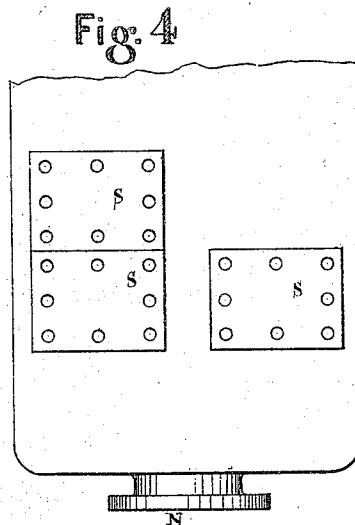
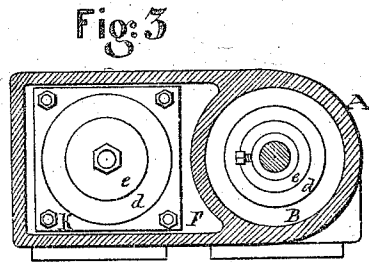
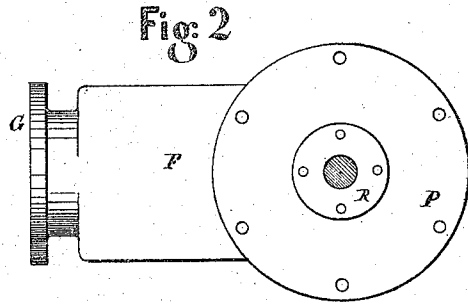
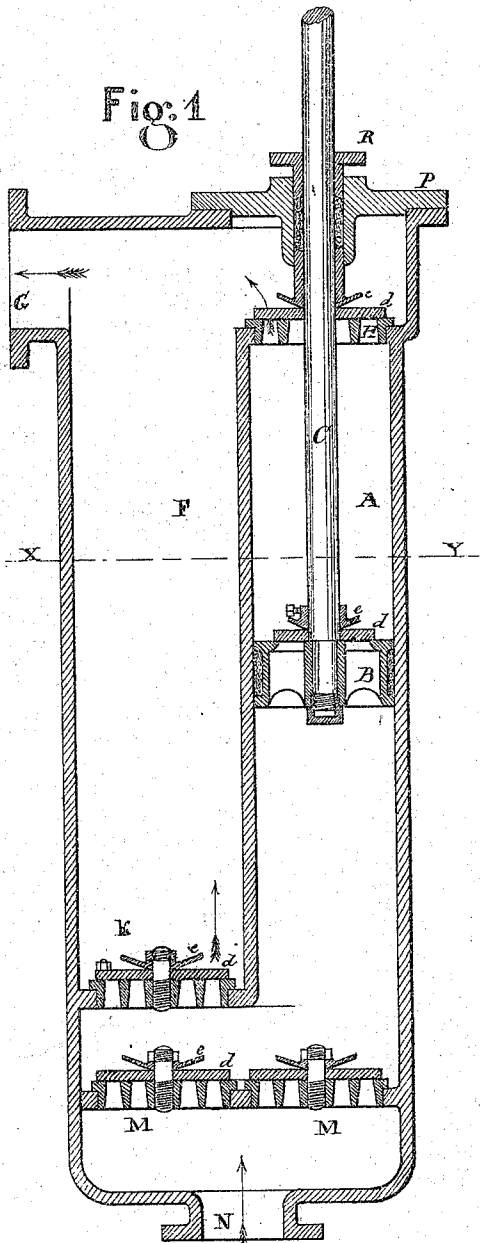
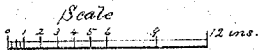


J. S. WILSON.

Improvement in Combined Force and Bucket-Pumps for Steam-Engines.

No. 131,646.

Patented Sep. 24, 1872.



Witnesses { Edw F Brown  
John S Grant

J. Shields Miller

# UNITED STATES PATENT OFFICE.

J. SHIELDS WILSON, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN COMBINED FORCE AND BUCKET PUMPS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. 131,646, dated September 24, 1872.

*To all whom it may concern:*

Be it known that I, J. SHIELDS WILSON, of Philadelphia, Pennsylvania, have invented a Combined Bucket and Single-Acting Piston-Pump, of which the following is a specification:

The nature of my invention consists in the combination of a bucket-pump with the valves of the single-acting piston-pump. The object attained by the arrangement here shown is, that it will permit the application of the pump in places where the ordinary bucket-pump would be inadmissible on account of the necessarily contracted area of the bucket-valve; as, for instance, where the diameter of the pump is small and the velocity of the bucket very great, as in marine screw-engines.

Referring to the drawing making part of this specification, Figure 1 is a section through the pump. Fig. 2 is a plan. Fig. 3 is a section on the line *xy*. Fig. 4 is an exterior view of the lower part of the pump.

A is the pump-barrel; B, the bucket, consisting of the body B, the India-rubber valve *d*, and the pump-guard *e*. C is the pump-rod passing through the discharge-valve H at the top of the pump-barrel. The bottom of the pump-barrel is enlarged sufficiently to admit of two receiving-valves, M M, being placed as shown. This portion of the pump, above described, is usually known as the bucket-pump when applied to marine-engines, the top discharge-valve H being sometimes omitted where the overflow G is below the level of the top of the pump-barrel. The water and air from the condenser enter the pump at the lower receiving-nozzle N. On one side of the pump-barrel A is placed a chamber, F, cast in one piece with the pump-barrel, as shown

in Fig. 3. At the bottom of this chamber is placed a discharge-valve, K, similar in construction to the valve M. The water entering the chamber F, as also that passing through the discharge-valve H, passes outboard by the discharge-nozzle G. P is the lid of the pump; R, the stuffing-box. S S are doors for access to the lower pump-valves M and K.

If we suppose the bucket B to be solid, all the water would be discharged by the valve K, and the pump would work as a single-acting force-pump. My invention combines the action of both the bucket and force pump in one by the addition of the discharge-valve K, the operation of which is described in a succeeding paragraph.

This arrangement or combination presents great advantages, especially when used as an air-pump on the marine screw-engine, as the high speed of the bucket and the inertia of the valve in it permit the uninterrupted flow of air through the bucket, and when the bucket strikes the water no shock or concussion will follow. The inadequate area of valve in the bucket is thus compensated for by the discharge-valve K placed at the bottom, part of the water passing into the barrel of the pump and the remainder through valve K into chamber F.

I claim—

The combination of the bucket-pump, herein described, with the additional discharge-valve K, arranged substantially as and for the purpose herein set forth.

J. SHIELDS WILSON.

Witnesses:

EDWD. BROWN,  
JOHN F. GRANT.