March 21, 1939. H. E. TRACY 2,151,362

ANGULAR MAGNETIC CHUCK

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Fig. 1.

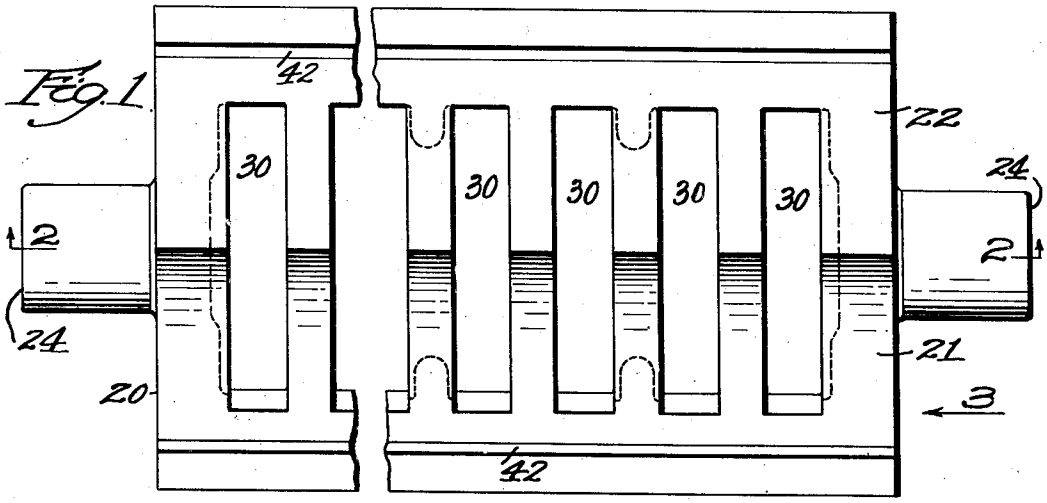


Fig. 2.

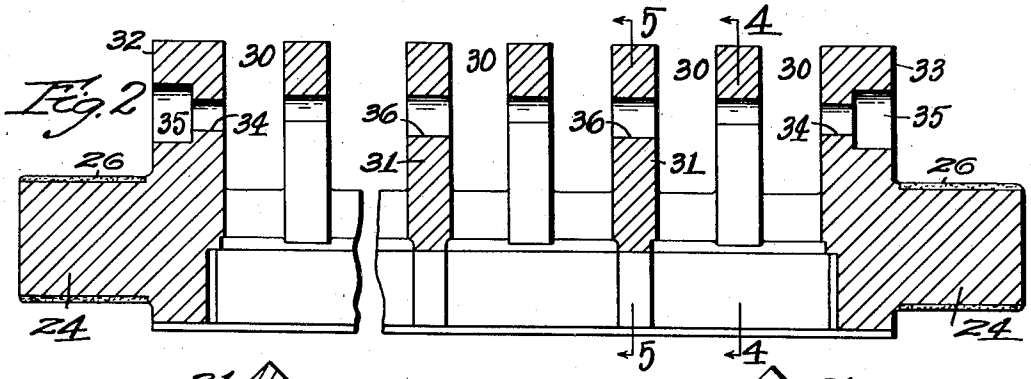


Fig. 4.

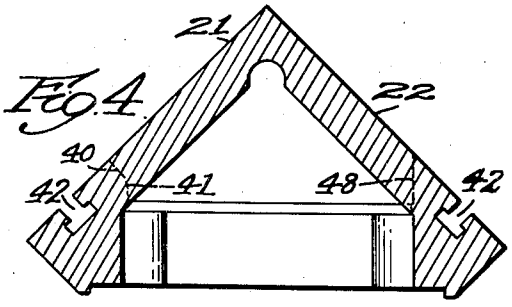


Fig. 3.

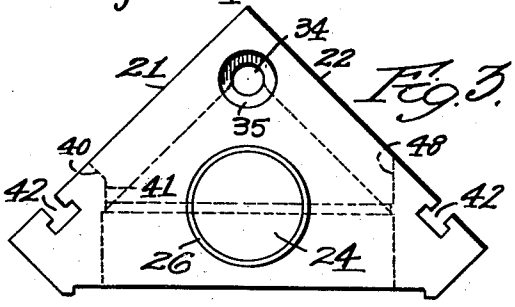
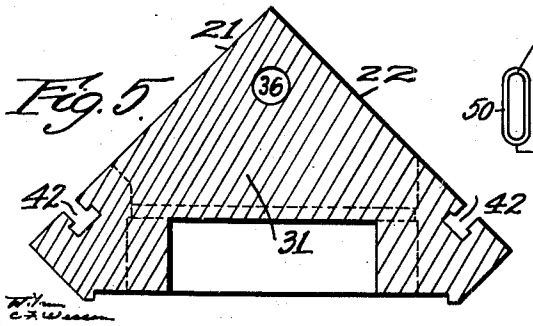


Fig. 5.



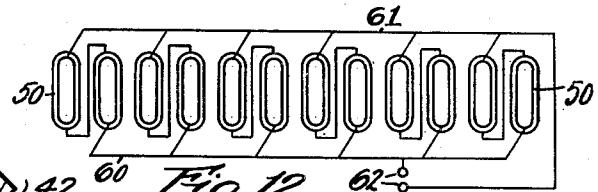


Fig. 12.

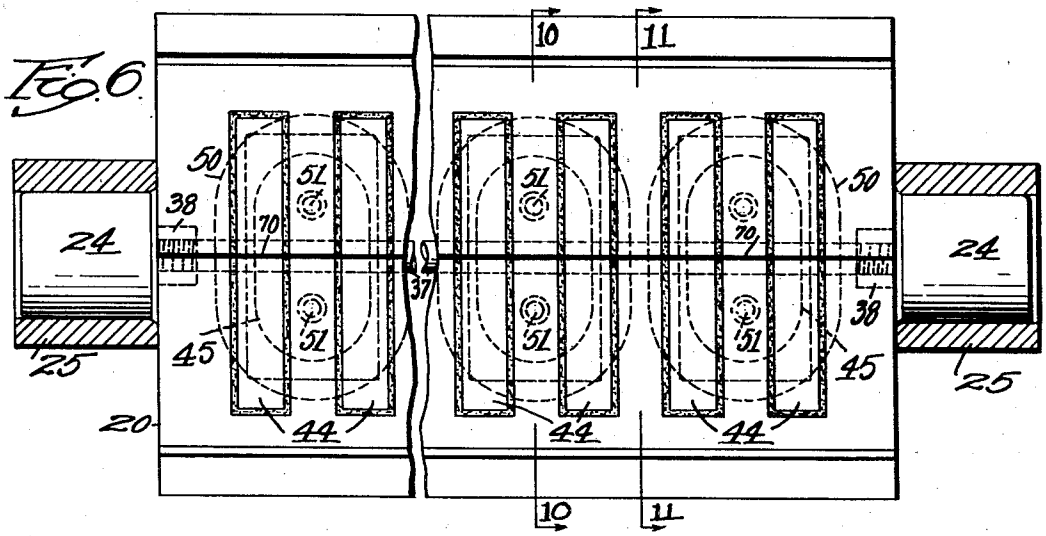
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Fig. 6.



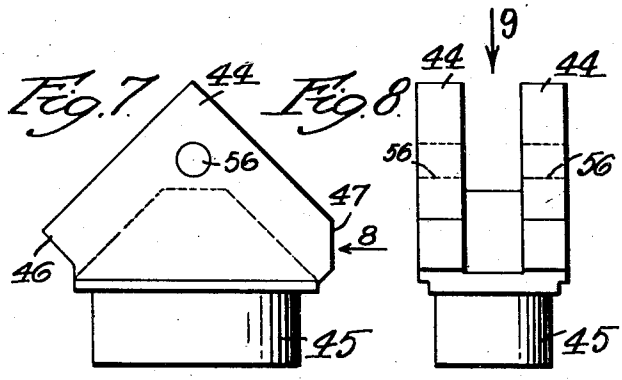


Fig. 7.

Fig. 8.

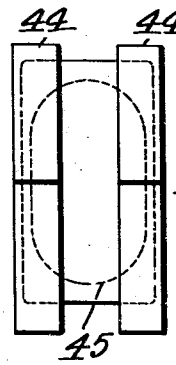


Fig. 9.

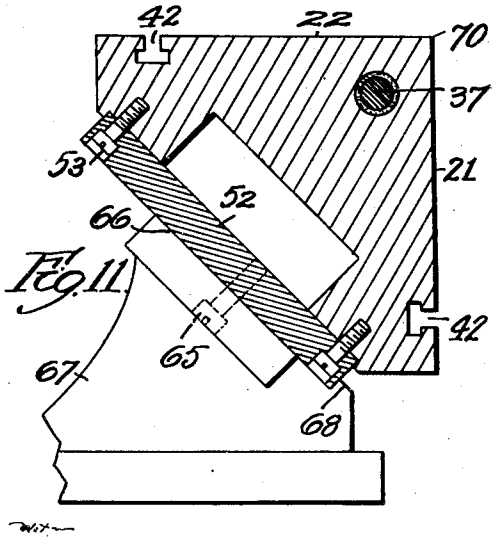


Fig. 11.

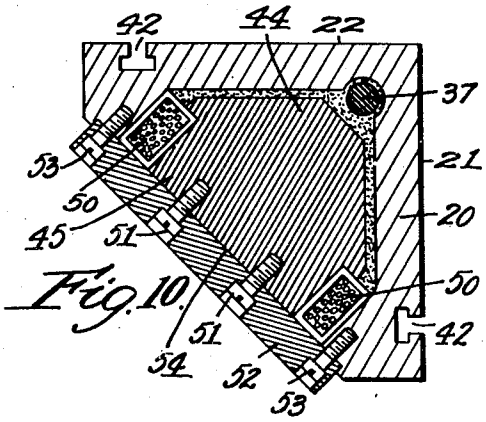


Fig. 10.

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UNITED STATES PATENT OFFICE

2,151,362

ANGULAR MAGNETIC CHUCK

Howard E. Tracy, Worcester, Mass., assignor to O. W. Walker Co. Incorporated, Worcester, Mass., a corporation of Massachusetts

Application May 20, 1935, Serial No. 22,325

1 Claim. (Cl. 175—367)

This invention relates to magnetic chucks and more particularly to the angular type of chuck shown in my prior Patent No. 1,673,719, issued June 12, 1928.

In said prior patent I disclosed a magnetic chuck provided with a series of pole pieces in one face of the chuck, and with a second series of pole pieces definitely spaced from said first series, located in an adjacent face of the chuck, and angularly disposed with respect to the first series

It is the object of my present invention to provide an improved chuck of this general type, in which corresponding pole pieces on two adjacent faces of a magnetic chuck are made continuous and extend across the intervening corner without interruption.

A further feature of my invention relates to the provision of angular pole pieces having faces to be exposed on two adjacent sides of a chuck and so designed that they may be conveniently inserted through the bottom of a unitary casing.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claim.

A preferred form of the invention is shown in the drawings, in which

Fig. 1 is a plan view of my improved chuck casing;

Fig. 2 is a longitudinal sectional view, taken along the line 2—2 in Fig. 1;

Fig. 3 is an end view, looking in the direction of the arrow 3 in Fig. 1;

Figs. 4 and 5 are sectional end elevations, taken respectively along the lines 4—4 and 5—5 in Fig. 2;

Fig. 6 is a plan view of the assembled chuck with the gudgeon bearings shown in section;

Fig. 7 is an end view of one of the magnet cores and attached pole pieces;

Fig. 8 is a side elevation, looking in the direction of the arrow 8 in in Fig. 7;

Fig. 9 is a plan view, looking in the direction of the arrow 9 in Fig. 8;

Figs. 10 and 11 are sectional end elevations, taken respectively along the lines 10—10 and 11—11 in Fig. 6, and

Fig. 12 is a wiring diagram.

Referring to the drawings, I first provide a casing 20 (Figs. 1 to 5) having a bottom opening and having work-supporting faces 21 and 22, shown herein as perpendicular to each other. The casing 20 is preferably provided with gudgeons 24 at its ends, which are rotatable in fixed bearings 25. The gudgeons 24 may be provided with sleeves 26 (Fig. 2) of hard bronze or other suitable non-rusting material. Suitable mechanism (not shown) is provided for angularly adjusting the chuck in its supporting bearings and for holding the chuck rigidly in adjusted position.

The casing 20 is provided with a series of transverse slots or openings 30 (Figs. 1 and 2) extending along two sides and across the intervening corner and each adapted to receive a magnet pole piece. The casing 20 is provided with a reenforcing partition 31 (Figs. 2 and 5) between each two pairs of pole piece openings 30.

The end walls 32 and 33 (Fig. 2) of the casing 20 are provided with aligned openings 34 and corresponding recesses 35 to receive a reenforcing rod 37 and clamping nuts 38. The partitions 31 have enlarged openings 36 to clear the rod 37. One lower end wall 40 (Fig. 3) of each slot or opening 30 is cut away as indicated at 41 to facilitate insertion of the pole pieces. T-slots 42 are provided in the faces 21 and 22 to facilitate the positioning of pieces of work thereon.

Angular pole pieces 44 (Figs. 7 to 9) are preferably formed in pairs, each pair being integral with a single magnet core 45. The pole pieces 44 fit loosely in the openings 30 and may be inserted therein from below by hooking the corner 46 (Fig. 7) of the pole piece over the beveled end wall 40 (Fig. 3) of the corresponding opening 30. At its other side, each pole piece 44 is provided with a beveled face 47 (Fig. 7) adapted to be inserted alongside a similarly beveled face 48 (Fig. 3) forming the adjacent end wall of the opening 30.

Each magnet core 45 is provided with a magnet coil 50, and a series of these cores with integral pole pieces and coils are secured by screws 51 to a bottom plate 52 which in turn is secured by screws 53 to the angularly disposed bottom face of the casing 20.

After the pole pieces have been secured in the desired positions, the rod 37 is inserted through the openings 34 and 36 previously described and also through corresponding openings 55 (Figs. 7 and 8) in the pole pieces 44. The nuts 38 are then applied to clamp the rod 37 in position, after which the openings between the pole pieces and the adjacent portions of the casing 20 are filled with suitable non-magnetic material such as lead or linotype metal.

It is customary after inserting this metal to calk or hammer the metal to cause the same to entirely fill the openings and render the chuck faces waterproof. The rod 37 is provided for the

special purpose of resisting endwise distortion of the casing during this calking operation.

The magnet coils 50 may be assembled in any desired manner. One common method of wiring a chuck of this type is shown in Fig. 12, in which the coils 50 of each adjacent pair are placed in series, and in which the several pairs are then assembled in parallel between main feed wires 60 and 61. Any suitable terminals 62 may be provided for the wires 60 and 61, by which terminals the chuck may be conveniently connected to a source of power.

While my improved chuck is commonly supported on the gudgeons 24, so that it may be angularly positioned as desired in its bearings 25, the chuck may also be secured by screws 65 to the inclined face 66 of a support or bracket 67, by which support the chuck will be held with its faces 21 and 22 respectively vertical and horizontal. A shoulder 68 engages the lower edge of the bottom plate 52 and resists the downward thrust of the chuck.

Having thus described a preferred embodiment of my invention, it will be seen that my improved chuck is of a simpler construction than that shown in my prior patent, that fewer parts are required, and that the assembling of the chuck is simplified. Holding faces are provided on two adjacent and angularly disposed surfaces of the chuck and these holding faces extend to and across the intervening corner 70 (Fig. 6) without any break or interruption of the holding surface of each pole-piece. The efficiency and utility of the chuck is thus substantially increased.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claim, but what I claim is:

In a magnetic chuck, a triangular block having an upper surface in two planes and slots extending through the block from top to bottom, and magnets having spear head poles flush with the upper surface planes, the spear-heads being cut away on one side to reduce their width to permit entrance into the slots.

HOWARD E. TRACY.