

(No Model.)

G. H. PATTERSON.
DRY MINERAL SEPARATOR.

No. 504,240

Patented Aug. 29, 1893.

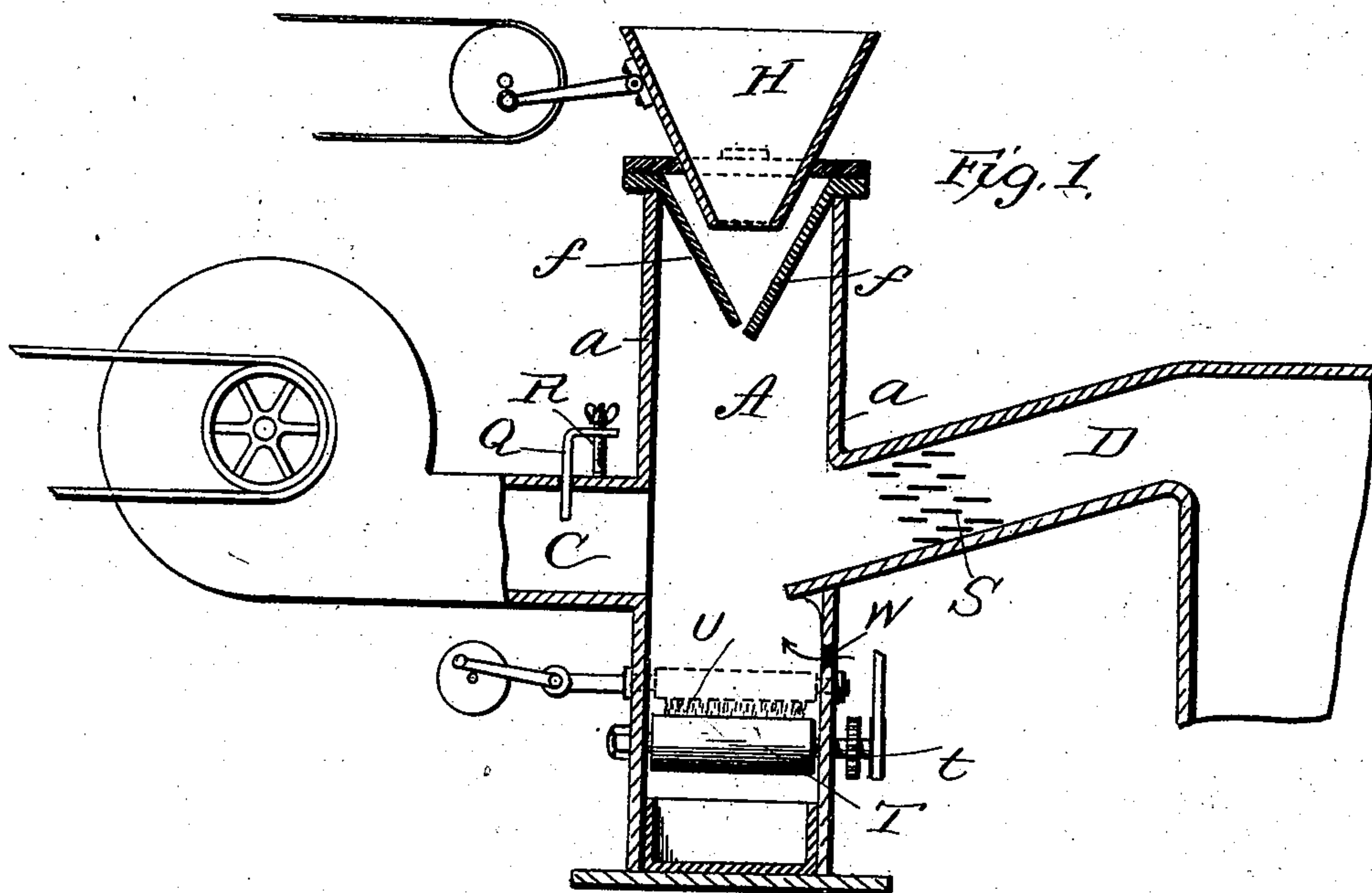


Fig. 1.

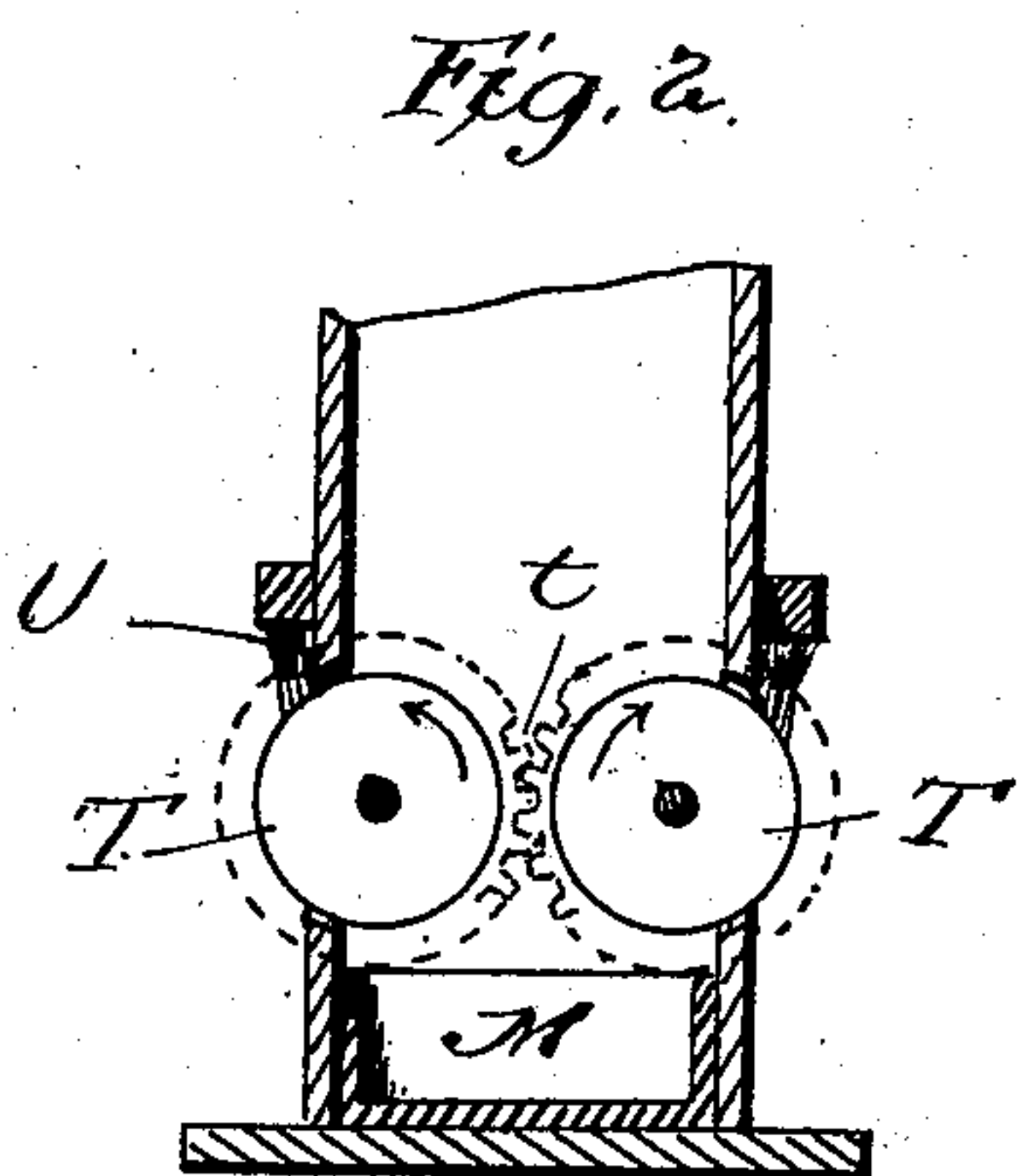


Fig. 2.

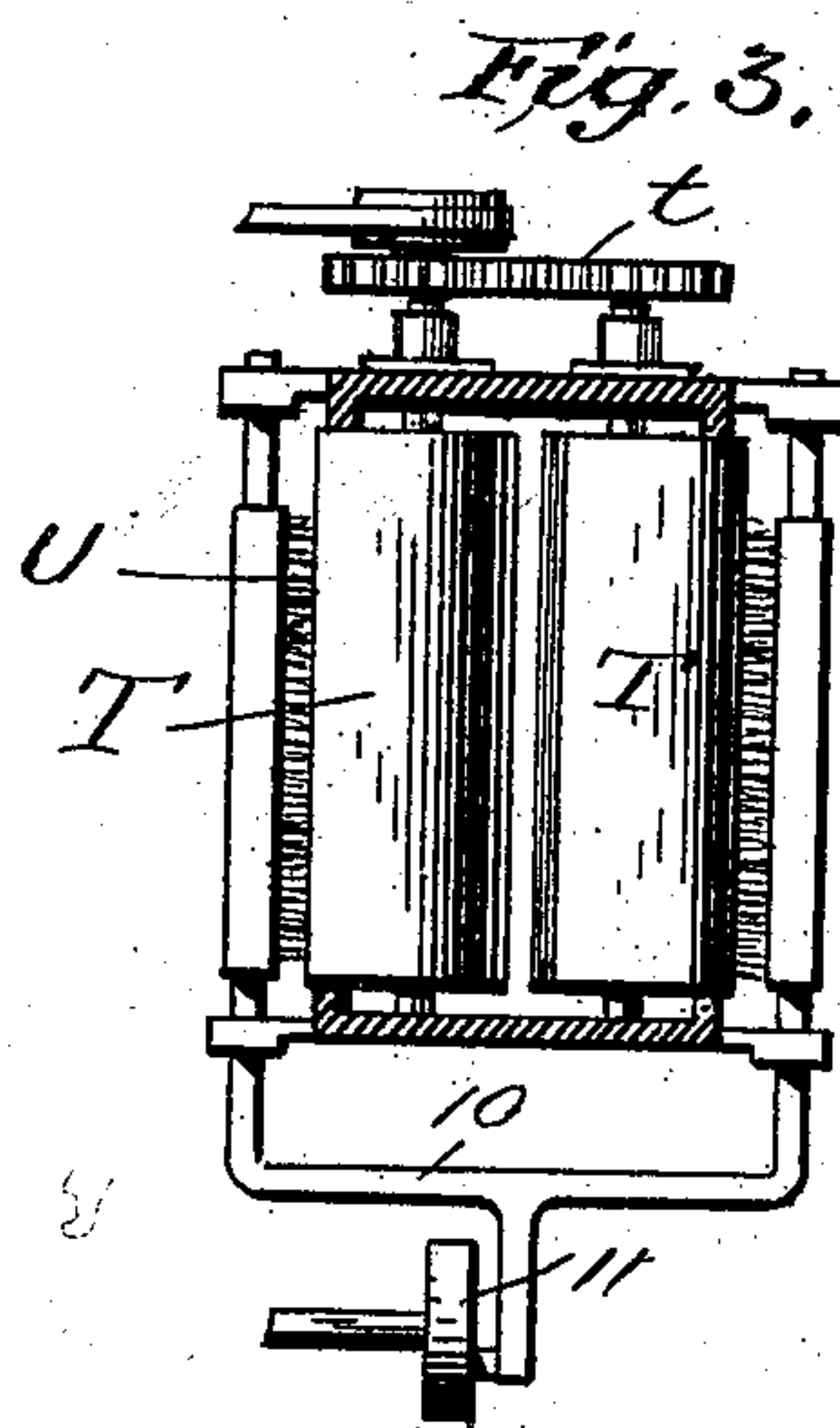


Fig. 3.

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UNITED STATES PATENT OFFICE.

GEORGE HUTTON PATTERSON, OF CAÑON CITY, COLORADO.

DRY-MINERAL SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 504,240, dated August 29, 1893.

Application filed March 9, 1893. Serial No. 465,293. (No model.)

To all whom it may concern:

Be it known that I, GEORGE HUTTON PATTERSON, a citizen of the United States of America, residing at Cañon City, in the county of Fremont and State of Colorado, have invented certain new and useful Improvements in Dry-Mineral Separators, of which the following is a specification.

My invention relates to improvements in dry mineral separators of that class in which a blast of air is used to separate the lighter material from the ore to be saved.

The object of the present invention is to provide a separator adapted particularly for dry or placer mining of gold, the construction of the device being such as to insure more complete separation of the material, while at the same time the machine is simple in construction and durable.

I have illustrated the invention in the accompanying drawings, in which—

Figure 1 is a central vertical section taken lengthwise through the separator, and Fig. 2 is a detail view of the magnetic rolls. Fig. 3 is a sectional plan view thereof.

In the drawings H, represents the hopper of the machine in which the material to be separated is placed, this hopper being preferably provided with a coarse screen at its lower end, and receiving a shaking movement from any of the well known means. This hopper rests upon the separator casing A, which consists of vertical walls *a*, inclosing the space within which the separating action is accomplished. Two inclined partitions or shelves *f, f*, are provided immediately beneath the hopper which receives the ore and cause it to fall into the space beneath in a thin stream. A passageway C, leading from a suitable source of air supply, is located at one side of the casing and is adapted to deliver a powerful blast of air to the same, which may be regulated by the vertically sliding gate Q, adjustable vertically by means of the set screw R. Upon the opposite side of the casing is located an inclined passageway D, with its mouth directly opposite the passageway C, while its upper end communicates with any receptacle adapted to receive the material which is forced through the same by the blast of air. The bottom of the inclined passageway D, is preferably extended slightly with-

in the separating chamber, as shown, and a series of stops or checks S, may be provided which deflect the current of air passing through the passageway, and tend to retain any of the gold which might be forced therein.

In the lower part of the separating chamber are located a number of rollers T, preferably two, which are driven by the gear wheels *t* located upon the outside of the casing and communicating with the source of power, and these rollers are of highly magnetized material. As the ore in the hopper is fed downward in a fine stream, it is intercepted by the blast of air through the passageway C, and all lighter particles of dirt and refuse matter are forced by the air blast through the passageway D, while the heavier particles drop upon or between the magnetic rollers in the lower part of the casing.

In dry mining, and particularly in "placer" mining, it often happens that much "black sand" is found in the ore, and as this is very heavy it cannot be separated by the air blast. This "black sand" is highly magnetic, and as it falls upon or in proximity to the magnetized rollers it is caught and retained by them, and in the revolution of the rollers the sand is carried to the sides of the casing, where brushes U, are provided which brush or scrape the sand into suitable receptacles or troughs (not shown) and keep the rollers bright and clean. The gold, which of course is non-magnetic, drops through between the rollers into the receptacle M, located beneath for that purpose. The floor of the exit passageway is extended for a short distance within the casing or chamber in the form of a projection or shelf, and beneath is an opening W, through which the air passes to fill the vacuum caused by the blast of air over the upper face of the shelf. The air thus admitted through the opening W rises and passes out at the exit, thus aiding, in its upward passage, the separating action. The brushes U are preferably connected to a yoke 10 which may be operated in any suitable way as by the crank disk 11 so as to reciprocate the brushes longitudinally along the sides of the rollers.

I claim as my invention—

1. In a dry mineral separator a central chamber having a feed hopper above the

same, a passageway at one side admitting an
air blast, an exit for said blast at the oppo-
site side, openings in the walls of the cham-
ber below the level of the air passages, mag-
5 netic rollers mounted within the chamber
having portions of their peripheries extend-
ing through said openings and brushes lo-
cated without the chamber bearing against
said portion, substantially as described.
10 2. In combination with the separating cham-
ber of a mineral separator, magnetic rollers
journaled in the lower portion having their
peripheries projecting through openings in
the walls of the chamber, a yoke having its
15 arms supported in proximity to the walls and
provided with brushes depending into con-
tact with the rollers, and connections to the

yoke for reciprocating the same, substantially
as described.

3. In combination the central chamber, the 20
feed hopper communicating therewith, a pas-
sageway for admitting an air blast upon one
side of the chamber, an exit for said blast
upon the other side, a projection from the
wall of the chamber beneath the mouth of 25
the exit, and an opening in the wall below
said projection, substantially as described.

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

GEORGE HUTTON PATTERSON.

Witnesses:

ADDIE C. MACON,
AUGUSTUS MACON.