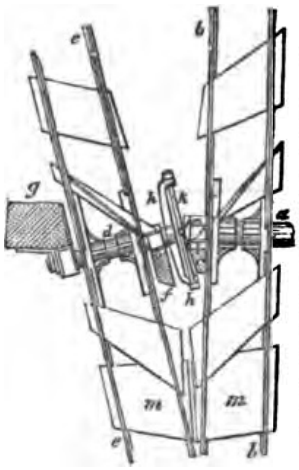
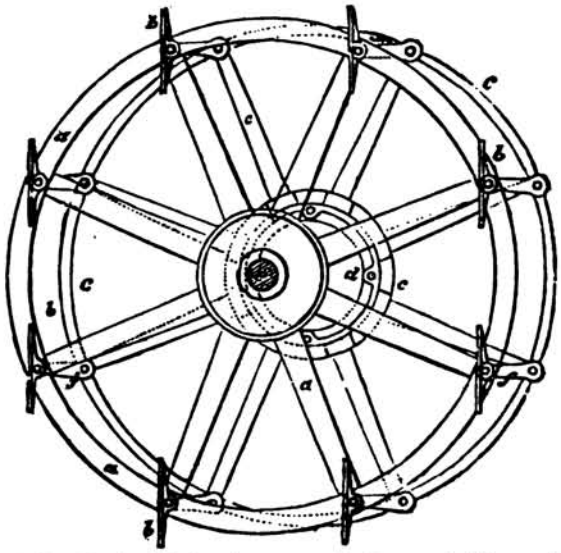
cross heads move in horizontal guides. *f f f f* are the connecting rods, proceeding from the cross heads of the piston-rods to the cranks upon the two shafts, *g* and *h*, which carry the two pairs of wheels *i i i i*. The air-pump *k* is placed between the two engines, and is worked by a short crank *l*, formed in the middle of the shaft *g*; *m* is the boiler, and *n* the chimney.

Galloway's Oblique Double Wheel.—In this invention two wheels are placed at each side of the vessel, the axes of which wheels do not lie in the same right line, but form an obtuse angle with each other. The axes are connected by a universal joint, so that the wheels revolve together, and the floats being set obliquely to the axes of the wheel, the descending floats in the two wheels approach each other on entering the water, so as to retain it between them, in the action of propelling, whilst the ascending floats as they leave the water gradually separate, so as to avoid lifting the water as they rise out of it.



The accompanying cut gives an end view of the wheels, with the descending or entering floats; *a* is the inner or driving shaft which carries the wheel, *b* the outer end of the shaft, turning in a plummer block on the spring beam *c*, *d* is the outer shaft carrying the wheel *e*, and working in bearings attached to the spring beams *f* and *g*; *h h* a cross arm keyed on to the inner end of the outer shaft *d*, and the extremities of which are connected by two drag links *k k*, to a similar cross arm on the outer end of the shaft *a*, thus constituting a universal joint, by which the motion of the shaft *d* is effected; *m m* are the descending floats, the ascending ones being omitted to avoid confusion.

Buchanan's Parallel Float Wheel.—With the view to obviate the loss of power which has place in the ordinary wheel, owing to the oblique action of the radiating floats, Mr. Buchanan invented a wheel in which the whole of the paddles constantly preserve a vertical position during the entire revolution. The annexed figure is an elevation of Mr. Buchanan's wheel.



a a is the paddle-wheel, *b b* the floats attached to spindles working in the rims of the wheel; *c c* a guide wheel revolving on an eccentric disc or ring *d*,