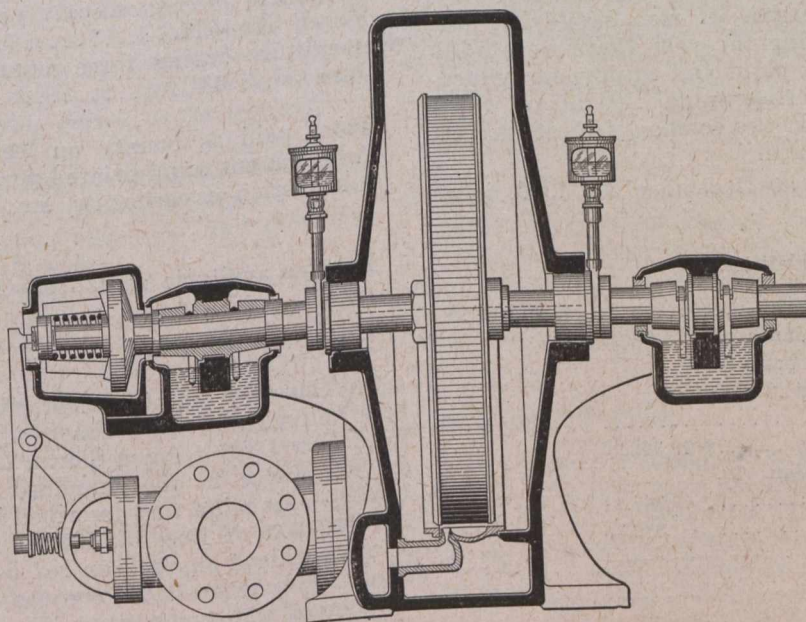
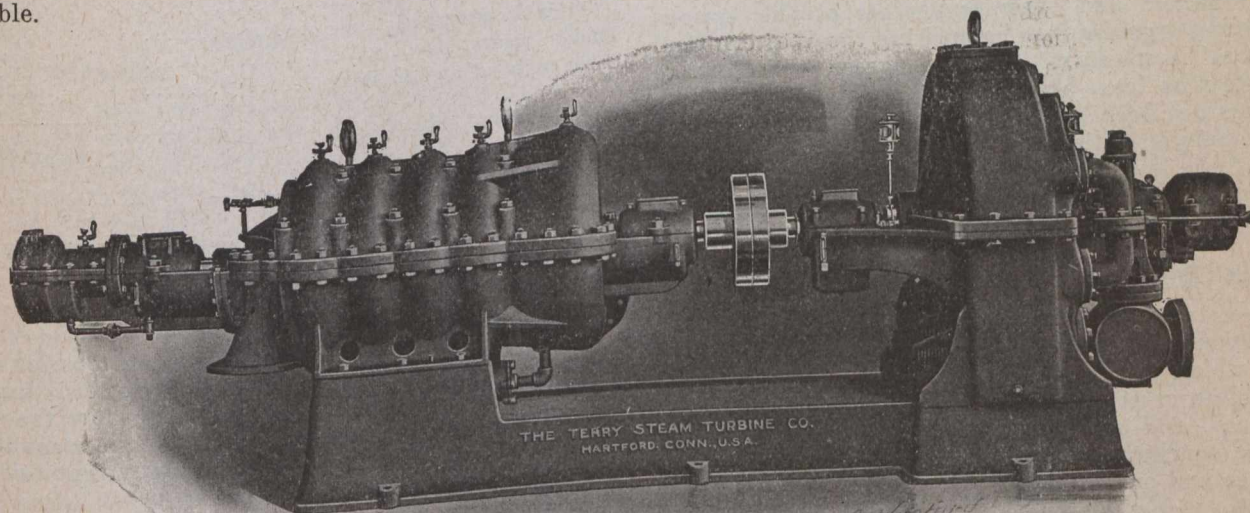


Turbine Driven Centrifugal Mining Pumps.

For keeping mines free from water and for creating hydraulic power for placer mining, the turbine-driven centrifugal pump in its present development is peculiarly applicable. The very small dimensions of such sets would commend their use where space conditions are important without very deep inquiry into their other virtues. Turbine pumps can be started up at any time from a cold condition and once started operate for an indefinite time until stopped by the simple closing of the throttle valve. To those unfamiliar with the modern turbine and centrifugal pump the power and speed of these machines is almost incredible.

lbs. The small size and simple construction is in striking contrast to the great weight of a reciprocating pump for the same service.

As a means of propulsion for centrifugals no machine has yet been devised which fills the bill as satisfactorily as the small steam turbine. Because of its superior range of speed it is possible to get a unit of much smaller diameter than would be necessary in a larger pump driven by a reciprocating engine. The accompanying cuts show its extreme simplicity; there is but a single row of buckets on the rotor. This single-stage feature reduces complications, but in order that the speed shall be normal the steam in the course



For example, the larger illustration shows a Jeanesville 5-stage centrifugal pump driven direct-connected by a single-stage Terry steam turbine. These units are about 48 inches in height and not over 10 ft. in length, yet have a capacity of 1,000 gallons of water per minute against an average discharge pressure of 270

of its expansion is made to traverse the buckets several times, each time being redirected into the wheel through return passages in the casing. The wheel thus receives energy in successive stages and therefore the peripheral speeds are much lower than would be the case if the steam impinged on the wheel but once.