

A. Ross'
Continuous Action Magnetic Iron Separator

No. 122,493.

Patented Jan. 2, 1872.



Witnesses

Charles Legge

Charles G. L. Simpson

Inventor

Alex. Ross.

A. Ross'
Continuous · Action · Magnetic · Iron Separator

No. 122,493.

Patented Jan. 2, 1872.

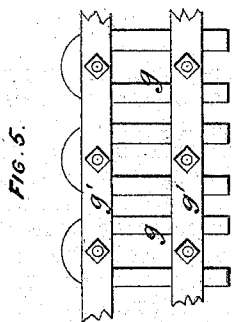


FIG. 4.

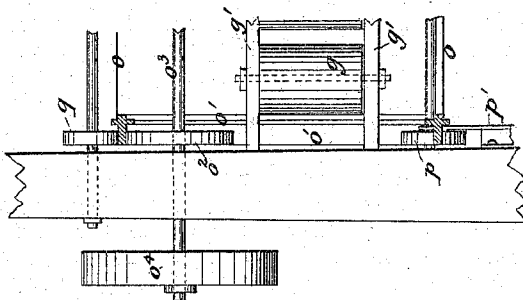


FIG. 6.

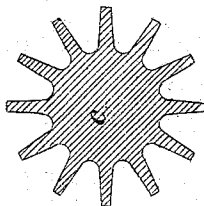
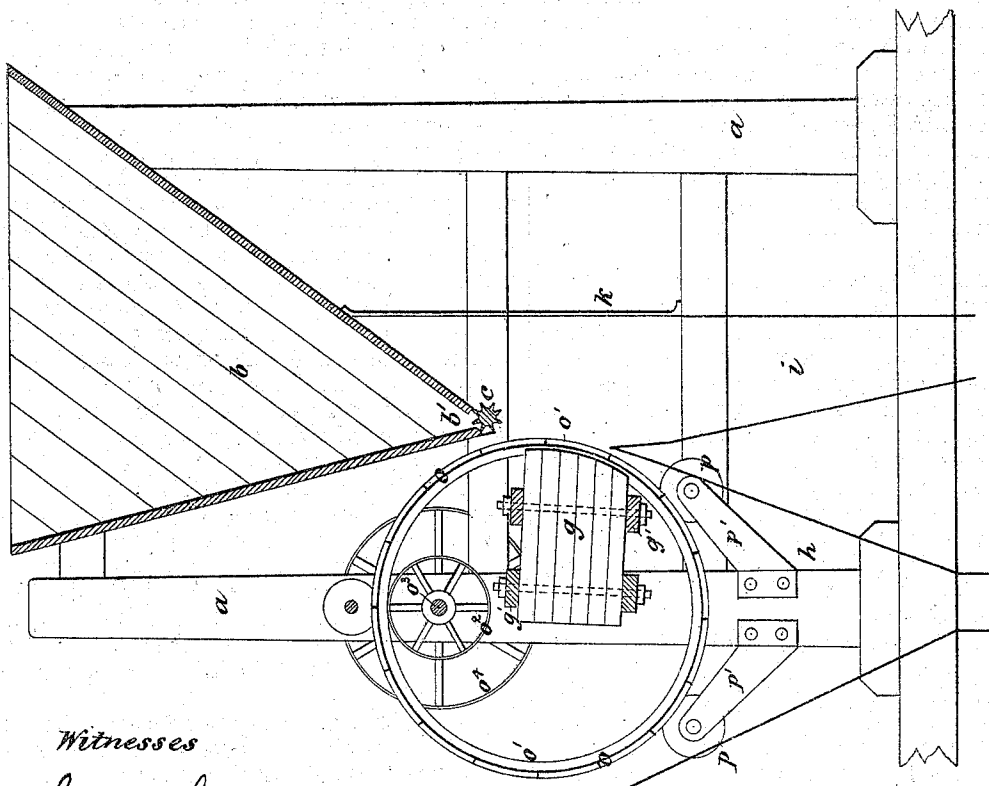


FIG. 3.



Witnesses

Charles Legge
Charles G. Simpson

Inventor

Alex. Ross

UNITED STATES PATENT OFFICE

ALEXANDER ROSS, OF MONTREAL, CANADA.

IMPROVEMENT IN ELECTRO-MAGNETIC SEPARATORS.

Specification forming part of Letters Patent No. 122,493, dated January 2, 1872.

SPECIFICATION.

To all whom it may concern:

Beit known that I, ALEXANDER ROSS, of the city of Montreal, in the district of Montreal and Province of Quebec, optician, have invented new and useful "Improvements on Machinery for Separating Iron Particles from Foreign Substances;" and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the drawing hereunto annexed, where is represented a side elevation of the machine.

This invention relates to improvements on machinery for separating small particles of iron from any foreign substances with which it may chance to be mixed, and refers especially to the iron sand found in various parts of the globe, the machine insuring the perfect separation of the iron from the sand or other particles, so that the iron resulting from the operation is purer and more free from silica or other substances than that separated by any other process yet known or introduced, the machine itself being less expensive at first cost, more easy to run, and not requiring highly-skilled labor, and can be run with less motive power.

Similar letters of reference refer to like parts in the drawing.

Letter *a* is the frame, as shown, or of any form found requisite, supporting a hopper, *b*, for the reception of the iron and sand mixed. At the bottom of this hopper, and extending its whole length, is an opening to allow of the escape of the mixed iron and sand, the flow of which is controlled and regulated by a fluted feed-roller. This feed-roller is set in motion by a pulley-wheel, *c'*, geared in any way to a going part of the machine, and arranged so that the speed of its revolution can at any time be altered, as requisite. *d* and *e* are two drums, as shown, made of any suitable materials, and over which runs or is stretched a broad band, *f*, the whole width of the hopper, made of thin metal, leather, paper, canvas, or any other textile or flexible material. Across this band, and at regular intervals, are placed projecting pieces *f*¹, of any suitable material, firmly attached to it at any convenient angle with the surface of the band. To extend the band and to bring it to a suitable angle to prevent friction, a friction-roller,

*f*², may be placed, if found requisite, at any convenient point. The magnets *g* are arranged secured by cross-pieces *g*¹, and held by bolts passing through them. Permanent magnets may be used, as shown, but electro-magnets or any other attractive force can, with equal facility, be employed if found more convenient. The ends of the magnets more distant from the hoppers are slightly rounded so as to diminish the abruptness of their attraction, and *g*² is a plate, of brass or other suitable metal, interposed between the magnets and the band. *h* or *i* are chutes to carry off, respectively, the iron separated and the impurities remaining; and *k* is a screen or shutter of any convenient shape, to prevent the current of sand being affected by draughts of air. Motion is imparted to the drums in any ordinary manner.

Having thus described the construction of my invention, I will proceed to indicate the manner in which it is operated. The machine being set in motion, the mixture to be separated is supplied to the hopper *b* and flows through the aperture in a steady equal stream, the amount passing through being regulated by the revolution of the fluted feed-roller. The mixture falls in a perpendicular direction by gravitation, into the chute *i*, with the exception of the particles of iron, which immediately upon leaving the hopper come under the attractive influence of the magnets *g*, and are thereby drawn to the surface of the intervening band *f*, the magnetic force overcoming the attraction of gravitation. The band *f*, revolving round the drums, carries away with it the load of iron attracted to it by the magnets, the projections *f*¹ carrying the particles of iron beyond the influence of the magnets, their attraction being reduced by being rounded off at their lower ends and depositing them in the chute *h*, whence they may be removed as required. The projections *f*¹ may in many cases be omitted, the rounding off of the magnets at the bottom end diminishing the magnetic force enough to allow the particles of iron to drop into the chute from the band *f*.

Having thus described the construction and operation of my invention, to which I have given the name of "Ross' continuous-action magnetic iron-separator," what I claim as my invention and wish secured by Letters Patent, is the new

and useful "improvements on machinery for separating iron particles from foreign substances," as follows:

1. The combination of the belt *f*, having drums *d e*, with the magnets *g*, the latter being rounded off for the purpose of diminishing the attraction, as described.

2. The series of magnets *g*, having their combined attractive surface rounded off for the purpose of diminishing the attraction as the belt passes the last portion of the series, as described.

3. The combination of the hopper, the fluted discharge-roller, the belts, with magnets *g* arranged as described, and the separating-chutes, as set forth.

Montreal, 30th day of March, A. D. 1871.

ALEXR. ROSS.

Witnesses:

CHARLES LEGGE,

CHARLES G. C. SIMPSON.

(50)