G. A. GRAY, Jr.

Hydraulic Wheel-Presses.

No. 138,393. Patented April 29, 1873.

Fig. 1

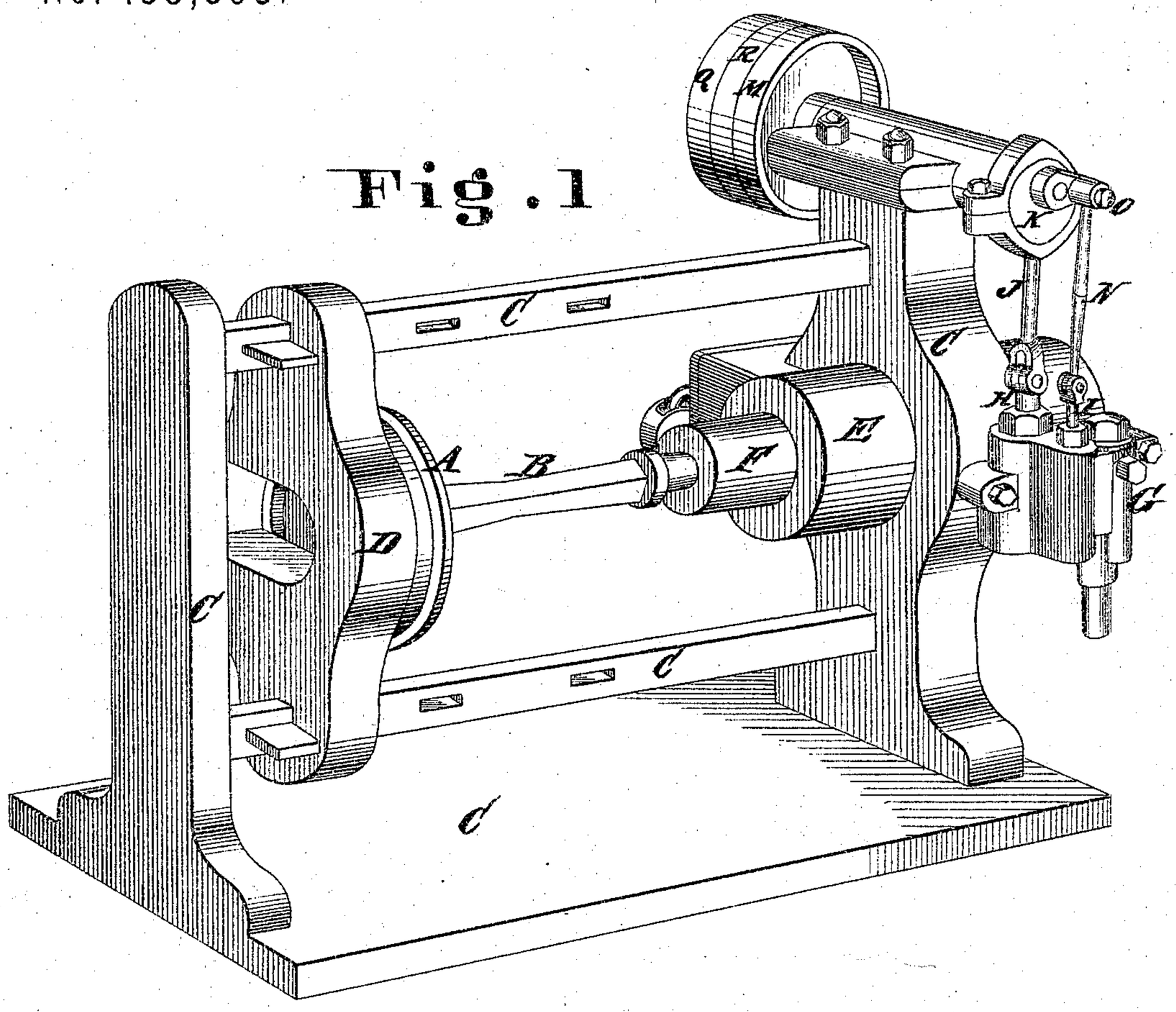


Fig. 2

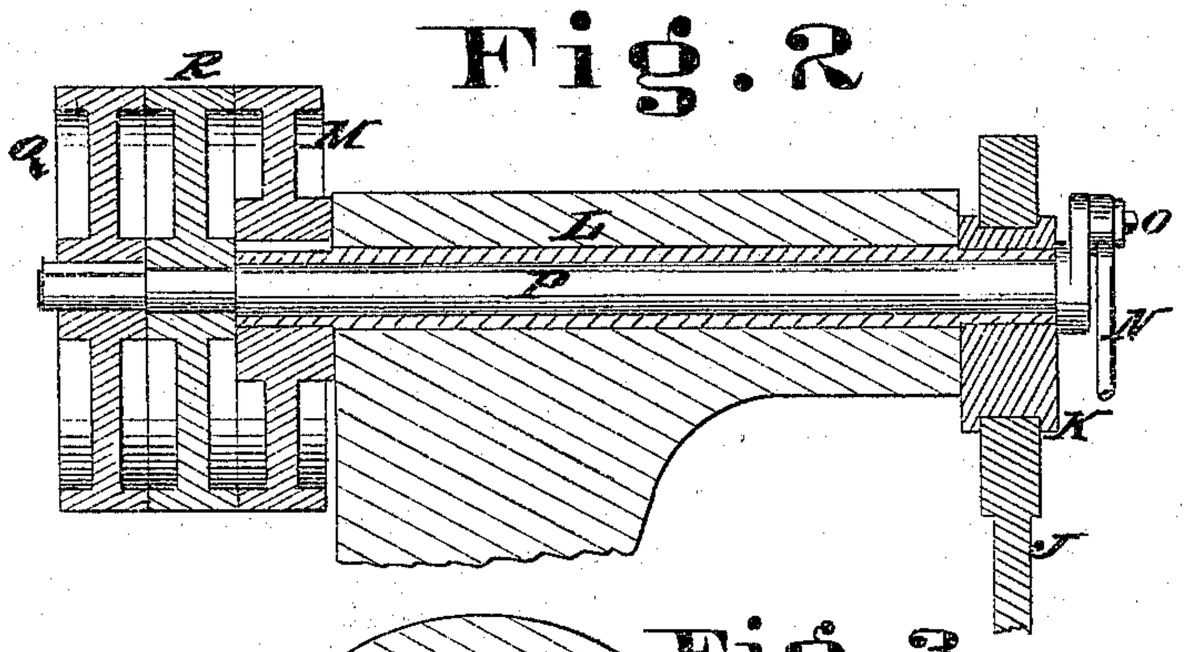
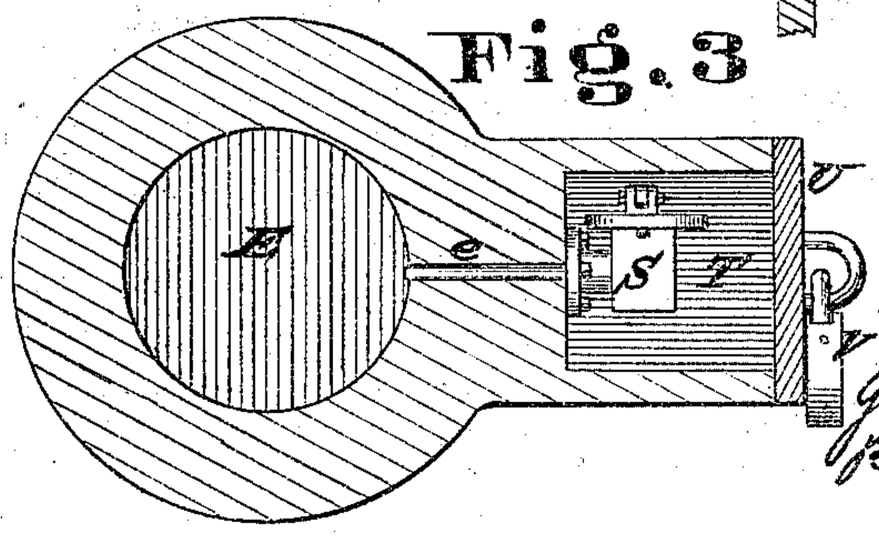


Fig. 3



Attest

Henry Millward

P. Abbott Hunter

Inventor

Geo. A. Gray Jr.

By F. Millward

attorney.

UNITED STATES PATENT OFFICE.

GEORGE A. GRAY, JR., OF HAMILTON, OHIO.

IMPROVEMENT IN HYDRAULIC WHEEL-PRESSES.

Specification forming part of Letters Patent No. **138,393**, dated April 29, 1873; application filed August 20, 1872.

To all whom it may concern:

Be it known that I, GEORGE A. GRAY, Jr., of Hamilton, Butler county, State of Ohio, have invented a certain new and useful Improvement in Hydrostatic Apparatus for Forcing Wheels on Axles and other Uses, of which the following is a specification:

Nature and Objects of Invention.

My invention consists in the provision in the water-forcing mechanism of two plungers of different diameters or areas for the purpose of rapidly charging by means of the large one and forcing partially, and completing the work, by the slower but more powerful small plunger.

Description of the Accompanying Drawing.

Figure 1 is a perspective view of a hydrostatic press embodying my invention. Fig. 2 is a section showing the driving mechanism of the two plungers. Fig. 3 exhibits in section the "lock-up" safety-valve.

General Description.

A B exhibit a wheel and axle, respectively, under pressure. C is the stationary frame of the machine; D, an adjustable pressure-head, adapted to suit different lengths of axles; E, the forcing-cylinder, and F the plunger of the same. G is an ordinary valve-chamber of a pump, fitted with the customary supply and discharge valves. In connection with this single chamber two plungers, H I, are fitted to operate. They are of unequal sizes, as shown. The large one, H, is driven by eccentric-rod J, eccentric K, hollow shaft L, and driving-pulley M, and the small one is driven by pitman N, crank-wrist O, shaft P, and driving-pulley Q, the shaft P passing through the hollow shaft L. One belt is used to operate both plungers, being shifted by the usual appliances from one to the other, and, when necessary to stop the machine, running on loose pulley R. The cylinder E connects with a safety-valve by duct *e*. This valve S is located in a chamber, T, and when properly loaded is locked up by means of hinged door U and padlock V, so that only a certain amount of pressure can be put upon the machine, and employees are prevented from increasing it.

In operation, the belt is first shifted over to pulley M, and the plunger H being set in motion, the cylinder E is rapidly filled, and the work is partially accomplished. When the pressure reaches the limit of power of the large plunger the belt is shifted over to the pulley Q, and the small plunger I completes the work by increasing the pressure to the safety-valve limit.

Claims.

1. In a hydrostatic press, the combination, with a single pump, of plungers H and I of unequal area, and arranged for independent action, substantially as and for the purpose specified.

2. The combination, in a hydrostatic press, of the plungers H I of unequal areas, rods J N, crank and eccentric K O, shafts L P, and driving-pulleys M Q, connected and operating substantially in the manner and for the purpose specified.

In testimony of which invention I hereunto set my hand.

G. A. GRAY, JR.

Witnesses:
CHAS. A. BAUER,
W. N. GRAY.