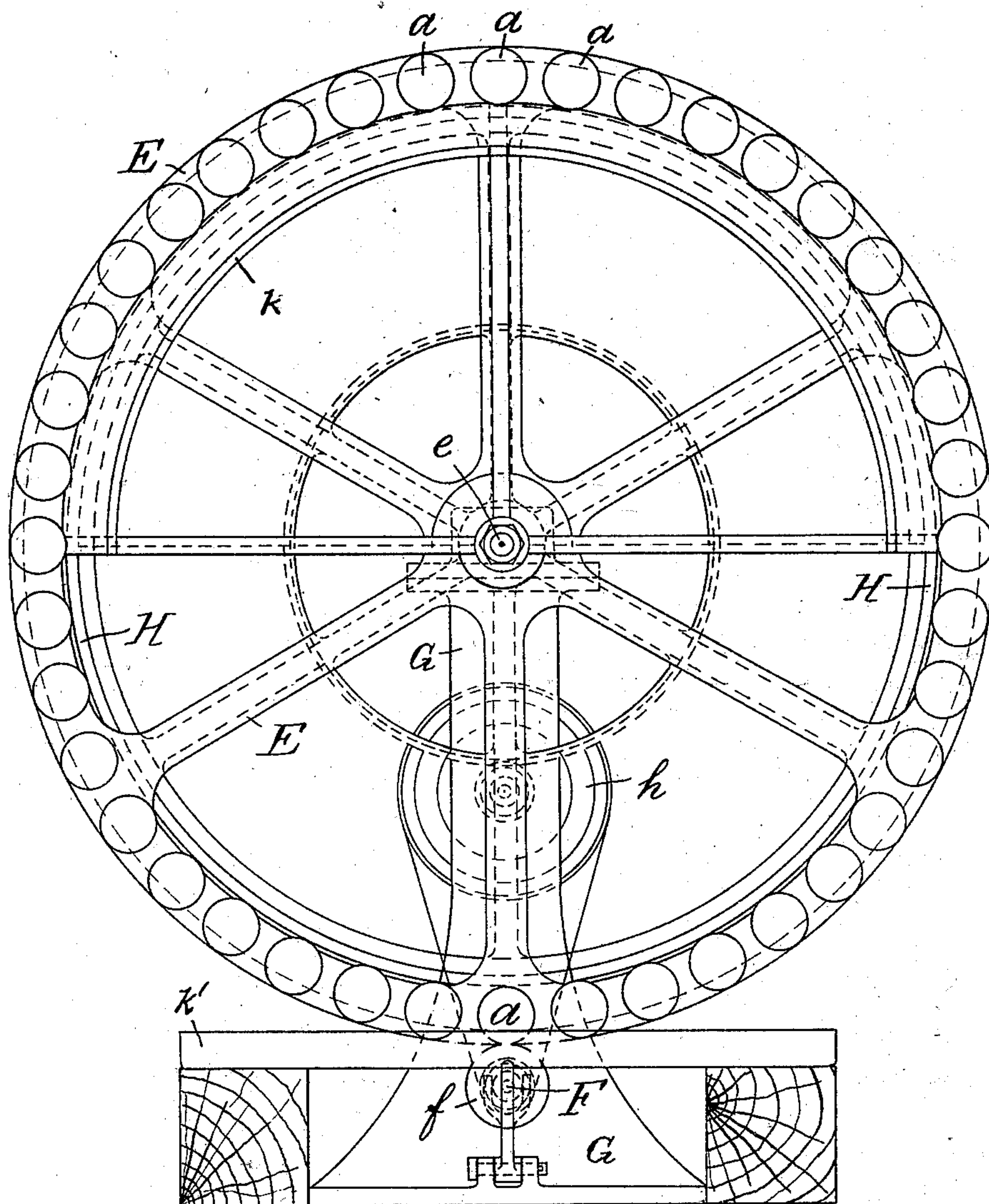


Fig. 4.

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UNITED STATES PATENT OFFICE.

ALBERT BARNES, OF LONDON, ENGLAND.

MEANS FOR APPLYING SILVERING OR GILDING SOLUTIONS TO GLASS, PORCELAIN, &c.

SPECIFICATION forming part of Letters Patent No. 625,733, dated May 30, 1899.

Application filed November 29, 1898. Serial No. 697,769. (No model.)

To all whom it may concern:

Be it known that I, ALBERT BARNES, a subject of the Queen of Great Britain and Ireland, residing at London, England, have invented a new and useful Improvement in or Relating to the Application of Silvering or Gilding Solutions to Glass, Porcelain, or other Like Material and Means for Mechanically Effecting the Same, (for which I have made application for Letters Patent in Great Britain under No. 9,977, dated April 30, 1898,) of which the following is a specification.

This invention relates to the method of and means for mechanically supplying known solutions, one being a salt of the required metal and the other a reducing solution for silvering or gilding glass, porcelain, and the like, applicable to the silvering of incandescent electric globes or bulbs or of any form of mirror or reflecting-surface. The application of such solutions has hitherto been effected by hand, the diverse solutions being mixed in their proper proportions in a suitable vessel before application and thence applied by hand, causing great difficulties and deterioration to the finished metallic coating and to the hand-tools used by the rapid decomposition of the mixed solutions before reaching the surface to be silvered or gilded, causing deposition of the metal on the tools and vessels employed and want of purity or homogeneity of the plated film on the finished article. A composite film is obtained consisting of layers of metal in different conditions with traces of oxids between, the whole film being more or less in a state of tension and when applied to incandescent-lamp globes preventing a perfect and lasting deposition thereon of a covering-film of copper, which is the practice for the protection of the silvering.

To obviate these difficulties, my invention consists in the mode of application of the diverse reacting solutions, permitting them to mix only in the necessary regulated quantities by liquid or spray jets at the point where they impinge upon the article to be silvered or gilded, thus preventing deposition of the metal upon the tubes or vessels carrying the solutions only in a separated condition and giving a pure and homogeneous film upon the required surface, and, further, this invention consists in the appliances employed

to direct, feed, and control the solutions in a combined liquid or spray jet and in mechanical appliances whereby the said operation of gilding or silvering may be quickly and cheaply mechanically applied to a series of articles, such as the globes of incandescent electric lamps.

Figure 1 is a sectional plan of the jet appliance with compressed-air duct by which the combined solutions may be directed upon the required surface either as a liquid jet or as a spray. Fig. 2 is an outside plan of the same, showing air-control cock. Fig. 3 is a side elevation of an appliance in which the process may be mechanically and cheaply applied to a large number of small articles, such as incandescent electric-lamp globes. Fig. 3^a is a detail view of the gearing connecting the drive-wheel and spindles. Fig. 4 is a front elevation of the same.

The metallic and reducing solutions are contained in separate receptacles A A', Fig. 3, from which they may be fed to the issue-jets either by compressed air or other pressure or by gravitation. The jet-tubes B B', receiving the said solutions, terminate in fine nozzles b b', converging to one another, so that the jets of the two solutions meet and mix and are thrown in such mixed condition upon the surface to be plated. When it is desired that the jet shall be in the form of fine spray, a supply of compressed air is introduced through the duct C, which is controlled by a cock D and branches, the supply of compressed air into each of the solution-tubes by an inner tube d having the effect of spraying the solution at its issue from the nozzles b b'. This jet appliance having flexible connections to the solution-jars and to the source of the compressed air may be applied by hand over any surface which it is desired to silver or gild, such surface being either stationary or moved under the stationary jets. Where, however, the objects to be plated are small, similar to one another, and numerous, such as the globes of incandescent electric lamps, I mount these globes a upon a wheel-frame E, adapted to revolve in suitable bearings e e and driven at a slow speed by reducing-gearing f, conveniently frictional gearing, from a first-motion shaft F.

The jet appliance B B' is mounted upon any

fixed part of the framing or bed G of the rotating wheel by a standard *g* and ball-and-socket joint, so that the jet-tubes B B' can be directed and fixed at any desired angle to the
5 article *a*, carried upon the slowly-revolving wheel E. At the same time, if the plating has to be effected around the circumference of the article *a*, as in the case of a lamp-globe, the said globe is caused to revolve about its
10 own axis at considerable speed by a speed-gearing H, conveniently driven by cone-pulleys *h h'* from the first-motion shaft. Only such part of the article as it is desired to plate is left bare and clean. The other part of the
15 article which is not to be plated is protected by such a covering as is well known in the silvering trade.

Beneath the jet appliance is located a curved deflector or trough *k* for catching the
20 solution dropping below the globes, and, if desired, a second trough *k'* may be placed at the base of the apparatus beneath the globes on the lower half of the wheel-frame.

Having now described this invention, what
25 I claim, and desire to secure by Letters Patent, is—

1. The herein-described method of applying a mixed metallic and reducing solution in silvering and gilding consisting in simultaneously
30 supplying both solutions in separate

streams to a point of mutual impingement at or close to the surface to be plated, substantially as described.

2. Means for silvering or gilding comprising a combined double jet-pipe having converging detachable nozzles, means of attachment for a supply of distinct solutions to either nozzle; a duct for receiving compressed air controlled by a cock and a central tube within each solution-tube connected to said air-
40 duct substantially as described.

3. An apparatus for silvering and gilding comprising a rotatable wheel; holders for small articles revolubly supported on the periphery of said wheel; gearing connections
45 to said holders from a shaft adapted to rotate said holders upon their own axes in combination with a fixed double jet-tube, adapted to direct mixed jets of metallic and reducing solutions upon prepared surfaces of articles
50 rotating in said holders mounted upon said slowly-revolving wheel substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

ALBERT BARNES.

Witnesses:

RICHARD A. HOFFMANN,
CHARLES CARTER.