(No Model.)

O. S. WALKER.

MAGNETIC CHUCK.

No. 564,296. Patented July 21, 1896.

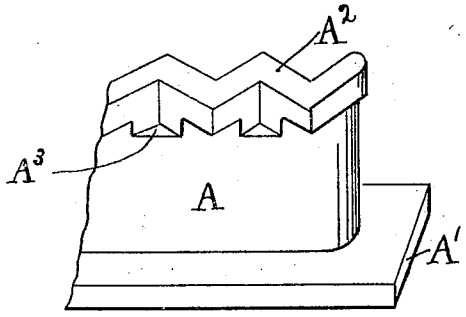

Fig 4.

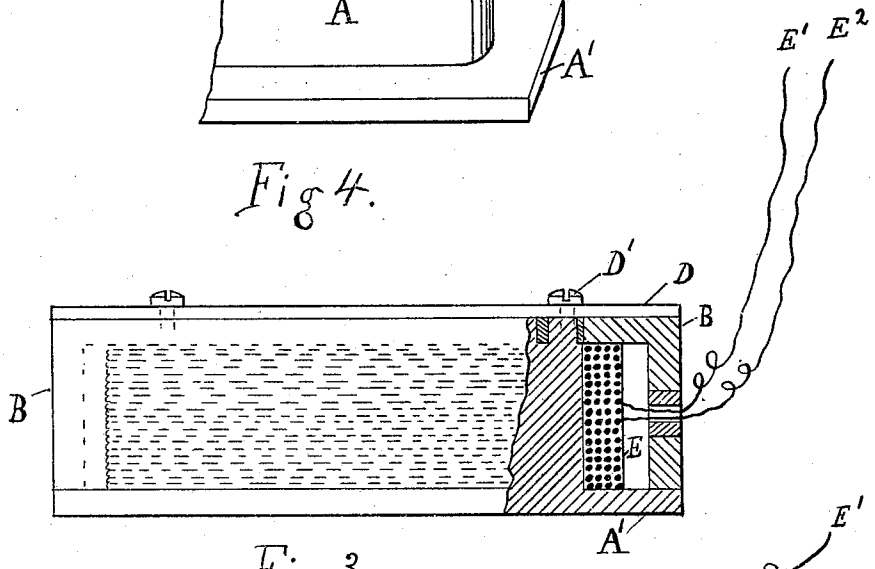

Fig 3

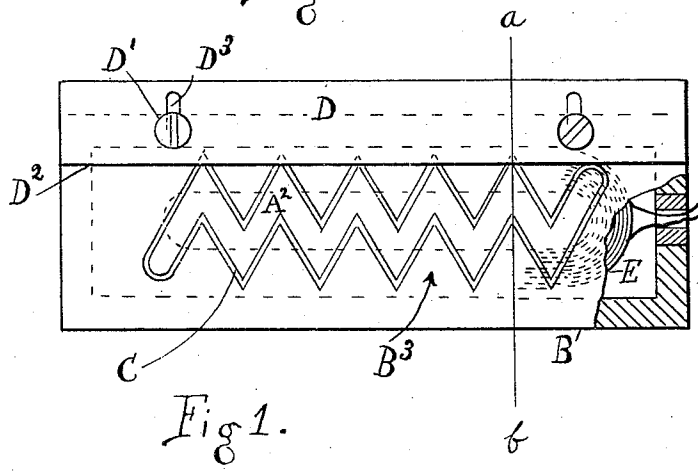

Fig 1.

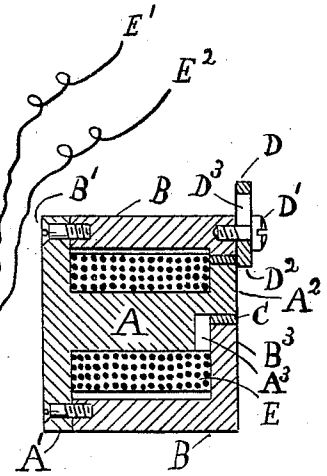

Fig 2.

Witnesses
B. F. Curtis
J. M. Bentson

Inventor
O. S. Walker

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

OAKLEY S. WALKER, OF WORCESTER, MASSACHUSETTS.

MAGNETIC CHUCK.

SPECIFICATION forming part of Letters Patent No. 564,296, dated July 21, 1896.

Application filed February 13, 1896. Serial No. 579,147. (No model.)

To all whom it may concern:

Be it known that I, OAKLEY S. WALKER, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Magnetic Chuck, of which the following is a specification.

My invention relates to magnetic chucks or holders for iron or steel pieces that require to be held firmly while being machined, filed, carved, or otherwise operated upon, and is more particularly adapted for thin flat pieces that require to be held down firmly and from their nature cannot be held by their edges without interfering with the machining or other operations to be performed. Furthermore, the gripping of pieces by their edges in a vise or with other ordinary appliances has a tendency to lift the piece in a certain degree.

The object of my invention is to provide a holder that will insure the piece held thereon being in close and firm contact with the holder itself and obviate the necessity of any other than magnetic means for holding the same.

The difficulty with magnets for holding work heretofore has been that while the force has been usually ample to hold down the work or pieces placed thereon, the same could be moved about quite easily in a circular direction; and, furthermore, the distribution of power, or lines of greatest force, over the face or poles of the magnet has been limited. In my invention I obviate both of these difficulties and provide magnetic means for preventing the twisting or swiveling about of the work, and improved means of distributing the magnetic force over the face of the magnet or holder.

Referring to the accompanying drawings, like letters of reference indicating like parts in each, Figure 1 is a part plan and part sectional view of my invention; Fig. 2, a transverse section through line *a b* of Fig. 1. Fig. 3 is a part elevation and part longitudinal vertical section; and Fig. 4 is a partial perspective view of the magnet-core.

A is the central core of the magnetic chuck, formed of cast metal, and is provided at the bottom with a rectangular flange A′ and at the top with a sinuous or angular flange A^2, the whole forming an oblong spool for the reception of the magnetizing coil E. Encircling the central core and coil is the oblong shell B, resting upon and fastened to rectangular flange A′ by the screws B′. The top of the shell B is provided with an aperture similar in shape to the flange A^2, which passes completely through the shell B or flush with the outer surface of the same. A narrow space, however, is left between the flange and shell, which is filled with non-magnetic material C, the flange A^2 forming one pole of the magnet and the top face of the shell B forming the other, and a narrow air-gap only remains to complete the magnetic circuit. It will be noticed that the angular flange A^2 in its zigzag course extends the air-gap or line of maximum power of the magnet until it has crossed the greater part of the surface of the chuck, and a more even pressure will thus be exerted on a piece of work laid thereon. Adjustably attached to the top surface of the shell B is the slotted magnetic strip D, fastened by the screws D′, and so placed that one edge D^2, Figs. 1 and 2, of the said strip crosses or passes in close proximity to a portion of the air-gap. A piece of work now being placed in contact with the edge D^2 of strip D and resting on the top surface of the chuck will be strongly attracted to the strip as well as to the shell B, and the piece will be more firmly held in place, and the tendency to twist about under the pressure of the tool is obviated. Terminals E′ E^2 of the coil E pass out through a suitable aperture in the end of the shell B and may be suspended from the electric supply mains from overhead in long loops capable of a swinging action when the chuck is moved; as, for instance, when the same is used on a metal-planer. It will be noticed that the projections B^3 of the shell B extend over the central core A of the spool.

By reference to Figs. 2 and 4 it will be seen that the core A is cut away at A^3 to such a depth that a wider air-gap is formed under the said projections than is formed at the surface of the holder. This is to prevent undue leakage of the lines of force.

It is evident that other forms of magnets could be employed for magnetic chucks with various shapes and contours of air gaps to distribute the magnetic power, also that a

plurality of magnetic strips could be employed to assist in holding the work in place. I therefore do not confine myself to a sinuous or angular course for said gap, or to a single auxiliary magnetic strip for steadying the work; but

What I claim as new, and desire to secure by Letters Patent, is as folows:

1. In a magnetic chuck for holding iron or steel pieces to be operated upon, the combination of a magnetizing-coil, an inner core forming one pole of the magnet, an outer shell forming the other pole, an air-gap between the two poles and the meeting faces or edges of the said poles formed with interlocking zigzag or sinuous contours substantially as described.

2. The combination with a chuck for holding work to be machined or otherwise manipulated, of magnetic polar faces and an adjustable magnetic strip or bar the edges of which form a raised surface from the chuck-face to extend the action of the magnetic lines at an angle to the face of the chuck substantially as set forth.

OAKLEY S. WALKER.

Witnesses:
B. F. CURTIS,
J. W. ROBERTSON.