

PATENT SPECIFICATION

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(54) IMPROVEMENTS IN OR RELATING TO RECOVERY APPARATUS FOR THE COLLECTION OF DRILLING OR LIKE CUTTINGS

(71) We, FORACO FORAGE
RATIONNEL CONSTRUCTION S.A., a
French corporate body, of 24 Avenue George
V, 75008 Paris, France, do hereby declare
the invention, for which we pray that a patent
may be granted to us, and the method by
which it is to be performed, to be particularly
described in and by the following statement:—

The present invention relates to recovery
apparatus for the collection, from a gas
stream, of the cuttings obtained during a drill-
ing, or core-extraction, operation, particularly
for such operations using a reflex-flow gas
stream drilling process.

It has been known for a long time that core
samples of any desired lengths can be brought
to the surface, but their extraction is often
slowed down by the difficulty with which the
core sample rises. One of the least costly
methods consists of using compressed air as the
drive means and in collecting the mixture of
cutting and dust particles by means of separa-
tion apparatus such as cyclone apparatus. This
method of recovery, however, destroys the
sequence of removal collection of the cuttings
as a function of the drilling level reached and
has, in addition, the disadvantage of using ex-
pensive apparatus.

Accordingly, the present invention pro-
vides recovery apparatus for the collection of
cuttings from a gas stream resulting from a
drilling, or core extraction, operation com-
prising a permeable tube for attachment to the
outlet end of a delivery tube carrying gas-
borne cuttings, a perforated recovery sheath
open at one end and closed at the other, the
apertured tube extending into the open
end of the recovery sheath and both being
surrounded, for at least most of their length,
by an open-ended decompression sleeve.

Thus, whatever may be the method of drill-
ing, or core-extraction, using, say, compressed
air as the gas fluid, the cuttings are collected
in the sequence of cutting and hence arrival
at the head of the bore, and they are collected
in the order of their arrival, without dis-
turbance. In fact, since the apertured tube

has, as its sole object, the decompression of
circulatory air and the removal of any water
which has been brought up, the cuttings fall
without disturbance into the perforated re-
covery sheath, these perforations facilitating
the collection of the cuttings while maintain-
ing a certain excess pressure facilitating the
removal of the water by the apertured tube.

Preferably, the cuttings are carried in an
air stream slowly exclusively through the cen-
tral passage of a system of concentric tubes,
whether for a drilling or for a core extraction
operation, the compressed air initially fed into
the annular space between the concentric tubes.

In this way, an exact and continuous geo-
logical section is obtained, the samples re-
moved during a core extraction operation and
drilling cuttings being introduced into the
recovery sheath without contamination, and
without manual handling.

The invention will now be described in
more detail, by way of example only, with
reference to the accompanying drawings, in
which the single figure shows a recovery
apparatus in accordance with the invention.

In the figure, cuttings brought to the sur-
face, carried by the gas stream in this
example, compressed air, are carried through
a tube 1, which may be, or may communicate
with, the central tube of a reflex flow gas
stream drilling operation using coaxial tubes
with which compressed air is supplied into the
space between the tubes and is exhausted, with
air borne cuttings through the central tube.
An apertured tube 2 surrounded by a decom-
pression sleeve 3 is fixed to this tube 1. This
sleeve 3 can be mounted in any manner and
it will be assumed that it is fixed at 4 to the
apertured tube 2 by means of a collar 4 or
similar attachment means. The sleeve 3, which
is open at its lower end 8, can be a simple
sleeve made from any material.

The apertured tube 2 extends into the open
upper end of a recovery sheath 5, which can
also be of any material. This sheath 5 is per-
forated, as shown, and is closed at its lower
end, so as to facilitate the entry of the cuttings

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and their retention therein. A slight excess air pressure created by the sheath 5 facilitates the removal of any water, which may have been carried in the air stream together with the cuttings, through fine slots 6 in the apertured tube 2, so that any water and a certain quantity of dust carried in the air stream and ejected through the fine slots 6 of the apertured tube 2, are collected at the lower end 8 of the decompression sleeve 3.

The tube 2 can easily be exchanged by providing, for example, any kind of connection at the end 7 of the tube 1. Apertured tubes, such as tube 2, are thus chosen which are adapted to the cuttings which are brought up in order to avoid too great a dispersion of any fine dust particles existing in the particular instances. If, exceptionally, it is desired to recover this small fraction, water may be sprayed between the apertured tube 2 and the sleeve 3, from an outlet not shown, in order to trap the dust particles distributed between the apertured tube 2 and the sleeve 3. Fine dust particles passing through the slots 6 are thus carried to the open lower end 8 of sleeve 3, where they may be collected by means not shown.

The decompression sleeve 3 and recovery sheath 5 may be secured in place by any convenient attachment means, the sleeve 3 at fixing collar 4 and the sheath 5 at a collar 9, for example.

The length of the sheath 5 is not critical and the sheath 5 need not be perforated, if it is made of permeable material.

35 WHAT WE CLAIM IS:—

1. Recovery apparatus for the collection of

cuttings from a gas stream resulting from a drilling, or core extraction, operation comprising an apertured tube for attachment to the outlet end of a delivery tube carrying gas-borne cuttings, a permeable recovery sheath open at one end and closed at the other, the apertured tube extending into the open end of the recovery sheath and both being surrounded, for at least most of their length, by an open-ended decompression sleeve.

2. Recovery apparatus as claimed in Claim 1, in which the delivery tube carrying gas-borne cuttings is the centre tube, or is connected to, the centre tube of a concentric tube, reflex-flow, gas stream drilling arrangement.

3. Recovery apparatus as claimed in Claim 1 or Claim 2, in which the apertured tube is a selected one of a plurality of interchangeable tubes.

4. Recovery apparatus as claimed in any one of Claims 1 to 3, in which the decompression sleeve and the recovery sheath are each provided with fixing means for attachment to the apertured tube.

5. Recovery apparatus as claimed in any one of Claims 1 to 4, including means for injecting water spray between the apertured tube and the decompression sleeve.

6. Recovery apparatus as claimed in Claim 1, substantially as described herein with reference to the accompanying drawing.

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