

K. OEHL-SCHLAEGER.
 DEVICE FOR COLLECTING STUFFING BOX DRIPPINGS.
 APPLICATION FILED DEC. 11, 1903.

Fig. 1

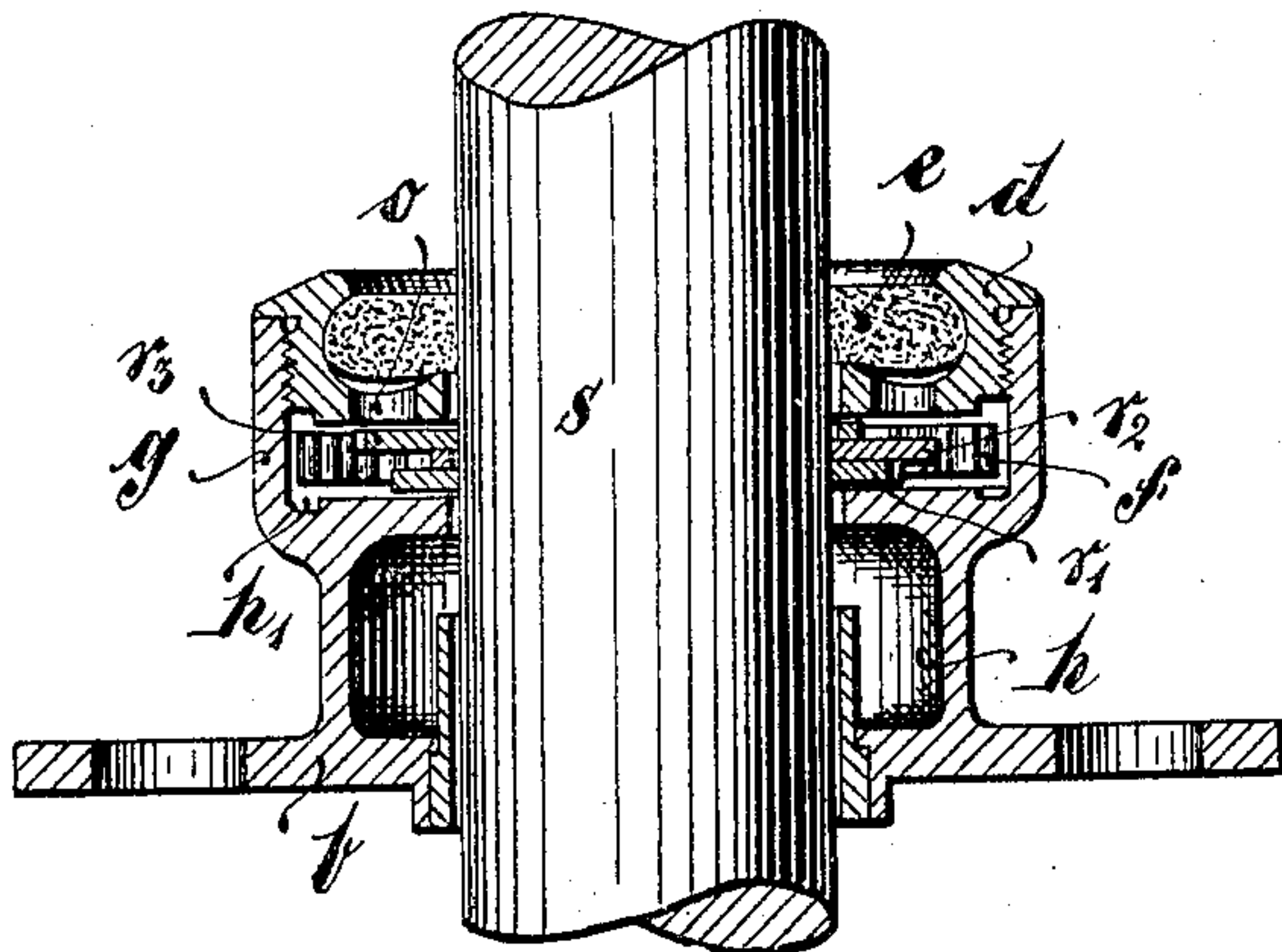


Fig. 2

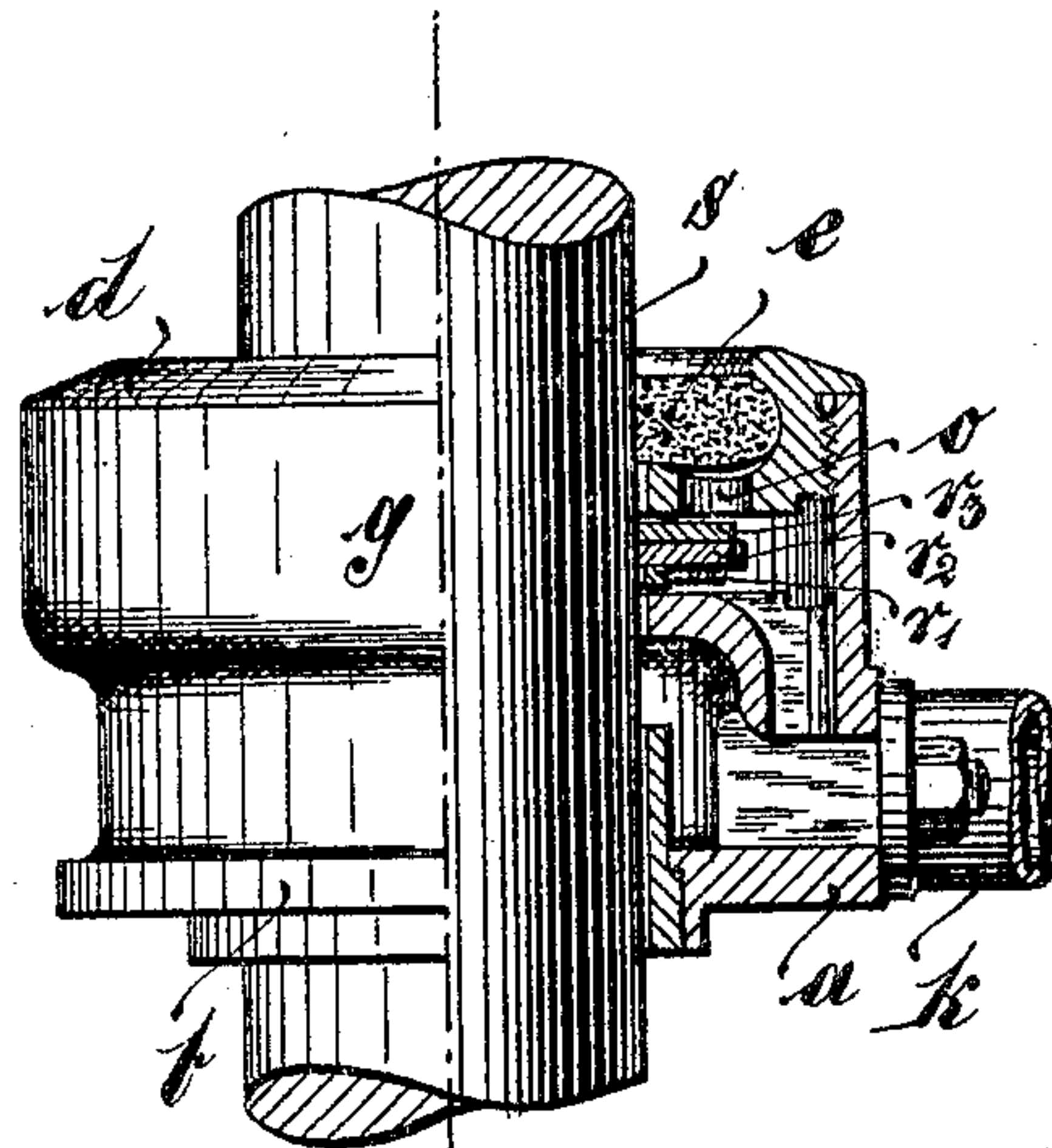


Fig. 3

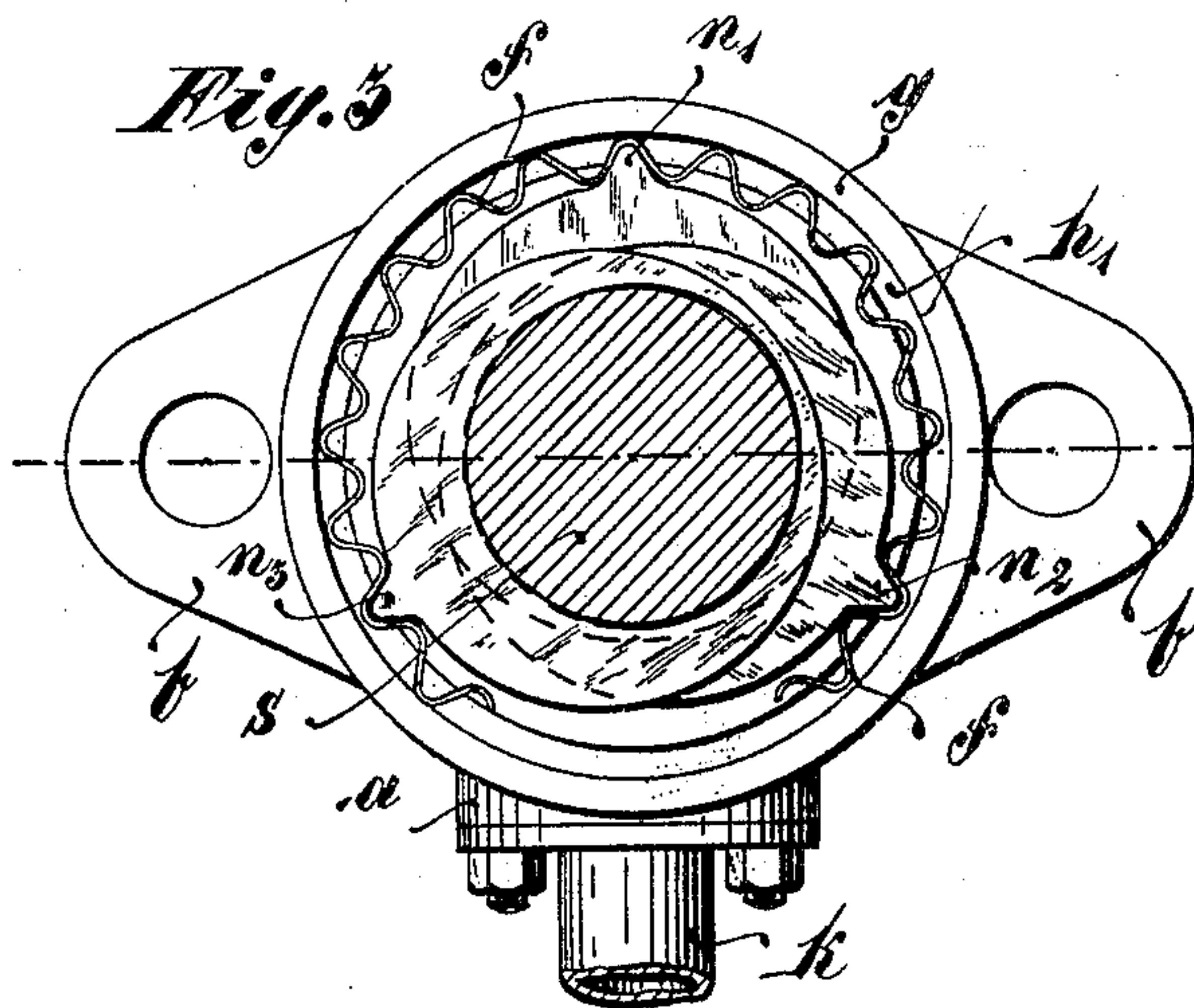
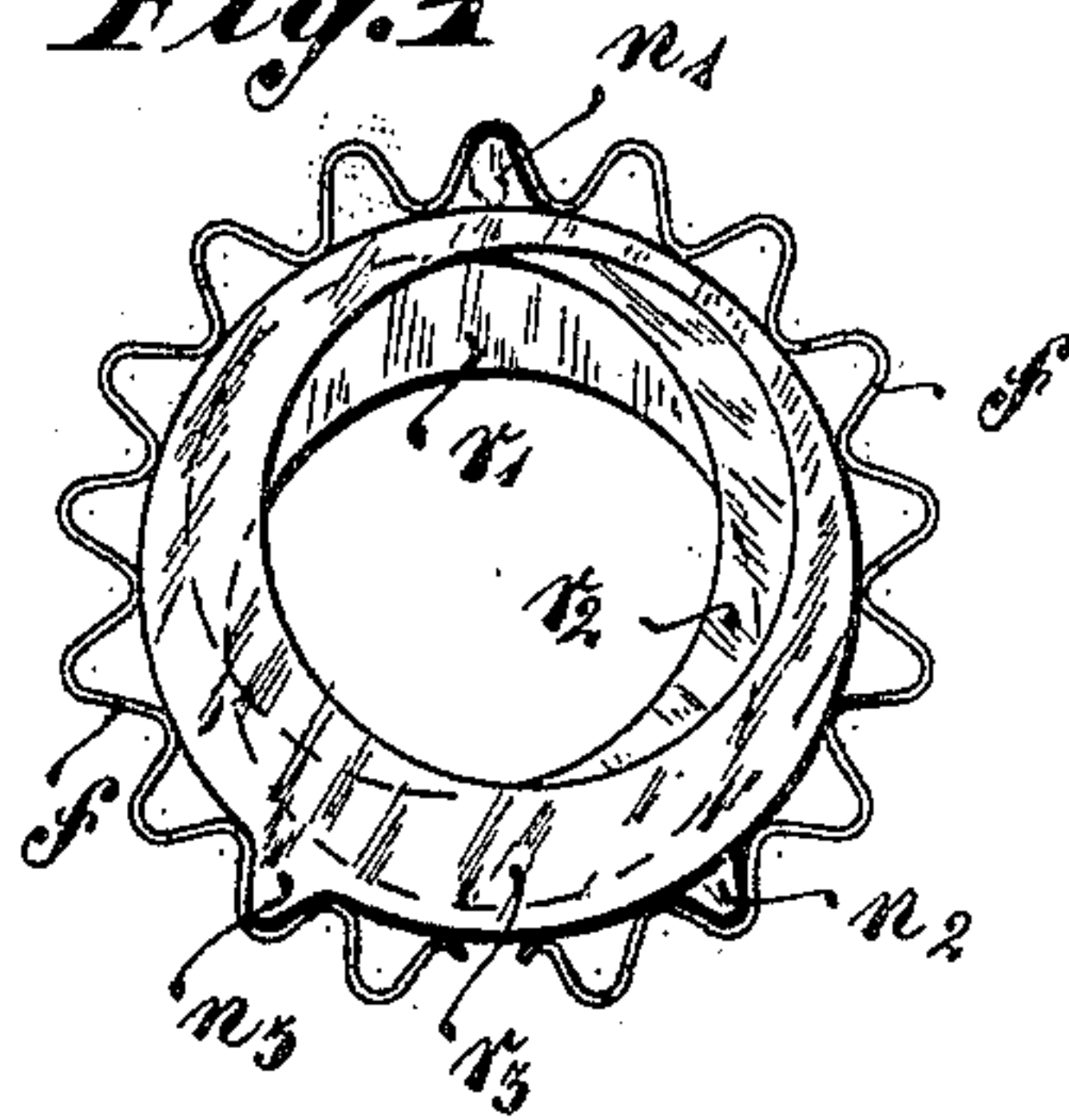


Fig. 4



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UNITED STATES PATENT OFFICE.

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DEVICE FOR COLLECTING STUFFING-BOX DRIPPINGS.

No. 803,188.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, KURT OEHLSCHLAEGER, civil engineer, residing at 1 Grossestrasse, Fleusburg, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Devices for Picking Up and Collecting Stuffing-Box Drippings, &c., of which the following is a specification.

The present invention relates to a device for picking up and collecting the stuffing-box drippings and leakage from piston-rods, pump-plungers, and the like.

In steam-engines provided with surface condensers, and particularly in marine engines, it is of importance for the maintenance of the boiler plant to restrict as much as possible all leakages of steam and water from stuffing-boxes, valves, &c. A leakage very commonly observed and exceedingly hard to entirely do away with is that occurring at the stuffing-boxes of feed-pumps coupled with the power engine and other pumps. Experience has shown that all these stuffing-boxes leak more or less, so that a loss occurs which during a long voyage makes itself quite perceptible. In view of this fact various forms of construction have been tried for the stuffing-boxes with metallic or non-metallic packings, but with practically the uniform result that to obtain a moderately-good packing a perpetual overstraining of the stuffing-box is necessary, whereby piston-rods, pump-shafts, stuffing-box packing, and lining are quickly worn out.

According to the present invention no attempt is made to alter or improve the stuffing-box itself; but instead a device is employed outside the stuffing-box by which all leakage-water, as well as any water clinging to the pump-shaft or piston-rod, is completely taken up and collected and from which it can be led back again to the reservoir or the suction-space of the pump. To this end there is cast on or by other means attached to the stuffing-box a box or casing containing three annular plates or disks, one behind the other and bored eccentrically with a circular hole for receiving the piston-rod or pump-shaft. These three annular plates are surrounded by an undulating spring, a projection on the circumference of each annular plate, at the broadest part thereof, taking into a recess of the spring, so that the three annular plates can always be kept at an angle of one hundred and twenty degrees to one another—*i. e.*, they can be prevented from altering their relative

position to one another. The leakage-water will thereby be arrested and collected in the box containing the annular plates and can from thence be led back to the reservoir or pump, as desired.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a central vertical section showing the device applied to a stuffing-box. Fig. 2 is an elevation of the same, partly in section, seen at an angle of ninety degrees to Fig. 1. Fig. 3 is a plan view of the device, the cover having been removed; and Fig. 4 shows the packing-rings separately.

The device is attached to the end plate *b* of the stuffing-box in a cast on casing *g* and consists of three rings r^1 r^2 r^3 , laid one above the other and having eccentric borings. (See Fig. 4.) These are so proportioned that the piston-rod *s* very nearly, but not quite, fills them. Each of the rings r^1 r^2 r^3 is provided at its broadest part with a projection u^1 u^2 u^3 . The lowest ring r^1 is laid on the bottom of the box or casing *g* in such manner that its projection u^1 takes into the center recess of the undulating spring *f*. (See Figs. 3 and 4.) The second ring r^2 is laid upon the last ring in such a way that its projection u^2 is brought to lodge in the ring *f* at an angle of one hundred and twenty degrees to the projection u^1 . The ring r^3 is now put in position above the other two with its projection u^3 engaging the spring *f* at one hundred and twenty degrees to both projections u^1 and u^2 . It is of course assumed that the three rings are slipped in the box *g*. If the piston rod or shaft *s* be completely withdrawn, the spring *f* will press the rings toward their centers, as seen in Fig. 4. This figure gives at the same time, on a slightly-exaggerated scale, a clear picture of the effect of the spring *f* upon the piston-rod or pump-shaft, since it makes it clear that each ring lies close against the surface of the piston-rod or pump-shaft with at least half the circumference of its boring. Now since the rings are set at an angle of one hundred and twenty degrees to one another there is between each pair of rings an overlapping packing of about sixty degrees, so that a complete surrounding of the piston-rod or pump-shaft is effected by means of three rings only—that is, the rings r^1 r^2 r^3 collect all the water leaving the stuffing-box and retain all water and strain coming through with the piston-rod. This is collected in the casing *g* and led off by pipe *k*. The spring *f* and three rings r^1 , r^2 , and r^3 are

kept in place by the cover screwed tight into the box *g*. In order to render the securing and removal of this cover more easy, it may be provided with two holes *o* for the pins of
5 a key or spanner.

At a suitable point on the circumference of the casing *g* a draining-socket *a* is cast, which is connected with the spaces *h* and *h'* by suitable channels. (See Fig. 2.) To this socket
10 can be attached the flange of a pipe *k*, leading to the reservoir or suction-space of the pump. (See Figs. 2 and 3.) In horizontal engines the socket *a* will of course be placed at the lowest point possible of the casing cir-
15 cumference, and the passage connecting it with the space *h'* will preferably lie nearer the circumference.

Owing to the freedom of radial movement of the rings *r'* *r*² *r*³ and the spring *f*, the end
20 plate of the stuffing-box need only be tightened lightly even in the case of pump-shafts of piston-rods which do not work rectilineably, so that the friction and wear to which the parts are subjected are reduced to a mini-
25 mum.

Owing to the fact that the projections of the three rings are always held at an angle of one hundred and twenty degrees to one another by means of the spring *f*, the angles between
30 the radii of the rings passing through the pro-

jections are always altering, a circumstance which is of value in the case of piston-rods or pump-shafts which are not cylindrical throughout, but which, owing to wear, are thinner in the middle than at the ends.

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Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

A device for collecting the leakage-water
40 from pump shafts or rods, piston-rods, and the like, consisting of the combination of a casing attached to the stuffing-box for said rod, three plates provided with eccentric cir-
45 cular holes through which the rod passes, said plates lying one upon the other within said casing, a projection on each annular plate upon its circumference at the broadest part
50 of the plate and an undulating spring inclosing said plates and tending to press them to- ward a common center, the projections on said plates being held by said undulations one hun-
dred and twenty degrees apart, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set
55 my hand in presence of two witnesses.

KURT OEHLSCHLAEGER.

Witnesses:

JULIUS PREDEL,

ALBERT MICHELSEN.