April 12, 1938. J. CHANIK 2,113,874

ANGLE BLOCK FOR MAGNETIC CHUCKS

Filed July 7, 1936 3 Sheets-Sheet 1

Fig. 1.

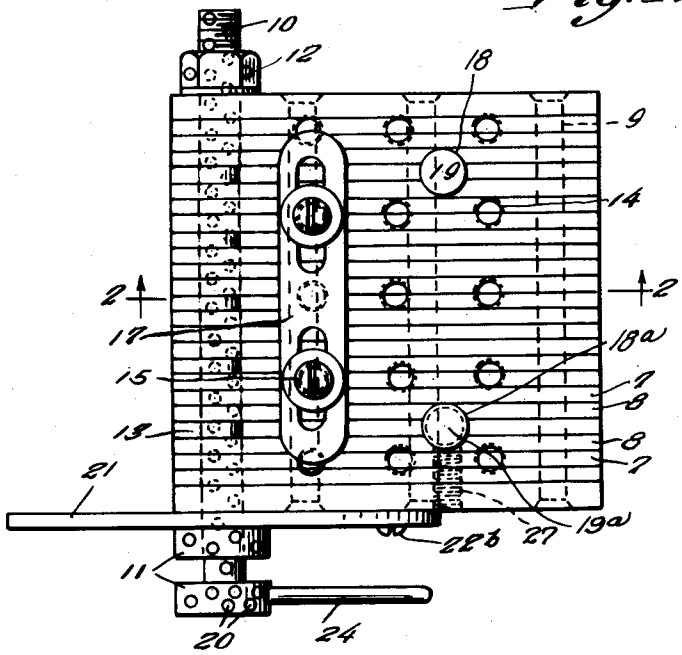


Fig. 2.

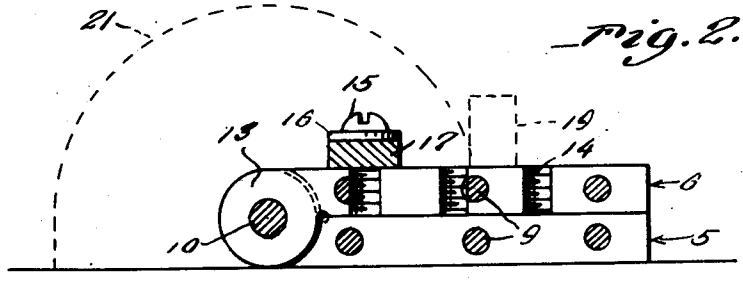
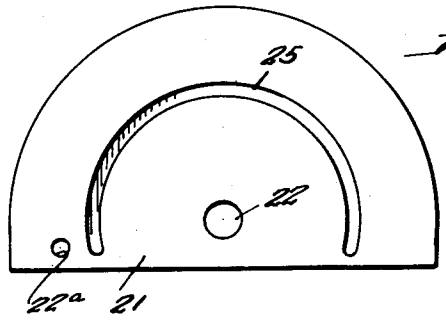


Fig. 3.



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April 12, 1938. J. CHANIK 2,113,874

ANGLE BLOCK FOR MAGNETIC CHUCKS

Filed July 7, 1936 3 Sheets-Sheet 2

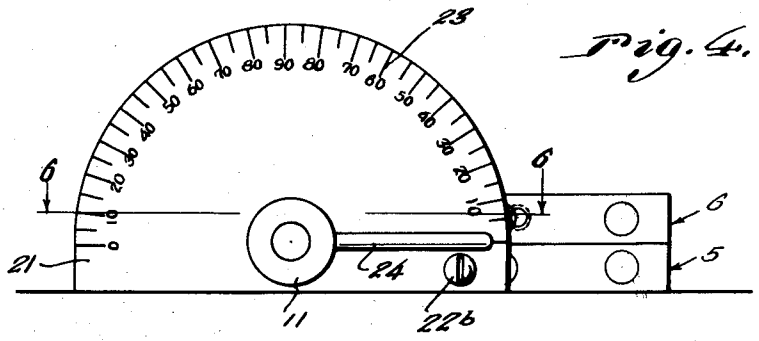

Fig. 4.

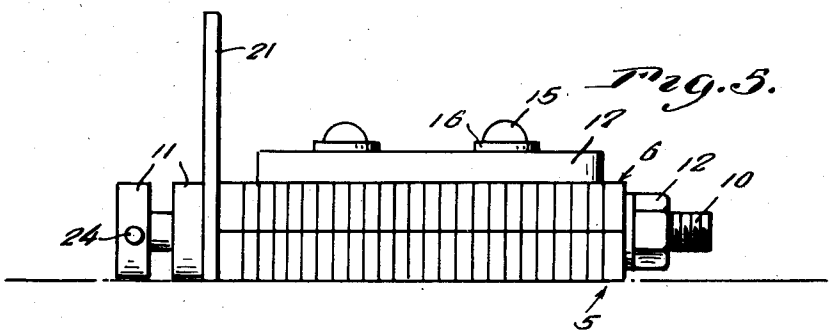

Fig. 5.

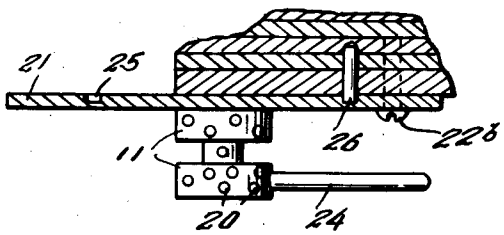

Fig. 6.

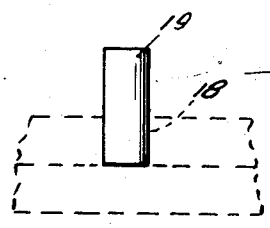

Fig. 7.

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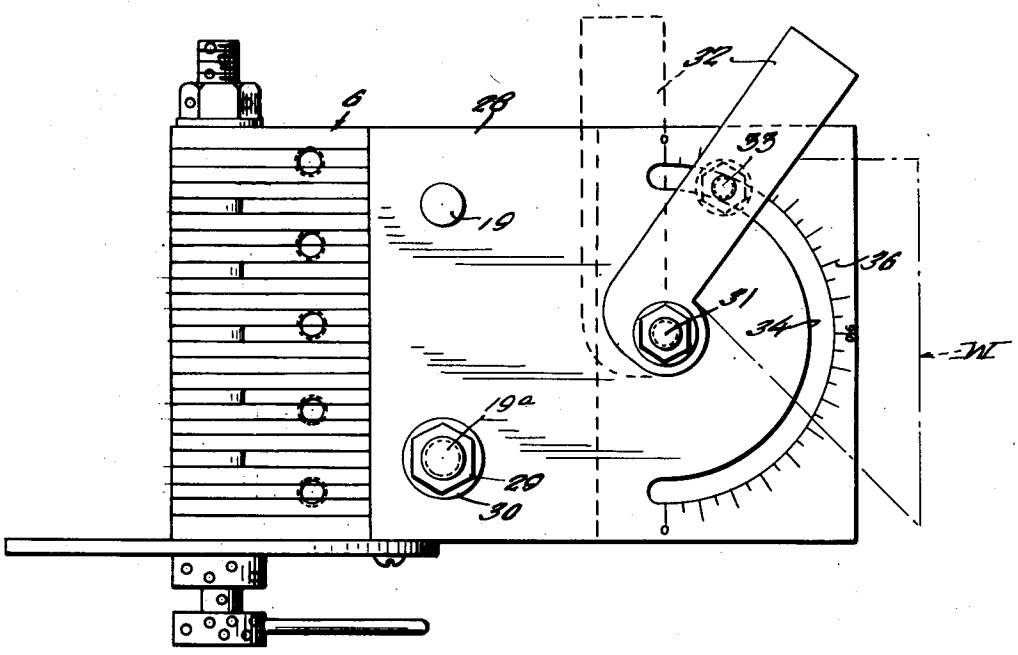
April 12, 1938. J. CHANIK 2,113,874

ANGLE BLOCK FOR MAGNETIC CHUCKS

Filed July 7, 1936 3 Sheets-Sheet 3

Fig. 8.



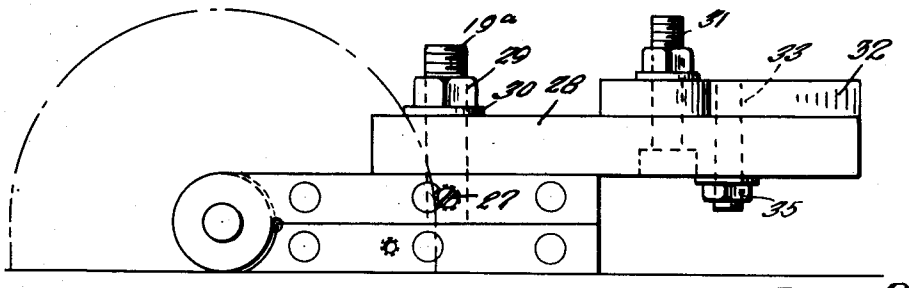


Fig. 9.

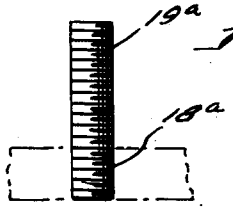


Fig. 10.

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UNITED STATES PATENT OFFICE

2,113,874

ANGLE BLOCK FOR MAGNETIC CHUCKS

John Chanik, Windsor, Ontario, Canada

Application July 7, 1936, Serial No. 89,356

3 Claims. (Cl. 51—216)

This invention relates to a magnetic angle plate for use on magnetic chucks on grinding machines for holding the work to be ground so that the latter may be supported, without clamping, at any desired angle.

The invention together with its objects and advantages will be best understood from a study of the following description taken in connection with the accompanying drawings wherein:

Figure 1 is a plan view of a fixture or angle block embodying the features of the present invention;

Figure 2 is a sectional view taken substantially on the line 2—2 of Figure 1;

Figure 3 is an elevational view of a gauge plate forming part of the invention and viewing the same from the grooved side thereof;

Figure 4 is a side elevational view of the angle block or fixture;

Figure 5 is a front edge elevational view of the angle block or fixture;

Figure 6 is a fragmentary detail sectional view taken substantially on the line 6—6 of Figure 4;

Figure 7 is a fragmentary detail view illustrating the application of a stud to the angle block for a purpose hereinafter more fully explained;

Figure 8 is a plan view of an angle block and an attachment therefor embodying the features of the present invention;

Figure 9 is a side elevational view of the assembly shown in Figure 8 with the gauge illustrated in broken line; and

Figure 10 is a detail view showing a threaded stud used in the assemblage of Figures 8 and 9.

Referring to the drawings by reference numerals, and more particularly to the invention as disclosed in Figures 1 to 7, inclusive, it will be seen that the fixture or angle block embodying the features of the present invention, comprises a lower fixture block 5 which is adapted to rest on the base of the magnetic chuck (not shown), and an upper fixture block indicated by the reference numeral 6.

Each of the blocks 5 and 6 is composed of alternate sections or plates 7 of soft steel and alternate sections or plates 8 of non-magnetic material as aluminum, brass or copper.

The plates of each of the blocks 5 and 6 are securely held together, as shown, by binder rods or rivets 9 also of non-magnetic material.

The fixture blocks 5 and 6 are hingedly connected together through the medium of a bolt 10 equipped at one end with a head 11 and provided at its relatively opposite end with a nut 12, and in this connection it will be noted that certain of the plates or sections of the blocks are provided with apertured ears 13 to receive the bolt 10, the ears of the plates or sections of block 6 being positively engaged with the bolt in any suitable manner so that upon rotation of the bolt 10, the plates or sections of the upper fixture block 6 will swing with the bolt as a unit toward or away from the lower fixture block 5 to assume the desired angle of adjustment.

To facilitate a rotation of the bolt 10 and the associated fixture block 6, the head 11 of the bolt has extending therefrom a suitable manipulating handle 24 as shown.

A gauge plate 21 is provided and is disposed against one side of the lower fixture block 5. The gauge plate 21 is provided with an opening 22 which receives the bolt 10 and is also provided with an opening 22*a* to receive a screw or similar fastening element 22*b* which is threaded into certain of the plates or sections of the lower fixture block 5 for securing the gauge plate 21 in fixed position relative to the lower fixture block 5.

On the outer face thereof the gauge plate 21 has disposed adjacent its arcuate edge an arcuate series of graduations 23 against which the lower edge of the fixture block 6 is readable for placing the fixture block 6 at the desired angle of adjustment relative to the lower fixture block 5.

Drilled into the upper fixture block 6 are preferably four rows of threaded openings 14 adapted to receive bolts 15 for securing at the desired adjustment on the upper fixture block 6 a stop or abutment bar 17 provided with slots as shown for receiving the bolts 15, which latter are equipped with washers 16 as illustrated. It will thus be seen that the work placed on the upper fixture block 6 may be disposed in edge abutting relation with the stop or abutment bar 17 to hold the work properly against the tool. It will be apparent that by providing the abutment bar 17 with slots, and the upper fixture block 6 with openings 14 as hereinbefore described and illustrated abutment block 17 may be secured at any desired position on the block 6 as required by the nature of the work for the operation to be performed on the work.

For guiding the upper fixture block 6 in its swinging movement toward or away from the lower fixture block 5, said fixture block 6 at one edge thereof has projecting therefrom a pin 26 which works in an arcuate groove 25 provided on the inside face of the gauge plate 21 as shown in Figure 6.

Also, at suitable points thereon the upper fixture block 6 has tapped thereinto relatively spaced transversely aligned openings 18, 18a, the latter opening being threaded to receive a stud bolt 19a while the former opening 18 is smooth and is adapted to receive a stud pin 19 (see Figures 7 and 10).

The threaded stud bolt 19a is secured within its opening 18a through the medium of a set screw or the like 27 (see Figure 9).

Said pin 19 and said bolt 19a are used when it is desired to apply to the upper fixture block 6, and in lieu of the abutment plate 17, an assembly shown in Figures 8 and 9 for holding on the angle block work of, for example, the type suggested in Figure 8 by broken line and indicated generally by the reference letter W.

This assembly as shown in Figures 8 and 9 consists of a substantially rectangular plate 28 that is adapted to rest partly on the top of the upper fixure block 6 and adjacent one end edge is apertured to receive said pin 19 and stud bolt 19a as shown. The plate 28 is further secured in position through the medium of a nut 29 threaded on to the stud bolt 19a, a washer 30 being provided for disposition between the nut 29 and the plate 28.

Pivoted to the plate 28 forwardly of its transverse center and indicated generally at 31 is a work stop or abutment plate or arm 32 against which one edge of the work resting on the plate 28 abuts as shown in Figure 8 in a manner to hold the work W in proper position on the plate 28.

For securing the abutment arm or plate 32 at the desired angular adjustment, there is provided on the arm 32 a threaded pin 33 that works in an arcuate slot 34 provided adjacent the forward edge of the plate 28 and equipped with a nut 35 which when threaded against the under side of the plate 28 will serve to secure the abutment arm 32 at the desired adjustment.

Disposed adjacent an edge of the slot 34 is an arcuate scale 36 against which one edge of the arm 32 is readable to facilitate the placing of the arm or abutment plate 32 at the desired adjustment.

It is thought that a clear understanding of the construction, utility and advantages of the invention of this character will be had by those skilled in the art without a more detailed description.

Having thus described the invention, what is claimed here is:

1. An angle block for use with magnetic chucks comprising a lower fixture block and an upper fixture block, said blocks being pivotally connected together at one edge, and each of said blocks being composed of alternate and complementary magnetic and non-magnetic plates, said upper fixture block being provided with a plurality of transverse rows of relatively spaced openings, an abutment block adapted to rest on the upper fixture block, and screw means engaging in slots in said abutment block and in selected openings in the upper fixture block for securing the abutment block at the desired adjustment, said upper fixture block being also provided with an additional pair of relatively spaced openings, a plate adapted to rest on the upper fixture block and having openings aligning with the last-mentioned openings, stud elements engaging in the openings in said plate and in the upper fixture block for securing the plate to the upper fixture block, a work abutment arm pivoted to said plate, and means for securing said work abutment arm at the desired adjustment on said plate.

2. An angle block for use with magnetic chucks comprising a lower fixture block and an upper fixture block, said blocks being pivotally connected together at one edge, and each of said blocks being composed of alternate and complementary magnetic and non-magnetic plates, said upper fixture block having a plurality of spaced transverse rows of relatively spaced openings therein, an abutment block adapted to rest on the upper fixture block, screw means engaging in slots in said abutment block and in selected openings in the upper fixture block for securing the abutment block at the desired adjustment, said upper fixture block being also provided with an additional pair of relatively spaced openings, a plate adapted to rest on the upper fixture block and having openings aligning with the last-mentioned openings, stud elements engaging in the openings in said plate and in the upper fixture block for securing the plate to the upper fixture block, a work abutment arm pivoted to said plate, said plate being provided with an arcuate slot and a scale adjacent one edge of said slot, and said work abutment arm having a pin extending downwardly therefrom and working in said slot, and a nut threaded on said pin adapted to be threaded home into binding engagement with the under side of the plate for holding said abutment arm at the desired adjustment.

3. A fixture for use with magnetic chucks comprising a lower fixture block and an upper fixture block, said blocks being formed of alternate magnetic and non-magnetic plates secured in parallel relation; bolt means pivotally connecting said fixture blocks together at one end edge, a gauge plate secured to a side edge of the lower fixture block and provided with an opening for accommodating said bolt means, said gauge plate having an arcuate edge and a series of graduations adjacent said edge and against which the lower edge of the upper fixture block is readable for placing the upper fixture block at the desired angular adjustment, said plate being provided also on one face thereof with an arcuate groove, and the upper fixture block having a pin extending from one side edge thereof and working in said groove, said upper fixture block being also secured to said bolt means to turn therewith, and handle means on one end of the bolt means for rotating the latter.

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