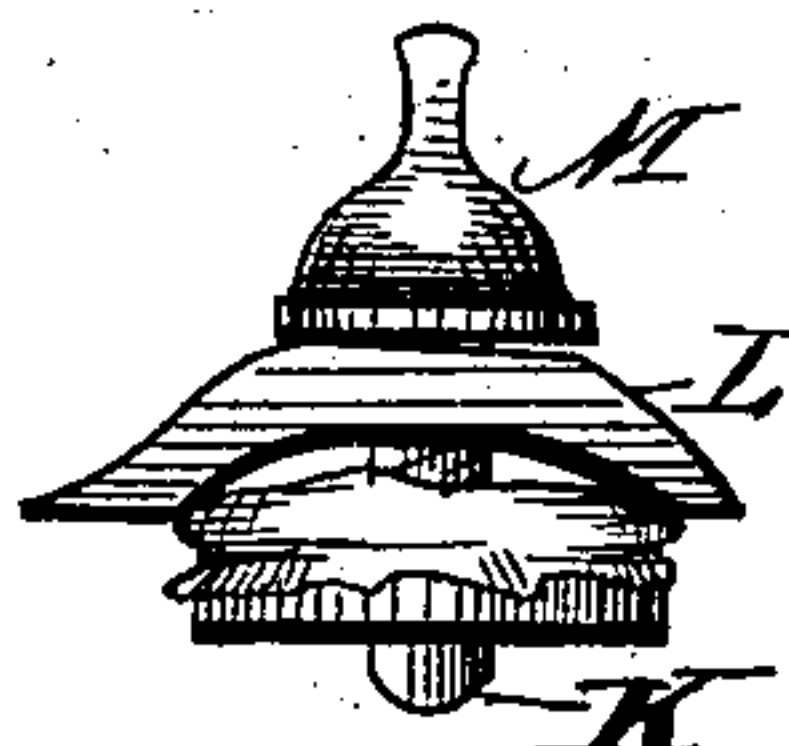
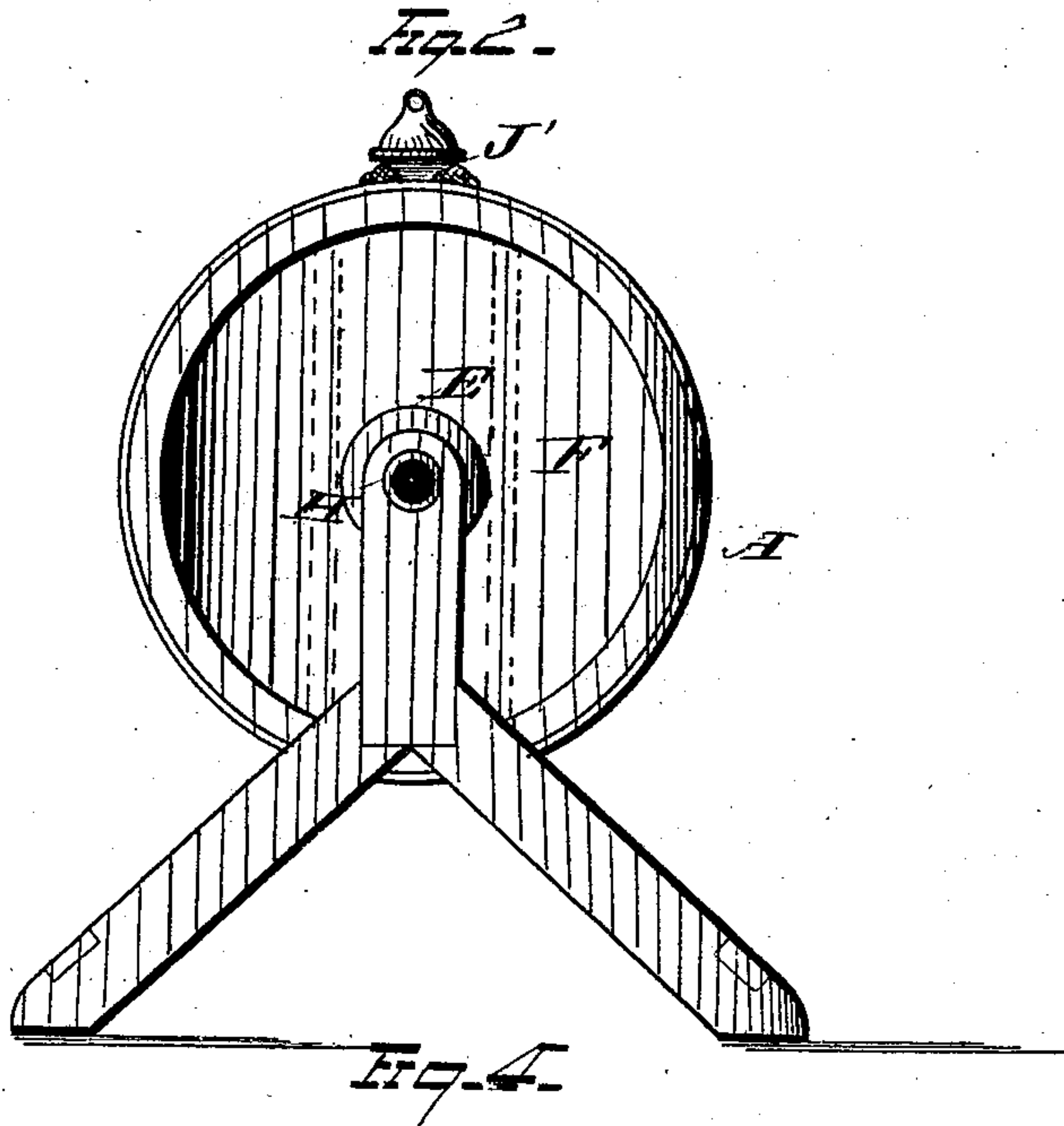
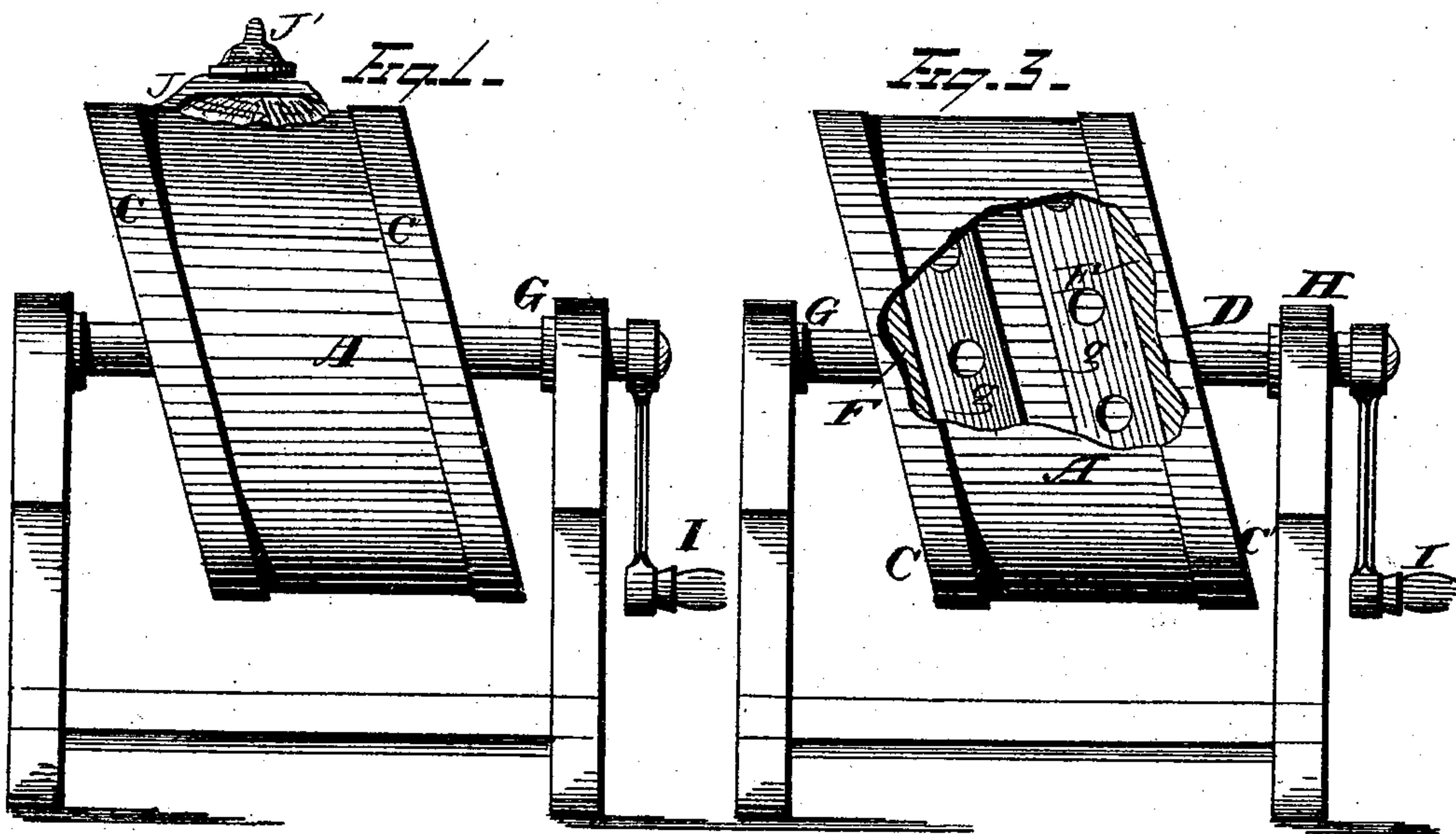


G. L. WITSIL.

## AGITATING AND MIXING APPARATUS.

No. 189,293.

Patented April 3, 1877.



WITNESSES

WITNESSES  
Ed. L. Nottingham,  
A. W. Bright.

George S. Hitzel INVENTOR

P. H. A. Seymour  
ATTORNEY

ATTORNEY



# UNITED STATES PATENT OFFICE.

GEORGE LA FAYETTE WITSIL, OF CAMDEN, ASSIGNOR OF ONE-HALF HIS  
RIGHT TO ALEXANDER F. PORTER, OF WOODBURY, NEW JERSEY.

## IMPROVEMENT IN AGITATING AND MIXING APPARATUS.

Specification forming part of Letters Patent No. 189,293, dated April 3, 1877; application filed  
February 22, 1877.

*To all whom it may concern:*

Be it known that I, GEORGE L. WITSIL, of Camden, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Agitating and Mixing Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification

My invention relates to an improved agitating and mixing apparatus, the object of the invention being to provide an apparatus in which liquids or granular substances may be subjected to a combined lateral and rotary movement, whereby the contents of the apparatus will be thoroughly agitated, or the several constituents intimately intermingled one with the other.

My invention consists in the combination, with a driving-shaft, of a section of a hollow cylinder cut obliquely to the axis of the same, whereby the revolution of said peculiarly-shaped vessel operates to force the contents of the same continuously from side to side of the vessel, as the contents partake of the rotary movement imparted by the driving-shaft.

In the drawings, Figure 1 represents a side elevation of my invention. Fig. 2 represents an end view of a modification when the same is provided with a hollow shaft. Fig. 3 is a side elevation with a portion of the cylinder cut away to show the interior of the same. Fig. 4 is a detached view of the bung.

A designates the cylinder, the sides of which may be made to incline at any desired angle. When the apparatus is intended for use in mixing or agitating liquids it is preferably made of wood, and the staves are secured by hoops C C'. Cylinder A is rigidly secured to the driving-shaft D by means of collars E, preferably made of metal; but it is evident that a skeleton-frame or spider may be secured to the shaft, the arms of the frame being attached to the heads F, and extending to the outer edge of the heads, thereby imparting sufficient strength to the structure to ef-

fectually resist the lateral strain exerted on the cylinder, as the weight of its contents is constantly thrown from side to side as the cylinder is rapidly rotated when in use.

Driving-shaft D may extend through the cylinder, or it may be a divided shaft, with its ends passing through, and keyed or otherwise secured, to the heads F.

Collars G are secured to the driving-shaft D within the bearings H, to prevent any longitudinal movement of said shaft, and to receive the end thrust of the same. I represents the crank, which is removably secured to the end of the driving-shaft. Perforated partitions g may be secured to the inner sides of heads F, said partitions extending only part the length of the cylinder, and serving as deflectors, to obstruct the rotary movement of the substance operated upon, and resolve such movement into a lateral course, or at right angles to the movement of the cylinder. These deflectors also serve to break up the volume of the liquid or other matter contained in the cylinder, and separate the mass into a number of smaller streams, which latter, being forced to take varied directions, meet each other at different angles and with varying velocities, thereby effectually intermingling the contents of the cylinder.

The opening J in the cylinder is closed by a bung, J', which is provided with a screw-threaded stem, K. The bung having been inserted in the cylinder, a yoke, L, is placed over the stem K, the ends of the yoke resting upon the cylinder. Hand-nut M is then turned down upon the stem K, and operates to draw the bung in close contact with the inner surface of the cylinder.

I do not limit myself to the means herein shown and described for closing the opening in the cylinder, as any improved device would serve the required purpose.

When the apparatus is designed for mixing liquids the driving-shaft is made hollow, to allow of the free escape of air from within the cylinder. If divided shafts are used, one or both of said shafts may be made hollow. If a single continuous hollow shaft is employed that portion of the shaft within the cylinder



may be perforated to allow of the free escape of the contained air within the cylinder.

An apparatus embodying the construction and arrangement of parts above set forth is specially adapted for use in churning, washing, mixing paints, paper-pulping, &c.

When the apparatus is designed for use when it is necessary to subject the cylinder to the action of heat, as in the case of roasting coffee, ores, or when heavy material is to be subjected to treatment within the cylinder, the latter may be made of sheet or cast metal. In such event the apparatus would serve as a coffee-roaster, ore-roaster, tumbling-barrel, or ore-washer. It is also evident that the cylinder may be made of wire-gauze, and render the apparatus specially adapted for use in popping corn and the like.

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

1. An agitating and mixing apparatus consisting of a revolving cylinder, the ends of which are cut obliquely to its axis, substantially as and for the purpose set forth.

2. The combination, with a cylinder, the ends of which are cut obliquely to its axis, of perforated deflectors, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 15th day of February, 1877.

GEORGE LA FAYETTE WITSIL.

Witnesses:

JOHN R. CASSADY,

JAMES M. CASSADY.