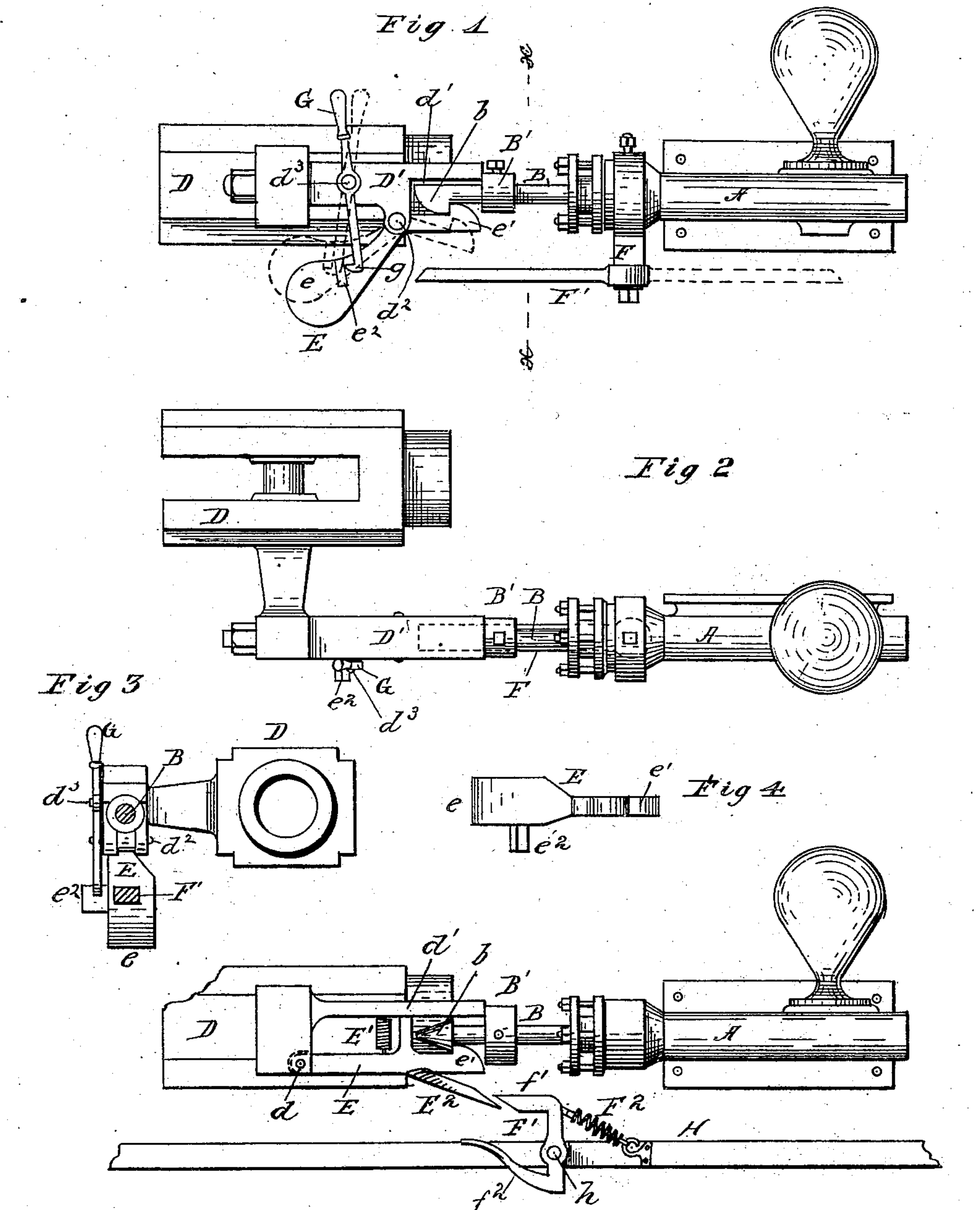


(No Model.)

P. S. KINGSLAND.
STEAM PUMPING ENGINE.

No. 272,264.

Patented Feb. 13. 1883.



Witnesses
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Fig 5

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PHILIP S. KINGSLAND, OF CHICAGO, ILLINOIS.

STEAM PUMPING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 272,264, dated February 13, 1883.

Application filed November 20, 1882. (No model.)

To all whom it may concern:

Be it known that I, PHILIP S. KINGSLAND, a citizen of the United States, residing at the city of Chicago, in the county of Cook, in the State of Illinois, have invented a certain new and useful Improvement in Steam Pumping-Engines, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a steam-engine pump and that part of the engine to which it is attached, showing one form of my improvement. Fig. 2 is a plan view of the same. Fig. 3 is a sectional view on the line xx in Fig. 1, looking to the left. Fig. 4 is a plan view of the pivoted latch which connects the pump-rod with the cross-head. Fig. 5 is a side elevation of the same parts shown in Fig. 1, but illustrating another form of my improvement.

The same letters denote the same parts in all the figures.

My invention relates to pumps operated by steam-engines; and it consists in a detachable coupling between the pump and the engine, the object being to provide for suspending and resuming the operation of the pump without interfering with the working of the engine.

In the drawings, A denotes the cylinder of a pump, and B the pump-rod. D denotes the cross-head of the engine. The pump-rod B, instead of being attached to the cross-head of the engine in the usual way, has on its outer end a hook-like enlargement or projection, b . A connecting-arm, D' , projects from the cross-head to meet the pump-rod. This arm is considerably thicker than the pump-rod, and it is rabbeted at the outer end, so as to allow the outer end of the pump-rod to pass under the upper part, d' , of the arm. A collar, B' , adjustably set on the pump-rod abuts against the end of the part d' , and thus locks the piston-rod to the arm one way. A latch, E, pivoted on the lower side of the arm D' at d^2 , just back of the rabbet, engages with the hook b , and so locks the arm to the pump-rod the other way. This latch has a weighted arm, e , at the other side of the pivot, which keeps the forward end, e' , up against the hook b . The latch is bent so that its weighted end hangs considerably below the arm D' when the forward end engages with the pump-rod. The pump-cylinder A carries near its outer end a depending bracket,

F, on which is horizontally pivoted a brake-arm, F' , of such a length that when it is turned directly toward the latch E the outer end of the brake-arm will, during the inward stroke of the pump, impinge on the weighted end e of the latch and lift it—an effect which is facilitated by a bevel on the end of the brake-arm corresponding to the slope of the forward and under side of the weighted arm of the latch. The lifting of the weighted end necessarily lowers the forward end, e' , as shown in dotted lines in Fig. 1, so that it becomes disconnected from the hook b of the pump-rod, which is consequently no longer drawn by the connecting-arm D' , but after being thrust into the cylinder to the limit of the stroke remains unaffected by the motion of the engine. The weighted arm e of the latch has on its outer side near the end a lug, e^2 . On the side of the connecting-arm D' , and almost vertically above the lug e^2 , when the latch is engaged with the pump-rod, a lever, G, is pivoted at d^3 . Its lower end comes down far enough to engage with the lug e^2 , and has an L-shaped projection, g , toward the weighted end of the latch. This projection, engaging with the lug when the latch is locked with the pump-rod, necessarily pushes the lever a little out of plumb, so that when the weighted arm is raised by the brake-arm F' the natural poise of the lever will swing its lower end back, so that the projection g will hook under the lug e^2 , and thereby hold up the weighted end of the latch, so as to prevent its forward end from engaging with the end of the pump-rod. This automatic motion of the lever G may be aided by setting on the arm D' a spring whose elasticity shall press the lever toward the lug. When it is desired to connect the pump with the engine again, the brake-arm F' is swung out of the way of the latch E into the position shown by dotted lines in Fig. 1, and the upper end of the lever G is struck backward, thereby swinging the projection g from under the lug e^2 . Obviously the weighted end e of the latch will then fall, and thus throw up the forward end into line with the pump-rod, so that at the farther end of the stroke the two will impinge. If necessary, the pump-rod may be drawn out of its cylinder by a bar or wrench, so as to bring it within reach of the stroke. Both latch and pump-rod have their corresponding ends bev-

eled, as shown in Fig. 1, so that the latter will readily slip under the former until they interlock, when the connection of the pump with the engine is again perfect.

5 It is obvious that the appliances I have described can easily be operated while the engine is in rapid motion. It is equally obvious that such a provision for connecting and disconnecting the engine and pump is of great utility, as it often happens that it is necessary to
10 run the engine for other purposes when the pump is not wanted, and is indeed a serious hinderance. By means of the apparatus which I have described I am not only enabled to
15 operate the engine without the pump, but can also, in case of a sudden emergency requiring the use of the pump, connect the latter instantly without stopping or retarding the engine.

20 Fig. 5 illustrates some modifications of detail in the devices which I have been describing. It shows the latch E pivoted at the end farthest from the pump, instead of near the middle, the pivot being at *d* on the cross-head
25 itself. It is held up to the end of the pump-rod by a spring, *E'*, connecting it with the lower side of the connecting-arm *D'*, which is reduced for its whole length to about the thickness of the part *d'*. (Shown in Fig. 1.) From
30 the lower side of the latch and forward of the middle a trip-arm, *E²*, projects downward and forward, so as to engage with the brake-arm *F'*, when the latter is swung up into the line of its motion. This brake-arm is shaped somewhat like a yoke or bell-crank, and is vertically, instead of horizontally, pivoted at *h* on
35 the bed-plate H or other fixed support, almost vertically below the mouth of the pump-cylinder. The pivoted point is near the middle of the stem or trunk of the yoke. When this is
40 turned into a horizontal position, the branch *f'*, which engages with the trip-arm *E²*, projects upward nearly at right angles from the right-hand end of the stem, the other branch, *f²*,
45 (which constitutes a handle,) projecting upward and backward from the left end. The brake arm or yoke is held nearly in this position by a spring, *F²*, which draws the right-hand end toward the bed-plate. The branch
50 *f'* is then out of reach of the trip-arm of the latch. By pulling downward and forward on the handle *f²* the stem may be turned into a vertical position, as shown in Fig. 5, the branch *f'* projecting horizontally forward, so
55 as to catch the trip-arm *E²* on the forward stroke and pull it down, and with it the latch, out of engagement with the end of the pump-rod, so that on the return-stroke it will not draw the pump-rod back with it. The parts
60 are preferably so arranged that the engagement of the trip-arm with the brake-arm shall

take place at the end of the forward stroke. The pump-rod will then, as shown in the drawings, have range enough to recede into the cylinder out of reach of the connecting-arm *D'*.
65 Ordinarily the impetus of the stroke will be sufficient for this purpose; if not, the rod can be thrust back by applying a bar or wrench to it. The handle *f²* can be let go as soon as the forward stroke is ended. When the connection is to be restored the pump-rod is drawn
70 out again, so that its outer end may meet the latch on the forward stroke, when the beveled end of the latch will slip past the similar end of the rod and be brought up again by the
75 spring *E'*, so that the two hook ends will interlock, and the connection will be complete again. The particular construction and arrangement thus described will ordinarily be found preferable to that of Fig. 1. 80

In Fig. 5 the hook end *b* of the pump-rod is shown developed into a conical or semi-oval tip, whose base projects beyond the cylindrical periphery of the rod equally on all sides. With this construction, if the rod be accidentally
85 turned, its engagement with the latch will not be impaired.

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

1. The combination of the cross-head, the
90 pump-rod, an automatically-engaging coupler joining the two, and a tripping device arranged to be brought into or out of engagement with the coupler at the will of the operator, substantially as and for the purpose described. 95

2. The pump-rod provided with the beveled hook end *b*, the connecting-arm *D'*, the pivoted latch E, provided with the beveled hook end
100 *e'*, and the pivoted brake-arm *F'*, arranged at a certain point in its circuit to trip the latch, all in combination substantially as and for the purpose described.

3. The pump-rod B, provided with the beveled laterally projecting tip *b*, the cross-head D,
105 the latch E, pivoted at one end on the cross-head and provided at the other with the beveled hook *e'*, the trip-arm *E²*, arranged to project from the latch, the pivoted brake-arm *F'*, provided with the branch *f'*, arranged to en-
110 gage with the trip-arm at a certain point in its circuit, and automatic means for holding the hook end of the latch in engagement with the tip of the pump-rod, and for holding the brake-arm out of the position of engagement
115 with the trip-arm, all in combination substantially as and for the purpose described.

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