July 23, 1940. J. SCHNEIDER 2,208,858

DIE

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Fig. 1.

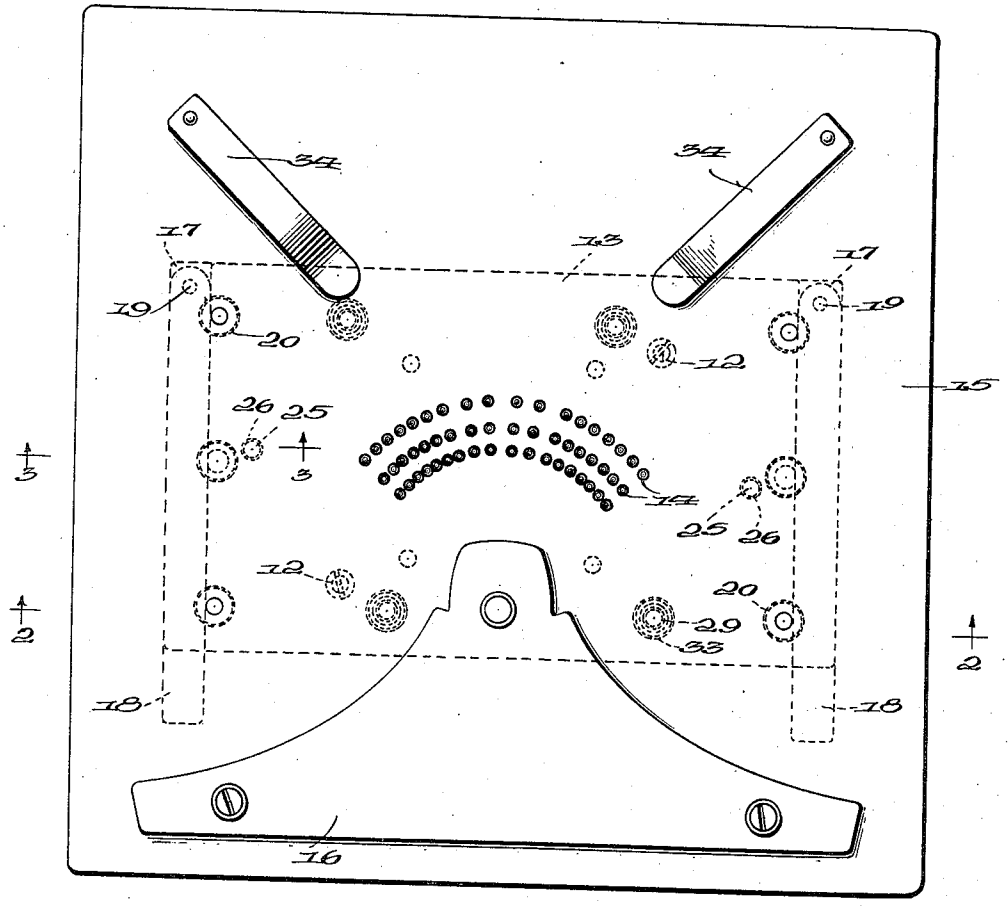


Fig. 2.

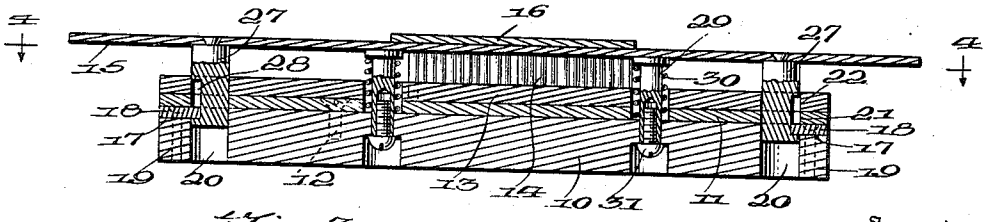
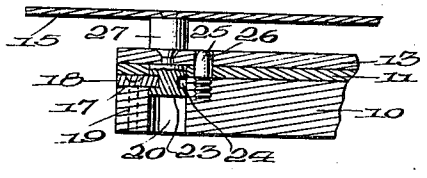


Fig. 3.



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Fig. 4.

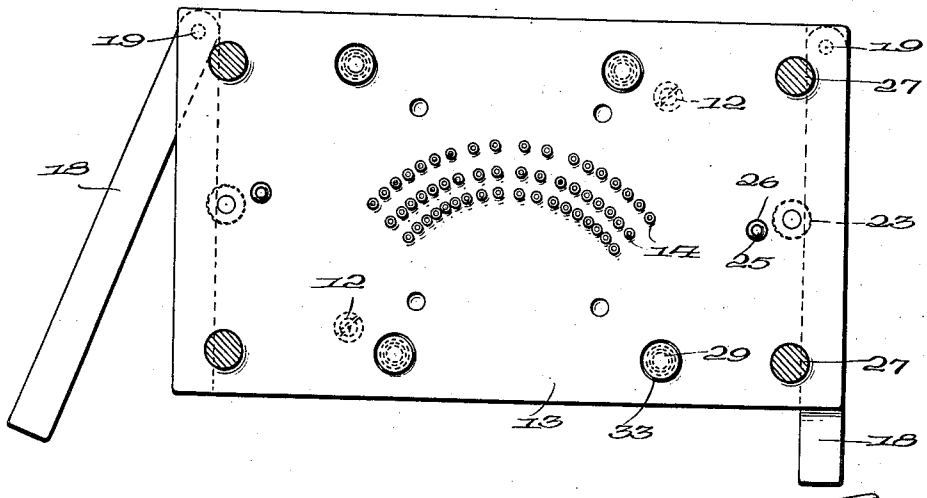
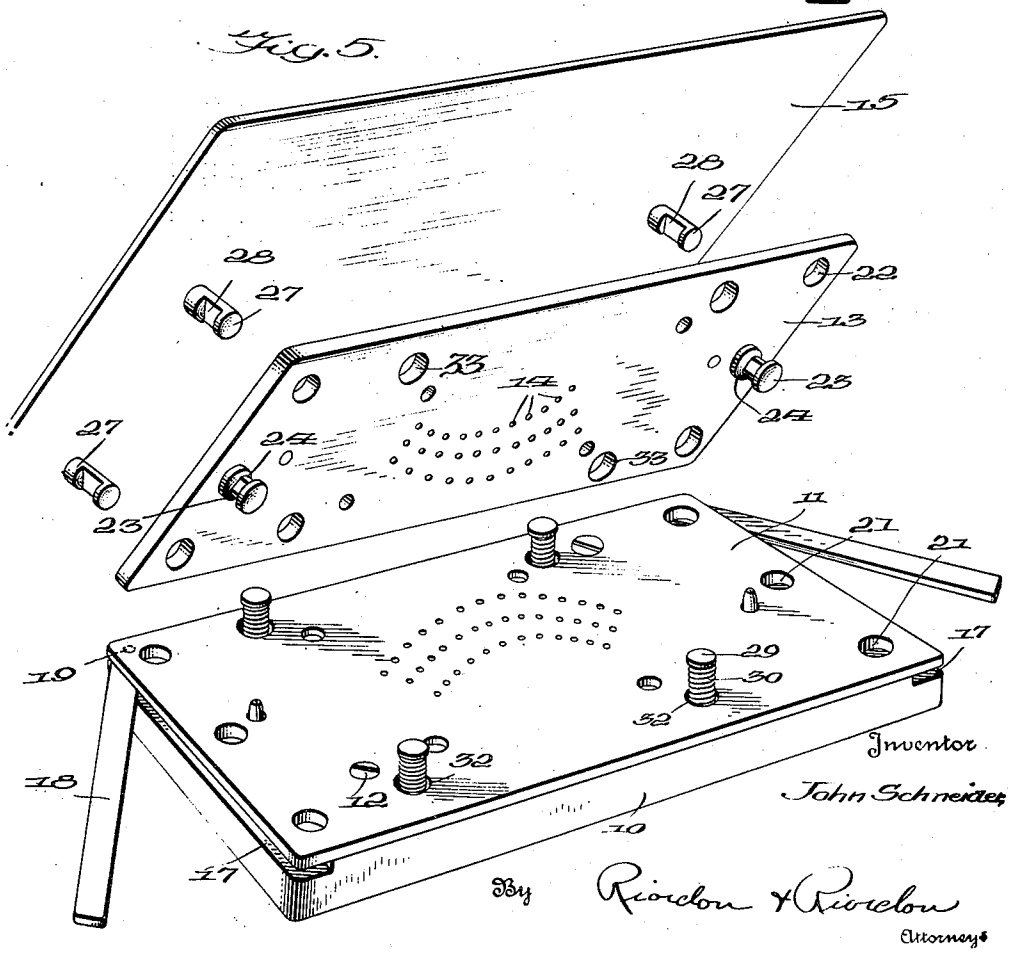


Fig. 5.



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UNITED STATES PATENT OFFICE

2,208,858

DIE

John Schneider, Cincinnati, Ohio, assignor to The Louis G. Freeman Company, Cincinnati, Ohio, a corporation of Ohio

Application January 2, 1936, Serial No. 57,296

20 Claims. (Cl. 164—93)

This invention relates to shoe machinery and more particularly to improvements in dies for use in ornamenting shoe uppers and shoe parts by forming cutouts or perforations in portions thereof.

A conventional form of die for these purposes comprises a base upon which is mounted a plurality of cutting or perforating members, and a stripper plate mounted slightly in advance of a plane through the cutting edges of the cutting members.

The cutting members may in themselves be individually formed to produce ornamental cutouts in the work, or they may take the form of a plurality of perforating punches or tubes arranged in an ornamental design. These members are usually carried by a plate variably designated in the art as a cutter, tube or punch plate, which is secured to the base, and there may be, although not necessarily, a sub-plate interposed between the tube plate and the base in order to adjust the effective height of the cutters with respect to the base, being of any desired thickness, necessary to effect the result. The sub-plate also functions to receive the impact transmitted through the cutters or tubes, during the cutting operation.

The stripper plate is customarily mounted resiliently or depressibly upon the base and forms a supporting surface for the work, when the cutters project upwardly. When pressure is applied, the cutters are forced through the work, the stripper or work support yielding to permit same, and upon its return to normal position, it strips the work from the cutters.

While in a conventional structure the several parts are separably attached to each other, by means of screws or bolts, considerable time and the use of tools is required to remove or separate the parts, such removal being sometimes necessitated for repair or replacement of a cutter member or of the stripper plate.

It is an object of the present invention to provide a die of the type described, but of improved construction, which will permit rapid detachment of the stripper or work support when desired, and without the use of tools.

It is a further object to provide a structure which permits rapid detachment not only of the stripper plate, but of the cutter or tube plate, thus providing ready access to any part of the structure without the use of tools, at a minimum expenditure of time, and also to facilitate repair and replacement of the cutting members.

To this end a novel mounting for the stripper is utilized, in which the resilient studs, normally secured to the stripper plate are detached therefrom, but engageable therewith, and are mounted in the base independently of the stripper, which is provided with supporting means arranged to be latched to the base.

Similarly the cutter or tube plate is mounted to be latched in the base, but in such a manner as to be quickly released therefrom.

A further object contemplates the provision of a common latching means for both the cutter plate and stripper plate.

To the attainment of the foregoing and other objects which will appear as the description proceeds, reference may be made to the accompanying drawings, in which:

Fig. 1 is a top plan view of an assembled die;

Fig. 2 is a section on the line 2—2 of Fig. 1;

Fig. 3 is a fragmentary section on the line 3—3 of Fig. 1;

Fig. 4 is a top plan of the die block proper, with the stripper removed; and

Fig. 5 is a perspective of the complete structure showing the parts in disassembled relation.

Referring now more particularly to the drawings in which like reference numerals designate like parts, the die illustrated comprises a base plate 10, to which is secured a sub-plate 11, in any convenient manner as by screws 12. The herein described embodiment of die also includes a tube plate 13 carrying cutting members 14 (illustrated as tubes or punches), and a stripper plate or work support 15 upon which is mounted an edge gage 16, for accurately locating the work relative to the cutters.

The tube plate 13 may support any desired form of cutting or punching members, in accordance with the pattern to be placed in the work, in lieu of the tubes 14.

The sub-plate 11 and base plate 10 are of course suitably perforated in a conventional manner to accord with the openings of the tubes 14 thereby permitting passage of cuttings or chips completely through the die, as indicated in Fig. 5.

The base 10 is formed with recessed or milled out portions 17 at opposite ends, which portions form slots in conjunction with the sub-plate 11, said sub-plate being of a length coextensive with that of the base plate 10. Levers or arms 18 designed to function as latches, are pivoted at 19 to adjacent corners of the base plate, and are made of a size and shape to fit within and substantially fill the slots 17. A series of perforations 20 is provided at each end of the base plate 10, the perforations being so located as to partially intersect the recessed portions 17 whereby, when the levers

18 are fully within the slots or recessed portions 17 they will extend at least partially across the perforations. The sub-plate 11 and tube plate 13 are similarly perforated at 21 and 22 respectively, such that when assembled upon the base plate 10 the perforations 20, 21 and 22 will be aligned.

The number of perforations in the cutter plate 13 is less than that of the sub-plate and base plate, being replaced in part by grooved or slotted pins 23 extending from the plate 13 for projection into certain of the perforations 21 and 20. The grooved portions 24 of the pins 23 are so located as to receive the overhanging edge of latching lever 18 thereby to secure the tube or cutter plate in position on the base plate 10.

In order to assure accurate alignment of the tube plate on the base, guide pins 25 may be mounted on the base 10 to extend through the sub-plate into suitable openings 26 in the plate 13.

The stripper plate 15 is provided with pins 27 which are recessed at 28, these pins being located for projection into the remaining perforations 20, 21 and 22, and the recesses 28 being positioned to receive the overhanging edges of the respective latches 18.

Instead of the usual spring studs normally secured to the stripper plate, studs 29 surrounded respectively by springs 30 are mounted in the base for yielding vertical movement, being secured against detachment from the base by screws 31. The length of these studs and the strength of the springs is such as to project the enlarged heads of the studs 29 through openings 32 in the sub-plate 11 and openings 33 in the tube plate 13, to abut or bear against the stripper plate and support same in a plane slightly in advance of the plane of the cutting edges of the tubes 14. The cutaway portions 28 of the studs 27 are of sufficient length to permit normal stripping movements of the plate 15 during cutting operations.

The gage 16 is illustrated as an edge or abutment gage attached by screws to the stripper plate, but may be any conventional type of gage well known in the art, e. g., clamping mask, or resilient pin gage, or it may be omitted; and instead of being screw fastened to the stripper plate may be mounted thereon in any customary manner; if a resilient pin gage is employed, the pins may be carried by the base plate, to extend through the stripper in a manner similar to the studs 29.

Any convenient form of work holder may be mounted upon the stripper plate as desired, spring fingers 34 being illustrated in the present embodiment.

Having thus described my invention, the operation and advantages thereof will be readily apparent.

The tube or cutter plate and the stripper plate will be assembled by inserting the pins 23 and 27 in the proper perforations and latching them in position by means of the latching levers 18 and the device is ready for use. When it is desired to remove the plate 15, and/or the plate 13, as sometimes becomes necessary in repairing or replacing a damaged part, all that is necessary is to swing the levers 18 outwardly, and either of these plates can be readily detached without the time and effort required to unscrew the conventional securing means and without the requirement of tools.

The tube or cutting plate can be removed readily for the replacement of a single tube, or as many tubes or cutters as is necessary to be repaired or replaced.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is:

1. In a die for ornamenting shoe parts, a base, a plate having cutting elements mounted thereon, a stripper, quickly releasable latching means for detachably securing said plate and said stripper in superposed relation to said base, and for releasing said plate and stripper for complete removal from the base, and means structurally independent of said stripper, for resiliently mounting said stripper for yielding movement relative to said plate, when said stripper and plate are latched to said base.

2. A die comprising a base, cutting elements on the base, a work supporting stripper plate, spring pressed pins mounted upon the base in disconnected relation to said stripper plate, and having portions engageable with the surface of the plate adjacent the base, and effective normally to support said plate slightly in advance of the cutting elements, and latching means upon the base movable into and out of latching engagement with said plate, for detachably securing the plate to the base and in engagement with the pins.

3. A die comprising a base, a cutter plate carried by the base and having cutting elements mounted thereon, a stripper plate, means to support said stripper plate in an operative relation to said cutting elements, said cutting plate and stripper plate each having a portion extending toward said base, and means common to said plate, pivoted on said base for movement into latching engagement with said extending portions.

4. A die comprising a base, a cutter plate carried by the base and having cutting elements mounted thereon, a stripper plate, means to support said stripper plate in an operative relation to said cutting elements, said base being provided with perforations, said cutter plate and stripper plate each having notched projecting portions positioned for entry into the perforations of the base, and means common to said plates, engageable with said portions to latch both plates to the base.

5. A die comprising a base, a cutter plate on the base carrying cutting elements, a work supporting stripper plate, spring pressed pins mounted upon the base in disconnected relation to said stripper plate, having portions engageable with the surface of the stripper plate adjacent the base, and effective normally to support the stripper plate slightly in advance of the cutting elements, and interengaging means upon the stripper plate and base movable into and out of latching relation, for detachably securing the stripper plate in position upon the pins.

6. A die comprising a base, a cutter plate on the base carrying cutting elements, a work supporting stripper plate, spring pressed pins mounted upon the base in disconnected relation to said stripper plate, having portions engageable with the surface of the stripper plate adjacent the base, and effective normally to support the stripper plate slightly in advance of the cutting elements, and interengaging means upon the cutter plate, stripper plate and base movable into and out of latching relation, for detachably securing both plates in position upon the pins.

7. A die comprising a base, a cutter plate carried by the base and having cutter elements

mounted thereon, a stripper plate, means to support said stripper plate in an operative relation to said cutting elements, said base being provided with perforations, said cutter plate and stripper plate each having notched projecting portions positioned for entry into the perforations of the base, and latching arms common to said projecting portions pivotally mounted on said base for movement into latching engagement with said notched portions.

8. A die comprising a base, a sub-plate carried thereby, a cutter plate adapted for assemblage with the base and sub-plate, and having cutting elements mounted thereon, a stripper plate, means to support said stripper plate in an operative relation to said cutting means, said base being provided with perforations, and said cutter plate having projecting portions positioned for entry into certain of the perforations of the base and sub-plate, said cutter plate being provided with perforations located for alignment with certain others of the perforations in the base and sub-plate, and said stripper plate having a projecting portion positioned for entry into the latter perforations, and means engageable with said projecting portions to latch both the cutter plate and stripper plate in quickly detachable, assembled relation to the base.

9. A die comprising a base having recesses at its end, a plate secured to said base with ends in projecting relation to said recesses and forming a slot with each of said recesses, a plate having the cutting elements mounted thereon, means on said plate extending into said slots, and means operable in said slots for latching said extending means to said base.

10. A die comprising a base having recesses at its end, a plate secured to said base with ends in projecting relation to said recesses and forming a slot with each of said recesses, a plate having the cutting elements mounted thereon, means on said plate extending into said slots, a stripper, means on said stripper extending into said slots, and means operable in said slots for latching all of said extending means to said base.

11. A die comprising a base having recesses at its end, a plate secured to said base with ends in projecting relation to said recesses and forming a slot with each of said recesses, a stripper, means on said stripper extending into said slots, and means operable in said slots for latching said extending means to said base.

12. In a die for ornamenting shoe parts, a base, a plate superposed upon at least a portion of said base, said plate having cutting elements mounted thereon, a stripper, and quickly releasable latching means common to said plate and said stripper for detachably securing said plate in its superposed relation and said stripper to said base, and for releasing said plate and stripper for complete removal from the base.

13. A die comprising a base, a cutter plate carried by the base and having cutting elements mounted thereon, a stripper plate, means to support said stripper plate in an operative relation to said cutting elements, said cutting plate and stripper plate each being provided with means extendable into said base, and means common to said plates, movable into latching engagement with said extendable means.

14. In a die for ornamenting shoe parts, a base, a work support associated with said base, means adjacent the edge of the die, and spaced outside the normal operating area thereof, to movably mount the work support on the base, and additional means disposed interiorly of the confines of the base and work support, with respect to said first means, to exert a stripping pressure upon the work support during an ornamenting operation, said pressure exerting means being mounted on the base in disconnected relation to said work support.

15. In a die for ornamenting shoe parts, a base, a work support associated with said base, means adjacent the edge of the die, and spaced outside the normal operating area thereof, to movably mount the work support on the base, and additional means disposed interiorly of the confines of the base and work support, with respect to said first means, to exert a stripping pressure upon the work support during an ornamenting operation, said pressure exerting means being mounted on the base in disconnected relation to said work support, and means to quickly detach said work support from said base.

16. In a die for ornamenting shoe parts, a base, a work support associated with said base, means adjacent the edge of the die, and spaced outside the normal operating area thereof, to movably mount the work support on the base, additional means disposed interiorly of the confines of the base and work support, with respect to said first means, to exert a stripping pressure upon the work support during an ornamenting operation, said pressure exerting means being mounted on the base in disconnected relation to said work support, and means to detachably latch said work support in operating position.

17. In a die for ornamenting shoe parts, a base, a work support associated with said base, means positioned outside of the normal operating area thereof, to movably mount the work support on the base, and additional means disposed within the confines of the normal operating area, between said work support and base, to exert a stripping pressure upon the work support during an ornamenting operation, said pressure exerting means being mounted in disconnected relation to said work support.

18. In a die for ornamenting shoe parts, a base, a work support associated with said base, means positioned outside of the normal operating area thereof, to movably mount the work support on the base, additional means disposed within the confines of the normal operating area, between said work support and base, to exert a stripping pressure upon the work support during an ornamenting operation, said pressure exerting means being mounted in disconnected relation to said work support, and means to detachably latch said work support in operating position, whereby said support may be freely removed from the base and the pressure exerting means.

19. A flat bed die of the type described comprising a base, a work support therefor, work ornamenting elements disposed upon said base, means mounting said work support upon said base for movement into and out of a spaced relation thereto and for movement relative to said ornamenting elements, said base having means providing free operation of said ornamenting elements past the plane of the work support during movement thereof, and resilient means structurally free of said work support, mounted in said base and engageable with the surface of the work support adjacent the base, to exert a stripping pressure thereon during an ornamenting operation.

20. A flat bed die of the type described comprising a base, a work support therefor, work ornamenting elements disposed upon said base, means mounting said work support upon said base for movement into and out of a spaced relation thereto and for movement relative to said ornamenting elements, said base having means providing free operation of said ornamenting elements past the plane of the work support during movement thereof, resilient means structurally free of said work support, mounted in said base and engageable with the surface of the work support adjacent the base, to exert a stripping pressure thereon during an ornamenting operation, and means to quickly secure and detach said work support with respect to the base.

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