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PIPE LIFTING TOOL

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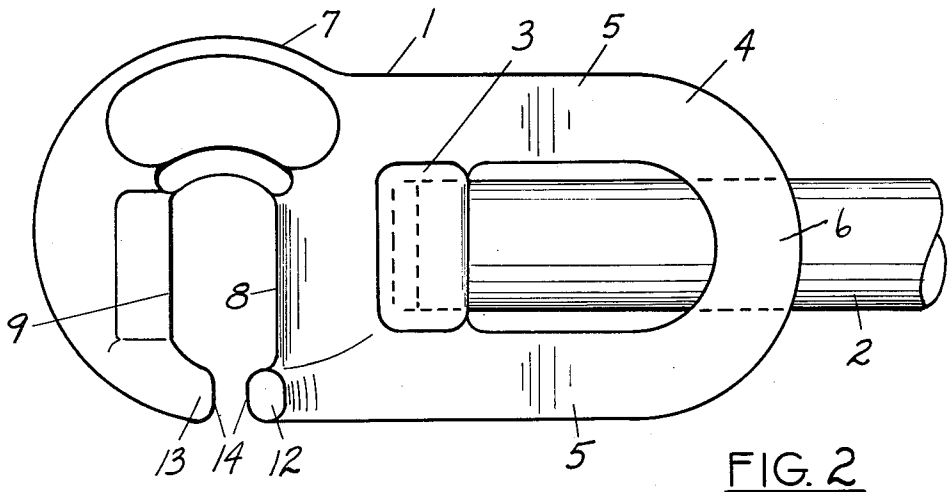


FIG. 2

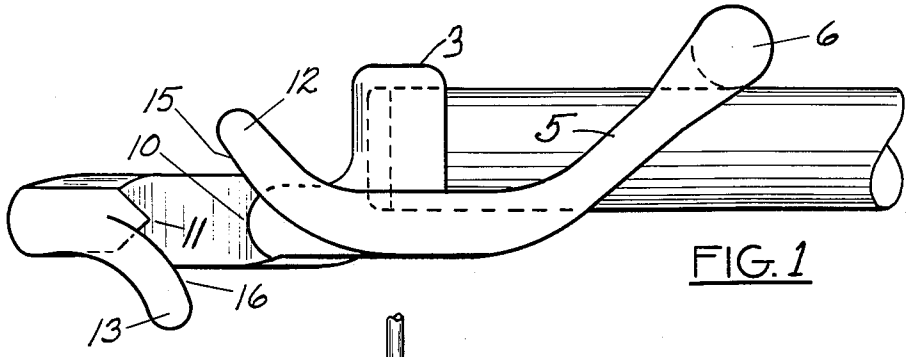


FIG. 1

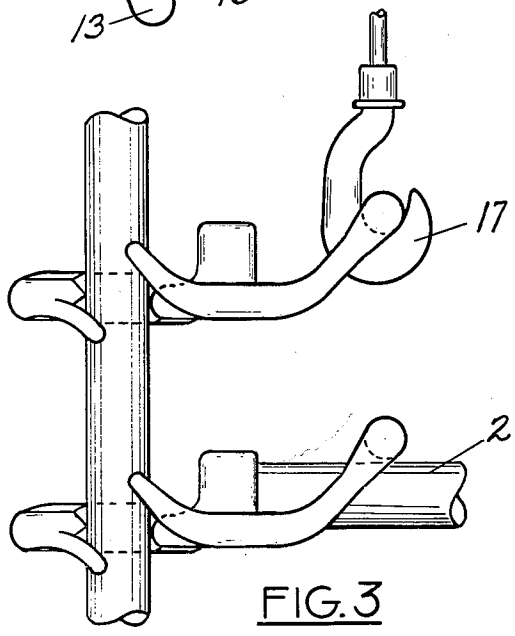


FIG. 3

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PIPE LIFTING TOOL

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This invention is a pipe lifting tool useful in raising or lowering well pipe either manually or with a hoist. So long as there is an upward pressure exerted by the tool, the pipe is securely gripped and the grip is released as soon as the upward pressure is released. When the pressure is released, the tool cannot slip off the pipe although it can be easily removed if the tool is intentionally tilted to an angle far below the normal position during use.

In the accompanying drawing, FIG. 1 is a side elevation of the pipe lifting tool; FIG. 2 is a top plan view; and FIG. 3 is a diagrammatic view showing the use of the tool for both manual and power lifting.

The tool comprises two parts, a casting **1** and a handle **2** threaded into a lug on the casting. On the same side of the casting as the handle is an eye **4** having spaced arms **5** integral with the base of the lug **3** and extending diagonally across the handle **2** and joining each other in a base **6** in substantial contact with the upper surface of the handle **2**. Accordingly, upon a lifting force applied to the outer end of the handle **2**, this force is transmitted to the casting through the lug **3** and also through the eye **4**. On the side of the casting opposite the handle is a C-shaped section **7** having jaws **8** and **9** normal to the handle and spaced apart a distance slightly greater than the outside diameter of the pipe to be lifted. The jaw **8** has a rounded edge as shown at **10** while the jaw **9** has a pointed or wedge shaped edge **11**. Upon a tilting force applied either through the handle **2** or by lifting on the eye **4**, the edge **11** is wedged into biting contact with the outside of the pipe securely gripping the pipe. Upon release of the lifting force, the rounded edge of the jaw **10** permits quick release so that the tool can be moved along the pipe to a new position. In the released position, the handle **2** will be substantially horizontal while in the gripping position, the handle **2** will be inclined at a small acute angle above horizontal.

In the gripping position, the jaws **8** and **9** are, of course, firmly held against the pipe and there is no tendency for the tool to slip off the pipe. In the released position, there is no force tending to hold the jaws against the pipe and there is the possibility that the jaws might accidentally be dislodged from the pipe. This is prevented by horns **12** and **13** at the outer ends of the jaws, the horn **12** being in the outer end of the jaw **8** and extending upwardly therefrom in a curve so that it partly blocks the space between the jaws and the horn **13** extending downwardly from the outer end of the jaw **9** in a similar curve. As is apparent from the plan view of FIG. 2, when the tool is in a horizontal position, the space **14** between the horns **12** and **13** is much less than the space between the jaws **8** and **9** so that accidental removal of the tool from the pipe is positively prevented by the horns. When the tool is tilted a sufficient distance below the horizontal position shown in FIG. 1 to bring the surfaces **15** and **16** on the horns **12** and **13** to a vertical position or parallel to the pipe, these surfaces are spaced far enough apart to permit passage of the pipe. While in FIG. 1 it looks as though the jaws **8** and **9** would block the entrance of the pipe, that does not happen because the horns as shown in FIG. 2 are outward beyond the jaws **8** and **9** so that as soon as the pipe is between the surfaces **15** and **16**, returning of the tool to the horizontal position permits the pipe to slip easily between the jaws **8** and **9**. For

the particular tool illustrated, as shown in FIG. 3, the gripping edges **10** and **11** of the jaws in the relaxed position lie in a plane substantially normal to the largest diameter pipe which will fit between the gripping edges and will grip the pipe upon tilting the tool upward through an angle of the order of 5° from that plane while the surfaces **15** and **16** come into a generally vertical position when the tool is tilted to an angle of the order of 30° below that plane. These angles are not critical. The distance between the horns **12** and **13** when projected on the plane of the jaws, or on a plane inclined to the plane of the jaws at the pipe gripping angle, is less than the outside diameter of the pipe. It is only when the horns are projected on a plane making an angle with the plane of the jaws greater than the pipe gripping angle that the distance between the horns becomes greater than the outside diameter of the pipe. Since it requires a combination of both tilting of the tool relative to a horizontal plane and movement of the tool in the direction of the jaws **8** and **9** in order to remove the tool from the pipe, accidental removal is made substantially impossible. The tool can be used for pulling pipe as well as for lifting pipe. In the gripping position, the horns block any tendency of the pipe to roll from between the jaws.

For manual use, the handle **2** is threaded into the lug **3** and while one man holds the tool in the pipe gripping position the other man can shift the position of his tool so as to take a new grip either for raising or lowering the pipe. For power use, the handle **2** is removed and the hook **17** of the hoist is inserted through the eye as shown in the upper part of FIG. 3.

What is claimed as new is:

A pipe lifting tool comprising a frame having a pair of horizontal jaws, said jaws having gripping edges substantially parallel to each other and spaced apart a distance slightly greater than the outside diameter of the largest size pipe to be lifted, said gripping edges lying in a common plane substantially normal to the largest size pipe which can fit between said gripping edges and gripping the pipe when the frame is tilted upward to lift the pipe, the outer ends of the jaws being open to provide in the absence of other structure a passageway for insertion or removal of pipe, a horn on the outer end of each jaw blocking said passageway, said horns each having one end joined to the outer end of its jaw and extending at an angle to the plane of the gripping edges of the jaws with the other end of one horn projecting above and the other end of the other horn projecting below the plane of the gripping edges of the jaws, and said horns having outer ends spaced apart a distance, as measured in a plane inclined downward from the plane of the gripping edges of the jaws, slightly greater than the outside diameter of the largest size pipe to be lifted and defining a passageway for insertion or removal of pipe when the frame is tilted downward below a position in which the jaws would grip the pipe.

References Cited in the file of this patent

UNITED STATES PATENTS

303,408	Wheeler	Aug. 12, 1884
951,816	Henderslot	Mar. 15, 1910
1,551,214	Perrel	Aug. 25, 1925
1,627,733	Fritts	May 10, 1927
2,079,491	Cooke	May 4, 1937
2,340,868	Dye	Feb. 8, 1944
2,481,610	Meighan	Sept. 13, 1949
2,650,852	Phelps	Sept. 1, 1953

OTHER REFERENCES

Publication: Investigation Reports, U.S. Bureau of Mines, R.I. 3984, May 1947.