

(No Model.)

2 Sheets—Sheet 1.

E. D. JOHNSTON.
MORTAR MIXING APPARATUS.

No. 440,478.

Patented Nov. 11, 1890.

Fig. 1.

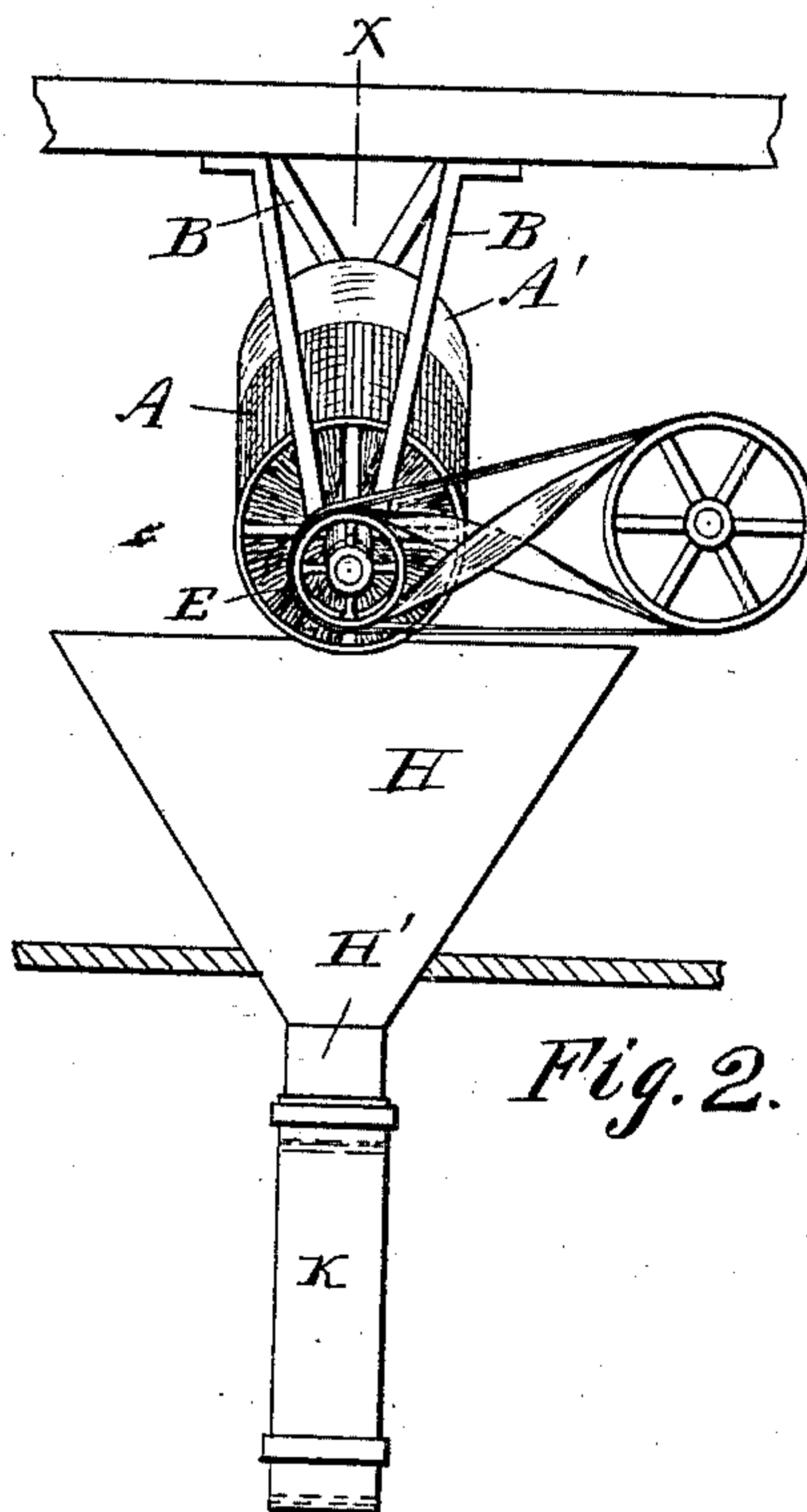
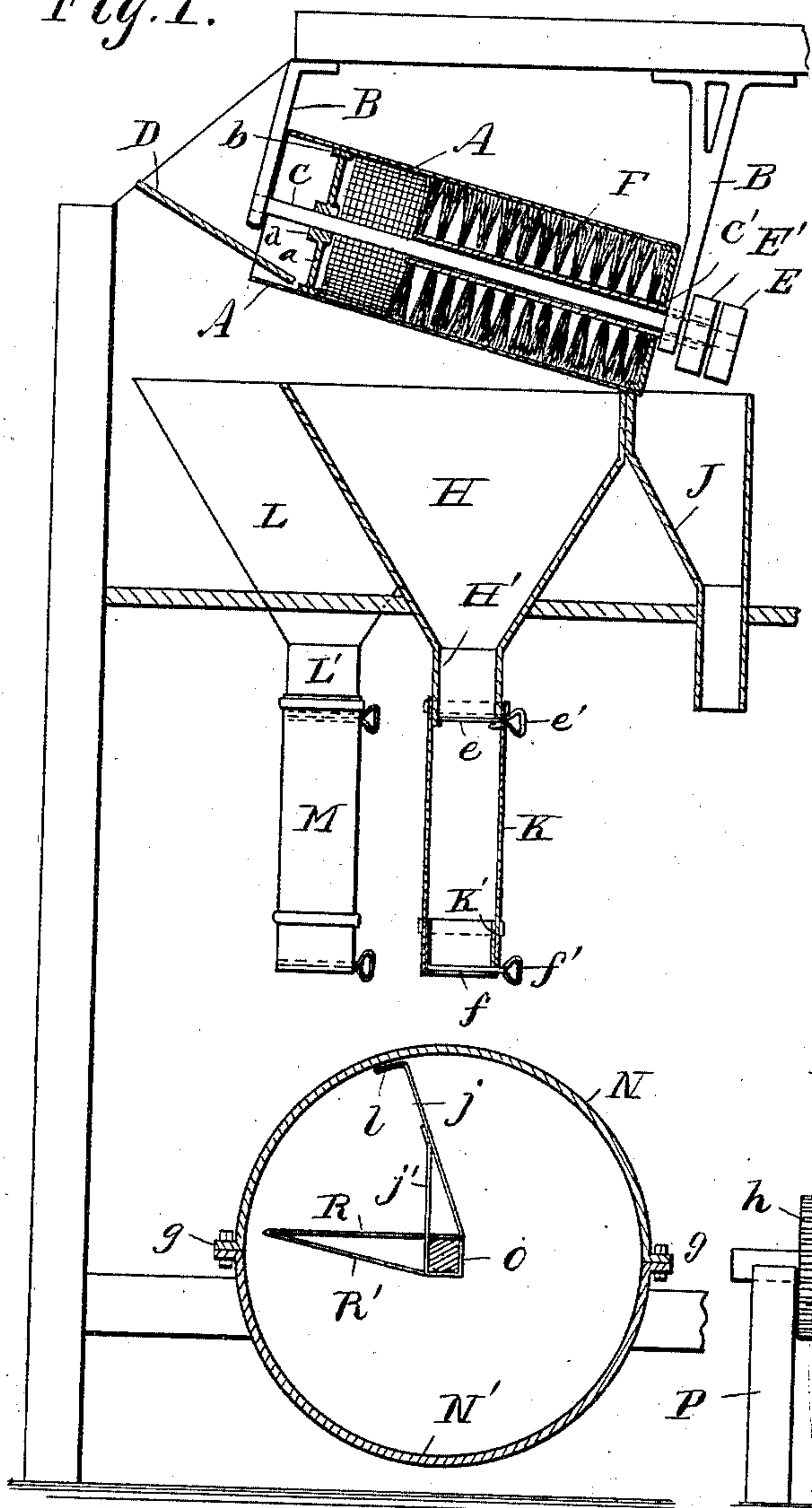


Fig. 2.

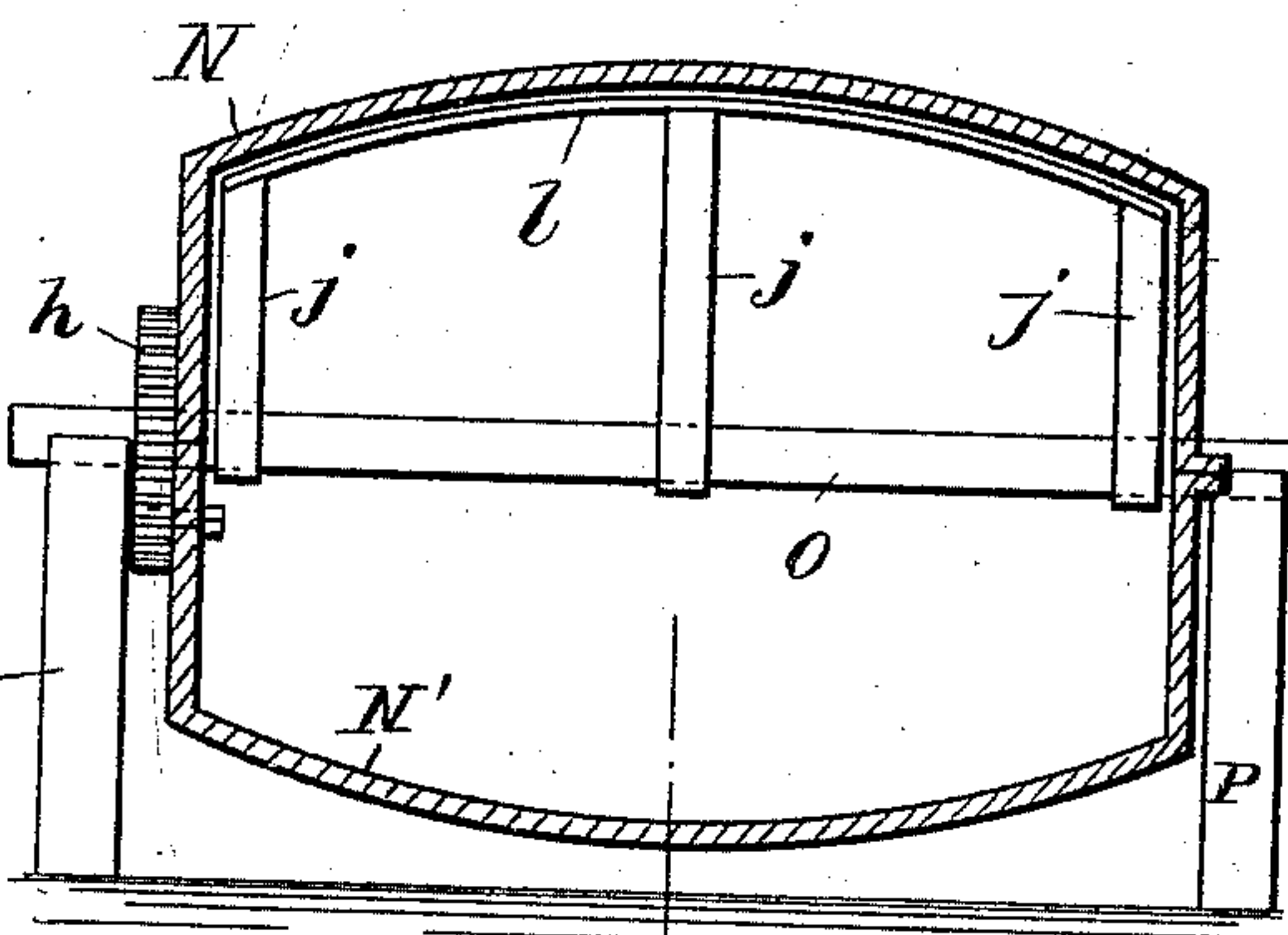


Fig. 3.

WITNESSES:

J. Henry Pickens
C. Bedgwick

INVENTOR:

E. D. Johnston

Munn & Co.

ATTORNEYS

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Fig. 4.

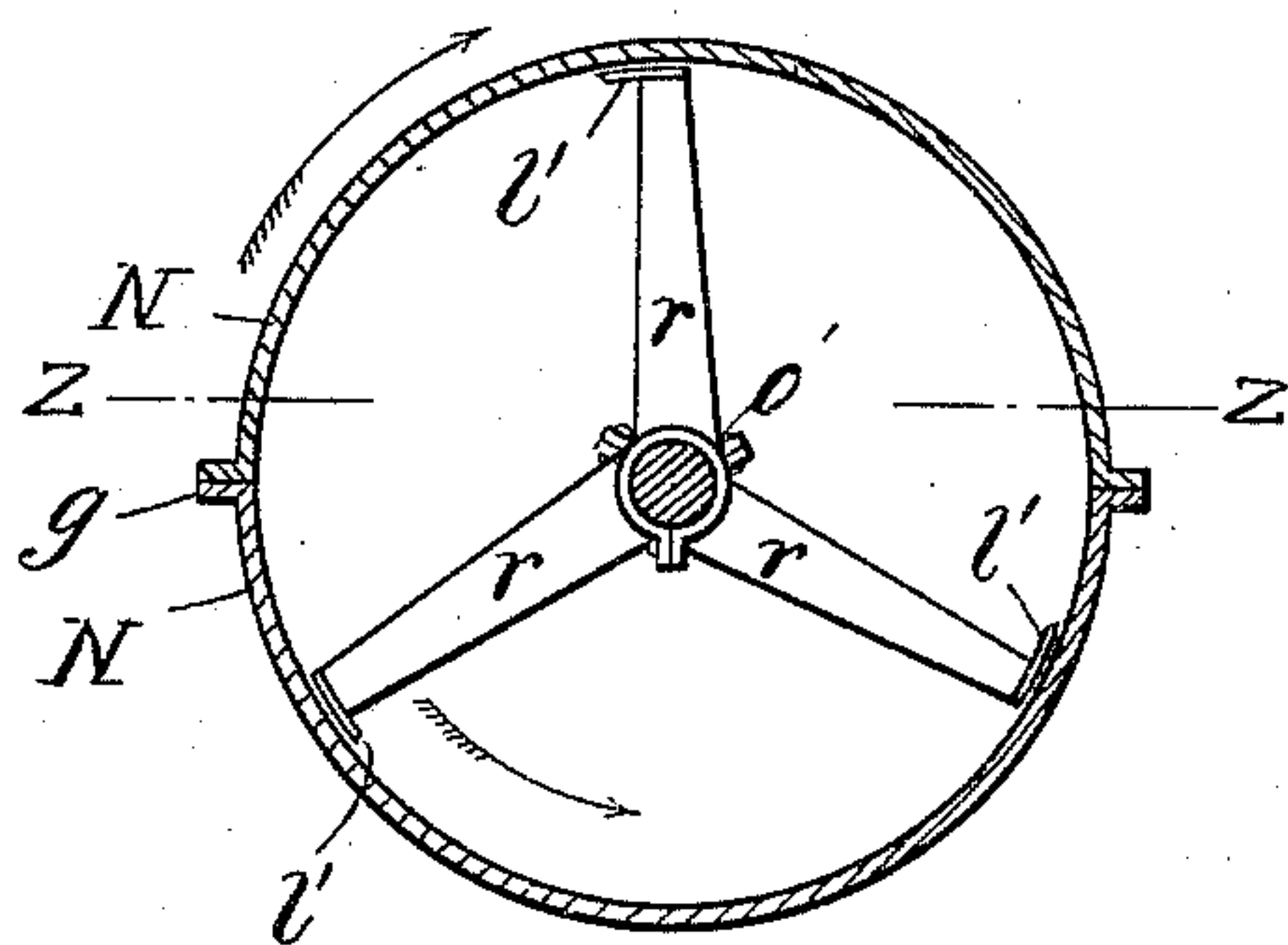
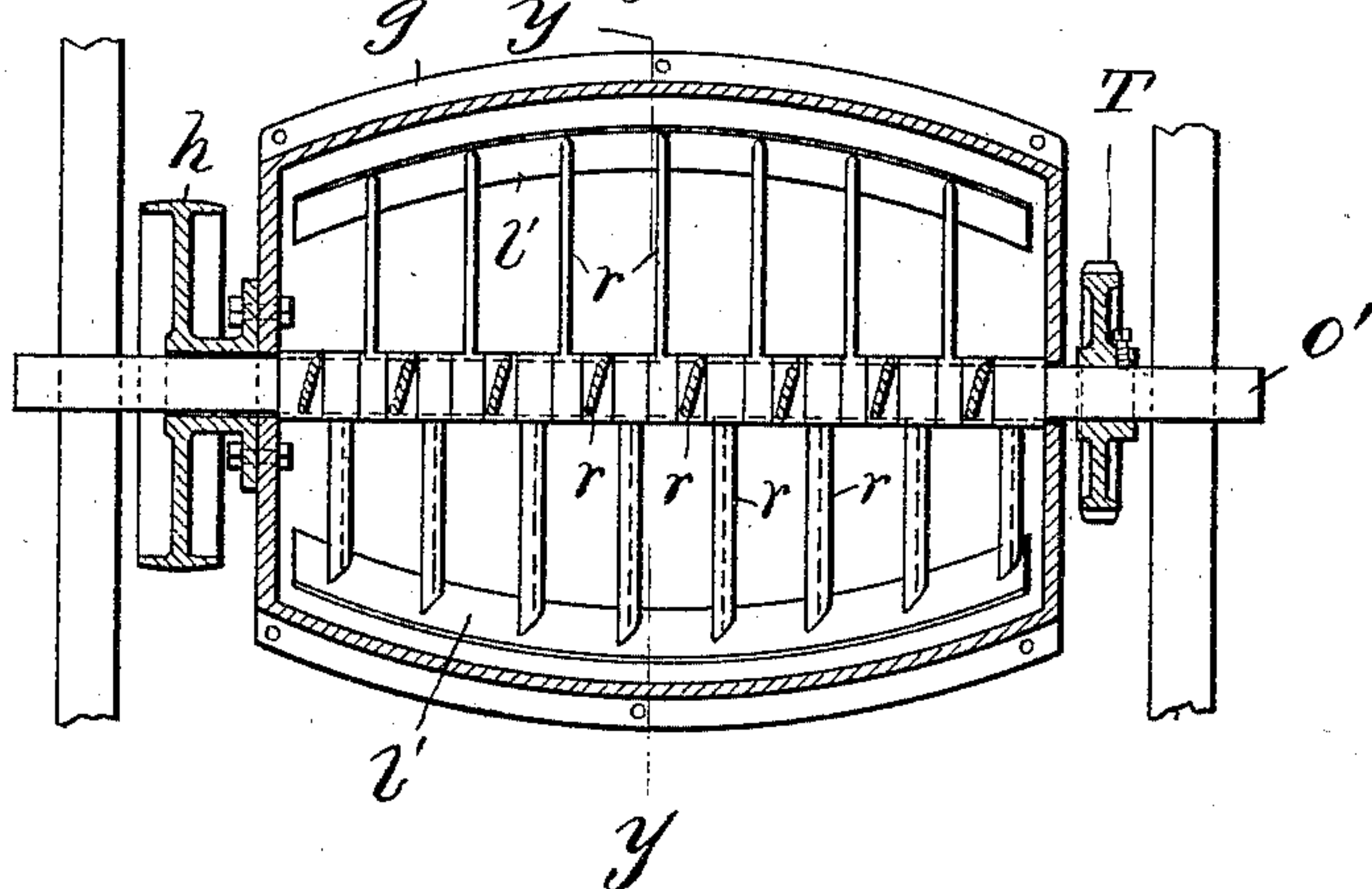


Fig. 5.



WITNESSES:

J. Henry Sherratt
C. Bedgwick

INVENTOR:

E. D. Johnston
BY *Munn & Co.*
ATTORNEYS

UNITED STATES PATENT OFFICE.

EDWARD D. JOHNSTON, OF NEW YORK, N. Y.

MORTAR-MIXING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 440,478, dated November 11, 1890.

Application filed January 31, 1890. Serial No. 338,825. (No model.)

To all whom it may concern:

Be it known that I, EDWARD D. JOHNSTON, of the city, county, and State of New York, have invented a new and Improved Mortar-Mixing Apparatus, of which the following is a full, clear, and exact description.

My invention relates to improvements in an apparatus for mixing mortar, cement, plastering, and similar compounds. Heretofore it has been the practice for a person to mix such compounds in a pen by means of a hoe, the operator adding lime, sand, water, &c., as needed, and the operation has usually been carried on upon the premises where the material was to be used. In mixing mortar in this manner a great deal of labor is required, and as the operation is frequently carried on in the street it is often a source of annoyance and inconvenience to passers by.

The object of my invention is to obviate these difficulties by providing an apparatus in which mortar and similar compounds may be quickly, cheaply, and efficiently mixed.

To this end my invention consists in certain features of construction and combinations of parts, that will be hereinafter fully described, and specifically pointed out in the claim.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical section of the device or apparatus embodying my invention on the line xx of Fig. 2. Fig. 2 is an end view of the same with the mixing-cylinder in longitudinal section; Fig. 3, a plan view of the mixing-cylinder with the upper half thereof removed. Fig. 4 is a vertical cross-section of the mixing-cylinder provided with a modified form of mixing apparatus on the line yy of Fig. 5, and Fig. 5 a horizontal section of the same on the line zz of Fig. 4.

Supported by suitable brackets B in an elevated position, preferably in the second story of a building, is an inclined tubular sieve A, which is mounted upon the shaft C, which turns in the brackets B. The sieve A is open at each end and is supported upon the shaft C by the spokes a , which extend from bands b , to which the sieve is attached, to the collars d , which are fixed to the shaft. The sieve

A is for sifting sand, and it is provided at its upper end with a tubular extension A', which is not perforated, into which the sand to be sifted is dumped, the sand being conducted into said tube by the chute D, which enters the end thereof.

The shaft C is provided with a suitable pulley E, by which it is operated, and passes loosely through a hollow shaft C', extending into the lower end of the sieve, and provided with an operating-pulley E' and with brushes F, which are firmly attached to the shaft. The shaft C' and brushes F extend into the tubular sieve A a little more than half its length. The brushes F may be made of wire, bristles, or of any suitable material, and are of such a length that they will touch lightly against the inner surface of the sieve.

The brushes F and sieve A are fixed upon separate shafts that they may be rotated in opposite directions. By operating them in this manner the finer sand will be forced through the meshes of the sieve, and the coarser particles will pass out at the lower end thereof and the sieve be kept perfectly clean by the brushes.

Suitably supported beneath the body of the sieve A is a bin H, having tapering sides which terminate at the bottom in a spout H', and beneath the lower end of the sieve A is a chute J, which may be connected with another chute, so that the material which falls into it may be directed into any desired receptacle. The bin H will thus receive the finer sand, and the coarser particles will pass off through the chute J. In the lower end of the spout H' of the bin H is a slide e , which projects through the side of the spout H', and is provided with a suitable handle e' , so that by manipulating the handle the sand in the bin may be allowed to flow through the spout, and may be cut off at will. To the lower end of the spout is attached a spout K, which is made preferably of canvas, but may be made of any suitable material. This spout is provided with a metal nozzle K' at its lower end, in which is fixed a slide f , having a handle f' , by means of which the nozzle may be opened and closed; or the spout may be provided with a cap having a snap-clamp.

The spout K, between the slides e and f ,

should hold sufficient sand to charge the mixing-cylinder, which should be arranged beneath the spout.

Adjacent to the bin H is another bin L, 5 which is of the same shape and is intended as a receptacle for lime. It has a lower terminal spout L', having a suitable cut-off slide therein, and a spout M attached thereto, which may be swung over the mixing-cylinder, and 10 which is also provided with a cut-off slide at the lower end, and the spout M should hold sufficient lime between the two slides to charge the mixing-cylinder.

The water necessary to mix with the sand 15 and lime may be introduced in any suitable way, and a tank may be provided which will hold the exact amount necessary.

The mixing-cylinder is composed of two longitudinally-separable parts N N', which 20 are provided with corresponding flanges g, which may be provided with bolts or clamps, and by means of which the parts are fastened together. The cylinder is mounted loosely and to turn upon the shaft O, which rests in 25 suitable supports P at each end of the cylinder. The cylinder is provided with a gear-wheel h, which also turns upon the shaft O, and which is bolted to the lower part N' of the cylinder. The lower part N' of the 30 cylinder is attached to the shaft O by the straps i, which pass over the top of the shaft and are bolted at each end to the part N'. The shaft O extends beyond the supports P, in which it rests, so that the ends of 35 the shaft may be engaged by the hooks of a derrick and the shaft and the lower half of the cylinder lifted bodily and carried to a wagon or other receptacle, where the part N' of the cylinder may be dumped. Within the 40 cylinder and rigidly attached to the shaft O is a coarse sieve R, which extends at right angles with the shaft to one side of the cylinder, and which is provided with supporting-braces R'. The shaft O is also provided with 45 arms j, which extend diagonally upward above the sieve R, and which are provided at the terminal ends with a cleaver or scraper l, which is curved forwardly from the ends of the arms j, so as to nearly touch the sides of the cylinder, to which it corresponds in shape. The 50 scraper-arms j are provided with suitable braces j', which may be formed of the same pieces as the arms, the arms being bent around the shaft O, so that the scraper-holding portion j shall extend upwardly from the back side of the shaft and the supporting portion j' extend upwardly against the same from the front side of the shaft. The object of the scraper is to prevent the mortar from accumulating upon the sides of the cylinder. As 60 the cylinder revolves, the scraper will scrape the mortar from the sides thereof and the lumps will fall upon the coarse sieve R and be disintegrated.

65 Power is applied to the gear-wheel h and the device is operated as follows: The brushes

F and sieve A are set in motion and sand is dumped upon the chute D to supply the sieve. The finer sand will fall into the bin H and the coarser particles will pass off through the 70 chute J, as described. After the bin H is filled it will not be necessary to operate the sieve whenever the mixing-cylinder is operated, as the bin will hold sufficient sand to charge the cylinder many times. When the mortar is 75 to be mixed, the top N of the cylinder is removed, a charge of sand and lime is inserted from the bins H and L, as described, and sufficient water is added to complete the mixture. The top N is then fastened to the bot- 80 tom portion N' of the cylinder and the cylinder is set in motion. As the cylinder revolves, the parts will become thoroughly mingled, the scraper l and sieve R will prevent the matter from becoming lumpy, and the result 85 will be a superior quality of mortar.

If plastering is to be made, the necessary quantity of hair may be introduced into the cylinder, and if other compounds are to be mixed the operation may be varied accord- 90 ingly.

I do not confine myself to any particular arrangement of the sand and lime bins, as they may be arranged in any suitable manner; but they should be higher than the mix- 95 ing-cylinder, so that the sand and lime will easily flow into the same.

In Figs. 4 and 5 I have shown the cylinder N N' mounted loosely upon a rotatable shaft O', the cylinder having the gear-wheel h fixed 100 thereto, as described, and the shaft being provided with a gear-wheel t, so that the cylinder may be revolved in one direction and the shaft O' in the other.

Attached to the shaft O' are three series 105 of radially-extending arms r, although the number may be increased or diminished without changing the nature of the invention. All the arms or knives of a series are parallel, and they are turned to the same angle; 110 but the angle of the knives r of each series is different, and they revolve in different paths, so that as the shaft O' turns the knives r will pass through the mortar in the cylinder and throw it from knife to knife, thus thor- 115 oughly stirring the mass and mingling the parts.

The knives r extend nearly to the sides of the cylinder and are united at the ends by a band l', which extends the length of the cyl- 120 inder and scrapes the mortar from the sides thereof.

From the foregoing description it will be seen that mortar or other similar compounds may be made in large quantities in a certain 125 locality and carried ready-made to the points where it is to be used.

Having thus described my invention, what I claim as new, and desire to secure by Let- 130 ters Patent, is—

In a mortar-mixing apparatus, a rotatable longitudinally-separable cylinder into which

the ingredients to be mingled are inserted,
said cylinder being loosely mounted upon a
fixed shaft and having a coarse sieve attached
to said shaft at right angles with the same,
5 and a suitable scraper supported upon said
shaft and extending to a point near the side
of the cylinder above said sieve, so that the

mortar will be scraped from the sides of the
cylinder upon the sieve, substantially as de-
scribed.

EDWARD D. JOHNSTON.

Witnesses:

WARREN B. HUTCHINSON,
EDGAR TATE.