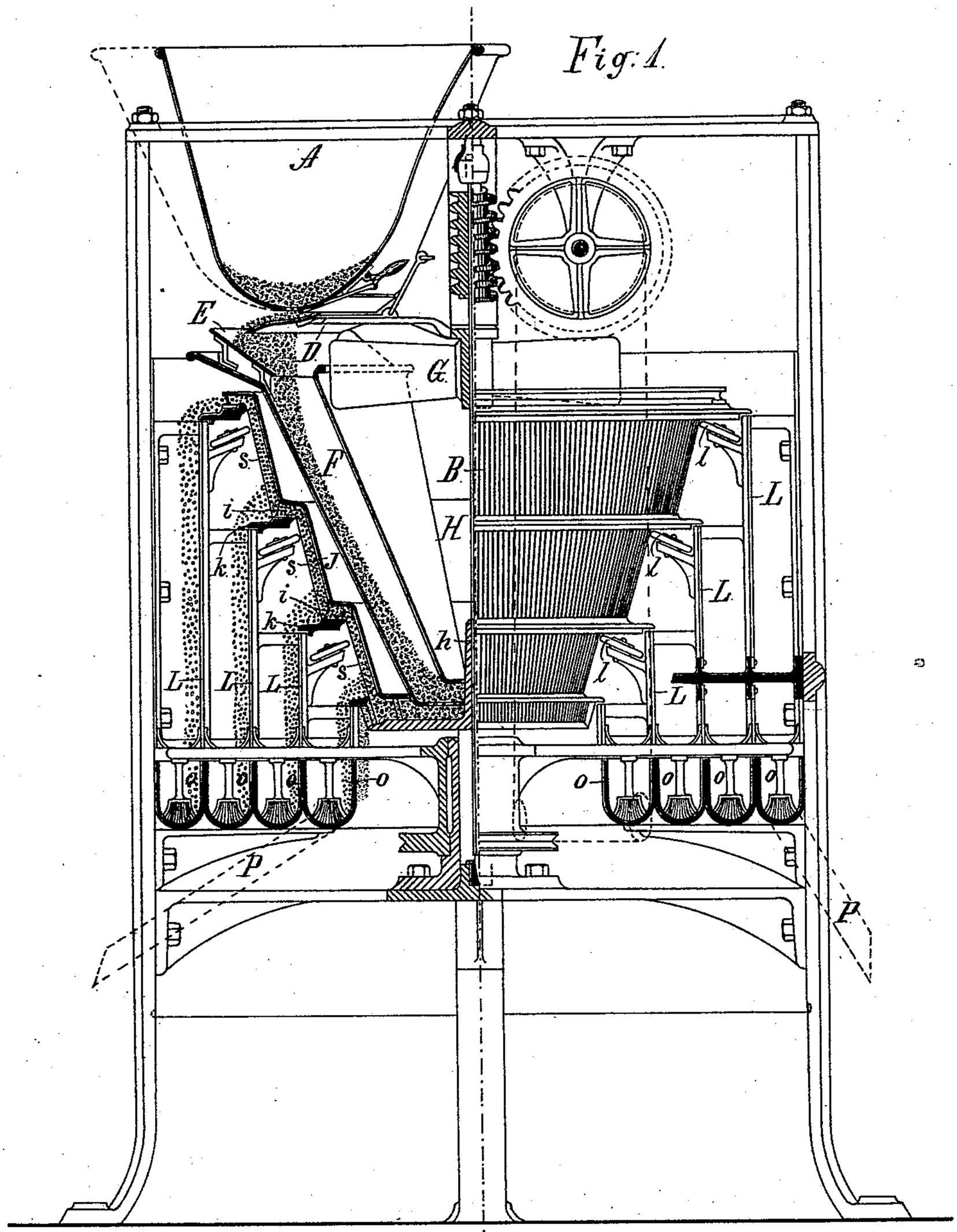
(No Model.) 2 Sheets—Sheet 1.

H. F. M. KAYSER.

CENTRIFUGAL SEPARATOR.

No. 527,860. Patented Oct. 23, 1894.

Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4

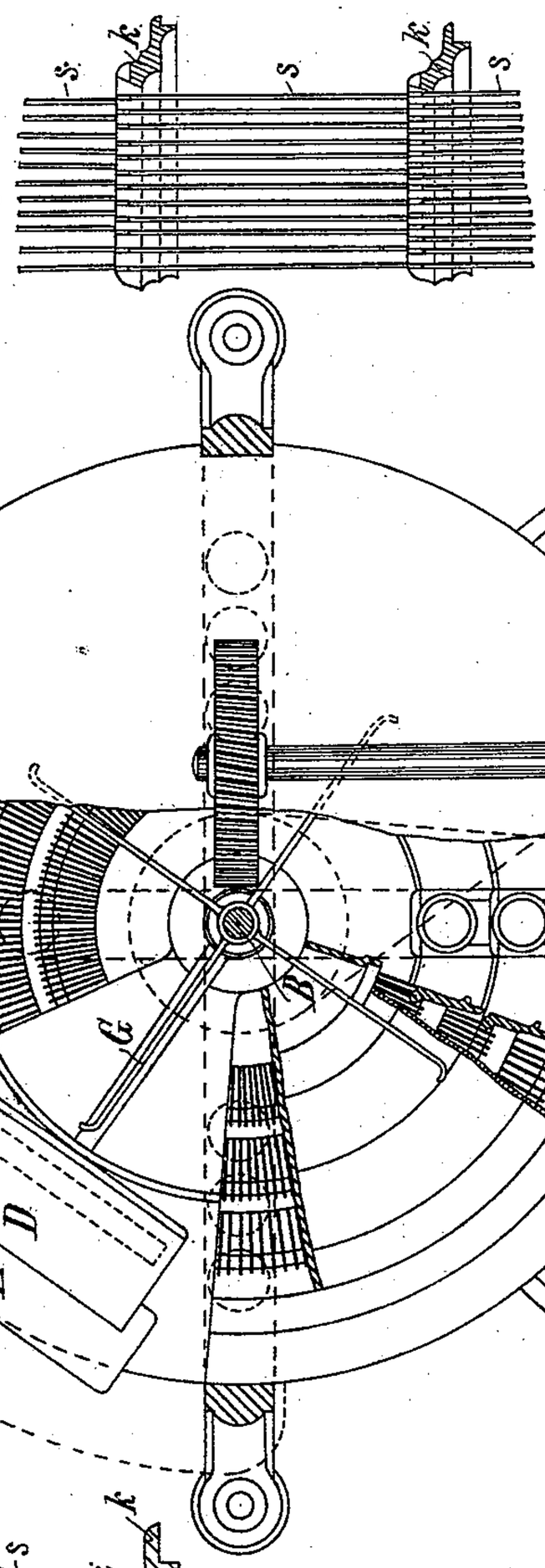
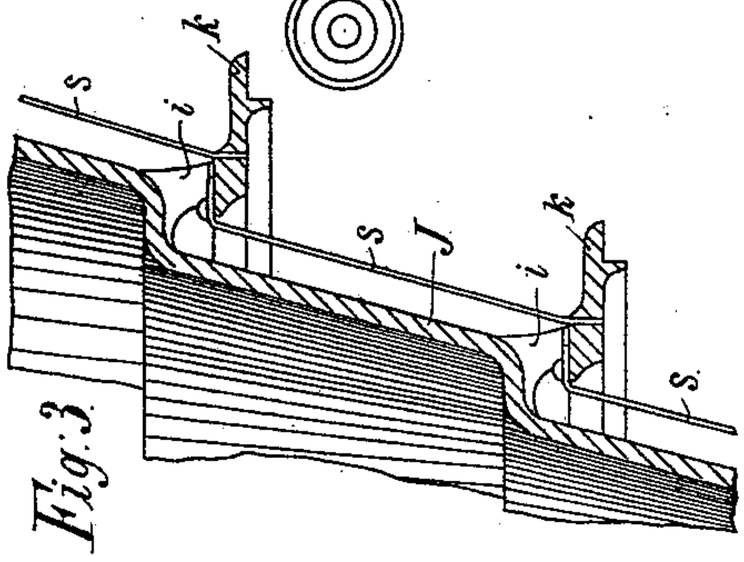


Fig. 2.

Fig. 3



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UNITED STATES PATENT OFFICE.

HERMANN FRIEDRICH MARTIN KAYSER, OF LEIPSIC, GERMANY.

CENTRIFUGAL SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 527,860, dated October 23, 1894.

Application filed February 8, 1894. Serial No. 499,504. (No model.)

To all whom it may concern:

Be it known that I, HERMANN FRIEDRICH MARTIN KAYSER, a subject of the King of Saxony, residing at Leipsic, in the Kingdom of Saxony, German Empire, have invented new and useful Improvements in Centrifugal Separators, of which the following is a specification.

This invention relates to a centrirugal separator, which serves to sort out and separate material in grains or granular substances, as well as to separate therefrom all impurities. For an example take some kind of cereal to be sorted, barley for instance.

The new centrifugal separator is shown in the accompanying drawings.

Figure 1 is an elevation partly in vertical section and Fig. 2 a plan view partly in horizontal section of the apparatus, while Figs. 3 and 4 show details thereof.

The mass arrives first, for the purpose of being fed to the centrifugal separator, in a funnel or hopper A fitted at the bottom with an outlet opening, formed long and narrow and adjustable. When discharged from this hopper A the grain falls on an inclined tray or plate D, thence on a second plate E inclined in the opposite direction, through a sloping funnel F to the bottom of the centrifugal separator proper. As the grain falls on the second inclined plate E it passes through a current of air from a fan-blower G whereby any chance impurities, such as chaff, dust, &c., are removed by means of the blast. The funnel F reaches almost to the bottom of the centrifugal-cylinder H, which consists of a vessel J in the form of an inverted truncated cone stepped at intervals and which is fastened by a hub or nave *h* on a vertical shaft B, this latter being caused to rotate by any suitable driving mechanism. The above-mentioned funnel F at its lower end, encircles the hub *h* and is provided with an annular outlet opening, also surrounding the hub, in such manner that the grain falls through the outlet opening on the bottom of the centrifugal vessel J. The centrifugal force resulting from the rotation of the vessel J throws the material outwardly and causes it to ascend through the outwardly inclining space between the inclined walls of the vessel J and the gratings S hereinafter referred to.

On the outside of the wall or casing of the centrifugal vessel J brackets *i* are cast, to receive and carry rings *k*. Fig. 3 shows a cross section of these rings *k*, which serve to support a grating or sieve formed (outside the centrifugal separator) of steel wire rods whereof the lower ends are fixed in suitable holes made to receive them in the rings *k*, while their upper ends are bent so as to hook into corresponding notches in the rings *k* next above them. As represented in Figs. 3 and 4, the upper ends of these steel wires are not fixed in the said notches, but are free to move therein, so that each single wire, by inward pressure, can be caused to approach the wall or casing of the centrifugal vessel J, while, when released from such pressure, it automatically returns to its original position. The steel wire rods or grating encircling the lowest step or stage of the centrifugal vessel J, below the ring, are set at a certain distance apart, corresponding to the grains of the smallest size, that it is thought desirable to retain. Those of the next or intermediate step or stage are set a little farther apart; and similarly with regard to the third or highest step or stage.

As shown in Fig. 3, the frame or grating of steel wires *s*, are by means of the rings and brackets united with the centrifugal vessel J, and consequently rotate together. Affixed to an outer immovable supporting framework are brackets L carrying rollers *l*, which, during the rotation of the apparatus, press the steel wire rods *s* of the several steps or stages inward, and thus keep them in continuous vibration.

The mode of operation of the hereinbefore described apparatus is as follows: As mentioned at the outset, the grain is delivered at the bottom of the centrifugal vessel, and through the outlet opening against the lowest step or stage of the screen or grating formed by the steel wire rods whose mesh is smaller than the bulk of the grain and allows sand for example to pass at once through the screen, and directly on the floor of the centrifugal vessel. By the effect of centrifugal force, the grain ascends against the steel wire screen, and falls through the screen, when it reaches that stage of the grating, where the steel rods are so arranged, that the mesh permits grains

of a certain size to pass. The vibration of the wires, caused as hereinbefore described by the rollers *l* facilitates the passage of the grain. The grain falling through the step-shaped gratings, lying one above another, according to the size of the mesh at each stage, are caught in channels *o* and are delivered by various discharging funnels into receivers outside the apparatus according to their several sorts. Each channel *o* is fitted with a stirring device which conveys each assorted kind of grain regularly to a discharging funnel P.

I claim—

1. A centrifugal separator comprising a vessel J of inverted truncated cone shape and stepped at intervals, the rotary shaft carrying said vessel the funnel F for introducing the material to the vessel and the grating around the outside of the vessel J composed of the bars with spaces between them of different sizes, said bars with the vessel forming an inclined passage for the upward movement of the material, substantially as described.

2. In combination in a centrifugal separator, the inverted truncated cone shape vessel J, the rotary shaft carrying the same, the grating about the vessel J forming a passage about the same for the material, said grating being composed of bars adapted to vibrate, and the bearings about the apparatus adapted to contact with the bars of the grating and vibrate the same as the machine is revolved, substantially as described.

3. In combination in a centrifugal separator, the inverted truncated cone shaped vessel, the grating about the same, the rotary shaft carrying said parts, said vessel and grating being stepped and forming an inclined passage for the material and the series of collecting channels about the grating and corresponding to the steps thereof, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERMANN FRIEDRICH MARTIN KAYSER.

Witnesses:

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