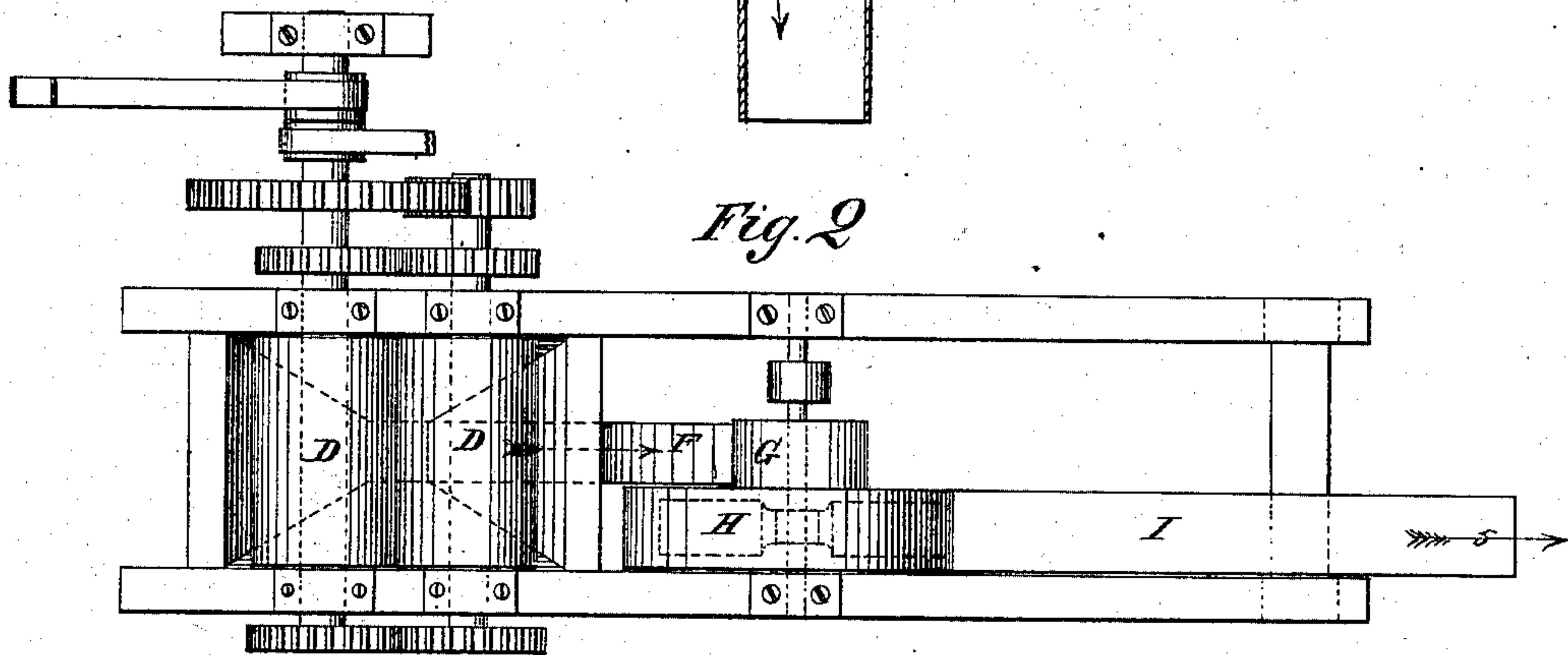
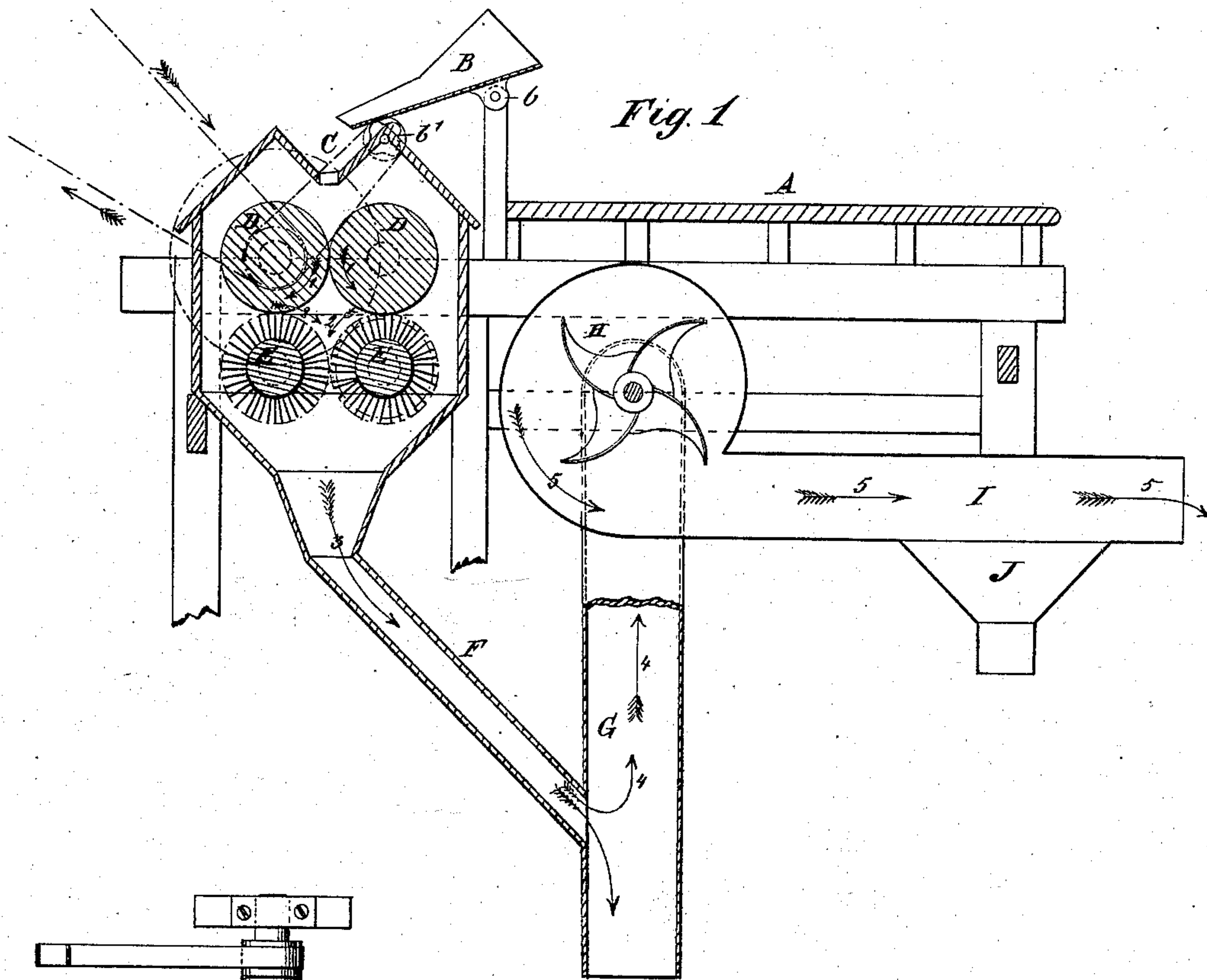


(No Model.)

C. C. COATS.  
Apparatus for Treating Ores.

No. 239,650.

Patented April 5, 1881.



Witnesses:  
*John M. Stelle*  
*E. Rosquist*

Inventor:  
*Chandler C. Coats*  
by *A. W. Almqvist*  
Attorney



# UNITED STATES PATENT OFFICE.

CHANDLER C. COATS, OF NEWARK, NEW JERSEY, ASSIGNOR OF ONE-HALF  
TO HATFIELD HOPPER, OF SAME PLACE.

## APPARATUS FOR TREATING ORES.

SPECIFICATION forming part of Letters Patent No. 239,650, dated April 5, 1881.

Application filed September 21, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, CHANDLER C. COATS, of Newark, in the county of Essex and State of New Jersey, have invented a new and useful  
5 Improvement in Apparatus for Treating Ores, of which the following is a specification.

The object of my invention is to provide an improved apparatus for treating gold and silver bearing earth, sand, and granular ores,  
10 whereby the metal-bearing portions or particles of the mass, while in a dry state, may be more rapidly and cheaply separated from the other portions than by devices heretofore used, and the valuable contents of the mass will thus  
15 be concentrated or confined in a smaller bulk of proportionally greater weight, thereby increasing the percentage of yield to the ton and making it feasible to profitably extract the precious metals out of poorer or "leaner" ores  
20 than heretofore.

It is evident that by concentrating the value in a greatly-reduced bulk the subsequent operations of trituration and amalgamation are greatly facilitated and the expense of power,  
25 time, and labor very materially decreased.

In the accompanying drawings, Figure 1 represents a vertical longitudinal section of the said apparatus. Fig. 2 is a top view of the same, the cover and feed-platform being re-  
30 moved.

Similar letters of reference indicate corresponding parts.

The metal-bearing earth, sand, or other naturally granular or granulated ore is fed from  
35 the platform A by means of a vibrating inclined spout, B, into the hopper C. The spout B is pivoted at *b*, near its rear end, and rests with its forward end upon an irregular cam-wheel, *b'*, by whose revolving the spout is vi-  
40 brated to cause the stuff to fall in a continuous stream into and through the hopper C and between the crushing or mashing cylinders D. These are arranged to revolve together in the direction of arrows 1, and directly underneath  
45 them are arranged rotary brushes or brush-rollers E, revolving in the direction of arrows 2, in opposite direction to the crushers D, and in brushing contact with the surface of the latter. The gearing is so proportioned that the  
50 brush-rollers E move faster than the cylinders D, and thus more effectually brush off the ad-

hering stuff from their surfaces, throwing it down in the direction of arrow 3, through the inclined pipe F, into the upright discharge-tube G, through which latter the heavier metal-  
55 bearing portions fall down, and are collected below, to be then triturated and amalgamated in the usual way. The tube G is connected at its upper end to the central opening in the casing of a revolving fan-blower, H, which, in  
60 revolving, draws the air, and with it the dust or light useless portions (tailings) of the mashed stuff, from the tube G in the direction of arrow 4, and discharges it in direction of arrow  
65 5 through the horizontal pipe or tube I.

A trough or hopper, J, may be arranged under an opening in the under side of the tube I, to receive the heavier portions of the tail-  
70 ings, if it be found worth the while to extract the small amount of ore which may have been carried over thither with the air-current from the fan H.

I have ascertained by experiment and assay that by this process and means earth and sand containing gold and silver in entirely too small  
75 quantities to make the ordinary working of it at all possible without loss have yielded out of the condensed bulk discharged at the lower end of the tube G an amount equal to over  
80 one hundred dollars to the ton. The useless portions, amounting to about three-fourths of the original bulk, have been separated and dis-  
85 charged at the end of pipe I and thrown away, thus saving all the non-paying useless labor and expense of triturating and attempting to amalgamate it for extraction of metals where there is none.

The application of a direct side blast to intercept the falling ore immediately beneath the cylinders D, as has formerly been attempt-  
90 ed, has proven ineffectual, affording only a partial and very imperfect separation, and I have by experiment found it necessary for successful operation that the ore should be acted upon during some distance of its fall by a directly  
95 contrary vacuum-current or suction in a pipe, G, of size no larger than will suit the capacity of the fan. This insures uniform action on the entire volume of the falling ore.

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

For the purpose of reducing the bulk of lean ore in a dry state to that of the metal-bearing portion thereof, the combination of the revolving crushing-cylinders D, the brushing-  
5 rollers E, revolving in opposite direction to the said cylinders, the spout F, discharging into the upright tube G, the fan H, and the final discharge-pipe I, the said fan being connected

with the tube G above the lower end of the spout F, to raise the tailings by suction from 10 the said tube G, as specified.

CHANDLER C. COATS.

Witnesses:

A. W. ALMQVIST,  
JOHN M. STELLE.