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IMPROVED WATER WHEEL.

The invention here illustrated is a water wheel, constructed upon the simplest plan consistent with a high useful effect; it presents a remarkable combination of strength, compactness and durability.

Fig. 1 represents the wheel put together, ready to be attached to a forebay or penstock.

Fig. 2 represents the scroll or spiral water passage into the wheel, with part of the top and side removed, in order to show its internal construction.

The wheel, when not running, rests upon pivot, *r*, which, when the wheel is in motion, acts as a guide only to keep it in its proper place. This pivot, *r*, is made of cast steel, and screwed into the hollow cylindrical part, *q*. S is the bottom of the spiral water passage, which rises with such a grade, that a sufficient quantity of water is conveyed to each bucket continually. *m* is the outer rim of this spiral water passage, which is represented with part of it cut away, so as the better to show its inner construction. *p* is a flange surrounding the inlet or chute into said scroll or water passage; this flange, *p*, has holes drilled through it for the purpose of bolting it to the forebay. This stationary part of the wheel, Fig. 2, is cast in one piece and requires no core, except a small one for forming the hollow in central part, *q*. The upper edge of the outer rim, *m*, is turned true, in order to form a water-tight joint with a ring, *e*, Fig. 1, which forms the lower part of the wheel.

In Fig. 1, *a* is the shaft, *b* the hub of the disk, *c* of the wheel. To this disk, *c*, the buckets, *d*, are attached. The lower and outer parts of these buckets are firmly held in place by a flat ring, *e*, which extends from the outer edge of these buckets, inwards, to the inner edge of rim, *m*, of the spiral water passage, with which it forms a water-tight joint. This ring, *e*, also serves to reduce the upward pressure of the water against the disk, *c*. The buckets, *d*, extend from the lower end of hub, *b*, across the top of the spiral water passage to the outer edge of disk, *c*, and ring, *e*, as represented. These buckets have no twist, and are therefore easily shaped by hand or otherwise. When the wheel is properly loaded, the water leaves these buckets in a radial line; and when too lightly loaded, in a tangential line with the course of the water in the scroll; and if too heavily loaded, in a tangential direction contrary to the course of the water in the scroll. *n* is a man-hole through which chunks and other obstructions are removed from the inside of the wheel and scroll. The wheel should always be entirely immersed in the escape water. The lower shaft, *a*, is made short, so as to be free from vibration. It is held in place by the four standards, *f*, and is truly trained by the four training screws, *y*. The result is that the wheel revolves smoothly upon the scroll rim, *m*, without losing water through the joint where the two meet, and without unnecessary wear to this joint caused by vibrations. These standards, *f*, rest upon four flanges cast on to the scroll, which also serve for the purpose of attaching the scroll to timbers placed in the wheelpit for that purpose. *l* is a bevil wheel, used when the power is to be transmitted to a horizontal shaft. *g* is the shaft through which the power is transmitted to the work to be done; it is resting loosely upon the top of shaft, *a*, and is driven by clutches, *h* and *k*. By this arrangement, any irregularities in this upper shaft, *g*, and attachments, are not transmitted to the lower shaft and water-tight joint of the wheel. This wheel has but one water-tight joint, while almost every other wheel has two and more.

The upward pressure of the water against disk, *c*, is, in almost every case, greater than the weight of wheel, shaft, and all attachments. It is therefore necessary to provide a cavity in the top of shaft, *a* or *g*, for the purpose of holding oil and the blunt end of a regulating screw, with which the wheel is held down—just sufficient to prevent the loss of water at the revolving joint, and not so much as to cause friction in said joint. Therefore, all the wear and friction is at this screw—always in sight and adjustable.

When wheels upon a horizontal shaft are desired for driving sash or muley saws or pumps, two are made—a right and a left wheel, attached to the same shaft, with a double scroll between them. The inventor has constructed a pair on this plan, attached to a sash saw, and finds them to operate fully equal to his utmost expectations, although constructed of wood and iron and shaped in a country blacksmith shop. M. Casner, who also has one of these wheels upon a vertical shaft, can be addressed at Round Mountain Post-office, Texas. This wheel has given entire satisfaction in every instance. The inventor had expected to give some authentic proof of the capacities of his wheel before bringing the same before the public; and for that purpose he was a competitor at the recent trials of water wheels at Fairmount. After having there witnessed the test of the wheels on exhibition he writes that he believed that none could surpass his own in producing a high per centage of power, while none could approach it in simplicity and economy of construction and durability. The inventor claims that the question of championship among water wheels is yet to be decided, and desires that it may be done in such a manner that a difference of from 13 to 18 per cent in the results of tests with identical wheels unaccounted for may not again take place.

This wheel was patented, through the Scientific American Patent Agency, by Caleb V. Littlepage, on the 8th of February, 1859, whose address, for further information, is Austin City, Texas.

Fig. 1

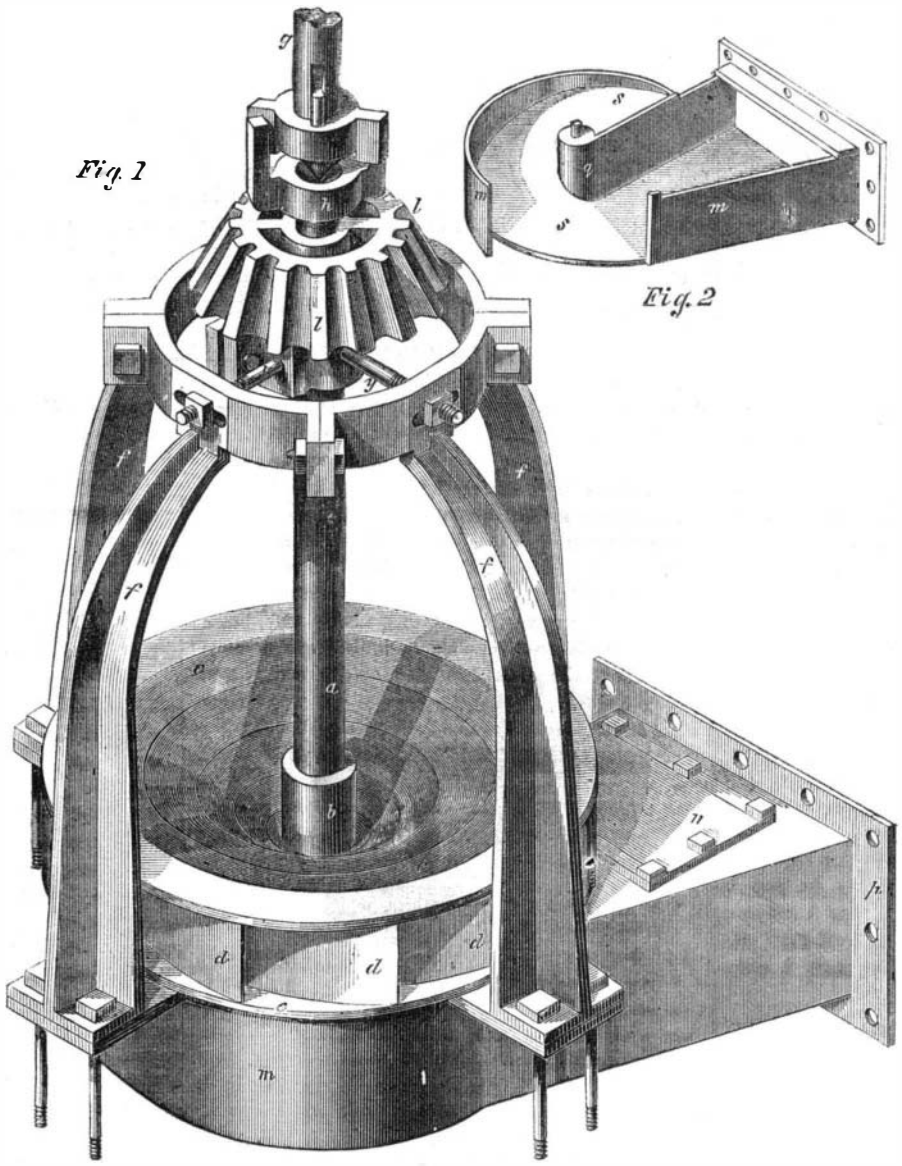

Fig. 2

LITTLEPAGE'S IMPROVED WATER WHEEL.

NEW CALIFORNIA STEAMER.—The Pacific Mail Steamship Company have lately contracted with Wm. H. Webb for a large steamer, destined for the San Francisco and Panama route. The following are to be her dimensions: Length of deck, 340 feet; breadth of beam, outside, 45 feet, 44 feet moulded; and depth of hold, 32 feet. She will be one thousand tuns larger than the *John L. Stevens*. Her engine is to be of the single beam variety, with a cylinder of 9.5 inches in diameter and 12 feet stroke, and will have extra capacity of boilers. She is to be constructed of the very best materials, with diagonal iron straps—her construction to be under the superintendence of Captain Skiddy. She will have water-tight compartments; and special attention is to be paid to the ventilation of the passenger's department.