

975,250.

Patented Nov. 8, 1910.
2 SHEETS—SHEET 1.

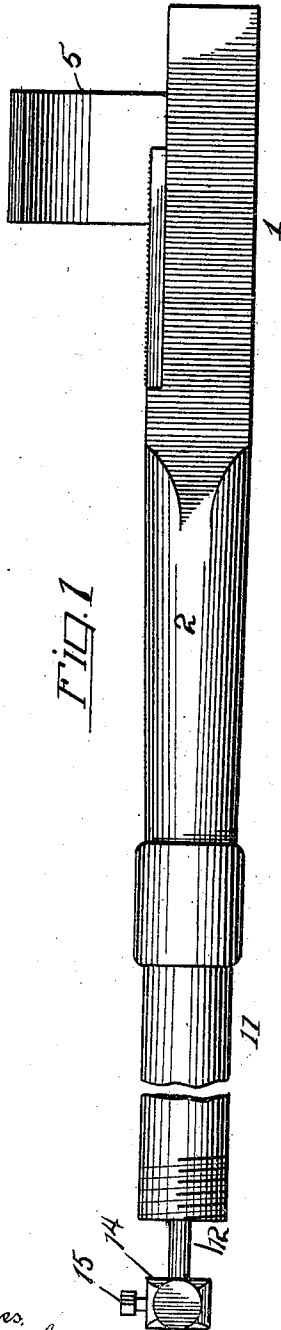


Fig. 1

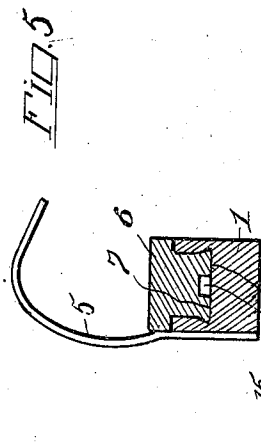


Fig. 5

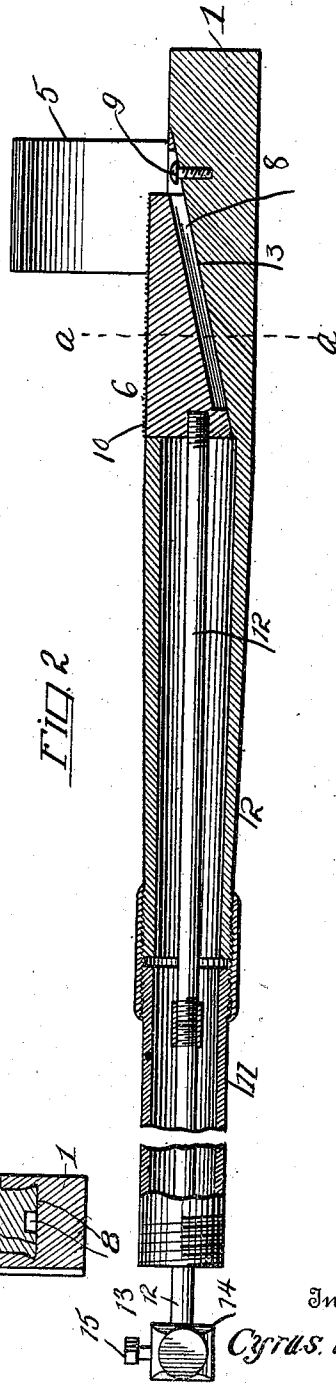


Fig. 2

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PIPE GRAPPLE.

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2 SHEETS—SHEET 2.

FIG. 3.

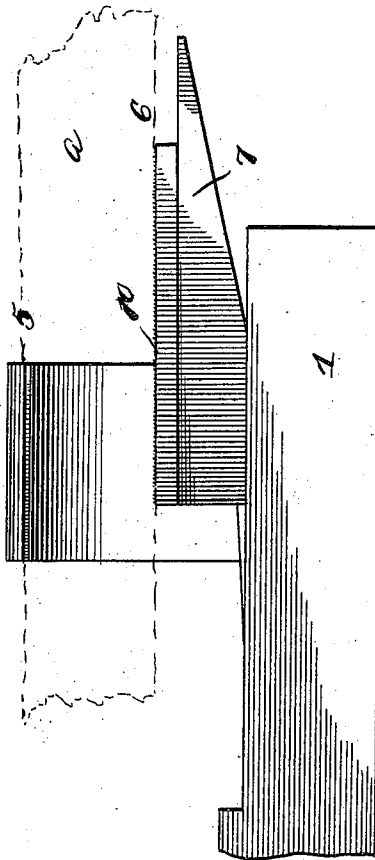
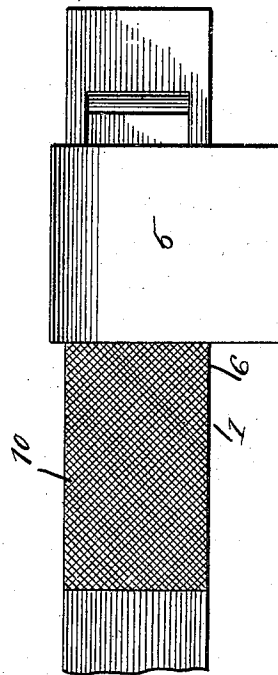


FIG. 4.



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UNITED STATES PATENT OFFICE.

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PIPE-GRAPPLE.

Patented Nov. 8, 1910.

975,250.

Specification of Letters Patent.

Application filed July 27, 1909. Serial No. 509,777.

To all whom it may concern:

Be it known that I, CYRUS KASS, a citizen of the United States, residing at Galesville, in the county of Trempealeau and State of Wisconsin, have invented new and useful Improvements in Pipe-Grapples, of which the following is a specification.

This invention is an improved pipe grapple particularly adapted for use in wells to grapple and remove broken pipe from the well, the said invention consisting in the construction, combination and arrangement of devices hereinafter described and claimed.

In the accompanying drawings:—Figure 1 is an elevation of a pipe grapple constructed in accordance with my invention showing the movable wedge jaw of the same in initial position. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is a detail elevation of the same showing the longitudinally movable wedge jaw in operative position as when grappling a pipe, the latter being indicated at *a* in dotted lines. Fig. 4 is a plan of the same with the movable wedge jaw in initial position. Fig. 5 is a transverse sectional view on the plane indicated by the line *a—a* in Fig. 2.

In accordance with my invention, I provide a head 1 which has a tubular end portion 2, the opposite end of the head being solid and being formed with a guide-way 3, the bottom of which is inclined and extends from one side of the bore of the tubular portion to the opposite side of the head, the side walls of the said guide-way converging outwardly as shown at 4 in Fig. 5. On that side of the head on which the guide-way opens is a hook jaw 5 which is disposed transversely of the head and extends across the same at a suitable distance therefrom. A longitudinally movable clamping jaw 6 has on one side a wedge shaped shank 7 which bears on the inclined bottom side of the guide-way 3. The said shank 7 is dove-tailed transversely so that its sides correspond and engage with the converging sides of the guide-way and hence the said jaw 6 is dove-tailed to the head so that it may be moved longitudinally but can not become casually detached therefrom and operates as a wedge when moving toward the lower end of the head 1 so that when moving in that direction longitudinally, the said jaw 6 also moves laterally toward the hook jaw 5 and serves in coaction with said hook jaw to firmly

grip and clamp a pipe between them. In the under side of the shank 7 is a longitudinal groove 8 which is engaged by a stop screw 9 that is secured to the head, said stop screw coacting with the ends of said groove to limit the longitudinal movement of the jaw 6 and prevent the latter from becoming casually detached from the head. The outer face of the jaw 6 is preferably milled or roughened as at 10.

In practice, the tubular end portion of the head 1 is coupled to a suitable length or lengths of pipe 11 according to the depth of the well in which the broken pipe is located that is to be removed, the pipe 11 serving as an extension of the head and enabling the latter to be placed in the bottom of the well and manipulated. The jaw 6 is connected to an operating rod 12 which operating rod may be composed of any suitable number of sections coupled together, said operating rod extending through the tubular portion of the head and also through the pipe 11 which forms an extension thereof and projecting beyond the upper end of said pipe 11 and there provided with a suitable stop device 13 which is here shown as a cross bar 14 having an opening through which said rod extends and a set screw 15 to clamp said cross bar on said rod.

In the operation of the invention, after the pipe 11 has been attached to the head and the rod 12 has been attached to the jaw and the device lowered into the well, the device is manipulated so as to cause it to turn in the required direction to engage the hook jaw 5 with the broken pipe in the bottom of the well. The rod 12 is then operated to force the wedge acting jaw 6 downwardly and thereby cause the broken pipe to be firmly clamped between the hook jaw and the wedge acting jaw and thereafter the device is lifted from the well and caused to bring up the broken pipe with it, it being understood that owing to the wedge action of the jaw 6, the grip of the hook jaw and the wedge jaw on opposite sides of the broken pipe increases with the resistance offered by the weight of the broken pipe and hence the heavier the broken pipe the more firmly the same is gripped. It will be understood that by appropriately adjusting the stop 14 on the rod 12 so as to cause said stop to bear on the upper end of the pipe 11, the wedge-acting jaw 6 may be

locked initially in its inoperative position shown in Figs. 1 and 2 while the device is being lowered into the well and prior to the operation thereof.

5 What is claimed is:—

1. A device of the class described comprising a tubular member having at one end a solid integral extension forming a head, said head having an inclined side forming
10 a guideway and said head being provided with dovetailed side flanges, a hook shaped member extending laterally from the head to present the hook portion adjacent to the inclined guideway, a wedge movable upon
15 the inclined guideway and having dovetail engagement with the side flanges, said wedge being provided with a longitudinal groove in the underside thereof, said groove being obstructed at one end, a stop screw inserted
20 into the guideway with its head engaging the groove in the underside of the wedge and lying in the path of the closed end of said groove, and a rigid operating rod connected

with the wedge and extending through the tube.

2. A device of the class described comprising a head having a tubular portion at one end and provided at the opposite end with a guide-way presenting an inclined side converging toward the lower end of the
25 head, a hook jaw on said head disposed transversely with reference thereto and opposite said guide-way, a wedge-acting longitudinally movable jaw in said guide-way,
30 a pipe connected to the tubular end of the head, an operating rod for the wedge-acting jaw extending through said pipe and the tubular portion of the head and a stop device on said rod. 35

In testimony whereof I affix my signature 40
in presence of two witnesses.

CYRUS KASS.

Witnesses:

J. F. CANCE,
W. S. WADLEIGH.