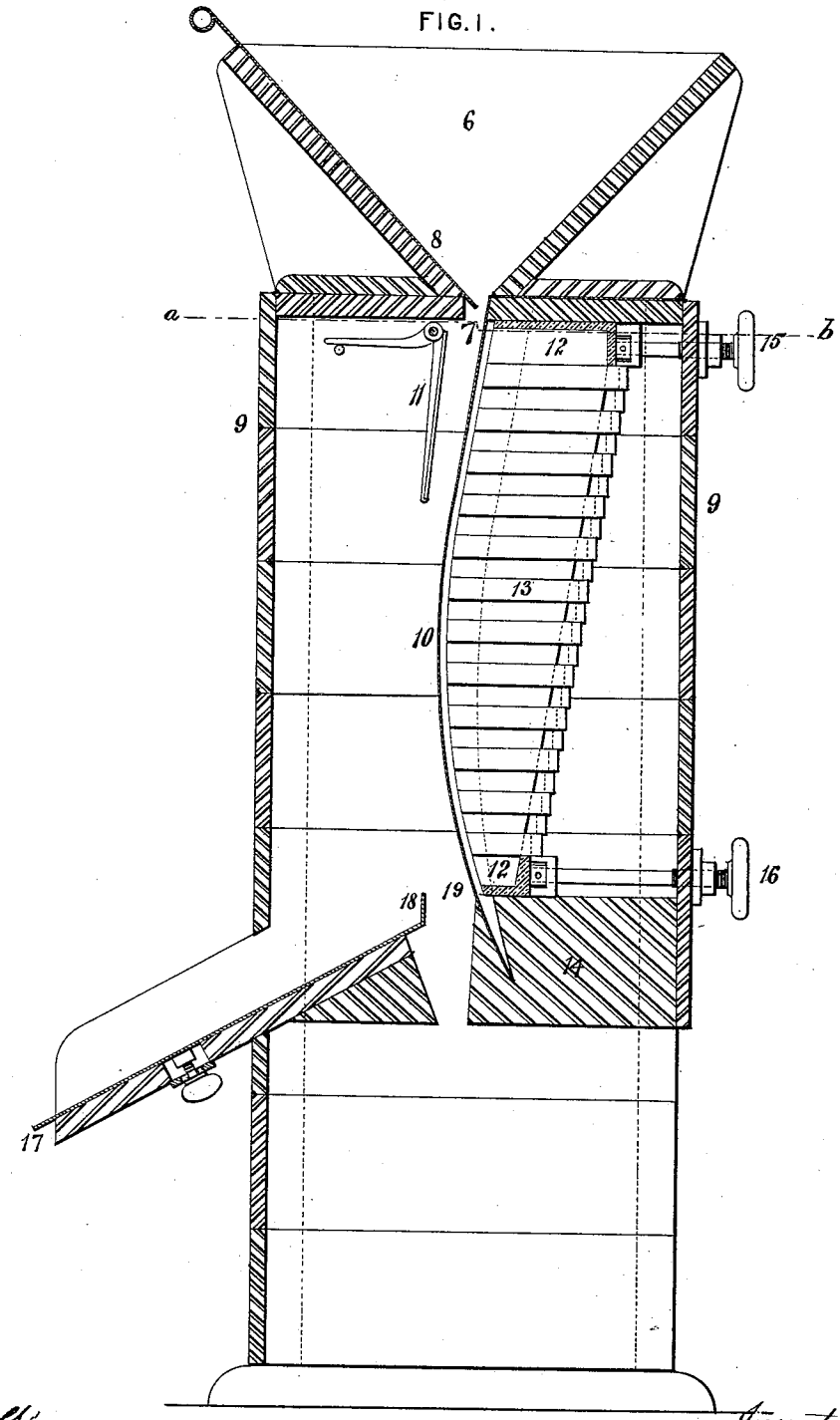
(No Model.) 2 Sheets—Sheet 1.

J. KING.

MAGNETIC SEPARATOR.

No. 262,790. Patented Aug. 15, 1882.

FIG. 1.



Witnesses:
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(No Model.) 2 Sheets—Sheet 2.

J. KING.

MAGNETIC SEPARATOR.

No. 262,790. Patented Aug. 15, 1882.

FIG. 2.

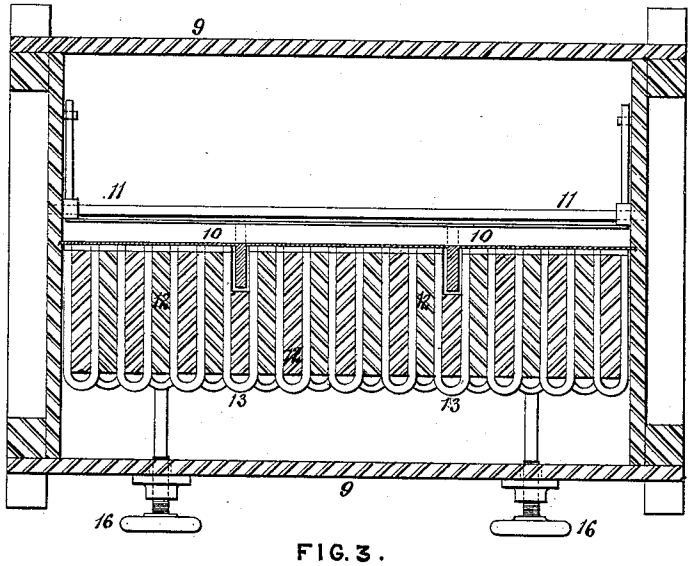
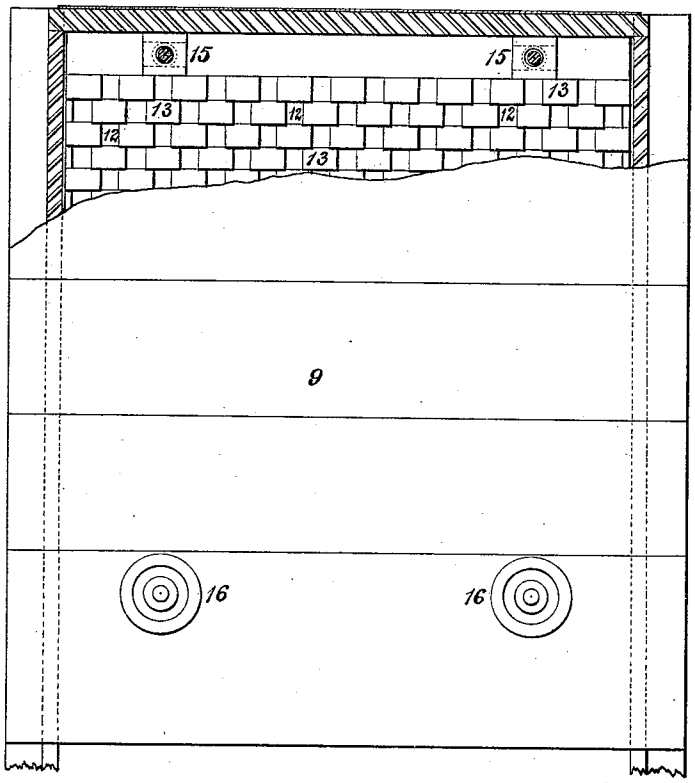


FIG. 3.



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UNITED STATES PATENT OFFICE.

JOHN KING, OF CARRIZAL BAJO, CHILI.

MAGNETIC SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 262,790, dated August 15, 1882.

Application filed December 27, 1881. (No model.) Patented in England June 28, 1881, No. 2,825.

To all whom it may concern:

Be it known that I, JOHN KING, residing at Carrizal Bajo, in the Republic of Chili, have invented an Improved Magnetic Separator for Separating Iron, Steel, or Magnetic Oxide from other Substances, (for which I have obtained a British patent, No. 2,825, dated June 28, 1881,) of which the following is a specification.

My said invention has for its object to separate iron, steel, or magnetic oxide from other substances by means of improved apparatus in which magnets are applied in a novel manner, and so that the operation may be conducted in an expeditious and continuous manner.

The apparatus may be advantageously used for separating bits of wire from grain, and for other similar purposes.

The apparatus is provided with a hopper into which the grain or other substance or mixture of substances to be operated upon is put, and from the bottom of this hopper the grain descends in a regulated stream down a more or less inclined channel or passage. The side of the passage is made of sheet zinc or brass, or other suitable thin material not affected by magnets; and beneath or behind this thin material there is fitted a gang or series of magnets arranged in one or more frames, which can be adjusted by means of screws or the like to put the acting parts of the magnets nearer to or farther from the thin material, on the other side of which the substances are passing, so that the attraction on any iron or steel bits among the substances may be made stronger or weaker, as may be found necessary. At the lower end of the gang of magnets the passage is curved round, and there is an opening toward the curved side for the iron or steel bits to pass off by, while there is an inclined chute down which the grain or other substances not attracted by the magnets pass into any convenient receptacle. At the curved part of the passage the magnetic attraction is made sufficiently strong to cause some of the iron or steel bits to stick to the surface of the thin material which is in front of the magnets at a point just out of the current of the grain or other substances, and as the bits accumulate the hold on those which become lowest relaxes and they drop off. It is because of this feature of the arrangement that the action is continuous, the iron or steel bits attracted by the magnets not requiring to be periodically stripped off, but dropping off themselves in the manner referred to. The magnets may be of the horseshoe form, but are by preference bent the flat way of the metal, and they are placed with their poles directed toward the thin material forming one side of the passage or channel, being arranged in transverse rows and with those of one row opposite the intervals between those of the next row. The inclination of the passage will require to be varied to suit different substances.

Figure 1 of the accompanying drawings is a vertical section and Fig. 2 is a horizontal section, of the apparatus on the line *a b*, Fig. 1, while Fig. 3 is a back elevation of the middle part of the apparatus with a part of the casing removed to show the backs of the magnets.

The apparatus has at its upper end a hopper, 6, into which the ores or other substances are put, such substances being, if necessary, first reduced to a granular or powdered condition. The bottom of the hopper 6 is made with a narrow opening, 7, extending across the entire width of the machine, and an adjustable plate, 8, is fitted to one side of the hopper for regulating the width of the opening 7. The opening 7 allows the substances to descend in a broad thin stream into the upper end of a casing, 9, and the stream passes down in contact with or very near to a sheet, 10, of thin zinc or other suitable material not affected by magnets, which sheet 10 extends across the width of the casing and is continued downward, with its upper part slightly inclined from the vertical in one direction, while its lower part is curved away in the opposite direction. The upper part of the sheet 10 may be made more nearly vertical or more inclined than as shown. Below the inlet-opening 7 and at the side opposite to that of the sheet 10 there is fitted a loosely-hanging flap or plate, 11, which prevents the stream of substances from spreading or deviating too far away from the sheet 10. Behind the sheet 10 there is a frame, 12, carrying a gang or series of magnets, 13, this frame consisting of vertical wooden bars fixed to the top and bottom horizontal frame-pieces in the form of a grating before the magnets are put in place. On these vertical bars, and embrac-