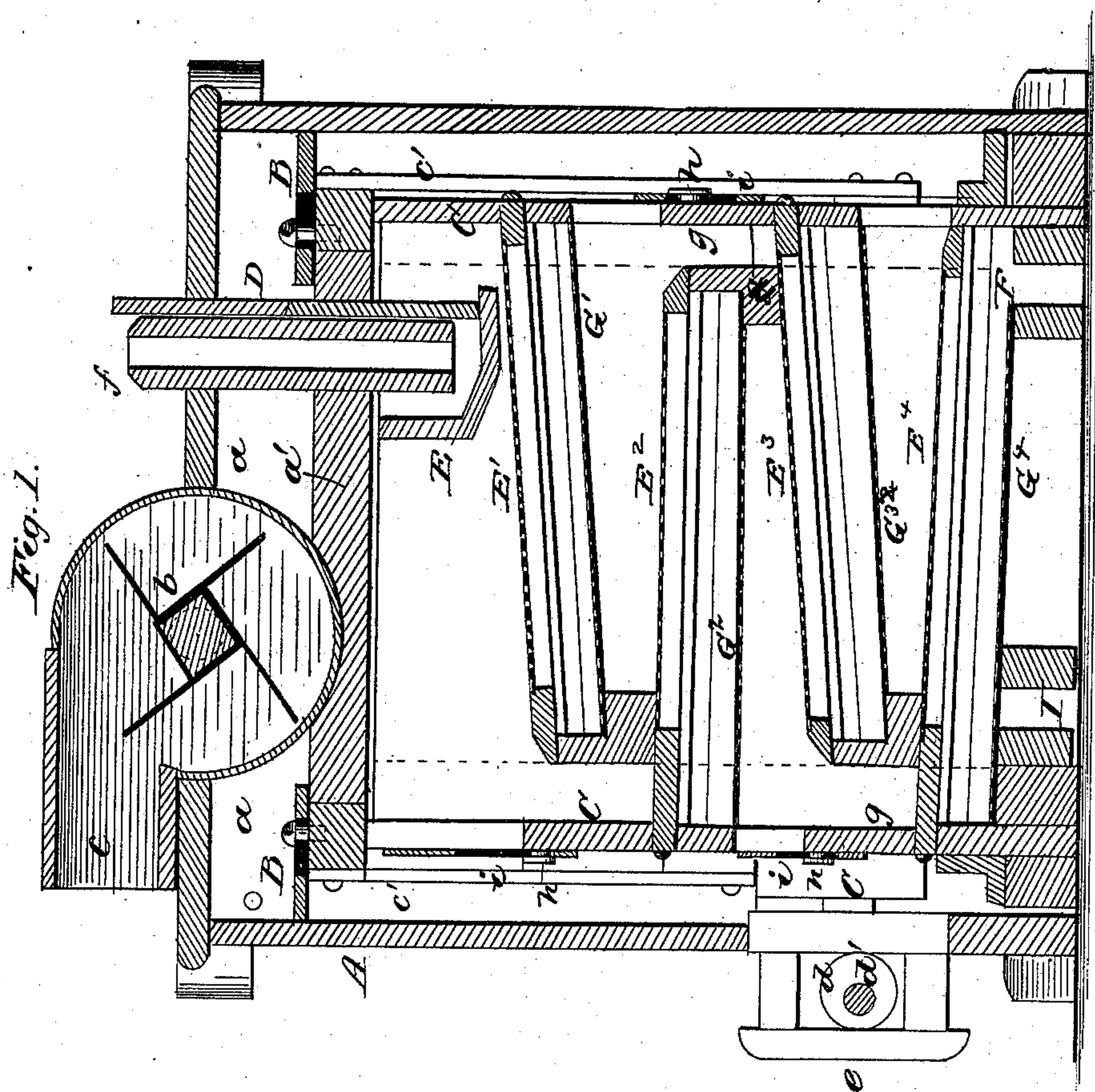


D. CHARLESWORTH.  
Middlings-Separators.

No. 214,621.

Patented April 22, 1879.



Witnesses  
Edw. G. Dutach  
Jno. P. Brooks

Inventor.  
David Charlesworth  
by Louis Bagger & Co.  
his attorneys.

D. CHARLESWORTH.  
Middlings-Separators.

2 Sheets—Sheet 2.

No. 214,621.

Patented April 22, 1879.

Fig. 3.

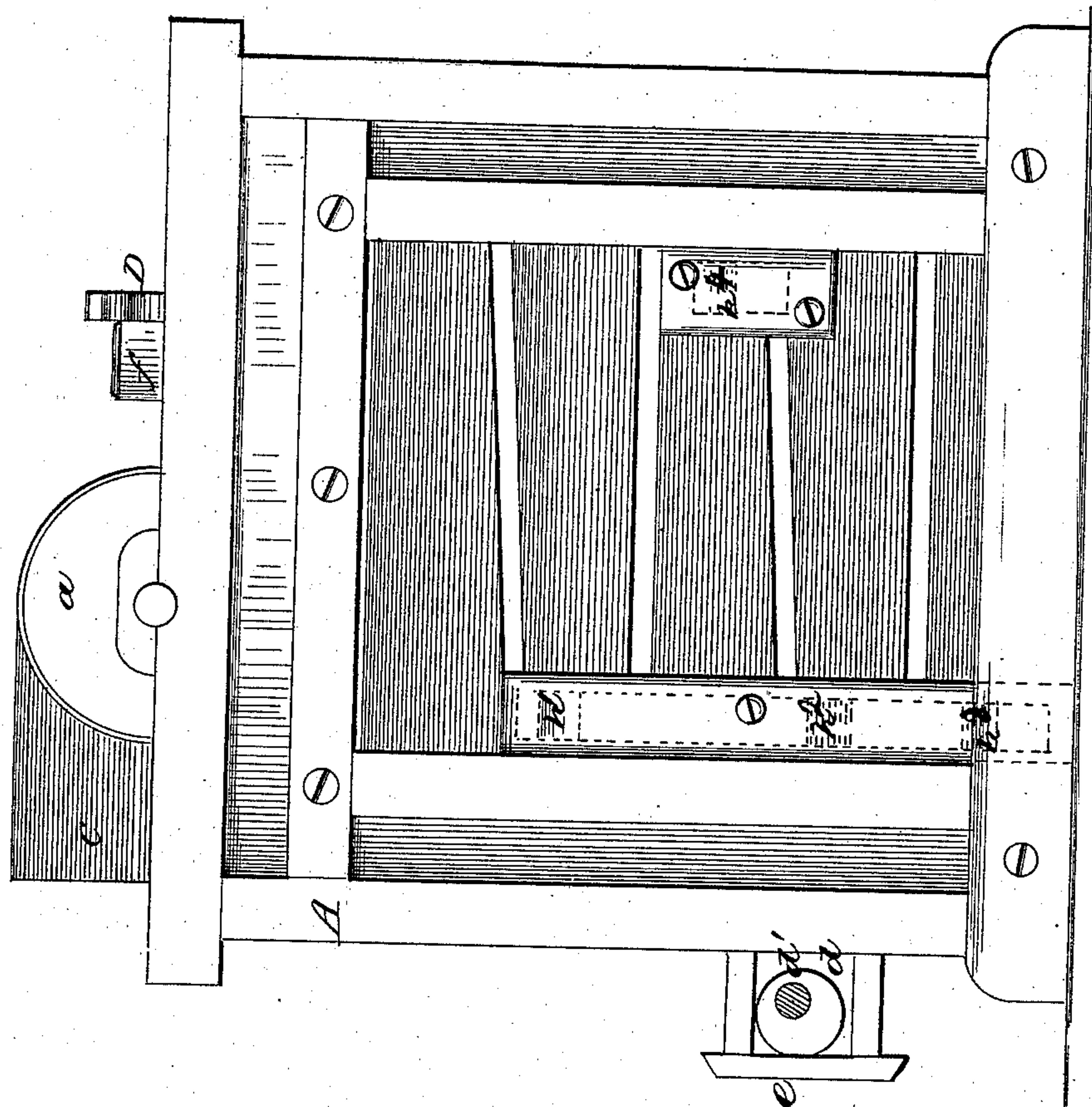
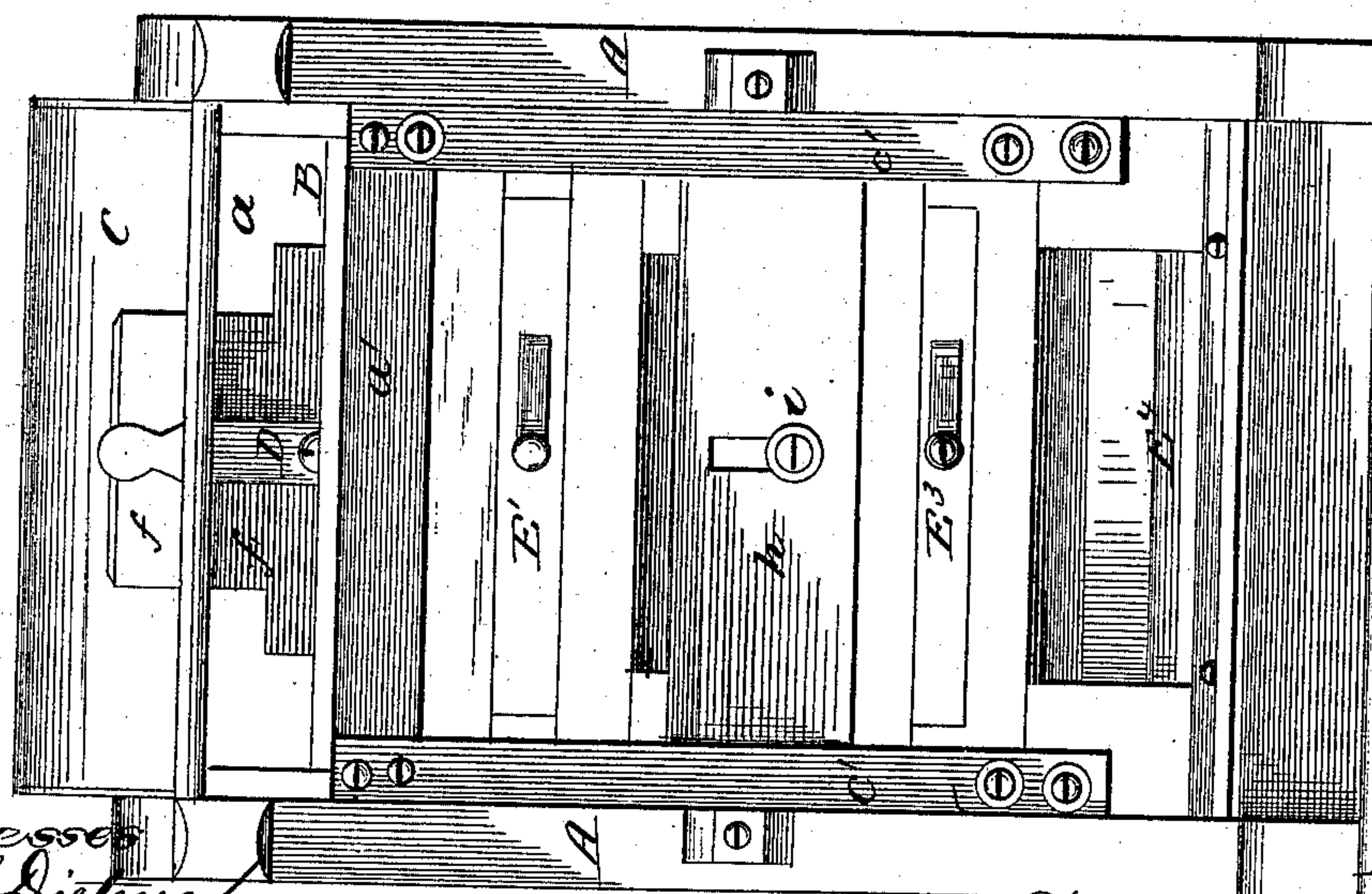


Fig. 2.



Witnesses  
*Ad. S. Dietrich*  
*Jos. P. Brooks*

Inventor  
*David Charlesworth*  
 by *Louis Bagger* *per*  
*his attorney.*



# UNITED STATES PATENT OFFICE.

DAVID CHARLESWORTH, OF EGMONDVILLE, ONTARIO, CANADA.

## IMPROVEMENT IN MIDDLEINGS-SEPARATORS.

Specification forming part of Letters Patent No. **214,621**, dated April 22, 1879; application filed June 7, 1878.

*To all whom it may concern:*

Be it known that I, DAVID CHARLESWORTH, of the village of Egmondville, in the county of Huron, Province of Ontario, and Dominion of Canada, miller, have invented new and useful Improvements in Middlings-Purifiers, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings, and in which—

Figure 1 is a vertical longitudinal section of my improved middlings-purifier. Fig. 2 is an end view with one of the end portions of the inclosing-case removed; and Fig. 3 is a side elevation thereof.

Corresponding parts in the several figures are denoted by like letters.

This invention relates to certain improvements in middlings-separators; and it consists in the employment of a shoe having a number of screens and valves in connection with a suction or blast chamber provided with a fan and regulating-valves, spouts communicating with the several screens, and a feeding-hopper having means for controlling the feeding of and distributing the middlings upon the upper screen or sieve, substantially as herein-after more fully described and claimed.

In the annexed drawings, A refers to the inclosing case or shell of the parts of the purifier. The upper part of this inclosure or case is provided with the blast or suction chamber *a*, within which is hung a fan, *b*, driven by suitable means and covered by a case having the dust-removing spout *c* leading into the blast-room. In the partition *a'*, forming the bottom of the suction-chamber *a*, are two openings, covered by the valves or slides B B, the object of which is to control the direct suction. Hung from the cross supporting-pieces of the partition *a'*, by means of flexible pendants or hangers *c' c'*, is the shaker C, which is operated by eccentrics or cams *d*, secured upon a transverse shaft, *d'*, driven in any known way, and hung in bearings fastened to the corner-posts of one end of the case A. The cams or eccentrics *d* are inclosed within frames *e e*, secured or connected to the shaker C. In the upper part of the case A is the middlings feeding-hopper *f*, alongside of which is arranged

a valve or slide, D, and below it is arranged an inclined board or conductor, E.

By moving the slide or valve by hand vertically the feeding of the middlings can be regulated and the latter be passed or spread on the inclined board to the desired thickness or quantity and uniformly, from which it (the middlings) will be conducted in like manner to the upper or first sieve below.

E<sup>1</sup> E<sup>2</sup> E<sup>3</sup> E<sup>4</sup> refer to a series of sieves, of which each succeeding one, reckoning from the top downward, is of a coarser grade or mesh than the preceding or upper one, to provide for the sifting of the different grades of middlings. Each succeeding sieve is arranged at a different or opposite inclination, as seen in Fig. 1, with its lower end extending a short distance inward from the upper end of the one next below, and from an upward-projecting board or extension, *g*, to form passages for the middlings as they escape from the sieves, or rather those portions thereof failing to pass through the sieves. These portions of the middlings finally enter the outlet F as offal, from whence they may be again passed over the sieves, if desired.

Upon the extensions *g* may be adjusted, by set-screws *h*, slides or valves *i*, for varying the size of the openings between the same where the suction or blast passes through or from them, in order to control the amount of suction required for the whole of the series of sieves, or any one or more of them, according to the fineness or coarseness of the middlings.

Below each sieve is arranged, in the same inclination therewith and connected thereto, a second sieve, G G<sup>1</sup> G<sup>2</sup> G<sup>3</sup> G<sup>4</sup>, constituting a second series of sieves, the object of which is to further sift or purify the middlings falling through the above sieves E E<sup>1</sup> E<sup>2</sup> E<sup>3</sup> E<sup>4</sup>, and conduct the same to outlet tubes or pipes *h*<sup>1</sup> *h*<sup>2</sup> *h*<sup>3</sup>, one supplied to each of the said second sieves G<sup>1</sup> G<sup>2</sup> G<sup>3</sup> G<sup>4</sup>, but the upper ones uniting with the lower ones, and thus forming only two continuous tubes or pipes, from which the discharged or purified middlings are received. Those portions of the middlings falling upon the lowermost incline, G<sup>4</sup>, arranged below the last or bottom sieve, E<sup>4</sup>, are received into the

outlet I as "seconds," from which they may be again passed through the sieves.

Through the above-mentioned process a stronger, whiter, and consequently better, grade of flour is obtained.

Having thus fully described my invention, I claim, and desire to secure by Letters Patent—

In a middlings-purifier, the combination of the screens E E<sup>1</sup> E<sup>2</sup> E<sup>3</sup> E<sup>4</sup>, shoe C, having the valves *i h*, suction or blast chamber *a*, valves

B, outlet-pipes *h<sup>1</sup> h<sup>2</sup> h<sup>3</sup>*, and a feeding-hopper having means for regulating the feeding of and distributing the middlings upon the upper screen or sieve, all arranged and operating substantially as and for the purpose set forth.

DAVID CHARLESWORTH.

Witnesses:

DAVID SPROAT,  
JOHN GREGORY.