

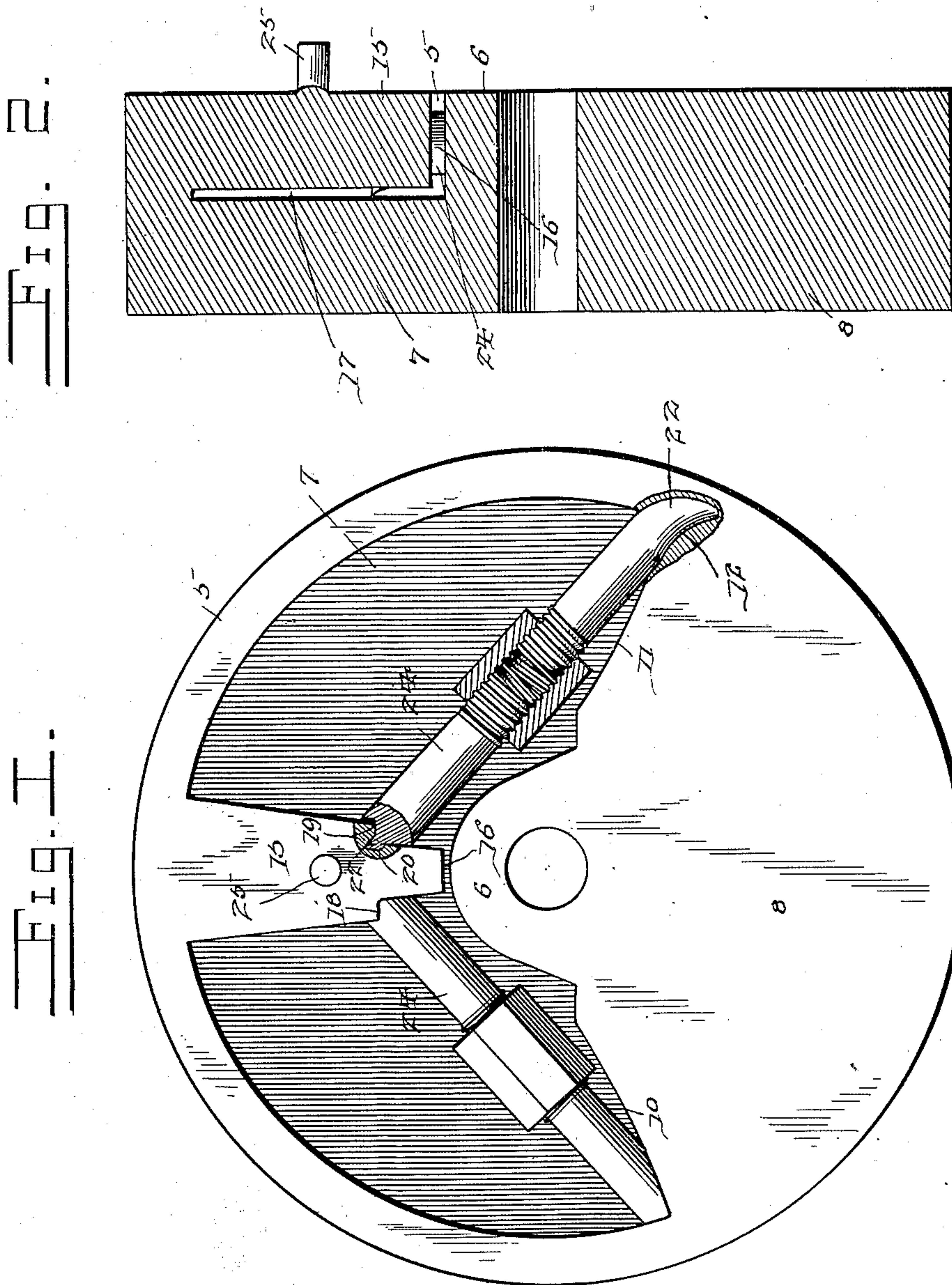
No. 662,486.

Patented Nov. 27, 1900.

F. BENJAMIN.
CRANK WHEEL.

(Application filed May 29, 1900.)

(No Model.)



Witnesses
F. E. Alden.

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UNITED STATES PATENT OFFICE.

FRANK BENJAMIN, OF MILDRED, MINNESOTA.

CRANK-WHEEL.

SPECIFICATION forming part of Letters Patent No. 662,486, dated November 27, 1900.

Application filed May 29, 1900. Serial No. 18,432. (No model.)

To all whom it may concern:

Be it known that I, FRANK BENJAMIN, a citizen of the United States, residing at Mildred, in the county of Cass and State of Minnesota, have invented a new and useful Crank-Wheel, of which the following is a specification.

This invention relates to engines in general, and more particularly to the crank-wheels or crank-disks thereof, one object of the invention being to provide a construction involving the usual counterbalance and in which the strength of the wheel will be such as to stand all strains, irrespective of the cut-away portion incident to the formation of the counterbalance.

A further object of the invention is to provide means for bracing the portions of lesser strength of the wheel.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in both views, Figure 1 is an elevation showing the complete crank-wheel. Fig. 2 is a central vertical section of the structure shown in Fig. 1.

Referring now to the drawings, the wheel of the present invention consists of a rim 5, of suitable metal, and which is sustained upon the central or hub portion 6 by means of an inwardly-directed web 7, of lesser thickness than the rim and lying flush with the rear edge of the latter, this web in the present instance having a counterbalancing-weight 8, formed integral therewith, the counterbalancing-weight lying within the inclosure of the rim and being substantially segmental in form. The extent of the weight is somewhat more than one hundred and twenty degrees, and the sides 10 and 11 thereof lie at angles to the inner face of the rim, as shown. At the apices of these angles are formed sockets 12 for a purpose which will be presently explained.

Extending inwardly and radially from the inner face of the rim 5 is an arm 15, which lies diametrically opposite to the counterbalance and the inner end of which is separated from the hub of the wheel by a slight interspace 16.

The arm 15 is separated from the adjacent face of the web 7 also by a slight interspace, as shown at 17, the arm being tapered in the

direction of the center of the wheel and having its inner portion reduced sharply in width to form shoulders 18 and 19 in the angles, at the inner ends of which are formed sockets 20. The sockets 20 lie equidistant from the sockets 12, and engaged therewith are teeth 22 at the ends of screw-jacks 24, these jacks acting to brace the free end of the arm 15 and hold it from fracture under excessive or sudden strain. These jacks may be readily applied to and removed from the wheel, and when in place they act to greatly increase the strength of the wheel and correspondingly increase the power which may be developed with the wheel.

In the present instance the rim, the web, and the counterbalancing-weight are cast integral, and upon the arm 15 is a wrist-pin 25, which projects at right angles to the face of the arm, this pin and arm being also formed integral with the rim, web, and weight, so that the entire structure is integral, with the exception of the jacks, which may be applied and removed as desired.

In practice the wheel is applied to the engine-shaft by engaging the central perforation 26 thereof with the outer end of the shaft, said wheel being held against rotation upon the shaft by a key or set-screws or in any other suitable manner, the connecting-rod of the engine being connected with the wrist-pin. If an excessive load is to be placed upon the engine, the screw-jacks are put in place; but under other conditions this is not necessary, as the formation and arrangement of the wheel give the strength sufficient for ordinary conditions, there being no spokes, as is usual, and which spokes are incident to cut-away portions extending entirely through the wheel, with the result of weakening it.

It will of course be understood that in practice any suitable material may be employed in the manufacture of the wheel and any desired proportions may be observed for the various parts without departing from the spirit of the invention. Furthermore, it will be seen that that portion of the wheel that carries the crank-pin or wrist-pin is of sufficient weight to prevent tearing away of the pin.

What is claimed is—

1. A crank-wheel for engines comprising a

rim, a web extending inwardly of the rim from one edge thereof and having a lesser thickness than the rim, a counterbalance-weight within the inclosure of the rim, and
5 an arm extending inwardly from and radially of the rim at a point diametrically opposite to the weight and separated from the hub and web by slight interspaces, said arm having an outwardly-directed wrist-pin adjacent to
10 its free end, and all of the parts being formed integral.

2. A crank-wheel for engines comprising a web and a rim, the web extending inwardly from one edge of the rim, a counterbalanc-
15 ing-weight within the inclosure of the rim and lying wholly upon one side of the diameter of the rim, sockets being formed in

the angles between the sides of the weight and the inner face of the rim, an arm extending inwardly and radially from the rim at its
20 inner face and having a reduced inner end resulting in the formation of shoulders, sockets being formed at the inner ends of the shoulders, screw-jacks engaged with the corresponding sockets, and a wrist upon the
25 outer face of the arm, the rim, the web, the weight and the arm being formed integral.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

FRANK BENJAMIN.

Witnesses:

S. A. ELLIS,

W. S. SCHOFIELD.