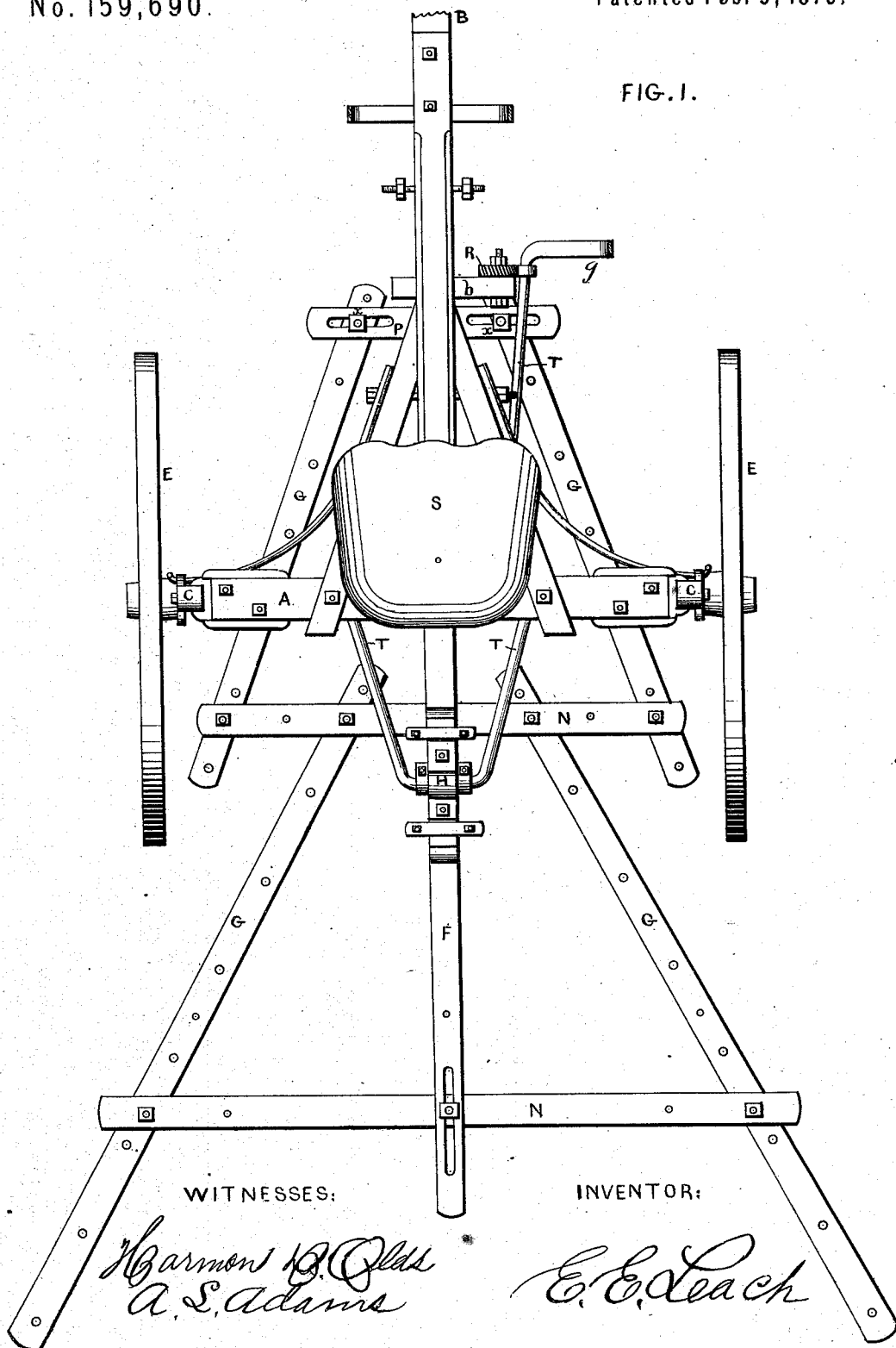


E. E. LEACH.
Riding-Harrow.

No. 159,690.

Patented Feb. 9, 1875.

FIG. 1.



WITNESSES:

Harmon B. Olds
A. S. Adams

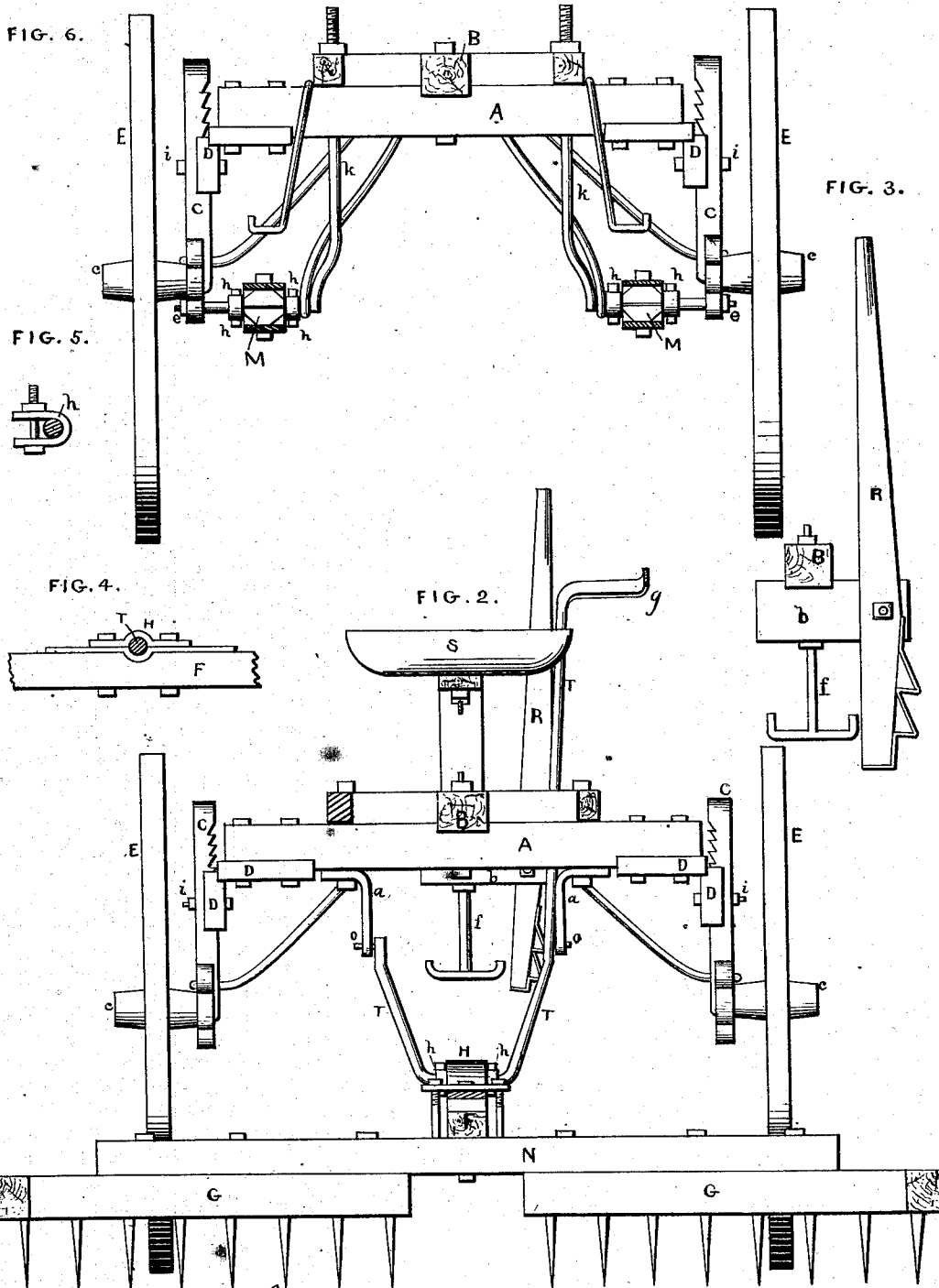
INVENTOR:

E. E. Leach

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INVENTOR:

Harmon & Olds
A. S. Adams *E. E. Leach*

UNITED STATES PATENT OFFICE.

EDWIN E. LEACH, OF CEDAR RAPIDS, IOWA.

IMPROVEMENT IN RIDING-HARROWS.

Specification forming part of Letters Patent No. **159,690**, dated February 9, 1875; application filed July 14, 1874.

To all whom it may concern:

Be it known that I, EDWIN E. LEACH, of Cedar Rapids, in the county of Linn and State of Iowa, have invented a certain Improvement in Combined Harrow and Cultivator, of which the following is a specification:

The nature of my invention consists in combining, with a sulky-carriage, interchangeable hangers for the support, respectively, of a harrow, and the beams of a pair of cultivator-plows.

In the annexed drawings, Figure 1 is a plan view, showing the machine arranged as a sulky-harrow. Fig. 2 is a sectional rear elevation of the same. Fig. 3 is a sectional rear elevation of the machine, arranged as a walking-cultivator.

The same letters of reference are used in all the figures in the designation of identical parts.

The carriage used has an elevated axle-tree, A, capable of straddling a row of corn or other growing crop, which is adjustably connected to the journals *c c*, on which the wheels E turn, by means of the uprights or standards C, adjustably secured by bolts *i* to the angle-plates or bearings D, fixed on the ends of the axle-tree. The tongue B is secured and braced to the axle-tree and other parts of the carriage in the usual manner, and a driver's seat, S, mounted thereon by means of a spring-bar. Equidistant from the center of the axle-tree holes are bored through it, capable of receiving either bolts *l l*, for securing the hangers *a a*, or the screw-threaded ends of the draft-bars *k k*. The hangers *a* are

provided for the support of lever T, from which the harrow is suspended, all as clearly shown in Fig. 2, when the machine is to be used as a sulky-harrow.

In converting the machine from a sulky-harrow to a straddle-row walking-cultivator, the harrow, its lever T, and the hangers *a* and bolts *l*, are removed, and the draft-bars *k* attached, their vertical ends being passed through and secured to the axle-tree, while their horizontal ends, to which the cultivator-beams are pivoted, extend through holes in the downwardly-projecting lugs of the standards C, to which they are also secured by nuts *e*, all as illustrated in Fig. 3. The vertical ends of these draft-bars are suitably elongated, to admit of the vertical adjustment of the axle-tree.

It is evident that the draft-bars may be used to secure the hangers *a*, and that both the draft-bars and hangers may remain permanently secured to the carriage, though I prefer the interchanging of them, as heretofore stated.

What I claim as my invention, and desire to secure by Letters Patent, is—

In combination with the herein-described wheel-harrow, the draft-bars *k k*, for the attachment of cultivator-plows, in the conversion of the machine from a harrow into a cultivator, substantially as specified.

E. E. LEACH.

Witnesses:

HARMON D. OLDS,
A. L. ADAMS.