

No. 887,128.

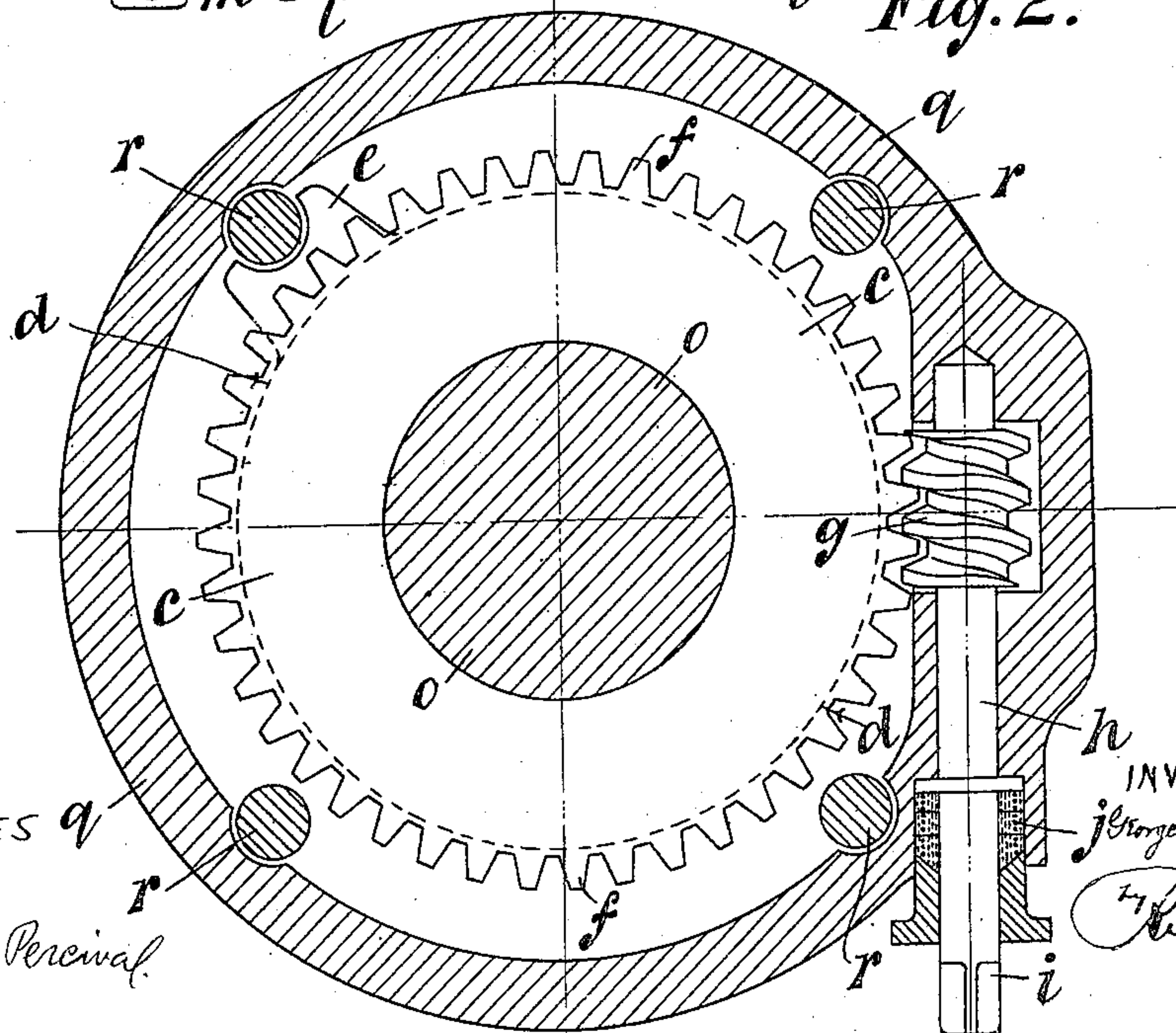
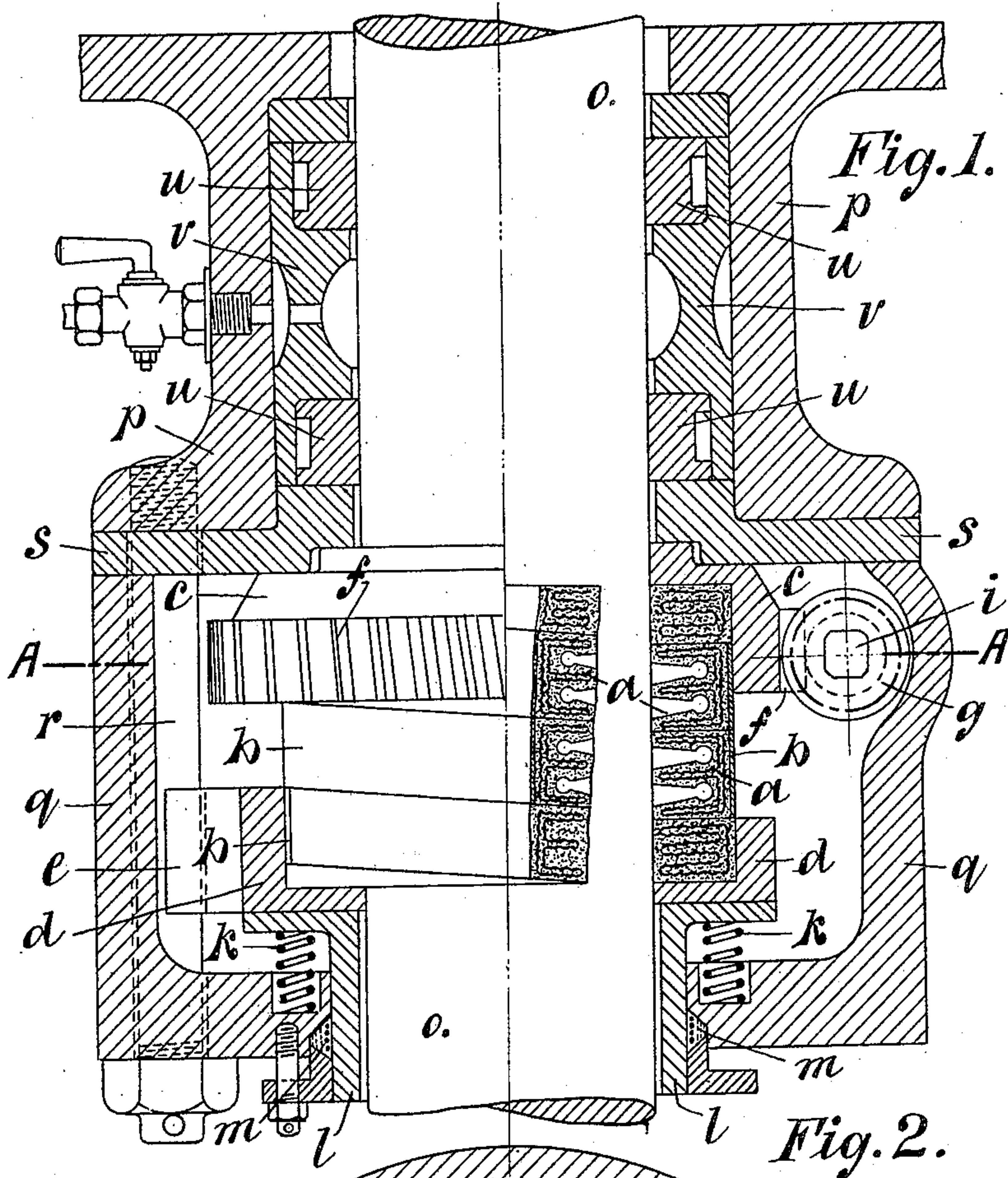
PATENTED MAY 12, 1908.

G. H. ROBINSON.

GLAND FOR RODS AND PLUNGERS.

APPLICATION FILED OCT. 20, 1905.

2 SHEETS—SHEET 1.



WITNESSES
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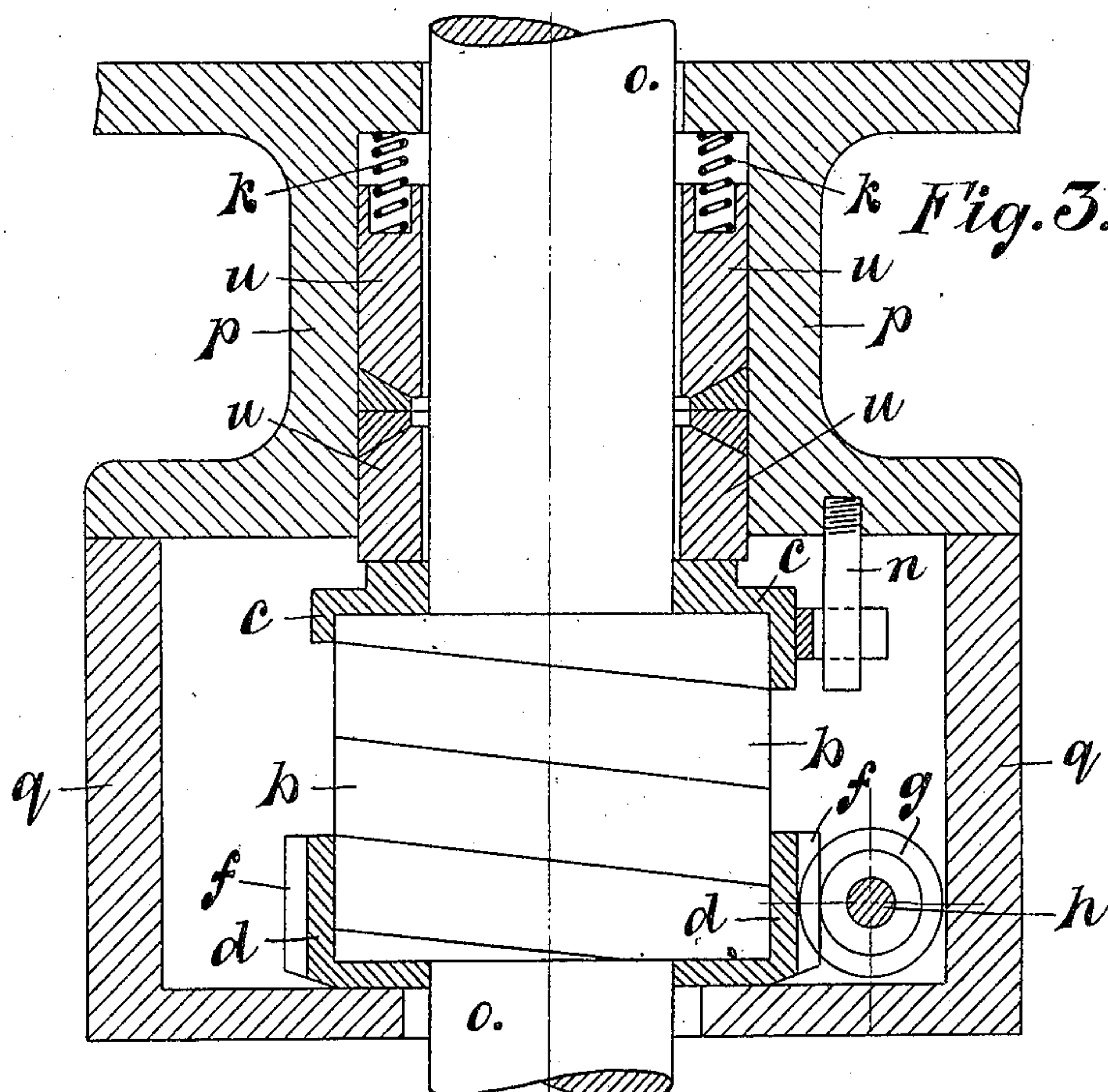
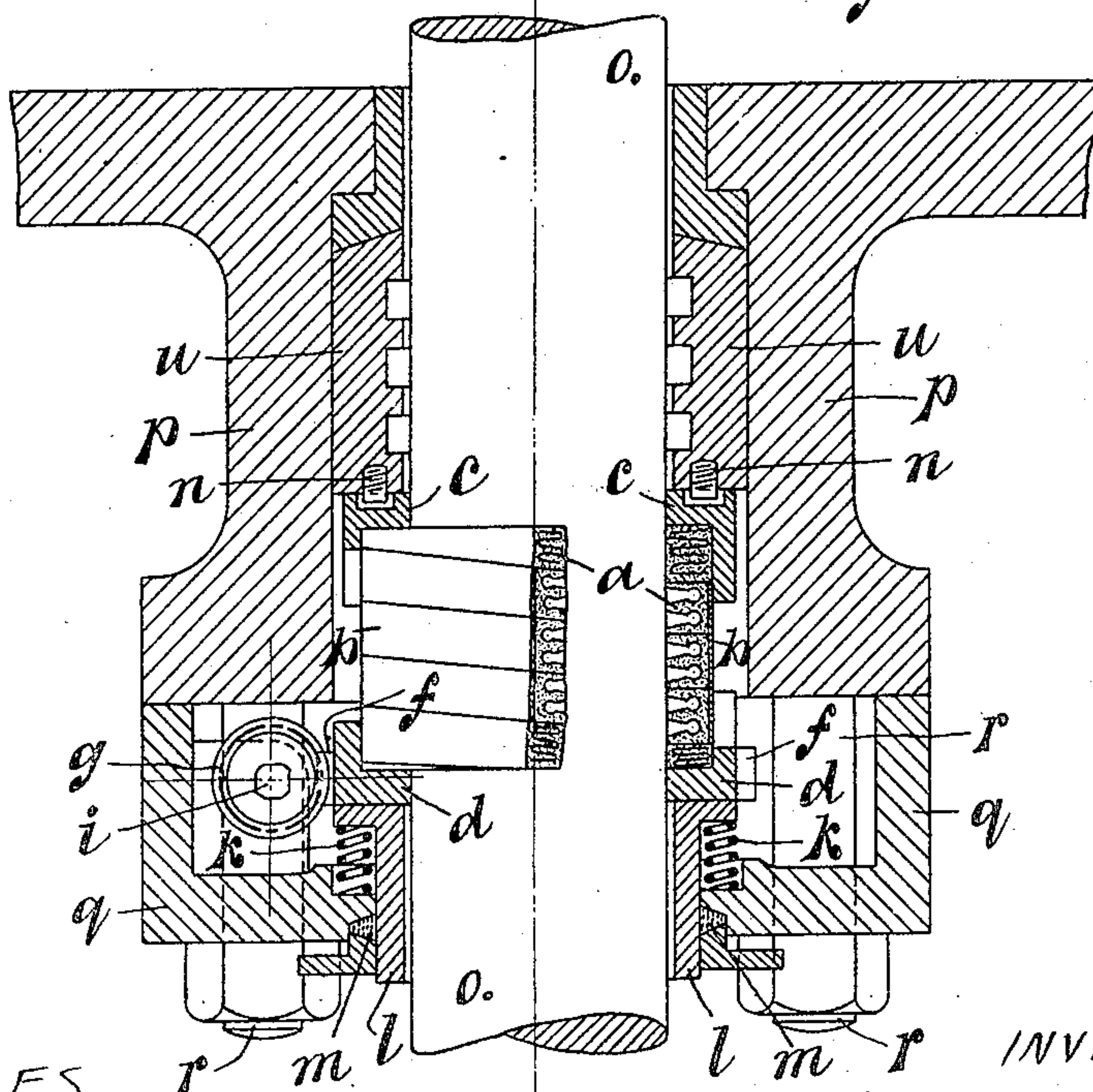


Fig. 4.



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UNITED STATES PATENT OFFICE.

GEORGE HUNTER ROBINSON, OF SUNDERLAND, ENGLAND, ASSIGNOR TO ASPLAN BELDAM, GEORGE WILLIAM BELDAM, AND CYRIL ASPLAN BELDAM, TRADING AS THE BELDAM PACKING & RUBBER COMPANY, OF LONDON, ENGLAND.

GLAND FOR RODS AND PLUNGERS.

No. 887,128.

Specification of Letters Patent.

Patented May 12, 1908.

Application filed October 20, 1905. Serial No. 283,701.

To all whom it may concern:

Be it known that I, GEORGE HUNTER ROBINSON, a subject of the King of England, residing at Sunderland, in the county of Durham, England, have invented new and useful Improvements in Glands for Rods and Plungers, of which the following is a specification.

This invention has reference to packings for making a fluid-tight joint between a cylinder or chamber end, cover, or other part, and a rod, plunger, or the like, working through it, the rod or plunger being that of an engine, pump, or machine, from the cylinder or chamber of which it is desired to prevent the escape of fluid, or into which the entrance of fluid is to be prevented.

The packing according to this invention is of spiral form, and is adapted to be adjusted to, or in relation to the rod or part to be packed, by winding or pulling on, by mechanical means, one or both ends, or a suitable part or parts of the packing; and it comprises a portion or part which presses on the surface of the rod or part to be packed, and a band, cord, chain, spiral spring, or the like, in connection with said former part, by means of which the actual tension on, or support to, and adjustment of the packing in relation to the part in connection with which it works, is effected.

The invention will be further described with reference to the accompanying drawings.

Figure 1 is a sectional elevation, Fig. 2 a plan in section at A A Fig. 1, showing one form; and Fig. 3 and Fig. 4 are sectional elevations, showing two other slight modifications.

The same letters of reference denote the same or equivalent parts wherever they occur in the different drawings.

Referring first more particularly to Figs. 1 and 2, *a* represents the flexible portion of the packing which comes in actual contact with the rod or other part with which a fluid tight joint is to be made; and *b* is the part by means of which the actual tension on, or support to, and adjustment of the packing in relation to the rod or other part is effected;

and which, in the case shown, consists of a band of steel or other suitable metal, on and covering the outside or back of the part *a*.

c and *d* are rings of angle section in the construction shown—to which the ends of the band *b* or part *a*, are fastened.

o represents the rod to be packed.

p is the existing stuffing box of the cylinder in which the rod *o* works; and *q* is the box within which the packing is placed; it being held on the box *p* by studs and nuts *r*. A plate *s* is introduced between the box *q* and the box *p*, against one surface of which, the ring *c* of the packing bears, and with which it makes a fluid-tight joint.

The ring *d*, to which one end of the band *b* is suitably attached, is prevented from turning by a projection *e* upon it, the edge of which engages with one of the bolts *r*; while the other ring *c*, to which the other end of the metal band *b* is attached, is adapted to be rotated; and for this purpose is provided with teeth *f*, forming a worm wheel on its periphery, which are engaged and worked by a worm *g* inside the box *q*, on a spindle *h*, one end *i* of which projects through the box, and by which it is adapted to be turned; a gland or stuffing box *j* being provided around the spindle *h*, to make a fluid tight joint with the box *q*.

At one end of the packing, springs *k* are provided, which give elasticity longitudinally to it, and enable the lengthening of the packing to take place when adjusted by the adjusting means, due to the coiling on of same as it becomes worn. In Figs. 1 and 2, these end springs *k* are at the outer end of the box *q*, and are supported by its end, at one end, and with their outer ends they press upon a flanged ring *l*, which passes through the end of the box *q*; a tight joint with which is effected by the gland and packing *m*. The inner end or flange of this ring *l* bears upon the underside of the ring *d*, and makes a joint with it.

When the packing becomes worn, it is adjusted on to the rod *o* by turning the spindle *h*, which through the worm *g*, and the worm teeth *f* on the ring *c*, pulls or winds up the metal band *b*, and with it, the packing *a* to

the required degree of tension; and this can be effected, while the engine or machine is running.

In the case shown in Figs. 1 and 2, the stuffing box *p* is filled with metallic rings *u*, carried in a central ring *v*, to which lubricant can be easily supplied.

The packing *a* which actually comes in contact with the rod, may be a soft packing, or a compound packing of soft material and flexible or other suitable metal, or of metallic parts made up in pieces, which are connected to and supported by the continuous adjusting and holding bands, cords, or the like, *b*; and the form and nature of this part will depend upon the nature of the packing part *a*. For instance, in the case shown, this outer part *b* is in the form of a band, and the packing material *a* is assumed to be of soft or flexible type, and its outer surface or part is supported by and rests on the band *b*, and the tension is applied spirally to it for adjusting it; but in other cases, as stated, metallic cords or wires, or coil springs may be used in connection with the part *a*, either at the back, or even extending through it, or in any other suitable way, but preferably at the back; the ends of which cord or spring, or the part *a*, or both, are connected up with the adjusting rings *c*, *d*, so that when these rings are rotated in relation to each other, or one of them is, the band, cord, or spiral spring will apply pressure spirally to the packing material *a*, and adjust it on to, and hold or support it up to the rod or part to be packed.

In Fig. 3, the springs *k*, by which the automatic longitudinal adjustment for the increase of length of the packing lengthwise on the rod, due to the coiling up of a greater length of it on to it, is effected, are placed between the rings *u* in the stuffing box *p*, and the bottom of such stuffing box; and the outer ring *d* of the packing rests on the outer end of the box *q*, and makes joint with it. In this case, also, the outer end ring *d* of the packing is provided with worm teeth *f*, and is adapted to be rotated through these teeth, and the worm *g*; and the ring *c* is prevented from being rotated by a pin *n*, which engages with or passes through a projection *e* on the ring *c*.

In Fig. 4, the spiral packing is adapted to fit and work partly in the existing packing box *p* of an engine cylinder and partly in a short box *q*, fixed on the outer end of same. The lower ring *d* in this case is provided with teeth *f*, and is rotated by the worm *g* similarly as in Fig. 3; but in this case, the automatic longitudinal adjustment of the packing by means of the springs *k*, is allowed to take place at this outer end of the packing, similarly as in Figs. 1 and 2.

The inner ring *c* is prevented from being rotated by means of pins *n*, fitted in the ends

of the fixed ring *u* in the bottom of the stuffing box *p*.

What is claimed is:—

1. An engine or machine packing comprising a spiral packing part which acts on the surface of the rod or other part with which a fluid-tight joint is to be maintained, spirally arranged around the said rod or other part to be packed; a spiral flexible binder in connection with said other packing part, for holding and pressing it to the rod or other part to be packed; a ring at one end of said spiral packing, to which one end of said binder is connected, having teeth upon it; a casing in which said packing is disposed; a worm wheel supported by and within the said casing, and meshing with the teeth of said ring; and an actuating shaft on said worm wheel extending through the casing; substantially as set forth.

2. An engine or machine packing comprising a spiral packing part which acts on the surface of the rod or other part to be packed; a spiral metal flexible binder on the outside of said packing part, for holding and pressing it to the rod or other part to be packed; a ring (*c*, *d*) at the ends of the packing to which each end of said binder is attached; an outer casing to the packing; rotative actuating means connected with one of said rings and adapted to be operated from outside the said packing casing; and springs (*k*) in connection with one of the end rings for admitting longitudinal extension of the packing when spirally wound on the rod or other part; substantially as set forth.

3. An engine or machine packing comprising a spiral packing part which acts on the surface of the rod or other part with which a fluid-tight joint is to be maintained, spirally arranged around the said rod or other part to be packed; a spiral flexible binder on the outside of said packing part, for holding and pressing it on to the rod or other part to be packed; a ring at each end of said spiral packing, to which said binder is attached; a casing in which said parts are contained; a bush (*l*) in connection with the said outer ring, and extending through and making joint with the end of the casing, and with the outer face of the said ring; and springs (*k*) between the inside of the end of the casing and the bush, and pressing the said bush onto the said outer ring; substantially as set forth.

4. In an engine or machine packing, the combination of a rod *o*; the packing *a* wrapped spirally around the said rod; a ring *c* at and connected with the inner end of said packing; a ring *d* at and connected with the outer end of said packing; a casing *q* containing said packing; a bush *l* making joint at its inner end with the ring *d*, and passing through said casing and making

joint therewith; a packing *m* between the
said bush *l* and the end of the casing *q*;
springs *k* disposed between the inner end of
the case *q* and the inner part of the bush *l*;
5 teeth *f* on one of said rings (*c*, *d*); a worm
wheel *g* meshing with the teeth *f*, and sup-
ported by and within the casing *q*; an actu-
ating shaft *h* connected with the worm *g*,
and extending to the outside of the casing;
10 and a packing *j* for making a fluid-tight

joint between the casing and the shaft *h*; as
set forth.

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

GEORGE HUNTER ROBINSON.

Witnesses:

H. D. JAMESON,

A. NUTTING.