Sept. 2, 1958 A. C. RESCHKE 2,849,820

POTTERY TRANSFER BRUSHING MACHINE

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FIG. 1.

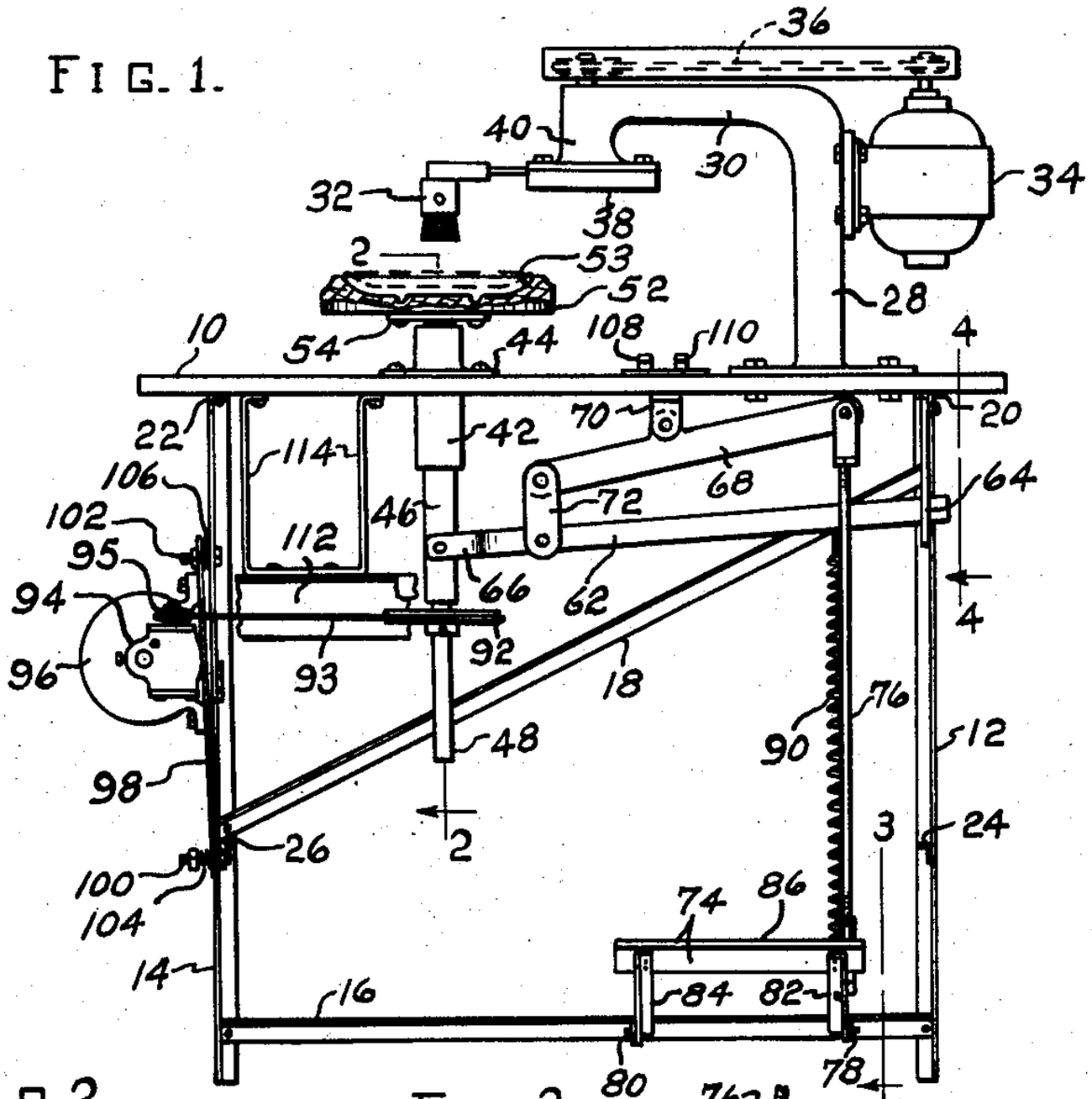

FIG. 2.

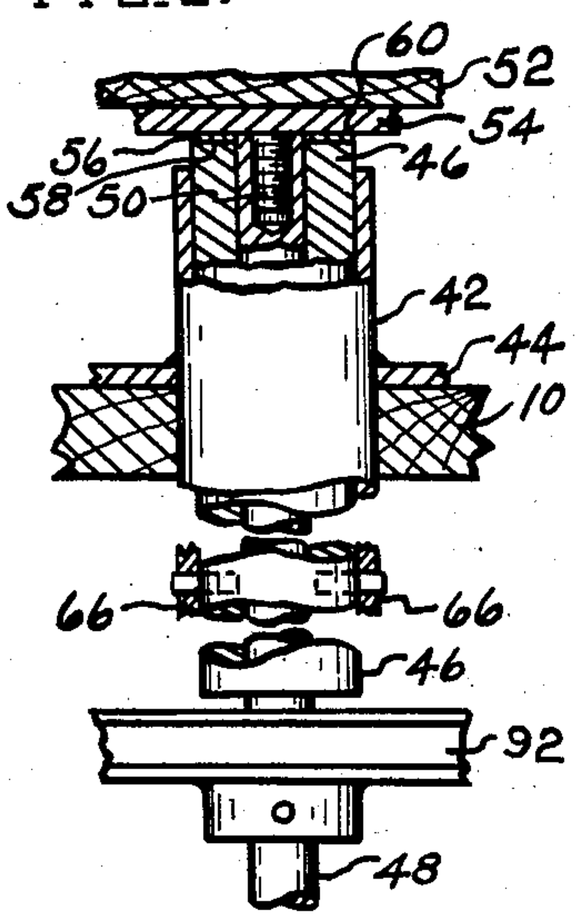

FIG. 3.

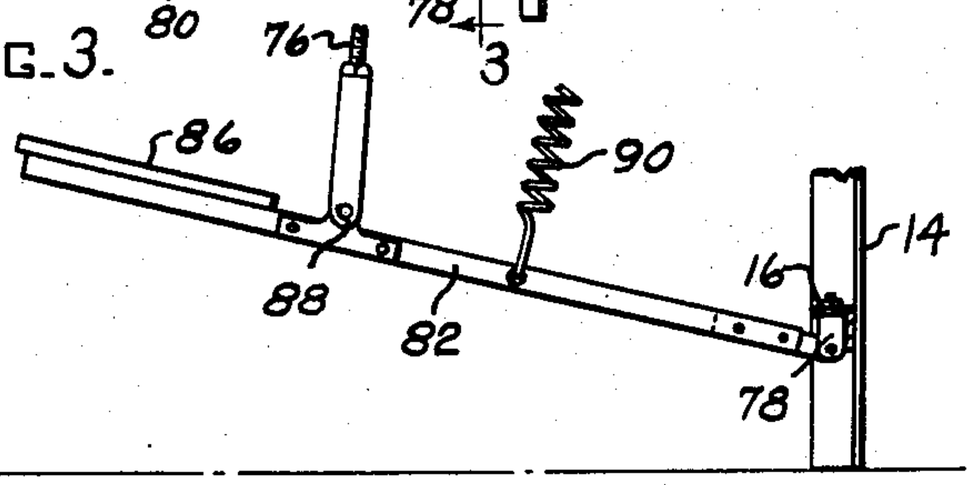

FIG. 4.

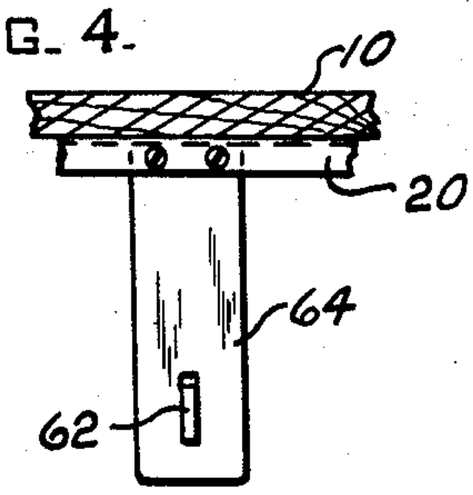

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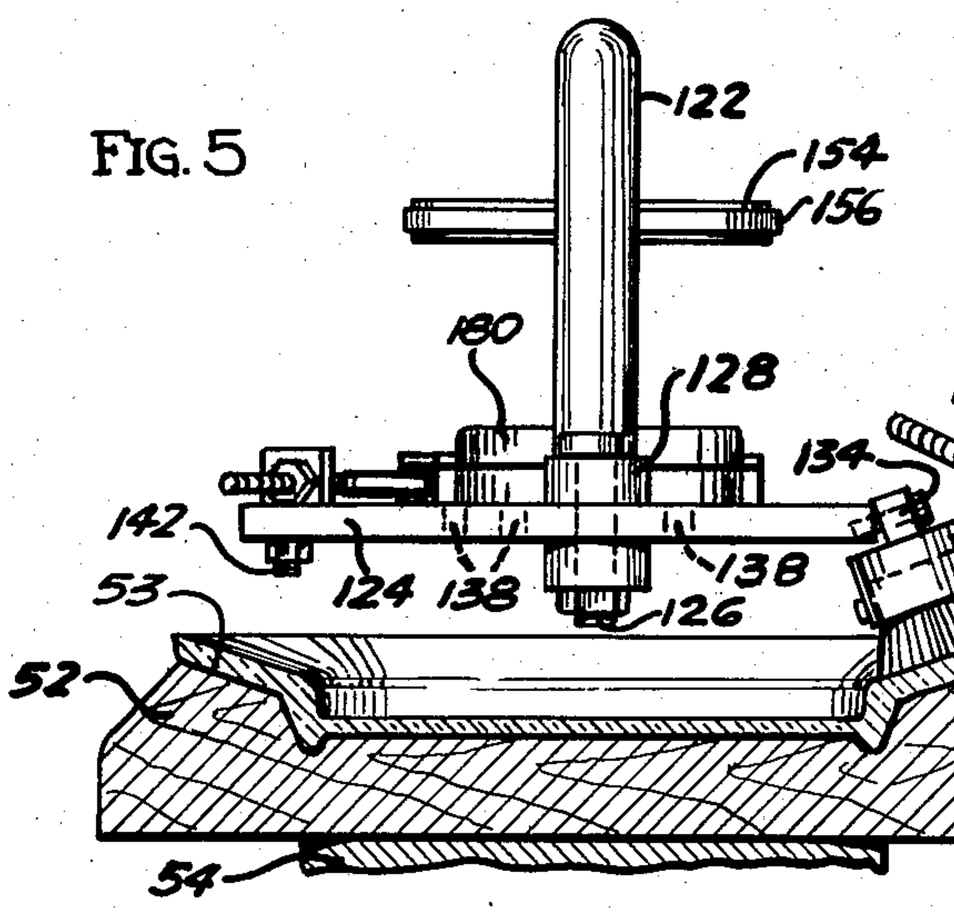
FIG. 5



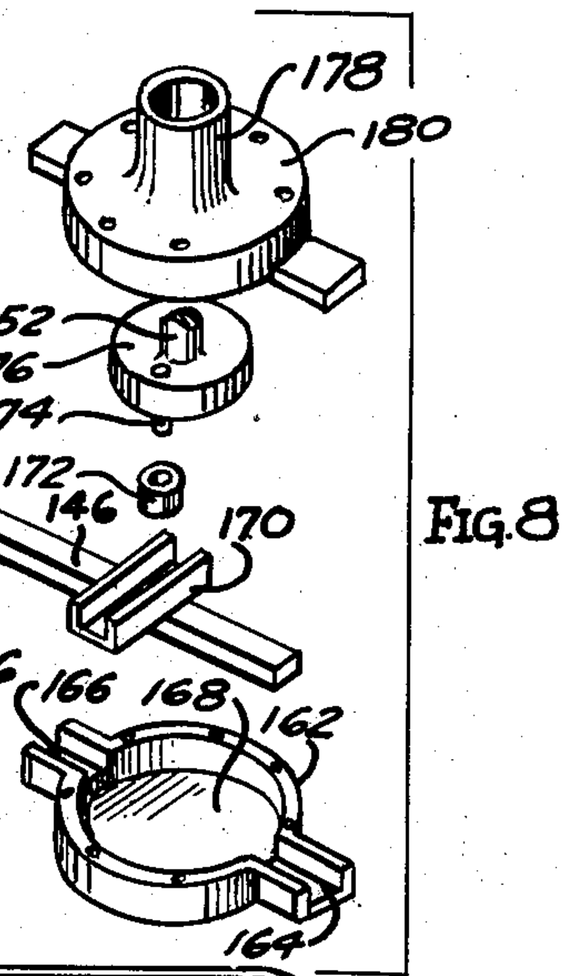


FIG. 8

FIG. 5

FIG. 6

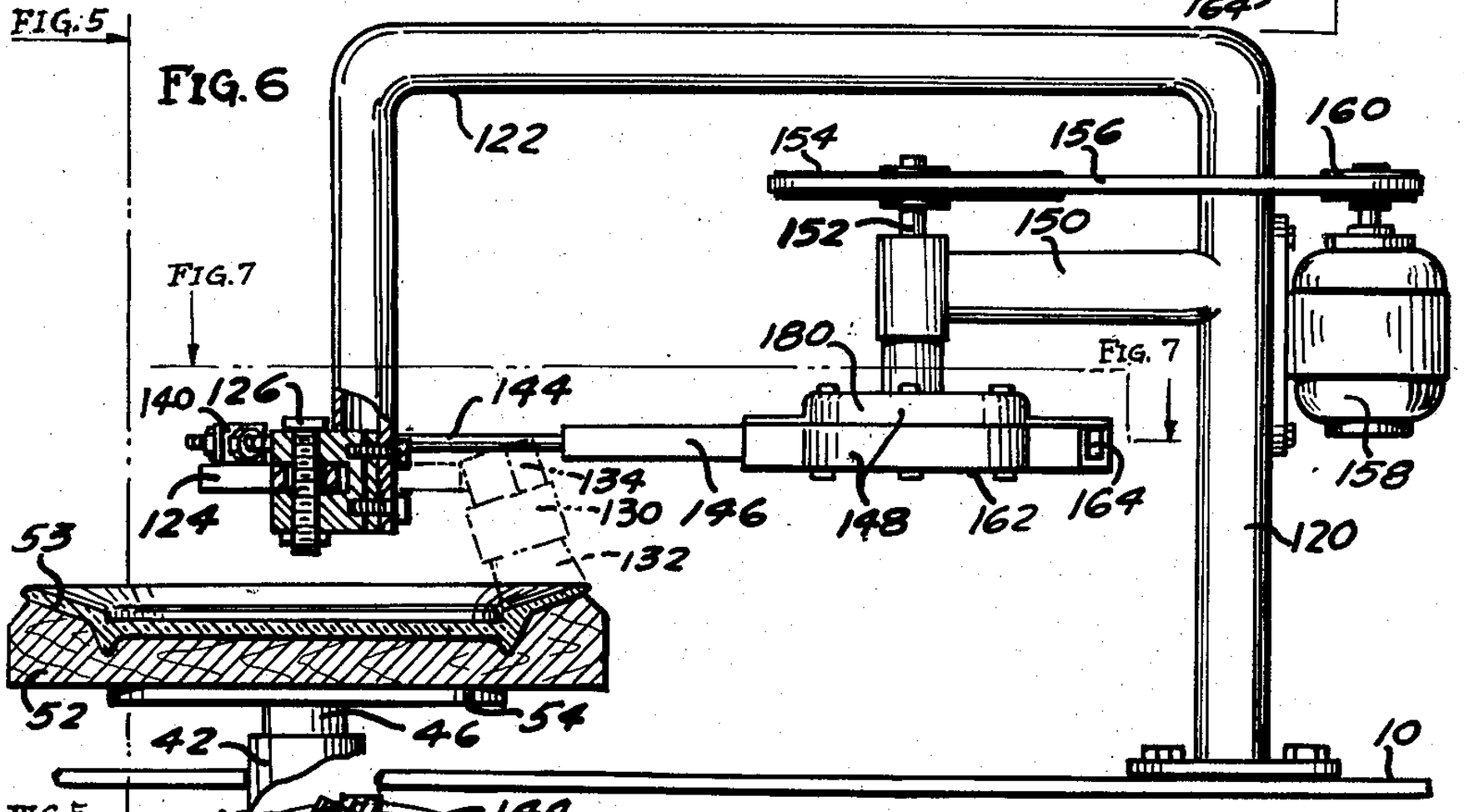


FIG. 7

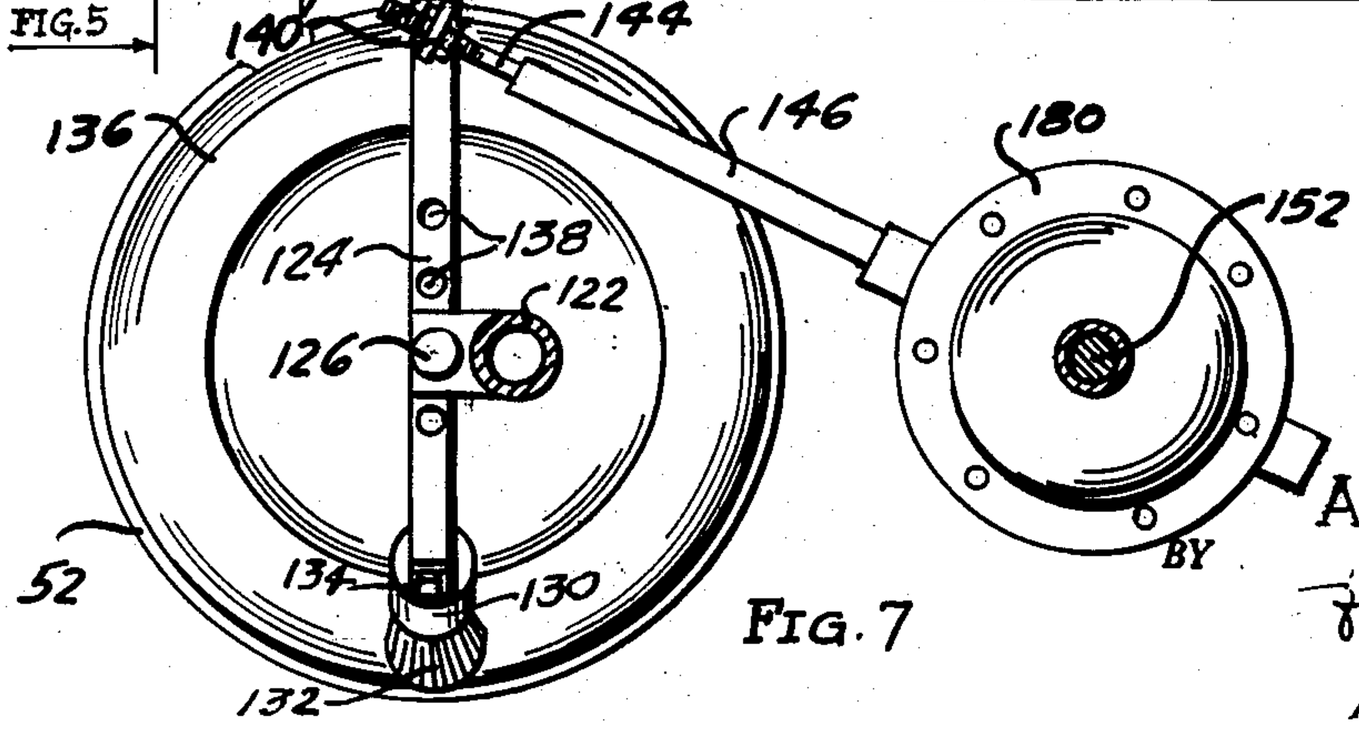


FIG. 7

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POTTERY TRANSFER BRUSHING MACHINE

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6 Claims. (Cl. 41—1)

This invention relates to a machine for applying transfers to pottery, and more particularly where such transfers are arranged in an annular pattern around the rim of plates, saucers and the like.

In a Patent 2,685,753, granted August 10, 1954, there is disclosed a pottery transfer brushing machine which provides a planar reciprocating brushing motion found highly desirable in the treatment of pottery transfers, particularly as applied to cups and other articles capable of being manually held while the brushing motion is applied to the transfer. The present invention which is a continuation in part of my copending application, Serial No. 466,616 filed November 3, 1954, now abandoned, is an improvement in which mechanism is provided for bringing plates, saucers, and other generally circular dishes into light engagement with the reciprocating brushing motion which may be along a linear or arcuate path, while simultaneously rotating such dishes so that the brushing action will be uniformly applied over an annular area of the dish to which the transfers are to be applied. The invention further has to do in one form thereof, with the provision of a to and fro brushing movement, on an arcuate path, concentric with the axis of rotation of the saucers, plates and the like, and in which the radius of the path may be varied to conform to the radius of the region undergoing treatment. The machine contemplates a foot control for accurately gauging the brushing pressure, and which control may be operated with a minimum of fatigue to the operator.

The above and other novel features of the invention will appear more fully hereinafter from the following detailed description, when taken in conjunction with the accompanying drawings. It is expressly understood that the drawings are employed for purposes of illustration only and are not designed as a definition of the limits of the invention, reference being had for this purpose to the appended claims.

In the drawings, wherein like reference characters indicate like parts:

Figure 1 is a front elevational view of the machine with the forward legs cut away;

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

Figure 3 is a fragmentary end elevational view of the treadle control taken from the section 3—3 of Figure 1;

Figure 4 is a fragmentary end view of the central lever fulcrum mount as viewed from the line 4—4 of Figure 1;

Figure 5 is a fragmentary end elevation of a modified form of the invention with parts in section;

Figure 6 is a fragmentary side elevation, with parts in section of the form shown in Figure 5;

Figure 7 is a sectional view taken on the line 7—7 of Figure 6; and

Figure 8 is an exploded view of the crosshead and crank elements.

Referring to Figure 1, there is shown a work table 10 mounted on leg end frames 12 and 14, such frames being

braced at the rear by a horizontal angle iron tie bar 16 and an angle iron diagonal brace 18. Each of said end frames are provided with upper transverse table support members 20 and 22, and lower cross braces 24 and 26.

Upon the table is rigidly mounted a standard 28 having an overhanging arm 30, the arm supporting a reciprocating brushing member 32, driven by a motor 34, belt drive 36 and crank and cross-head mechanism 38 in the depending head 40 on the end of the arm, the construction of which is shown in detail in the Patent 2,685,753 referred to above.

On the table, there is also mounted a vertical tubular guide 42, such guide having a mounting flange 44 rigidly secured to the table. Within the tubular guide is a bearing sleeve 46 adapted to slide vertically within the guide 42 and within which is journalled a vertical drive spindle 48. The spindle has a threaded bore in its upper end to receive the threaded stem 50 of a circular work support, the support comprising a block 52 having a face 53 complemental to the under surface of a relatively flat dish or plate, the block being mounted on a flange 54 integral with the threaded stem 50. A thrust bearing in the form of a washer 56 is positioned between the end of the sleeve 58 and the underface 60 of the flange 54. In practice, the threads of the bore and stem will be so correlated in respect to the direction of rotation of the spindle as to maintain the work support secure upon the end of the spindle.

Provision is made for vertically sliding the bearing sleeve in the guide by a foot treadle, and suitable linkage, whereby an operator may lift the work support and work positioned thereon into light frictional contact with the reciprocating brush. Such linkage comprises a lever 62 fulcrumed at one end in a bracket 64 depending from the cross-member 20, and having a yoke 66 at the other end pivoted to the lower end of the sleeve 46. A lever 68, fulcrumed on a depending bracket 70 mounted on the table 10 is connected at one end to said lever 62 by a link 72, and at the other end to a foot treadle control 74, by an adjustable tension rod 76.

The treadle is pivoted on the rear angle member 16 on spaced brackets 78 and 80, the treadle being formed of spaced angle irons 82 and 84, having a foot plate 86 at their forward ends. The rod 76 is pivotally connected to the angle iron 82 as at 88. A tension spring 90, connected between the diagonal brace 18 and the angle iron 82 serves to counterbalance the treadle, and normally cause the sleeve 46 to retract to the lower position shown in Figure 1, when the work piece is out of contact with the reciprocating brush 32.

The spindle 48 is provided with a drive pulley 92, the latter being driven by a belt 93 extending to a pulley 95 of a gear reduction 94 connected to a drive motor 96. The belt will be of sufficient length to permit limited vertical movement of the pulley 92, without danger of the belt being thrown therefrom. The reduction and motor are mounted on a p late 98 resiliently and adjustably secured to the end frame 14 as by bolts 100 and 102, and springs 104 and 106, the spring 104 holding the plate resiliently against the end frame 14 while the spring 106 resiliently tensions the belt 93.

Convenient switches 108 and 110 are provided on the table 10 for controlling the power to the motor 96, and motor 34. A guard 112 enshrouds the belt 93, the guard being supported on a depending bracket 114 from the table 10.

It will be understood that various work supports 52, for accommodating plates of different diameters will be interchangeably threaded into the end of the drive spindle 48. When a plate is set in the work support 52, and a decal or gold leaf pattern applied thereto as by a transfer,

around the rim of the plate, the spindle **48** is caused to rotate, and lifted so as to bring the rim of the plate into light engagement with the reciprocating brush **32**, through operation of the foot treadle **74**. Thus the manual effort of holding the plate true beneath the brush is practically eliminated, and the brush performs a uniform wiping pressure over the annular transfer area as the work support rotates.

The standard may be adjusted so as to swing the arm to locate the travel of the brush along tangential lines located radially from the center of the spindle, at such distance as the diameter of the particular dish and pattern being applied thereto may require.

In the modified form of the invention, in Figures 5 and 6 there is shown a standard **120** mounted on the table **10**, such standard having an overhanging arm **122** which is adapted to support an oscillating lever **124** on a pivot **126** mounted in the pivot block **128**. The axis of the pivot **126** is aligned with the axis of the work support **52**. The lever **124** at one end carries a brush socket **130**, in which is secured a brush **132** or other burnishing device. The brush socket **130** is mounted on the lever end at an angle as is shown at **134**, so that the brush will bear against the rim **136** of the dish substantially normal to the annular beveled surface thereof. Such angle can be varied to suit the work piece.

The lever **124** is provided with a number of perforations **138** along its length so that the radius of the brush in its oscillation about the pivot **126** may be varied for plates or saucers and the like of varying diameter. The opposite end of the lever **124** is provided with a block **140** having a swivel pin **142** journalled in an aperture in the lever end, and such block is connected by a link **144** which has a rectangular sectioned end **146** that extends into the crank and crosshead housing **148**. The standard **120** has a short bearing support arm **150** in which is journalled the shaft **152**, which shaft is driven by a pulley **154**, a belt **156** and a drive motor **158** having a drive pulley **160**, the motor being mounted upon the standard **120**.

The crosshead mechanism is shown in exploded form in Figure 8, the housing comprising a lower section **162** having guideways **164** and **166**, and a hollow space **168** to accommodate the crosshead and crank. The rectangular sectioned end **146** of the rod **144** slides in the guideways **164** and **166**, and has on its upper face a transverse crosshead channel **170** adapted to receive the roller **172** which is driven in a circular path by the crank pin **174** on the crank disk **176**. The crank disk is secured to the shaft **152**, which extends outwardly through the bushing **178** in the top housing member **180**, which is also hollow to provide space for the crank and crosshead.

Upon rotation of the shaft **152**, the rod **144** is caused to reciprocate, and such motion causes the lever **124** to oscillate so that the brush **132** will provide a suitable arcuate rubbing action upon the transfer being applied to the dish **136**. The crosshead housing **148** is free to swing about the axis of the shaft **152** as is necessary to compensate for the arcuate path followed by the end of the lever **124** to which the rod **144** is attached. The oscillatory movement of the lever **124** may be varied by changing the radial distance between the pivot block **140** and the pivot pin **126**, the perforations **138** rendering this possible.

In practice, it will be understood that a partially fired plate is provided with the transfer having the design or pattern applied to the plate, and that such transfer is caused to be transferred to the plate by the brushing or burnishing action of the brush **132** which oscillates rapidly in an arcuate path while the plate rotates at a desired speed. Thereafter, the work support is lowered and stopped, the plate removed, and finished by further firing to provide the desired glazed surface.

While two forms of the invention have been illustrated and described, it is to be understood that the invention is not limited thereto. As various changes in the construction and arrangement may be made without departing from the spirit of the invention, as will be apparent to those skilled in the art, reference will be had to the appended claims for a definition of the limits of the invention.

What is claimed is:

1. A pottery transfer brushing machine comprising a work table having a vertical tubular guide mounted therein, a sleeve bearing slidably mounted in said guide, a spindle journalled in said sleeve and having a work holder affixed on its upper end adapted to support a plate for rotation, a thrust bearing acting between said holder and the upper end of said sleeve, means for continuously driving said spindle, means mounted below said table including a lever operatively connected to said sleeve for elevating said sleeve in said guide, and a standard on said table having an oscillating brush depending toward said work holder, said brush oscillating in a plane parallel with said table and through a path which lies laterally spaced from the axis of said spindle, and which is substantially symmetrical to a radius extending from the axis to the mid point of the path.

2. A pottery transfer brushing machine comprising a work table having a vertical tubular guide mounted therein, a sleeve bearing slidably mounted in said guide, a spindle journalled in said sleeve and having a work holder for plates affixed on its upper end and having threaded engagement with said spindle, a thrust bearing acting between said holder and the upper end of said sleeve, means for continuously driving said spindle to rotate said work holder, foot-operated means mounted below said table including a lever operatively connected to said sleeve for elevating said sleeve in said guide, and a standard on said table having an oscillating brush depending toward said work holder, said brush oscillating in a plane parallel with said table and through a path which lies laterally spaced from the axis of said spindle and which is substantially symmetrical to a radius extending from the axis to the mid point of the path.

3. A pottery transfer brushing machine comprising a work table comprising a work top and end support frames, a vertical tubular guide mounted on said work top, a sleeve bearing slidable in said guide, a spindle extending through said sleeve bearing and journalled therein, a rotatable work holder for plates having threaded engagement with the end of said spindle, a thrust means adapted to bear against the upper end of said bearing sleeve, a pulley affixed to the lower end of said spindle below said bearing sleeve, motor and belt drive means for said pulley mounted on one of said end frames, and laterally disposed in respect to said spindle, a lever laterally disposed beneath said work top and having a yoke connection to the lower end of said sleeve and pivotally mounted upon said other end frame, a foot treadle pivotally mounted between said frames, linkage connecting said treadle with said lever whereby to elevate said sleeve through foot operation of said treadle, a standard having an overhanging arm mounted on said table top, an oscillating brush carried on said arm and adapted for oscillation in a plane parallel with the table top, said brush being located over said work holder and oscillating along a path, the mid portion of which lies substantially perpendicular to a radius extending from the axis of said spindle, and power means for oscillating said brush.

4. A pottery transfer brushing machine comprising a work table having a vertical spindle journalled therein, a work holder for plates affixed on the upper end, means for rotating the work holder, a standard on said table for supporting an oscillating brush, said standard having a pivot mount located over and in alignment with said spindle, a brush supporting lever pivotally secured in said mount, power means for oscillating said lever, a brush mounted on said lever extending toward said work holder, and means for relatively moving the work holder

and oscillating brush toward and away from each other to engage the brush with an annular area of a plate when supported on said holder.

5. A pottery transfer brushing machine comprising a work table having a vertical spindle journalled therein, a work holder for plates affixed on the upper end, means for rotating the work holder, a standard on said table for supporting an oscillating brush, said standard having a pivot mount located over and in alignment with said spindle, a brush supporting lever pivotally secured in said mount, power means for oscillating said lever, a brush mounted on said lever extending toward said work holder and adapted to be oscillated through an arc concentric with said spindle, means for varying the radius of said arc, and means for relatively moving the work holder and oscillating brush toward and away from each other to engage the brush with an annular area of a plate when supported on said holder.

6. A pottery transfer brushing machine comprising a work table comprising a work top and end support frames, a vertical tubular guide mounted on said work top, a sleeve bearing slidable in said guide, a spindle extending through said sleeve bearing and journalled therein, said spindle having a threaded axial bore in the upper end thereof, a rotatable work holder for plates having a threaded stem adapted to be secured in said bore and a thrust face adapted to bear against the upper end of

said bearing sleeve, a pulley affixed to the lower end of said spindle below said bearing sleeve, motor and belt drive means for said pulley mounted on one of said end frames, and laterally disposed in respect to said spindle, a lever laterally disposed beneath said work top and having a yoke connection to the lower end of said sleeve and pivotally mounted upon said other end frame, a foot treadle pivotally mounted between said frames, linkage connecting said treadle with said lever whereby to elevate said sleeve through foot operation of said treadle, a standard on said table for supporting an oscillating brush, said standard having a pivot mount located over and in alignment with said spindle, a brush supporting lever pivotally secured in said mount, power means for oscillating said lever, and a brush mounted on said lever extending toward said work holder and adapted to be oscillated through an arc concentric with said spindle, and adapted to be brought into engagement with an annular area of a plate supported on said work holder upon elevation thereof.

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