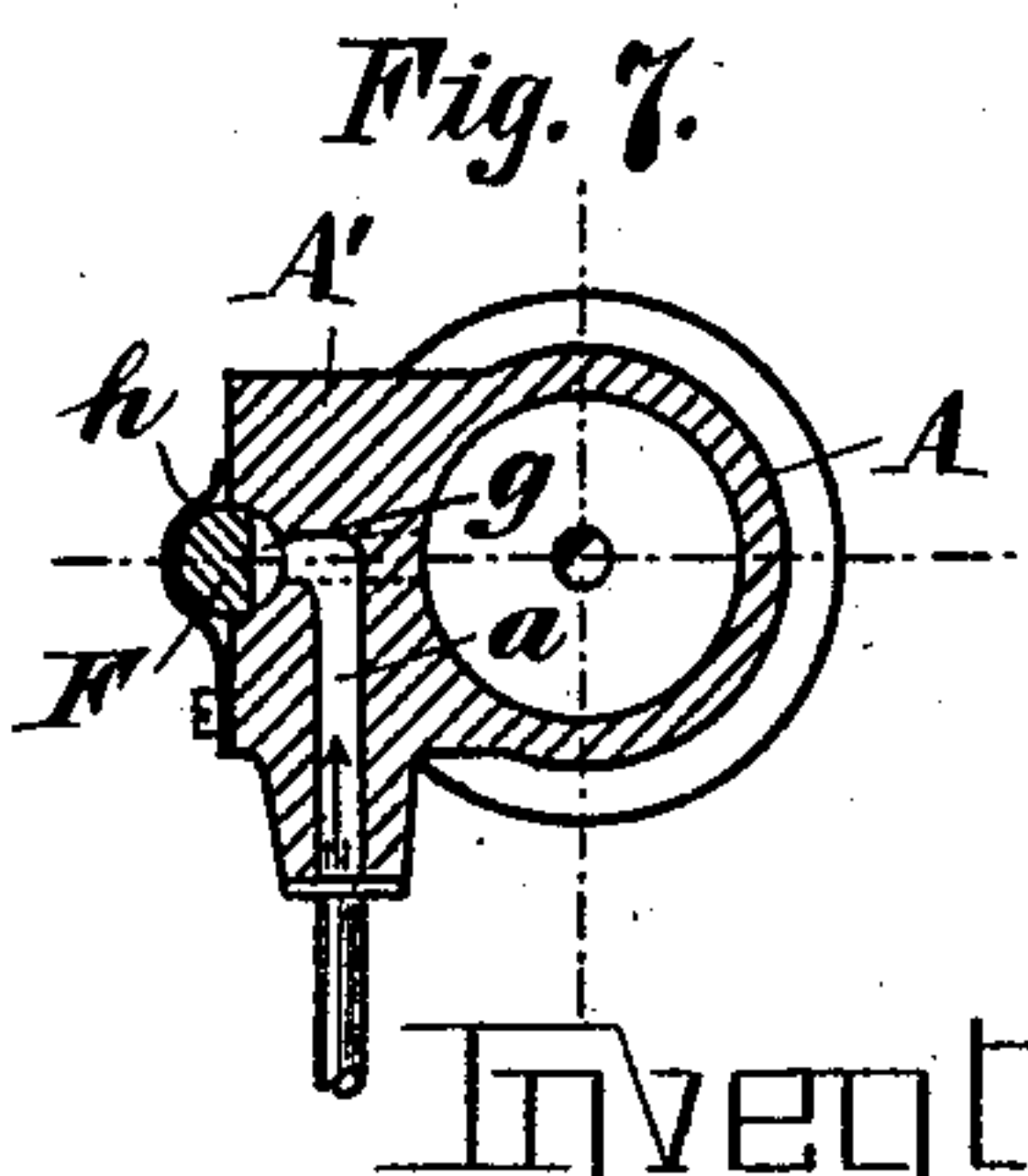
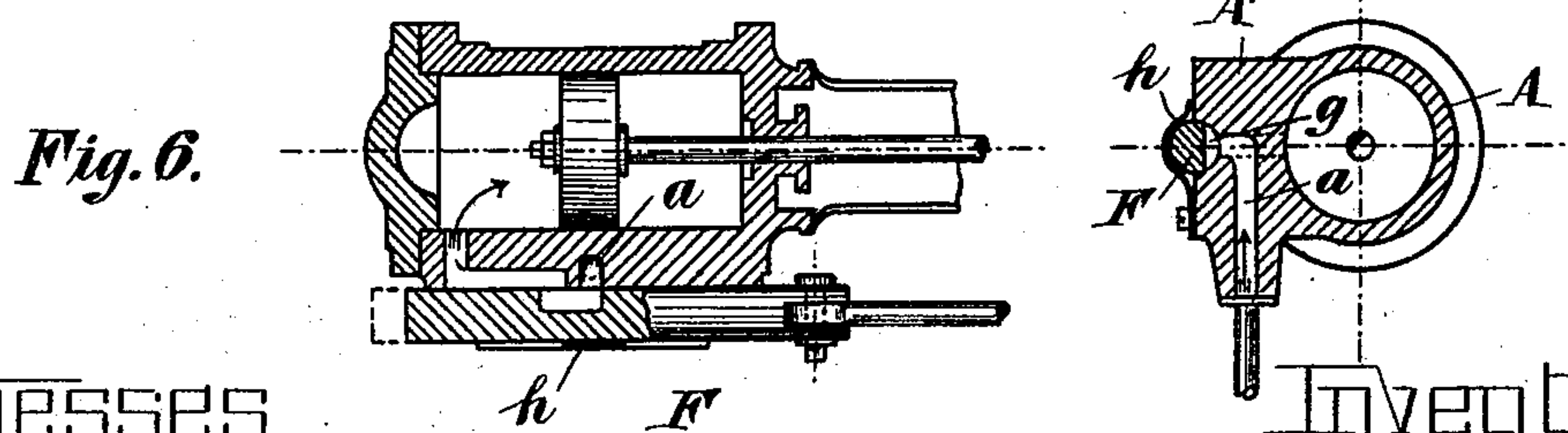
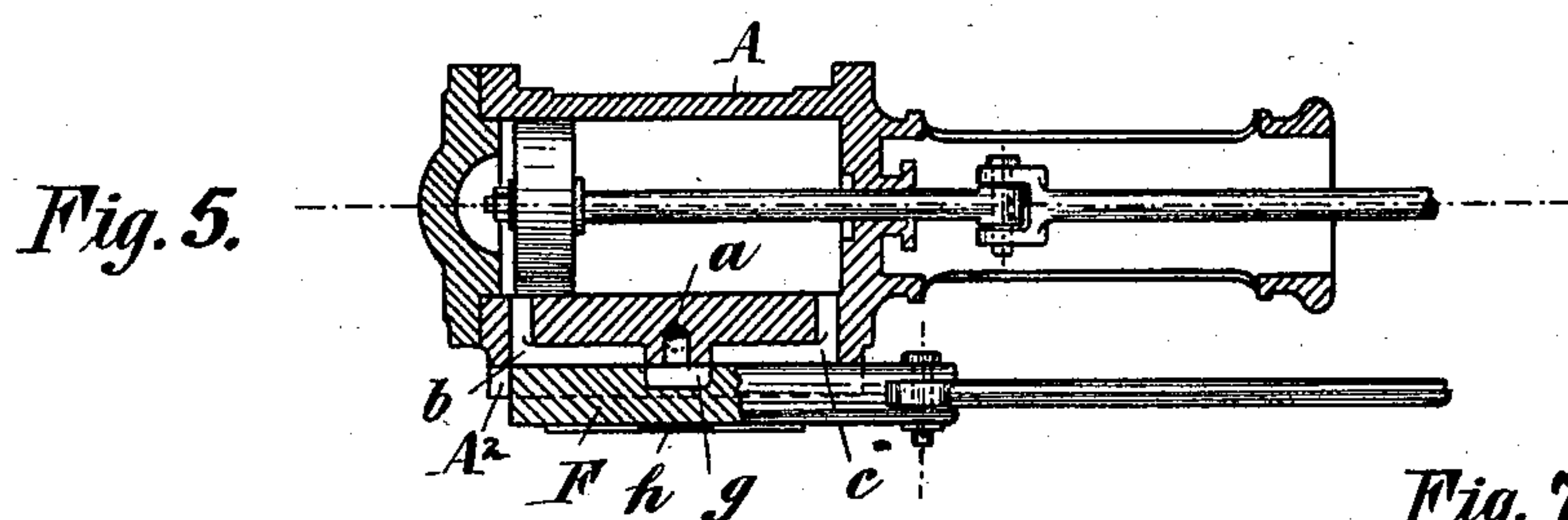
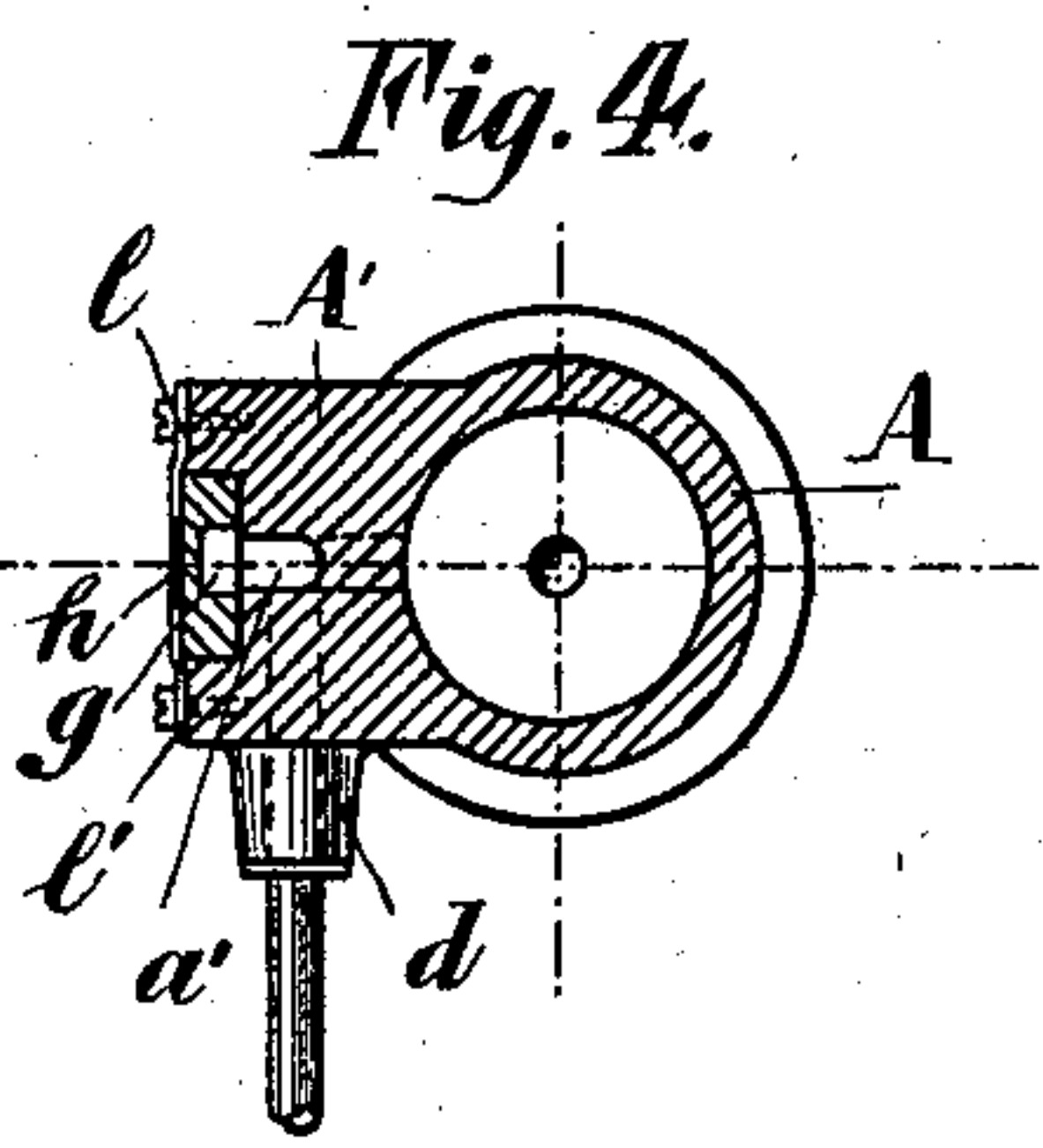
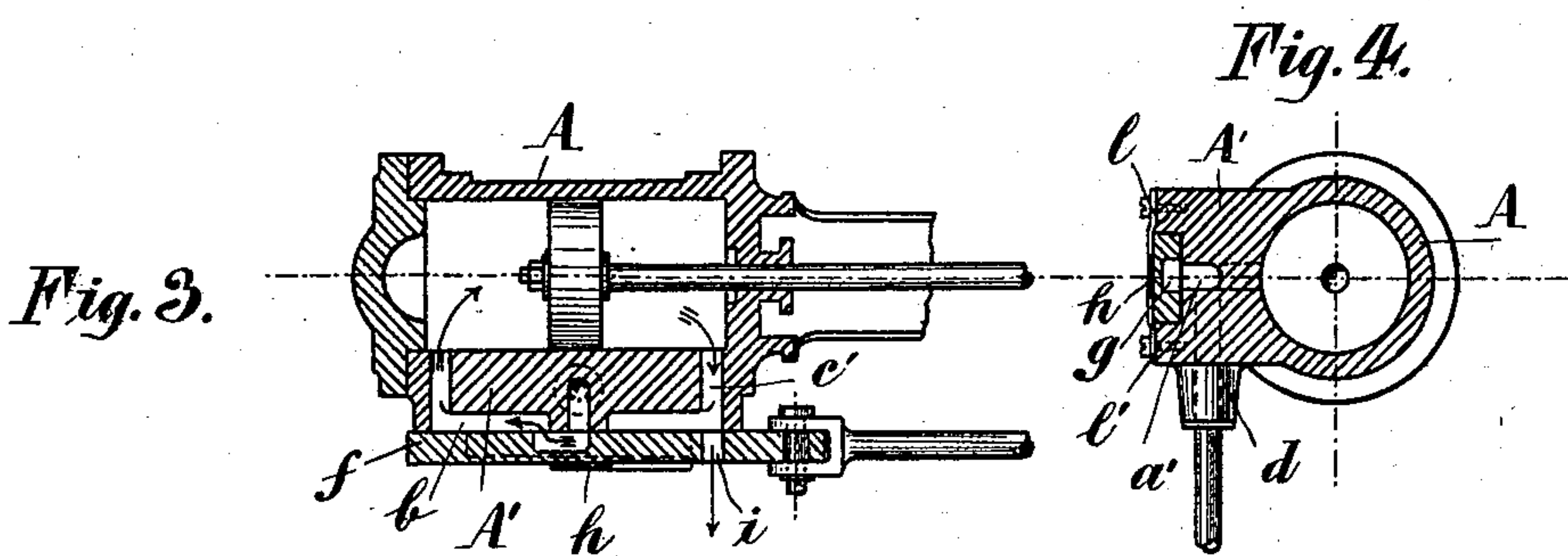
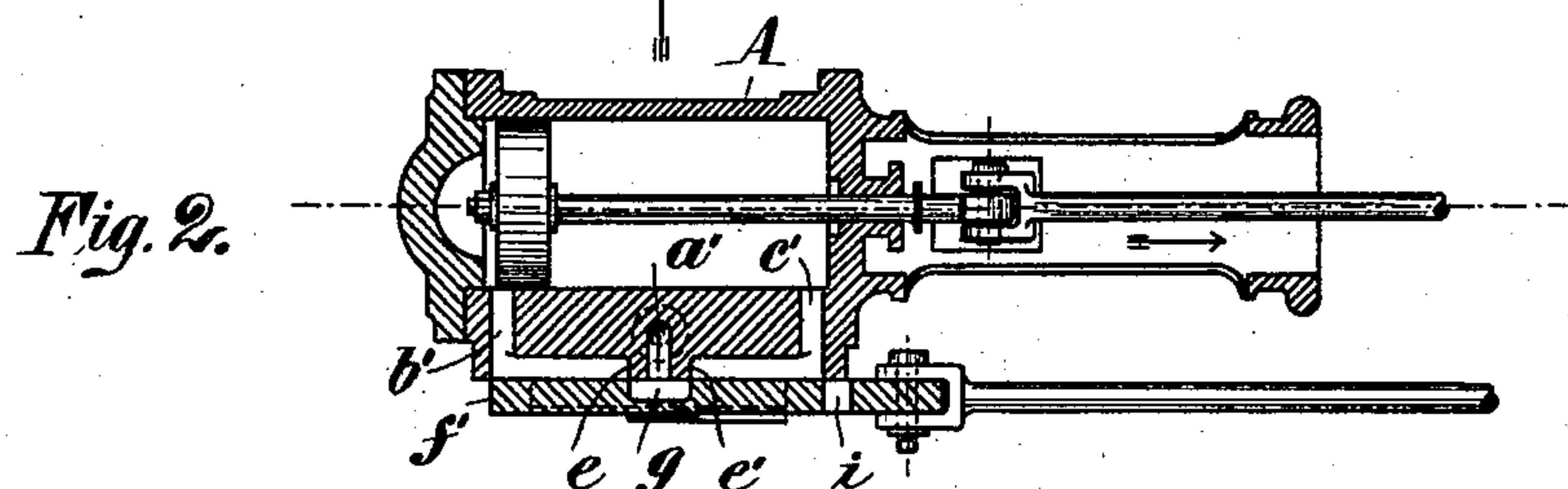
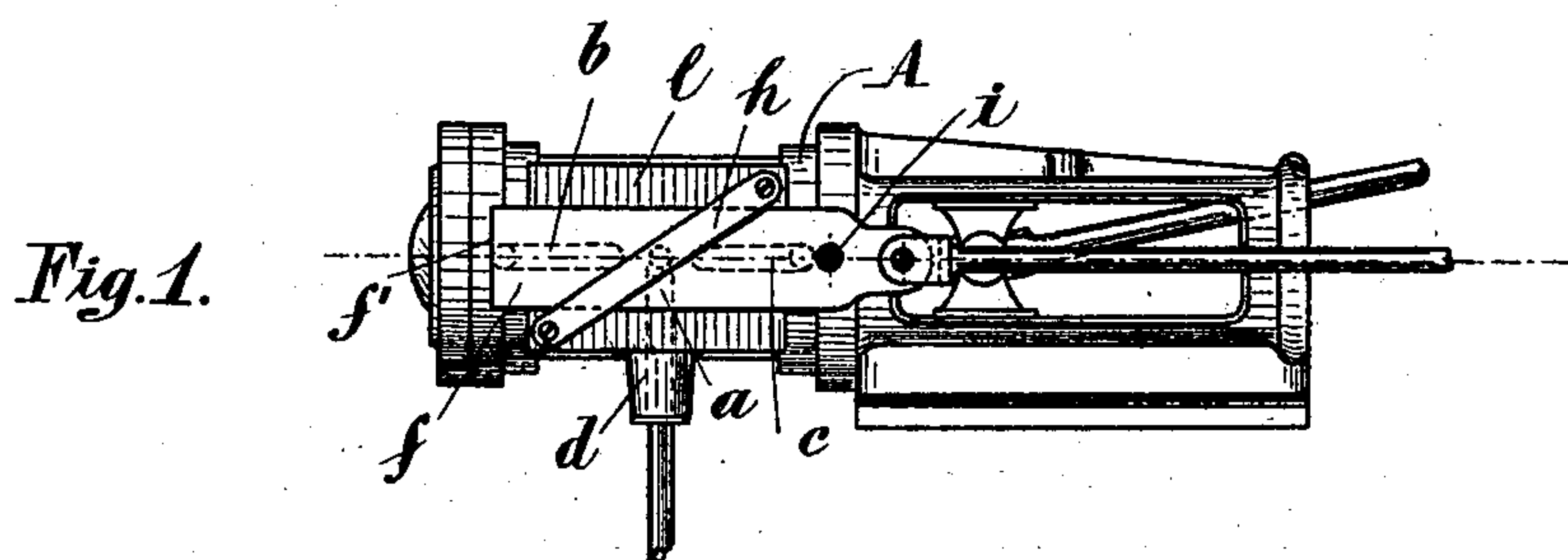


(No Model.)

J. SCHOENNER.
TOY STEAM ENGINE.

No. 506,447.

Patented Oct. 10, 1893.



Witnesses
L. Hoolsey.
F. Stricker.

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by
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UNITED STATES PATENT OFFICE.

JEAN SCHOENNER, OF NUREMBERG, GERMANY.

TOY STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 506,447, dated October 10, 1893.

Application filed April 29, 1893. Serial No. 472,350. (No model.) Patented in Germany March 24, 1892, No. 67,253.

To all whom it may concern:

Be it known that I, JEAN SCHOENNER, manufacturer, a subject of the German Emperor, residing at Nuremberg, in the Kingdom of Bavaria, Empire of Germany, have invented certain new and useful Improvements in Toy Steam-Engines, of which the following is a specification.

This invention was patented in Germany March 24, 1892, No. 67,253.

This invention has for its object to provide valve arrangements for toy steam engines, whereby it will be possible to make these latter with fixed, instead of, as is generally customary, with oscillating cylinders, but yet both as regards simplicity and mode of making can be suitably employed for toys. In order to attain these objects, an arrangement of parts is employed in which, however, in contradistinction to existing similar arrangements, there is not required a special valve case or box.

On the accompanying drawings, Figure 1 is a side view of one form of my invention. Figs. 2 and 3 are longitudinal sectional views of the same showing two positions of the valve. Fig. 4 is a central transverse sectional view of the cylinder and valve. Fig. 5 is a longitudinal sectional view illustrating the preferred form of the invention. Fig. 6 is a similar view illustrating a slight modification thereof. Fig. 7 is a transverse sectional view of the form of the invention shown in Fig. 5.

Figs. 1 to 4 show a cylinder of a toy steam engine fitted according to this invention, and this improved arrangement consists as follows:—A side piece A' is cast on the steam cylinder A in which the steam passages or ports are made. These may be enumerated as follows:—The steam admission channel a and the two transit passages b and c . The steam is admitted at the side by means of a nozzle d , turns at right angles, and opens at a' into the middle of the valve face A^2 . The transit passages are separated from the opening a' by means of cross bars or pieces $e e'$, and in reality are only grooves or gutters cut out or formed in the face of the side piece A' . This is of special importance for the formation of the apparatus from one piece. At both ends, the grooves or gutters are connected by means

of rectangular ports $b' c'$ with the interior of the steam cylinder. The steam distribution is effected by means of a valve plate f with the recess g corresponding to the inlet opening a' . This recess, on the movement of the valve, alternately places the opening a' in communication with one or other of the passages b and c . The exhaust steam escapes direct into the open air through the ports $b' c'$. The valve f sliding on the face A^2 is, in other respects a flat plate and is made of such a length that it also forms the cover for the passages $b c$. It is set in motion in the usual manner by means of an eccentric from the crank axle and is guided on both sides by the ledges $l l'$ formed on the cast iron piece A . In order that the valve may fit steam tight, it is pressed against its facing or seating by means of a flat spring h fastened over it.

The mode of working of the arrangement hereinbefore described, which is shown in an end position in Fig. 2, is as follows:—On the engine moving in the direction indicated by the arrow, the connection of the steam inlet passage a with the passage b is established by means of the recess g ; the steam passes behind the piston and drives the same forward. At the same time with this movement, an opening i in the valve coincides with the port c' , so that, as the piston moves forward, the exhaust steam can escape through the opening i into the open air. When the piston has reached the end of its stroke, fresh steam is admitted to the passage c through the recess g , and simultaneously the rear edge f' of the valve passes away from off the port b' , by which means the latter is left open, and thus the exhaust steam can freely escape at this side.

The valve f may have another sectional form to that given above, for instance, it may be of a round or oval cross section, but then the form or shape of its facing or seating must be made to correspond. Also, in order to simplify the putting together of the main parts, in place of the longitudinal flat valve f , a slide valve F , formed as a cylindrical piston may be employed, the facing or seating A^2 of which is correspondingly formed as a hollow cylinder, see Figs. 5 to 7 of the accompanying drawings. The hollow chamber g ,

for connecting the steam inlet passage *a* with the transit passages *b* and *c*, is then produced by filing, cutting or the like, a segmentally shaped piece, out of the piston *F*. In the last
5 described construction of parts, both their manufacture and the production of a steam tight connection are very much facilitated, and consequently the engines can be made more cheaply.

10 Where cheapness is particularly desired, in order to increase the saving, the parts may be simplified by omitting the passage *c*, somewhat in the manner shown in Fig. 6. The valve may be kept to its seating in a similar
15 way to the arrangement hereinbefore described, by means of the diagonal spring *h* which may only be fastened at one side.

I declare that what I claim is—

1. An improvement in toy steam engines

with fixed cylinders, consisting in the combi- 20 nation, with a steam inlet passage *a* and passages *b* and *c*, formed as described, of a valve of suitable cross section, forming the covering for the passages *b c*, and having a recess *g* whereby the said passages can be placed al- 25 ternately in connection with the steam inlet, substantially as described.

2. In toy steam engines such as described, a round piston valve *F* fitting a correspond- 30 ingly shaped facing or seating *A*², the said valve having a hollow space *g* formed as described, whereby the steam inlet passage can be connected with the transit passages, substantially as described.

JEAN SCHOENNER.

Witnesses:

WM. J. BLACK,
OSCAR BOCK.