No. 704,853. Patented July 15, 1902.

S. E. BRETHERTON.

ORE SAMPLER.

(Application filed Dec. 14, 1901.)

(No Model.) 4 Sheets—Sheet 1.

Fig. 1.

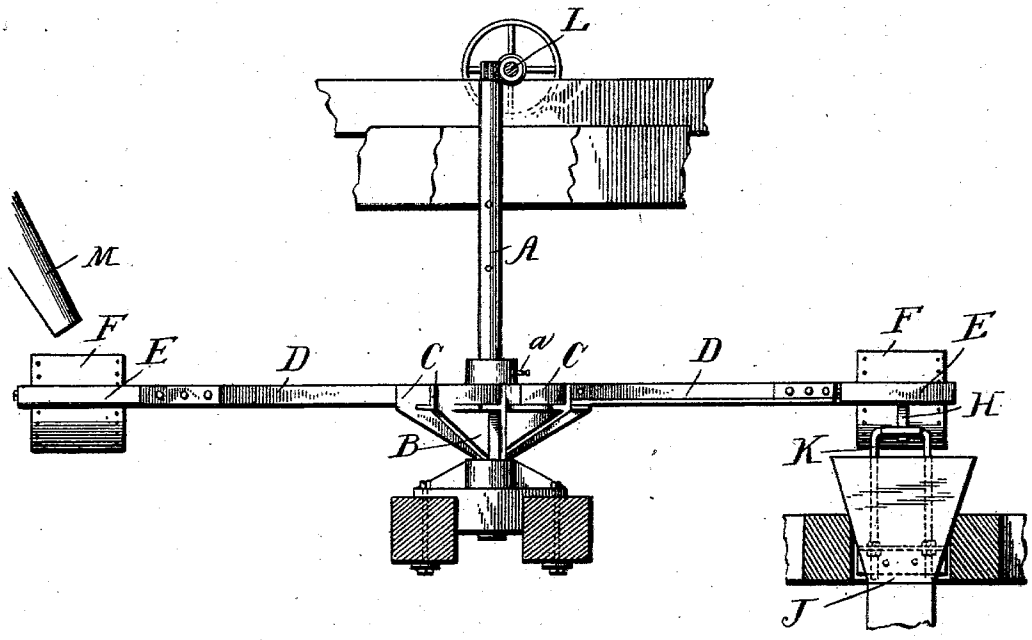


Fig. 2.

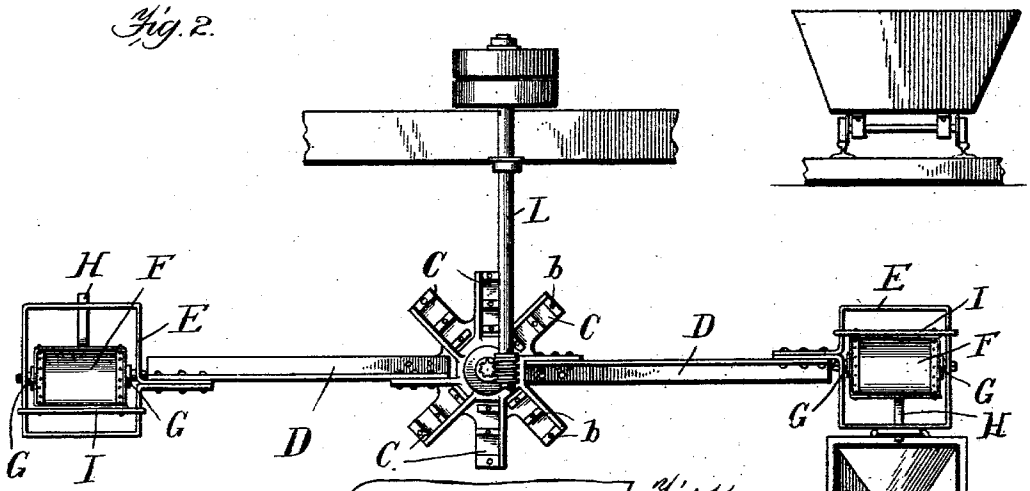
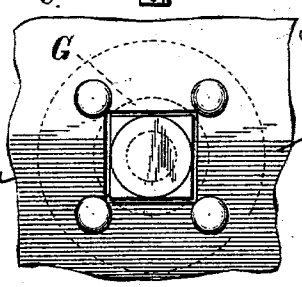


Fig. 11.



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Fig. 3.

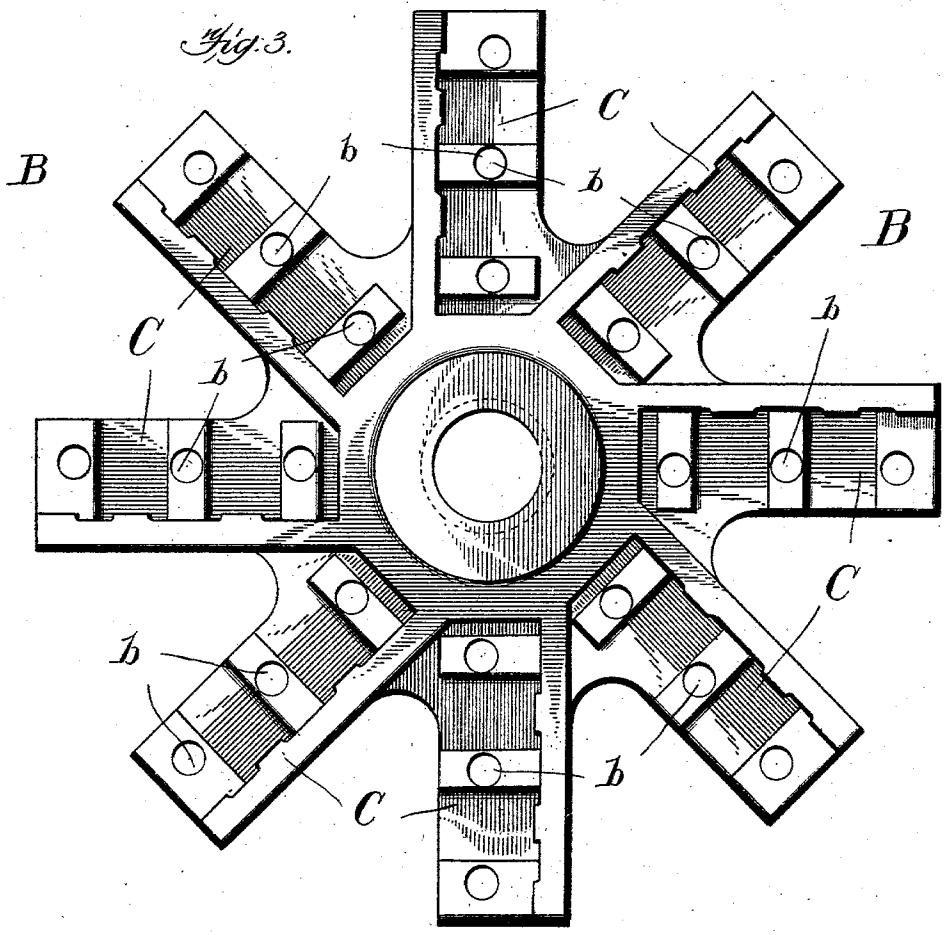
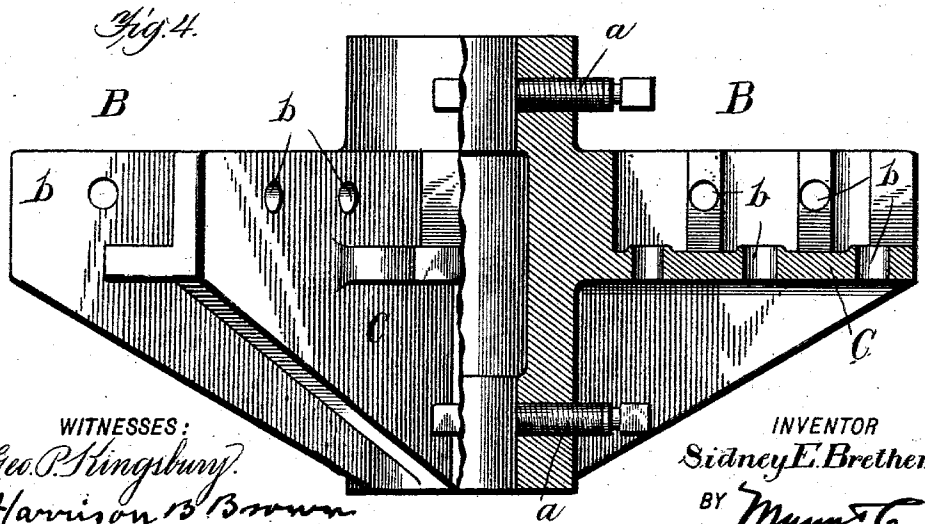


Fig. 4.



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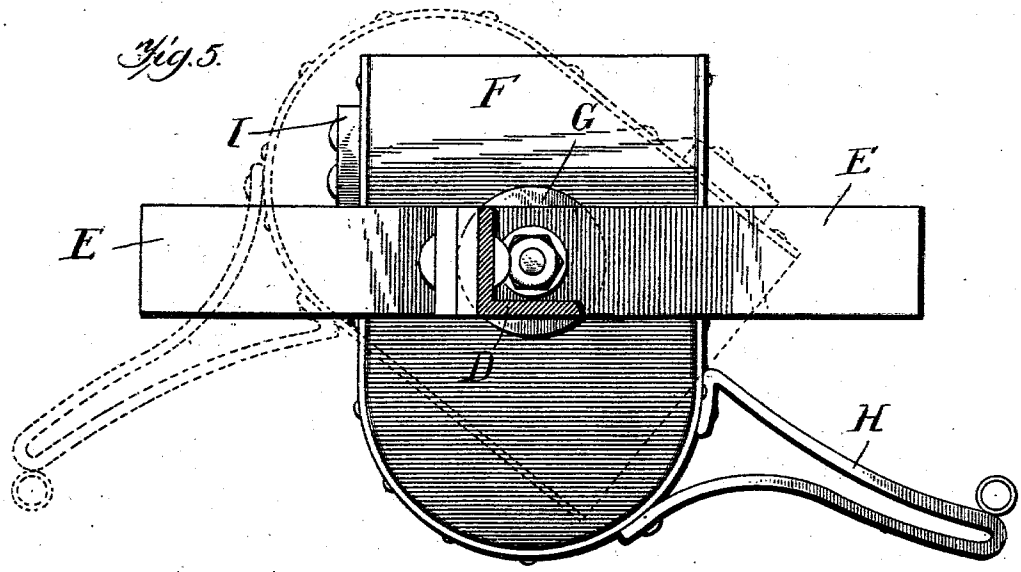
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ORE SAMPLER.

(Application filed Dec. 14, 1901.)

(No Model.) 4 Sheets—Sheet 3.

Fig. 5.



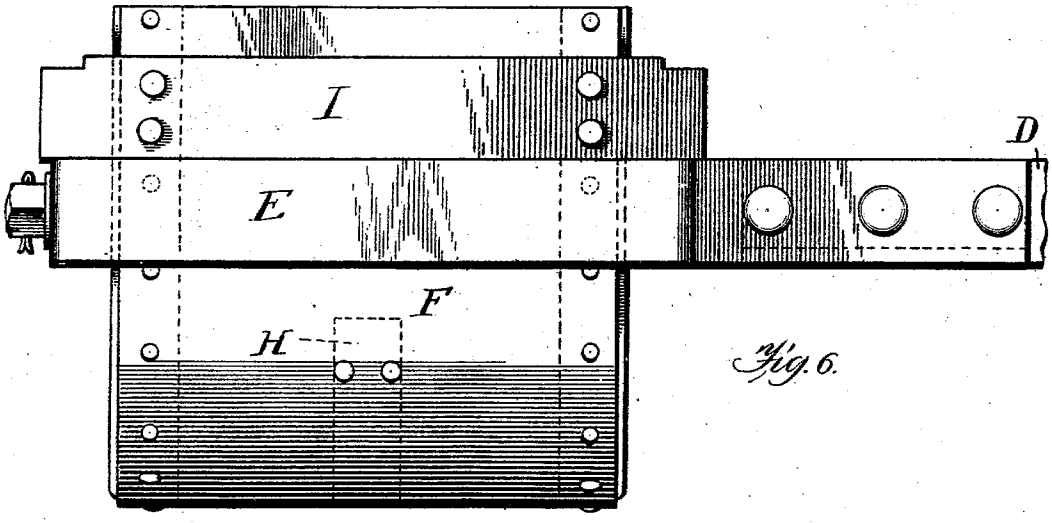
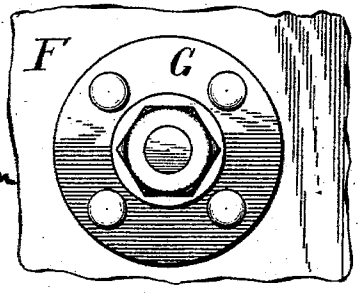


Fig. 6.

Fig. 10.



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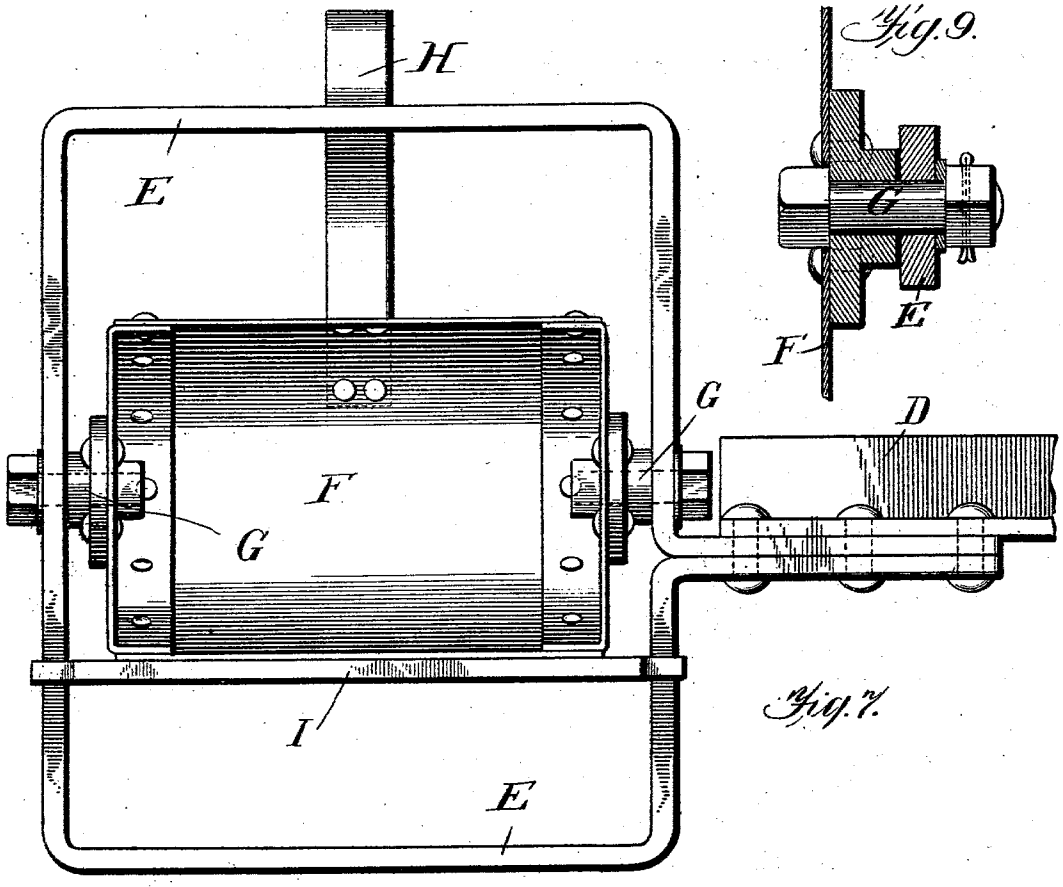


Fig. 7.

Fig. 9.

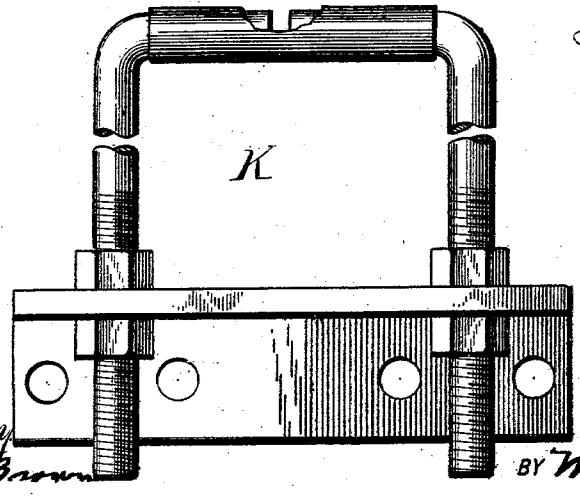


Fig. 8.

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UNITED STATES PATENT OFFICE.

SIDNEY E. BRETHERTON, OF DENVER, COLORADO.

ORE-SAMPLER.

SPECIFICATION forming part of Letters Patent No. 704,853, dated July 15, 1902.

Application filed December 14, 1901. Serial No. 85,984. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY E. BRETHERTON, of Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Ore-Samplers, of which the following is a specification.

The object of my invention is to provide an apparatus for automatically sampling coarse ore as it first comes from the crushing machinery. I am aware that ore-samplers have been invented and that they are now used; but to all such known to me there are many objections, and among which appears the fact that the ore must be finely crushed, necessitating much time and labor and making it too fine for blast-furnace smelting.

The advantages in sampling the ore in its coarse state as it first comes from the crushers will be readily understood and appreciated. In my sampler I provide an apparatus that has the advantage of not only being adapted to take a fair sample of comparatively coarse ore as it first comes from the stamps or crushers, but, due to its simplicity of construction with maximum strength and facility with which it may be kept clean, it has decided advantages over all ore-samplers now used or known. A further advantage in my sampler is due to the fact that all parts are interchangeable and that provision may be made for taking more or less of the ore, as desired, according to the nature thereof.

Having thus stated the object of my invention and briefly referred to the novel features thereof, I will now proceed to describe in detail its construction and operation, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a side elevation of my sampler, partly broken away, showing two of the buckets and supporting-arms, the others being removed. Fig. 2 is a plan view with one bucket about to be dumped by engagement with the fixed tripping device. Fig. 3 is an enlarged plan view of the spider. Fig. 4 is a side elevation of the spider, part broken away and in section. Fig. 5 is a transverse section through the bucket-supporting arm, showing a bucket in full lines about to be dumped and in dotted lines in a dumped position. Fig. 6 is a view showing a section of the supporting-arm looking at the rear side of a bucket. Fig. 7 is a plan view of the bucket and supporting devices. Fig. 8 is an elevation of the fixed tripper device. Fig. 9 is a sectional detail showing one bucket-pivot, part of the bucket, and its supporting-frame. Fig. 10 is an external detail view of one pivot, the bucket-supporting frame being removed; and Fig. 11 is a detail showing a pivot-head looking at the inside of the bucket.

In the drawings, A denotes an upright shaft supported at its upper and lower ends by suitable bearings. Upon the shaft A is arranged an adjustable spider B, held by jam-screws *a*. (Shown in Figs. 1 and 4 of the drawings.) The spider B may be formed of one casting, though I do not desire to limit myself thereto, having eight, more or less, brackets C, provided with bolt-holes *b*. To each bracket C, I bolt an angle-iron arm D, having at its free end a rectangular or other suitably-shaped frame E. In the frame E is hung a bucket F on trunnions G, secured to the bucket near the open end thereof—*i. e.*, off center— to insure its mouth or open end hanging upwardly. The trunnions G are arranged in line with the arms D, as shown in Fig. 7 of the drawings. From the bottom of each bucket E projects a tripping arm or projection H, disposed in a direction at right angles with its trunnion and the supporting arm or sweep D. To the bucket F, above the frame E and on the opposite side to the arm H, is secured a stop-bar I, whose outer ends extend over the frame E, as shown, to prevent the bucket tipping on that side.

In the path of the buckets F is arranged a hopper J or ore-car and a tripping-loop K. The latter is arranged to engage the arms H, projecting from the buckets, and dump their contents into the hopper, which latter leads by a suitable spout to a receiving car or vehicle below.

The path of the buckets is arranged under a spout M, leading from the crusher, so that in passing through the stream of ore as it falls from the crusher they take a complete average or sample and carry it to the hopper, where the bucket is dumped by the arm H engaging with the tripper-loop K, as aforesaid. The weight of the bucket is so balanced that

it rights itself immediately, ready to catch another sample as it again passes through the stream of ore from the crusher.

In my sampler I provide eight buckets and supporting-arms therefor. Any number of buckets—one or more—may be used, as the supporting-arms are secured to the spider by bolts that can be readily removed.

Any suitable means may be provided for revolving the shaft A. In the drawings I show a transverse shaft L, having a worm-wheel thereon meshing with a similar wheel at the upper end of the shaft A.

I would have it understood that I do not desire to limit myself to any particular shape in the make-up of the several parts of my appatus, as such details may be modified without departing from the spirit of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An ore-sampler consisting of a vertical shaft and means for rotating it, a spider adjustable on the supporting-shaft and having radiating arms detachable therewith as specified, the said arms carrying at their free ends balanced buckets having projections for engaging a fixed tripper device dumping the buckets, and the buckets having a stop device permitting it to swing in one direction only beyond its balanced position as set forth.

2. In an ore-sampler employing a vertical shaft and horizontally-disposed arms fixedly secured to and radiating from said shaft, the combination therewith of buckets pivoted to the said arms and carried thereby, and means in the path traveled by the buckets adapted to tilt and dump them on their pivots, substantially as described.

3. In an ore-sampler, the combination with a supporting-shaft and detachable arms radiating from and horizontally supported on said shaft, pivots on the arms in alinement therewith, balanced buckets supported on the said pivots and a fixed tripper device in the path traveled by the buckets adapted to tilt and dump them, substantially as described.

SIDNEY E. BRETHERTON.

Witnesses:
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WILLIAM B. RYDER.