

(No Model.)

W. DIXON & S. THOMPSON.

PISTON FOR STEAM ENGINES.

No. 362,729.

Patented May 10, 1887.

Fig. 1.

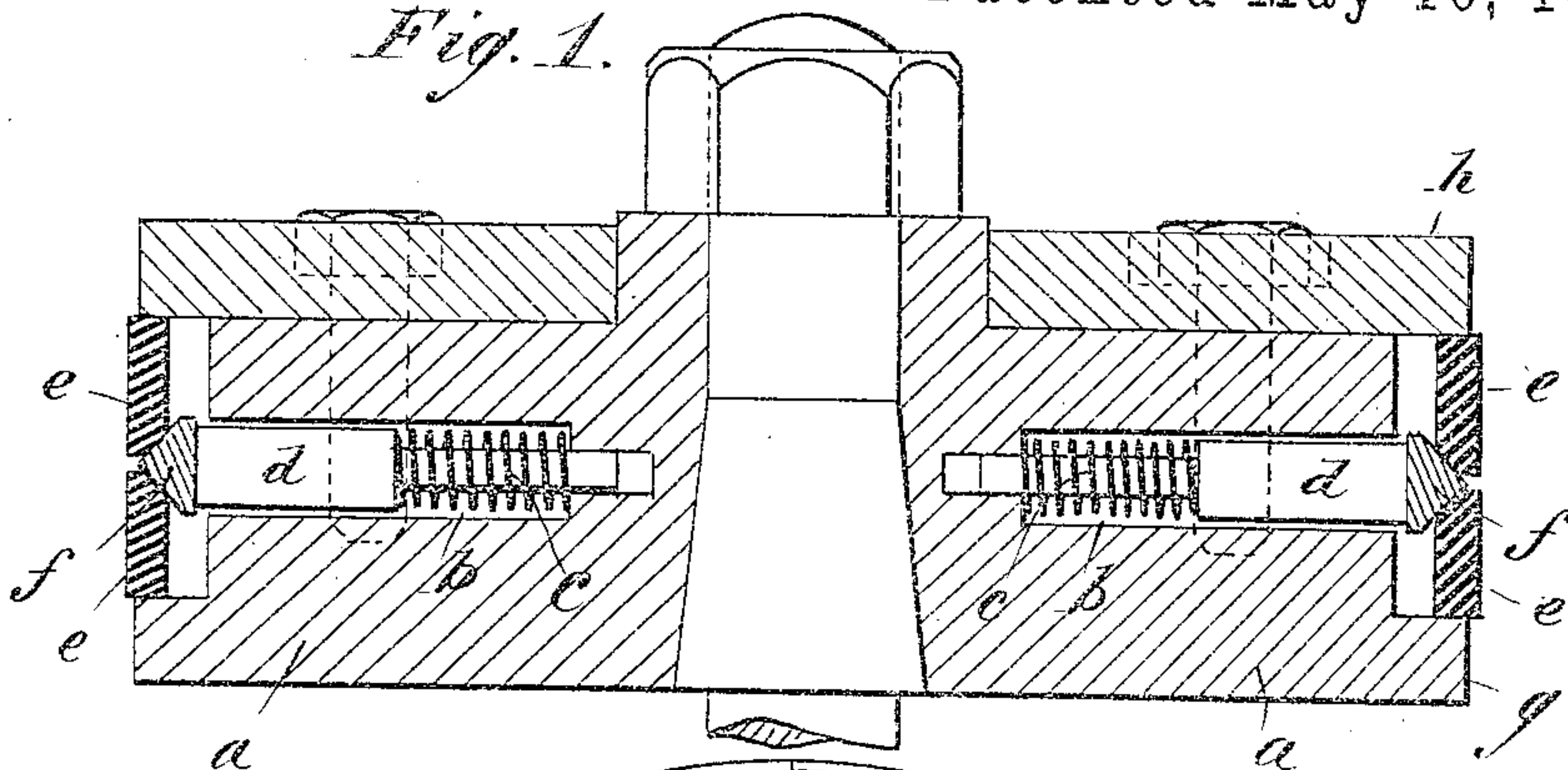


Fig. 2.

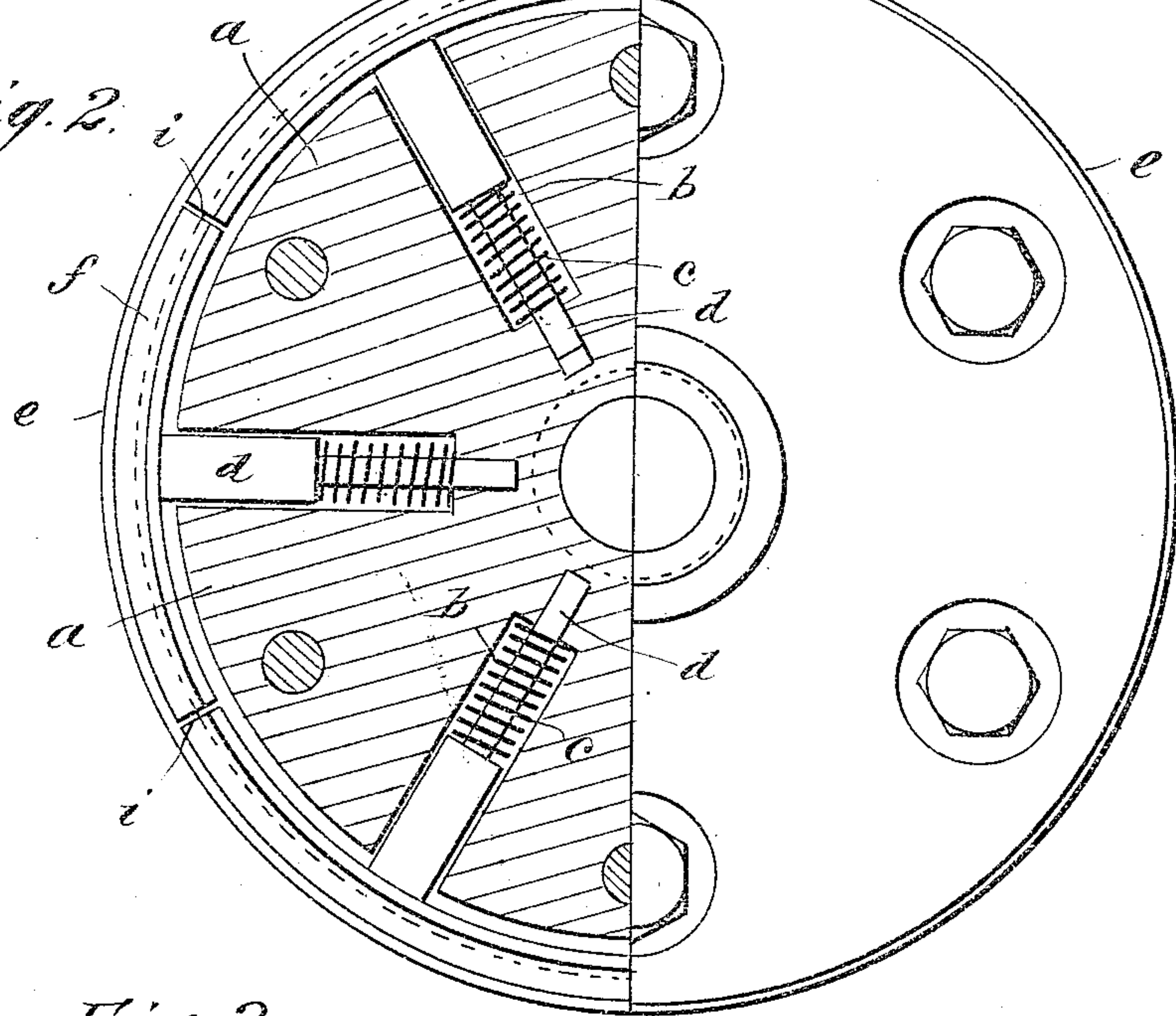
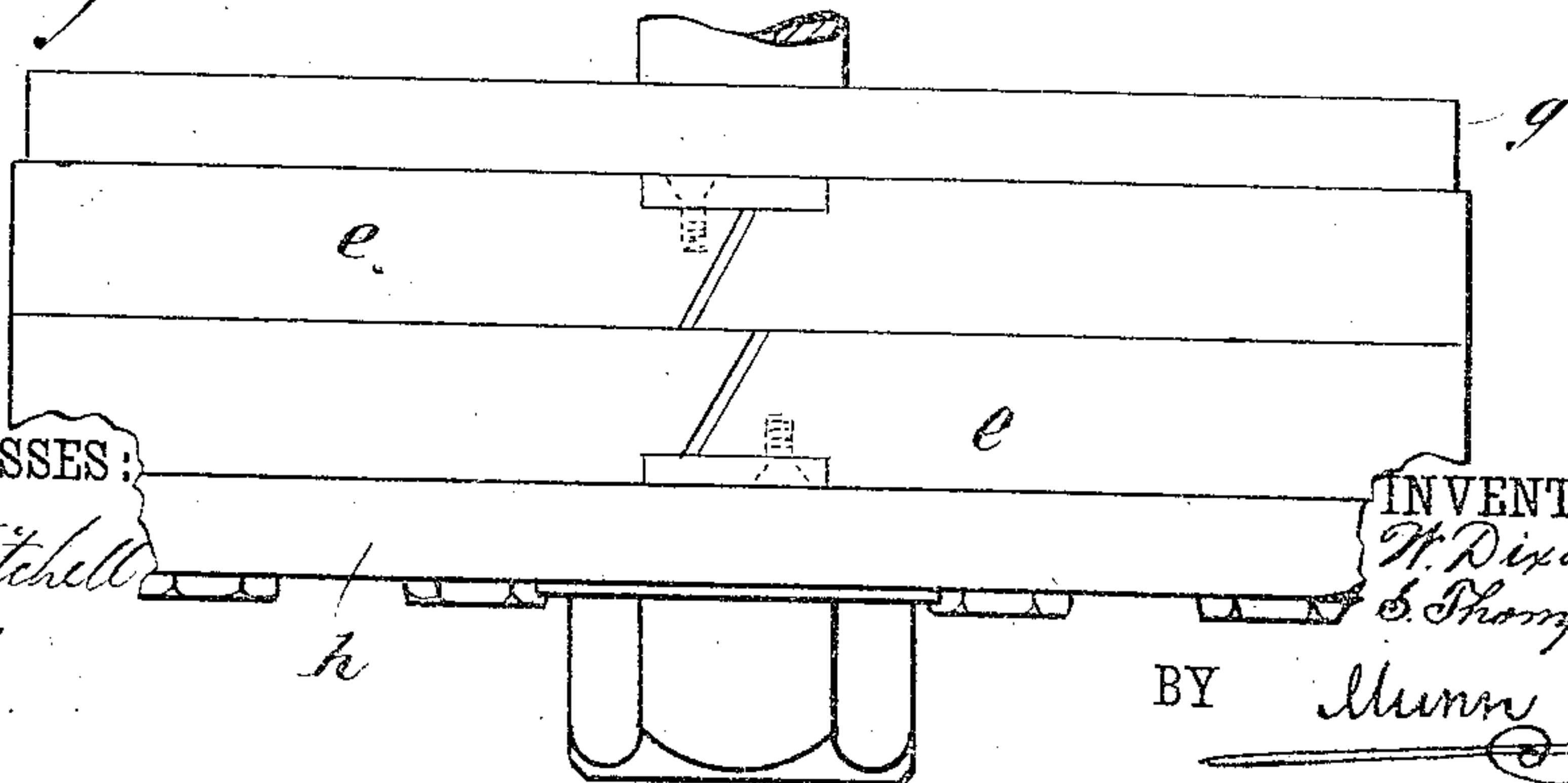


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM DIXON, OF SHEFFIELD, COUNTY OF YORK, AND SAMUEL THOMPSON, OF TRENT, COUNTY OF STAFFORD, ASSIGNORS TO TOM THOMPSON AND SAMUEL THOMPSON, BOTH OF HANLEY, AND THOMAS MILNES FAVELL, OF ETRURIA, ENGLAND.

PISTON FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 362,729, dated May 10, 1887.

Application filed November 16, 1886. Serial No. 219,024. (No model.) Patented in England May 8, 1886, No. 6,227.

To all whom it may concern:

Be it known that we, WILLIAM DIXON, of Sheffield, in the county of York, England, and SAMUEL THOMPSON, of Trent, in the county of Stafford, England, subjects of the Queen of Great Britain, have invented certain new and useful Improvements in Pistons, of which the following is a full, clear, and exact description.

The invention relates to that class of pistons wherein provision is made for the automatic expansion of the packing-rings to compensate for wear, so that the entire sectional area of the cylinder to which the piston is fitted will always be occupied by the piston; and the object of the invention is to improve the construction of pistons of this character.

The invention consists in the means substantially as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a central sectional elevation of a piston embodying our invention. Fig. 2 is a face view of the same, partly in section; and Fig. 3 is an edge view of the same.

The body *a* of the piston is formed with a series of recesses or pockets, *b*, extending radially from near the center to the periphery, for the reception of blocks or studs *d*, the said studs or blocks being provided on the shanks at their inner ends with spiral or other suitable springs, *c*, for the purpose presently to be explained. In a groove in the periphery of the piston, and resting on and supported by the outer ends of the blocks or studs *d*, is placed the ring *f*, reversely beveled on its outer surface and made preferably in segments, as shown at *i*, Fig. 2. The said peripheral groove is formed by the annular rim or raised portion *g* of the piston and the clamping plate or cap *h*. In this peripheral groove, also, and abutting the side walls thereof, are the packing-rings *e e*, of suitable material, which project beyond the periphery of the body of the piston, as shown, and against which bears the spring-pressed segmental ring *f*, their inner edges, where they adjoin the ring

f, being beveled correspondingly to the wedge shape of the said ring *f*. With this construction, it is evident that as the pressure of the springs *c* forces the blocks or studs *d* outward, and with them the ring *f*, the latter will, by reason of its wedge shape, force the packing-rings *e e* outward against the cylinder or case to which it is fitted, and also wedge the same laterally against the opposite walls of the peripheral groove, insuring a tight fit of the piston in the engine or other cylinder to which it is applied, and effectually preventing the entrance of steam behind the packing-rings, and the consequent deleterious effects should the steam effect an entrance to the parts behind the said packing-rings. It will be observed, also, that by the invention above described a space is formed on the periphery at either side of the packing-rings, wherein the steam or other motive agent may circulate, forming a cushion therein, and thus exerting the same pressure on the face and around the peripheral edge of the piston. A very desirable reduction of the frictional surface is also effected by this form of piston.

By means of the blocks interposed between the packing-rings and springs the latter are caused to exert a direct and even pressure.

The number of spring-pressed studs or blocks *d* will vary according to the diameter of the piston and the strength of the springs employed; or the blocks *d* may be dispensed with entirely and a direct pressure on the segmental ring *f* provided for by extending the springs outward to the said ring, or in any other suitable manner.

It will be understood that this invention is adapted to pumps and valves as well as to engine-cylinders, and that it is not limited to the precise construction and arrangement of parts shown.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. A piston provided in a peripheral groove thereof with packing-rings, a reversely-beveled ring behind and bearing against said packing-rings, and spring-pressed blocks be-

hind the said reversely-beveled ring, substantially as shown and described.

2. A piston provided in radial recesses or pockets thereof with spring-pressed blocks or studs, a ring reversely beveled on its outer surface and fitted in a peripheral groove of the piston, and packing-rings fitted on said beveled ring and beveled to conform to the same, substantially as shown and described.
- 10 3. In a piston, the combination, with packing-rings fitted in the periphery thereof, of a segmental ring behind said packing-rings, a series of studs or blocks in radial pockets or recesses in the piston, and spiral springs on

the shanks of said studs or blocks, substantially as shown and described. 15

In testimony that we claim the foregoing as our invention we have signed our names, in presence of two witnesses, this 14th day of October, 1886.

WILLIAM DIXON.
SAMUEL THOMPSON.

Witnesses:

JOHN GEORGE ASH,
WILLIAM IRVING,
*Clerks to Messrs. Broomhead, Wightman & Wone,
Solicitors, Sheffield.*