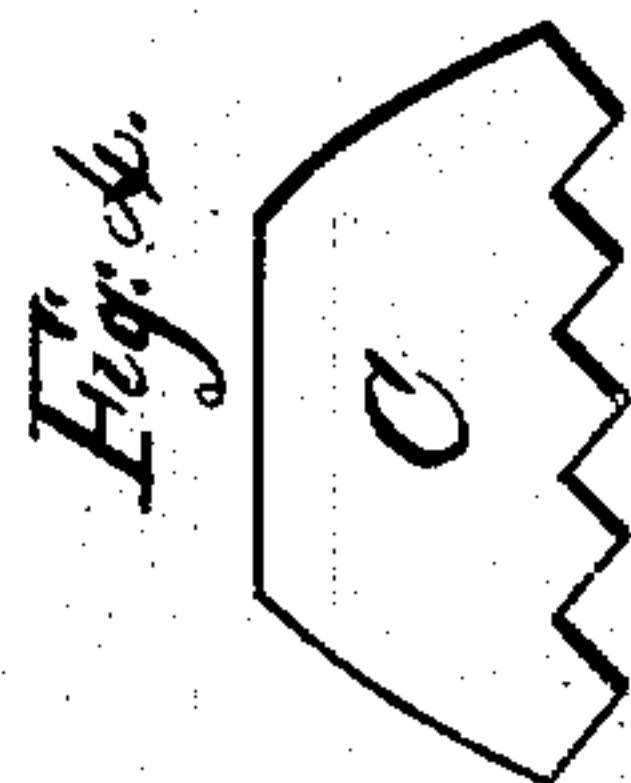
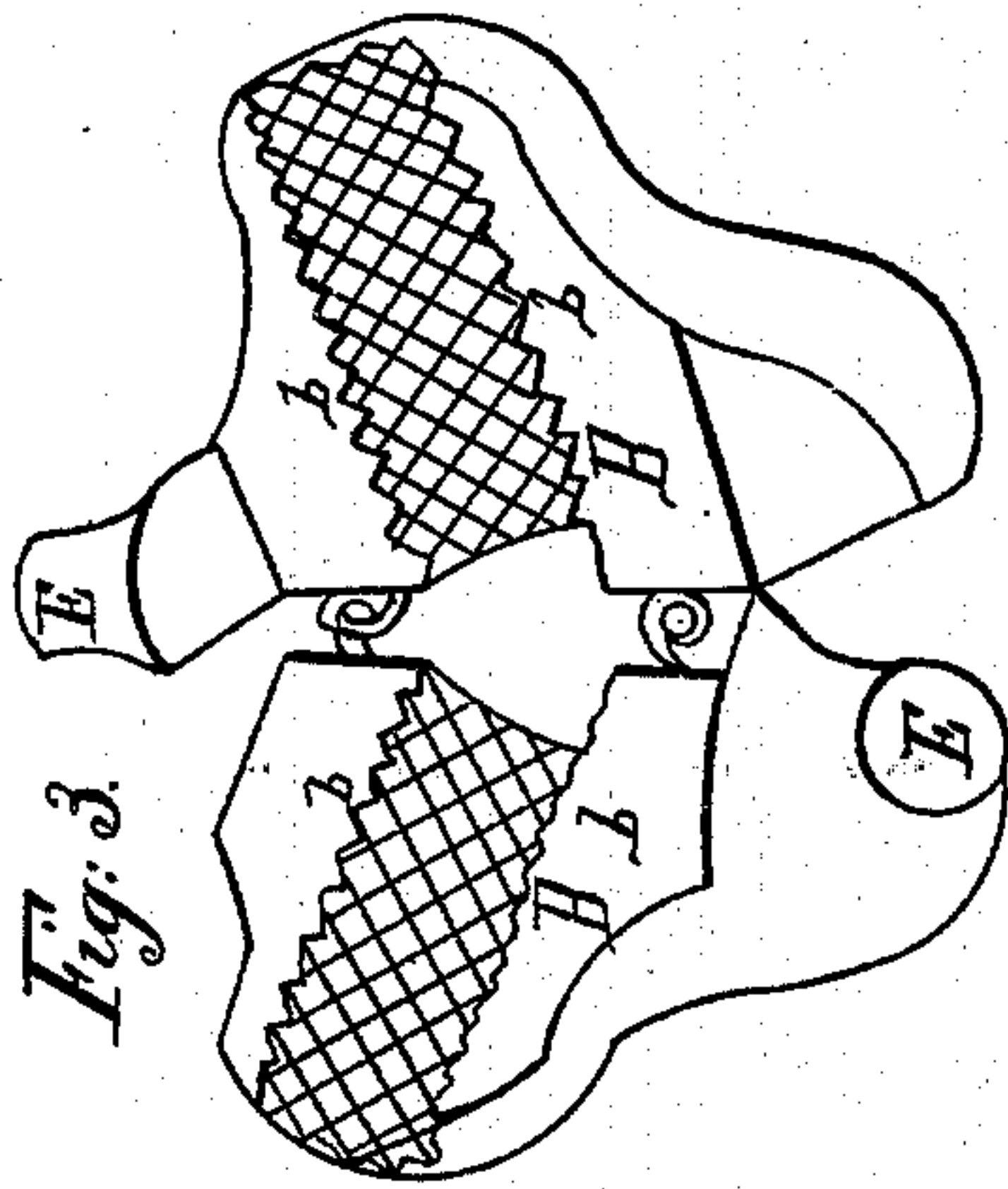
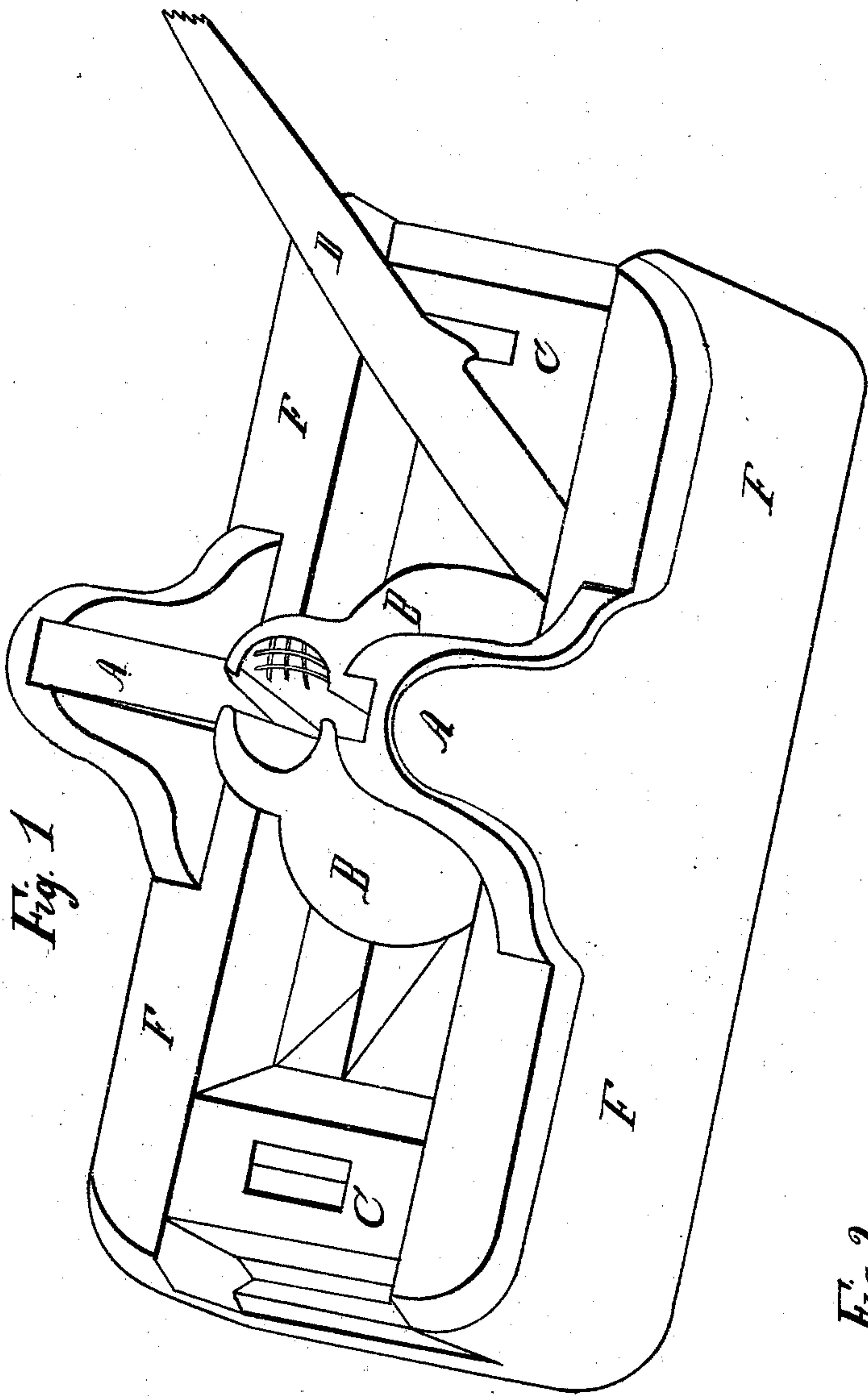


N. W. Green.
Harwer Clamps
Nº 60,361. Patented Dec. 11, 1866.



Witnesses.
R. H. Duell
L. L. Hanson.

Inventor.
N. W. Green.

United States Patent Office.

IMPROVED GRAPPLING TOOL.

N. W. GREEN, OF CORTLAND VILLAGE, NEW YORK.

Letters Patent No. 60,361, dated December 11, 1866.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, NELSON W. GREEN, of Cortland Village, Cortland county, State of New York, have invented a new and improved mode of Seizing or Grappling Rods, Tubes, Pins, Posts, or Piles, for the purpose of withdrawing the same from the ground or from timber perpendicularly, and a new and improved machine, and a new and improved combination of levers and arrangement of fulcra, for the purpose of applying and using the said modes of grappling, and for withdrawing the said rods, tubes, pins, posts, or piles, as aforesaid; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is the different parts of the machine in combination; and the other figures show the profile and sections.

The nature of my invention consists in providing the self-adjusting grapple, B B, so constructed that when the levers, D D, are applied in combination on opposite sides of the thing to be grappled, and the short arms of the levers lift upon the opposite jaws of the grapple, that the first effect of the levers, D D, is to close the jaws of the grapple, B B, upon the thing to be withdrawn and seize it, and as the power of the levers, D D, is increased the grapple, B B, is raised, taking the rod, tube, or other thing so seized, along with it; and when the short arms of the levers are again lowered the grapple opens, by force of gravity, and follows the levers to its original position, to be again grappled and raised, as before, each time raising the thing so seized, thus adjusting itself to its work by the simultaneous working of the levers, D D, like the handles of a pump, and in so constructing and combining the two or more levers, D D, that the rod, tube, &c., shall be lifted in a perpendicular direction, that is, in a line in continuation of the line of the thing to be withdrawn, thus, among other advantages, avoiding the resistance occasioned by the side application of the power, by which is secured, not only a great gain in the effective force of each separate lever, but a gain by the combination; and in the construction and arrangement of the two fulcra, C C, by which the power or effective distance of the levers, D D, can be changed as the one or the other may be most desired; and of constructing the bed, F F F, with the standards, A A, by which the grapple, B B, and levers, D D, and fulcra, C C, can be applied as indicated.

I construct my self-adjusting grapple, B B, of iron, steel, or wood, or other equivalent; with the arms, *b b*, which move freely up and down in the grooves, *a a*, in the standards, A A, with the view of keeping the jaws of the grapple, B B, in position to receive the levers, D D. The hole through the grapple I make a file surface and equal to the size of the rod or thing to be grappled, but cut away at the central parts of the jaws to flatten and make it less than a circle in order that it will close upon the rod, &c., before the jaws meet. I so unite the jaws of the grapple, B B, by hooks at the bottom, that the axis of motion shall be below the lower face of the jaws and so adjusted that on the application of the levers the whole of both of the file surfaces shall be brought into contact with the thing to be grappled. When it is desired to use the grapple, B B, alone for the purpose of a clamp to receive the blow of a falling weight in driving the rod or tube in constructing wells, or similar cases, I simply detach the grapple, B B, and reverse it and adjusting it to the thing to be driven in the reversed position and slightly clamp it in the desired position by means of clamp-screws added for the purpose, one on each side, which screw into one jaw and move easily through the other, outside the file surface, to allow the grapple to seize the bar or tube when the weight strikes it, and then closes and grapples it upon the same principle as when the levers are applied. I construct my bed, F F F, of iron, or other equivalent material, with a hole through the bottom to receive the rod or thing to be withdrawn, with the adjustable fulcra, C C, and the standards, A A, which operate as before described, and the levers, D D, of the same material. The fulcra, C C, have a series of grooves on the under sides, which fit to corresponding grooves in the bed, for the purpose of retaining them in place, a section of which is shown in fig. 4. When the bed, F F F, in combination with the grapple, B B, and fulcra, C C, and levers, D D, are to be used for withdrawing small rods from timbers, or pins from ship planks and frames, I dispense with the adjustable fulcrum and cast them with the bed entire, and for convenience attach to the levers, D D, rods perpendicularly to them, which turn upon themselves in the grooves of the top of the fulcra, C C, and are attached to the bed by extending into sockets on each side of the levers in the bed; and in this case the hole and file surface of the grapple is made at the bottom equal to the size of the largest rod or pin likely to be grappled, and tapering to a point at the top of the grapple, thus

making the machine small, compact, and applicable to general purposes; and the whole machine, in this or the other form, may be used as a jack, by which is secured a great gain of power.

What I claim is—

1. The self-adjusting grapple B B, the adjustable fulcra C C, in combination with the levers D D.
2. I claim the frame F F F, including the standard A A, in combination with the grapple B B, the adjustable fulcra C C, and the levers D D, for the purposes described.

N. W. GREEN.

Witnesses:

R. H. DUELL,
RYAN GREEN.