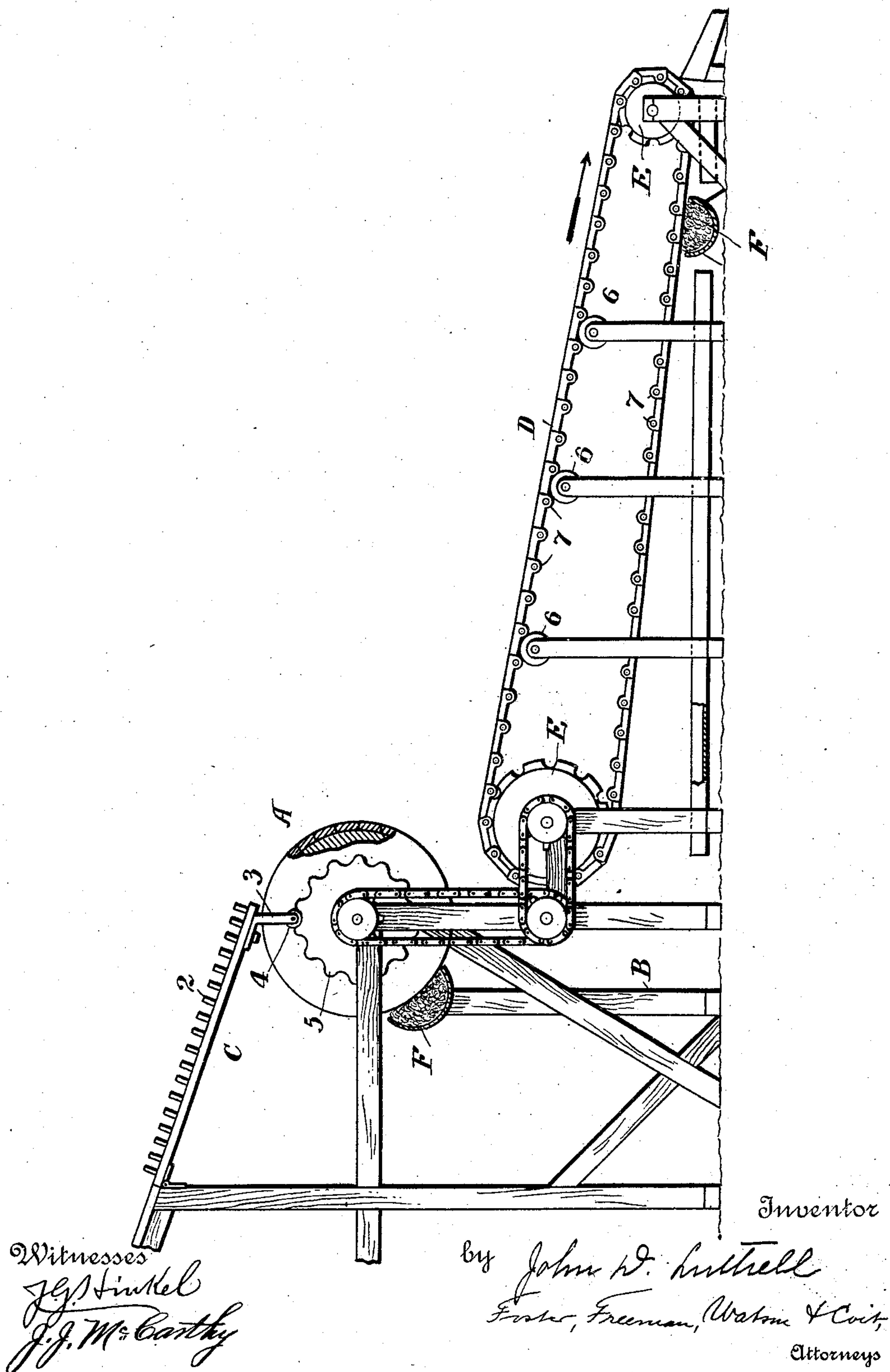


J. D. LUTTRELL.
GOLD SEPARATING APPARATUS.
APPLICATION FILED FEB. 29, 1908.

933,772.

Patented Sept. 14, 1909.



UNITED STATES PATENT OFFICE.

JOHN D. LUTTRELL, OF BENTON HARBOR, MICHIGAN.

GOLD-SEPARATING APPARATUS.

933,772.

Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed February 29, 1908. Serial No. 418,531.

To all whom it may concern:

Be it known that I, JOHN D. LUTTRELL, a subject of the King of Great Britain, residing at Benton Harbor, Michigan, have invented certain new and useful Improvements in Gold-Separating Apparatus, of which the following is a specification.

My invention relates to apparatus for separating gold from auriferous sands, or wherever the gold is combined in extremely small particles with granular or pulverized material, and consists of means fully set forth hereinafter whereby to deposit gold upon suitably prepared adhesive or separating plates from which the said particles are afterward removed by a wiper, as fully set forth hereinafter and as illustrated in the accompanying drawing, which represents in elevation and in part section a simple form of apparatus embodying my invention.

While my improved apparatus may be used in connection with plates of different characters, I have specially adapted it for use in connection with what I term adhesive or separating plates. These consist of a suitable composition or material forming the body portion of a plate and with which mercury is so combined that it is presented at the surface of the plate in the form of small particles. By the use of said plates the fine particles of gold instead of amalgamating with the mercury will simply adhere thereto, and may afterward be removed by means of a suitable wiper.

In my said apparatus the said plates may be applied to and constitute part of a drum A, the shaft of which turns in suitable bearings upon the framework B of the apparatus, or the periphery of the drum may be a continuous strip of veneer. Whatever may be the construction, the surface of the plates, or of the periphery, is prepared as before described, and the material, as for instance auriferous sand, is deposited upon the surface of the drum at the top from a table or chute C which preferably is provided with a series of vertical pins 2, so arranged that as the material passes down the table the particles are broken up or separated to thereby fall in as separated condition as possible onto the surface of the drum. In order to promote the proper feeding and separation of this material the drum is agitated and for this purpose is provided with a bracket 3 carrying a roll 4 which bears upon the serrated or toothed periphery of

a wheel 5, upon the axis of the drum A. There may be a series of these drums each of which constitutes a carrier for the plate or plates, but for some purposes I prefer to make use, in addition to the drum, of an endless flexible carrier D, the same consisting of a series of blades or plates suitably connected together either by links or by flexible bands passing through the same and supported at the ends by drums or rollers E, E, the shafts of which turn in bearings upon the frame, and with intermediate supporting rollers 6, 6, the plates being provided at the under side with ribs 7 which cause the plates to be agitated as the endless carrier travels in the direction of its arrow. As shown the traveling movement of the carrier D is imparted from the shaft of the drum A through the medium of sprockets and chains, as shown, but any other suitable driving means may be employed.

Opposite the periphery of the drum A, and below the lower part or section of the endless carrier D, are arranged boxes or troughs F, each of which is adapted to receive and retain a mass x of fibers, as for instance cotton fibers, in sufficient quantity to bear against the opposite surfaces of the plates supported by the drum or carrier. With the parts as thus constructed the material deposited upon either carrier will be carried with the same until discharged therefrom by gravity, and the fine particles of gold which are brought in contact with the faces of the plates will be caused to adhere thereto by contact with the mercury upon said faces, but in consequence of the distributive character of the latter and of the short length of time that such contact is permitted, gold will not amalgamate with the mercury, and as the surface of the carrier is brought opposite the wiper the fine particles of gold will be wiped from the adhesive plates and deposited upon the wipers but without wearing away or deteriorating said plates. From time to time, as for instance at the end of each day's work, the material on the wipers will be withdrawn and heated or burned, the gold being thereby deposited as a button or in solid particles at the bottoms of the troughs.

It will be seen that the material is not caused to travel upon the surfaces of the adhesive plates, but is simply agitated by the motion of the carriers so that the particles of gold tend to settle among the particles

of sand in contact with the mercury, which tends to hold them until there is an actual mechanical separation by the action of the wipers.

5 It will be seen that the terminal roller E is small in diameter, and that there is but a slight inclination of the traveling bed. This arrangement and construction has for its purpose the prevention, as much as possible, 10 of any sliding of the particles on the plates either in traveling or at the time of discharge, the small roller insuring a quick tilting of the plates which will throw off the sand, etc. Rubbing of the plates is thus 15 prevented. The wipers also are made of material which will detach the adhering but non-amalgamated gold particles with as little rubbing of the plates as possible. As a result of this absence of flow there is no at- 20 trition of the plates by the sand, and no wear and no tendency of the movement of the sand to separate the mercury from the plates, and as a result it is not necessary to renew the plates as in the case of those 25 where the gold is separated by amalgamation.

It will be evident that by the term "adhesion plate" as herein used I distinguish 30 from a plate provided with free mercury, or so coated that the fine particles of gold will amalgamate with the mercury. Such amalgamation results in a substantial loss of gold and rapid deterioration of the plates, both of which I avoid by using plates to which 35 the gold will slightly adhere without combining.

My improved apparatus, which of course may be made in various shapes, and with carriers of different kinds and forms and proportions, may be used either with dry 40 material or that which is more or less combined with water, but in any case it is desirable to avoid as much as possible any strong or vigorous water currents, but to use the water simply as a means of convey- 45 ing the material to and depositing it upon the plates.

I do not here claim an adhesive plate for separating gold consisting of a body of material having mercury presented at the sur- 50 faces in the form of isolated particles.

What I claim as my invention is:

The combination in a gold separator, of a rotatable drum having peripheral plates of a character to cause the adhesion of fine par- 55 ticles without amalgamating with the same, a feeding table arranged to convey auriferous material to the drum, an endless carrier supported by rotatable rollers in a position to receive the material passing from the 60 drum and provided with plates of the same character as those upon the drum, means for vertically reciprocating the upper portion of the traveling carrier, and means for rotating the drum and rollers.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN D. LUTTRELL.

Witnesses:

CHARLES E. FOSTER,
ARTHUR L. BRYANT.