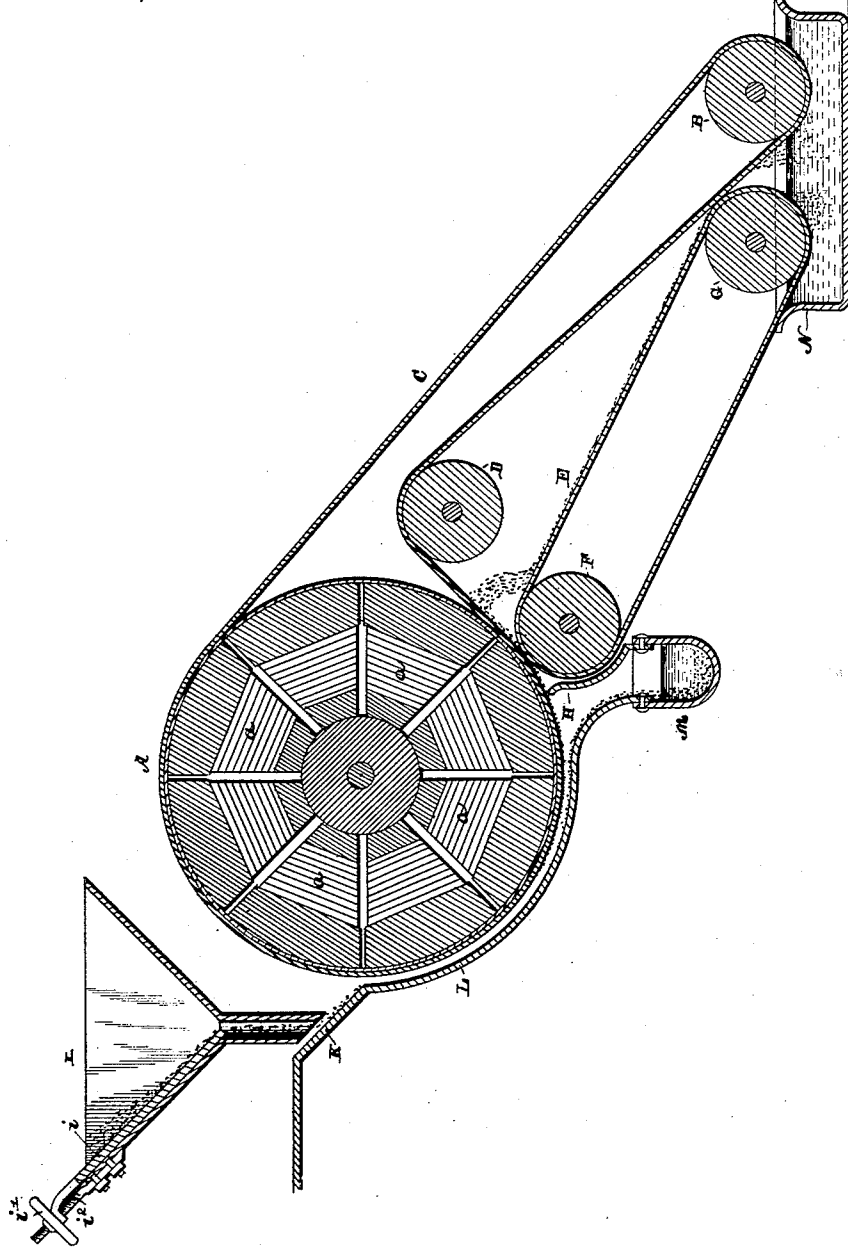


(No Model.)

H. CANE.
ORE SEPARATOR.

No. 468,540.

Patented Feb. 9, 1892.



Witnesses

E. S. Duvall Jr.
L. P. Holthaupt
By his Attorneys,

Inventor

Henry Cane.

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UNITED STATES PATENT OFFICE.

HENRY CANE, OF SPOKANE FALLS, WASHINGTON, ASSIGNOR OF ONE-HALF
TO WALTER GERSON, OF SAME PLACE.

ORE-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 468,540, dated February 9, 1892.

Application filed June 6, 1891. Serial No. 395,290. (No model.)

To all whom it may concern:

Be it known that I, HENRY CANE, a citizen of the United States, residing at Spokane Falls, in the county of Spokane and State of Washington, have invented a new and useful Ore-Separator, of which the following is a specification.

My invention relates to an improvement in ore-separators in which the separation is effected through the influence of magnetism, and has for its object to provide an apparatus that will efficiently separate magnetic ores, being especially adapted for the separation of gold from the black sand with which it is commonly found associated, an apparatus in which the separation is made without previously drying the sand in this particular case, but is easily made without going to this wasteful and tedious process of drying the gold-bearing sand before separating the gold therefrom, and also to provide means for readily collecting and washing the separated particles independently of each other in the same apparatus; and it consists of the interposition of a continuous band between a magnetic drum and the material to be separated, together with special details of construction hereinafter more fully described, illustrated in the accompanying drawing, and specifically pointed out in the appended claims.

The figure represents a vertical transverse sectional view of a magnetic ore-separator constructed in accordance with my invention.

Referring to the drawing by letter, A designates a magnetic drum provided with a series of radiating magnets *a*, having their poles as near to each other as construction will allow. Around the magnetic drum and the supplemental pulley or drum B passes an endless belt C, constructed of any suitable material with reference to the purposes of the machine. The lower portion of said endless belt, against which the magnetic particles are attracted through the magnetic influence of said drum, is deviated from its regular path in the course of its endless revolution by means of a guide-pulley or drum D, which holds the band tightly to the magnetic drum, in order that the attracted articles may adhere to the drum for a sufficient distance during its revolution to permit the particles when

said band leaves the magnetic drum and the magnetic effect of the same is no longer exerted upon the particles for the same to drop upon a supplemental endless carrier-belt E, which passes over the pulley or drum F, situated beneath and to one side of said magnetic drum and said guide-pulley D and over the pulley or drum G, situated in a horizontal parallel plane with the pulley or drum B, around which the main belt passes. The pulley or drum F, beneath the magnetic drum and the idler-pulley D, is partly incased by a shield or guard H, interposed between the non-magnetic particles in their path to the receptacle, in which they are designed to run, and the pulley, in order that none of the particles attracted and carried by the magnetic drum over said pulley to the endless belt running over the same will not be likely to commingle again with each other after the separation is effected.

The material containing the magnetic and non-magnetic particles of matter to be separated from each other is fed to the apparatus through the hopper I, which is provided with an adjustable regulating-slide *i*, which is adjusted to feed the material in any quantity desired by means of the hand-wheel *i'*, working on the screw-threaded arm *i''*, secured to the hopper-frame. From the hopper the substances pass down the chute K and beneath the magnetic drum over the concave incline L, in which the lower portion of said drum and endless belt thereover pass, and the particles not attracted by said drum and held to the belt through magnetic influence pass into the receiving and washing trough M, in which the same is easily washed and collected, said trough being located beneath the pulley or drum F, and to which is secured the guard or shield incasing a portion of said pulley or drum. A supplemental and additional trough N is placed directly beneath the horizontal parallel pulleys or drums B and G, the lower portions of which revolve beneath the liquid in said trough, which serves to cleanse the belts passing over said drums and also to wash the particles conducted to the trough by the same.

The operation of my device is thought to be apparent from the foregoing description.

The material fed through the hopper passes in the quantity desired from the same down the inclined way beneath the magnetic drum, the magnetic particles contained in the material being attracted to the endless belt passing around the drum and is held to the same until said belt leaves the drum, at which point, the magnetic influence being no longer exerted, the attracted particles drop from the same upon the supplemental carrier-belt and are conducted to the collecting and washing trough in which the same is deposited, and the belts passing through the water in said trough being at the same time cleansed and prepared for subsequent use. The metals which are not attracted continue in their course beneath the drum to a receiving and washing trough, in which the same are cleansed and may be readily collected and further separated by amalgamation—in the case of gold, separation from any substances which magnetic influence failed to cause the separation therefrom.

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

1. In a magnetic ore-separator, a magnetic drum, an endless belt passing thereover, a band-roller and a supplemental guide-pulley, and a supplemental endless belt located beneath said guide-pulley and main endless belt, substantially as set forth.

2. In a magnetic ore-separator, a magnetic drum, an endless belt passing thereover, a band-roller and a supplemental guide-pulley, a supplemental endless belt located beneath said guide-pulley and main endless belt, a washing and receiving trough located under the lower extremities of both endless belts, and a washing and collecting trough located beneath said magnetic drum and the upper end of the supplemental endless belt, substantially as set forth.

3. In a magnetic ore-separator, a magnetic drum, an endless belt passing thereover, and an idler pulley or drum, an endless belt lo-

cated directly beneath said belt and passing over a pulley or drum located beneath said magnetic drum and partly incased by a shield or guard and over a pulley or drum in the same horizontal parallel plane with the idler pulley or drum over which the main belt passes, a guide-roller placed beneath the main endless belt and holding the same above the supplemental belt and to the magnetic drum to a point beyond the upper plane of said supplemental belt, a washing and receiving trough located directly beneath said parallel pulleys, and a washing and receiving trough beneath said magnetic drum and the upper end of the supplemental endless belt, substantially as set forth.

4. In a magnetic ore-separator, a magnetic drum, an endless belt passing thereover, and an idler pulley or drum, a supplemental endless belt directly beneath said main belt and passing over a pulley partly incased by a shield or guard directly beneath and to one side of said magnetic drum and over a pulley located in the same horizontal parallel plane with the pulley over which the main belt passes, a guide-roller placed beneath and elevating the main belt above the supplemental belt, a receiving-trough beneath said parallel pulleys, a receiving and collecting trough located beneath the magnetic drum and upper end of the supplemental endless belt, a concaved incline chute beneath said magnetic drum and communicating with the trough beneath the same, and a hopper provided with an adjustable regulating-slide controlled by a hand-wheel connected with the same and working on a screw-threaded arm secured to the same, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

HENRY CANE.

Witnesses:

W. B. ROBERTS,
W. M. BYERS.