

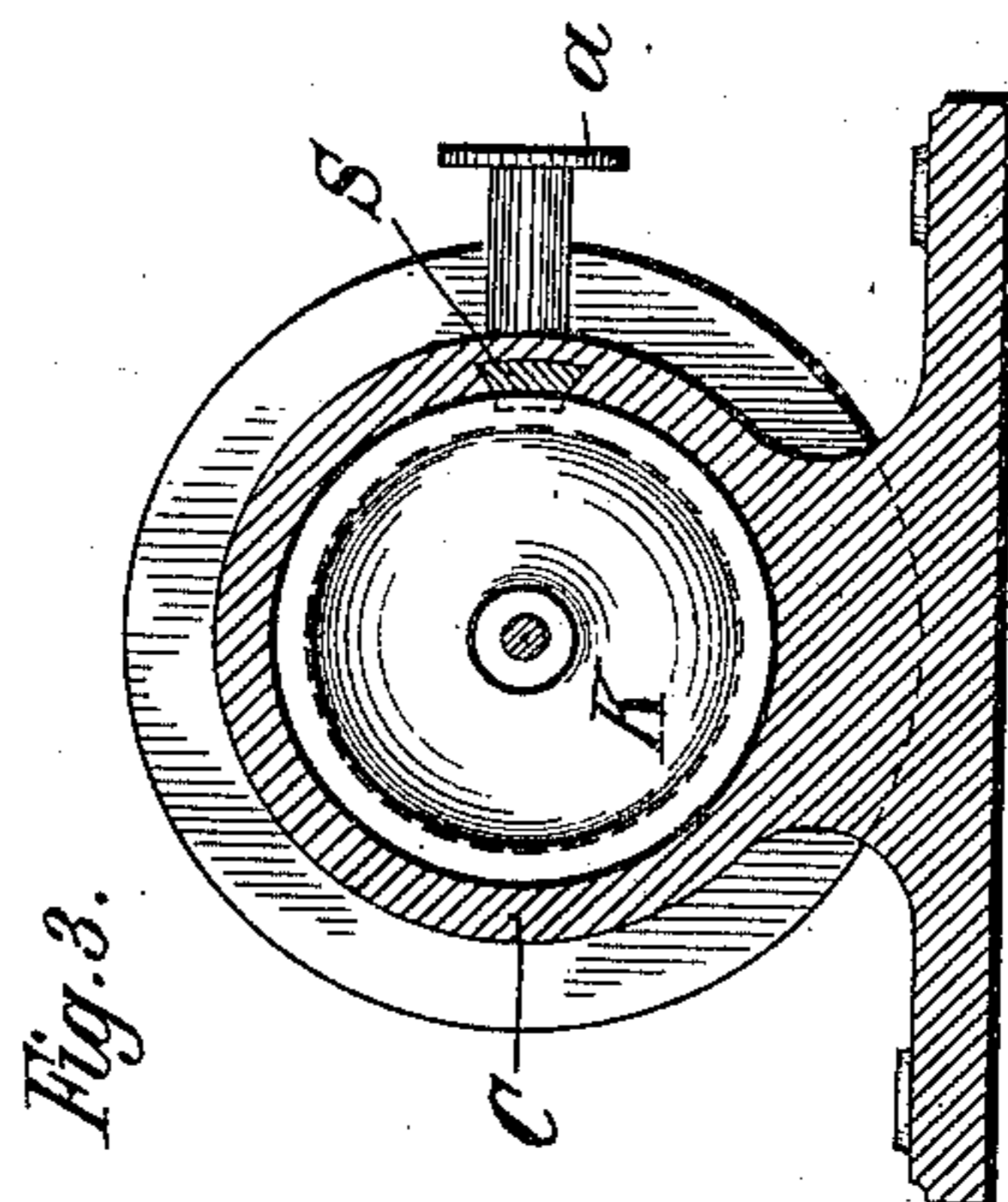
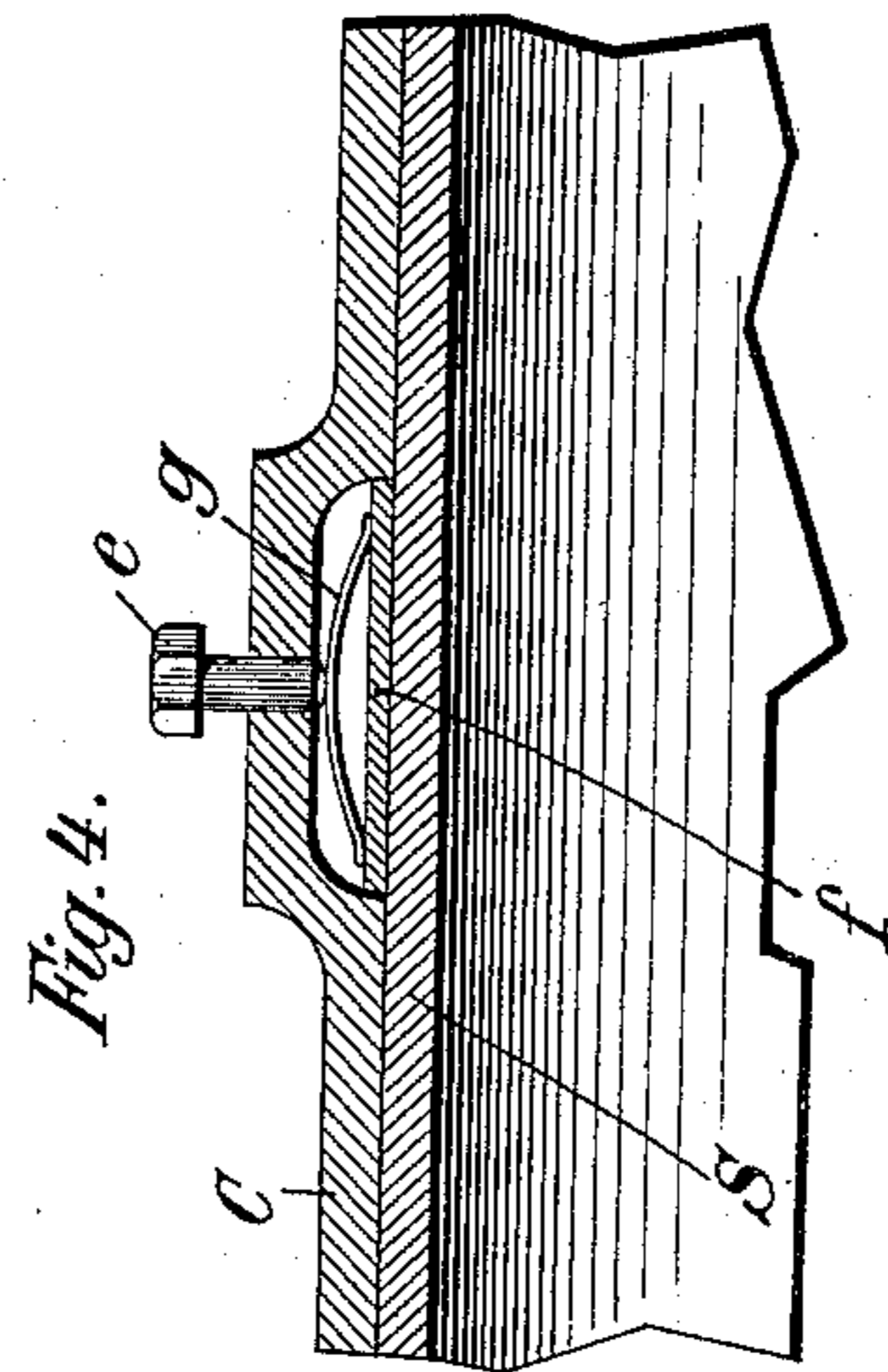
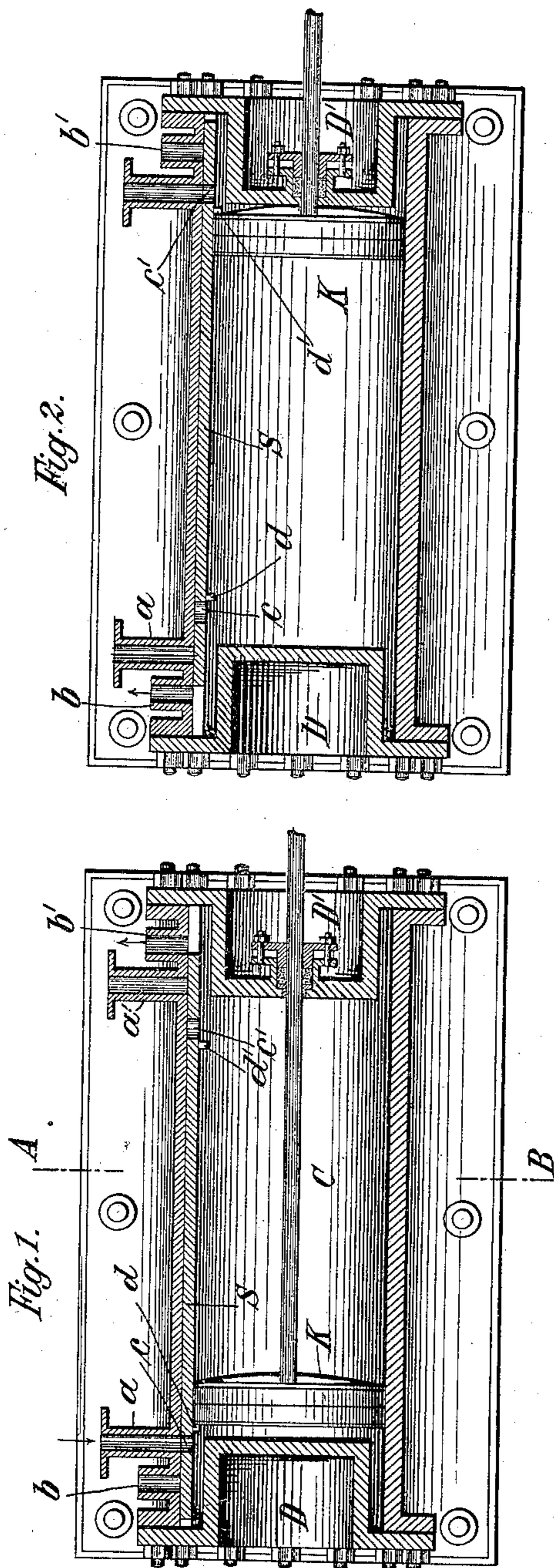
No. 639,023.

Patented Dec. 12, 1899.

J. DAMLOS.  
SLIDE VALVE GEAR.

(Application filed Mar. 9, 1899.)

(No Model.)



Witnesses:

G. S. Noble  
J. Buchler.

Inventor  
Johannes Damlos  
by P. Singer  
Att'y.

# UNITED STATES PATENT OFFICE.

JOHANNES DAMLOS, OF HAMBURG, GERMANY.

## SLIDE-VALVE GEAR.

SPECIFICATION forming part of Letters Patent No. 639,023, dated December 12, 1899.

Application filed March 9, 1899. Serial No. 708,373. (No model.)

*To all whom it may concern:*

Be it known that I, JOHANNES DAMLOS, merchant, a subject of the Emperor of Germany, residing at 30 Mühlendamm, in the free town of Hamburg, Empire of Germany, have invented certain new and useful Improvements in Slide-Valve Gear for Steam and other Motive-Power Engines, of which the following is a full, clear, and exact description.

The apparatus for distributing the steam to steam-engines, for example, which together form the valve-gear, has hitherto been applied externally of the cylinder, and various improvements have recently been made which render these parts very complicated, and consequently frequent repairs are necessary, the cost of the engine is increased, and its maintenance is rendered more difficult.

The present invention relates to a slide-valve which is situated in the interior of the steam or other cylinder and is actuated directly by the piston.

In the accompanying drawings, Figures 1 and 2 illustrate in horizontal section a steam-cylinder with a valve-gear of this kind. Fig. 3 is a section on the line A B of Fig. 1, and Fig. 4 is a detail view.

As may be seen from the drawings, the steam-cylinder C is provided with the inlet-passages *a a'* and the exhaust-passages *b b'*. In the interior of the cylinder C the slide-valve S is arranged to slide steam-tight in a dovetail-shaped groove in the wall of the cylinder, Fig. 3. This slide-valve is provided with the ports *c c'*, which correspond with the steam and exhaust passages. It is also furnished with the projections *d d'*, and is so shaped that it forms with mathematical accuracy a continuation of the cylindrical surface of the interior of the cylinder, and therefore fits steam-tight against the piston.

The slide-valve S, which allows the steam to pass alternately to each side of the piston, is shown in its extreme left-hand position in Fig. 1 and in Fig. 2 in its extreme right-hand position. In the position shown in Fig. 1 the steam enters through the passage *a* in the cylinder and port *c* in the valve, while the exhaust-passage *b'* is open. The piston K is now driven along the cylinder and when approaching the end of its stroke it comes against the projection *d'*, causing the slide-valve to be pushed along the position shown

in Fig. 2, closing the passages *a* and *b'* and opening the passages *a'* and *b*. The steam from the boiler then forces the piston K back again, while the exhaust-steam escapes by the outlet *b* into the open air or into the condenser till the piston K again occupies its first position, as shown in Fig. 1.

To avoid what is known as "clearance-space" in the cylinder, both the cylinder-covers D and D' are recessed into the cylinders, as shown, so that this space is reduced as much as possible. It is obvious that by arranging the projections *d* and *d'* adjustably, so that they can be pushed forward or backward, or by means of a spring-packing in the piston K, for example, the supply of steam to the cylinder may be cut off before the piston has completed its entire stroke, so that for the remainder of the stroke the piston is driven to the end of its stroke by the expansion of the steam, and so a thorough utilization of the steam-pressure is effected.

In order to regulate the friction of the slide-valve in its guides and to prevent any movement taking place during the stroke of the piston before the latter has reached its extreme position, a pressure device, such as shown in Fig. 4, may be employed, consisting of the screw *e*, pressure-plate *f*, and spring *g*.

Reversing of the engine can be effected by a suitable apparatus worked from the outside of the cylinder—for example, by a rod provided with a handle passing through a stuffing-box in the cylinder-cover and attached to the slide-valve S.

I claim—

In a slide-valve gear, the combination with a cylinder having a longitudinal dovetail slot therein, a slide-valve fitting said cylinder-slot and forming a segment of the interior wall of said cylinder, said slide-valve being provided with inlet and outlet ports, and having projections thereon adapted to be struck by the piston, and means for tightening said valve in its seat, substantially as set forth.

In witness whereof I subscribe my signature in presence of two witnesses.

JOHANNES DAMLOS.

Witnesses:

CARLLE HEINBERZER,  
E. H. L. MUMMENHOFF.