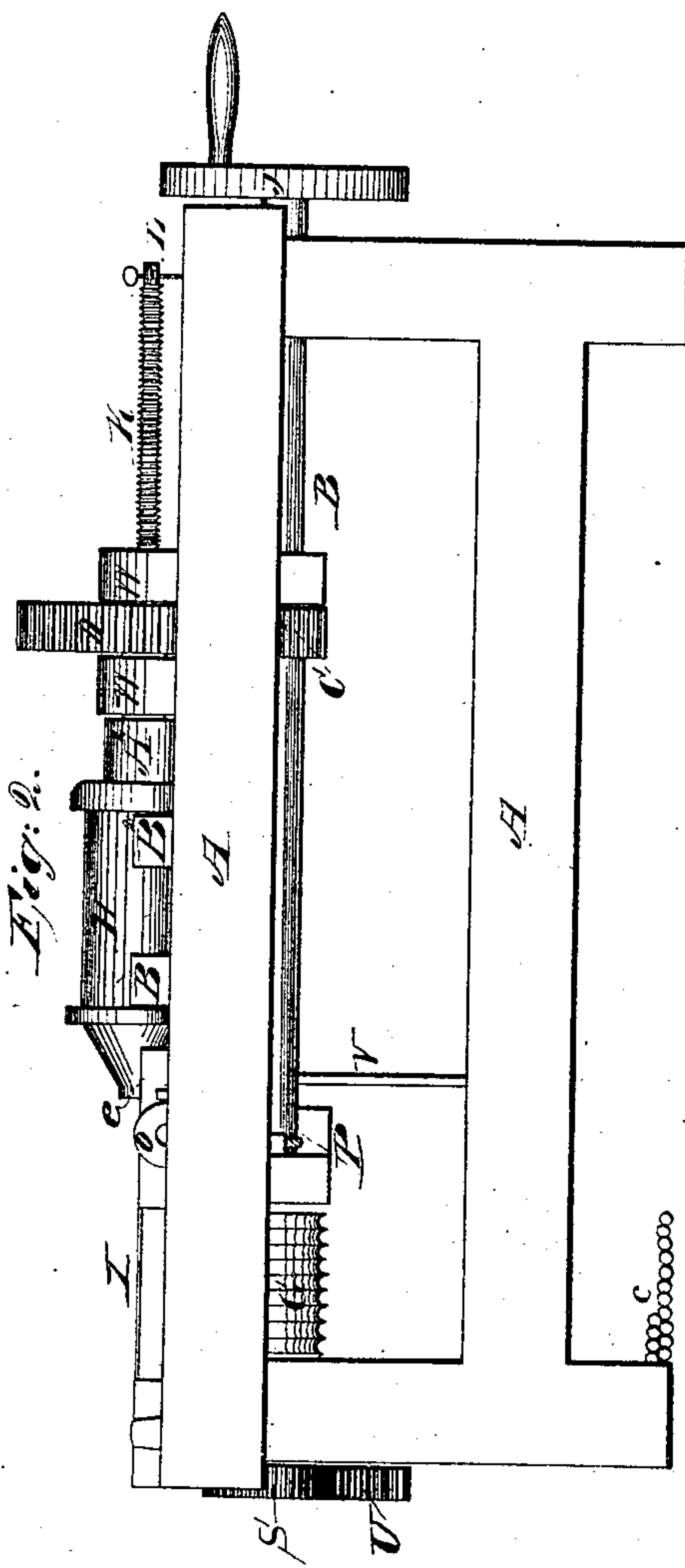
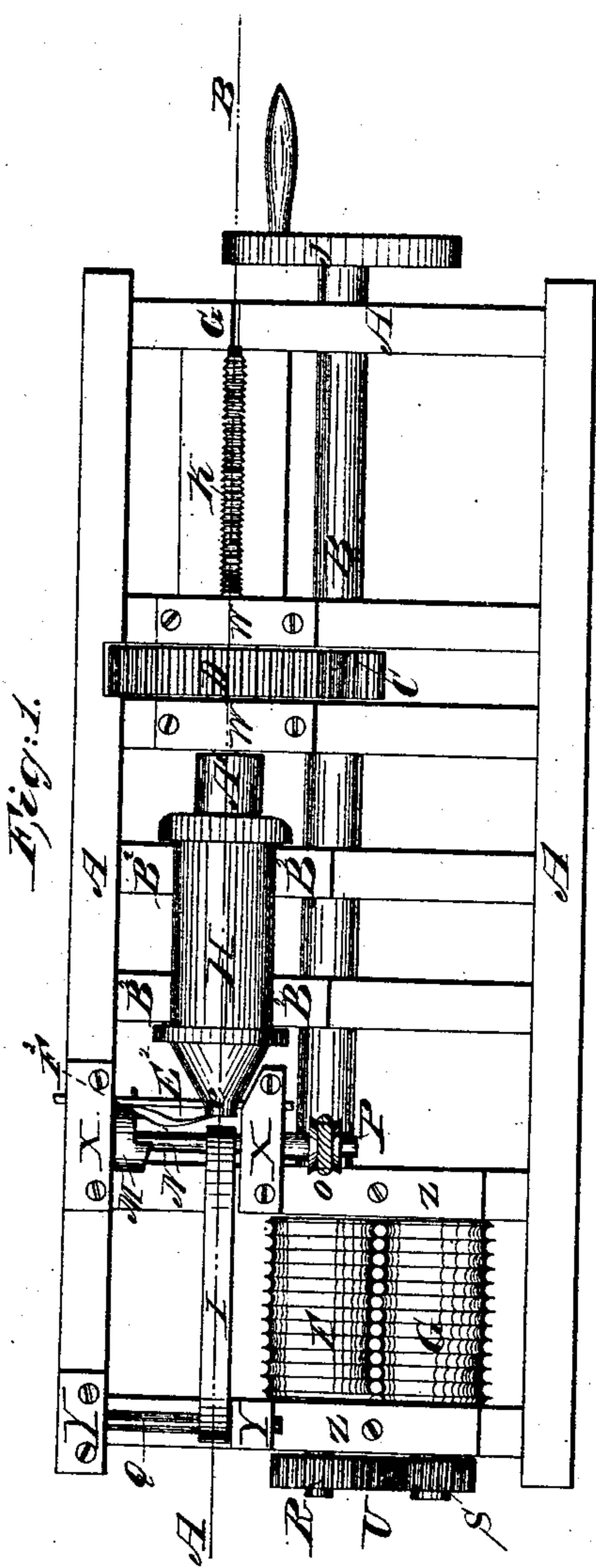


J. C. AYER.
Globule Machine.

No. 17,865.

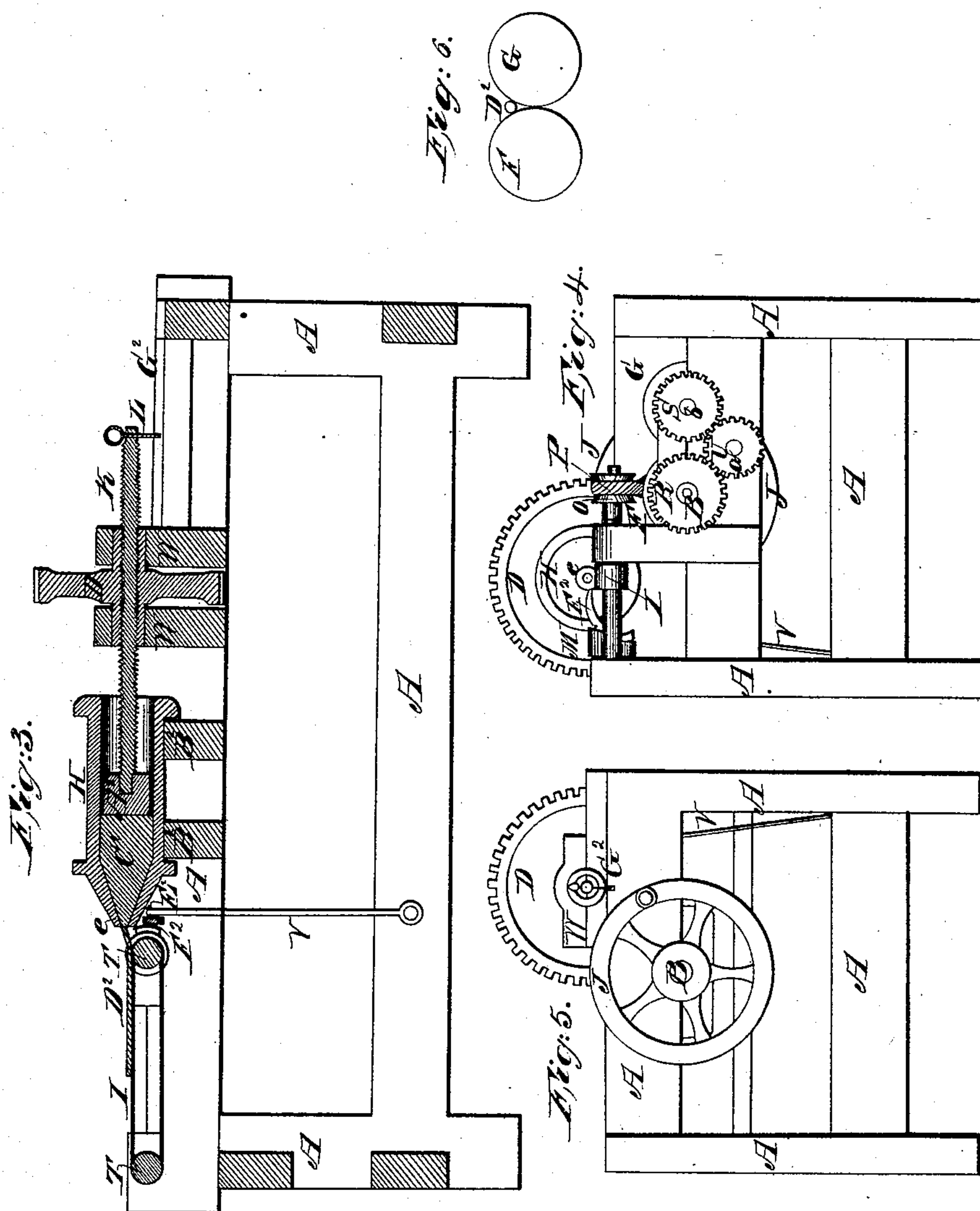
Patented July 28, 1857.



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UNITED STATES PATENT OFFICE.

JAMES C. AYER, OF LOWELL, MASSACHUSETTS.

IMPROVEMENT IN PILL-MACHINES.

Specification forming part of Letters Patent No. 17,865, dated July 23, 1857.

To all whom it may concern:

Be it known that I, JAMES C. AYER, of Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a novel and useful Globule-Machine; and I hereby declare that the following specification, in connection with the accompanying drawings and references thereon, constitutes a lucid, clear, and exact description of the construction and operation of the same.

In referring to said drawings, Figure 1 denotes a plan or top view; Fig. 2, a side elevation; Fig. 3, a longitudinal and vertical section on line A B, Fig. 1. Fig. 4 denotes one end elevation; Fig. 5, the opposite end elevation; Fig. 6, the end view of the forming cylinders for forming the globules.

The nature of my invention consists in first forming semi-solid material of which the globules are to be made in circular rods by compressing this material with great force, in the manner hereinafter seen, through a strong cylinder, and then forming globules of these rods by means of two corrugated cylinders, one of which is revolved at greater speed than the other; and in the application of my machine, which may extend to and be useful for a variety of purposes—such as forming confectionery, (in its plastic state,) wax, shot, &c., into the globule form, and for making pills.

To enable persons skilled in building machinery or in any art nearest to which my invention appertains to construct and carry out the same, I will describe it, as follows:

I construct a frame of wood, (seen at A in Figs. 1, 2, 3, 4, and 5 of the accompanying drawings,) to which I suspend a driving-shaft, B, so as to freely revolve. One of the cylinders for forming the globules (seen at F, Figs. 1 and 4) is secured near to the end of this drive-shaft B, while a gear (seen at R, Figs. 1 and 4) is secured to its end, and which gears into and turns an intermediate gear, U, Figs. 1, 2, and 4, and this gears into and turns the other globule-cylinder, G, Figs. 1, 2, 3, and 4, with greater speed than the cylinder F, and in the same direction. The intermediate gear, U, turns freely on the stud *a*, Fig. 4, while the gear S and cylinder G are driven by it. The periphery of both the cylinders F and G are grooved, as seen in the drawings at Figs. 1 and 2, and are placed side by side for opera-

tion when in the machine, as seen at Figs. 1 and 4, so that the edges left by forming these grooves will quite touch each other, thus leaving round holes down between each of these edges when these cylinders are so laid together.

I construct a hollow cylinder (seen at H, Figs. 1, 2, 3, and 4) and place it in the stands B², Figs. 1, 2, and 3, and to the inside of which cylinder is fitted a plunger, so as to move tight therein, as seen at A², Figs. 1, 2, and 3. This plunger is fastened to the forward end of a screw, K, Figs. 1, 2, and 3, which passes through and is driven by the hub of the gear D, revolved in the stands W, Figs. 1, 2, 3, and 5, which gear-hub forms the nut for this screw, which is prevented from turning by the pin L, Figs. 2, 3, and 5, with one of its ends in the groove G², Figs. 1, 3, and 5, and, by turning of this gear D by the pinion C on the drive-shaft B, will drive the screw K and plunger A² forward into the cylinder H with great force and press out the semi-solid substance out of the end or small hole *e* of the cylinder H, which, when so pressed out in the form of round rods, will be cut or severed by the knife F², which is hoisted up and thrown forward by the cam M, which is fixed to the apron-shaft N and forced to quickly drop and sever the rod D², Fig. 4, and then move back out of the way of the rod by the spring V, ready to be again raised and pushed forward ready to again cut the rod D² by the cam M, revolved on the shaft N, which revolves in the boxes X, in connection with the spring V. Another apron-shaft (seen at Q) is fitted to the boxes Y, Fig. 1, around both of which the apron I is revolved over the pulleys T by means of the band P, Figs. 1, 2, and 4, which is driven by the main shaft B, and thence passing around the pulley O on the apron-shaft N, which pulleys T are fastened to these apron-shafts. The object of this apron is to conduct the rods D² of semi-solid substance along on its upper surface as it is driven through the cylinder H until it is cut off by the dropping of the knife F. Then the rod D² is dropped down by hand between the cylinders F and G, as they are revolving one faster than the other, and by which the whole rod D² is instantly formed into globules and deposited under the machine, as seen at *c*, Fig. 2, and so on until the contents C² in the cylinder H are exhausted. The globe form is

imparted to the plastic rod D^2 by the revolving of the cylinders F and G. The cylinder G, revolving the fastest, of course predominates and forms the globules c , in conjunction with the other cylinder, F, and carries these globules down and deposits them underneath the cylinders, as seen at c , Fig. 2, as before mentioned. The cylinder H may be taken from the machine for refilling after the material in it is used up, as before mentioned, and so on, and replaced in the machine ready to be again operated upon. If pills are to be made, the composition or ingredients of which they are to be composed should be thoroughly mixed, after which it is placed in the cylinder H, and then operated upon, as before mentioned—that is, the whole machine being put in operation, the material C^2 will be pressed through the hole e in the cylinder H in the form of a wire or round rod and cut off at proper lengths to be formed into globules or pills when dropped between the cylinders F and G as they are in motion.

At Fig. 6 is a view of the end of both cylinders F and G, with a pill-rod, D^2 , dropped between them, just ready for the pilling operation to commence, as will be readily understood. A balance-wheel (seen at J, Figs. 1,

2, 4, and 5) is secured to the main shaft B, to which power from any known motor can be applied to drive my machine. This description of construction so embodies the machine's operation that no further description on that point is deemed necessary.

I claim—

1. The corrugated or grooved globule-cylinders F and G, or their equivalents, for forming the rods of "mass" or semi-solid material into globules, when constructed, arranged, and operated essentially in the manner and for the purposes fully set forth.

2. The cylinder H, plunger A^2 , and screw K, for forming the round rods D^2 of the desired size, arranged and operated substantially in the manner and for the purposes fully set forth.

3. The knife F^2 , or its equivalent, for cutting the rods D^2 of semi-solid substance the desired length, so arranged, as within specified, that it will cut or sever the rods D^2 without its sticking to them, essentially in the manner and for the purposes fully set forth.

JAMES C. AYER.

Witnesses:

E. W. SCOTT,
HENRY I. SNELL.