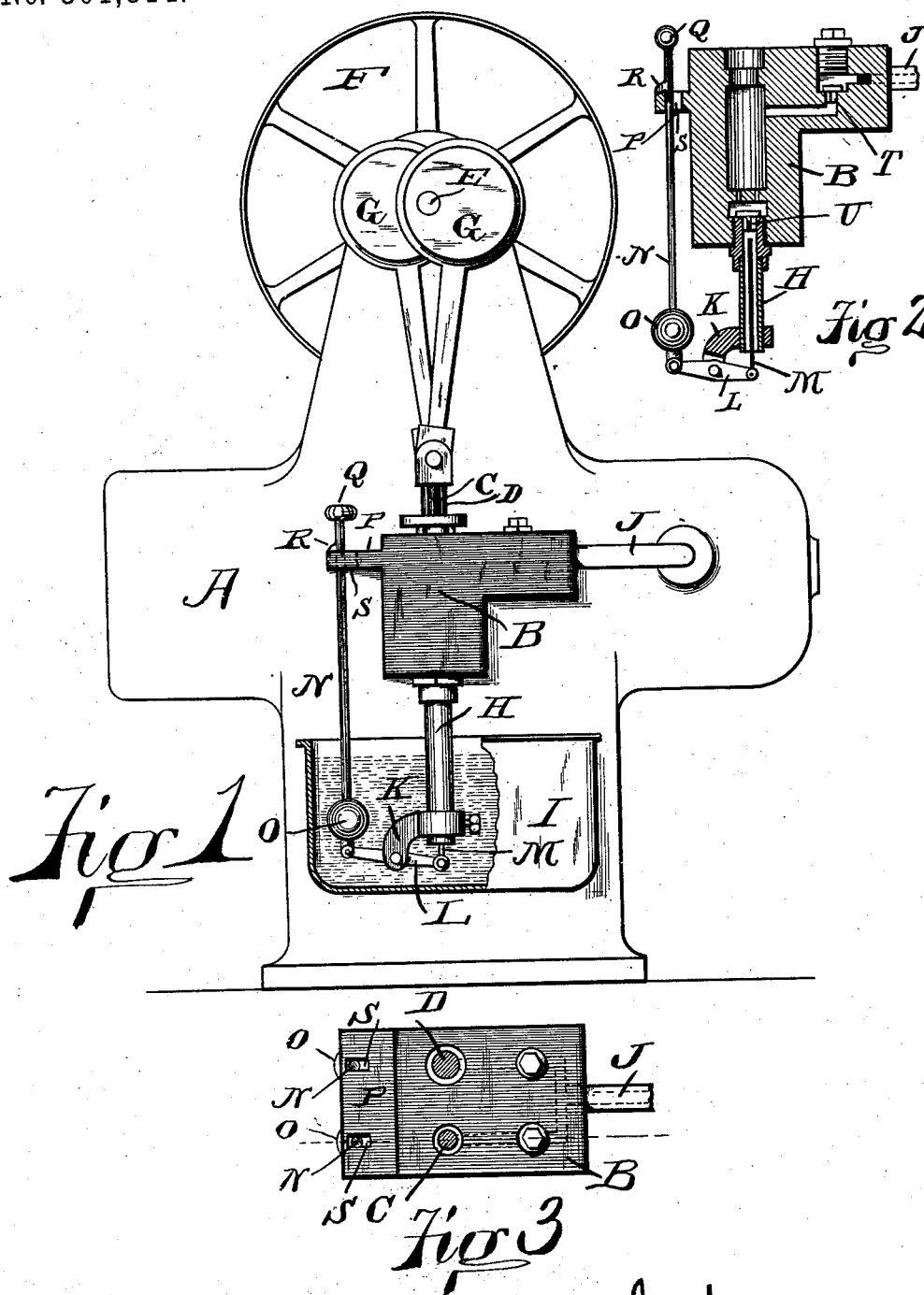


(No Model.)

A. GORDON & G. T. REISS.
HYDRAULIC PRESS.

No. 301,814.

Patented July 8, 1884.



Witnesses:
John R. Woods
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UNITED STATES PATENT OFFICE.

ALEXANDER GORDON AND GEORGE T. REISS, OF HAMILTON, OHIO,
ASSIGNORS TO NILES TOOL WORKS, OF SAME PLACE.

HYDRAULIC PRESS.

SPECIFICATION forming part of Letters Patent No. 301,814, dated July 8, 1884.

Application filed March 7, 1884. (No model.)

To all whom it may concern:

Be it known that we, ALEXANDER GORDON, a subject of the Queen of Great Britain, and resident of Hamilton, Butler county, Ohio, and GEORGE T. REISS, a citizen of the United States, and resident of Hamilton, Butler county, Ohio, have invented certain new and useful Improvements in Hydraulic Presses, of which the following is a specification.

This invention pertains to presses operated by the pressure of liquid produced by the action of one or more small plungers.

The invention relates to improvements in the pump used for supplying the press with liquid, the object of the invention being to provide for the more perfect control of the action of the pump upon the press. It is common in hydraulic presses to provide the pump with two plungers of different areas, the intention being that both pumps shall run in producing the lighter pressure, then the large plunger only until a pressure beyond its capacity is reached, and the final pressure be given by the small plunger running alone. The stopping and starting of these plungers have been effected by the means of the shifting of belts; but the shifting of the belt is very objectionable where a heavily-resisted reciprocating motion is to be regulated thereby. Pumps for hydraulic presses have also been regulated by means of adjusting-valves arranged to control the flow of liquid from the pumps; but an objection attaches to all externally-controlled valves operated in connection with the exceedingly heavy pressures employed in the operation of hydraulic presses. Such valves are difficult to seat, and leakage from them can hardly be prevented. Furthermore, the operation of shifting belts or of adjusting-valves is slow, whereas it is desirable that the pump should be under absolute control, so that its action may be stopped when a certain pressure is reached. In our present invention we control the action of the press by tripping the suction-valve, which we are enabled to do instantaneously and easily.

Our invention will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of a hydraulic press-cylinder fitted with a pump embodying our improvement; Fig. 2, a vertical section of the pump; and Fig. 3 a plan of the pump.

In the drawings, A represents a cylinder of a hydraulic press, such a press, for instance, as is commonly employed in forcing car-wheels on and off their axles; B, the force-pump; C, the small plunger of the pump; D, the large plunger of the pump; E, the usual eccentric-shaft; F, the driving-belt; G, the two eccentrics arranged as usual to operate the two plungers through the medium of eccentric-rods; H, the suction-pipe of the pump; I, the tank from which the suction-pipe takes its supply of liquid; J, the discharge-pipe from the pump to the hydraulic cylinder of the press; K, a fulcrum-hanger secured to the lower end of the suction-pipe; L, a lever fulcrumed to this hanger; M, a rod attached to one end of this lever and reaching idly upward; N, a rod attached to the other end of the lever and reaching upward; O, a weight attached to the rod N and tending to depress that end of the lever L to which the rod N is attached; P, a shelf-like lug projecting outward from the body of the pump; Q, a knob or handle at the upper end of the rod N; R, a catch-lug projecting from the body of the rod N; S, a mortise-opening in the lug P, through which works the rod N; T, the discharge-valve of the pump; and U the suction-valve of the pump.

The pump is constructed and operated as usual, each plunger being provided with independent suction-valves and with independent discharge-valves delivering to a common discharge-pipe. In the present case each division of the pump has an independent suction-pipe.

While our invention is of special value in connection with pumps provided with a pair of plungers it possesses a full value in connection with a single-plunger pump. There is a valve-rod, pivoted lever, hand-rod, &c., for each plunger in case more than one plunger is employed, as in the case illustrated in the drawings. The catch-lug R engages over the lug P and prevents the rod N from descending. In this position the valve-rod M will

simply stand idle in the suction-pipe, and the suction-valve will operate precisely as usual. If the knob Q be pushed to the right the catch-lug will become disengaged, and the weight
5 O will cause the lever L to oscillate and push the valve-rod upward. This will trip the suction-valve, and the plunger to which this suction-valve pertains will instantly cease forcing liquid into the hydraulic cylinder. Lift-
10 ing the rod N and re-engaging the catch-lug R permits the suction-valve to resume its normal position. By means of this device the inflow of a plunger can be stopped by the simple act of pushing sidewise upon the knob Q.
15 There is no pressure to resist the action of the valve-rod, as it is the duty of this rod to simply hold the valve open after it has opened in the regular performance of its work.

Instead of tripping the suction-valve proper,

a trip-valve may be provided near the suction- 20 valve, and discharge its backflow into the suction-pipe or into a liquid-vessel.

We claim as our invention—

1. In a device for regulating the action of a force-pump, the combination of a valve below 25 the plunger of a pump, a lever for tripping the valve, a weight for depressing the lever, and means for sustaining the weight when the valve is not to be tripped.

2. In a hydraulic press, a double-plunger 30 pump and a pair of valve-tripping devices, combined substantially as and for the purpose set forth.

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Witnesses:

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