June 22, 1926. **1,589,901**

L. H. ROBERTS

RASP

Filed March 27, 1925 2 Sheets-Sheet 1

FIG. 1

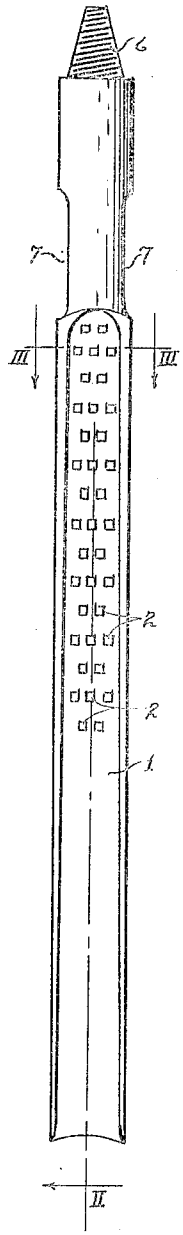


FIG. 2

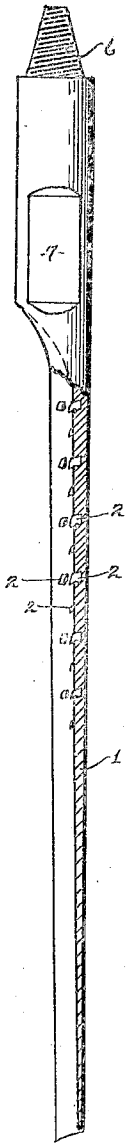


FIG. 6

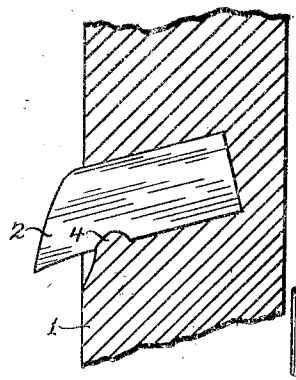
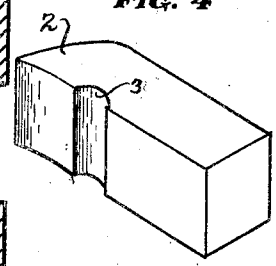


FIG. 4



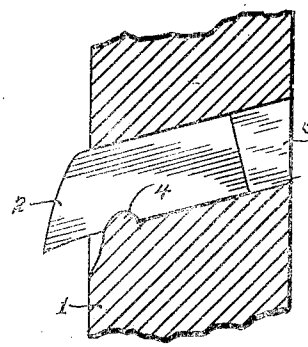


FIG. 7

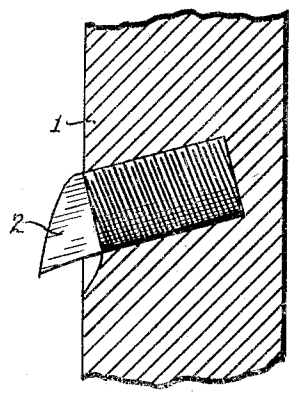


FIG. 8

INVENTOR.

Leslie H. Roberts

BY *William C. Edwards Jr.*

ATTORNEY.

June 22 , 1926. 1,589,901

L. H. ROBERTS

RASP

Filed March 27, 1925 2 Sheets-Sheet 2

FIG. 9

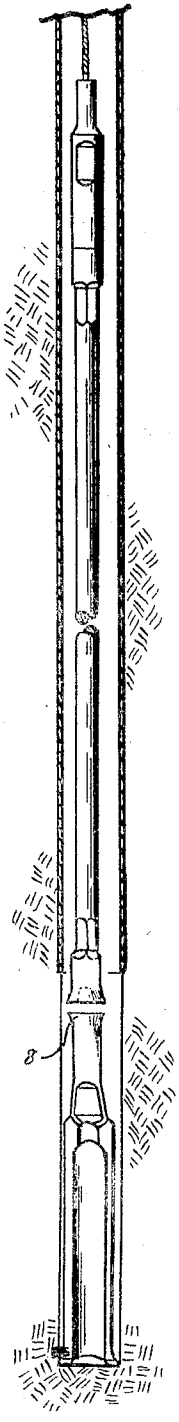


FIG. 10

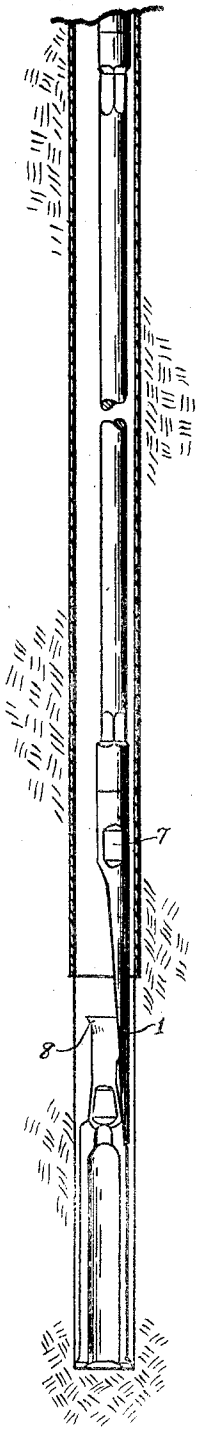


FIG. 5

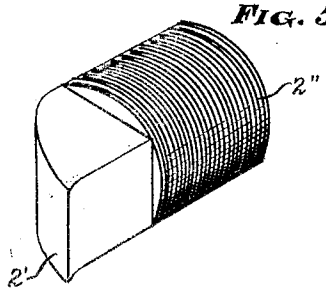


FIG. 3



INVENTOR.

Leslie H. Roberts

BY William C. Edwards Jr.

ATTORNEY.

Patented June 22, 1926. 1,589,901

UNITED STATES PATENT OFFICE.

LESLIE H. ROBERTS, OF WICHITA, KANSAS.

RASP.

Application filed March 27, 1925. Serial No. 18,742.

The invention relates to a tool useful in oil well drilling operations. In drilling oil wells, it frequently happens that the bit will be worked loose and finally drop off the drill stem and rest on the bottom of the hole then being drilled. From the surface of the ground this is not apparent, consequently as the drilling operations are continued, the up and down motion of the walking beam causes the drill stem to pound and batter on the top of the drill, until the top end of the drill becomes swelled to such an extent that it is impossible to get fishing tools, such as slips and the like, past the knob on the bit, or so that the bit may be removed from the hole. Therefore, the sides of the knob must be cut off to permit the fishing tools to get hold of the bit. My invention is a rasp-like implement for this purpose, the character and method of application being more readily understood by reference to the drawings.

In the drawings: Fig. 1 is a face view of my improved rasp. Fig. 2 is a side view of the rasp seen in Fig. 1. Fig. 3 is a sectional view taken along the line III—III, Fig. 1 looking in the direction of the arrows. Fig. 4 is a perspective view of a single rasp tooth as employed in the composite tool. Fig. 5 is a modified form of rasp tooth. Figs. 6, 7 and 8 show vertical sectional views through the improved rasp to disclose varying methods of fastening teeth elements in the body of the rasp. Fig. 9 is a sectional view of the base of an oil well hole, disclosing how the bit has dropped from the drill stem and under the battering action, previously mentioned, the upper end of the bit has been swelled. Fig. 10 is a sectional view of the same oil well hole showing my improved rasp in its operative position for cutting off the sides of the knob-like swelling of the bit. Similar numerals of reference indicate corresponding parts throughout all the figures of the drawings.

In the past, for this purpose, a tool called a rasp has been employed for this purpose; such tool having teeth merely raised out of the body of the metal, similar to the ordinary rasp. However, a rasp of this type for oil well usages would necessarily be of considerable length, size and weight and when in use it would be subject to a very considerable strain and stress at times. It is essential, therefore, that the body of such a tool be of such a quality that it will yield considerably before breaking. Such yielding characteristics, however, are on the contrary very objectionable for the formation of satisfactory cutting elements, wherein the teeth should be of a quality that will effectually cut away the objectionable knob on the bit.

Referring to the drawings: 1 is the body of the rasp having a plurality of teeth elements 2. The body 1 is made of a mild steel or other material having characteristics permitting it to bend before breaking. Each tooth 2 is formed preferably of air hardened steel. The body of the rasp is provided with recesses, receptacles or holes of suitable size, shape or configuration; each adapted to receive a tooth element of the kind provided. In the preferred form illustrated, suitable holes are punched or drilled in the body of the rasp; the rasp and the teeth elements are then heated, and while hot, the teeth have been inserted into their respective holes in the rasp and positioned to project either straight or at a desired angle, or as shown in Figs. 6, 7 and 8. In Fig. 4 a tooth 2 is shown having a groove 3 on its under side; as assembled in Figs. 6 and 7 it will be noted that by means of a punch, a portion of the heated metal of the rasp 1 has been driven into the hollow portion 3 of the tooth 2 as disclosed at 4. This binds the tooth 2 within the body of the rasp 1 so that it is impossible to get out. However by use, teeth may become dull and it may be desirable to remove same. In Fig. 7 the hole 5 is shown extending clear through the body of the rasp 1. The rasp is then heated and a punch inserted at 5 drives the tooth out for replacement or sharpening and replacement as previously described. In Fig. 8 the shank of the tooth 2′ is threaded at 2″ and screwed into a threaded hole in the body of the rasp. This type of tooth could be easily unscrewed for replacement or resharpening.

It will be observed in Figs. 1 and 2 that only about one half of the rasp like device carries teeth elements. The lower portion of Fig. 2 shows a sectional cut taken along the line II—II, Fig. 1 to show the tapering chisel like characteristics of the rasp and the independent teeth elements corresponding to those illustrated in the enlarged detail, such as Fig. 6.

It has been the prior custom to use a rasp

having teeth the full length of the rasp. On the upstroke of the walking beam, it was necessary to raise the rasp entirely above the bit and on the down stroke it frequently permitted the point of the rasp to strike on top of the bit, which resulted in additional swelling of the top of the bit and damage to the rasp, itself. In my invention the lower, or chisel-like portion of the rasp being without teeth, is first permitted to assume the position disclosed in Fig. 10 where the lower chisel-like portion of the rasp has passed the swelled portion of the bit. This blank portion of the rasp then acts as a guide for the rasp portion of the tool in relation to the bit on which it is working, therefore the rasp can be worked up and down and never strike on top of the bit. It is always guided to one side of the bit and whenever the teeth strike the swelled bit, due to the momentum of the rasp, the teeth operate to whittle away the swelled portion 8 of the bit.

It will be readily seen that a tool of the type illustrated can be readily repaired. The upper portion of the rasp has a tapering threaded portion 6 for attachment to the chuck, flat faces 7, 7 being provided to receive a tightening wrench. The section taken along the line III—III in Fig. 1 as illustrated in Fig. 3 shows the concave or hollowed out shape of the rasp and tapered end portions of the tool; the tool is made in this shape to best conform to the shape of the hole and to more readily encompass the swelled portion 8 of the bit and thereby more properly chisel such swelled portions away.

Such modifications may be employed as lie within the scope of the appended claims.

Having fully disclosed my invention, what I now claim as new and desire to secure by Letters Patent is:

1. A metallic body for a rasp including a chisel-like, blank element at one end, concave in section; a head element at the opposite end as a means for attachment to power operative mechanism; a perforated central section and cutting elements removably secured in the perforations through said central portion.

2. A metallic body for a rasp including a chisel-like, blank element at one end, concave in section; a head element at the opposite end as a means for attachment to power operative mechanism; a perforated central section; a plurality of cutting blocks, each grooved on its under side; one of said cutting blocks, in each of the perforations, inwardly arranged to provide tooth cutting elements; and parts of the body element driven within the grooves of the toothed elements for engaging purposes.

3. A tool for chiseling battered drill-bit portions, having a chisel-like blank end portion concave in section adapted for passing and enveloping such a battered drill-bit portion as included within a oil-well casing; and upper toothed cutting portions on said tool adapted for cutting away said battered portions of the drill-bit, under controlled vertical movements of the tool and as guided by the lower blank portion of said tool.

LESLIE H. ROBERTS.