Jan. 18, 1949. L. GRANAT 2,459,276

PRESS AND DIE THEREFOR

Filed Nov. 7, 1945

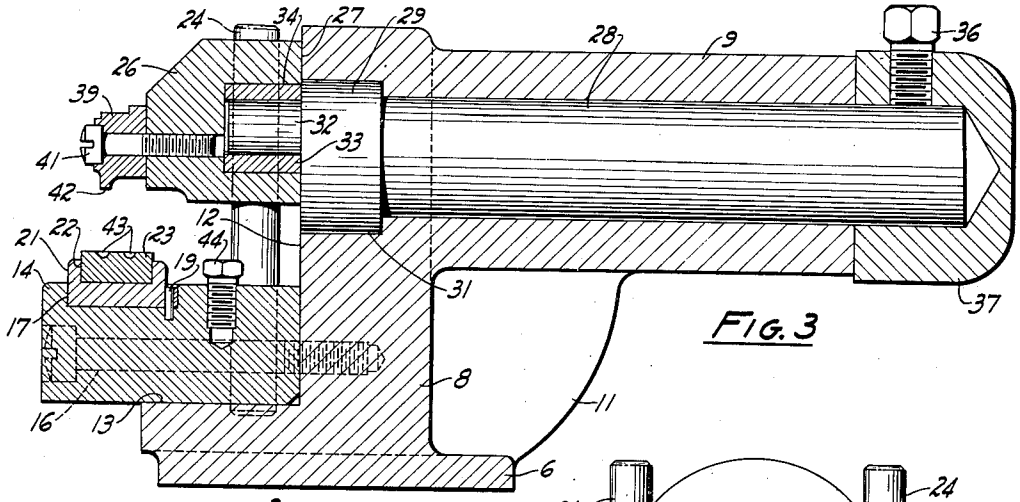


FIG. 3

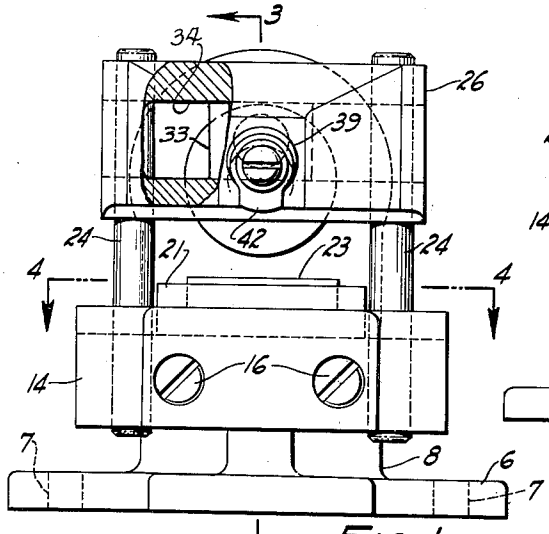


FIG. 1

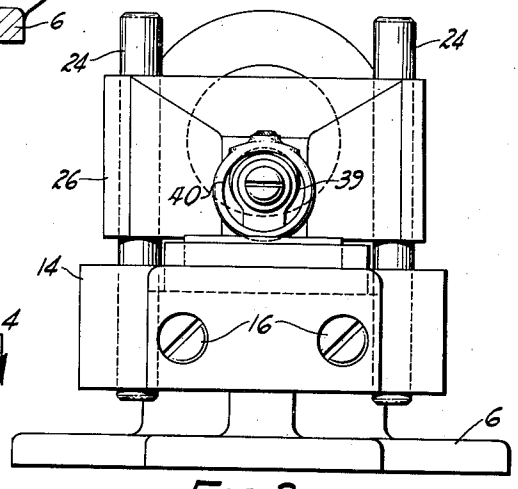


FIG. 2

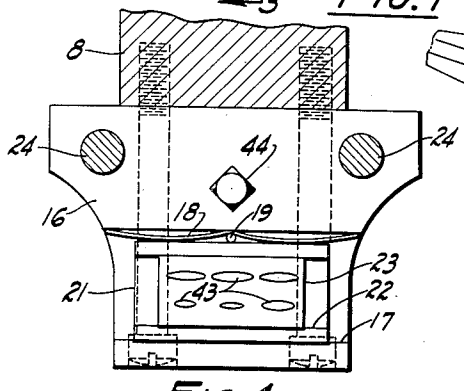


FIG. 4

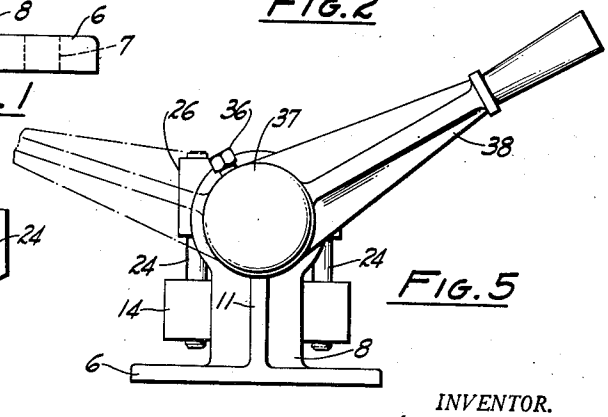


FIG. 5

INVENTOR.
LEO GRANAT

BY
Gardner & Warren
his atty.

Patented Jan. 18, 1949

2,459,276

UNITED STATES PATENT OFFICE

2,459,276

PRESS AND DIE THEREFOR

Leo Granat, San Francisco, Calif.

Application November 7, 1945, Serial No. 627,236

1 Claim. (Cl. 101—4)

1

This invention relates to the combination of a power press and die used for sinking lettered or design inscriptions in surfaces of impressible materials.

It is an object of the invention to provide a press and die combination particularly adapted to applying impressed designs or lettering to the inside surfaces of tubular or annular members.

Another object of the invention is to provide mechanism for applying impressed designs or lettering to the inside surfaces of annular members, such as finger rings, which is arranged to prevent expansion of the impressed body in its least cross sectional dimension by displacement of the body mass caused as a result of penetration into the mass by the die.

A further object of the invention is to provide, in apparatus of the character described, novel die mounting and adjustment means adapted to permit rapid die interchange and facilitation of registry with the impression die of selective holding means used to receive and support the objects to be impressed in properly registered and aligned relationship with the impression die.

Still another object of the invention is to provide a compact portable device, of the class referred to, which is capable of producing, by manual effort, an excess of power over that required to impress a lettering or design engraving or embossing die in the surface of even comparatively hard and impression-resistant materials.

Other objects and features of advantage, in addition to the foregoing, will become apparent to those skilled in the art to which the apparatus pertains as the hereunto annexed detailed description of the invention proceeds. It is to be understood that the invention is not to be limited to the specific form thereof herein shown and described as various other embodiments thereof may be employed within the scope of the appended claim.

In the drawing:

Figure 1 is a front elevational view of the press of my invention showing the relationship of the parts at the start of an impression stroke. A portion of the view is broken away and shown in vertical section so as to more clearly disclose the internal construction.

Figure 2 is a view, similar to Figure 1, showing the relationship of the parts at the completion of an impression stroke.

Figure 3 is a longitudinal vertical sectional view of the press taken in the plane indicated by the line 3—3 of Figure 1.

Figure 4 is a fragmental top plan view of the

2

die bolster plate. The plane in which the view is taken is indicated by the line 4—4 of Figure 1.

Figure 5 is a rear elevational view of the apparatus shown in a reduced scale.

Referring to Figure 3 of the drawing, the structure of my invention comprises an integral supporting frame having a base flange 6, provided with apertures 7 for the reception of hold-down bolts, a column 8 rising vertically from the base flange and an extended boss 9 projecting rearwardly from the column 8. A rib 11 joining the base plate, column and boss provides vertical reinforcement of the latter against flexing stresses. The forward face 12 of the column is a machined surface and rectangularly intersects a horizontal ledge 13 spaced above the base flange 6. Positioned on the ledge 13 is a bolster plate 14 held in place and in secure engagement with the surfaces 12 and 13 by mounting screws 16 passing through apertures bored horizontally through the bolster plate and engaged in coextensive threaded holes formed in the column 8.

Means are provided for supporting and adjustably positioning a die block on the bolster plate. Formed in the upper surface of the bolster plate and paralleling the front face of the latter is a groove 17 having, as is best shown in Figure 4, a W-shaped leaf spring 18 lying along its rear side and secured in place by means of an axially vertical fixed pin 19 engaged in the centermost entrant portion of the spring. Positioned in the groove 17 is a die carrier comprising a block 21 of comparatively hard metal which is slightly narrower in width than the spacing between the pin 19 and the forward side of the groove 17 so that the carrier may be slid into the groove longitudinally. The flexed portions of the spring 18, in their free state, extend transversely into the groove materially beyond the pin 19 so that, when a carrier 21 is placed in the groove, the consequently flexed springs will exert considerable pressure in urging the carrier toward and against the forward side of the groove. The groove 17 is accurately machined so as to rectangularly intersect the longitudinal axis of the supporting frame with the result that substitute carriers 21 placed in the groove will be precisely registered with cooperating elements of the die structure. The carrier 21 is provided in its upper surface with a die back groove 22 precisely paralleling the groove 17 and fitted with a die block 23, of relatively soft metal, having just sufficient clearance transversely of the groove so as to permit a slight frictionally resisted movement of the

block when the latter is urged longitudinally of the groove.

Means are provided for supporting a movable die element above the die block and means are further provided for forcibly urging the die element toward the die block. Secured in the bolster plate 14, and rising in relatively spaced relation adjacent the rear edge thereof, is a pair of parallel guide pins 24 on which is mounted, for vertical sliding movement, a die head 26. The guide pins 24 are spaced forward of the column surface 12 and the die head is so proportioned that its rear surface 27 lies contiguously with and slides along the column surface. The boss 9 is axially bored to journal a shaft 28 having an integral collar 29 thereon, journalled in a counterbored portion 31 of the shaft bore, and fitted with an integral crank pin 32 journaled in a bearing block 33 eccentrically positioned relative to the axis of the shaft 28 and adapted to slide in a groove 34 provided in the die head 26 and extending horizontally across the rear surface 27 thereof. The other end of the shaft 28 is secured, by a setscrew 36, in the hub 37 of an operating lever 38. The arrangement of parts is such that, when the lever 38 is manually moved downwardly toward the base flange 6 or its support, the subsequent rotary movement of the shaft 28 will cause motion of the crank pin 32 in a partial orbit about the shaft axis thus imparting vertical motion to the die head 26 and effecting linear movement of the latter toward or from the die block 23. A die 39, secured by a screw 41 to the front face of the die head 26, is carried by and duplicates the movements of the latter.

The mechanism shown in the drawing is particularly designed for applying impressed lettering or similar designs to the inside surfaces of tubular members such as finger rings 40 in which a manufacturer desires to inscribe the metal type or quality, the maker's name and other identifying insignia. Heretofore, such inscriptions were impressed into the rings by means of hand tools, constructed in the form of punches having the desired legend engraved thereon, which were caused to transfer their type design to the ring by being placed in engagement with the ring and being struck one or more sharp blows by a hand hammer. The type letters or figures of such punches are very minute in size and the slightest angularity of the punch with respect to the surface in which the inscription is to be made, together with variations in the force of the hammer blows, may produce in successive rings faulty impressions which are not clear cut thus rendering the inscriptions hard to read and detracting from the otherwise fine workmanship which the ring should possess. In addition to this, should the punch type be imbedded too deeply in the metal, it will cause undue displacement of the nearby metal which will create a slight spreading of the ring band and will effect the appearance, on the sides of the latter, of visible bulges. These bulges, even though very slight seem to be magnified by their presence on a highly polished surface and greatly detract from the appearance of the ring. I obviate many of the objections inherent in the use of hand tools by making the die 39 of generally cylindrical form and possessing a dimension of greatest diameter capable of entering, with considerable clearance the smallest rings to be inscribed and I further provide the die with a peripheral ridge 42 on which the desired master lettering or characters may be engraved, the die being then hardened in the usual manner. Directly underlying the ridge 42 I provide in the die block 23 recesses 43 which are shaped as chordal portions of annuli representing the various sizes and cross-sectional shapes of the rings to be inscribed so as to form pockets which will snugly fit the ring bands. It will be noted in Figure 4 that the die block is formed with rows of recesses 43 which are respectively spaced equidistantly from the adjacent side of the block so that when the latter is switched end for end and reinserted in the groove 22 or when the carrier 21 is likewise repositioned, automatic alignment of a selected one of the recesses and the ridge 42 will be had in a plane intersecting the longitudinal axis of the press. Alignment in a plane paralleling the above axis may be had by shifting the die block 23 and/or carrier 21 to register the selected recess 43 with the ridge 42.

In operating the press, assuming that the preparations of mounting the desired die 39 and alignment of the proper recess 43 with the die ridge 42 have been taken care of, the die is lowered by manipulating the lever 38 until it is just above the die block 23 and sufficient space exists to insert the band of the ring below the type ridge and into the recess 43. The lever movement is then continued downwardly to bring the die into actual engagement with the ring band and to cause the type or design contained in the ridge to become imbedded in the ring metal to form therein the desired impression. The depth of impression may be regulated by a screw 44 or other stop means carried by either of the relatively movable members 14 or 26 and engageable by the other member so as to limit their degree of relative approach. The operation of impression may be accomplished as rapidly as successive rings can be placed in and removed from the press and no vigilance on the part of the operator is required to check perpendicularity of the die with the ring surface or the depth to which the impression is made since these are automatically taken care of by the construction of the recesses 43 and by the stop 44. Thus impressions in successive rings of a given size will be identical as to alignment and depth of penetration. There will also be no perceptible expansion of the ring band in its narrow dimension due to the fact that the metal of the band, in which the impression is taking place, is completely confined in the form-fitting recess. Any expansion that does occur will be distributed circumferentially of the band where it will not show as a bulge on the outer surface of the band.

Having thus described my invention in detail, what I claim as new and desire to secure by Letters Patent is:

In apparatus, for impressing inscriptions on the internal surface of an annular member, having a supporting frame, a bolster plate fixed on the frame provided with a guide groove traversing the longitudinal axis of the frame, and a die adapted to enter said annular member and positioned above and movable in a linearly vertical path intersecting said bolster plate guide groove; a die block in and slidable longitudinally of said guide groove, said die block having therein a plurality of aligned recesses shaped to conform with and to receive dissimilar chordal masses of respective annular members, a leaf spring having a portion thereof secured in said guide groove and engaging said die block to frictionally resist movement of the die block in the guide groove, said die having an impression element thereon

engageable with said annular member and said die block recesses being successively registrable with the path of movement of the die when the die block is moved along the guide groove, and a stop element threadedly engaged with the bolster plate and interposed between the latter and the die for variably regulating the degree of relative approach of the die and die block.

LEO GRANAT.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
21,473	Storm	Sept. 7, 1858
253,950	Smith	Feb. 21, 1882
484,918	Peckham	Oct. 25, 1892
701,585	Lehr	June 3, 1902
1,403,213	Weaver	Jan. 10, 1922
1,733,876	Halvorsen	Oct. 29, 1929
2,071,003	Scholz	Feb. 16, 1937
2,102,808	Piperoux	Dec. 21, 1937
2,122,669	Wickwire	July 5, 1938

FOREIGN PATENTS

Number	Country	Date
377,756	Great Britain	Aug. 4, 1932
398,785	Germany	July 15, 1924