

(No Model.)

J. YOUNG.

VALVE CONNECTION FOR STEAM ENGINES.

No. 587,168.

Patented July 27, 1897.

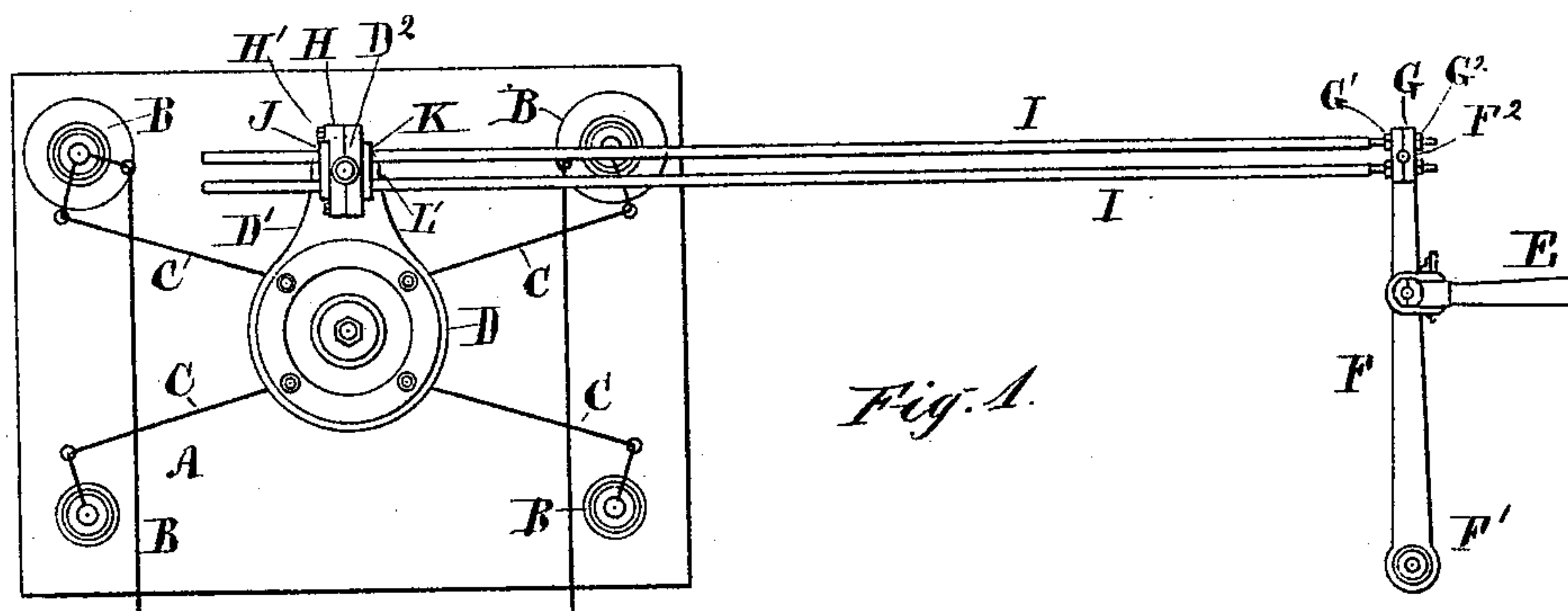


Fig. 1.

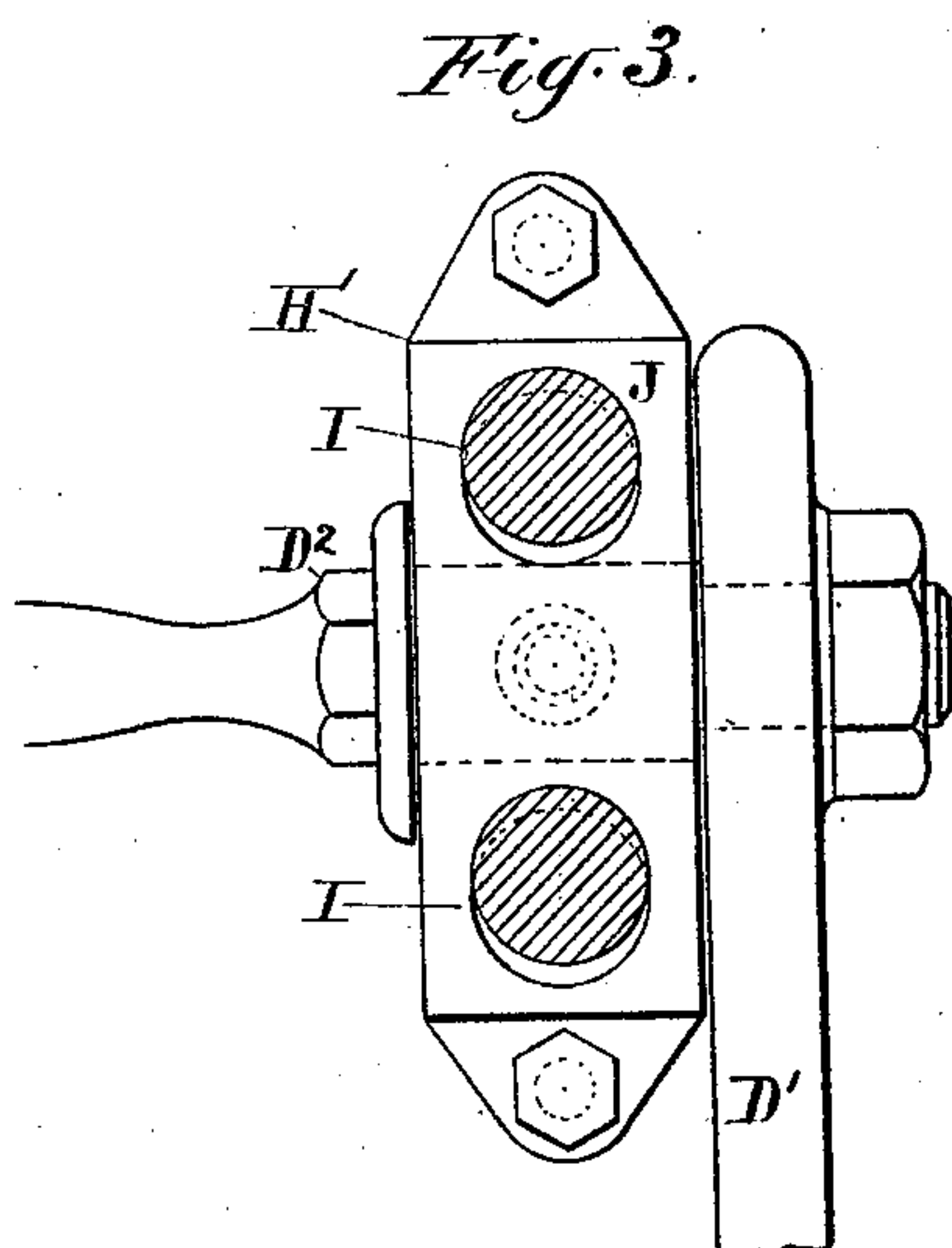


Fig. 3.

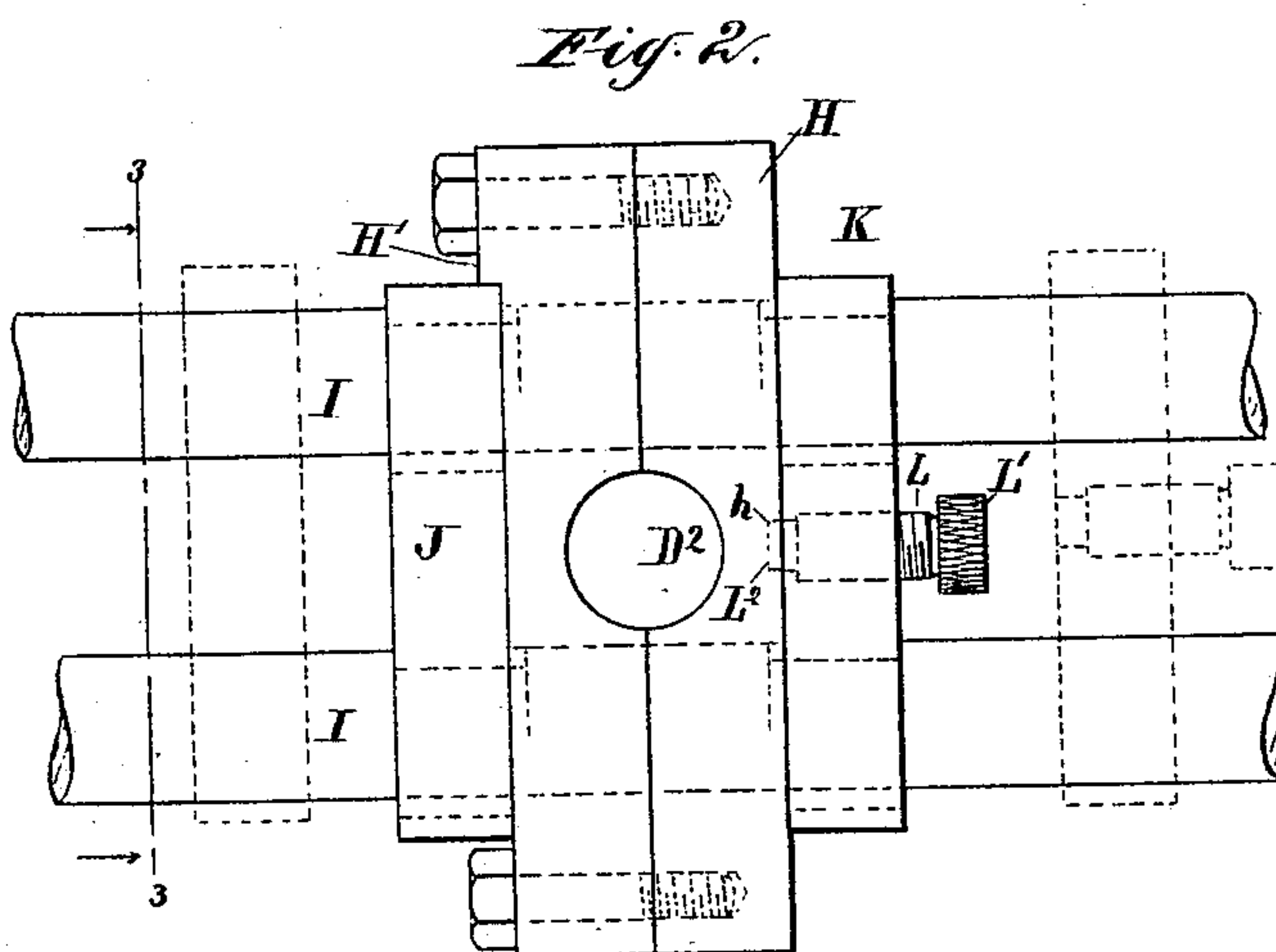


Fig. 2.

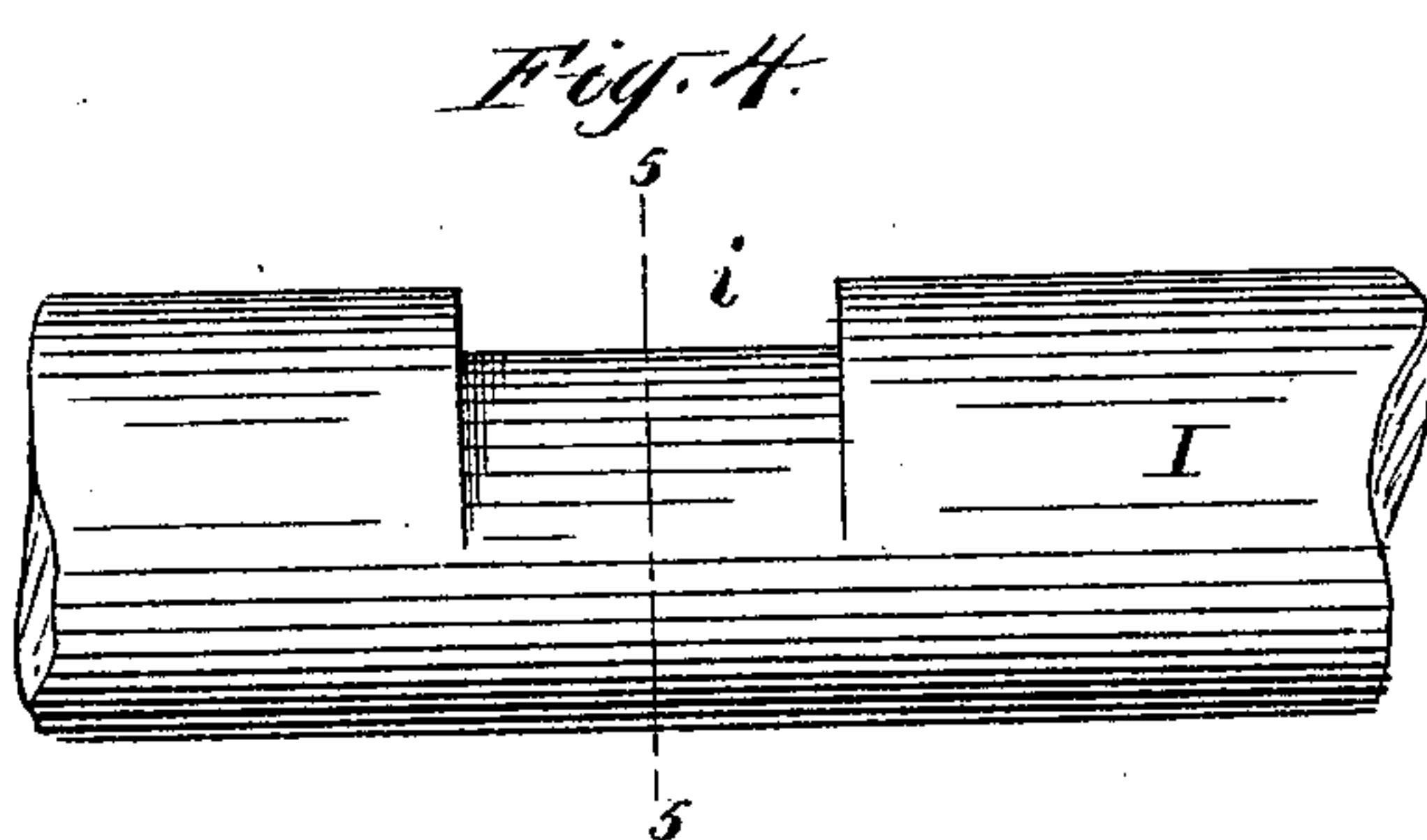


Fig. 4.

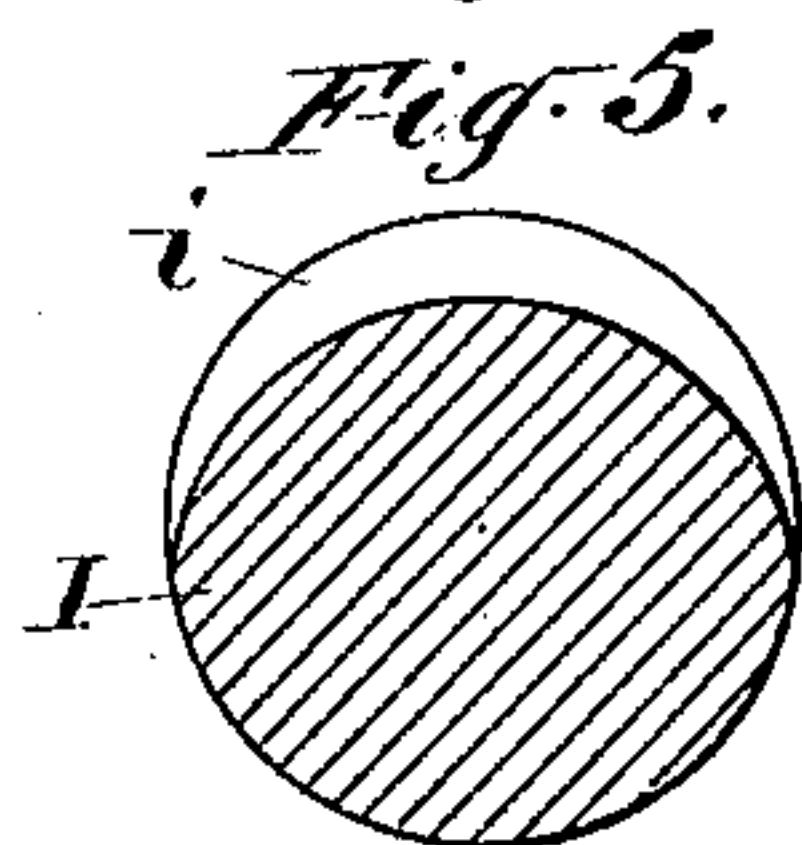


Fig. 5.

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JOHN YOUNG, OF NEWARK, NEW JERSEY.

VALVE CONNECTION FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 587,168, dated July 27, 1897.

Application filed January 19, 1897. Serial No. 619,731. (No model.)

To all whom it may concern:

Be it known that I, JOHN YOUNG, a citizen of the United States, residing at Newark, Essex county, in the State of New Jersey, have invented a certain new and Improved Valve Connection for Steam-Engines, of which the following is a specification.

I employ what I term a "latch-rod," which serves the purpose ordinarily attained by what is termed the "hook-rod." It is important in starting and stopping to disconnect the valves from the mechanism by which the engine works them automatically to allow the valves to be worked by hand. When the cylinder is properly warmed and all is ready, the connection with the eccentric or other operating device must be reestablished. The ordinary hook is open to several objections, one of the most serious of which is the liability in rapid running to unhook by the vibratory motions of the hook-rod or the inclination of the impinging surfaces.

My device is absolutely sure in its hold. It is disconnected without lifting any heavy bar or overcoming any considerable resistance. The manipulation for effecting the engagement again is equally easy.

The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is a side elevation on a small scale. Fig. 2 is a corresponding view of a portion on a larger scale. The dotted lines in this figure show the locking-pieces in their free and detached condition. Fig. 3 is a cross-section on the line 3 3 in Fig. 2. Figs. 4 and 5 are on a still larger scale. Fig. 4 is a side elevation, and Fig. 5 a cross-section on the line 5 5 in Fig. 4.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

A is the cylinder of a horizontal engine of the style known as "Corliss."

B are the valves, and C the connections to the valves from pins set in an ordinary wrist-plate D, the latter having an upright arm D', carrying a horizontal pin D².

E is the eccentric-rod leading from an eccentric on the main shaft (not shown) and connecting to a rocker-arm F, turning on a

fixed center F' on the bed-plate, and F² a horizontal pin set in the upper end.

So far as yet described all the parts may be of the ordinary and long-approved construction.

On the pin D² is mounted a block H, formed in two parts to embrace the pin and held together by bolts H².

I I are two smoothly-finished rods mounted parallel to each other and connected to the upper end of the rocker-arm F and extending through corresponding holes bored in the block H above and below the pin D². One face of the block H, that on the right in Fig. 1, is plane. The opposite face is plane up to an offset H' a little above the upper rod I. In the center of the plane face, that on the right, is a cylindrical hole h. The rods I are cylindrical except for two notches i i on the upper side of each, which perform important functions.

J and K are lock-pieces matching against the faces of the block H and each bored to match the cylindrical rods I I. The notches i are adapted to allow these lock-pieces to drop down a little and engage therewith. The lock-piece J on the left side in Fig. 1 matches under the offset H' when the lock-piece is dropped down into its notch i and holds it down securely. The opposite lock-piece K is similarly free to be dropped into the notches i to effect the engagement, but there is no offset to prevent its being raised at any time. As an assurance against its ever being accidentally raised, and also to avoid lost motion, I employ a screw L, having a milled head L' and a point L², which engages in the hole h in the block.

In starting the engine, the slides J and K having both been lifted out of their engagement with the notches i and slipped away to any required distance from the block H, the engineer takes hold of the ordinary handle forming the extension of the pin D² and rocks the wrist-plate freely in one direction and the other, the block H sliding freely backward and forward on the rods I, these rods playing idly in one direction and the other as they shall be moved by the rocker-arm F, the notches i i being of no effect under these conditions. When it is desired to engage or "hook on" the engine, the engineer, taking

advantage of the proper moment when the rods I are thrust farthest through the block, moves the slide J toward the block H until it is over its proper notches *i i*, when it sinks by gravity into engagement therewith. On the return motion the attendant transfers his attention to the opposite lock-piece K, preferably grasping it by the milled head L' of the screw L, and moves this lock-piece into contact with the block, in which position it will be over its notches *i i* and will sink by gravity, aided, if necessary, by the force of his hand, into engagement with the notches. Now the engine is hooked on, ready to receive its motion from the eccentric, in the ordinary manner, and the completeness of the engagement being insured by the attendant turning the screw L and engaging the point L' in the hole *h*, and continuing the turning motion until he has taken up all the slack, if any, the parts will hold with absolute certainty. In this condition the engine runs for any period. When it is desired to disconnect or "unhook," the attendant takes hold of the milled head L', giving it a few turns in the direction to unscrew, and, applying a gentle lifting force when the wrist-plate is rocked in that direction, it is easily raised and moved outward on the cylindrical bodies of the rods I. On the return motion the rods I move freely through the block H, carrying the lock-piece J away therefrom, and the attendant then easily lifts it and moves it or allows it to be moved outward upon the cylindrical surface of the rods I on that side of the block. Now the engine is completely unhooked.

The rods I may serve by being welded or otherwise firmly united together at any point sufficiently distant from the block H, but it may be desirable to adjust them to compensate for imperfections or wear. I provide for extending them quite to the point of connection with the rocker-arm and making them separately adjustable endwise, as follows: G is a block carried on the pin F², and I I are the straight rods extending through this block and secured by nuts G' G². Their positions may be adjusted endwise by turning these nuts. When once properly set, they may remain an indefinite period.

After the lock-piece K has sunk into its proper notches *i* the screw L, by being turned in the proper direction, not only engages in the hole *h* and reliably holds the piece K against being shifted endwise, so as to unlock the connection, but also by being turned "home" takes up the slack which might otherwise exist between the parts and makes a firm though easy-turning joint.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. Instead of making the rods cylindrical they may be square or any other section, the holes in the block H and in the lock-pieces J K being correspondingly modified.

The block H is preferably, like the block G, made in two parts, so as to each half upon its pin. The abutting faces of each may be dressed off by filing or other ordinary means, so as to let the halves come closer together whenever the bearing on the pin shall have become worn so as to need it.

Although I have shown my invention as applied to the wrist-plate of a Corliss engine, it will be obvious that it may apply equally to all the various forms of valve motion having rocker-arms or analogous devices carrying a pin analogous in function to the pin D².

Parts of the invention can be used without the whole.

I prefer to use the two rods I because they hold the parts efficiently against torsional displacement and receive and transmit the thrusts and torsional forces directly.

I claim as my invention—

1. In a steam-engine having a pin D² connected to the valves, and two parallel rods with connections for reciprocating them by the motion of the engine, each rod having two notches *i, i*, a block H turning on such pin and loosely embracing such rods and means for locking both the rods in the block or allowing it to slide freely at will, combined substantially as herein specified.

2. In a steam-engine having a pin D² connected to the valves and two notched rods I with connections for reciprocating them by the motion of the engine, a block H turning on such pin and loosely embracing such rods, and the two locking-pieces J and K, also embracing such rods and adapted to be readily shifted in position by the attendant, for locking the rods in the block or allowing them to slide freely at will, combined substantially as herein specified.

3. In a steam-engine having a pin D² connected to the valves and a rod I with connections for reciprocating it by the motion of the engine, a block H turning on such pin and loosely embracing such rod and having an offset H' on one face the locking-piece J also embracing said rod arranged to engage with such offset so as to be held thereby in the position for maintaining the locked condition, and the locking-piece K acting on the opposite face of the block and controlling the condition, all combined and arranged for joint operation substantially as herein specified.

4. In a steam-engine having a pin D² connected to the valves two parallel rods I and I with a notch *i* in each, a block H turning on such pin and loosely embracing such rods, and the block G carried on the rocker-arm F for reciprocating it by the motion of the engine, and separate adjusting means G', G², for each rod, in combination with each other and with the locking-piece J and offset H² and the locking-piece K and independent holding means for the latter, arranged to serve substantially as herein specified.

5. In a steam-engine having a pin D² con-

5 nected to the valves, and reciprocated rods I,
I, with notches *i* as shown, the block H, the
locking-piece J for acting on one face and be-
ing confined against end motion by the offset
5 H' on the block, the locking-piece K for act-
ing on the opposite face, and the screw L in-
serted in the piece K and arranged to per-
form the double function of confining such
locking-piece against endwise movement and
10 also taking up any slack in the junction of

the rods with the block, all substantially as
herein specified.

In testimony that I claim the invention
above set forth I affix my signature in pres-
ence of two witnesses.

JOHN YOUNG.

Witnesses:

JAMES J. ALLEN,
G. A. WATTS.