

No. 803,260.

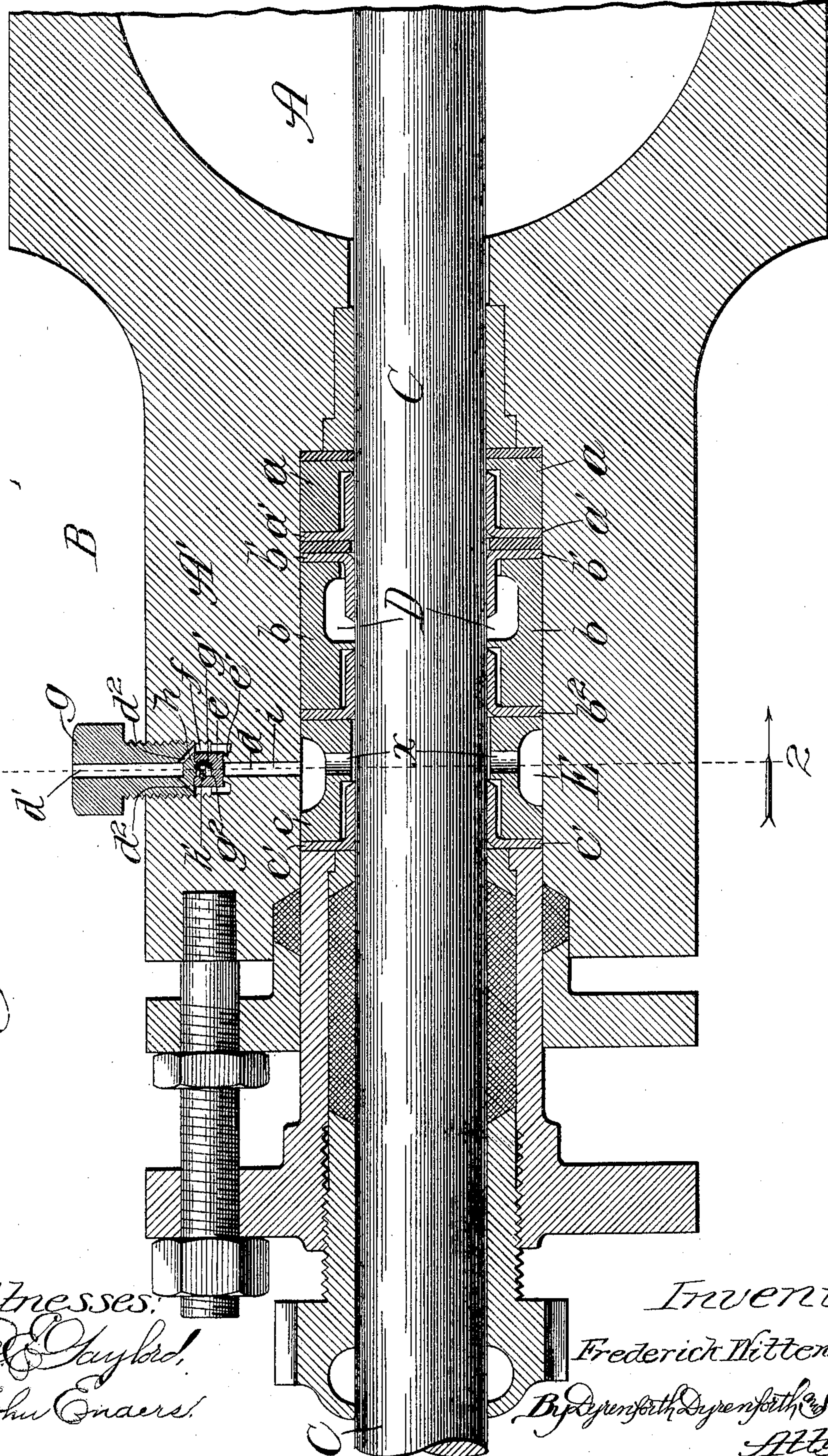
PATENTED OCT. 31, 1905.

F. WITTENMEIER.

GAS COMPRESSOR.

APPLICATION FILED OCT. 18, 1904.

2 SHEETS—SHEET 1.



Witnesses:
Ed. Taylor,
John Enaers.

Inventor:
Frederick Wittenmeier,
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2 SHEETS—SHEET 2.

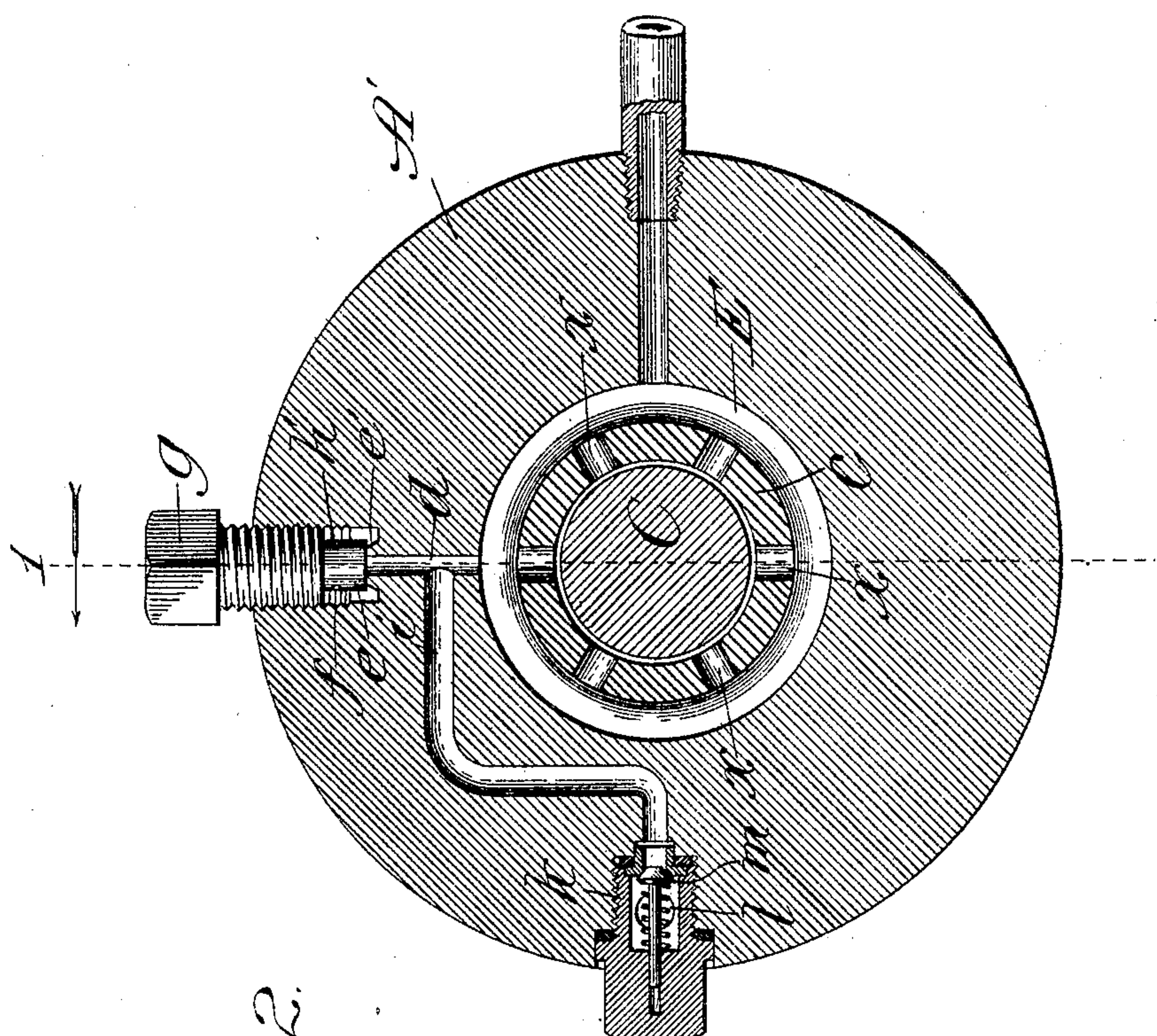


Fig. 2.

Witnesses:
Edw. C. Chubb,
John Enders.

Inventor:
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UNITED STATES PATENT OFFICE.

FREDERICK WITTENMEIER, OF CHICAGO, ILLINOIS, ASSIGNOR TO KROE-
SCHELL BROS. ICE MACHINE CO., OF CHICAGO, ILLINOIS, A CORPO-
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GAS-COMPRESSOR.

No. 803,260.

Specification of Letters Patent.

Patented Oct. 31, 1905.

Application filed October 18, 1904. Serial No. 228,925.

To all whom it may concern:

Be it known that I, FREDERICK WITTEN-
MEIER, a citizen of the United States, residing
at Chicago, in the county of Cook and State
of Illinois, have invented a new and useful Im-
provement in Gas-Compressors, of which the
following is a specification.

My invention relates to the stuffing-box con-
struction of a gas-compressor; and it relates
particularly to an improvement in the con-
struction of the stuffing-box feature of the
gas-compressor forming the subject of Let-
ters Patent of the United States, No. 606,430,
dated June 28, 1898, to Julius Sedlacek.

Examination of the aforesaid patent will
show that it provides for a plurality of stuff-
ing-box chambers within the housing exten-
sion of the compressor-cylinder, each of these
chambers being formed in the outer side of a
packing-ring about the piston-rod, and that
the regulating-valve which opens to let into
the suction-chamber any excess of leakage-
gas accumulated in a stuffing-box chamber
opens at the base of that chamber which is
the one nearest the compressor-cylinder.

It is found in the practical embodiment of
this invention that by providing both of the
stuffing-box chambers in the outer sides of
the respective packing-rings the leakage-gas
finds too ready access from the inner to the
outer one. My object in this connection is
so to dispose the two stuffing-box chambers
that leakage from one to the other shall be
very materially reduced.

It is further found to be advantageous to
apply the regulating-valve to the outer stuff-
ing-box chamber, which is the lubricant-sup-
ply chamber, rather than to the inner cham-
ber; but where the valve is placed to dis-
charge, as in the patent, through the bottom
of the chamber it so far depletes the latter of
oil as to leave a large section about the upper
portion of the piston-rod uncovered with lu-
bricant and therefore dry. My object in this
connection is to prevent the discharge through
the regulating-valve from producing this un-
desirable result.

My aforesaid objects are accomplished by
the construction hereinafter described, and
illustrated in the accompanying drawings, in
which—

Figure 1 is a broken longitudinal vertical
section of the stuffing-box of a gas-compressor

provided with my improvements, the section
being taken at the line 1 on Fig. 2 and viewed
in the direction of the arrow; and Fig. 2 a
section taken at the line 2 on Fig. 1 and
viewed in the direction of the arrow.

A denotes the compressor-cylinder, of
which only the rear portion is shown in Fig.
1, because my improvements relate solely to
the stuffing-box B, formed in the housing ex-
tension A' of the cylinder to cooperate with
the piston-rod C, which extends through it.
About the piston-rod in the housing A' are
provided suitable metal packing-rings *a*, *b*,
and *c*, equipped, respectively, with cup-
leathers *a'*, *b'*, *b''*, and *c'*. In the inner sur-
face of the ring *b* is formed about the piston-
rod a chamber D, and in the outer surface of
the ring *c* is formed a circumferential cham-
ber E, having a series of radial outlets *x* open-
ing to the piston-rod. Into this chamber E
leads transversely through the housing-wall
from its upper side a duct *d*, terminating in
a seat *e'* for a valve *e*, entering for its con-
finement into a recess *f* in the inner end of a
plug *g*, which screws into an opening in the
side of the housing A' and is provided with a
longitudinal central passage *d'*, having branch
ducts *d''* *d'''* leading from its inner end. On
the inner end of the plug *g* is a stud *g'*, fit-
ting within a socket *g''* in the upper side of
the valve and provided with a semicylindrical
circumferential groove *h* to admit pins *h'* *h''*,
passing transversely through the valve to em-
brace the stud *g'* between them. By this con-
struction (which, however, is not novel) when
the valve is in frictional contact with its seat
the plug *g* may be screwed against the valve
to tighten it on or initially loosen it from its
seat without turning the valve, and thus
grinding it against its seat, as the frictional
contact therewith will hold it against rotation,
since the stud rotates freely in the valve-
socket. From the duct *d* there leads in the
housing-wall a laterally-extending branch
duct *i*, terminating in a valve-chamber *k*,
from which a duct *l* leads to the suction side
of the compressor. Interposed in this cham-
ber is the valve *m*, presenting its inner sur-
face of smaller area to the chamber E and its
outer surface of larger area to the suction-
duct *l*, whereby when the pressure in the
chamber E equals that of the pressure from
the suction side the valve opens to introduce

into the suction-duct *l* any excess of pressure above that to be normally retained in the chamber.

As will be seen, by providing the two chambers D and E, respectively, on the inner and outer sides of the packing-rings containing them the escape of gas which enters the chamber D from the compressor is much more effectively prevented than where, as heretofore, the two chambers are in the outer surfaces of the rings, and the packing-leathers are thereby rendered more efficacious. It will also be seen that when pressure in the chamber E opens the valve *m* to discharge the over-pressure of gas in that chamber into the suction-duct *l*, (thereby to prevent such an accumulation of pressure as will tend to cause gas-leakage past the packing-cup *c'*,) the gas in discharging will carry along with it, as desired for lubricating purposes, some oil from the chamber, but not enough to deplete it, as heretofore, below the top surface of the piston-rod.

The supply of lubricant to the chamber E is produced in the usual manner by the action of a suitable pump, (not shown,) and the removable plug *g* affords means for inspecting the condition of the supply of lubricant in the oil-chamber.

What I claim as new, and desire to secure by Letters Patent, is—

1. In the stuffing-box of a gas-compressor, the combination with the piston-rod, of packing-rings equipped with flexible packing material, a chamber formed in the inner surface of one of said rings and extending into the body thereof and a chamber formed in the outer surface of the other ring, said chambers opening to the piston-rod, substantially as and for the purpose set forth.

2. In the stuffing-box of a gas-compressor, the combination with the piston-rod, of packing-rings equipped with flexible packing material, a chamber formed in the outer surface of the outermost ring and a chamber formed in the inner surface of the next adjacent ring, and extending into the body thereof, said chambers opening to the piston-rod, substantially as and for the purpose set forth.

3. In combination, a gas-compressor stuffing-box having a chamber in a packing-ring

about the piston-rod, a duct leading out of said chamber from above the plane of the piston-rod to the suction side of the compressor, and a regulating-valve controlling the discharge through said duct from said chamber, and adapted to be opened by pressure in the latter, substantially as and for the purpose set forth.

4. In combination, a gas-compressor stuffing-box having a chamber in a packing-ring about the piston-rod, a duct leading out of said chamber from above the plane of the piston-rod and having a lateral branch leading to the suction side of the compressor, and a regulating-valve in said branch controlling the discharge from said chamber and adapted to be opened by pressure in the latter, substantially as and for the purpose set forth.

5. In combination, a gas-compressor stuffing-box having a plurality of packing-rings equipped with flexible packing material about the piston-rod, a chamber formed in the inner surface of one of said rings and a chamber formed in the outer surface of the other ring, said chambers opening to the piston-rod, a duct leading out of the outermost of said chambers from above the plane of the piston-rod to the suction side of the compressor, and a regulating-valve controlling the discharge through said duct from said last-named chamber and adapted to be opened by pressure in the latter, substantially as described.

6. In combination, a gas-compressor stuffing-box having a plurality of packing-rings equipped with cup-leathers about the piston-rod, a chamber formed in the outer surface of the outermost ring and a chamber formed in the inner surface of the next adjacent ring, said chambers opening to the piston-rod, a duct leading out of said outermost chamber from above the plane of the piston-rod to the suction side of the compressor, and a regulating-valve controlling the discharge through said duct from said last-named chamber and adapted to be opened by pressure in the latter, substantially as described.

FREDERICK WITTENMEIER.

In presence of—

WALTER NORMAN WINBERG,
E. P. RICH.