

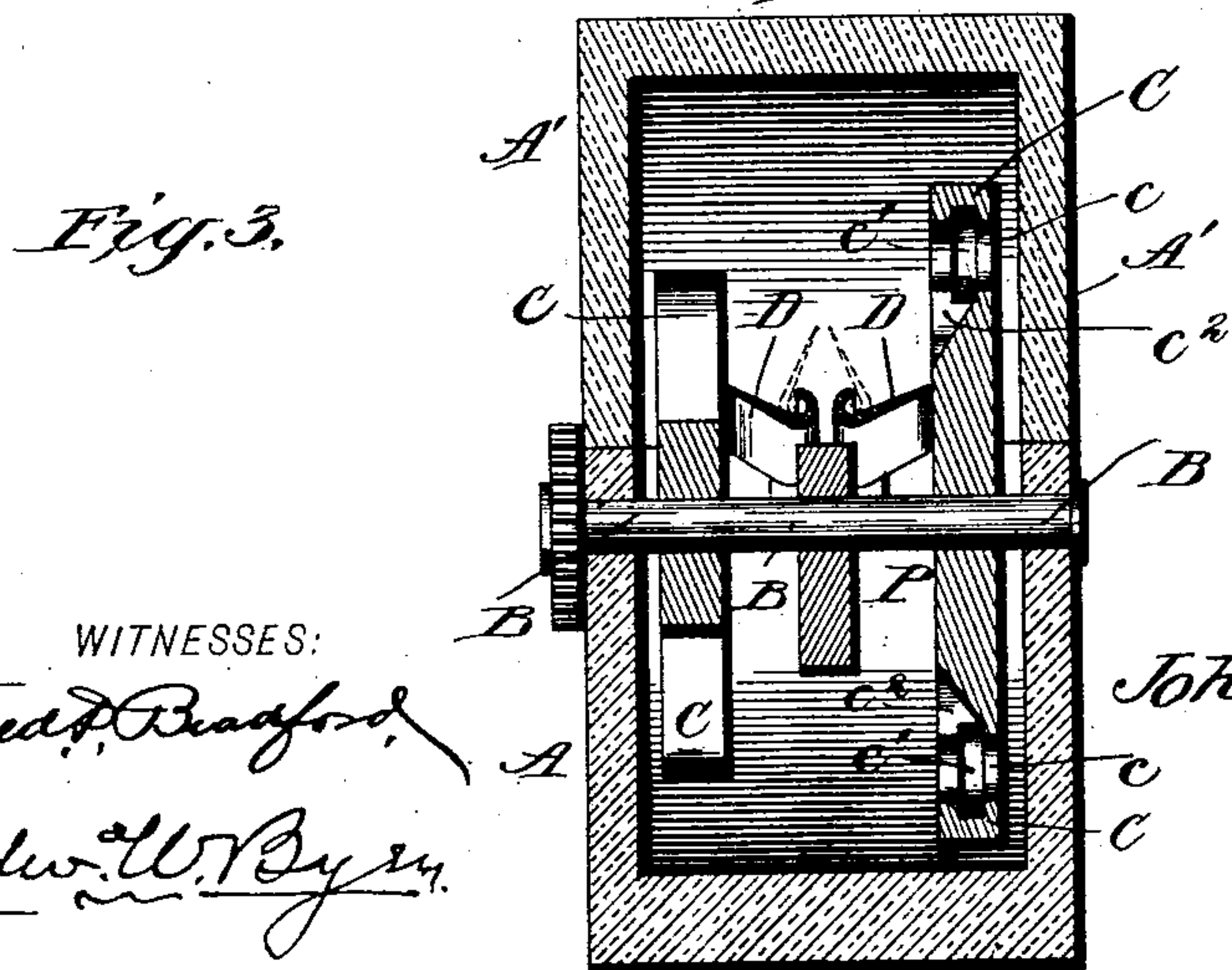
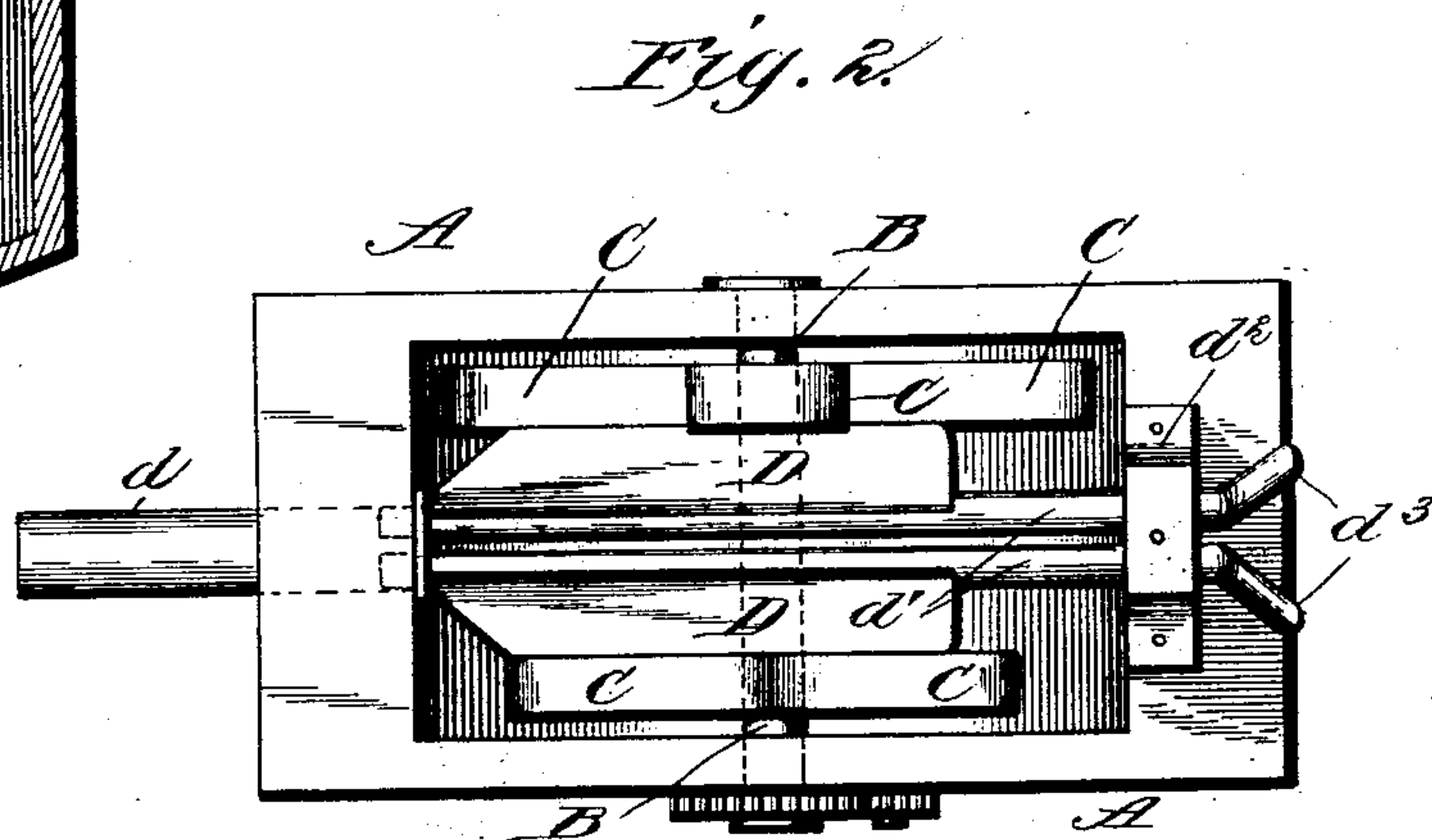
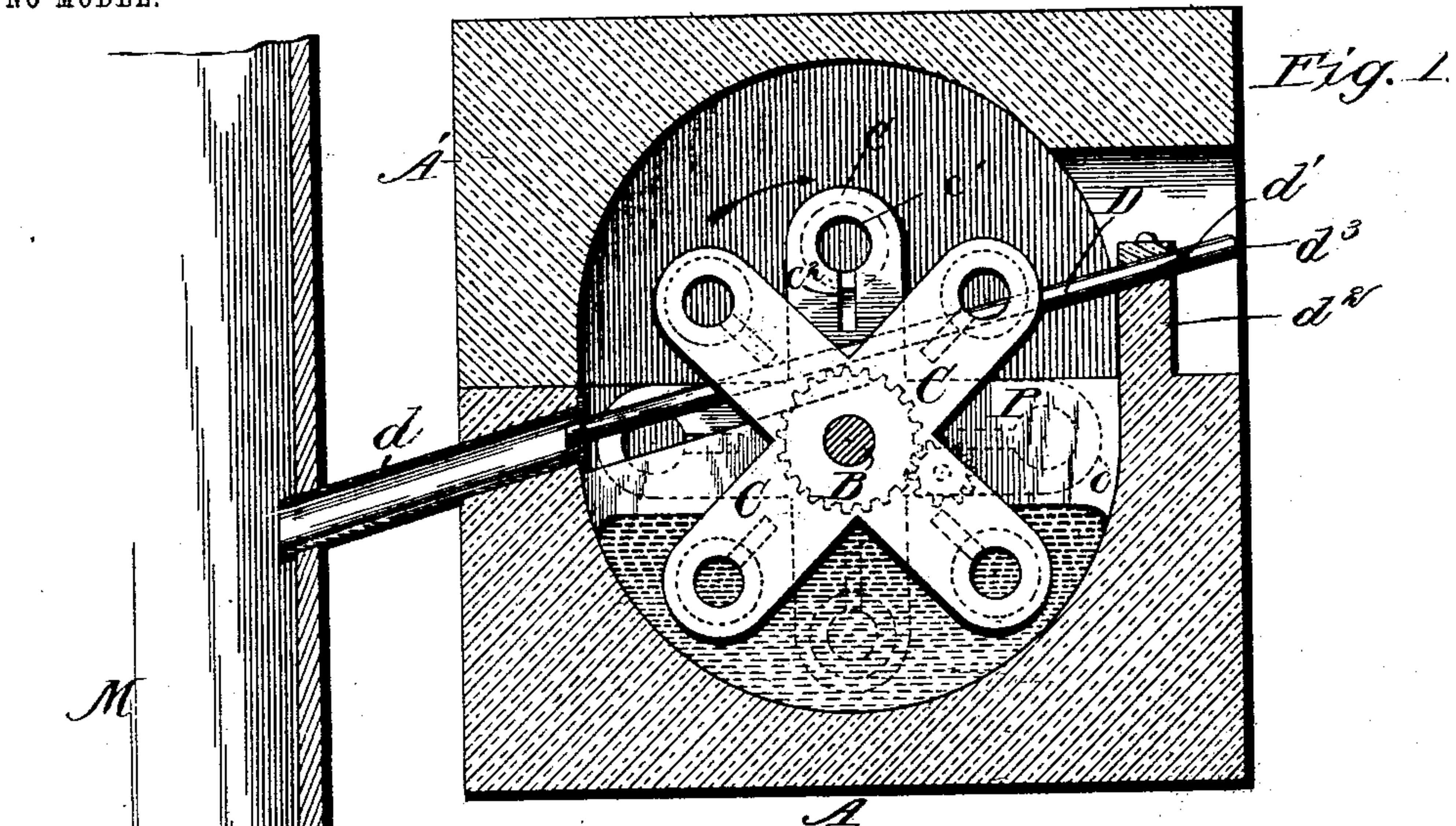
No. 733,301.

PATENTED JULY 7, 1903.

J. W. SWEARINGEN.
QUICKSILVER FEED FOR AMALGAMATORS.

APPLICATION FILED SEPT. 4, 1902.

NO MODEL.



WITNESSES:

Thos. D. Bradford
Edw. W. Byron

INVENTOR

John W. Swearingen

BY

Munn & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN WILLIAM SWEARINGEN, OF GASTON, CALIFORNIA.

QUICKSILVER-FEED FOR AMALGAMATORS.

SPECIFICATION forming part of Letters Patent No. 733,301, dated July 7, 1903.

Application filed September 4, 1902. Serial No. 122,072. (No model.)

To all whom it may concern:

Be it known that I, JOHN WILLIAM SWEARINGEN, of Gaston, in the county of Nevada and State of California, have invented a new and useful Improvement in Quicksilver-Feeds for Amalgamators, of which the following is a specification.

In the recovery and separation of gold and silver by amalgamation with quicksilver (mercury) it is very desirable that the quicksilver should be fed to the amalgamator-mortars with regularity and in as nearly a uniform and continuous a manner as possible. Ordinarily the feed of quicksilver to the mortars is made by hand at more or less remote intervals and is dependent upon the memory of the workman, and it often happens that the quicksilver is not fed at proper times, which involves great loss in the efficiency of the amalgamators and in the gold and silver which are sought to be separated thereby. By reason of its weight and its tendency to break up in globules quicksilver cannot be conveniently and certainly fed by any ordinary feeding device, and I have therefore devised a special form of feeding devices suited to the peculiar physical qualities of quicksilver and to the needs of the amalgamators, whereby it is automatically fed in regulatable quantities and at close and proper intervals without being dependent upon the memory of the workman, thereby making a great saving in gold and silver and in the time of the millman.

My feeder is designed to be run slowly and is a small affair driven by clock-gearing and adapted to feed a definite quantity of quicksilver every fifteen or thirty minutes or at any other interval and in any quantity; and it consists in the novel construction and arrangement of the parts of the same, which I will now proceed to describe with reference to the drawings, in which—

Figure 1 is a vertical longitudinal section. Fig. 2 is a top plan view with the cover removed, and Fig. 3 is a vertical transverse section.

In the drawings, A represents the bottom portion, and A' the detachable top portion, of the casing, which may be of any suitable size or shape and of any suitable material. It is preferably made of glass, either in whole or part, so that the level of the quicksilver may

be at all times seen and be replenished whenever necessary. In the lower portion of the case there is arranged in suitable bearings a horizontal shaft B, to which is rigidly fastened a series of radial arms C, here shown as four in number, but which may be of any desired number. In the end of each arm there is a transverse hole *c*, which is hollowed out between the two faces of the openings, so as to form little annular buckets *c'*, each of which has a tapered groove or channel-way *c''*, leading from the bucket toward the axial shaft of the arms. Alongside of the inner face of the wheel formed by the arms C there is disposed at an incline a scraper-blade D, formed as a little trough, which at its lower end turns in the casing and protrudes into a spout *d* and at its upper end has a shaft extension *d'*, turning in an elevated bearing *d''* and terminating in a handle *d'''*, by which its axial position may be shifted. This trough lies with its blade side close to the face of the arms C and in position to receive from the buckets *c* when they are inverted their small charge of quicksilver and conduct it away through their lower spout ends to the mortar or the amalgamator.

I may arrange on the shaft B any number of sets of arms C with buckets and corresponding receiving-troughs to supply any number of amalgamators. In the present instance I have shown two arranged in parallel planes side by side and separated in the casing by a partition P. This partition, however, is not necessary and may be dispensed with, and I may use either a single wheel of arms or any number of the same. The buckets of the several wheels may also be made of different sizes to give a different feed.

In the operation of my quicksilver-feeder the wheels with radial arms and buckets are turned in the direction of the arrow by an ordinary clock-gearing and clock-spring or any other regulated source of power, the wheels moving in the direction of the hands of the clock—i. e., they rise at the low end of the troughs and descend at the high side. As the arms of the wheels descend into the quicksilver the buckets fill with the same, and as the buckets rise all except a definite quantity retained by the annular shape of the buckets runs out, and when each bucket in the rise of the arms reaches a nearly vertical

position the small charge of quicksilver carried by the same runs down through the tapered channel c^2 and is discharged upon the closely-approaching blade of the trough and
 5 being received into the same runs down its incline and is discharged into the mortar or the amalgamator.

If it is wanted to throw any wheel of buckets out of service, this is easily accomplished by
 10 simply rotating its trough about its bearing, so that its blade or lip is removed from the side of the bucket-arms and does not receive the quicksilver raised by the same. This same adjustment of the troughs may be made
 15 available for regulating the quantity of quicksilver fed, for the troughs may be turned on their axes so as to take their blades or lips just far enough away from the arms to receive only a portion of the quicksilver, allowing the rest to fall into the reservoir of the
 20 casing, and by adjusting the edges of the trough closer to or farther from the arms the quantity received and fed may be regulated at will.

25 In making use of my invention it is to be applied to any form of amalgamating machine or frame, a portion of which is shown at M, and by its certain and automatic action it involves a great saving in this industry.

30 It is not practicable for a millman to run around to the mortars every ten or even fifteen minutes to feed quicksilver by hand. Hence the general rule is to feed every half-hour; but often the feeding is let go from
 35 one to ten hours because of some accident or neglect, or perhaps the workman may forget, when he is busy. This neglect and feeding at long intervals causes heavy loss, as before described, while if my feeder is employed the
 40 process of amalgamation is going on regularly without any doubt or mistake. Ordinarily after quicksilver is fed in about ten minutes it has all settled in some place, and during the other twenty minutes of the half-
 45 hour there is no quicksilver to splash with the pulp inside and take up the fine gold and silver. Therefore most of it comes out onto the plates, which are often out of order, and great losses are sustained. The constant
 50 feeding at short intervals, as in my invention, will keep the quicksilver in the splash

all the time and will greatly increase the percentage of amalgamation inside and saves also the labor of running around to all the mortars every few minutes to feed quicksilver and at the same time makes a great saving in the metals recovered. It will also save the expense of hiring expert amalgamators, and it allows the operator to devote more time to repairing, cleaning, and caring for the work
 60 generally.

In my invention one feeder is supposed to supply one mortar or amalgamator, although there may be several sets of dippers. There will be also an inclosing casing to connect
 65 together in firm position the feeder and the clock mechanism, and the connection of the feeder and clock mechanism will be in the nature of a clutch or universal coupling of any well-known form, the same to connect
 70 with gear-wheels on the side of the case, which gear-wheels are shown in dotted lines in Fig. 1 and in full lines in Figs. 2 and 3.

Having thus described my invention, what I claim as new, and desire to secure by Letters
 75 Patent, is—

1. An automatic feed for quicksilver, comprising a case forming a reservoir, a shaft bearing rotating arms having buckets in their ends, and an inclined trough having a spout
 80 at one end, a handle at the other and a blade or lip adapted to be juxtaposed to the arms substantially as described.

2. An automatic feed for quicksilver, comprising a case forming a reservoir, a shaft
 85 with rotating arms provided with buckets and a trough juxtaposed to said arm and arranged in bearings to be adjusted about its longitudinal axis substantially as described.

3. An automatic feed for quicksilver, comprising a case forming a reservoir, a shaft
 90 with rotating arms having holes through their ends hollowed out and provided with inclined channel-ways leaning toward the center of rotation, and an inclined trough fitting close
 95 to the tapered channel-ways on the arms substantially as and for the purpose described.

JOHN WILLIAM SWEARINGEN.

Witnesses:

JOHN W. O'NEILL,
 FRED SEARLS.