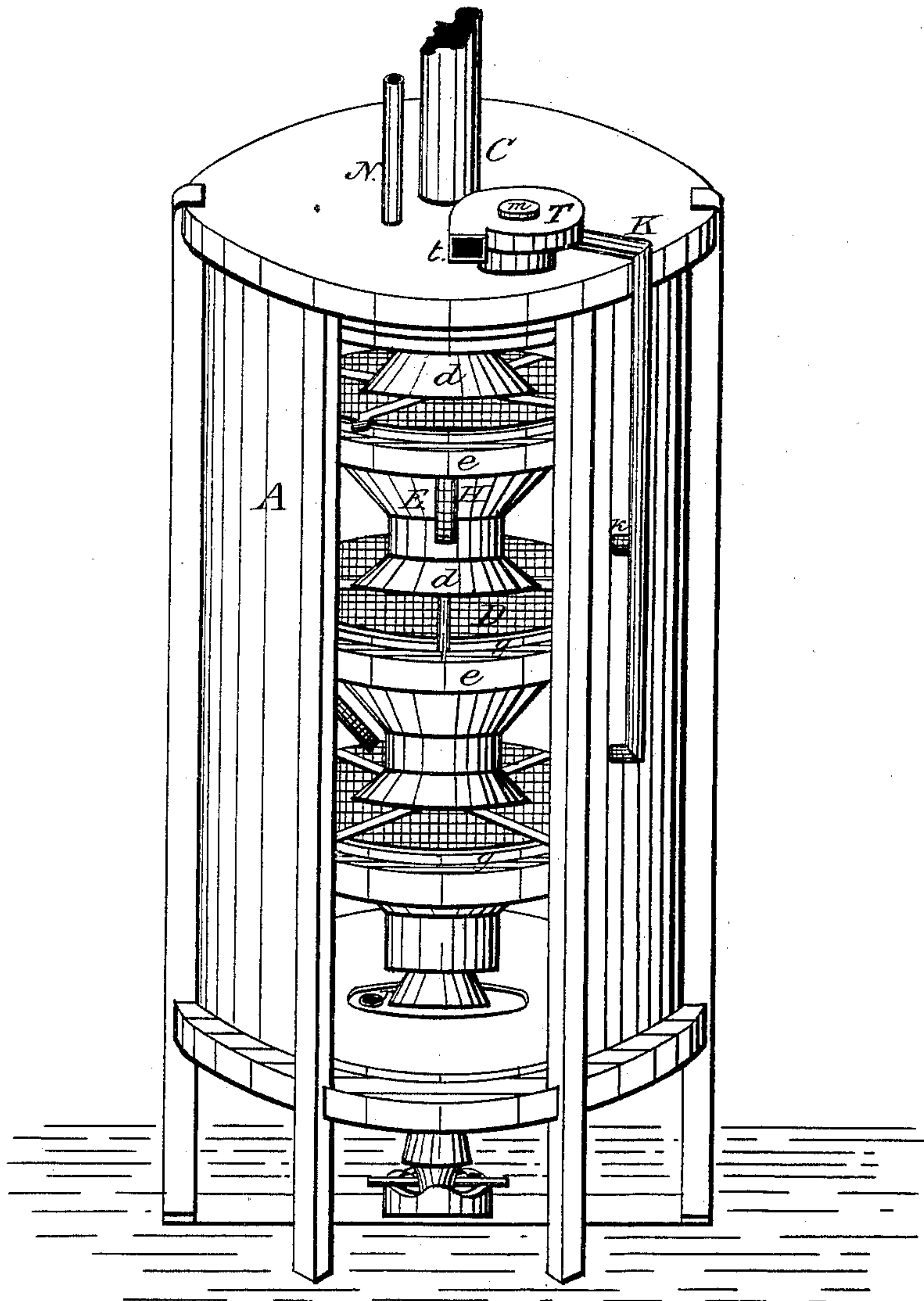


N. NILSON & N. OLSON.  
MIDDLINGS PURIFIER.

No. 176,192.

Patented April 18, 1876.

Fig. 1



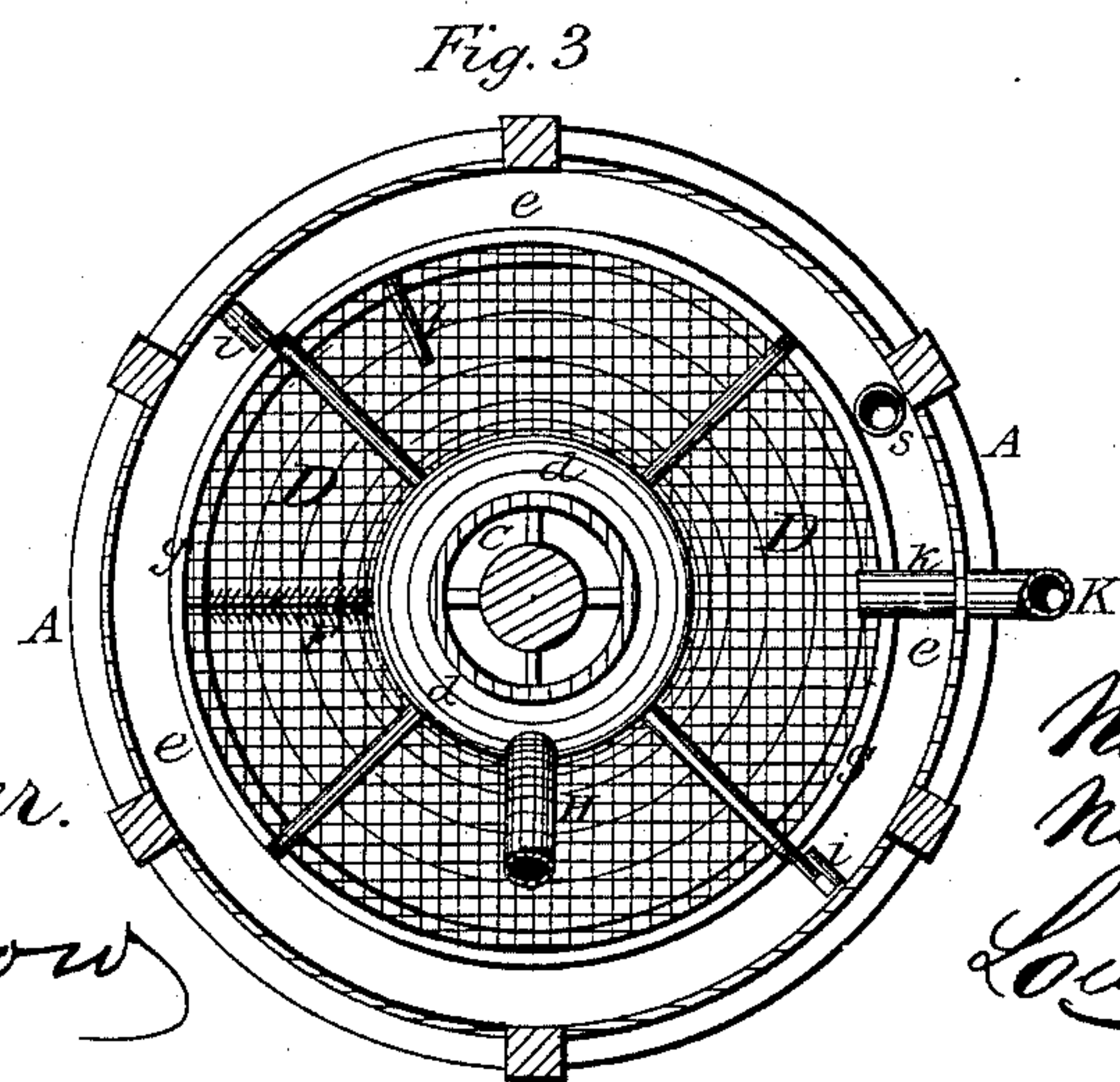
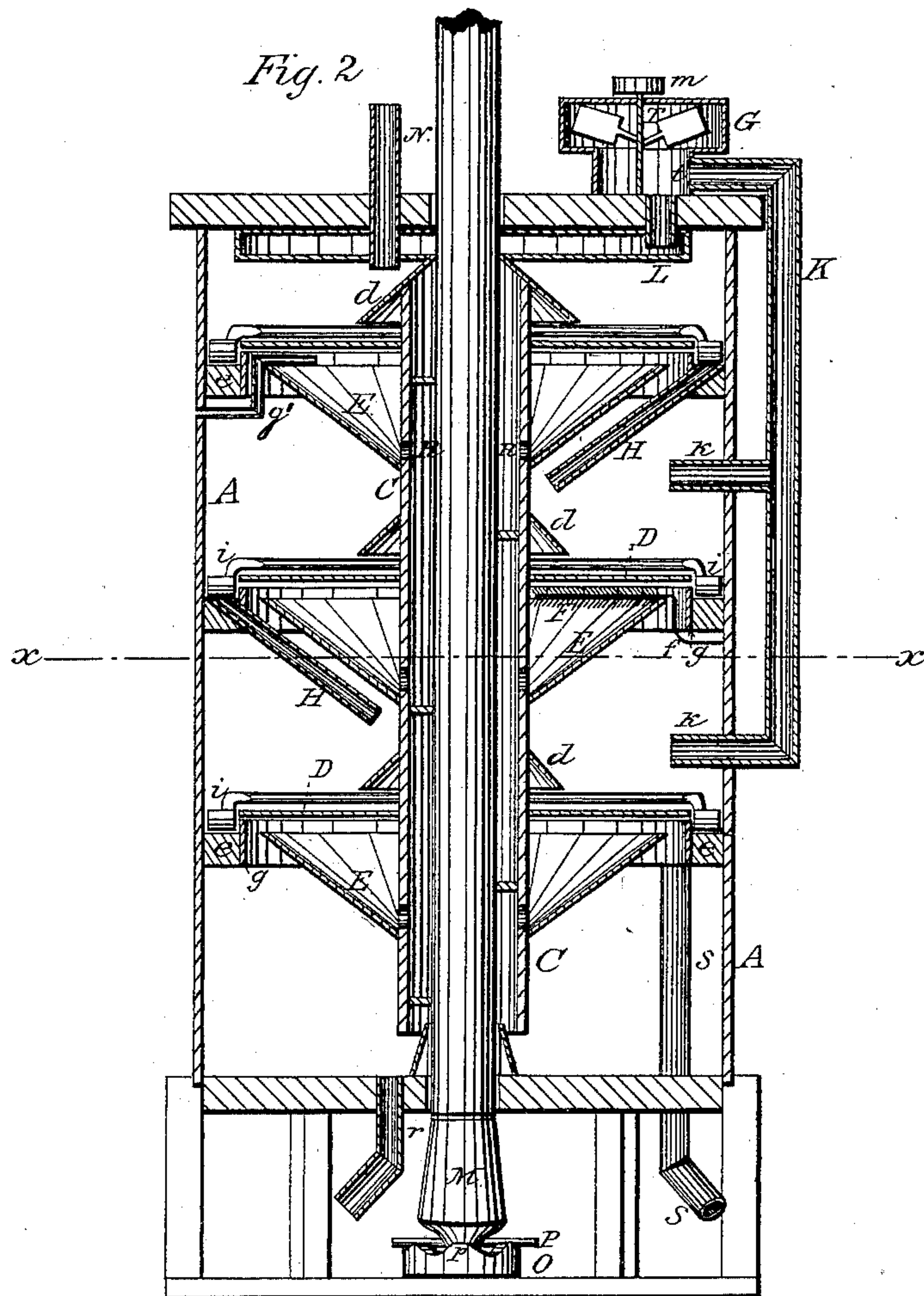
Attest:  
Wm. Bagger.  
C. A. Snow.

Inventors:  
Nils Nilson & Nils Olson  
by Louis Bagger  
att'y.

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# UNITED STATES PATENT OFFICE.

NILS NILSON AND NILS OLSON, OF MINNEAPOLIS, MINNESOTA.

## IMPROVEMENT IN MIDLINGS-PURIFIERS.

Specification forming part of Letters Patent No. **176,192**, dated April 18, 1876; application filed August 27, 1875.

*To all whom it may concern:*

Be it known that we, NILS NILSON and NILS OLSON, both of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Middlings-Purifiers; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which form a part of this specification, and in which—

Figure 1 is a perspective view, the outer case being partly removed. Fig. 2 is a vertical section, and Fig. 3 is a horizontal section, after the line indicated by *xx* in Fig. 2.

Similar letters of reference indicate corresponding parts in all the figures.

Our invention relates to that class of machines for purifying middlings—both from feed and shorts on the one hand, and from fine flour on the other—in which an air-blast is employed to assist the operating parts in effecting the separation and purification; and it consists in the construction and arrangement of parts, substantially as hereinafter described and pointed out in the claims.

In the drawing, A is the outer frame or case of the machine, provided with appropriate doors, through which access can be had to the interior. C is a central hollow rotating shaft or tube, upon which is affixed a series of riddles, D. Immediately above each of these is a conical shield or deflector, *d*, for the purpose of spreading the flour or middlings upon the sieve or riddle D when fed into the machine. E E are funnels, branching off from the tube C, one directly under each of the riddles.

Funnel E and riddles D are of about the same diameter, the riddles preferably slightly larger, and they must nearly reach the shelves *e e*, which are circumferentially placed upon the inside of case A. The riddles are kept clean by brushes F, arranged under each of them upon brackets *f*. Each of the shelves *e* has an upward-projecting rim or flange, *g*, thus forming a gutter, upon which the coarser parts of the middlings are thrown by the rotating motion of riddles D. These shelves are kept clear by scrapers *i*, affixed upon riddles D.

A tube, H, leads from each of the shelves down to the shield *d* of the riddle below, by which the coarse middlings deposited by the riddle upon the shelf *e* are distributed upon the riddle next below, for another sifting.

On top of case A is affixed a suction-fan, G, from which a pipe, K, branches off into smaller pipes *k*, leading to the various compartments between the several riddles, and to the perforated metal box L, above the top riddle. Air is supplied to the inside of the machine, underneath the riddles, through pipes *g'*. The machine is operated by a conical pulley, M, in which the axle C terminates; and the axle of fan G has a pulley, *m*, which, by a belt, may be connected with the main axle C, thus imparting motion to the fan. The entire axle C, with all its fixtures, rests at the bottom upon a ring, O, having a serrated flange, forming projections *p*. A pin, P, inserted through axle C, prevents it from dropping down, and at the same time imparts a hopping or shaking motion to the axle C when the machine is in operation.

The manner of operating our improved middlings-purifier is as follows: When the machine is started the middlings are fed into it through the feed-tube N. They first strike the top deflector *d*, and are scattered upon top riddle D. The finer parts now pass through the riddle into the funnel below, from whence they escape through perforations R in tubular axle C, through which they fall to the bottom, where the escape-pipe *r* is located. The coarser parts are, by the rotation, whirled out upon shelf *e*, from which they drop, through pipe H, down upon the next riddle, where the same operation is repeated. From the bottom shelf the remaining coarse parts, tailings, or bran are conveyed through the bran-pipe S out of the machine.

By this machine the chaff, dust, and other impurities are separated from the pure middlings, and kept suspended in the air by the blasts which enter the machine through pipes *g'* until drawn off in a steady current through the pipes *k* and K by the suction of fan G, from whence they are expelled through the opening *t* in fan-case T.

By using finer or coarser sieves or riddles D, this machine may be used as a flour-bolt or

grain-separator, as well as a middlings-purifier.

Having thus described our invention, we claim and desire to secure by Letters Patent of the United States—

1. The combination of the riddles D, having scrapers *i*, with the perforated circumferentially-flanged shelves or gutters *e*, having tubes or spouts H, substantially as and for the purpose herein shown and specified.

2. The combination of the central revolving tube C, circumferential deflectors *d*, riddles D, and funnels E, substantially as and for the purpose herein shown and specified.

3. The combination of the inlet-pipes *g'*, case A, and suction-pipes *k*, the latter disposed between the riddles D and under side of funnels E, substantially as and for the purpose herein shown and specified.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

NILS NILSON.  
NILS OLSON.

Witnesses:

JNO. W. ARCTANDER,  
A. MELAND.