

1,235,153.

T. OSAKI.
FLY WHEEL.
APPLICATION FILED DEC. 13, 1916.

Patented July 31, 1917.

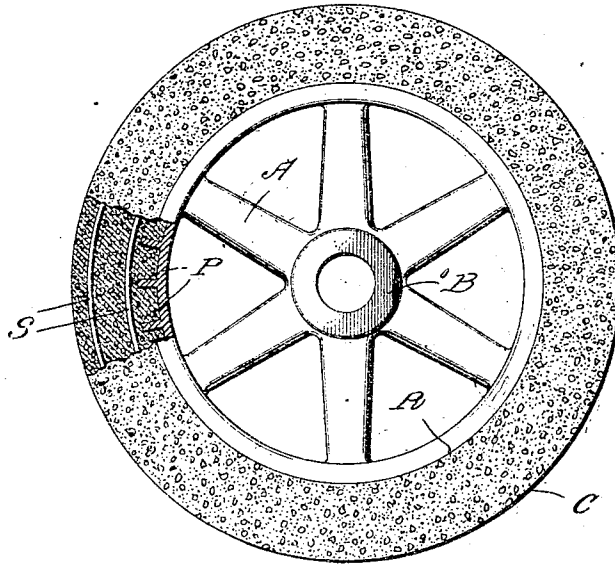


Fig. 1.

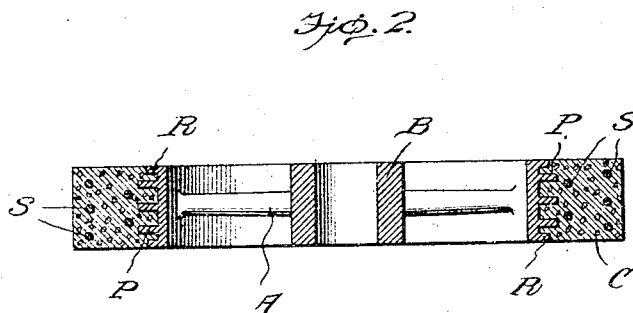


Fig. 2.

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FLY-WHEEL.

1,235,153.

Specification of Letters Patent.

Patented July 31, 1917.

Application filed December 13, 1916. Serial No. 136,713.

To all whom it may concern:

Be it known that I, TAKAZO OSAKI, a subject of the Emperor of Japan, residing at 9 Minami-dori 6-chome, Itachibori, Nishiku, Osaka, Japan, have invented certain new and useful Improvements in Fly-Wheels, of which the following is a specification.

My invention relates to improvements in fly wheels with rims or fellys formed of cement concrete reinforced by concentric steel rings inclosed therein; and the object of my invention is to obtain safe, reliable fly wheels considerably cheaper and easier. I attain this object by the construction and arrangement illustrated in the accompanying drawing, showing an example of fly wheels made in accordance with my invention, in which—

Figure 1 is a front elevation of the entire wheel, and Fig. 2 is a cross section of the same.

Similar letters refer to similar parts throughout the two views.

In constructing the fly wheel of my invention, I make the body of the wheel, consisting of the hub or nave B, the arms A, the rim R, and the pegs P cast out radially on the outside of the rim R; I then arrange several pieces of steel rods concentrically with the body of the wheel at a proper distance from the rim R, with said body as center; provide a round mold around said body, and fill cement concrete in the space between the mold and the rim; after the concrete sets I remove said mold and finally finish the fly wheel by polishing the surface of said cement concrete. The cement concrete C is securely attached to the rim R by means of the pegs P.

The main essentials of an ordinary fly wheel used with engines are the weight of the rim and its tensile strength against centrifugal force occurring therein. My invention supplies these essentials by imparting weight with concrete which is cheaper than cast iron and by imparting tensile strength with strong steel rods, which renders it possible to make efficient fly wheels considerably cheaper and easier than ordinary fly wheels made of cast iron, by utilizing the characteristics of these two materials. My invention renders it possible to make the rim at the actual spot where it is

needed, thus saving much labor and expenditure by making it unnecessary to carry such heavy materials about. In an ordinary cast iron fly wheel, the rim and arms do not cool uniformly after casting and there occur unexpected initial stresses among the molecules of the rim, and so a high-speed cast iron fly wheel sometimes bursts on account of the tension caused by centrifugal force while running. With the reinforced concrete fly wheel of my invention, cement, sand, gravel, and steel, are treated at an atmospheric temperature in making the rim, and the wheel is used after the cement hardens or sets, and so there occurs no initial or internal stress during the process of making, thus insuring safety. Viewed from the point of strength of materials, the fly wheel of this invention is most rational as can be inferred from these facts: Cast iron, hitherto used as a material in making fly wheels, is a kind of metal having little tensile strength, moreover, there occur abnormal stresses among its molecules after casting, and so it must be considered most unsuitable as a tension member. On the contrary steel is well known as the best material for tension members, having the greatest tensile strength. In my invention right materials are used at the right places to impart tensile strength to the rim by means of steel rods and to impart proper weight with cement concrete as described above.

I claim:

1. A fly wheel having a rim of cement concrete inclosing steel rods concentrically arranged around in the body of the wheel.

2. In a fly wheel, a body, a concrete rim formed on said body, and pegs mounted on said body in spaced relation extending into the concrete.

3. In a fly wheel, a body, a concrete rim, and pegs formed integral with and extending outwardly from said body into the concrete.

4. A fly wheel comprising a rim and a body, said rim consisting of reinforced concrete cast into and around the body; and said body having pegs formed on the outside extending into the concrete.

In testimony whereof I affix my signature here below.

TAKAZO OSAKI.