

LEVI M. SHARPS.
Water-Wheels.

No. 126,752.

Patented May 14, 1872.

Fig.1.

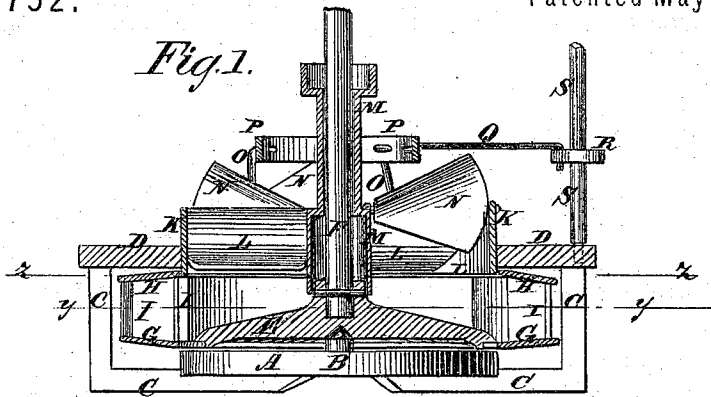


Fig.2.

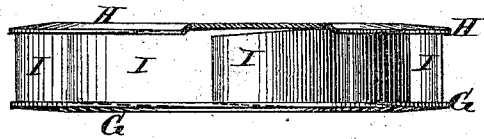


Fig.3.

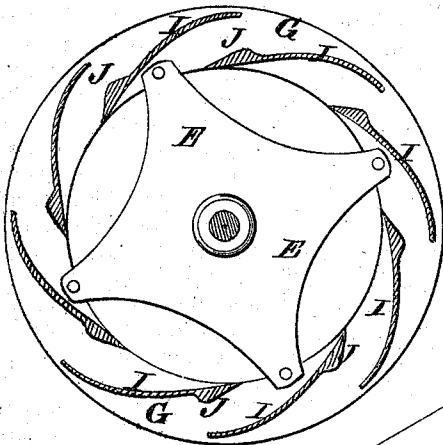


Fig.4.

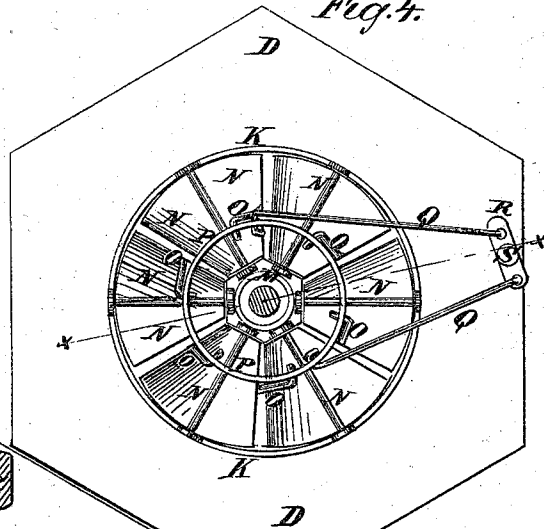
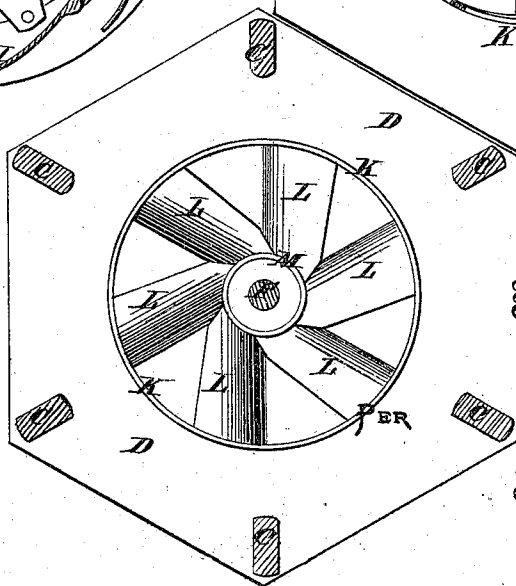


Fig.5.



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UNITED STATES PATENT OFFICE.

LEVI M. SHARPS, OF ALANTHUS GROVE, MISSOURI.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. 126,752, dated May 14, 1872.

Specification describing a new and useful Improvement in Water-Wheel, invented by LEVI M. SHARPS, of Alanthus Grove, in the county of Gentry and State of Missouri.

Figure 1 is a detail vertical section of my improved water-wheel taken through the line *x x*, Fig. 4. Fig. 2 is a detail side view of the wheel, part of the upper rim being broken away to show the flare. Fig. 3 is a horizontal section of the same taken through the line *y y*, Fig. 1. Fig. 4 is a top view of the water-wheel, showing the gates partially opened. Fig. 5 is a horizontal section of the same taken through the line *z z*, Fig. 1, looking upward.

Similar letters of reference indicate corresponding parts.

My invention has for its object to furnish an improved water-wheel, which shall be so constructed as to utilize the greatest possible per cent. of the power of the water by improving the construction of the buckets to produce the best effect, and the construction of the guide-chutes so that they may support the weight of the column of water, and deliver it squarely against the faces of the buckets; and it consists in the construction and combination of various parts of the water-wheel and its attachments, as hereinafter more fully described.

A is the circular bed-plate, which is made with a recess or box in the center of its upper side to receive the step or pivot B. The bed-plate A is cast solid with the arms or knees C, which project outward beyond the circumference of the wheel and then upward, and to their upper ends is bolted the top or circle plate D, which, with all its attachments, is thus supported from the bed-plate A. The circular bed-plate A should also be made with a flange around its outer edge to receive the lower rim of the wheel to prevent leakage. E is the spider, which is made with a recess or socket in the center of its lower side to receive the step or pivot B, and with a hub upon the center of its upper side to receive the lower end of the shaft F, which is secured to it by screws, bolts, or keys, so as to be carried around by and with said spider in its revolution. The arms or angles of the spider E are secured to the upper side of the lower rim G of the wheel by bolts passing through the said angles or arms, and through the said rim corresponding holes should be formed in the up-

per rim H of the wheel, so that the wheel may be detached and inverted to adjust it to run in the opposite direction, when desired. I are the buckets, which are made of iron or steel, and are eleven inches deep at their inner ends and eight inches deep at their outer ends, giving them a taper of three inches from their inner to their outer ends. The buckets I are made twenty inches long, have one-fourth pitch, and are curved upon an arc of a three-foot circle from their inner ends to within three inches of their outer ends, where the curve is changed so as to discharge the water in a direction exactly opposite to the direction of the wheel, in order to obtain its full benefit. The above dimensions are intended for a four-foot wheel; for other sizes the dimensions must be changed proportionately. This construction gives a flare of one and a half inch to each of the rims G H; or, in other words, the inner edges of the said rims G H, which are made exactly alike, will be three inches further apart than their outer edges, as shown in Figs. 1 and 2. J is a lining or projection formed upon the outer or convex side of each bucket I, about in the radial line that passes through the edge of the following bucket, to diminish the size of the outlet, or issue the proper amount without changing the pitch of the buckets. K is the sluice-box, which fits down into the circle of the plate D, and has a flange upon its lower edge fitting into the upper rim H of the wheel to prevent leakage. L are the chutes that guide the water to the buckets, the outer side edges of which are securely attached to the sluice-box K, and their inner side edges are attached to the enlarged lower part of the tube or sleeve M, through which the shaft F passes and in which it revolves. The sluices L curve downward from their upper ends nearly parallel with the gates when opened, and then curve forward to direct the water squarely against the faces of the buckets, or even to give it a slight upward or lifting movement. By this construction the weight of the column of water will be entirely taken from the step or pivot of the wheel, and the peculiar construction of the buckets will give a greater amount of surface for the direct action of the water in proportion to the size of issue. The column of water becoming more confined as it is discharged, escapes with greater velocity

than from a square hole or issue, and thus assists in giving greater speed and power to the wheel. N are the gates, which are pivoted to the sluice-box K and to the enlarged part of the tube M. To the upper edge of the gates N is attached an arm, O, which is jointed to the ring-plate P, or to arms or lugs attached to said ring-plate. The ring-plate P is thus connected with and supported by the gates N, and, when moved, moves all the gates with it. To the opposite sides of the ring-plate P are attached the inner ends of the connecting-rods Q, the outer ends of which are attached to the opposite ends of the cross-bar R, which is attached at its center to a vertical shaft, S, pivoted to the top plate D, and which may be operated to open and close the gates by a lever, hand-wheel, or other convenient means.

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

1. An improved water-wheel formed by the combination of the rims G H, buckets I, and projections J with each other, substantially in the manner herein shown and described, and for the purposes set forth.

2. The spider E, constructed with its pivot, socket, and hub, in combination with the wheel G H I J and shaft F, substantially as herein shown and described, and for the purpose set forth.

3. The bed-plate A, arms or knees C, and top plate D, in combination with the wheel G H I J and shaft F, substantially as herein shown and described, and for the purpose set forth.

4. The chutes L, constructed substantially as herein shown and described, in combination with the sluice-box K, tube or sleeve M, and wheel G H I J, as and for the purposes set forth.

5. The arrangement of the gates N, arms O, ring-plates P, connecting-bars Q, cross-bar R, and shaft S, in connection with the chutes L and sluice-box K, substantially as herein shown and described, and for the purposes set forth.

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