(No Model.)

2 Sheets—Sheet 1.

C. STEFFEN.

APPARATUS FOR REFINING SUGAR IN LOAF FORM.

No. 466,632. Patented Jan. 5, 1892.

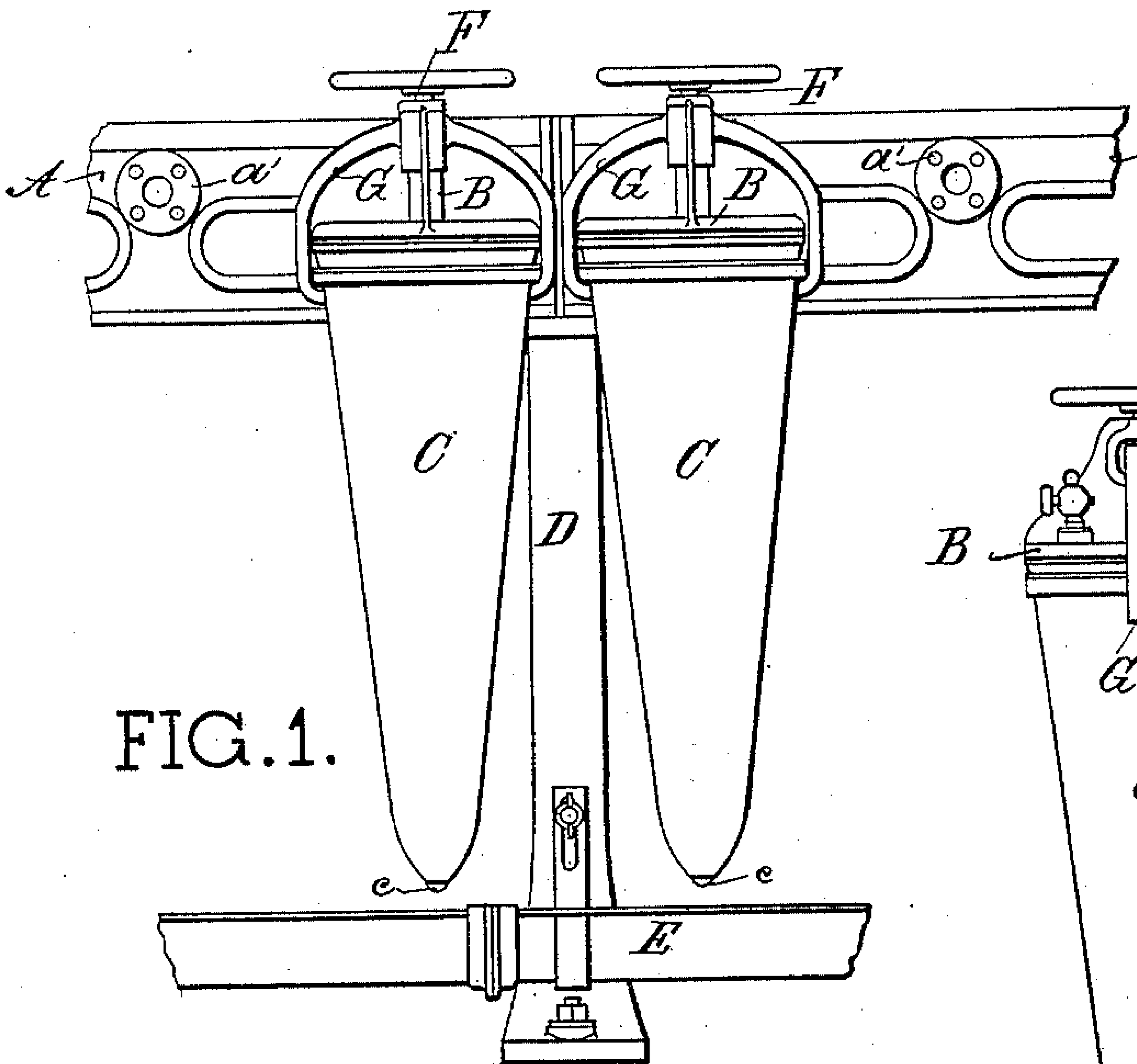


FIG. 1.

FIG. 2.

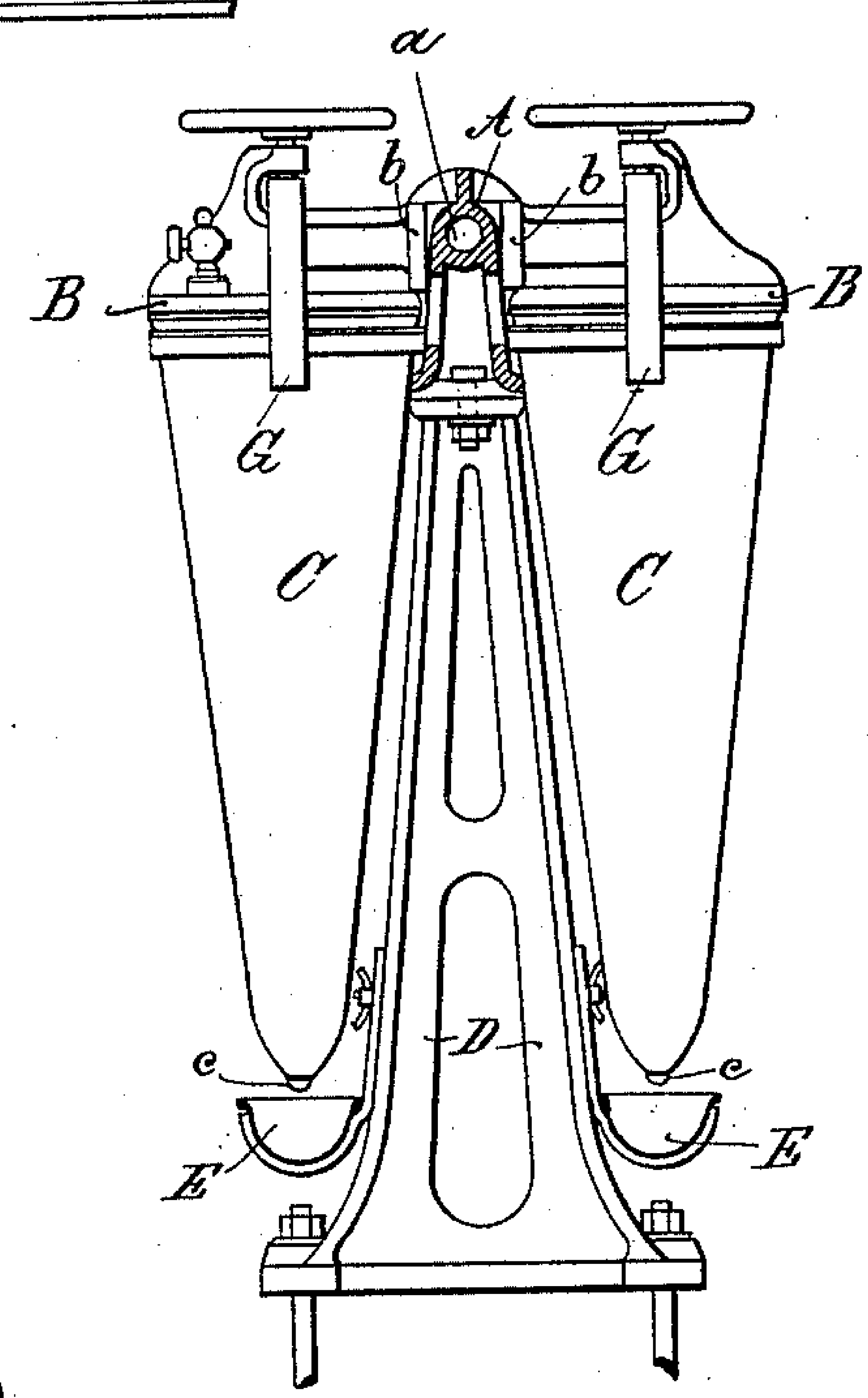
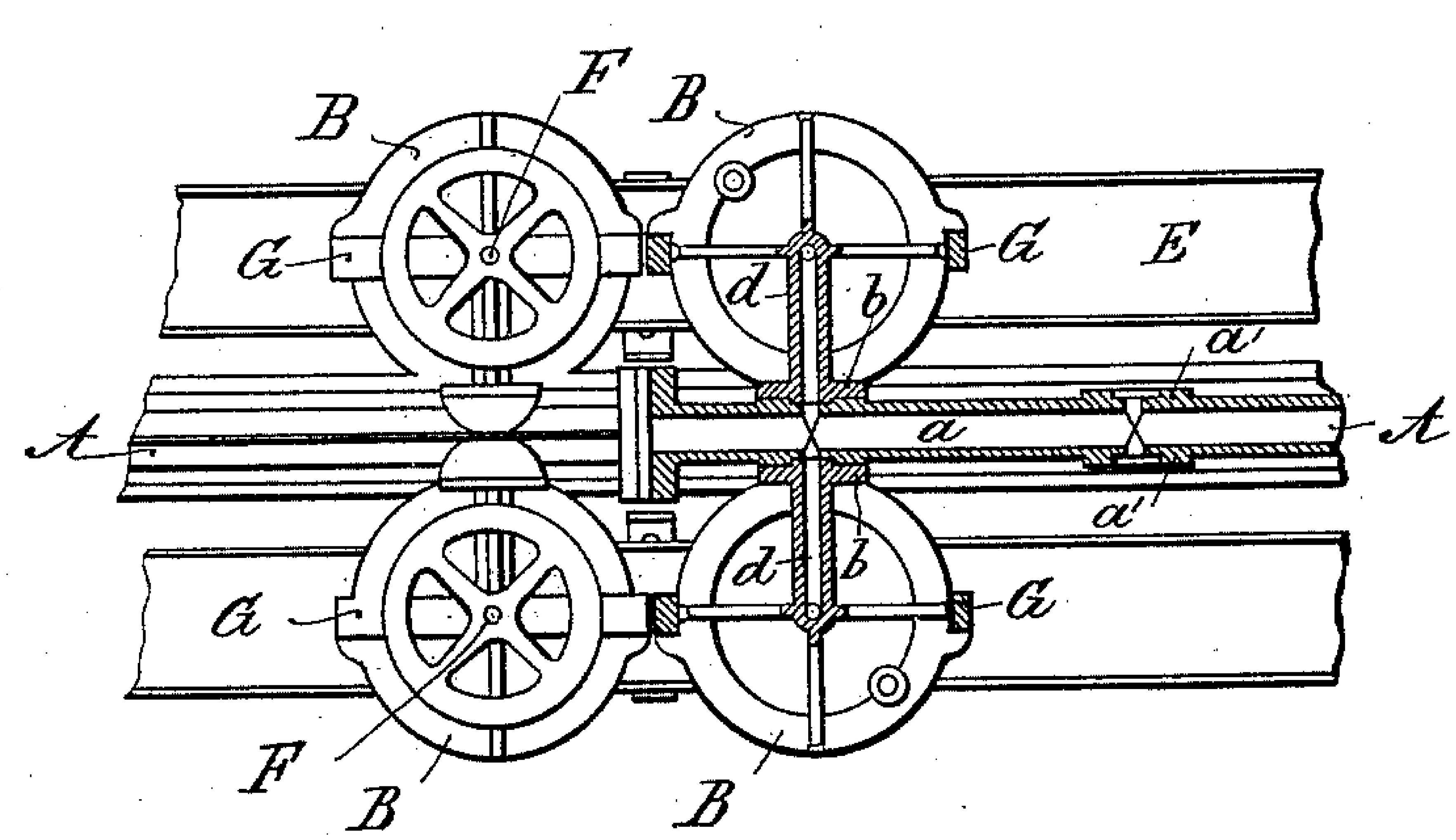


FIG. 3.



Attest
Walter Donaldson
[signature]

Inventor
Carl Steffen
by Ellis Spear
Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.)

2 Sheets—Sheet 2.

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FIG. 4.

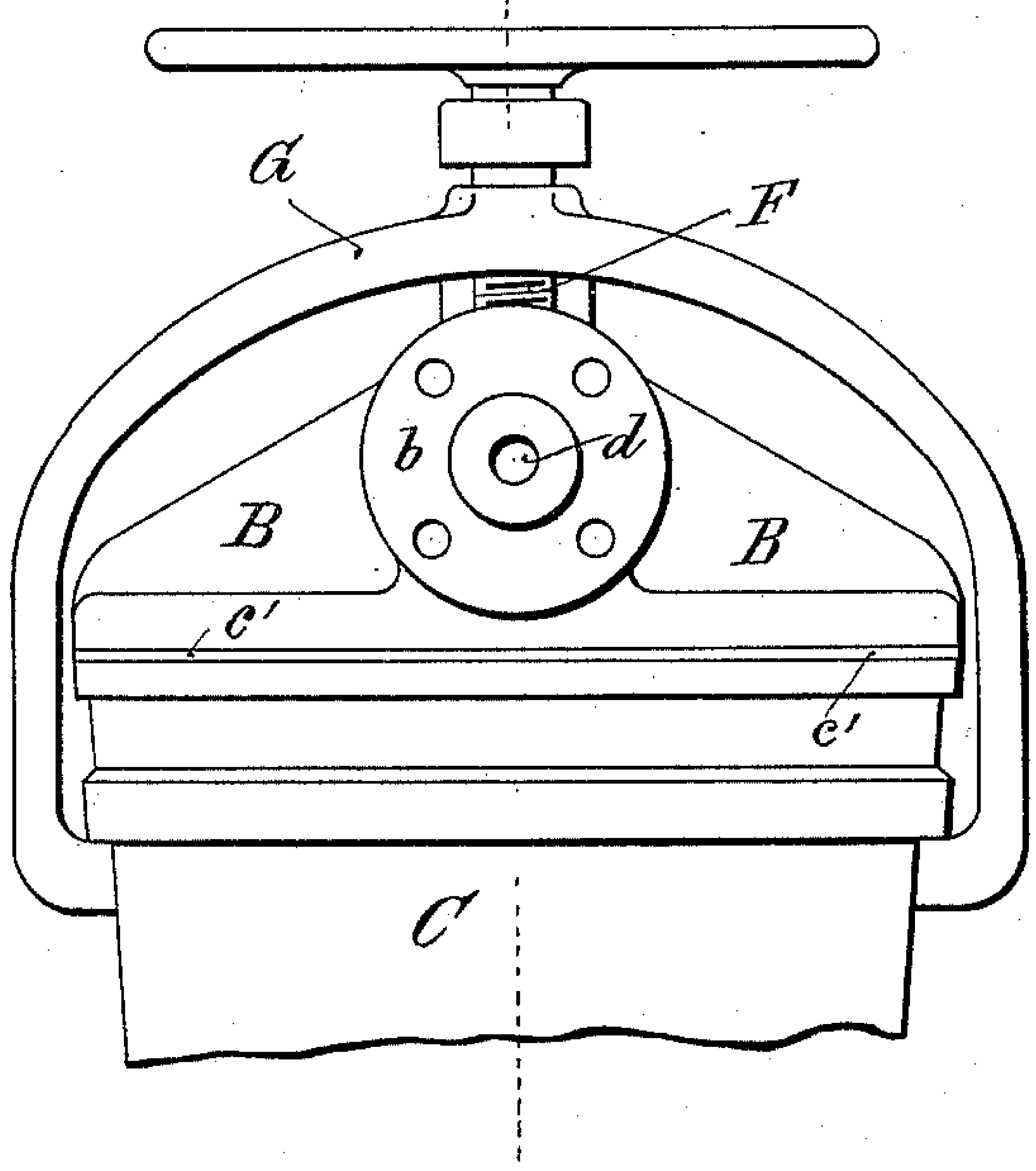
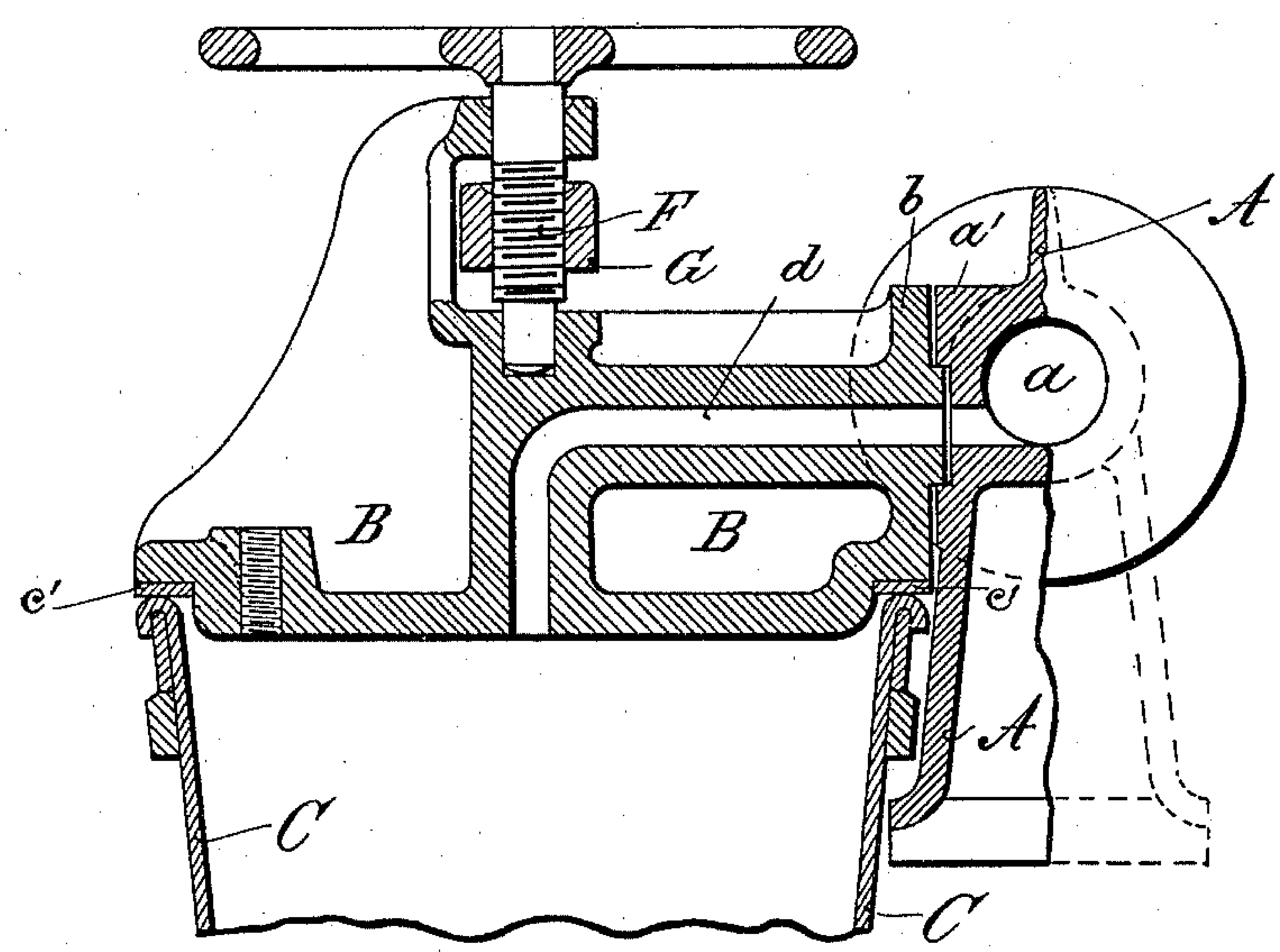


FIG. 5.



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[illegible]

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UNITED STATES PATENT OFFICE.

CARL STEFFEN, OF VIENNA, AUSTRIA-HUNGARY.

APPARATUS FOR REFINING SUGAR IN LOAF FORM.

SPECIFICATION forming part of Letters Patent No. 466,632, dated January 5, 1892.

Application filed February 28, 1891. Serial No. 383,287. (No model.)

To all whom it may concern:

Be it known that I, CARL STEFFEN, of No. 40 Heugasse, in the city of Vienna, in the Empire of Austria-Hungary, have invented a certain new and Improved Apparatus for Refining Sugar in Loaf Form, of which the following is a specification.

My invention relates to an improved apparatus for refining sugar in loaf form or for rapidly purifying sugar in loaves by employing a minimum quantity of liquor, the quantity of liquor employed in my improved apparatus being less than half that used in the purifying processes and apparatus now in use. The loaf-molds containing the crystalline mass of sugar are placed in my improved apparatus, each single form being provided with water-tight covers connected to a pressure tube or pipe containing washing or lixiviating liquor.

By means of this device the liquor is contained in the space between the cover and the sugar loaf, so that the pressure in the service-pipes will force the liquor uniformly through the entire mass of the sugar loaf and out at the opening or nozzle in the apex of the loaf-mold, said liquor being led off through suitable troughs into collecting vessels or reservoirs for separating the sirup from the washing-liquor. An entire system of such loaf-mold covers can be connected to a preferably horizontally-arranged pressure-tube, so as to form one apparatus, whereby a large number of sugar-loaves can be simultaneously submitted to the purifying process by means of the liquor in the tube or canal, said liquor being forced into the service-pipes by means of a suitable force-pump or pressure-tube.

An apparatus of this kind is described in the accompanying drawings, in which—

Figure 1 is the elevation of two loaf-molds connected to a hollow beam by means of their water-tight covers. Fig. 2 represents the connection of the hollow beam containing the washing-liquor with the loaf-molds arranged on each side of the same, partly in elevation and partly in vertical section. Fig. 3 is a plan or top view of Fig. 1, partly in horizontal section through the hollow beam. Fig. 4 is the elevation, on an enlarged scale, of a cover to a loaf-mold with the flange for attachment to the hollow beam. Fig. 5 is a vertical section of Fig. 4 according to the dotted line in said Fig. 4.

A is the hollow casting or beam containing the main supply-pipe or canal *a* and carrying the lateral flange-like extensions *a'*, to which the flanges *b* of the cover B to the loaf-molds C are screwed. The hollow beam A and the loaf-molds C, attached to the same, are carried by the standards D, to which the troughs E for receiving the liquor passing off from the "tuyeres" or nozzles *c* in the apex of the loaf-molds C are connected. The pipe or canal *a* is in connection with a pressure-tube or with a force-pump, so as to obtain the requisite pressure for forcing the liquor through the sugar-loaves in the molds. The cover B to each loaf-mold C can be firmly pressed onto the latter by means of the strap or bow G and screw F, Figs. 4 and 5, so that the packing-ring *c'* will hermetically seal the upper part of the mold, said covers being provided, moreover, with a canal *d*, communicating with the tube or canal *a* of the beam A. A space remains in the loaf-mold between the inner surface of the cover B and the upper surface of the sugar loaf for receiving the washing-liquor, which is under pressure and is uniformly forced through the entire mass of the sugar loaf. When the liquor has passed through the sugar-loaves, it flows out at the nozzels *c* at the apex of the molds C, and is led off by means of the troughs E into collecting-vessels, where the sirup is separated from the washing-liquor. The washing or purifying of the sugar loaves in the molds C is carried out very rapidly in consequence of the pressure exerted on the liquor. The aforedescribed apparatus can be employed to like advantage for one washing or for the systematic washing of sugar loaves with purifying-liquor. Each connection between the main tube or canal *a* in the hollow beam A and the canals *b* in the covers B can be so arranged that the same can be opened or closed, according to requirement, by means of suitable cocks or valves. As soon as the washing process is finished, which will be seen by pure liquor passing off from the nozzles *c* of the loaf-molds C, the liquor still remaining between the surface of the sugar loaf and the cover can be driven off by means of com-

pressed air or in other suitable manner, so that the surface of the loaf no longer appears to be wet, and the said loaves can be removed without loss of liquor.

In order to entirely remove the liquor from the loaves so treated as above described for fully drying the same and regaining the liquor remaining in the sugar mass after the washing is finished, the sugar loaf in the molds can be treated in a suitable centrifugal machine.

It will be evident that the form, arrangement, and construction of the parts can be modified in various ways without departing from the nature of my invention.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, what I claim is—

1. In combination with the standard D, the beam A, supported by said standard and having a channel extending through the same, and brackets extending laterally from said beam and forming covers for the molds and having passages extending from that in the beam A to the molds, said brackets having straps or bands for the support of the molds, substantially as described.

2. The combination of the hollow beam A, its canal or tube *a*, and lateral extensions *a'* with the flanges *b* and canal *d* of the covers B, the molds C, packing-rings *c*, and nozzles *c'*, the straps or bows G, screws F, the standards D, and the troughs E, all substantially as and for the purpose set forth.

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

CARL STEFFEN.

Witnesses:
W. B. MURPHY,
JOHN H. FORSTER.