2 Sheets—Sheet 1.

F. L. FAIRCHILD.
Traction-Engine.

No. 217,787. Patented July 22, 1879.

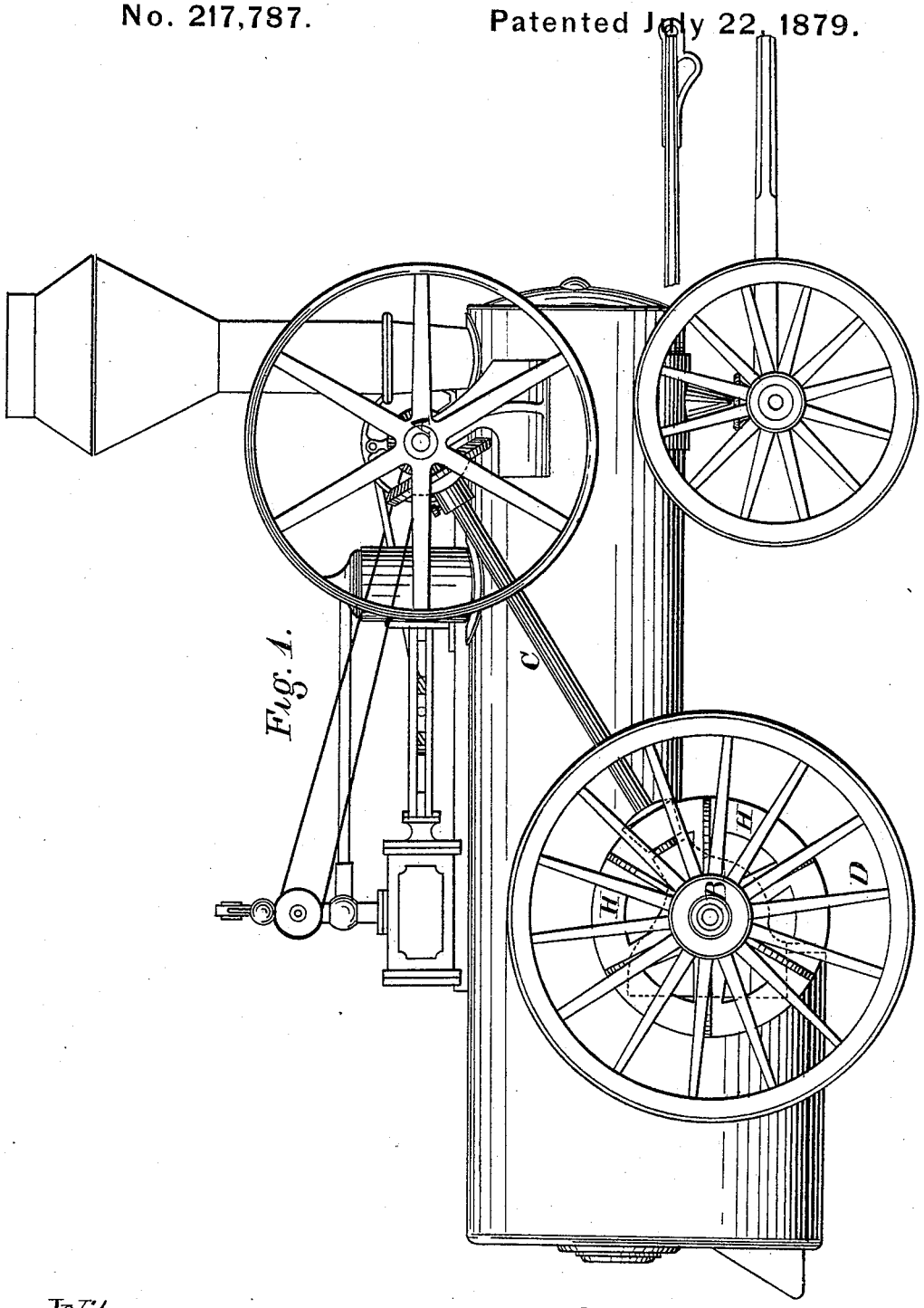

Fig. 1.

Witnesses:
George
D. Howe

Inventor:
Frank L. Fairchild,
by M. Bailey
his Attorney

2 Sheets—Sheet 2.

F. L. FAIRCHILD.

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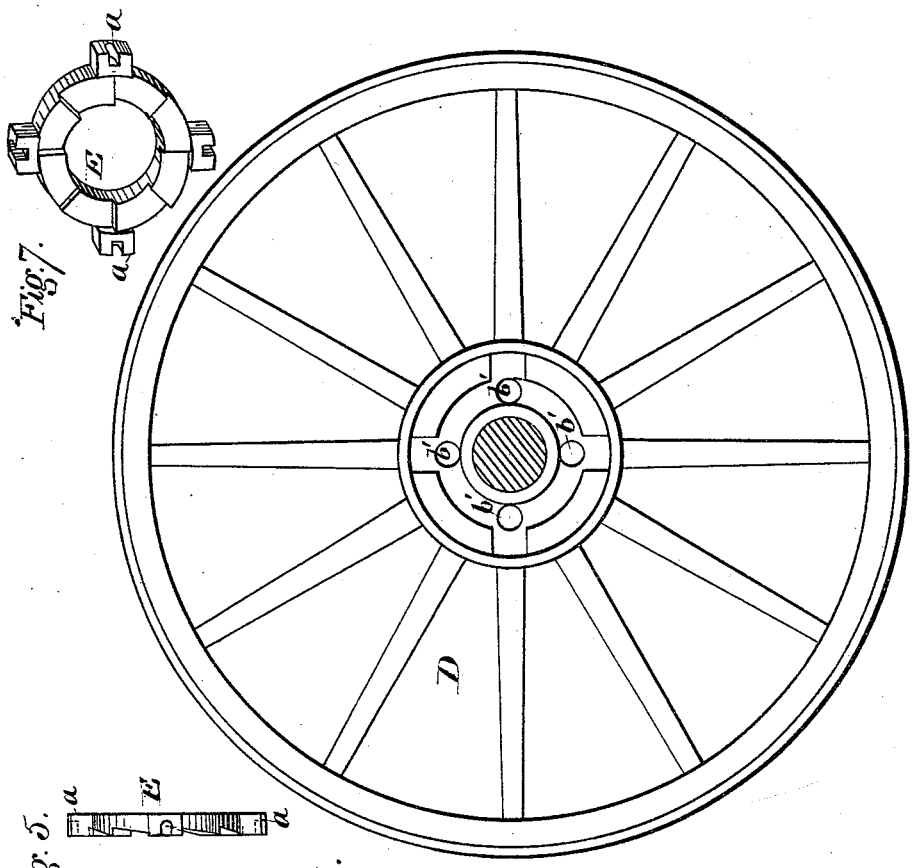

Witnesses:
Geo. H. Graves
D. Ploud

Inventor:
Frank L. Fairchild.
by H. S. Bailey
his Attorney.

UNITED STATES PATENT OFFICE

FRANK L. FAIRCHILD, OF MOUNT VERNON, OHIO.

IMPROVEMENT IN TRACTION-ENGINES.

Specification forming part of Letters Patent No. **217,787**, dated July 22, 1879; application filed May 24, 1879.

To all whom it may concern:

Be it known that I, FRANK L. FAIRCHILD, of Mount Vernon, in the county of Knox and State of Ohio, have invented certain new and useful Improvements in Traction-Engines, of which the following is a specification.

My invention relates to that kind of traction-engine in which steam and animal power may be used interchangeably or simultaneously and together to move the engine, the engine being adapted to be drawn by the animals that guide it, and the steam-power being used to supplement, if need be, the power of the team, and being susceptible of being turned on or off, while the machine continues in motion, without requiring the use of levers, or like instrumentalities, operated by hand, to throw the engine into and out of gear with the truck or driving wheels.

My invention has reference to the means used to provide for slip-motion—that is to say, means whereby the power-driven truck-wheels can, when necessary, rotate independently of the driving mechanism of the engine, and also of one another. For this purpose I propose to make use of an automatic-clutch arrangement, which I shall now proceed to describe by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a traction-engine embodying my improvements. Fig. 2 is a central vertical section through one of the truck-wheels and its supporting spindle or axle. Fig. 3 is an elevation of the inner face of the wheel. Fig. 4 is a plan of the part of the clutch carried by the wheel. Fig. 5 is an edge view of the same. Fig. 6 is a side view of the part of the clutch carried by the axle or spindle. Fig. 7 is an isometric view of the part of the clutch carried by the wheel.

The engine which, in Fig. 1, is shown in illustration of my invention is one in which the engine-shaft A is connected to the revolving rear axle, B, by an inclined shaft, C, geared at one end directly to the engine-shaft, and at the other end directly to the axle. It will be understood, however, that my invention is applicable not only to this arrangement of gearing, but to other arrangements, my device being intended to take the place of the usual pawl-and-ratchet arrangement, or other device for the same purpose, wherever that may be located.

In the present instance the rear truck-wheels, D, are mounted loosely on the revolving axle B. The hub of each wheel is cored or recessed on the inner face—that is to say, the face next to the boiler—to form a proper receptacle for the annular piece E, which constitutes one part of the clutch, and is provided on its exposed face with a series of inclined teeth, as shown. To prevent the clutch-piece from rotating independently of the wheel, it is provided with suitable projections to enter corresponding sockets in the hub, the projections, in this instance, being the radial tongues *a*, which enter mortises or grooves in the wheel-hub. The position which the clutch-piece E occupies in the hub is indicated clearly in Figs. 2 and 3. It is outwardly pressed by means of one or more springs, *b*, under compression between the hub and the back of the clutch-piece, and seated in suitable sockets *b'* in the hub. A retaining-flange or retaining-fingers, *c*, limit the extent to which the clutch can be projected from the hub by the springs. To act in conjunction with the piece E, I mount upon the spindle or axle B a corresponding clutch-piece, F, which is fixed to the axle, and normally occupies a position in which the part E will press up against and engage it. The edge of the part F when thus placed comes within the hub, or within a flange laterally projecting therefrom, and thus the parts of the clutch are effectually housed and shielded. In order to allow the two parts of the clutch to be separated from contact with one another—when, for instance, the engine is moved by animal-power alone—I attach to or form in one piece with the clutch-piece F a sleeve, G, which is provided with one or more longitudinal grooves to receive one or more splines, *e*, which project from the axle, and are also provided with set-screws *f*. By reason of the spline-and-groove arrangement the clutch-piece F can thus slide longitudinally of the axle, and can be held tightly by the set-screw in any desired position of adjustment thereon. There is sufficient space left between the clutch and the gear H on the axle (which, in this instance, is engaged by

the inclined shaft C) to permit the movement of the clutch-piece F necessary to separate it from its fellow piece in the hub. When the two parts are separated the retaining flange or fingers *c* prevent the clutch-piece E from being projected from its socket or thrown out of place.

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

In a traction-engine of the kind described, the automatic-clutch mechanism herein specified, the one part mounted in the hub of its wheel, and outwardly pressed by a spring or springs, the other part mounted on the axle or supporting-journal of the wheel, and adjustable to and from the hub part, the whole arranged and operating as set forth.

In testimony whereof I have hereunto set my hand this 25th day of April, 1879.

FRANK L. FAIRCHILD.

Witnesses:
M. BAILY,
M. GEORGIO.