

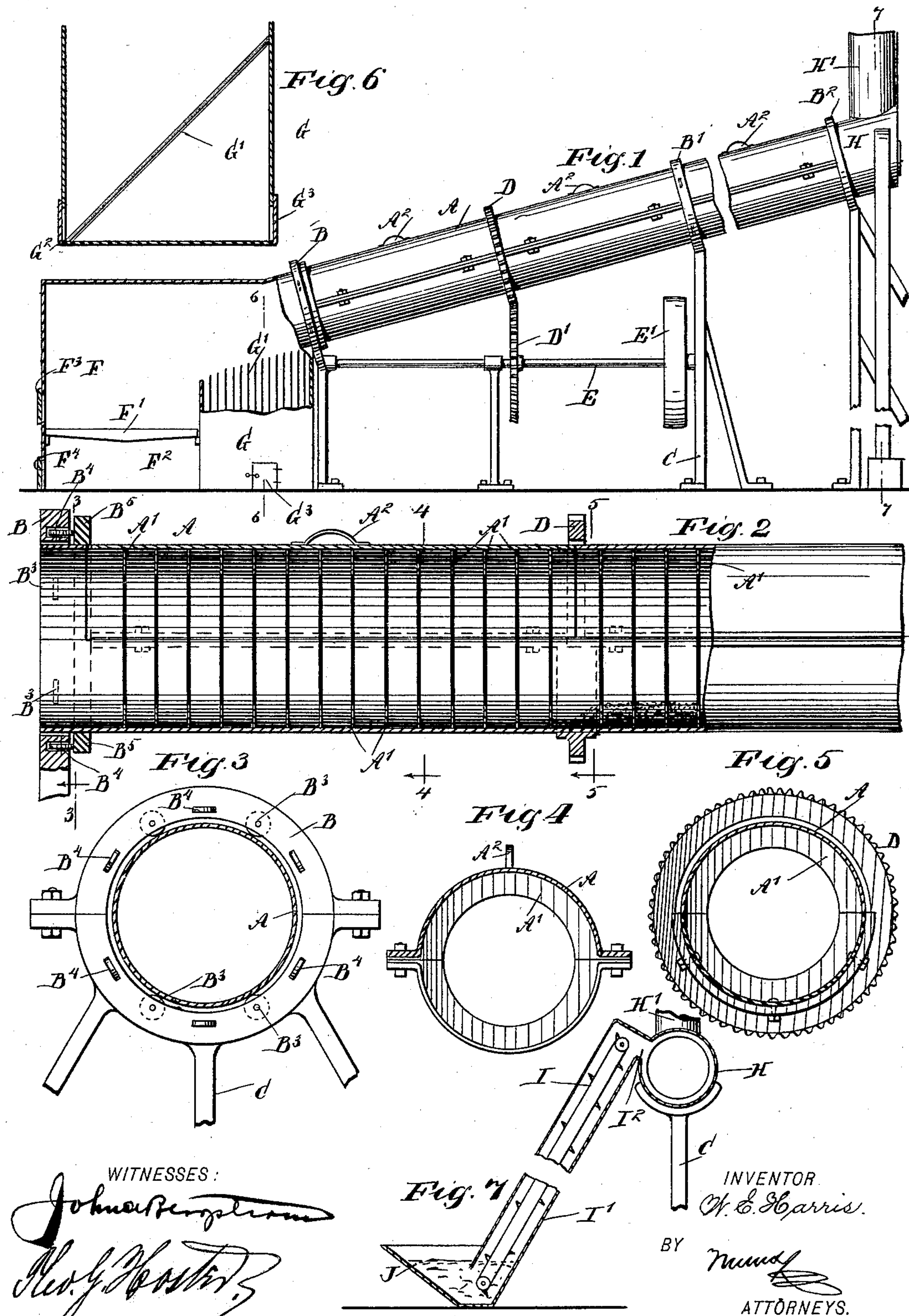
No. 613,143.

Patented Oct. 25, 1898.

W. E. HARRIS.  
GOLD SEPARATOR.

(Application filed Oct. 28, 1897.)

(No Model.)



WITNESSES:

*John Bengtson*  
*Rev. J. H. Foster*

Fig. 7

INVENTOR.

*W. E. Harris*

BY

*Mumford*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

WILLIAM E. HARRIS, OF CHICAGO, ILLINOIS.

## GOLD-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 613,143, dated October 25, 1898.

Application filed October 28, 1897. Serial No. 656,678. (No model.)

*To all whom it may concern.*

Be it known that I, WILLIAM E. HARRIS, of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Gold-Separator, of which the following is a full, clear, and exact description.

The invention relates to apparatus for separating precious metals from sand, gravel, and other material by a dry process; and the object of the invention is to provide a new and improved gold-separator which is simple and durable in construction, easily manipulated, and arranged to insure a proper separation of the precious metals from the accompanying tailings.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

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

Figure 1 is a side elevation of the improvement with parts in section. Fig. 2 is an enlarged sectional side elevation of the drum. Fig. 3 is a transverse section of the same on the line 3 3 of Fig. 2. Fig. 4 is a similar view of the same on the line 4 4 of Fig. 2. Fig. 5 is a like view of the same on the line 5 5 of Fig. 2. Fig. 6 is an enlarged transverse section of the screening-box on the line 6 6 of Fig. 1, and Fig. 7 is a transverse section of the elevator on the line 7 7 of Fig. 1.

The improved gold-separator is provided with a cylindrical drum A, held in an inclined position and mounted to turn in bearings B, B', and B<sup>2</sup>, carried by a suitable framework C, resting on the ground or other foundation. On the drum A is secured a beveled gear-wheel D in mesh with a beveled gear-wheel D', attached to a shaft E, carrying a pulley E', connected by belt with other machinery for imparting a rotary motion to the said shaft E and by the gear-wheels D' and D to the drum A, so as to revolve the same in its bearings.

Each of the bearings B B' B<sup>2</sup> is provided with rollers B<sup>3</sup>, adapted to engage the peripheral surface of the drum at different places, and in the lower bearing B is journaled a

second set of rollers B<sup>4</sup>, standing at right angles to the rollers B<sup>3</sup> and adapted to be engaged by the lower face of a ring B<sup>5</sup>, attached to the drum A, near the lower end thereof, as will be readily understood by reference to Figs. 2 and 3. Thus when the drum A is revolved the friction is reduced to a minimum in the bearings B B' B<sup>2</sup> owing to the rollers B<sup>3</sup> and B<sup>4</sup> above described.

The drum A is provided on its inside with annular flanges A', placed a suitable distance apart and of such a height as to retard the downward movement of the material to such an extent as to readily separate the precious metals from the sand, gravel, and other material, it being understood that the precious metals settle against the bottoms of the flanges, which latter thus form riffles for retaining the gold and other heavy materials.

The drum A is preferably made in sections or halves connected with each other by bolts, as indicated in the drawings, to allow of removing the top section when it is desired to remove the gold or other materials that have settled against the riffles formed by the flanges A'.

In order to conveniently lift the top section of the drum A, I provide the same with handles A<sup>2</sup>, as indicated in Figs. 1 and 2.

Through the drum A is adapted to pass the heat emanating from the burning fuel in a furnace F, arranged to connect with the lower end of the drum, as is plainly indicated in Fig. 1, the said furnace being of any approved construction and provided with a suitable grate F', an ash-pit F<sup>2</sup>, a firing-door F<sup>3</sup> for the fuel, and a door F<sup>4</sup> for removing the ashes from the pit F<sup>2</sup>.

Adjacent to the furnace F and between the fire-box thereof and the lower end of the drum A is arranged a screening-box G, into which pass the sand, gravel, and other tailings discharged from the lower end of the drum. The screening-box G is provided with transverse diagonally-extending bars G' for separating the sand and other fine material from the gravel, the latter passing down the bars G' to be removed through a door G<sup>2</sup> in the rear of the screening-box, while the sand passes through the bars G' to a compartment formed in the lower portion of the screening-



box, and to which compartment access is had by way of a door G<sup>3</sup> to remove the sand from the screening-box whenever desired. (See Fig. 6.)

5 The upper end of the drum A opens into a cylindrical inlet H, provided with a chimney H' for carrying off the smoke and gases arising from the burning fuel and passing through the drum A, and into the said inlet  
10 H discharges an elevator I, connected at its lower end with a receptacle J, containing the material to be treated. The elevator I may be of any approved construction and controlled either from the shaft E or by other  
15 means, and the said elevator is inclosed within a casing I', the lower end of which extends into the material contained in the receptacle J, the upper end opening into the inlet H. Thus when the machine is in motion the material contained in the receptacle J is carried  
20 upward by the elevator I and discharged at the neck I<sup>2</sup> into the inlet H, from which passes the material by its own gravity into the drum A to be agitated and heated therein to readily  
25 separate the precious metal from the sand, gravel, and other tailings, as above explained. It is expressly understood that when the machine is in motion and the drum A is rotating the material under treatment is thoroughly  
30 heated by the heat passing through the drum to insure a proper drying of the material and a consequent ready separation of the gold from the sand, the precious metal settling behind the flanges A', while the lighter material passes over the flanges and is finally dis-  
35 charged into the screening-box, in which the sand is separated from the gravel and heavier matter.

Having thus fully described my invention,

I claim as new and desire to secure by Letters Patent—

1. A gold-separator comprising a revoluble, inclined drum provided in its interior with annularly-spaced flanges, to form riffles for retaining the precious metals, a furnace connected with the lower end of the said drum, for causing the heat emanating from the burning fuel in the furnace to pass through the drum to heat the material therein, and insure a ready separation of the precious metals  
45 from the sand, gravel and other tailings, and a screening-box interposed between the furnace and the drum at the lower end thereof, to receive the tailings from the drum, the screening-box being arranged to separate the  
50 sand from the gravel and other heavy materials, substantially as shown and described. 55

2. A gold-separator comprising a revoluble, inclined drum provided in its interior with annularly-spaced flanges forming riffles for  
60 retaining the precious metals, an inlet for the upper end of the said drum, and provided with a smoke-stack for carrying off the gases, an elevator discharging into the said inlet, a furnace connected with the lower end of  
65 the said drum, to heat the material passing through the drum and insure a ready separation of the precious metals from the sand, gravel and other tailings, and a screening-box between the furnace and the lower end  
70 of the said drum, and constructed to separate the precious metals from the sand, gravel and other tailings, as set forth.

WILLIAM E. HARRIS.

Witnesses:

J. A. MACPHERSON,  
MARTHA MACPHERSON.