D. A. WOODBURY.

LINK FOR STEAM ENGINES.

No. 188,273. Patented March 13, 1877.

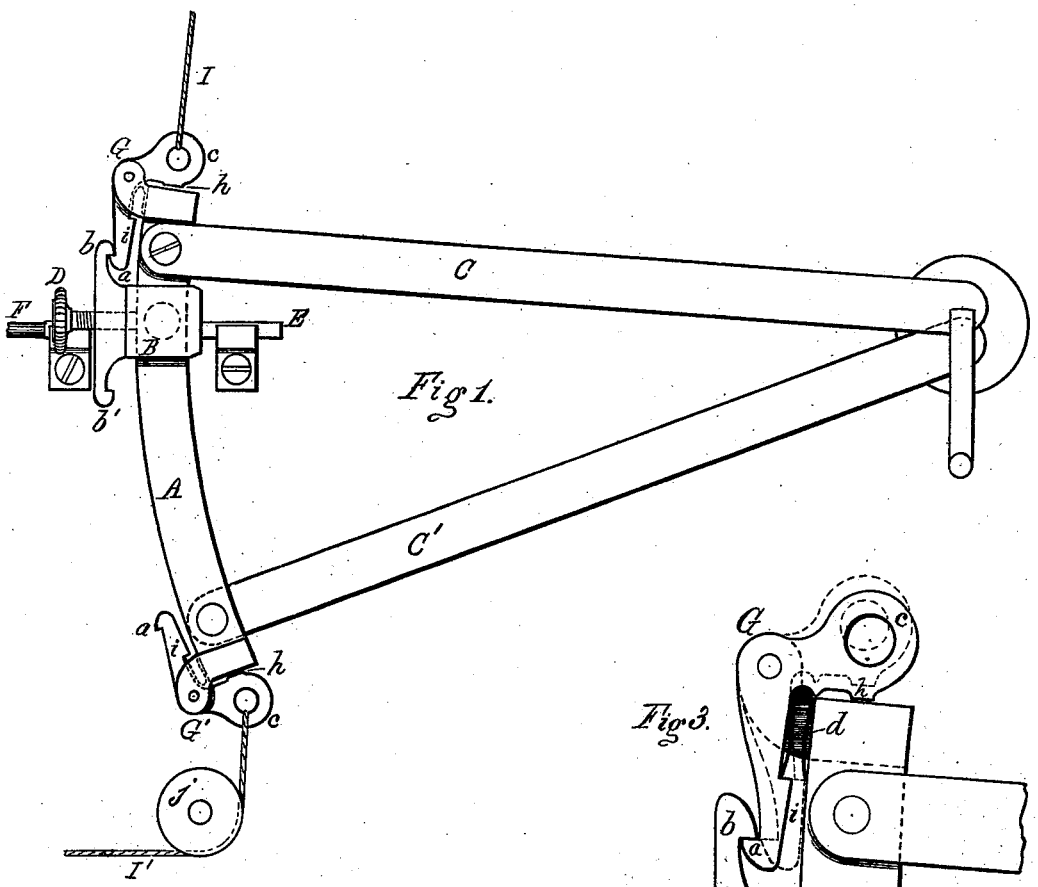

Fig 1.

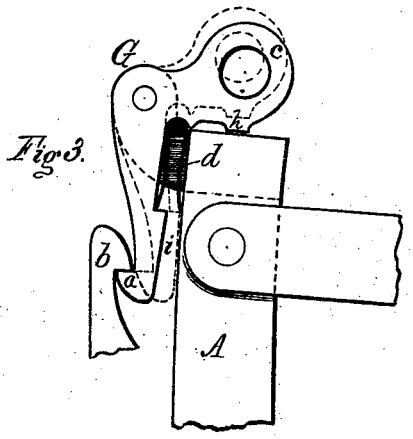

Fig 3.

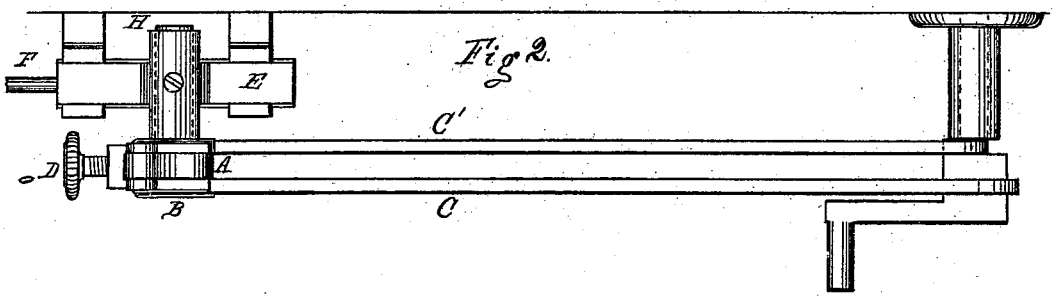

Fig 2.

WITNESSES.

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DANIEL A. WOODBURY, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN LINKS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **188,273**, dated March 13, 1877; application filed January 22, 1877.

To all whom it may concern:

Be it known that I, DANIEL A. WOODBURY, of Rochester, in the county of Monroe, and State of New York, have invented an Improvement in Links for Steam-Engines, whereof the following is a specification:

My invention consists chiefly in providing attachments upon an ordinary steam-engine link, whereby it may be shifted and the engine reversed at a distance from the engine-room, and, at the same time, be automatically locked and unlocked at both extremities of its adjustment.

In the accompanying drawing, Figure 1 is a side elevation of my invention. Fig. 2 is a plan view. Fig. 3 shows the locking device upon an enlarged scale.

In a large class of engines, particularly those used in drilling oil or artesian wells, and for hoisting purposes, it is necessary to reverse the engine at a distance from the engine-house, by means of a cord or similar medium. There has, however, always been a difficulty in retaining the link (the most common reversing-gear for such engines) at the extremities of its adjustment, owing to the angular thrust of the eccentric rods, and the weight of the link and its attachments.

My improvement provides a simple means of obviating this difficulty.

A, Figs. 1 and 3, is the link, made in the solid or bar form, as shown, and fitted to slide easily through a mortise in the block B. H, Fig. 2, is a gudgeon formed upon the latter, projecting into a bearing in the cross-head or slide E, thus allowing it to oscillate in the usual manner. F is the valve-stem, which is attached in any convenient way to the slide E; and C C′ are the eccentric rods.

The parts above described constitute one form of the ordinary link-motion.

G G′ are bell-cranks pivoted to the link at or near its extremities, or to suitable projections fastened thereon. One arm of these bell-cranks carries a loop, *c*, and upon the other is formed a hook, *a*. Hooks *b b′* corresponding to these latter are formed upon the block B, projecting toward the ends of the link, as shown.

The amount of oscillation allowed the bell-cranks G G′ is conveniently limited by the projections *h* and *i* coming in contact with the link-bar, the movement required being only sufficient to allow the hooks *a* and *b* to pass when detached, as shown in dotted lines in Fig. 2. Springs *d* force the hooks into contact when brought into the proper position.

I I′ are cords attached to the loops *c* and proceeding over guide-pulleys *j* to any point where it is necessary to reverse the engine.

It is obvious, from the nature of this construction, that when the link is at one extremity of its adjustment, as shown in Fig. 1, the catch G will retain it in such position. But when it is desired to shift it, a pull upon the cord I first unlocks the catch and then moves the link, and as the latter is thus forced to the reversed position, the catch G′ locks it automatically, till the operation is repeated in the opposite direction, by means of the cord I′.

It will thus be seen that I am enabled to reverse the engine, and automatically lock the link in either position at any required distance from the engine-house, by means of a single cord proceeding from each end of the link; that, when so locked, no further attention is necessary till the link is again shifted; and that the latter may be moved to any point in its adjustment and held by manipulating both cords. This latter point is of considerable importance in many cases; for, with a properly-designed valve, the link may be readily held at the point of no steam, thus stopping the engine. The necessity of manipulating the throttle is thereby obviated.

For the purpose of fixing the adjustment of the link at intermediate points, I provide the set-wheel D, the threaded shank of which is screwed into the link-block, so as to bear against the link, as indicated in Fig. 1. This is intended to supplement the locking devices above described for oil-well and other similar work, where it is often desirable to use the link as a cut-off gear for constant running in one direction.

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

1. The catch G, provided with stop-projections *h* and *i*, and spring *d*, in combination with the solid link A and block B, upon which is formed the hook *b*, constructed and operating substantially as set forth.

2. In combination with the solid link A, provided with automatic locking devices G *a* *b*, the set-wheel D, substantially as and for the purposes set forth.

D. A. WOODBURY.

Witnesses:
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