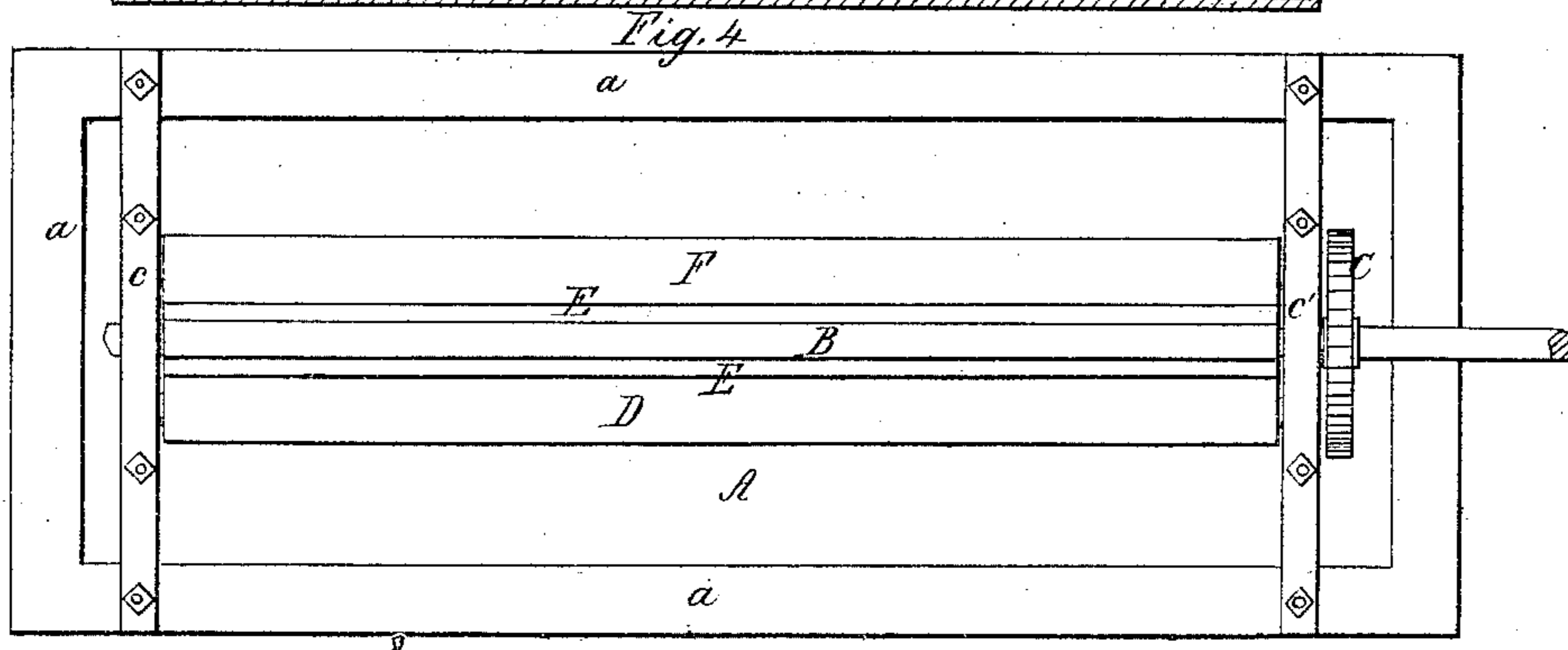
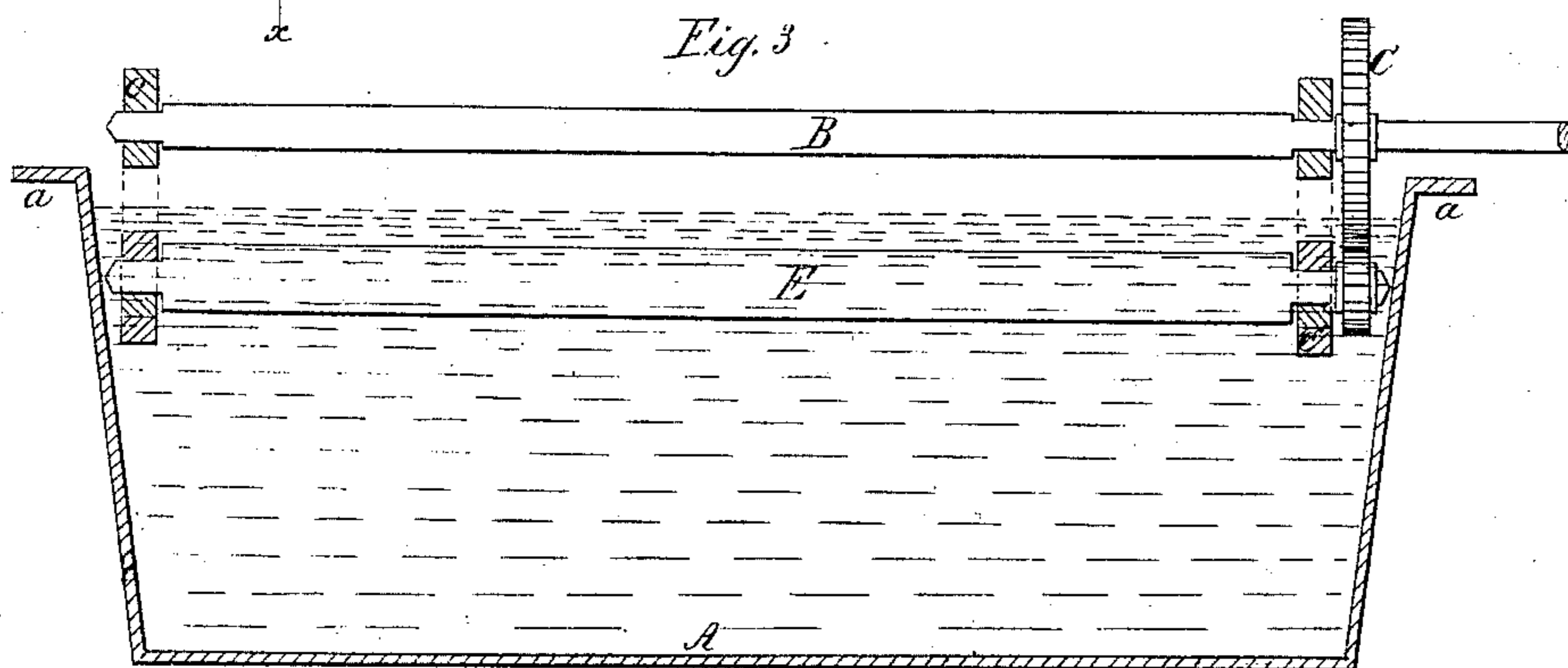
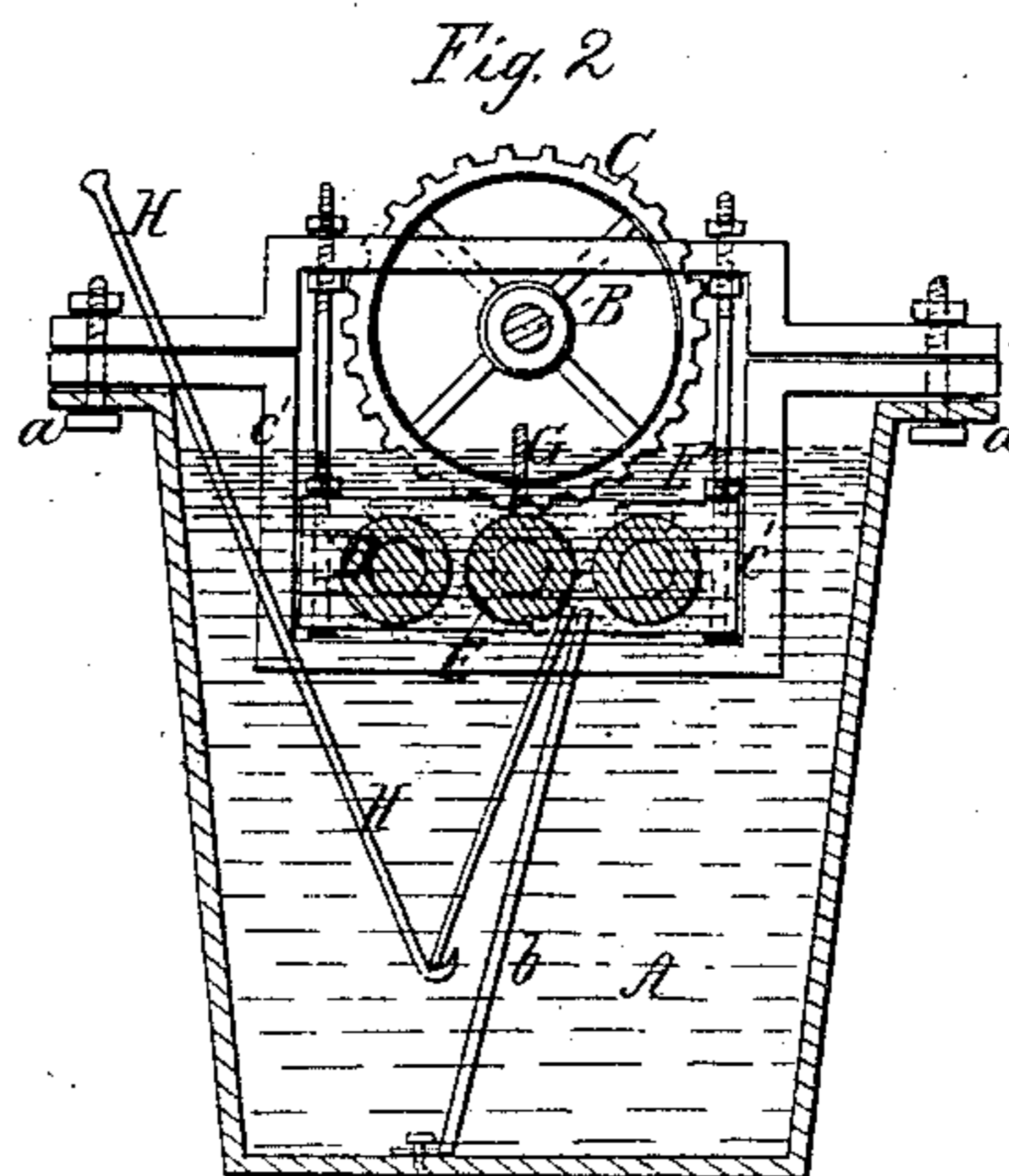
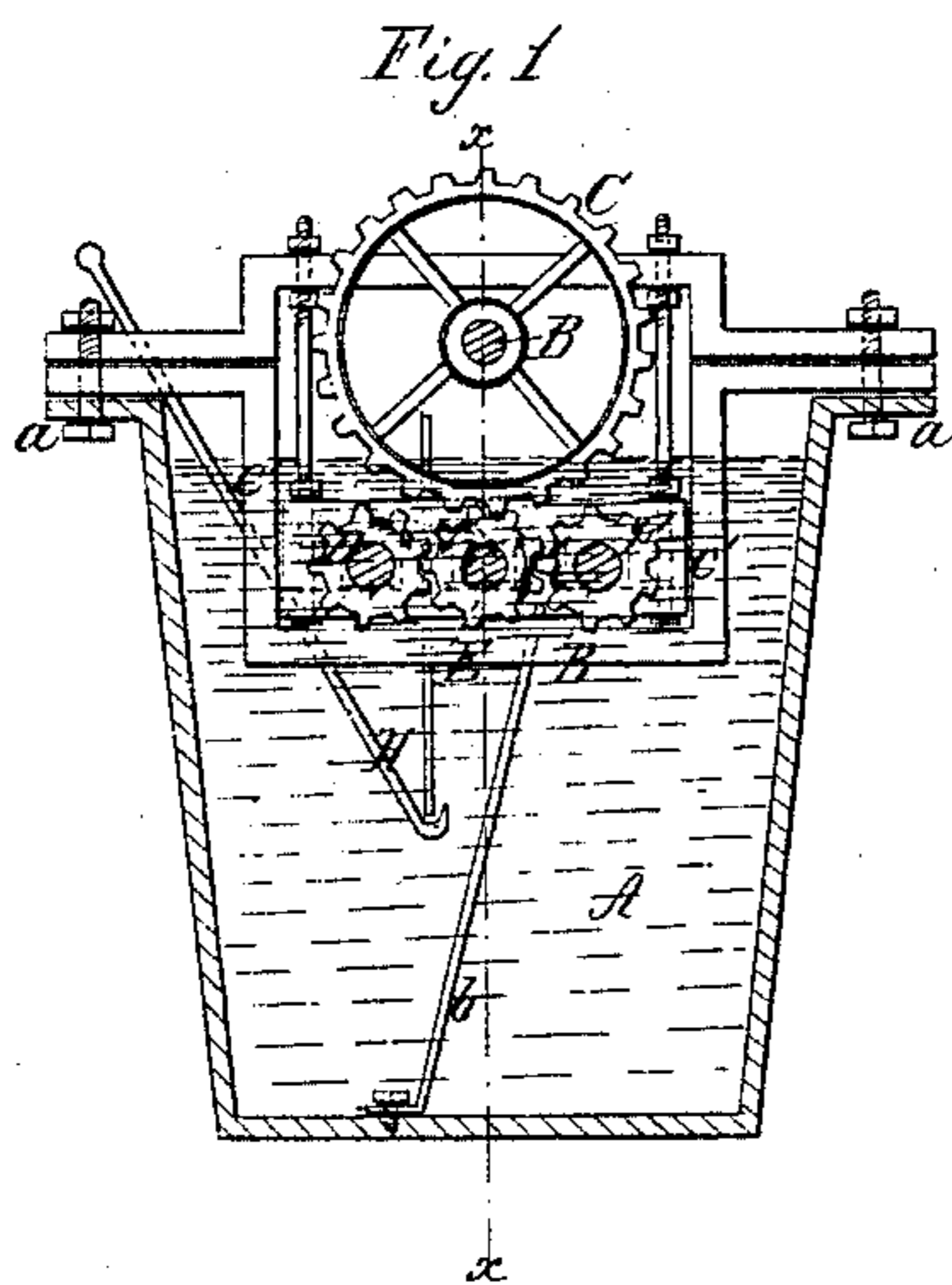


E. MOOREWOOD & G. ROGERS.
 APPARATUS FOR COATING SHEETS OF METAL.

No. 10,187.

Patented Nov. 1, 1853.



UNITED STATES PATENT OFFICE.

EDMUND MOREWOOD AND GEORGE ROGERS, OF LONDON, COUNTY OF MIDDLESEX, ENGLAND.

IMPROVEMENT IN COATING SHEETS OF METAL.

Specification forming part of Letters Patent No. 10,187, dated November 1, 1853.

To all whom it may concern:

Be it known that we, EDMUND MOREWOOD and GEORGE ROGERS, of London, in the county of Middlesex, England, have invented a new and useful apparatus for coating sheets of metal by dipping them into a bath of some other metal that fuses at a lower temperature than that of which the sheet is composed; and we do hereby declare that the following is a full, clear, and exact description of our said improvement, reference being had to the accompanying drawings, in which—

Figure 1 represents a transverse section of the apparatus with a plate to be coated descending into the bath; Fig. 2, a similar section with a plate to be coated immersed in the bath and about to be withdrawn; Fig. 3, a longitudinal section of the bath at the line xx of Fig. 1, and Fig. 4 a top view of the same.

Our improved apparatus consists of a metallic vessel A, having a flange a round its top to give it the requisite strength. This vessel should be made of wrought-iron and of a length somewhat greater than the longest sheet to be coated, and of such a depth that these sheets can be immersed in the bath of melted metal at least eight or ten inches when standing on edge. This bath-vessel may be placed over a furnace to keep the bath metal within it at the proper temperature to maintain the requisite fluidity.

Two frames c and c' are secured across the top of the bath-pot A for the purpose of supporting three rollers D, E, and F, the central one E on fixed bearings, and the two outside rollers D and F on bearings capable of being adjusted toward or from the fixed central roller E, for the purpose of widening or narrowing the space between the outside and middle rollers. These rollers are each fitted at one end with a cog-wheel of the same size and of such diameter that the teeth of one wheel shall gear or match into those of the other adjacent to it, that the wheel of the middle roller E, when turned by the driving-wheels C on the shaft B above, shall turn the outside wheels D and F and their rollers. Thus arranged when these rollers are in motion their adjacent surfaces on one side of the central roller will be ascending and on the other descending, so that a sheet of metal

gripped between those rollers on one side would be fed or dragged down into the bath, and on the other drawn up, and this is precisely the duty these rollers are intended to perform in immersing sheets in the bath and withdrawing them again therefrom in the process of coating them with the metal of the bath. Beneath the series of rollers one or more upright bars b are fixed to the bottom of the vessel, whose office it is to guide the edge of a sheet of metal pushed up against them into the ascension-opening between the rollers.

When this apparatus is to be used to coat iron with zinc, for example, a sufficient quantity of zinc is broken up into lumps of convenient size to handle and placed in the bath-pot. Heat is then applied to the pot in any convenient manner until the zinc is melted. If the melted metal is not in sufficient quantity to cover the working rollers to the depth of three or four inches, more metal must be added until the bath reaches that height, as represented in the drawings.

To prevent the surface of the molten metal of the bath where the sheets enter from becoming oxidized, it must be covered with sal-ammoniac or some other suitable flux, and if it should be desirable to avoid covering the surface of the sheets with flux as they emerge from the bath the surface of the bath may be divided by a bar G, placed over the middle roller, into two equal parts, and the flux placed only in that division in which the plate enters. The rollers should be kept constantly in motion, and an attendant should place the sheets on edge, and in a vertical position between the descending surfaces of the rollers D and E, when it will be seized and carried down steadily and regularly into the bath below, where the workman receives its lower edge on a hooked bar H, as represented, and by a dexterous movement of it turns over the upper edge of the plate against the guide-bar b , and then lifts it up until it comes into contact with the ascending surfaces of the rollers E and F, which seize and draw it up from the bath, at the same time squeezing the bath metal into contact with its sides and flattening out all puckers, bends, folds, and indentations, and delivering the sheet from the bath perfectly smooth and straight, and avoiding

the injurious curvature that sheets are always left with when coated by means of the apparatus heretofore in use for that purpose, and which rendered a subsequent operation to straighten and smooth the coated sheets indispensable.

The preparation of the uncoated sheet for the bath and the details of the preparation of the bath itself we deem unnecessary to describe here, as they are well known to those skilled in the art of coating metals.

What we claim as our invention, and desire to secure by Letters Patent, is—

The method herein described of coating sheets of metal by immersing them in other

molten metals which are more fusible, by means of rollers arranged substantially as herein described, so that with the same machine sheets of metal varying in thickness may be coated free from puckers, bends, or indentations on their surfaces, thus rendering unnecessary the subsequent operation of flattening which heretofore could not be dispensed with.

EDMUND MOREWOOD.
GEORGE ROGERS.

Witnesses:

JOSEPH MARQUETTE,
JOHN R. DARKER.