STILL CLEAN-OUT RETURN BEND

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1 Claim. (Cl. 285—20)

1. This invention relates to return bends, and
more particularly to that kind known as the
cleanout type, the latter being used for removing
petroleum coke and other products of combustion
accumulating in the tubes and headers as a re-
result of the high temperature oil cracking pro-
cesses employed in refining oil and making gasoline
in stills, boilers, and devices of similar nature.

It is well accepted that in the interests of econom-
y as well as in furtherance of producing better
grades of hydrocarbon fuels more efficiently, there
is a decided tendency to increase the operating pressures as well as the temperatures in the refining
units. With these pressure conditions be-
coming more severe it is necessary to provide for
cleanout return bends which will embody a con-
struction consistent with safety and at the same
time provide convenience in assembling and dis-
assembling the joint for cleanout purposes, in-
section, etc.

One of the principal objects of this invention is
to provide for a return bend which can be in-
stalled in an assembly with a bank of tubes with-
out requiring considerable space thereof.

Another object of this invention is to provide a
bend which will have the necessary rigidity to
avoid distortion under temperature conditions,
being able to remedy the sagging of tubes and re-
placing the same quickly and easily if necessary,
and to permit of the rotation of the latter in the
the event of extreme mugging.

Another object of this invention is to provide for
the proper spacing of tubes with a suitable
guide means.

Other advantages will become apparent after
reading the following description, in which:
Fig. 1 is a plan view of a return bend showing
a preferred embodiment of my invention.

Fig. 2 is a front view of the same return bend
in partial section.

Fig. 3 is a sectional view of the return bend
taken on the line 3—3 of Fig. 2.

Referring to Fig. 2, a fitting 1 is shown which is
commonly known as a return bend, which may
be either forged or cast, and which is provided
with an interior port 2 which extends around in a
semi-circular path to connect the tubes 3 at their
respective ends.

The ends of the tubes are abutted to the ports
by means of a ground joint or similar connection
4, forming a joint as at 5.

In order to make a proper joint with the return
bend, the tubes are preferably threaded as shown
at 6, which engage complementary threads on the
collar 7, which is preferably ring shaped or cy-
lindrical in form so as to fit into the socket 8 of
the link member 9. The latter is substantially
rectangular in form as shown in Fig. 2 and ex-
tends across to connect the tubes in spaced rela-
tion through the apertures 10. In order to assist
the entry of the collar 7 into the socket 8 after
it has been attached to the tube 3, by means of
the threads 6, the latter is preferably tapered at
its lower end as at 20 where it approaches the
shoulder 12.

In order to protect the finished surfaces 4 and 5
forming the joint for the assembly it is preferable
to provide a surrounding lip 22 which extends
annularly around the machined joint surfaces
thus forming a socket 23 for the entry of the tub-
ing 3. The collar 7 is attached to the tubing by
means of the threads as previously mentioned,
and the tubing is allowed to extend beyond the
upper surface 11 of the collar 7 at a predetermined
amount so that when the latter is held in engage-
ment with the link member 9, the tubing 23 will
remain adjusted in fixed relation with respect
to the shoulder 12. This is essential because un-
less the distance between the shoulder 12 and the
end of tubing as at 4 is carefully gauged evenly
for both tubes before assembling with the return
bend, distortion strains will be set up, probably
resulting in leakage.

Therefore, after the collar 7 has been placed on
the tubing in proper relation to the seating
surface 4, the collar for each pair of tubes is in-
serted into the socket 8 and held firmly against
the shoulder 12 by the washer 18 and the bolt
16, which overlaps the collar 7 sufficiently as at
19 so as to hold the latter in position with re-
spect to the surface 15. The bolt 16 is preferably
tapped into the link member 9 as shown at 17.
After this assembly is complete the return bend
is then abutted against the finished ends 4 of
the tubing and bolted to the link member 9 by
means of the studs and nuts 13 and 14, respec-
tively. The recess or hollow 21 permits of the
entry of the bolt head 16, preventing injury there-
to or tampering therewith.

Obviously this invention is capable of several
modifications and I desire, therefore, to be lim-
ited only to the extent of the following claim.

I claim:

1. A return bend, comprising in combination a
pair of tubes having at their respective ends fin-
ish ed surfaces of spheroidal contour for contact
with complementary surfaces on said return bend,
an annular lip surrounding the said contact and
a threaded collar for each pair of tubes threadedly
engaging the latter, a link member for holding
said tubes in spaced axial relation to each other
and provided with spaced sockets for the reten-
tion of each of said collars, and each of said sock-
et providing for centering means for said collars,
bolt and washer means for holding each col-
lar within said sockets, the said link member hav-
ing cooperative means for being held to said re-
turn bend in pressure-tight relation.

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