No. 809,591. PATENTED JAN. 9, 1906.

G. W. HEENE.

BLANK STAMPING OR IMPRESSING MACHINE.

APPLICATION FILED JUNE 14, 1902.

3 SHEETS—SHEET 1.

Fig. I.

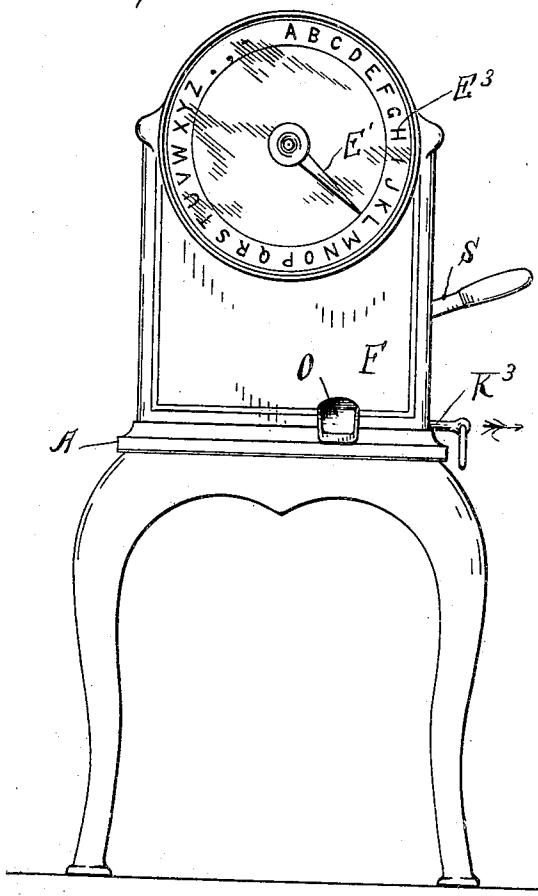


Fig. II.

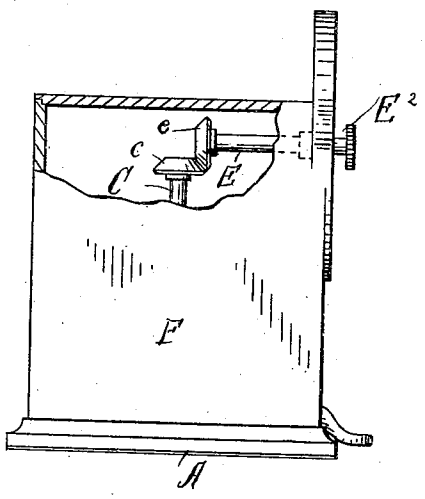
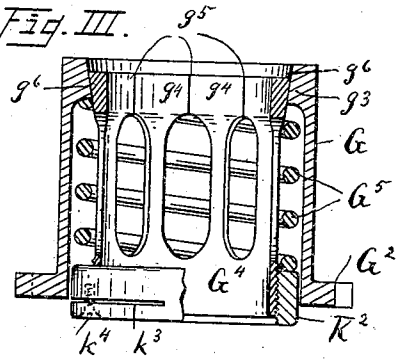


Fig. III.



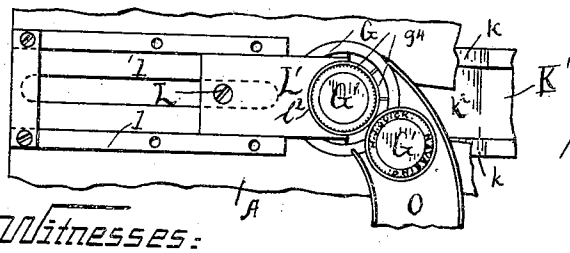


Fig. XI.

Witnesses:

A. L. Lord.

E. B. Donnelly.

Inventor:

George W. Heene

by

W. E. Donnelly

his Atty

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3 SHEETS—SHEET 2.

Fig. IV.

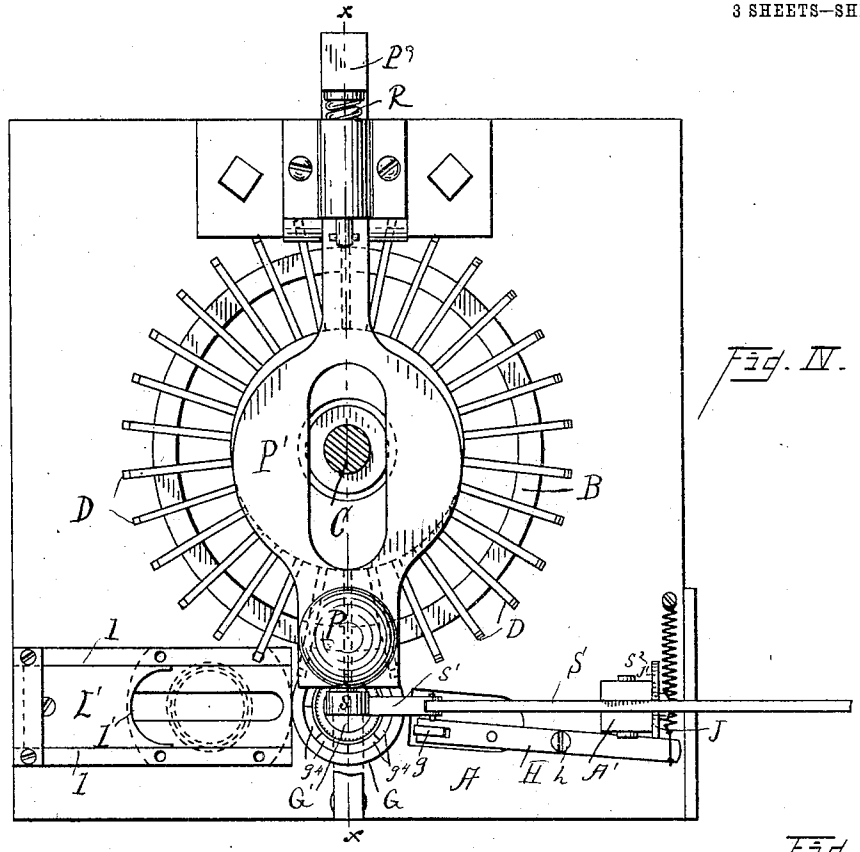

Fig. V.

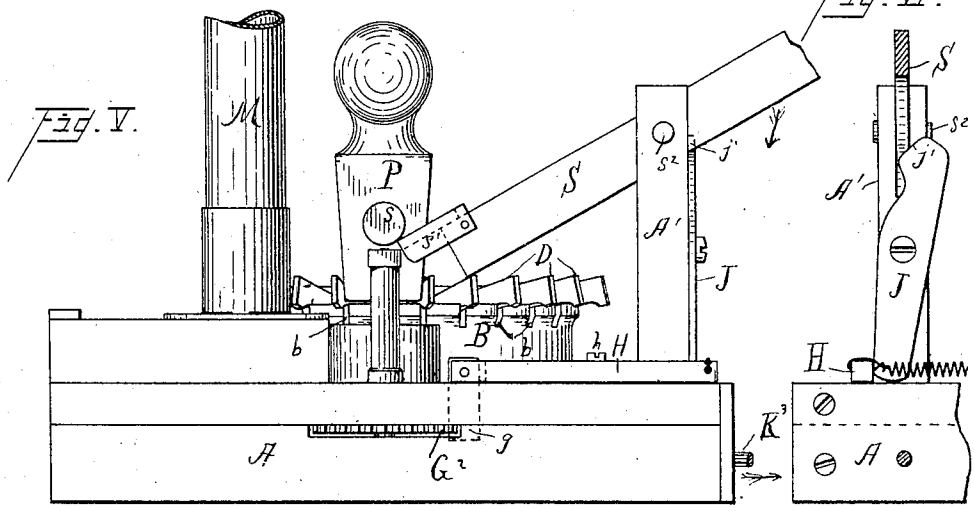

Fig. VI.

Witnesses:

A. L. Lord.

E. B. Donnelly

Inventor.

George W. Heene

by

W. E. Donnelly

his Atty

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3 SHEETS—SHEET 3.

Fig. VII.

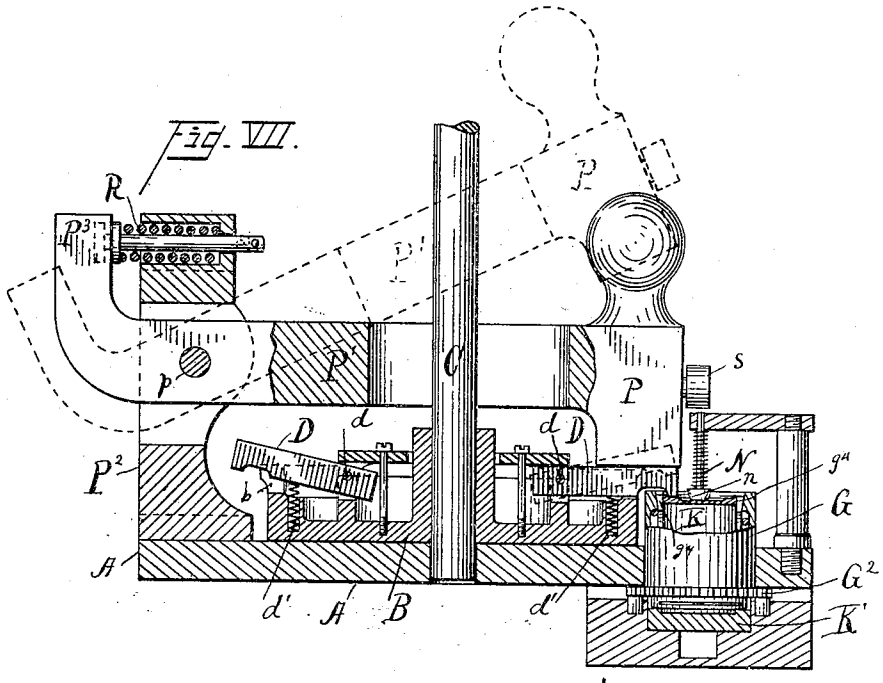


Fig. IX.

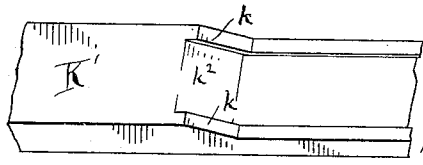


Fig. VIII.

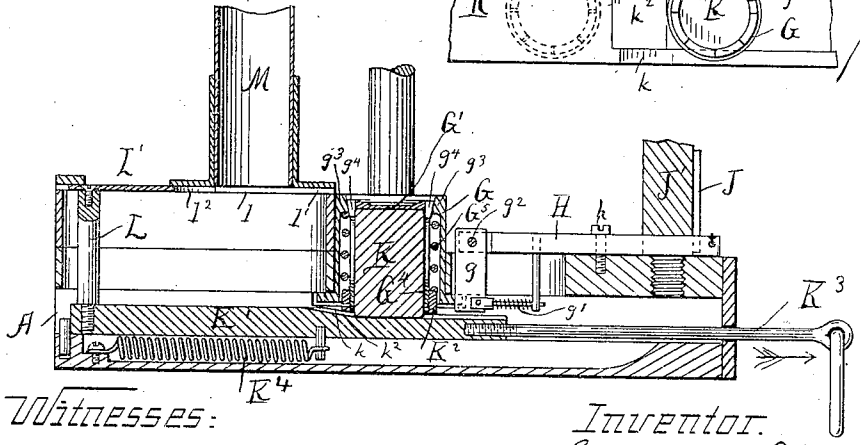
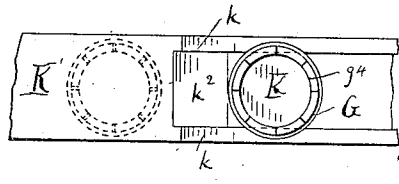


Fig. X.



Witnesses:

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Inventor.

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by

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his Atty

UNITED STATES PATENT OFFICE.

GEORGE W. HEENE, OF CLEVELAND, OHIO.

BLANK STAMPING OR IMPRESSING MACHINE.

No. 809,591. Specification of Letters Patent. Patented Jan. 9, 1906.

Application filed June 14, 1902. Serial No. 111,708.

To all whom it may concern:

Be it known that I, GEORGE W. HEENE, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Blank Stamping or Impressing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to machines for stamping metallic blanks, and more especially to that class of machines which employ interchangeable matrices in the shape of character-dies and which are impressed into the material by force.

The object of my invention is to provide a machine which is controlled in its operation from outside a casing both as to the character to be impressed and to the operation of the impressing apparatus.

A further object of this invention is to provide a machine which is positive in its feeding mechanism for placing the blanks in proper position so as to be operated upon by any one of the several matrices and to adjust the blank to a new position automatically by the moving or setting into operation the matrix-impressing mechanism.

A still further object of my invention is the complete control of the operation from the exterior of its inclosing casing, whereby the blank is fed to proper position to be impressed, and after having been impressed with the desired character the same may be delivered from said casing, the said action acting to lock the machine until the impressing mechanism is again set in operation.

My invention consists in providing an exteriorly-controlled revolving matrix table or platen provided with matrices adapted to impress a character upon a blank, said matrices being adapted to be individually located in relation to the blanks according to predetermined arrangement, so as to impress or cause to be impressed a character upon said blank, in combination with means for intermittently advancing said blank in relation to the point of impression.

My invention further consists in the combination, with a series of matrices adapted to be located according to predetermined arrangement, of a blank-chuck adapted to hold a blank so as to be impressed by any of the series of matrices and to be intermittently removed in relation to the point of impression, in combination with a blank-holder and means for removing the blank from the blank-holder to the chuck.

My invention further consists, in combination with the above features, of a chuck opening and closing device which is operated by the blank-feeding device, so that when the blank is fed to the holding-chuck it is in position to be grasped by the chuck, the chuck being open, and when the feeding device is returned to its normal position or return position the chuck automatically grasps the blank and retains it in position to be operated upon by any one of the matrices.

My invention further consists in parts and combination of parts, which will be hereinafter fully set forth and claimed.

In the drawings, Figure I is a view in front elevation illustrating the stand, dial, inclosing casing and exterior operating-levers of a machine embodying my invention. Fig. II is a view in side elevation looking toward the left of Fig. I, of a casing illustrating the connection between the dial-pointer and the matrix table or platen, illustrating the manner in which the character desired will be brought into position over the proper portion of the blank. Fig. III is a vertical sectional view, enlarged, of the blank-chuck with the anvil removed, illustrating how the same operates. Fig. IV is a plan view of the base-plate of the machine, showing the arrangement of the matrix table or platen, a plan view of the matrix-impressing hammer, also a plan view of the blank-feeding mechanism and the chuck, illustrating the assemblage of the parts as they appear. Fig. V is a view in front elevation of the base-plate, the matrix table or platen, the blank-tube for containing the blanks, and also illustrates the impressing-hammer lifting and releasing lever and the position of the same when the machine is at rest. Fig. VI is a detached view looking at the lever-standard toward the right of Fig. V, showing the cam-lever, which is operated by the hammer-operating lever for the purpose of intermittently feeding or changing the position of the blank in relation to the matrix or point of impression. Fig. VII is a vertical sectional view taken through line $x\,x$, Fig. IV, illustrating the operation of the impressing-hammer, the preferred construction of the matrix table or platen with its attached matrices and manner of attaching the same, also illustrating the blank-depressing finger for

holding the blank into the chuck before the jaws of the same close thereon and properly seating said blank upon the anvil. This view also shows the cushioning device for holding the hammer away from the matrices for the purpose of allowing the same to be located in proper position as predetermined above the blank. Fig. VIII is a vertical sectional view taken on line *y y*, Fig. IV, illustrating the blank-feeding tube, the blank-feeder slide in connection with the operating-bar located outside of the machine, also the manner of operating (opening and closing) the blank-holding chuck, and the connection between the cam-lever shown in Fig. VI, and the blank-holding chuck whereby said chuck is intermittently fed or moved in a rotary direction one space at each depression of the hammer-operating lever. Fig. IX is a view in isometric of the cam-bar, illustrating that portion of it which operates in connection with the grasping-chuck and its anvil. Fig. X is a plan view of a portion of the cam-bar, showing more clearly its operation and the respective positions occupied by the chuck and anvil in relation to said bar as the same is moved from one position to the other. Fig. XI is a plan view illustrating the blank-feeding device in position when the blank is fed to and over the chuck, showing also the ejection of the previously-finished blank.

A represents a base or bed plate of the machine, which forms the support for the operative parts of the device. Approximately centrally located on the said plate or base A is a revoluble die-carrier B, which is mounted upon a vertical shaft C in such a manner that the said shaft forms the vertical bearing for the dies and allows the same to be revolved in either direction, as desired. Pivotally secured to the platen B are a series of dies D, having on their under faces characters according to the purpose for which said machine is designed. In the construction shown these characters have the letters of the alphabet and certain punctuation-points. The faces of the dies which have these characters are hardened so that an impression may be made by them upon the blank, the same being usually of a softer material. These dies are pivoted, as at *d*, (see Fig. VII,) to the platen B and are supported near their forward end by springs *d'*. It is, however, obvious that these dies may be modified both in structural features and in mounting, it only being necessary that they be normally held out of contact with the blank and be adapted to assume a position over the blank, as directed, to impress the character upon the blank. The assemblage of the matrices D is radially, as illustrated in Fig. IV, and the same are guided in slots *b*, as illustrated in Fig. V. The shaft C extends upwardly from the carrier B (see Figs. VII and VIII) and is provided on its upper end with means, such as a beveled gear *c*, for connecting it to a horizontal shaft E, also provided with means, such as a beveled gear *e*, for connecting with the gear *c*, it being essential only that the connection *c e* be such that the rotation of the shaft E will be imparted to the shaft C and thence to the carrier B and dies D. The shaft E extends outward from a casing F, which incloses the mechanism (see Figs. I and II) and is provided with a pointer E' and means, such as a knob or rosette E^2, for revolving it. The pointer E' revolves within an indexed annular dial, which is provided with characters corresponding to the characters provided on the several dies D, the pointer being so arranged in relation to the carrier B that as the letter is indicated by the pointer on the dial this letter or character appears directly over a point in the blank, and preferably at a point upon the blank, if the same be disk-shaped, which is radial from the center of the blank, so that the character imprinted upon the blank will be radially disposed.

G represents a chuck which is shaped to hold a disk of metal by inclosing and grasping the periphery of the same. This chuck G is located within the base A, so that the proper portion of the blank G' will be presented beneath one of the dies D in such a manner that as said die is depressed either by impact or other force the character on the face of said die will be impressed upon the blank. To provide for the presentation of a new surface of the blank to receive the next following character, I construct the chuck G so that it can be intermittently revolved beneath said dies at this point, and for this purpose I have provided a feeding and spacing mechanism which consists in forming the lower part of the chuck G with an annular series of ratchet-teeth G^2, which are successively engaged to pawl *g*, (see Figs. V and VIII,) the said pawl *g* being constructed in the device shown in the form of a depending pivoted bar provided with a spring *g'* for keeping the pawl *g* normally in contact with the teeth of the chuck G^2 and allowing the said pawl to ride over the said teeth upon the reverse movement of this portion of the feed mechanism. The pawl *g* is in turn pivoted at its upper end, as at g^2, to a pivoted horizontal bar H, the same being pivoted, as at *h*, to the base A. The rocking or manipulating of the bar H in a horizontal direction for the purpose of moving the chuck G a predetermined distance is accomplished by means of a cam-lever J, (see Figs. IV, V, VI, and VIII,) the same being pivoted, as at *j*, to an upright post J', which forms the support also of the hammer-operating lever to be hereinafter set forth.

It is obvious that chucks of different structures may be employed for grasping and holding the blank, providing that the same have

the qualities of grasping and releasing the blank and holding the same solidly while it is being operated upon; but for this purpose I have devised the following construction, which is best adapted to subserve this purpose: The chuck G consists of the outer shell, (see Fig. III,) which is provided at its lower end with a series of annular ratchet-teeth G^2, which are located so as to project horizontally in a radial direction around said shell. This shell G is formed hollow and is provided at its upper end with a downwardly and inwardly projecting internal flange g^3 of suitable taper. The jaws g^4 of the chuck are formed by dividing a cylindrical inner shell G^4, of spring metal, the upper ends of said cylinder being divided, as at g^5, for this purpose and the tendency of the jaws being to expand outwardly and radially under tension of the spring of the metal. In order to cause the jaws g^4 to close together readily upon a periphery of the blank B', (see Fig. VII,) I provide the upper end of said jaws with the tapering outer surface g^6, which corresponds to the taper of the flange g^3, and thus as the shell G^4 is lowered within the castings G, which in this case is done by means of a spring G^5, the jaws close radially upon the periphery of the blank. This would be sufficient to hold the blank, but would not be sufficient to support the same while being operated upon, and for this purpose I have located within the shell G^4 an anvil-block K. (See Figs. VII and VIII. For the sake of clearness the same is not shown on Fig. III.) This anvil-block and also the shell G^4 are both supported upon a sliding cam bar or rod K'. (See Figs. VII and VIII and IX and X.) This sliding bar K' rests slidably within the base A and is provided on its upper surface with inclined cams $k\ k$, so disposed as to come in contact with the under surface of an adjustable nut K^2, located on the bottom of said shell G^4, thus raising the shell G^4 within the casing G and opening the jaws g^4, releasing the grasp of said jaws from the blank. Just subsequently another cam k^3, located centrally between the cams $k\ k$, engages the lower end of the anvil-block K and raises the same flush with the upper end of the chuck-casing G, pushing the blank G' upwardly from between the jaws g^4 and allowing a subsequent blank which is fed toward said chuck to push the ejected blank from the chuck G and into a conduit, which delivers it from the machine. This conduit and the just previously recited operation are more clearly set forth in Fig. XI. The bar K' is retracted by means of a spring K^4. The bar K' is provided with a rod K^3, which extends to the outer side of the machine and is provided with means, such as a handle or knob, for manipulating the cam-bar K'. At the rear end of the cam-bar K', I connect an upright stud L, which in turn is connected to a feeding slide-plate L', thus causing said plate L' to move back and forth with a bar or slide K'. This slide-plate L' moves in the way l, located just beneath the hopper or blank-tube M, and is of such thickness as to engage the lowest blank, move the same forward through the opening l'' and feed it to a position just above the chuck G, locating it so that it will drop into said chuck between the jaws $g^4\ g^4$ thereof, and into the anvil K, and for the purpose of properly adjusting said blank within the chuck and upon the anvil I provide a spring-pressed finger N centrally of the chuck, the same having a beveled foot-piece n to allow the blank to slide under it. For properly guiding the blank to the chuck and along the ways l and l' I form the engaging end of the slide L' with a curved engaging face l^2 of such contour as to embrace the blank and guide it to a position, holding the said blank while the same removes or displaces the blank ejected from the chuck.

From the above it will be seen that by pulling the rod K^3 outwardly in the direction of the arrow the first action is to open the jaws $g^4\ g^4$ by causing the cams $k\ k$ to raise the shell G^4 by engaging the nut K^2, afterward by cam k^2, raising the anvil K to such a position as to eject the blank G', leaving said blank flush with the chuck G, the next action being to move the blank to be fed from the hopper M by means of a slide L' along through the opening l' to cause said blank to engage the ejected blank and remove it from the above chuck G into the conduit O, from whence it passes out from the machine. This action also places the fed blank in position above the chuck and between the jaws on the same. The finger N seats the blank properly on the anvil K, and the releasing of the rod K^3 causes the spring K^4 to pull it back, whence the first action is to lower the anvil K, close the jaws $g^4\ g^4$ by the spring G^5 and return the slide L' to a position (shown in Fig. VIII) ready to engage the new blank.

The above constitutes the operation as far as the feeding and holding of the blank are concerned.

P represents a pivoted weight or hammer which is secured to one end of the pivoted lever P', in turn secured by pivotal attachments p to an upright P^2, rising from or forming part of the base A. The lever P' is provided at its pivotal end with an angular arm P^3, which is located so as to engage a spring-buffer R, which is preferably contained in the upper end of the upright P^2. The tension of this spring-buffer R is regulated so as to sustain the hammer P free of the dies D on the carrier B, so as to allow said dies to freely revolve without coming in contact with the face of the hammer and also acts to cushion the blow when the said hammer is raised and allowed to drop. The raising of the hammer P is accomplished by means of a lever S,

(see Fig. 5,) which engages a stud or roller *s* at the front end of the hammer P. This lever S is provided at its inner end with a pivoted finger *s'*, which will ride over the stud or roller *s* when the lever S is returned to its normal position, as shown in Fig. 5. The lever S is pivoted, as at s^2, to the upright A', which is preferably slotted or bifurcated at its upper end and is so located that as the outer end of the said lever S is depressed to raise the hammer C the said lever will come in contact with the cam *j'* of the cam-lever J, thus rocking or oscillating said cam-lever J, and with it the bar H is moved, which sets into operation the pawl *g*, thus shoving the chuck by its engagement with the ratchet-teeth G^2 one space.

It will thus be seen that at each depression of the lever S at its outer end the chuck G is rotated one space, presenting a new surface of the blank at each successive operation of the lever S. As the lever S is depressed at its outer end in the direction of the arrow, Fig. V, the weight P is lifted until the weight or hammer P has been raised to a point approximately as indicated by dotted lines in Fig. VII, and the finger *s'*, having by this time freed itself from the stud or roller *s*, the hammer or weight P drops and strikes the matrix beneath it, forming or impressing a character upon the blank in the chuck. This operation is continued until the desired number of characters are impressed upon the blank, when the rod K^3 is pulled outward in the direction of the arrow, Fig. VIII, and the blank released and a new blank fed to the chuck, as hereinabove set forth.

The die table or carrier B, as hereinbefore stated, is mounted upon an upright shaft C, by means of which it is revolved and the proper die located by the pointer E' in connection with the dial E^3.

In some cases it may be desired to adjust one edge of the collar or nut K^2 at the end of the shell G^4, and for this purpose I have provided the same with a slot k^3 and an adjusting-screw k^4, which by screwing upward will reduce the thickness of the collar at this point to correspond with the advancement or inclination of the cams k^2 and *k k*.

In setting forth this invention I have shown and described certain features of construction and assemblage of parts which I consider best adapted to perform their several functions; but I do not wish to be limited to these details or exact assemblage inasmuch as the same may be modified without departing from my invention.

What I claim is—

1. In a machine of the type set forth the combination with a matrix table or platen provided with a series of pivoted matrices, springs for holding said matrices in normal or non-operative position, means for moving said platen or table comprising an indicator a pivoted weight adapted to operate upon an individually-positioned matrix a blank-holder located in juxtaposition to said weight said blank-holder being movable so as to present successively a new surface to be operated upon, means for moving said blank-holder and means for feeding the blank to said blank-holder and ejecting the previously-completed blank from said blank-holder, said latter means comprising grasping-jaws an anvil located between said grasping-jaws means for opening and closing said jaws, and means for raising and lowering the anvil within said jaws, substantially as and for the purpose set forth.

2. The combination with a series of pivoted dies, and the movable weight, of a blank-holding chuck, means for simultaneously actuating the said chuck and weight, an anvil-block operating in said chuck, and a slide arranged beneath the said block and having an inclined face for raising and lowering the same.

3. The combination with the movable die and the means for actuating the same, of a blank-holding chuck comprising inner and outer shells, means for contracting the upper end of the inner shell as it is lowered, an anvil-block slidably mounted in the inner shell of the said chuck, and means for sliding said block in said shell, substantially as described.

4. The combination with the dies and the actuating means therefor, of a blank-holding clutch comprising an outer shell provided on its interior with an inclined surface, and an inner shell having its upper portion formed with a series of jaws having their outer surfaces inclined and being adapted to engage the inclined portion of the outer shell, means for holding the said shell in a depressed state within the outer shell, an anvil-block operating within the inner shell, and means for elevating the said inner shell and anvil-block.

5. In combination with the dies and the means for actuating the same, a chuck, an anvil-block arranged in the chuck, a blank-feed means, and a slide for simultaneously actuating said anvil-block and blank-feeding means.

6. In combination with the chuck comprising inner and outer shells, the inner shell having spring-arms engaging an inclined flange of the outer shell, an anvil-block arranged in said chuck, means for successively elevating the inner shell and anvil-block respectively, and means for feeding blanks to said chuck operated by said last-named means.

7. In combination with a chuck and a die, an ejecting means arranged in the chuck, a means for operating the said ejecting means, and means connected directly to said last-named means for feeding blanks to the chuck.

8. In combination with the chuck com-

prising coöperating inner and outer shells, an ejecting means arranged in the chuck, and a slide formed with cam-faces for successive engagement with the said inner shell and ejecting means respectively.

9. In combination with the blank-holding means, and the dies, means for bringing the said dies successively over said blank-holding means, a weighted lever for engagement with said dies, a pair of levers arranged one above the other, a cam-lever adapted when engaged by the upper of the first-named levers to actuate the lower thereof, said upper lever when operated elevating said weighted lever, and means carried on the inner end of said lower lever for imparting an intermittent movement to said blank-holding means.

10. In a machine of the type set forth, the combination with the blank-holding means, the dies, and the ejecting means operating through the said blank-holding means, of a blank-feeding means, and means rigidly connected to said last-named means, for releasing the blank in said holding means and actuating the ejecting means.

11. In a stamping-press, printing mechanism having individual die elements, mechanism comprising means for positioning, temporarily holding, releasing and delivering a blank, and means for effecting a stamping of the characters in a circle upon the blank while temporarily held.

12. In a stamping-press, printing mechanism having individual die elements, means for moving a blank into a position with its edge lapped by the printing mechanism, and also for temporarily holding the blank in and delivering it from such position, and means for effecting a stamping of the characters in a circle upon the blank.

13. In a stamping-press, printing mechanism having individual die elements, blank-handling mechanism comprising means for positioning, temporarily holding, releasing and delivering a blank, and means for effecting a spacing action, through relative movement of the blank and die elements, for stamping the characters in a circle upon the blank.

14. In a stamping-press, printing mechanism having a plurality of die elements, means for selecting individual die elements with reference to the printing position, blank-handling mechanism comprising means for positioning, temporarily holding, releasing, and delivering a blank, and means for effecting a stamping of the characters in a circle upon a blank.

15. In a stamping-press, printing mechanism having individual die elements, blank-handling mechanism having a rotatable anvil-support for the blank and also having means for positioning, temporarily holding, releasing, and delivering the blank, selecting means for the die elements, and means for effecting character-spacing through the movement of the anvil-support.

16. In a stamping-press, printing mechanism having individual die elements, blank-handling mechanism having a step-by-step rotated anvil-support for the blank and also having means for positioning, temporarily holding, releasing, and delivering the blank, and selecting means for the die elements.

17. In a stamping-press, printing mechanism having individual die elements, blank-handling mechanism having a rotatable anvil-support for the blank and also having means for positioning, temporarily holding, releasing, and delivering the blank, selecting means for the die elements, and operating mechanism having means for actuating the die elements and also for effecting a character-spacing through the medium of the anvil-support.

18. In a stamping-press, blank-handling mechanism having an anvil-support for the blank and also comprising means for positioning, temporarily holding, releasing, and delivering a blank, a die-holder arranged in overlapping relation to the anvil-support and having a plurality of die elements, means for selecting the individual die elements and operating mechanism comprising means for actuating the selected die element, and also for effecting a character-spacing movement of the blank.

19. In a stamping-press, blank-handling mechanism having an anvil-support for the blank and spacing mechanism coöperating with the anvil-support, said blank-handling mechanism also comprising means for positioning, temporarily holding, releasing, and delivering a blank, a die-holder bearing an overlapping relation to the anvil-support and having a plurality of die elements, means for selecting the individual die elements, and operating mechanism comprising means for actuating the said spacing mechanism for the anvil-support and also for actuating the selected die element.

20. In a machine of the class described, printing mechanism having individual die elements, blank-handling mechanism including an anvil-support for the blank and comprising means for positioning, and delivering the blank, a holding device for clamping and releasing the automatically-positioned blank upon the anvil, and controlling mechanism comprising means for setting and releasing the holding device respectively after the positioning of the blank and at the completion of the stamping operation.

21. The combination with the dies, a pivoted weight and operating means therefor of a blank-holding chuck, comprising inner and outer shells, means for contracting the upper portion of the inner shell, an anvil-block operating in said inner shell, and a slide formed with cams adapted to elevate successively

the inner shell of the chuck and the anvil-block.

22. The combination with the dies, a weight, and the actuating means therefor, of the blank-hopper, a chuck, means for feeding the blanks from the hopper to the chuck, a finger engaging the upper face of the blanks when arranged in the chuck, an anvil-block operating in the chuck, means for elevating the anvil-block for ejecting the blank, and means for rotating the said chuck.

Signed at Cleveland, in the county of Cuyahoga and State of Ohio, this 27th day of May, 1902.

GEORGE W. HEENE.

Witnesses:
E. B. DONNELLY,
K. C. BRADLEY.