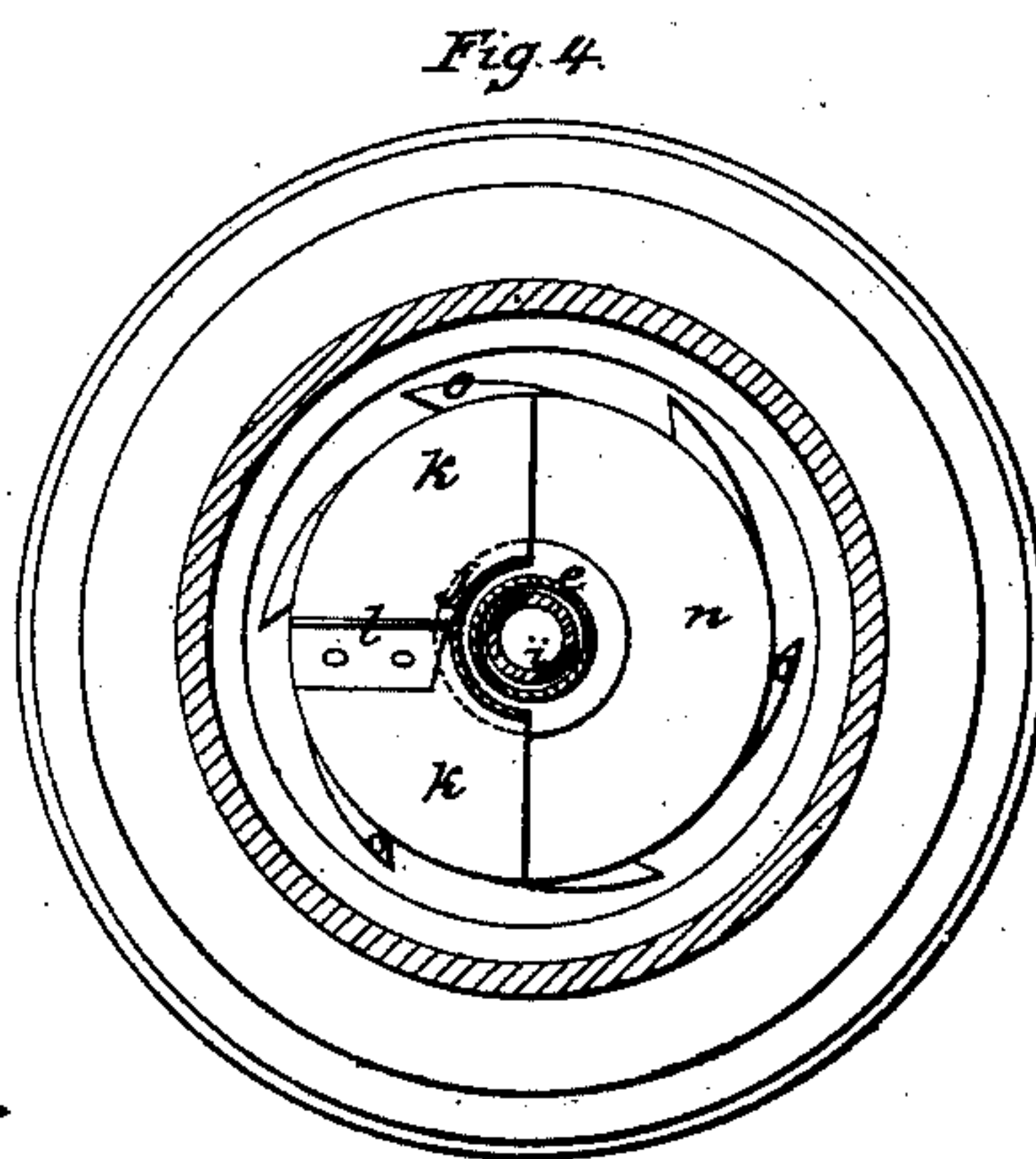
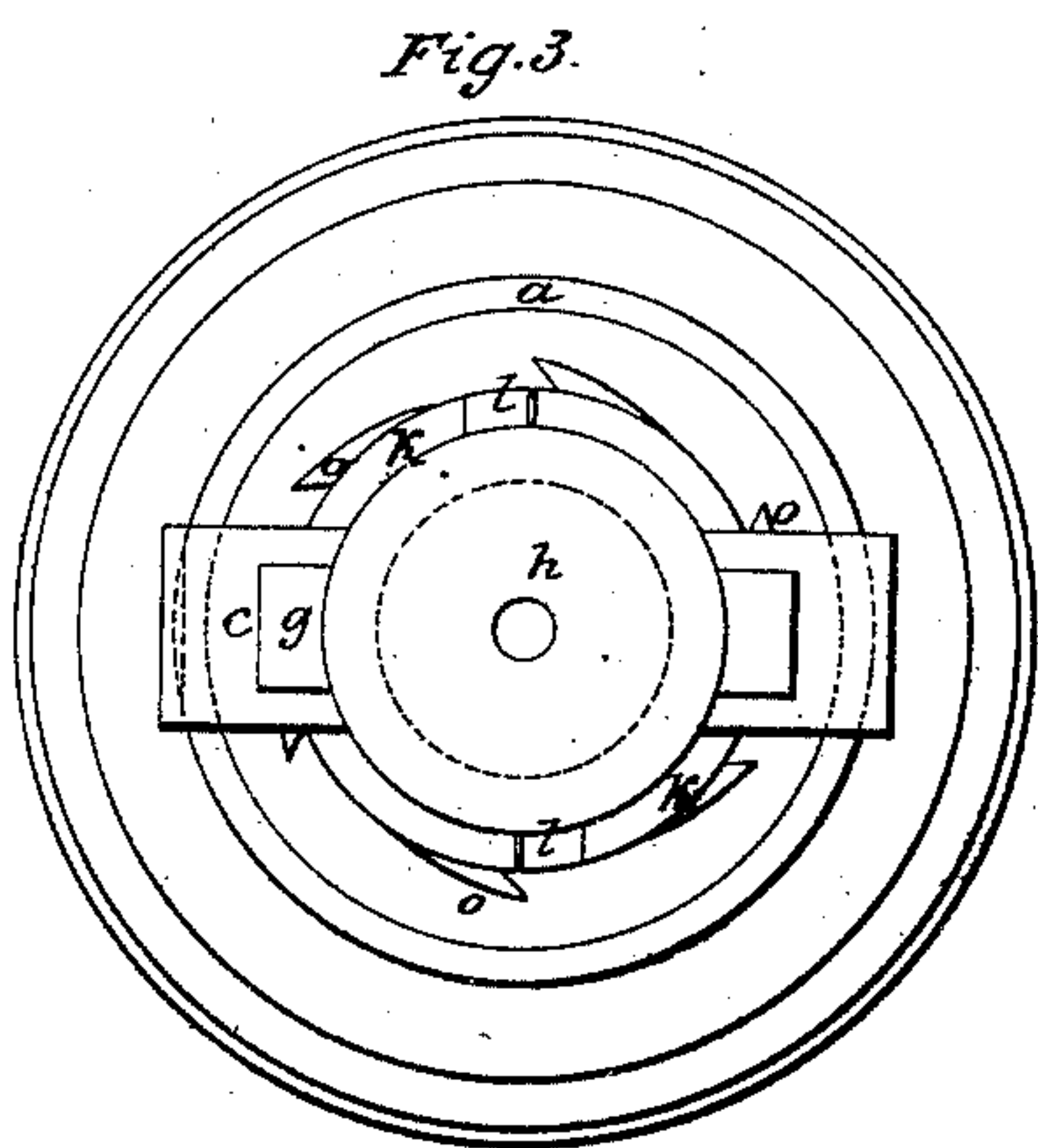
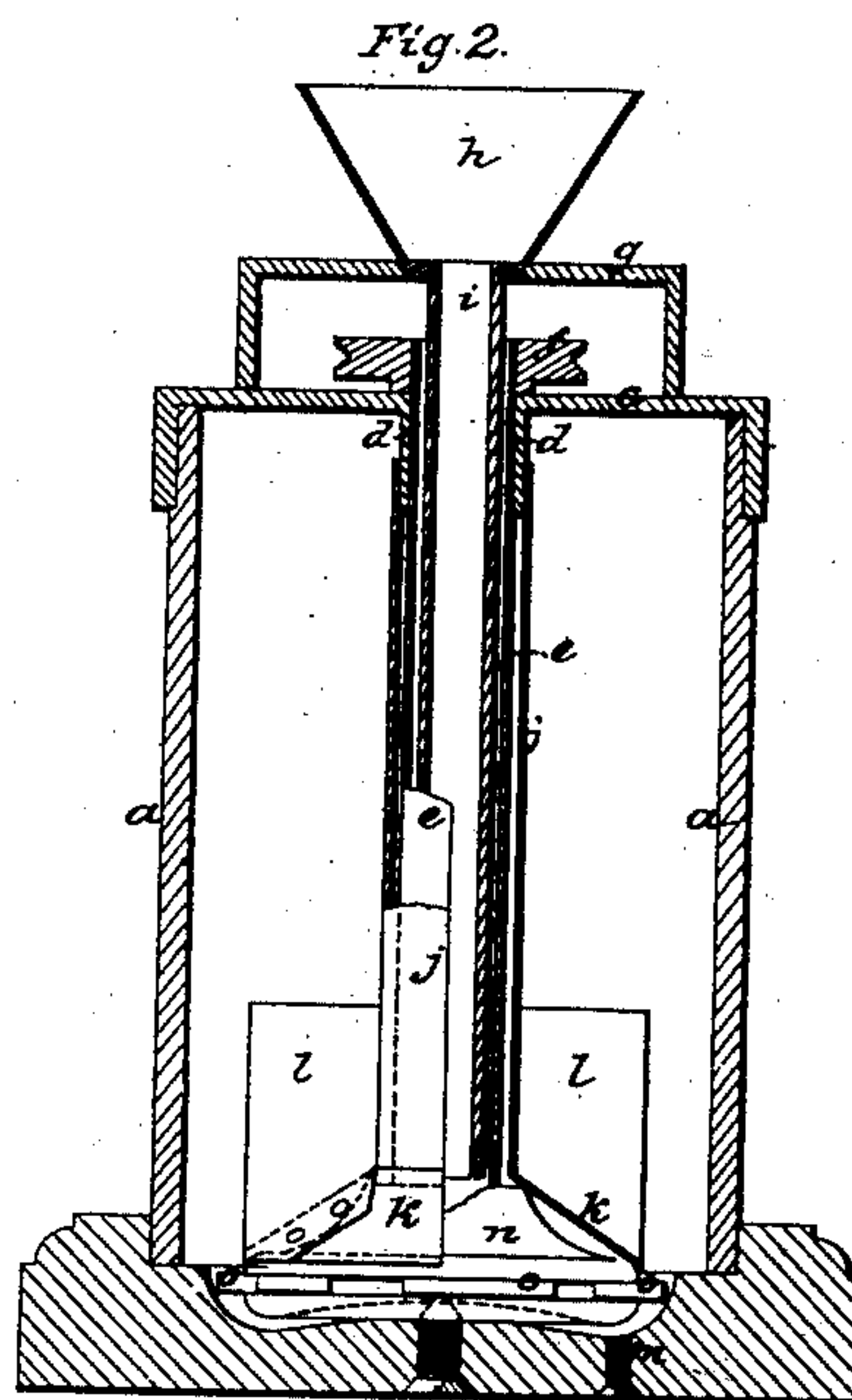
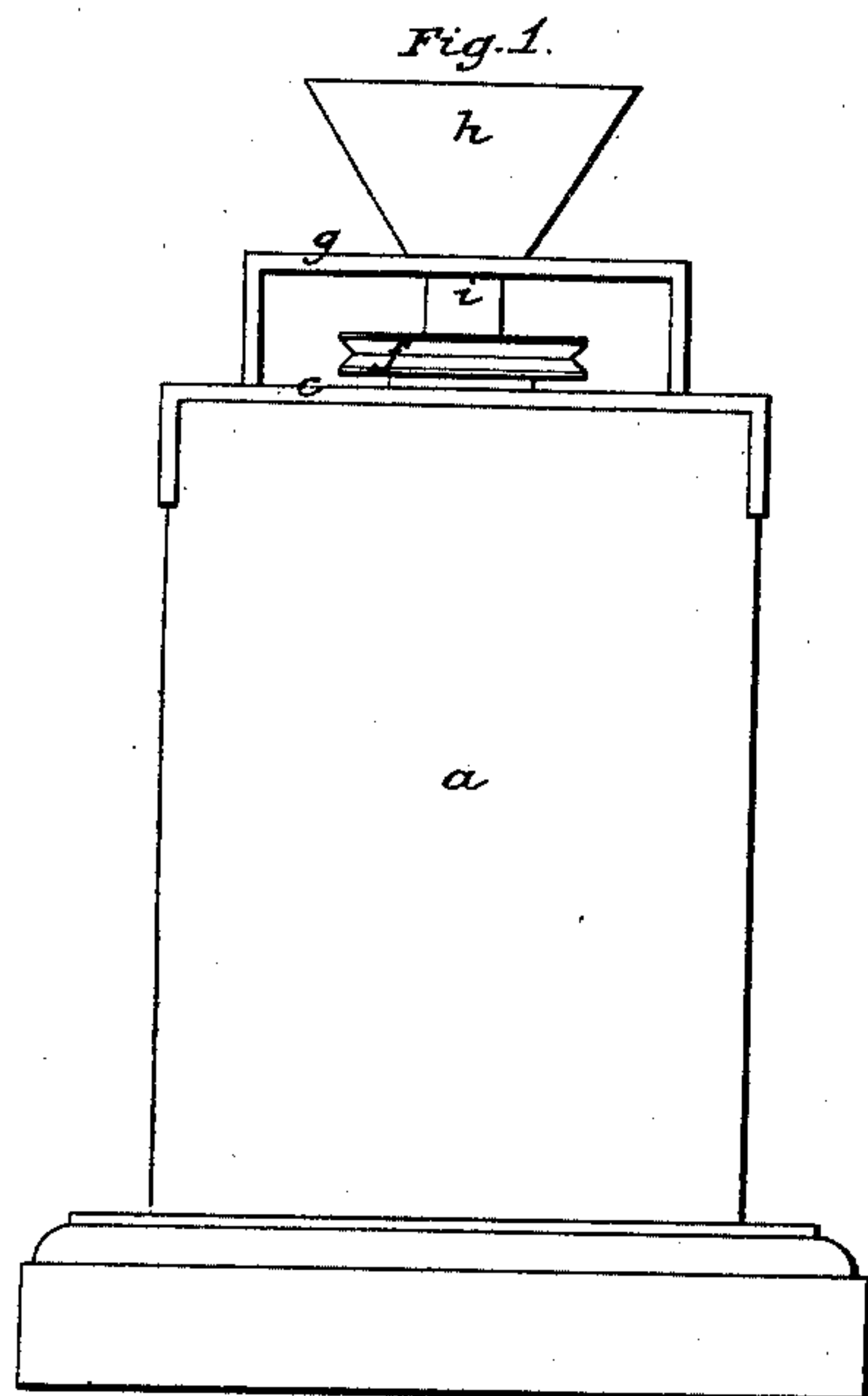


G. W. CARTER.
GOLD AMALGAMATOR.

No. 27,035.

Patented Feb. 7, 1860.



Witnesses.

Thos. A. Pickering.
Chas. W. Jones.

Inventor.

George W. Carter.

UNITED STATES PATENT OFFICE.

GEORGE W. CARTER, OF SAN FRANCISCO, CALIFORNIA.

AMALGAMATOR.

Specification of Letters Patent No. 27,035, dated February 7, 1860.

To all whom it may concern:

Be it known that I, GEORGE W. CARTER, of the city and county of San Francisco, in the State of California, have invented certain
5 new and useful Improvements in the Methods of Dry Amalgamation of Gold in the Ore with Mercury by Means of Machinery; and I do hereby declare that the following, taken in connection with the drawings that
10 accompany and form a part of this specification, is a description thereof so full and exact as to enable those skilled in the art to practice my invention.

Similar letters refer to similar parts in
15 the different figures of the drawings, whereof—

Figure 1 is an elevation, Fig. 2, a vertical sectional elevation, Fig. 3 a plan and Fig. 4
20 a horizontal cross section and partial plan of an amalgamating machine embodying and illustrating my invention.

(a) represents a reservoir, designed to be filled or nearly filled with mercury. A cross bar (c) fixed to the top of (a) supports the
25 bearing (d) within which the tubular shaft (e) of the centrifugal wheel (n) revolves. At the upper end of (e), which extends beyond the bearing (d) the pulley (f) or other suitable device is fixed for rotating the wheel
30 (n) by means of its shaft (e) which at its lower end rotates upon and is steadied by a step or bearing centrally fixed in the base of the reservoir which is cup shaped for the purpose of collecting the heavy product of
35 the amalgamation and is provided with a tap (m) for the discharge thereof.

(s) is a yoke to which is fixed the tunnel (h) and conducting tube (i) which passes
40 near the center of the wheel (n). The tube (j) surrounds the shaft (e) and is kept in position by fitting around (d); the lower end of (j) is provided with a shield plate (k) extending over the top surface of the wheel
45 (n) and to (n) or (j) the radial wings (l) are secured. The auriferous ore is supplied in a finely divided state to the centrifugal wheel through and by means of the tunnel (h) and tube (i). The centrifugal force
50 consequent upon rapid rotation of (n) disperses the ore in a finely subdivided state into and near the bottom of the mercury.

In Figs. 2, 3 and 4 it may be seen that the wheel (n) is provided with lips (o) project-
55 ing from the circumference near its discharge passages. These lips are intended to

displace the mercury by their rotation so that the ore may be thrown farther or spread by centrifugal force over greater area than would be the case if it was projected into or
60 against a solid or unbroken column of mercury. After the ore is projected into the mercury it floats upward consequent upon the difference of the specific gravity of the two substances. Each particle of the ore,
65 being surrounded by, and subjected to the hydrostatic pressure of, the mercury, the gold therein thoroughly amalgamates with the mercury and the amalgam thus formed subsides into the cup shaped base of the res-
70 ervoir.

The object of the tube (j), plate (k) and wings (l, l) is to prevent agitation or motion of the mercury consequent upon the rotation of the wheel (n) and shaft (e) which would
75 "flour" or mechanically divide the mercury into small globules which waste away with the overflow of the quartz. The deposit of the amalgam is also facilitated by a quiet state of the mercury.
80

Other modes of dry amalgamation with which I am acquainted may be generally described as methods of kneading and mixing and as compared with my invention are
85 wasteful both of mercury and gold. Wet amalgamation is more wasteful than dry because each particle of gold is surrounded by a thin film of water which is retained between the particle and the mercury by capillary attraction and prevents amalgamation
90 which requires contact between the gold and the mercury.

The nature of my invention consists in introducing and dispersing finely divided
95 auriferous ore in a dry state by means of machinery into or near the bottom of a column of mercury so that by the entire separation of the particles of the ore from each other, the hydrostatic pressure upon them, and their complete contact with the mercury,
100 amalgamation is more perfectly effected than by the ordinary methods.

The nature of my invention further consists in certain devices whereby "flouring"
105 of the mercury consequent upon the agitation produced by the machinery is prevented in order to avoid waste of the mercury and to facilitate the deposit of the amalgam.

Having described my invention what I claim as new and desire to secure by Letters
110 Patent is:

1. The amalgamation of gold with mer-

cury by means of a machine which disperses finely divided dry auriferous ore at or near the bottom of a column of mercury substantially in the manner as herein set forth.

- 5 2. Also the means substantially as herein set forth for preventing agitation of the mercury, consisting of the tube (j), shield

(k) and wings (l) whether the same are used separately or in combination.

GEORGE W. CARTER.

Witnesses:

THOS. A. PICKERING,
CHAS. W. IMEZ.