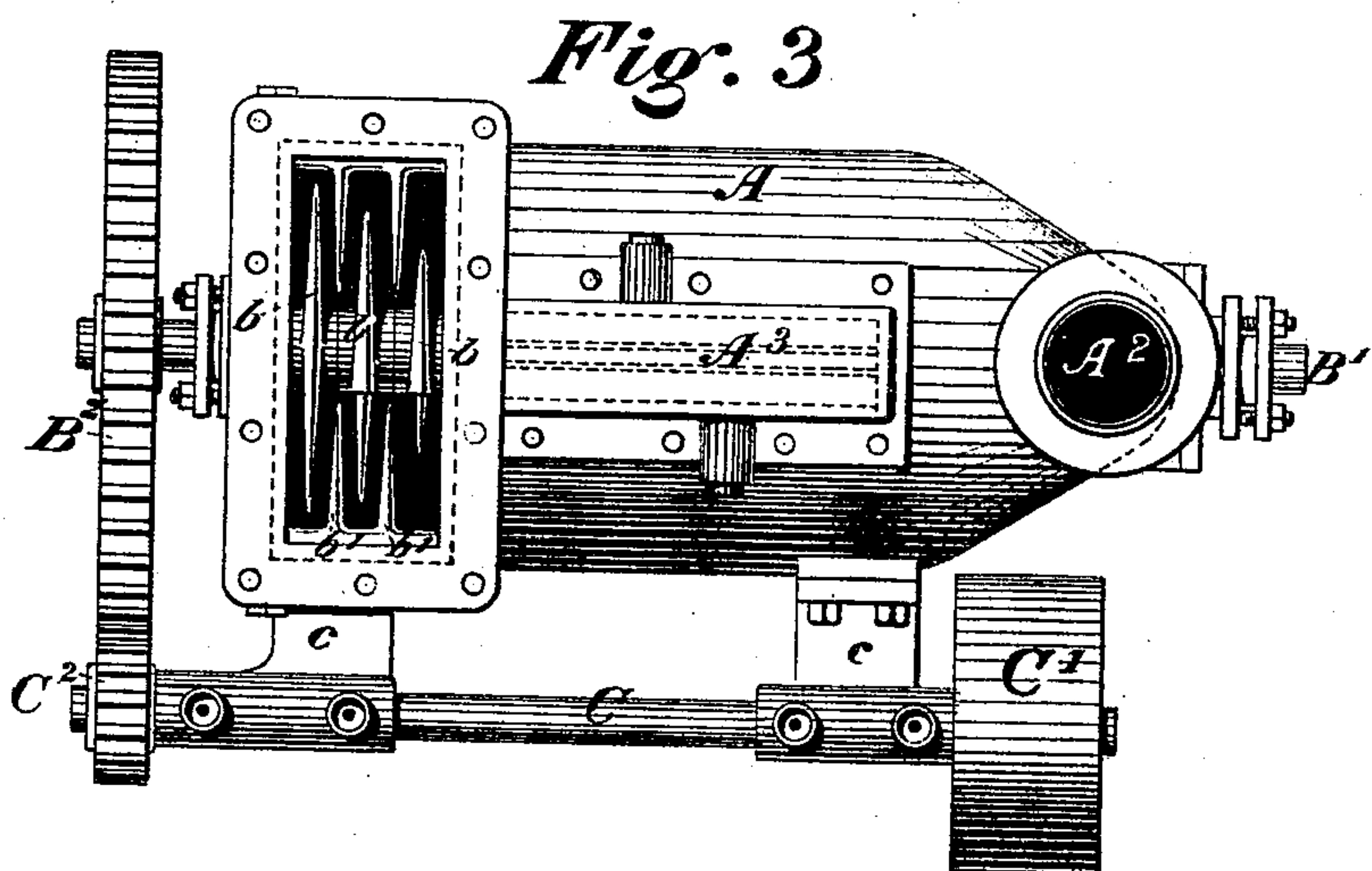
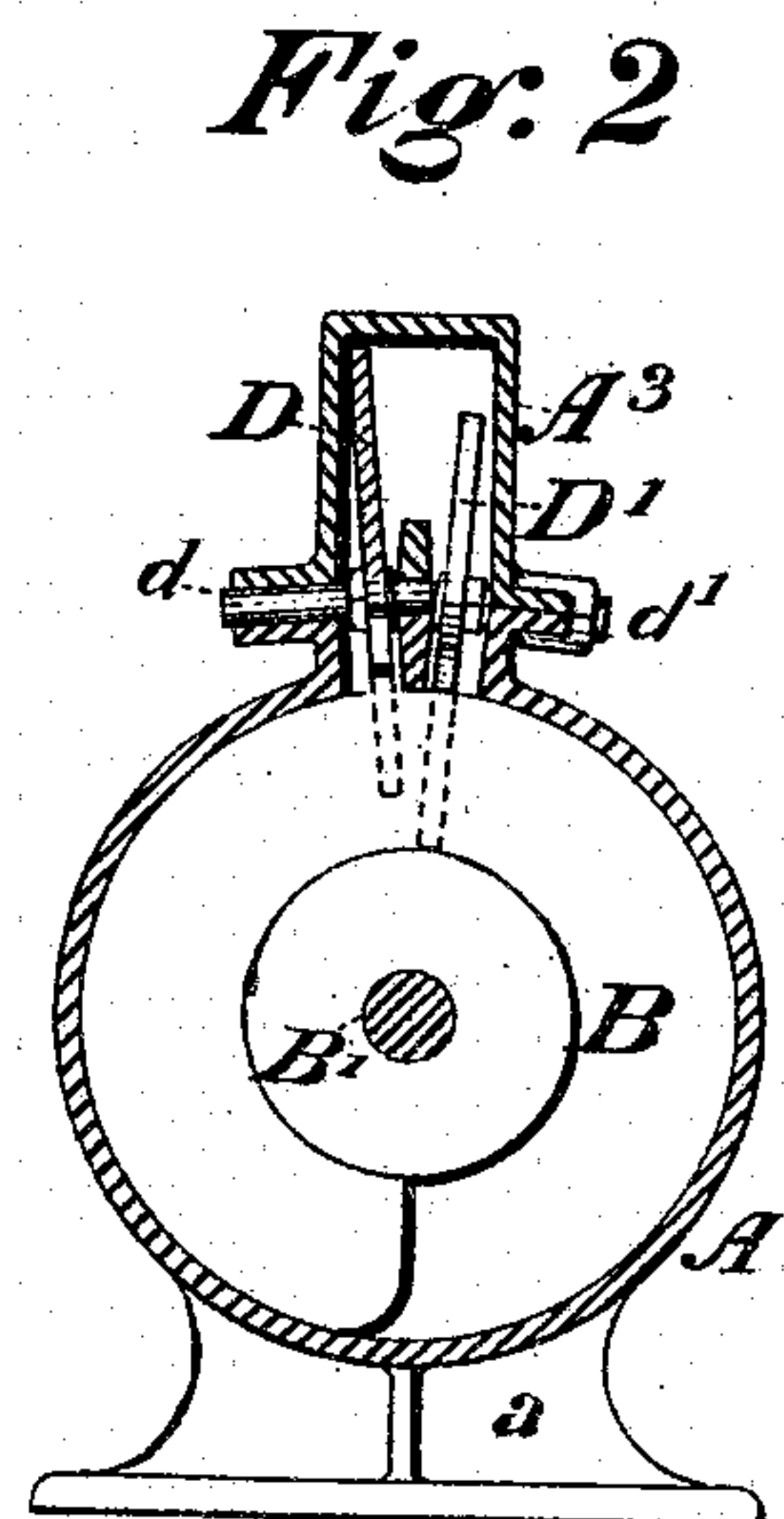
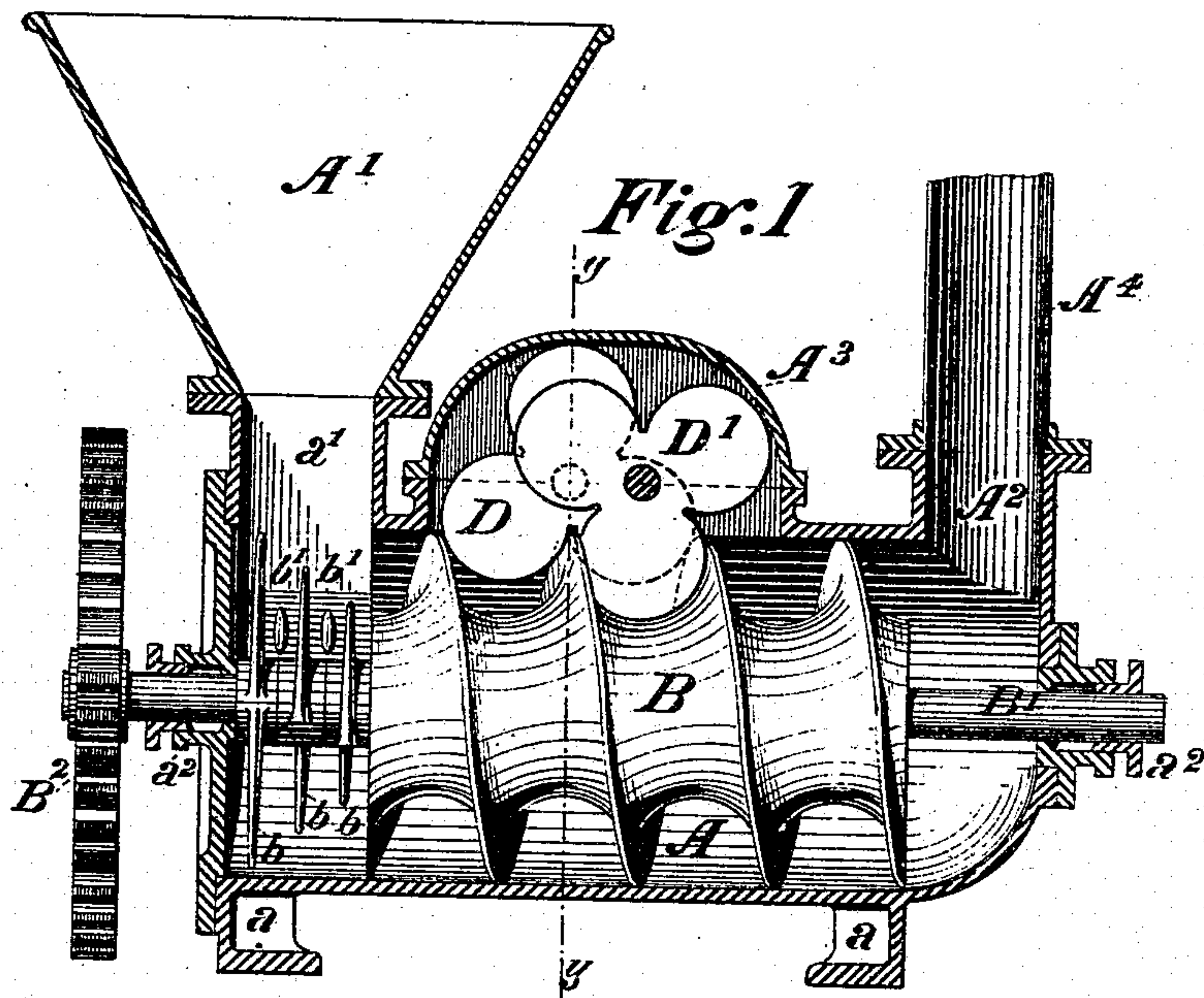


H. W. LAFFERTY.
SCREW ELEVATOR.

No. 178,647.

Patented June 13, 1876.



Witnesses:

John Gundering
Chas. W. Schuellermann.

Inventor:

Hugh W. Lafferty.
by J. Thorden Bell,
Att'y.

UNITED STATES PATENT OFFICE.

HUGH W. LAFFERTY, OF GLOUCESTER, NEW JERSEY.

IMPROVEMENT IN SCREW-ELEVATORS.

Specification forming part of Letters Patent No. 178,647, dated June 13, 1876; application filed January 7, 1876.

To all whom it may concern:

Be it known that I, HUGH W. LAFFERTY, of Gloucester, in the county of Camden, and State of New Jersey, have invented certain new and useful Improvements in Screw-Elevators, of which the following is a specification:

The object of my invention is to provide a simple and efficient device for elevating thick liquids, semi-fluids, or solid matter in fragments, at low speed from one vessel to another, the invention being specially designed for use in the manufacture of sugar, for the purpose of elevating boiled sugar from the cooling-pans to the mixer, as the bucket-elevator ordinarily employed is defective and unsatisfactory in its operation.

To this end my improvements consist in combining, with a screw-conveyer and an inclosing-case, one or more toothed disks rotated by the conveyer and alternately opening and closing spaces between its threads, to prevent the backward flow of the material to be elevated, as hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is a vertical longitudinal central section through an apparatus embodying my improvements; Fig. 2, a vertical section of the same at the line *y y*; and Fig. 3 a plan or top view of the same.

To carry out the object of my invention I provide a cylindrical case, A, having feet *a*, by which it rests upon a floor or base-plate. A mouth-piece, *a*¹, is formed upon one end of the case, to which is secured a feeding-hopper, A¹, and an outlet-nozzle, A², is formed upon the opposite end, to which nozzle is secured a delivery-pipe, A⁴, leading to the vessel into which the material is to be elevated. A screw-conveyer, B, fitting neatly within the case, is secured upon a shaft, B¹, passing centrally through the same, and supported in bearings in the ends thereof, being provided with stuffing-boxes and glands *a*², to prevent leakage. The screw-conveyer does not extend through the entire length of the case, in order to afford proper space at each end for the reception and discharge of the material operated on. A series of separator-blades, *b*, are secured upon the shaft B¹, immediately below the mouth-

piece *a*¹, and rotate between stationary blades *b*¹, for the purpose of breaking up any lumps that may pass in from the hopper. A casing, A³, is secured upon the top of the conveyer-case, and serves to inclose and provide bearings for one or more disks, D D', each provided with curved teeth, which mesh into the spaces between the threads of the screw-conveyer B. The screw-surface is curved coincidently with the teeth of the disks, so that the latter will be rotated by the revolution of the screw, and the disks are set at a longitudinal distance apart equal to about one-half the pitch of the screw, and inclined so that their center lines produced will intersect the center line of the shaft B¹. The shaft B¹ is, preferably, rotated through the intermediation of a counter-shaft, C, mounted, in bearings *c*, on the case A, and carrying a pulley, C¹, to receive power from the prime mover, and a pinion, C², meshing into a spur-wheel, B², on the shaft B¹.

In the operation of my invention the disks D D' being rotated by the screw-conveyer B, their teeth alternately open and close spaces between the threads of the screw-conveyer, and act as valves to prevent the backward flow of the material fed into the hopper, and insure its discharge at each successive revolution of the conveyer, the disks backing up the material in the thread of the conveyer on the face presented to it, and keeping the thread behind them clear for each new charge. In the position shown in Fig. 1 the disk D' has entirely closed the opening between two threads, and the disk D exposed one-half the space which one of its teeth covers between two other threads. At one period of the revolution of the screw both disks will be in such position as to leave an open space equal to one-fourth of the sectional area of the space between two threads of the screw and the case; but, by the use of additional disks set a sufficient distance apart, this opening may be proportionately reduced. In some instances a single disk will suffice, and in others a greater number will be required, varying with the nature and consistency of material operated on. The disks might be rotated by separate mechanism, if desired.

I have found in practice that two disks will

operate satisfactorily in an apparatus for elevating material of the consistency of boiled sugar; but I do not confine myself to the precise number and location of disks, nor the number of the teeth thereof herein shown.

I claim as my invention and desire to secure by Letters Patent—

The combination, in a screw-elevator, of a cylindrical case, a screw-conveyer revolving

therein, and one or more toothed disks rotating with the screw-conveyer, and alternately opening and closing spaces between the threads thereof, substantially as set forth.

HUGH W. LAFFERTY.

Witnesses:

J. SNOWDEN BELL,
JOHN EVERDING.