

No. 639,433.

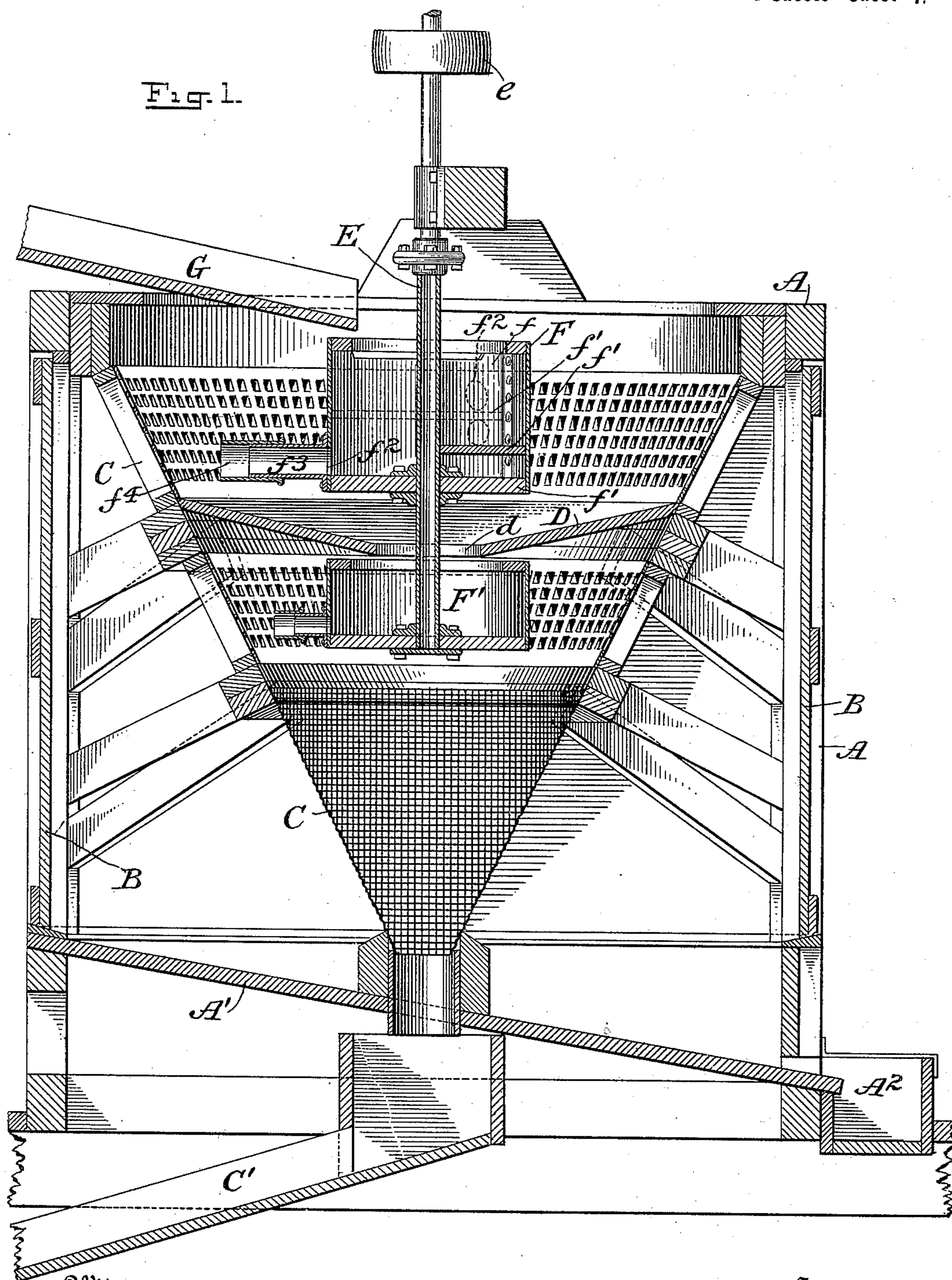
Patented Dec. 19, 1899.

F. A. PRATT.  
ORE SEPARATOR.

(Application filed May 18, 1899.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:

Geo. W. Taylor  
A. St. Jesbera.

Inventor  
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By his Attorneys  
Redding, Kiddle & Guelin

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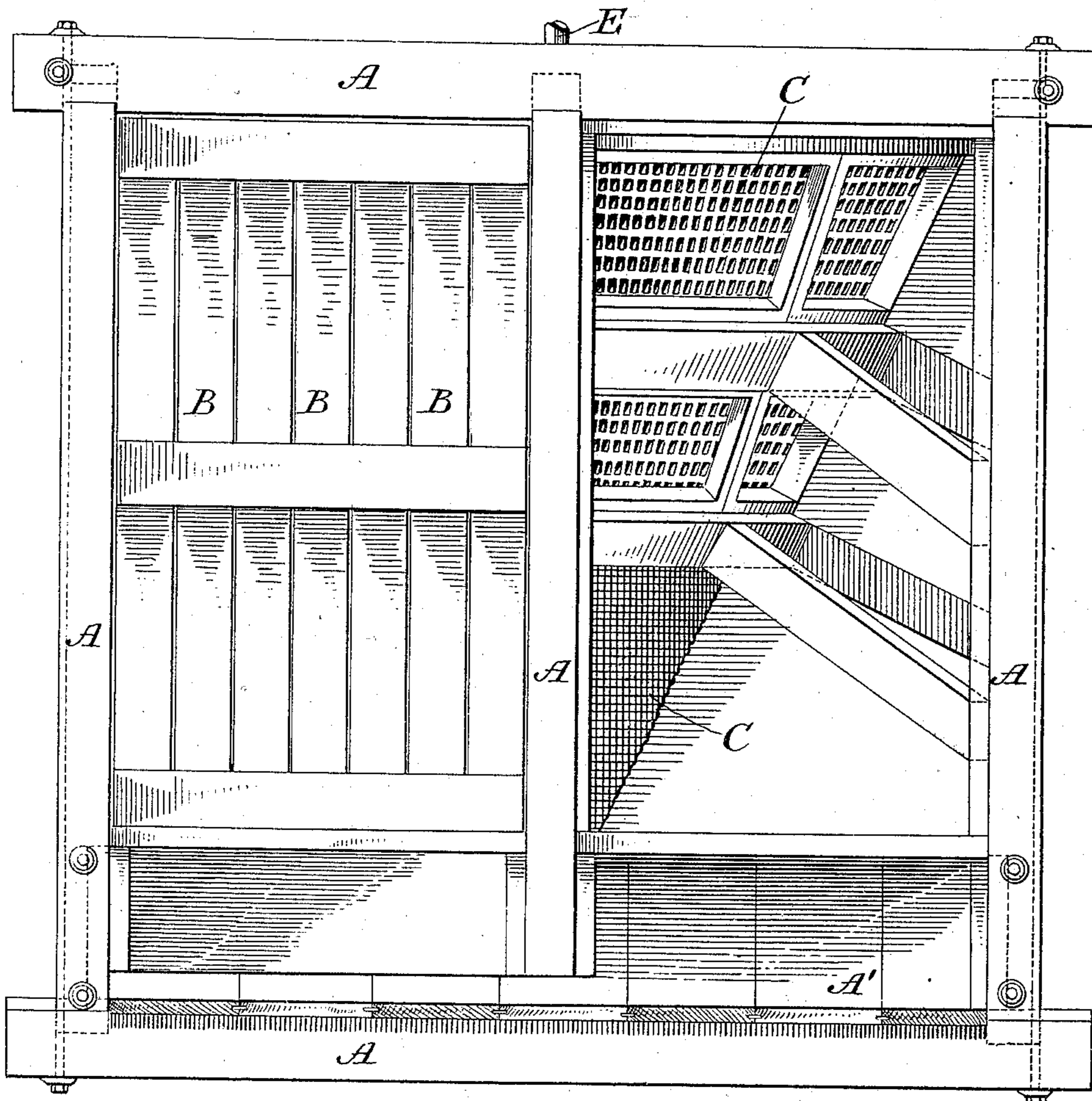
F. A. PRATT.  
ORE SEPARATOR.

(Application filed May 16, 1899.)

(No Model.)

3 Sheets—Sheet 2.

Fig. 2.



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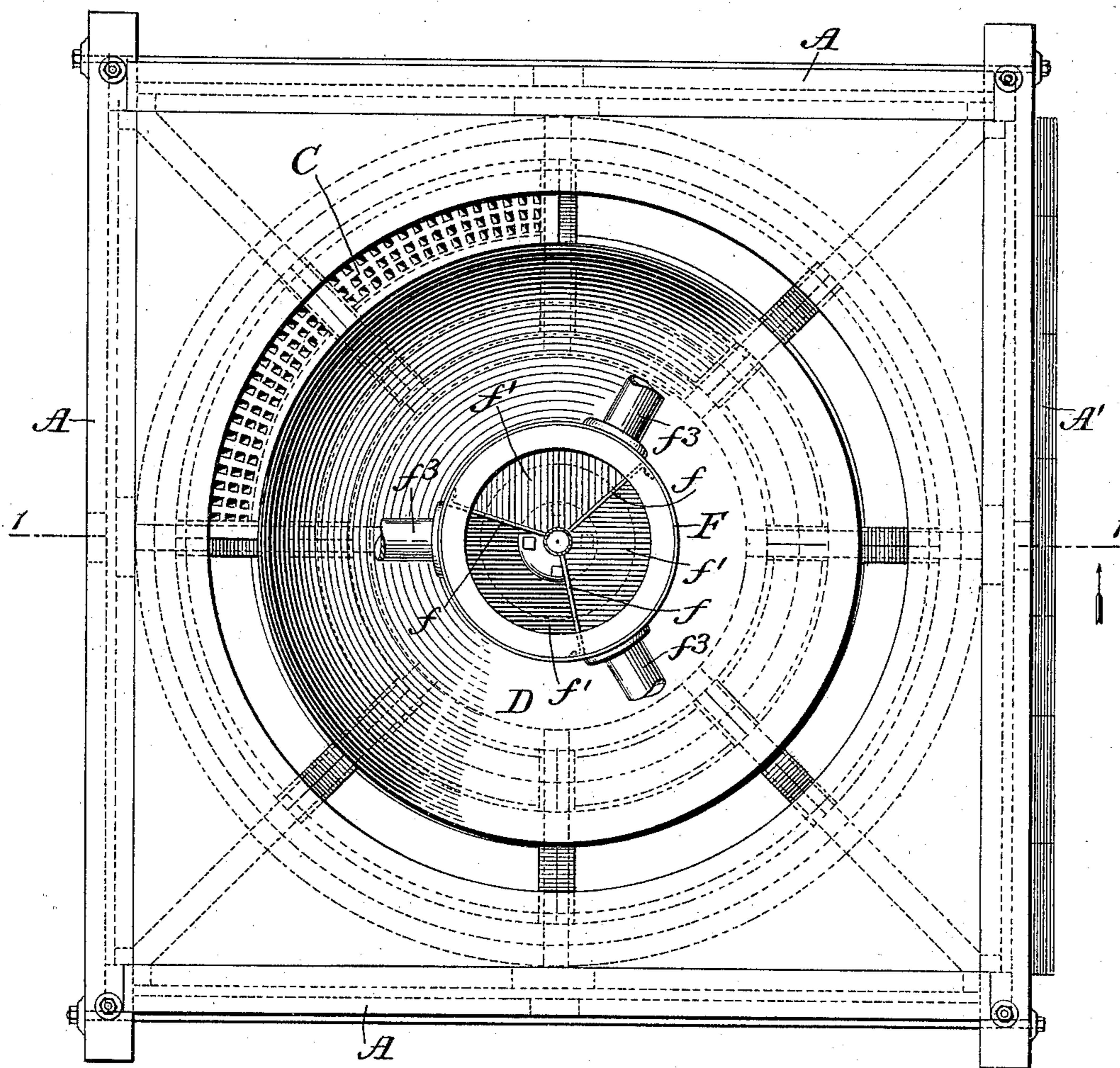
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(Application filed May 16, 1899.)

(No Model.)

3 Sheets—Sheet 3.

Fig. 2.



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# UNITED STATES PATENT OFFICE.

FREDERICK A. PRATT, OF BUTTE, MONTANA, ASSIGNOR OF TWO-THIRDS  
TO CLEMENT BARTZEN AND ARTHUR H. WETHEY, OF SAME PLACE.

## ORE-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 639,433, dated December 19, 1899.

Application filed May 16, 1899. Serial No. 717,110. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK A. PRATT, a citizen of the United States, residing in Butte, Silver Bow county, Montana, have invented certain new and useful Improvements in Ore-Separators, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to apparatus employed in the concentration of ores for the purpose of separating the fine particles of crushed ore from the coarser particles. Various devices have been suggested or employed for this purpose—such as revolving screens, hydraulic sizers, &c.—and while some have been used in the absence of any better device they are all more or less open to objection.

It is the object of this invention to produce an improved device or machine for the purpose referred to which shall be simple and inexpensive both in construction and in operation, shall not be liable to become clogged or blinded in use nor to the consequent reduction of capacity of the machine, shall be capable of treating large quantities of ore in a given time, and shall effect a thorough separation, not permitting the fine particles to pass along with the coarse, and thereby necessitate repeated working over of the ore. In the improved machine the screen is stationary and is disposed in funnel form around a rapidly-revolving distributor. The fine particles pass through the screen into a surrounding receptacle, while the coarse particles drop down through the open bottom of the funnel.

The invention will be more fully described hereinafter with reference to the accompanying drawings, in which, for purposes of explanation, it is illustrated as embodied in a convenient structure.

In the drawings, Figure 1 is a vertical central section of a machine which embodies the invention. Fig. 2 is a plan view of the same, a portion of the casing being removed. Fig. 3 is a plan view of the same with the hopper and driving-pulley removed and the distributing-spouts broken off.

As represented in the drawings, the mechanism is supported by a suitable framework A, the sides of which are inclosed by a suit-

able sheathing B. Within the frame and sheathing is supported a conical screen C, which may be of any suitable material and of any suitable mesh. In the drawings the upper part of the screen is shown as formed of a perforated plate, the size of the apertures being exaggerated for convenience in drawing, and the lower part of the screen is represented as formed of wire. A dished diaphragm D is shown as forming a sort of floor within the screen, such diaphragm having an opening  $d$  in its central and lowest part. A vertical shaft E, having a suitable driving-pulley  $e$ , is supported in suitable bearings centrally with respect to the funnel-shaped screen and carries two buckets or distributors F and F', the one above the diaphragm D and the other below the same. The upper bucket F is preferably divided by vertical partitions  $f$  into separate compartments, the floors  $f'$  of two of the compartments being arranged at different heights above the floor of the first compartment, which is also the main floor or bottom of the bucket or distributor. In the outer wall of each compartment, just above its floor, is an opening  $f^2$ , through which the ore is thrown, in the rapid rotation of the distributor, against the screen, and the arrangement of separate compartments with floors and openings at different heights insures a proper and even distribution of the ore over the surface of the adjacent screen without loading the distributor. It is evident that without any other parts than those just referred to the ore will be thrown against the screen at all times with the same force, depending upon the rapidity of rotation of the distributor; but in order to permit the force with which the ore is thrown against the screen to be regulated and controlled to some extent, as the character of the ore and other conditions may render desirable, each opening is provided with a delivery-pipe  $f^3$ , having an extensible section  $f^4$ , which can be secured by friction in adjusted position, and thereby regulate to some extent the force with which the material is thrown against the screen, thus preventing unnecessary wear on the screen and also preventing the clogging or blinding of the screen. The lower distributor or bucket F' is represented as having a

single compartment and a single extensible delivery-pipe, as already described with reference to the upper distributor; but obviously it might have more compartments and  
5 delivery-pipes if desired.

A hopper G or any other suitable means may be provided for delivering the material to the upper distributor F. As the latter is rotated at a high speed, the material will be  
10 thrown forcibly against the screen C. The fine particles will pass through the same and will fall upon the inclined floor A and thence will pass into the chute or receptacle indicated at A<sup>2</sup>. The coarse particles will pass  
15 down through the opening *d* in the dished diaphragm D into the lower distributor F'. From this the material will be thrown against the screen, and any fine particles that may have passed along with the coarse will go  
20 through the screen upon the floor A'. The coarse particles will fall down through the open bottom of the funnel-shaped screen, which is extended through the inclined floor A', and will pass into the chute C', from which  
25 they can be taken to the rolls to be reground.

It will be obvious that the improved machine can be driven with a comparatively small amount of power and yet is capable of treating thoroughly a large amount of material in a given time. There are no parts to  
30 get out of order, and if it should be necessary at any time to renew the screen the old screen can be removed and a new one placed in po-

sition without difficulty. There is no danger that the screens will become blinded, and the  
35 capacity of the machine therefore will not be diminished in use. Furthermore, the improved machine is compact and takes up considerably less space than other machines intended for the same purpose.  
40

I claim as my invention—

1. A machine for separating ores comprising a funnel-shaped screen and a rotating bucket or distributor centrally disposed within said screen, said bucket or distributor having an opening in its side wall and an extensible delivery-pipe through which the material is thrown against the screen, substantially as shown and described.  
45

2. A machine for separating ores comprising a funnel-shaped screen and a rotating bucket or distributor centrally disposed within said screen, said bucket or distributor being divided by partitions into separate compartments, said compartments having floors  
50 at different heights, and each of said compartments having an opening in its side wall above its floor through which the material is thrown against the screen, substantially as shown and described.  
55

This specification signed and witnessed this 6th day of May, A. D. 1899.  
60

FREDERICK A. PRATT.

In presence of—

J. K. HESLET,  
W. H. HENRY.