(No Model.)

C. ESPLIN.

METHOD OF BALANCING GEARS OR PULLEYS.

No. 304,809. Patented Sept. 9, 1884.

Fig. 1

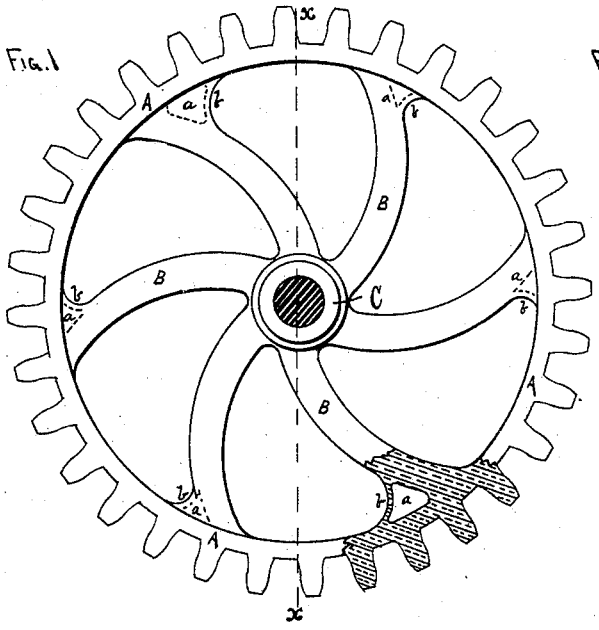


Fig. 2

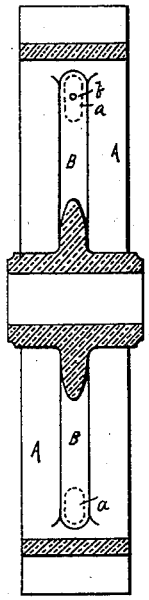


Fig. 3

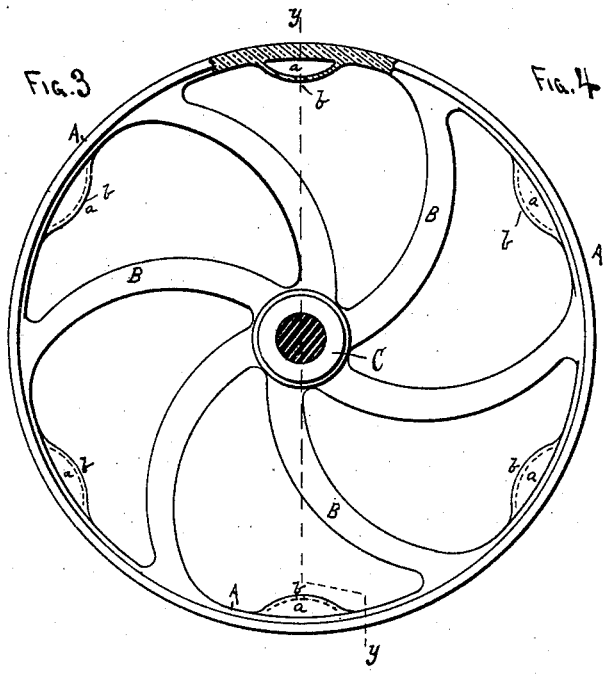
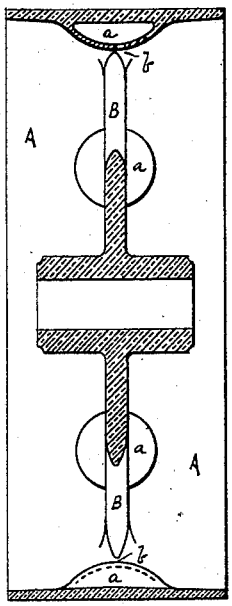


Fig. 4



Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES ESPLIN, OF MINNEAPOLIS, MINNESOTA.

METHOD OF BALANCING GEARS OR PULLEYS.

SPECIFICATION forming part of Letters Patent No. 304,809, dated September 9, 1884.

Application filed July 14, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES ESPLIN, a subject of the Queen of Great Britain and Ireland, who has declared his intention of becoming a citizen of the United States, and a resident of Minneapolis, in the county of Hennepin, in the State of Minnesota, have invented certain new and useful Improvements in Methods of Balancing Gears or Pulleys, of which the following specification is a full, clear, and exact description, reference being also had to the accompanying drawings, in which—

Figure 1 is a semi-sectional side elevation, and Fig. 2 is a cross-sectional elevation on the line *x x* of Fig. 1, of a gear; and Figs. 3 and 4 are similar views of a belt-pulley, showing my improvement attached thereto.

It is a matter of great importance in nearly all kinds of machinery in which large gears and pulleys are used that the latter should be perfectly balanced on the shafting to enable them to run truly and steadily, and hence much attention is paid and great pains taken to see that they are so "balanced."

Heretofore it has been customary to either attach counter-balances or weights to the rims or arms, or to file or cut away portions from the heavy sides; but this is a very unsatisfactory and tedious process, requiring much time and adding to the expense, and either weakening the gears or pulleys or detracting from their symmetrical appearance. My method of balancing consists simply in forming pockets or cavities *a* in the rims A or arms B of the gears, pulleys, &c., and filling said cavities with lead or other suitable heavy easily-manipulated metal or other substance. The pockets *a* will be formed by "cores" with small holes *b*, through which the core-sand may be removed and the lead, &c., be poured in. The gears or pulleys will be mounted upon their shafts C, and the latter set upon level bearings, and then the lead or other substance run into the cavities *a* until a perfect balance is obtained. Any required number of the cavities *a* may be formed upon each wheel, and may be placed either in the arms B, on the rims A, or at any other suitable point. On small wheels four of the pockets will usually be a sufficient number; but on larger wheels one pocket will be placed between or in each arm. The number of pockets will vary according to the size, form, and use for which the wheel is intended. The pockets *a* will be placed so as to neither weaken the wheel nor detract from its symmetry. On the contrary, they can very easily be arranged to add strength and be an ornament thereto. These pockets *a* can also be applied to the rolls of flour-reducing mills and to other forms of machinery requiring balancing. When used upon rolls, the pockets could be most conveniently placed in the ends of the rolls.

Having described my invention and set forth its merits, what I claim is—

A gear or pulley having separate cavities or pockets *a*, adapted to receive lead or other suitable heavy substance, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLES ESPLIN.

Witnesses:
LOUIS FEESER, Sr.,
LOUIS FEESER, Jr.