(No Model.)

G. CONKLING.

MAGNETIC SEPARATOR.

No. 481,474. Patented Aug. 23, 1892.

Fig. 1.

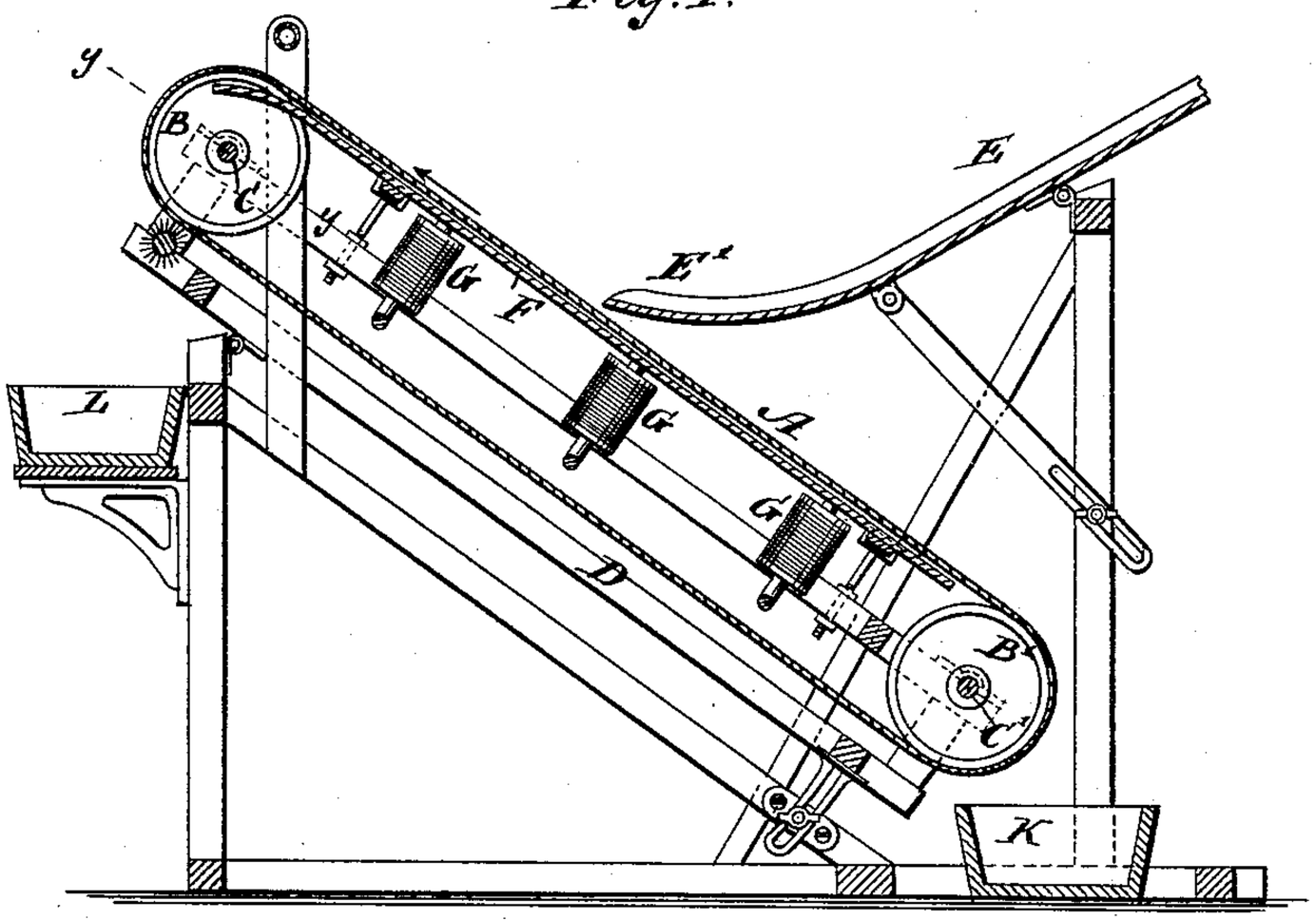


Fig. 2.

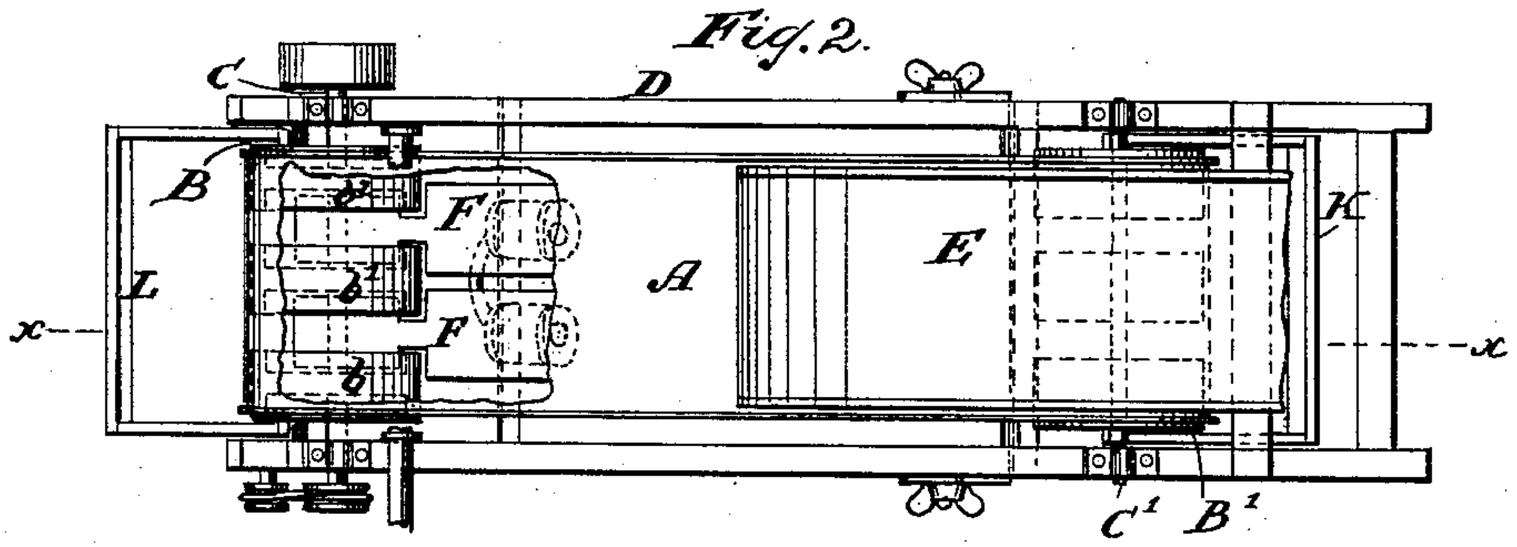


Fig. 3.

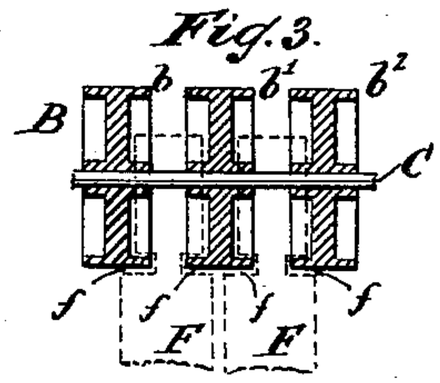
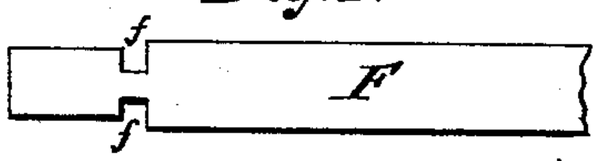


Fig. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

GURDON CONKLING, OF GLENS FALLS, NEW YORK.

MAGNETIC SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 481,474, dated August 23, 1892.

Application filed July 23, 1891. Serial No. 400,445. (No model.)

To all whom it may concern:

Be it known that I, GURDON CONKLING, a citizen of the United States, residing at Glens Falls, in the county of Warren and State of New York, have invented new and useful Improvements in Magnetic Separators, of which the following is a specification.

This invention relates to certain improvements in a magnetic separator described in Letters Patent No. 410,877, granted to me September 10, 1889, said improvements being pointed out in the following specification and claim, and illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section in the plane *x x*, Fig. 2. Fig. 2 is a plan or top view. Fig. 3 is a sectional view of the pulleys supporting the endless apron at its highest portion. Fig. 4 is a plan view of one of the magnets detached.

In the drawings the letter A designates an endless belt, which extends around two drums B B′.

The shafts C C′ of the drums B B′ are mounted in a frame D, which is inclined and the inclination of which can be adjusted by any suitable means—such, for instance, as those shown in the drawings.

E is a trough, which is placed over the belt A in an inclined position and over which a mass of crushed ore containing magnetic particles is conducted to the endless belt A. This belt is moved in the direction of the arrow marked near it in Fig. 1, and the trough E is adjusted in such a position that the crushed ore which discharges from the same has acquired a certain velocity in the direction in which the belt A moves. This purpose can be best accomplished by providing the trough E with a curved discharge-spout E′, which terminates close to and in a plane parallel with the surface of the belt A. By these means the crushed ore which rushes down over the inclined trough is delivered onto the belt with a certain velocity in the direction of the motion of the belt, so that even if the belt runs with considerable speed no swaying of the belt is produced by the impact of the crushed ore and the crushed ore is not liable to be thrown off over the sides of the belt.

In the interior of the endless belt A are situated one or more magnets F, which are secured to the frame D, so that when the inclination of this frame is changed the magnets will retain their relative position toward the belt A. These magnets may be made in the form of permanent magnets or in the form of soft-iron bars, which are rendered magnetic by electro-magnets G G, as indicated in the drawings. The mass of crushed ore which carries the magnetic particles strikes the belt at a point over the magnets F, and the magnetic particles contained in said mass are attracted to the belt A by the magnets and are carried upward, while the non-magnetic particles are carried downward over the belt and deposited in a vat K. The magnetic particles which adhere to the belt are carried over the drum B and discharged into the vat L. In order to insure this action, it is necessary that the magnets F be placed close beneath the upper branch of the belt A and that they extend in the direction of said belt up to and a little beyond the highest point of the upper strand of the belt.

In the apparatus described in my patent, No. 410,877, above named, the upper drum is provided with circular grooves to admit the ends of the magnets F; but I have found that the belt A in passing over the grooved drum is liable to be attracted by said magnets with such force that its free movement is interfered with and the belt is liable to wear out very rapidly. These disadvantages I have overcome by making the drum B of three sections *b b′ b²*, which are mounted on the shaft C at suitable distances apart, (see Fig. 3,) and the magnets F are formed with recesses *f f*, which receive the rims of the pulleys *b b′ b²*, as indicated in dotted lines in Fig. 3. By this arrangement the upper ends of the magnets are partly covered by the rims of the pulleys and the belt A cannot be drawn down between said rims, so as to come in contact with the magnets.

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

In a magnetic separator, the combination of an inclined frame having two opposite drums, one of which is made in three sections

$b\ b'\ b^2$, the endless belt passing around said drums, and the magnets supported by the frame within the belt and provided with recesses f to receive the rims of the sections $b\ b'\ b^2$ of the upper drum, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GURDON CONKLING.

Witnesses:
WM. C. HAUFF,
W. HAUFF.