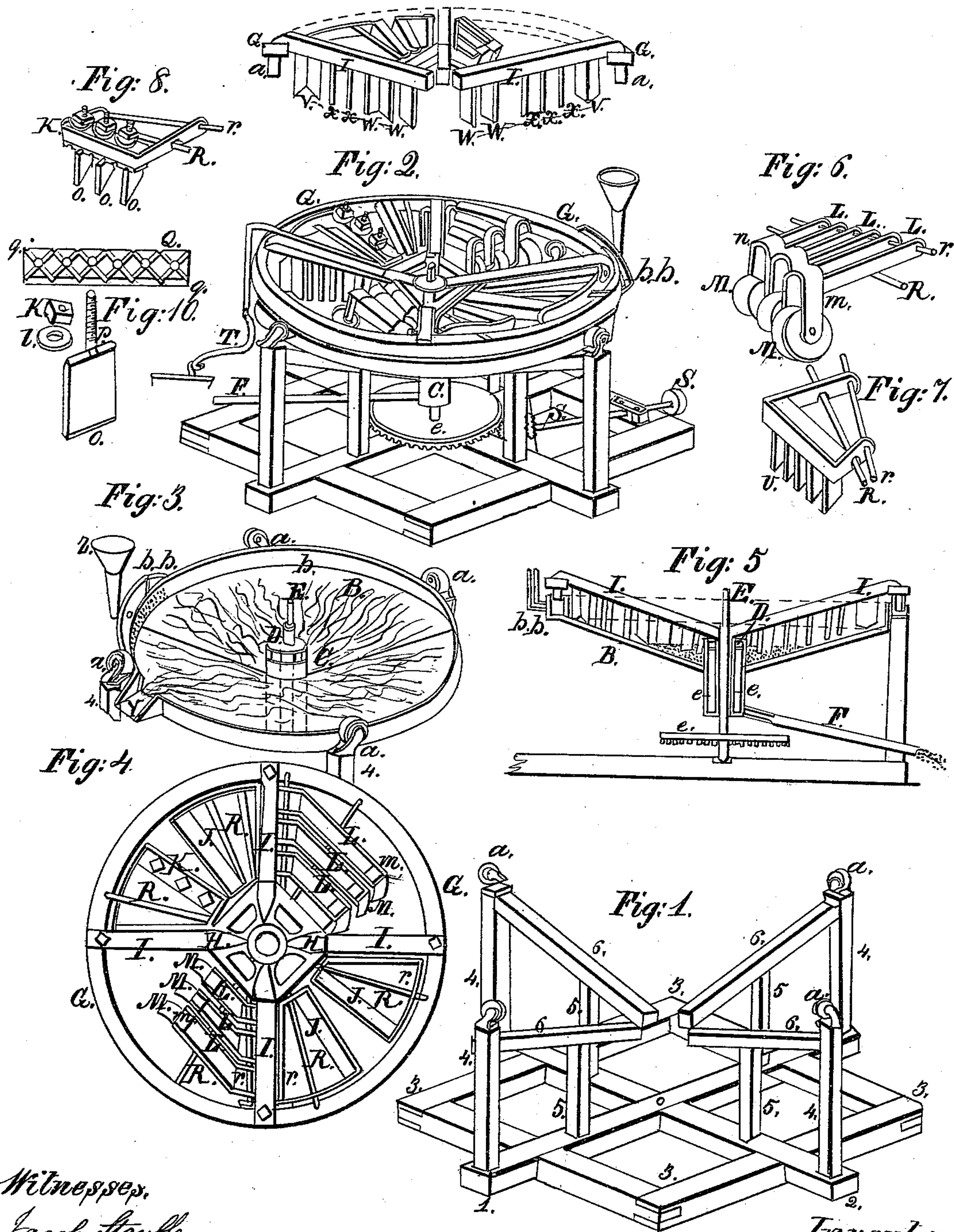


# W. I. Carter Ore Washer

No 93,965.

Patented Aug. 24, 1869.

Fig. 9



Witnesses,  
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# United States Patent Office.

WILLIAM L. CARTER, OF MARIETTA, PENNSYLVANIA.

Letters Patent No. 93,965, dated August 24, 1869.

## IMPROVED APPARATUS FOR WASHING ORES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WILLIAM L. CARTER, of Marietta, in the county of Lancaster, and State of Pennsylvania, have invented certain Improvements in the Machinery for Crushing and Washing Ore; and I do hereby declare the following to be a clear and exact description of my improved ore-washer, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 shows the frame-work A, cross-timbers 1, 2, 3, posts 4-5, and inclined beams 6.

Figure 2 is a perspective view of the machine.

Figure 3, a perspective view of the flanged conic basin and centre-pipe, &c.

Figure 4, a plan view of the revolving ring with its crushers, scrapers, &c.

Figure 5, a vertical section of the same, central shaft, and cylinders.

Figure 6, three of the crushers, shown detached.

Figure 7, a set of the scrapers.

Figure 8, a set of the reversible scrapers.

Figure 9 illustrates the double and single scrapers or shovels and rack-teeth on the centre-piece.

Figure 10 shows the plate and one detached shovel, with burr and washer.

The nature of my invention consists in providing a revolving ring, with a series of rollers or crushers, scrapers, shovels, and rake-teeth, made adjustable within a conic basin, into which the ore can be dumped from a cart, and subjected to being agitated, raked, and scraped in water constantly changing by a flow of clean water, while the muddy water is drawn off from the centre, and so as to prevent any waste of ore and work the washed ore upward and through an open spout or chute to a hopper or place for its reception.

The same can be operated as a horse-power, or by steam or water-power.

To enable others skilled in the art to make and use my invention, I will now proceed to describe its construction.

To adapt the machine for transportation, the timbers are so framed and numbered that they can be readily put together, as shown in fig. 1.

The four external posts 4, have a pulley, *a*, on the top.

The inclined beams 6, being supported by the shorter posts 5, support the basin B, fig. 3, which is stationary, with its bottom inclined to the centre, where it connects with a cylinder, C, elevated above the dished centre, with a cap, D, surrounding an inner cylinder, through which the revolving shaft E passes, resting in a step on the centre of the cross-pieces 1 and 2.

This shaft has a bevelled cog-wheel, *e*, below, and fits into a square collar in the central cap, with its

sockets H, for the reception of the four radiating arms I, bolted to the ring G. This ring rests on the pulleys *a* on the top of the posts 4.

The outer and inner cylinders C c form an open receiver, being closed at the bottom, having a spout, F, which conveys the muddy water off as it flows in above under the cap D.

The water is supplied from a tank, or otherwise, through the pipe Z, and enters an outer chamber, *b b*, and flows through a strainer or perforations in the flange *b*, at this point forming the rim that surrounds the basin B, flowing down the inclined bottom toward the centre.

Fig. 2 shows a shaft, *s*, with its bearings, having a strap-pulley, S, at one end, and a bevelled pinion, meshing into the bevel-wheel *e* on the other end.

This imparts motion to the central shaft E, and revolves the ring G and its appendages, which consist of two sets of crushing-rollers M, fig. 6, of any desired size or weight.

These rollers have arms L, with side bearings or ears, for rods or pivots *r*, which allow each its independent motion to surmount lumps of ore in crushing the same.

Under these are supporting rods R, that prevent the rollers from needless action upon the bottom of the basin.

The other two-sections or quadrants of the ring, alternating with the crushing-roller, contain scrapers or shovels, shown by figs. 7 and 8.

The cross-beams I, affixed to the ring G and central collar H, are provided on the outer end with the V-shaped discharging-shovels V, rake-like teeth X, and oblique shovels W, as likewise also on the cross-pieces forming the central collar.

One set of shovels, three, four, or six in number, figs. 8 and 10, are provided with an upper bevel-edge and central screw-stem *p*, washer *l*, and burr *k*, by which they are secured in the block K.

The under side of this block has a heavy plate, Q, with holes for the stem *p*, and cross-grooves to receive the bevel-edge of the shovel and hold it firmly by means of the screw and groove fitting said shovel, and can be turned from one inclination or groove to that of the other, for the purpose of regulating the operation of washing and discharging the ore, some ores requiring more and others less time to free them from impurities, and by this arrangement the discharge can be accelerated or retarded by the position of said adjustable shovels, working the ore upward and outward to be received by the discharging-shovels V, or kept longer under the rakes, scrapers, and crushers, subjected to the action of the water and the washing, so that by a simple relaxation of the burr, the shovels



can be set for any particular kind of ore or bank, and are readily altered when the quality of the ore demands a change.

The washed ore is carried outward, where the discharge-shovels V take it and carry it around over the chute or place of discharge Y.

The rim or ring G may be of wood, and in four segments, spliced and bolted together by the radiating central pieces I, secured to the central head H, which latter has spreaders or shovels so arranged, obliquely, as to work the ore and dirt outward from the central cylinder C, where it is dumped from a cart or thrown in from a platform above the machine, not shown.

This machine can be adapted to suit any bank of ore that requires washing, and the bottom of the concave basin overlaid with iron plates, or cast for the purpose, and the rollers, shovels, rakes, duly adjusted, will perform their work with speed and satisfaction.

I am aware that rotating buddles or machines have been used so as to concentrate on the periphery of the floor as well as in the centre, also revolving rakes and various devices of screens and washers; but I am not aware of any device combined and operated substantially in the manner shown and described.

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

1. The arrangement and combination of the ring G with its radiating arms I, fixed in a central socket collar, H, and provided with the discharge-shovels V, rake-teeth X, and central shovels W, together with the adjustable crushing-rollers M L, shovels U, supporting-rods R, and pivot-rods r, the whole mounted on rollers a, over a concave basin, B, with its flange b, substantially in the manner shown and for the purpose specified.

2. In combination with my revolving ring G and its appendages, the concave or conic basin B, with its central discharging-cylinder C surrounding the shaft E, the straining-chamber b b, discharge-pipe F, from the cylinder and spout Y, from upper portion of the concave, supported on frame-work A, in the manner and for the purpose set forth.

3. The cross-grooved plate Q, for the purpose of adjusting the shovels o by reversing their position, in the manner and for the purpose described.

Witnesses:

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