

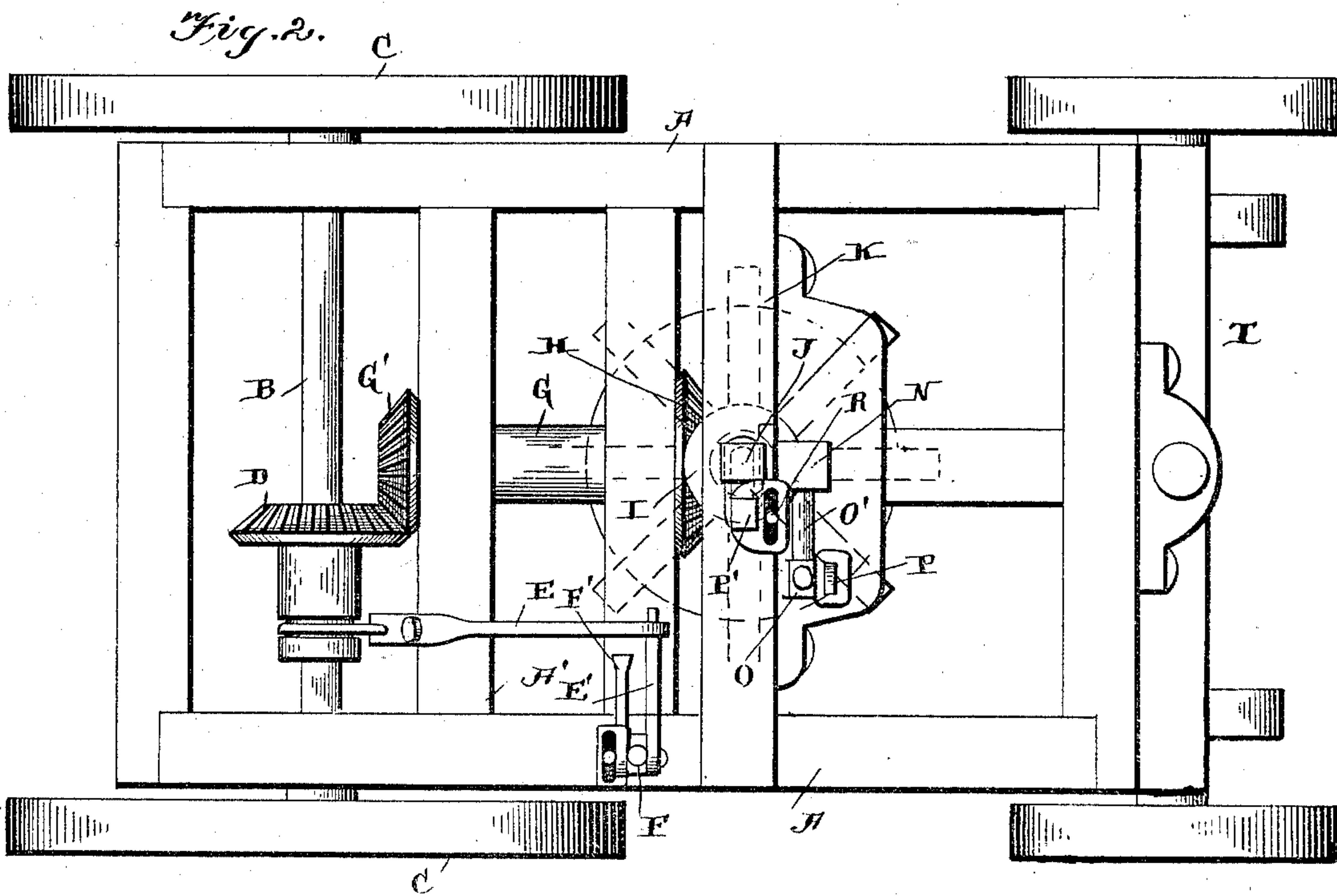
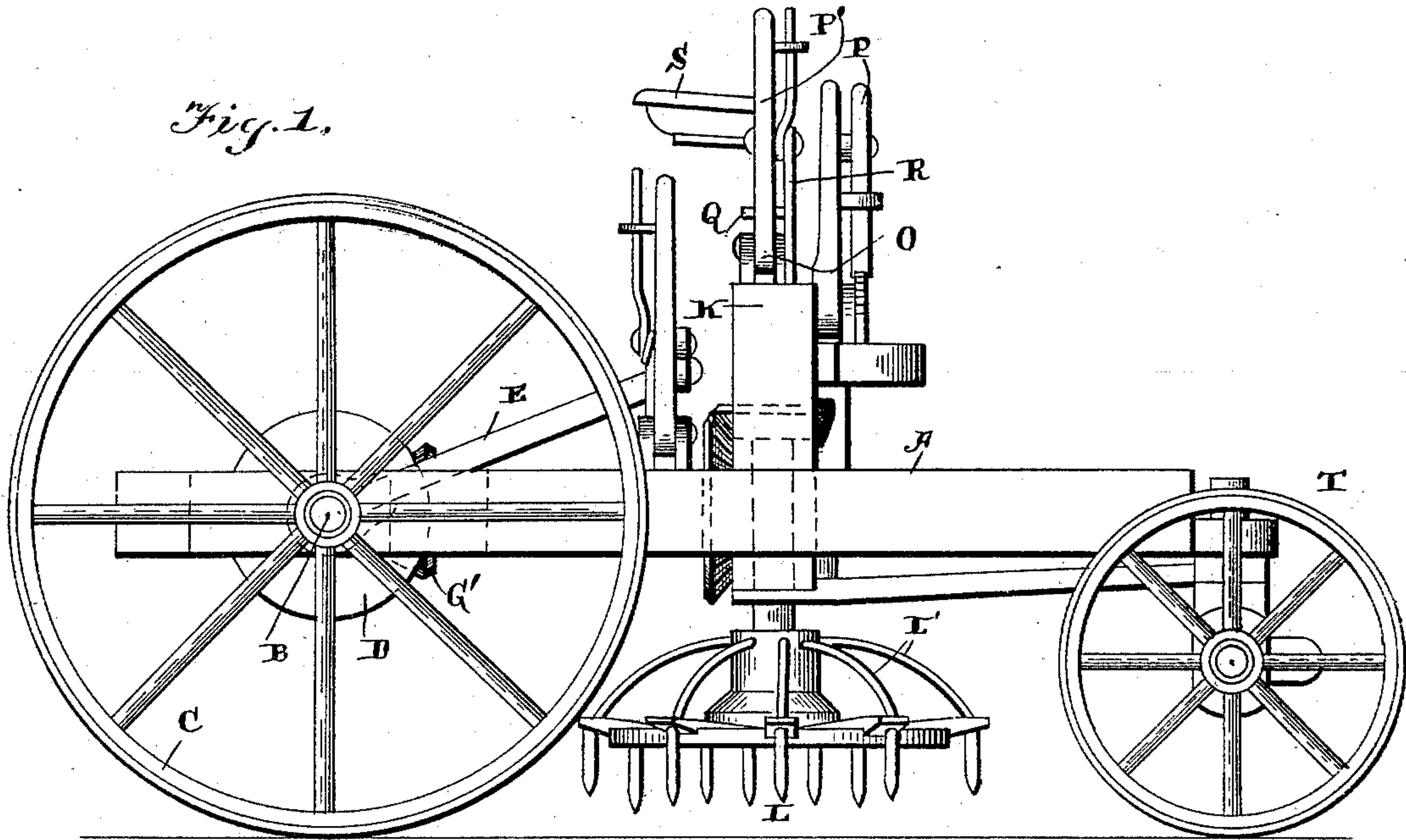
(No Model.)

2 Sheets—Sheet 1.

C. ROBERT.
ROTARY HARROW.

No. 509,686.

Patented Nov. 28, 1893.



WITNESSES.

Geo. C. Freck.

John A. Fitzgerald.

INVENTOR.

Christian Robert.

By Lehman, Pottson & Nesbit
attys

(No Model.)

2 Sheets—Sheet 2.

C. ROBERT.
ROTARY HARROW.

No. 509,686.

Patented Nov. 28, 1893.

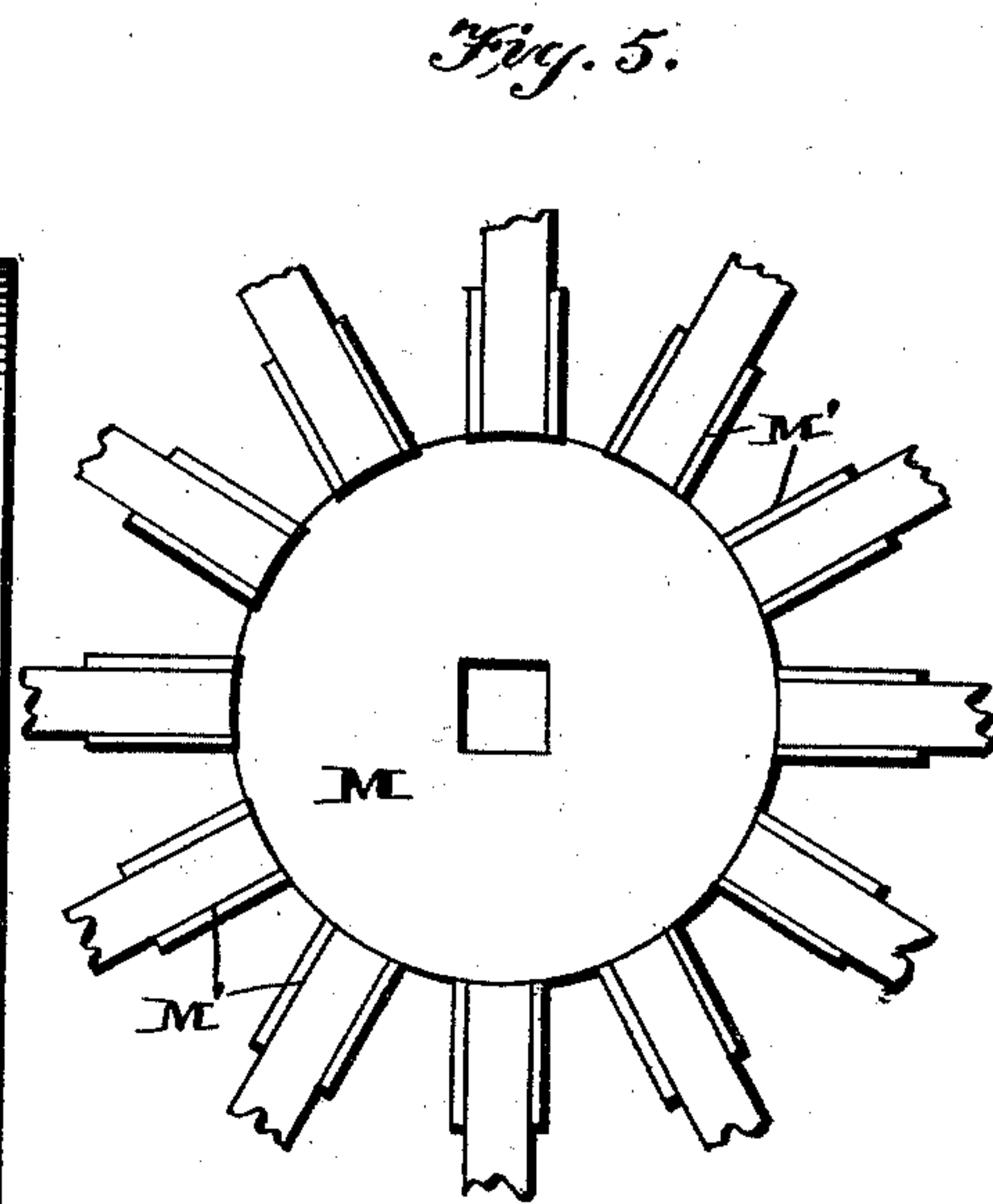
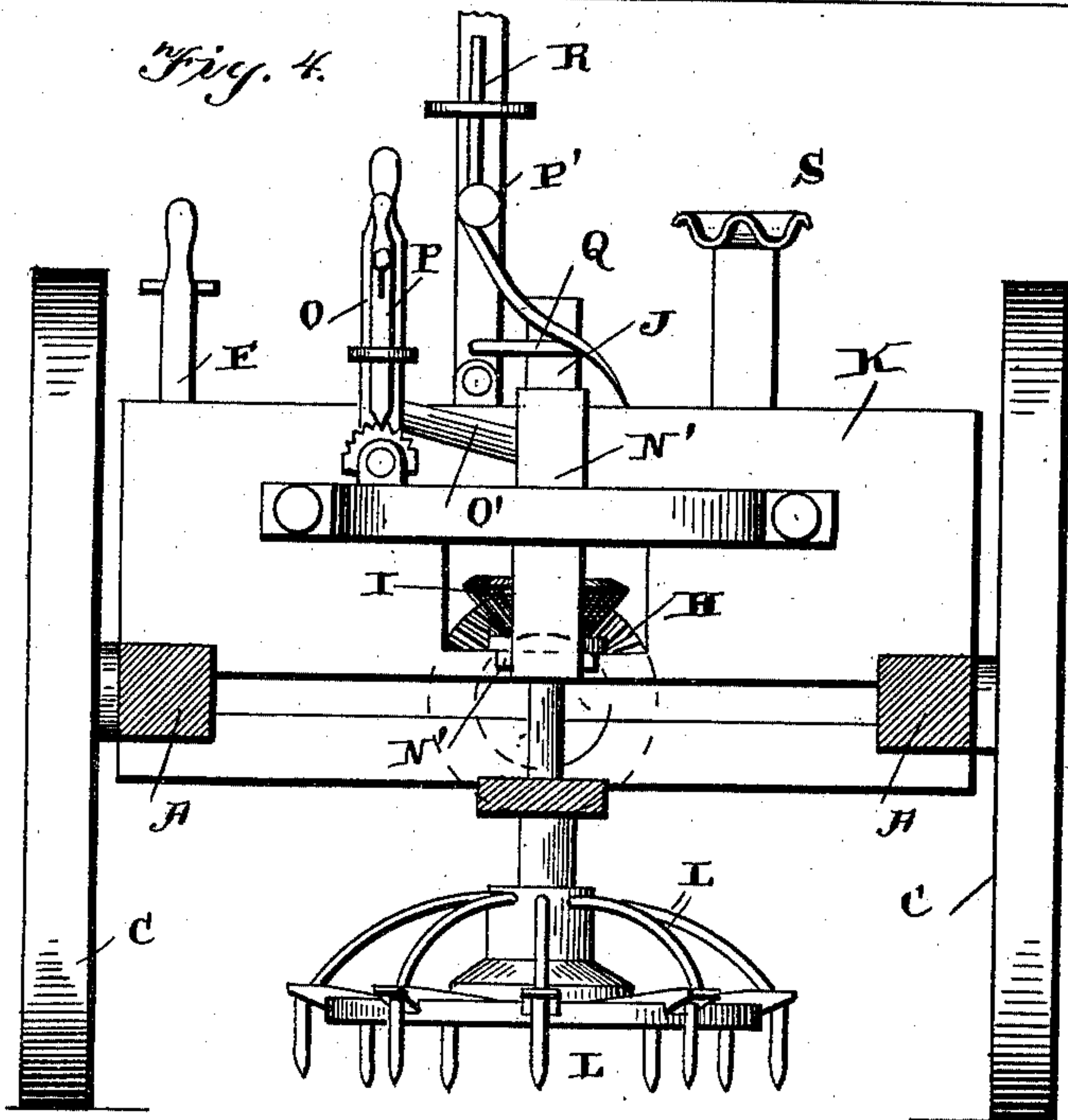
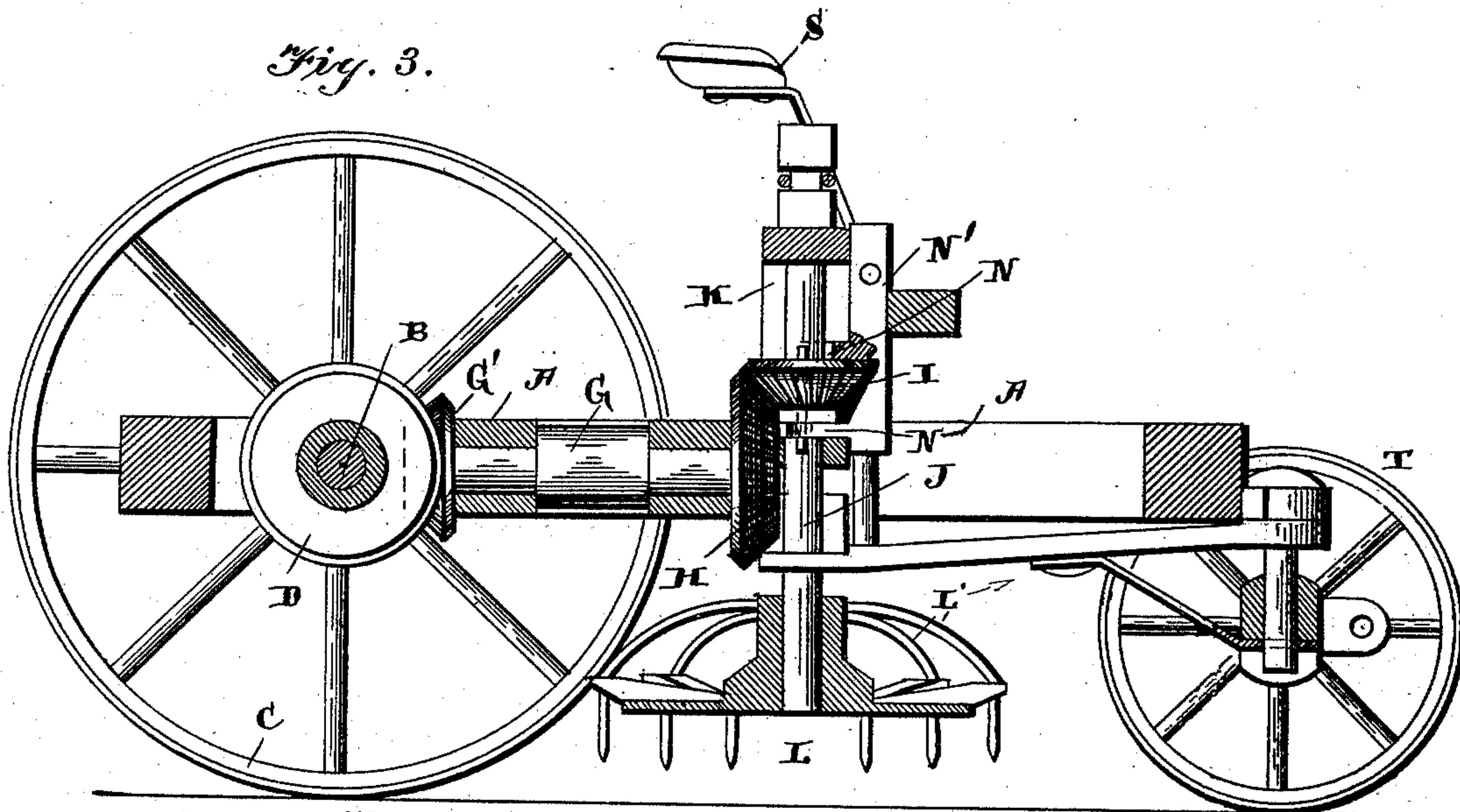


Fig. 6.

WITNESSES—
Geo. C. Trech.
Roland Q. Fitzgerald.

INVENTOR—
Christian Robert,
By Lehmann Patterson & Nash
Attys.

UNITED STATES PATENT OFFICE.

CHRISTIAN ROBERT, OF LAWRENCEVILLE, INDIANA.

ROTARY HARROW.

SPECIFICATION forming part of Letters Patent No. 509,686, dated November 28, 1893.

Application filed May 4, 1893. Serial No. 473,017. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN ROBERT, of Lawrenceville, in the county of Dearborn and State of Indiana, have invented certain new and useful Improvements in Rotary Harrows; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in rotary harrows; and it consists in the novel features of construction and the arrangement of parts which will be fully described hereinafter and more especially referred to in the claims.

The object of my invention is to construct a harrow with a very simple operating mechanism, and one in which the adjustment of the harrow may be easily and quickly accomplished.

Referring to the accompanying drawings,—Figure 1, is a side elevation of my improved harrow. Fig. 2, is a plan view of the same. Fig. 3, is a longitudinal sectional view of the same. Fig. 4, is a cross sectional view, on line 4—4, of Fig. 2. Figs. 5 and 6 are detached views of a modified form of harrow.

A designates the side beams of a harrow frame and journaled across their rear ends is the drive shaft B, having upon its ends the wheel C.

Mounted on shaft B within the frame is the longitudinally movable gear D, which is adapted to be operated by lever E, fulcrumed to cross bar A', of the frame, as shown. The outer end of this lever is connected by link E' to the lever F mounted on beam A. The ratchet F' of this lever consists of a rod of metal coiled between its ends and fulcrumed by means of said coil to lever F, and adapted to engage at its lower end the frame, so as to hold the said last named lever in the desired adjustment with the gear C thrown in or out of gear, as desired.

G is a shaft extending longitudinally forward in the frame having upon its rear end the beveled gear G' which is engaged by gear C and thereby operated. The forward end of this shaft carries gear H, which engages bev-

eled gear I, mounted loosely upon the longitudinally movable shaft J, which latter occupies a vertical position in the central cross beam or bridge K, of the cultivator frame.

Rigidly secured to the lower end of shaft J is the harrow L, constructed as shown, with teeth depending from its under surface, its periphery being braced by the radial supports L'. This harrow may be constructed if desired as shown in Fig. 5, with the central hub M and radial spoke sockets M' formed of one piece of metal. The pinion I is mounted on shaft J between the perforated lugs N of bar N', which latter is movable vertically, as shown, upon the forward side of bridge K. An operating lever O is connected to the standard N' by means of a link O', whereby the latter is raised or lowered carrying with it the beveled gear I, and thus throwing the machine in or out of gear, as desired. A ratchet locking mechanism P is provided for this lever which serves effectually to hold the same in the adjustment in which it has been placed.

By means of the construction it will be seen that two independently operating mechanisms are provided for throwing the machine in and out of operation.

Fulcrumed upon the upper side of bridge K is lever P', and extending therefrom is yoke Q, which encircles the upper grooved end of shaft J, and by means of which lever and connection the latter may be elevated for the purpose of raising or lowering the harrow, when obstructions are to be avoided or when the machine is to be moved from place to place. It will be noticed that this vertical adjustment of the shaft is secured independently of the operating mechanism and that the latter will as effectually rotate the harrow when in an elevated as when in a lowered position. A depending ratchet R, coiled and pivoted between its ends to lever P', engages at its lower end the upper side of bridge K, and in this manner the lever is held in the requisite adjustment. Also arranged upon this bridge is the operator's seat S.

The forward end of the harrow frame is mounted upon a suitable truck T, which may be arranged for two or more horses, as will be readily understood.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of a harrow, a shaft for
5 operating the same, gear I loose on said shaft
frame N' lugs N extending from said frame
above and below said gear, and an operating
means, substantially as shown and described.
2. In an improved harrow, the combination
10 with a drive shaft and a harrow operating
mechanism, of a gear carried by the said shaft
for actuating the said mechanism, a lever ful-
crumed to the frame and connected to the
said gear for moving it on the shaft, an op-
15 erating lever connected to the said first named
lever, a ratchet secured to the said operating
lever which is coiled between its ends where

it is fulcrumed to the said operating lever and
which at its lower end is adapted to engage
the harrow frame, substantially as shown and 20
described.

3. The combination of a harrow carrying
shaft, a lever for elevating it, a suitable con-
nection between the lever and shaft, and dog
R coiled between its ends to embrace a pivot 25
and sharpened at its lower end to engage the
frame, substantially as shown and described.

In testimony whereof I affix my signature in
presence of two witnesses.

CHRISTIAN ROBERT.

Witnesses:

ADAM BOERSTLER,
GEORGE CLEMENZ.