(No Model.) 2 Sheets—Sheet 1.

A. D. BRYCE-DOUGLAS.

LINK MOTION FOR ENGINES.

No. 342,728. Patented May 25, 1886.

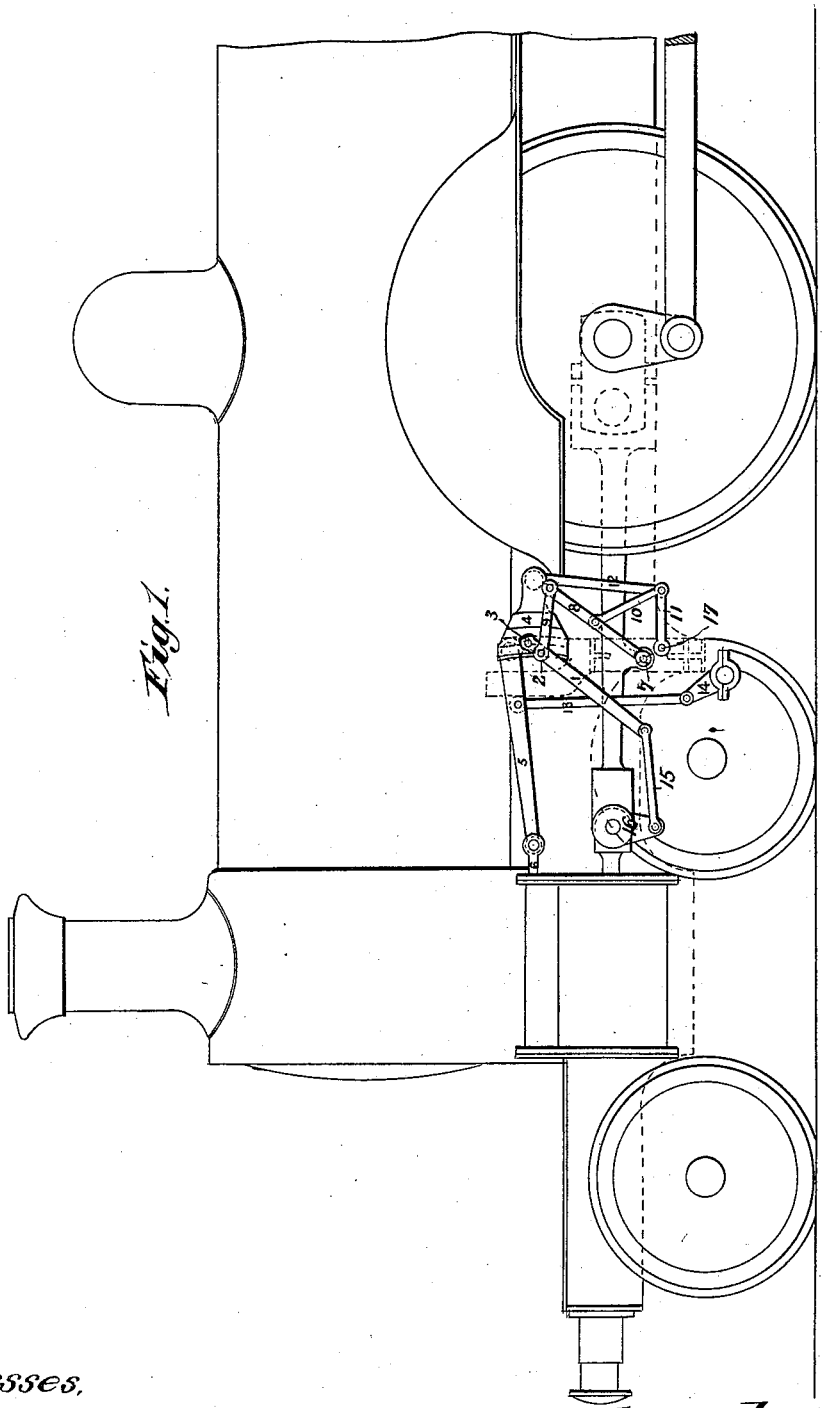

Fig. 1.

Witnesses,
Jos. L. Coombs
Robert Everett.

Inventor,
Archibald D Bryce-Douglas,
By James L. Norris.
Atty.

(No Model.) 2 Sheets—Sheet 2.

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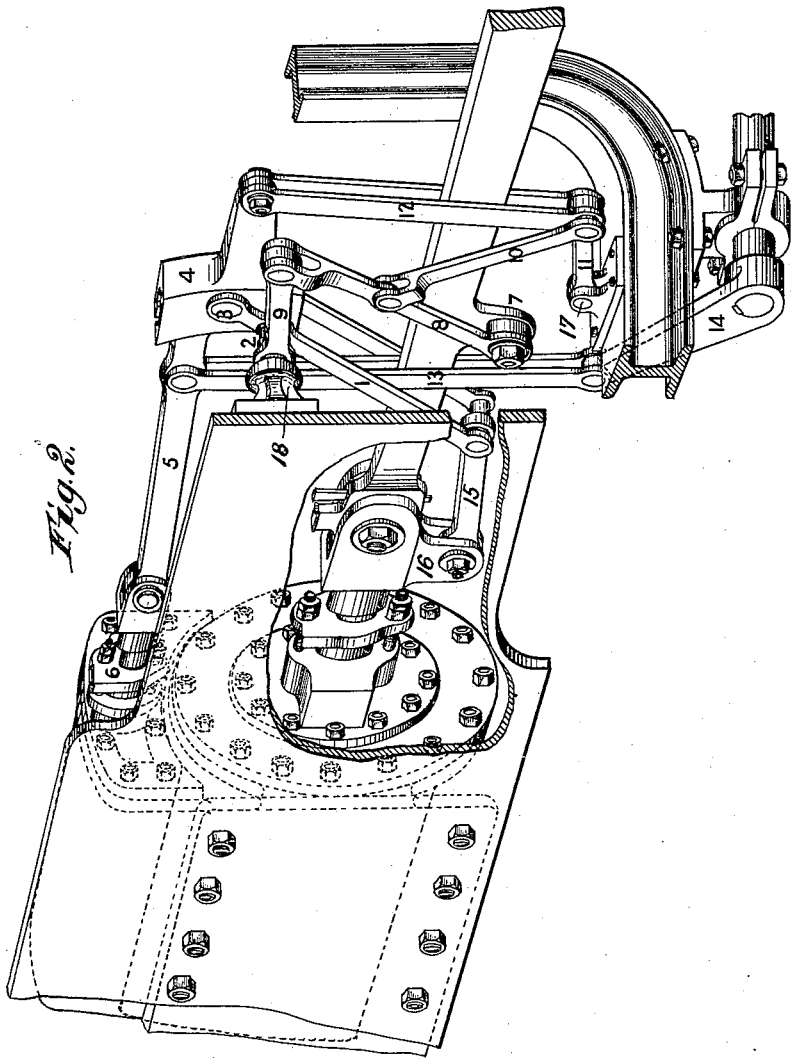

Fig. 2.

Witnesses.
Percy B. Hills
Robert Everett

Inventor:
Archibald D. Bryce-Douglas.
By James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

ARCHIBALD DOUGLAS BRYCE-DOUGLAS, OF SEAFIELD, ARDROSSAN, COUNTY OF AYR, SCOTLAND.

LINK-MOTION FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 342,728, dated May 25, 1886.

Application filed December 21, 1885. Serial No. 186,367. (No model.) Patented in England May 28, 1885, No. 6,506.

To all whom it may concern:

Be it known that I, ARCHIBALD DOUGLAS BRYCE-DOUGLAS, a subject of the Queen of Great Britain, residing at Seafield, Ardrossan, in the county of Ayr, Scotland, have invented a new and useful Link-Motion for Working the Slides or Valves of Steam and other Fluid-Pressure Engines, (for which I have obtained a patent in Great Britain, dated May 28, 1885, No. 6,506,) of which the following is a specification.

My invention relates to the arrangement of levers and links for working the slides or valves of steam or other fluid-pressure engines to stop, start, reverse, or to vary expansion. The motion for this purpose is derived from that of the piston-rod combined with a movement obtained from the connecting-rod. The levers and links which I employ may be variously arranged to suit the particular forms and conditions of the engines to which they are applied.

The accompanying drawings show the invention as applied to a locomotive-engine.

Figure 1 represents in side elevation a portion of a locomotive with my improved link-motion applied. Fig. 2 shows the link-motion devices in perspective, together with a portion of the engine-frame in section.

1 is a beam pivoted on fixed center 2 and connected at one end by a link, 15, to the piston-rod head 16, while at the other end it carries the curved link 4, pivoted thereto by a pin, 3; 8, lever pivoted at 7 to the connecting-rod of the engine and connected at its other end by a radius-rod, 9, to the fixed center 2, while to an intermediate point of its length is pivoted one end of a link, 10, whose other end is connected, respectively, by a link, 12, to the curved link 4, and by a radius-rod, 11, to a fulcrum, 17, on the framing; 5, connecting-rod to slide-rod 6; 13 14, gear for shifting rod 5 in curved link.

By referring to Fig. 2 it will be seen that the beam 1 is pivoted on a fixed center or fulcrum, 2, supported by a bracket or bearing, 18, that is formed on or attached to the engine-frame.

From the above-described arrangement it will be seen that the reciprocating motion imparted to the beam 1 by the piston-rod causes it to impart a to-and-fro motion to the link 4, while at the same time the latter will receive a rocking motion on the center 3 through the reciprocating motion imparted to the link 12 at right angles to the said to-and-fro motion of the curved link by virtue of the connection of link 12 to the connecting-rod through the lever 8 and link 10, and thus the link 4 will receive a compound motion similar to that imparted to an ordinary link-motion by two eccentrics.

Having thus described the nature of my invention and in what manner the same is to be performed, I claim—

In combination with the lever 1, oscillating on a fixed fulcrum in time with the piston, and the curved link mounted on the lever and fitted with a sliding block connected to the valve-rod, the lever 8 and the links 9, 10, 11, and 12 communicating a rocking movement from the connecting-rod to the link 4.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 8th day of December, A. D. 1885.

ARCHIBALD DOUGLAS BRYCE-DOUGLAS.

Witnesses:

E. D. DUNLOP,
Iron merchant, Glasgow,
ANDW. LAING,
Engineer, Govan, Glasgow.