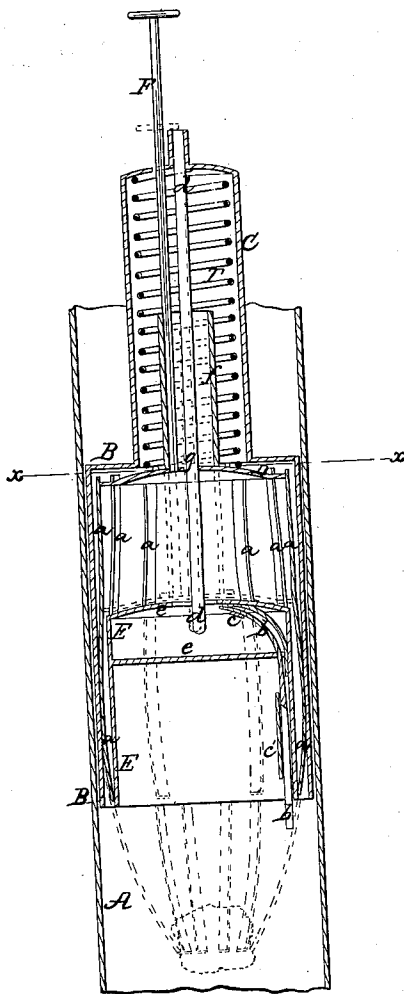


*J. R. Carr,  
Drill-Rod Grab.*

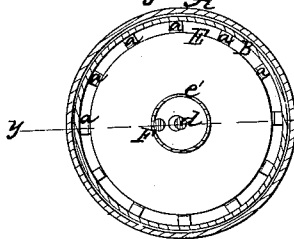
*N<sup>o</sup> 47,929.*

*Patented May 30, 1865.*

*Fig. 1.*



*Fig. 2.*



*Witnesses.  
M. A. Hearn  
Thos. Cook*

*Inventor  
J. R. Carr.  
By William R. Allen  
E. F. Larkin*

# UNITED STATES PATENT OFFICE.

JACKSON R. CARR, OF ELLENVILLE, NEW YORK.

## IMPROVED GRAPNEL FOR WELLS.

Specification forming part of Letters Patent No. 47,929, dated May 30, 1865.

*To all whom it may concern:*

Be it known that I, JACKSON R. CARR, of Ellenville, in the county of Ulster and State of New York, have invented a new and useful Improvement in Grapnels for Deep Wells; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal section of a grapnel made according to my invention, taken on the line *y* of Fig. 2. Fig. 2 is a cross-section taken on the line *x* of Fig. 1.

Similar letters of reference indicate corresponding parts.

This invention has for its object to produce an implement for use by miners and by those engaged in boring Artesian and other wells, by means of which they can recover from the bottom of the bore broken pieces of drills and other comparatively light objects.

When a drill is broken during the operation of boring a well and the fragments or parts thereof are left in the well, it has been found very difficult and expensive to recover them. The work of boring is necessarily stopped until such fragments are recovered, because the steel or iron fragments would destroy the face of a drill if another one were introduced, even if the fragments were so small as not to cover the area of the bore. It is therefore necessary to remove such fragments from the well before proceeding with the work of drilling. This difficulty occurs with metallic pieces or fragments of any other description which cannot be cut and beaten to pieces as rock is cut and beaten by a drill.

When large and heavy fragments—such as long pieces of a drill-rod or of a tube—fall into a well, they are usually removed by powerful grapnels or other suitable means, not necessary to be here described, because my invention does not relate to them. My invention is designed for the recovery of small fragments of steel or other metal from off the bottom of the well.

A designates a well which is being bored.

B is a cylindrical case, open at bottom, and connected at top with an extension-case, C, of smaller diameter. A spring-rod, *d*, made fast at its upper end in the top of the case C, ex-

tends downward through a perforation, *e'*, in the top of an inner case, E, which is fixed concentrically within the case B, so as to leave an annular space between them. The said inner case, E, has a close diaphragm, *e*, across it, a little way below its top, so as to protect the end of the spring-rod. At a proper point above the end of the spring-rod *d*, I make a notch, *g*, so as to form of the rod a latch which will engage with the right-hand edge of a perforation in the top of the disk D. The rod is so fixed in the top of the small case C as to spring toward or bear against the edge of the perforation. On the inside of the case E are guides *c c'*, one of which is fixed to its top and the other against one of its sides. These guides inclose and guide a slide, *b*, which is bent at its upper end nearly at a right angle, and which, when it is forced upward, moves against the lower end of the rod *d* and disengages it from the disk D. This slide extends, when drawn down to its lowest position, a little way below the edges of the cylinders E and B.

D is a movable disk placed within the case B above the top of the inner case, E. To its periphery are fixed the ends of numerous flat springs *a*, whose tension is toward the center or axis of the cylinder B. The disk D is perforated to permit its free movement up and down over the spring-rod *d*. A lifting-rod, F, is fixed to the top of the disk D, said rod passing up through the top of the upper case, C. The lower ends of the rods F and *d* are, moreover, protected by a collar, *f*, which rises from about the center of the disk D.

T is a spiral spring, placed within the case C, about the collar *f*. Its upper end bears against the top of the case C and its lower end against the disk D.

The operation of the apparatus is as follows: When the grapnel is to be used to recover a piece of metal or any refractory substance which resists the drill from off the bottom of the well, it is lowered into the well, with its parts in the position seen in blue outline in Fig. 1, the disk D being held up by means of the latch *g* of the rod *d*, to which position it is brought by drawing the rod F upward, thereby also compressing the spring T. In this condition of the parts the spring-arms *a* are concealed between the cylinders B and E. When the grapnel reaches the bottom of the

well, the projecting end of the slide *b* will touch the bottom of the well, and the weight of the grapnel will compel the slide to move in its guides, so that its upper end will press against the lower end of the rod *d*, and thereby release the disk *D* from the latch or notch *g*, when the force of the spring *T* will immediately drive down the disk *D* and its arms *a* without and beyond the cylinders *B* and *E*, when they will assume the position seen in red outline, clasping any object lying on the bottom of the well, which object can then be drawn out of the well by raising the grapnel.

The inner case may or may not be used as a "clay-chamber," in which a body of clay or

othersuitable yielding substance may be placed before the grapnel is lowered into the bore, and in which small particles of iron and steel will become embedded, so that they can be drawn out from the bore with the grapnel.

I claim as new and desire to secure by Letters Patent—

The grapnel above set forth for recovering fragments of metal and other refractory substances from the bottoms of wells, constructed and operated substantially as described.

JACKSON R. CARR.

Witnesses:

J. J. WAREL,

T. F. TERWILLIGER.