

Jan. 19, 1932.

M. B. CROWE

1,841,574

RETURN BEND

Filed Jan. 8, 1930

2 Sheets-Sheet 1

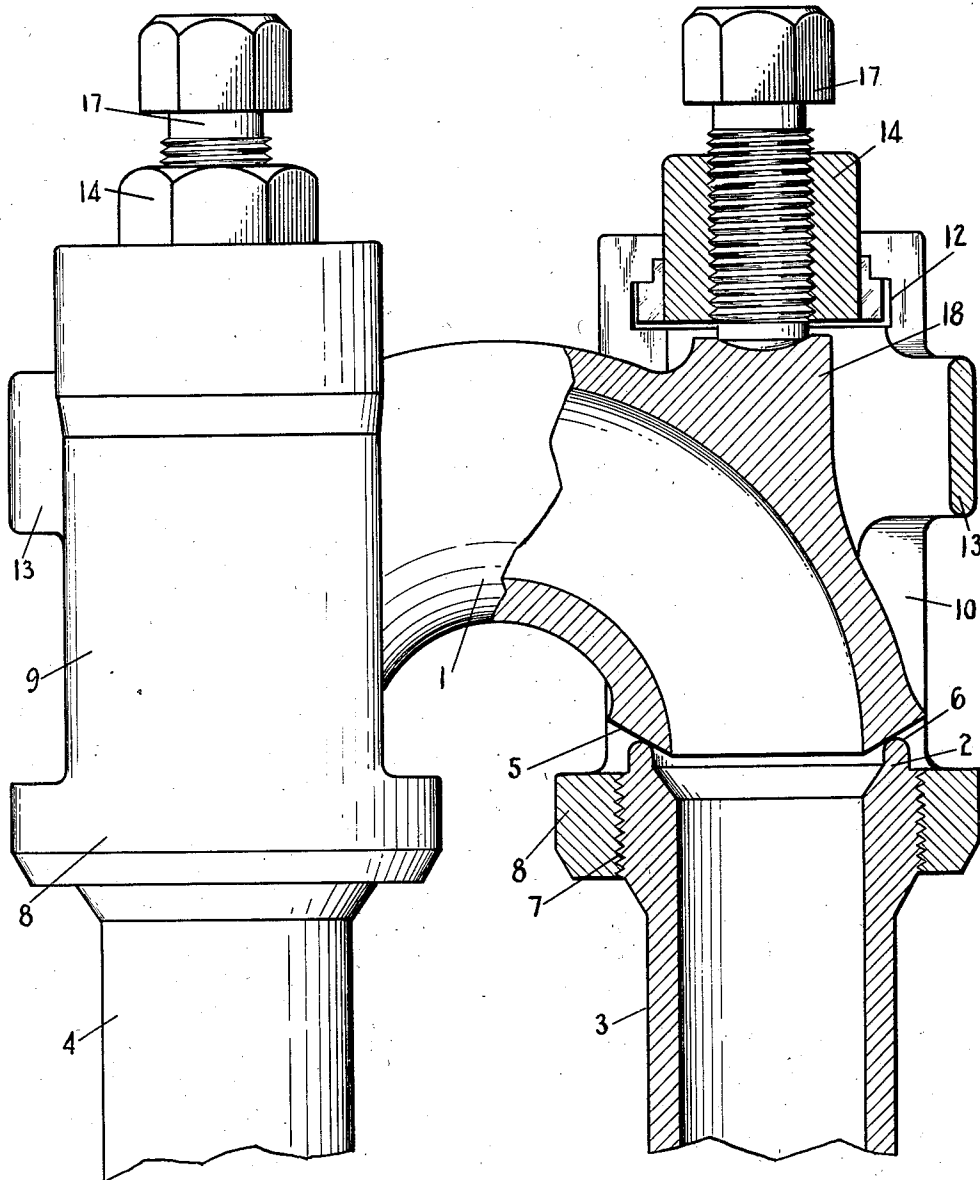


FIG. 1

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FIG. 2

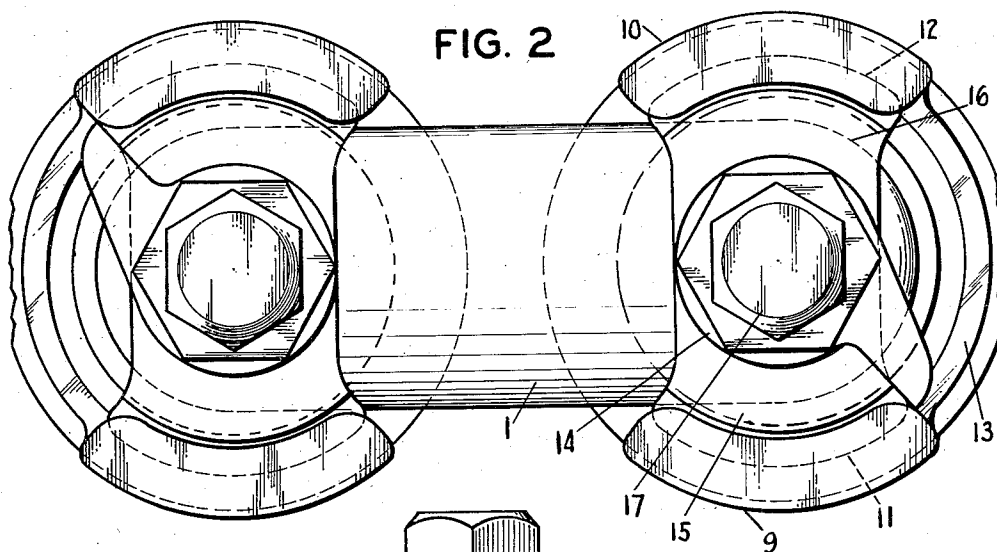
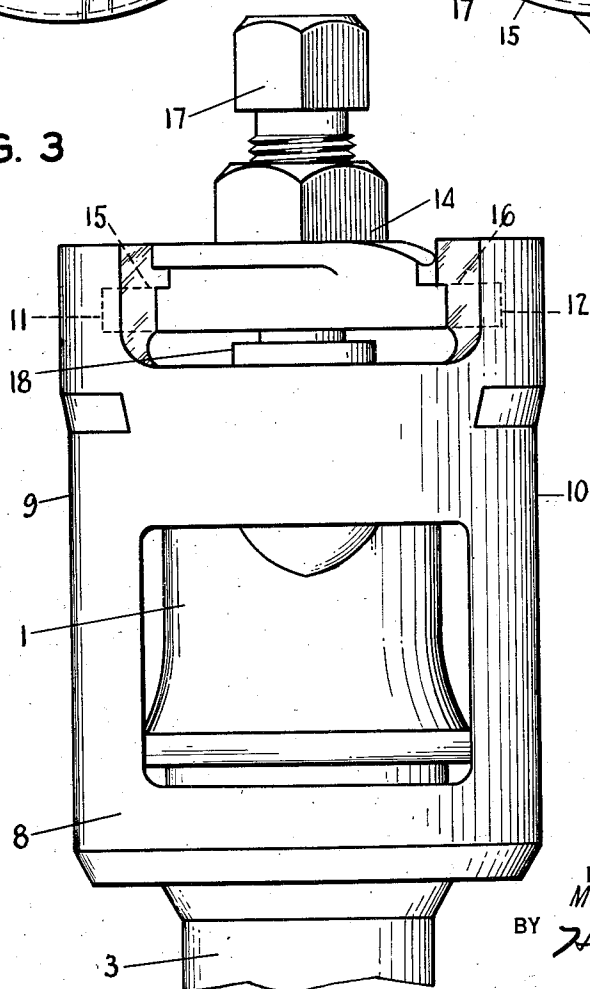


FIG. 3



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MORTON B. CROWE, OF BIRMINGHAM, ALABAMA, ASSIGNOR TO FRED C. FANTZ, OF WEBSTER GROVES, MISSOURI

RETURN BEND

Application filed January 8, 1930. Serial No. 419,280.

My invention relates to that class of return bends in use in cracking stills, in which it is very desirable to have a quickly detachable return bend on the ends of the tubes, owing to the fact that when the deposit of free carbon inside the tubes has attained such proportions as to require removal, it is necessary to detach the bend, as is also the case when a tube has been destroyed and must be replaced.

Originally the tubes were threaded, and the flanges or other members used for attachment of the return bend were screwed onto the pipe or tube, but the cutting of threads in the tubes weakened them at the very point where strength is essential.

My invention has for its object, to provide a construction which will permit of threading the tubes, which is a comparatively simple operation, in such a manner that there will be no weakening of the tubes.

Another object of my invention is, to provide a construction whereby the return bend may be quickly and easily detached from the tubes when desired.

A further object of my invention is, to provide a more inexpensive structure than that now used for this purpose.

My means for accomplishing the foregoing objects may be more readily understood by reference to the accompanying drawings, which are hereto annexed and are a part of this specification, in which—

Fig. 1 is a side elevation, partly in section, of my improved return bend;

Fig. 2 is a top or plan view of the same; and

Fig. 3 is an end elevation thereof.

Similar reference numerals refer to similar parts throughout the entire description.

As shown in the drawings, a return bend 1 is constructed so that its faces contact with the ends 2 of tubes 3 and 4, which may be formed with any suitable type of joint desired. As illustrated, the joint comprises outwardly and upwardly tapering surfaces on the faces 5 of the return bend 1, and annular ridges 6 on the ends 2 of the tubes 3 and 4, said ridges 6 having convex faces which abut the faces 5 of the return bend 1.

The ends of the tubes 3 and 4 are upset, as clearly seen in the sectional portion of Fig. 1, and threads 7 are cut on these upset portions, so that there is no danger whatever of weakening the tubes 3 and 4 by the cutting of the threads 7. Upon these threads 7 I mount on each tube an annular member 8, which is provided with upwardly extending side walls 9 and 10. These side walls 9 and 10 are provided with arcuate grooves 11 and 12 adjacent the top of their inner surface. These upwardly extending side walls 9 and 10 are preferably connected by a rib 13.

A plate 14 is provided with arms 15 and 16, which are fitted to and adapted to enter the arcuate grooves 11 and 12 in the side walls 9 and 10. In the plate 14 is mounted a set screw 17, one end thereof being adapted to engage an abutment 18 formed on the return bend 1. Obviously the plate 14, the set screw 17 and the abutment 18, are duplicated for each annular member 8.

The operation of the device is obvious. The annular members 8 are screwed on the end of the tubes 1 and 2, in the position shown in Fig. 1. The return bend 1 is then placed intermediate the upwardly extending side walls 9 and 10, with the upwardly and outwardly tapering surfaces on its faces 5 contacting the annular ridges 6 on the ends 2 of the tubes 3 and 4. The plates 14 are then placed in position, with their arms 15 and 16 engaging the arcuate grooves 11 and 12 in the side walls 9 and 10. Then, by tightening the set screws 17, their ends will engage the abutments 18 on the return bend 1, the faces 5 of the return bend 1 and the ends of the tubes 3 and 4 will be drawn tightly into engagement, and a leak-proof joint will ensue.

Obviously, when it is desired to clean the tubes, or to replace a defective tube, all that is necessary is to loosen the set screws 17, which permits the removal of the plates 14, when the return bend 1 can be very easily and quickly detached from the ends of the tubes, which can then be readily cleaned; or, if a tube has been destroyed, it is an easy matter to remove the annular members 8, withdraw the defective tube, and insert a new tube, with no danger of injury to the joint.

Although I have described my device as suitable for locking a return bend, it will be apparent to persons skilled in the art that it is equally useful in connection with locking
5 an elbow or a T.

Having described my invention, what I regard as new, and desire to secure by Letters Patent of the United States, is:

In refinery apparatus, a joint between a
10 still pipe and a return bend which can be readily separated after the usual coking of the joint, comprising an inwardly coned surface on each end of the bend and a relatively thin projecting ridge on the end of each still
15 pipe adapted to make a substantially line contact with the coned ends of the return bend and means for securing said bend and said pipe in contacting relation.

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