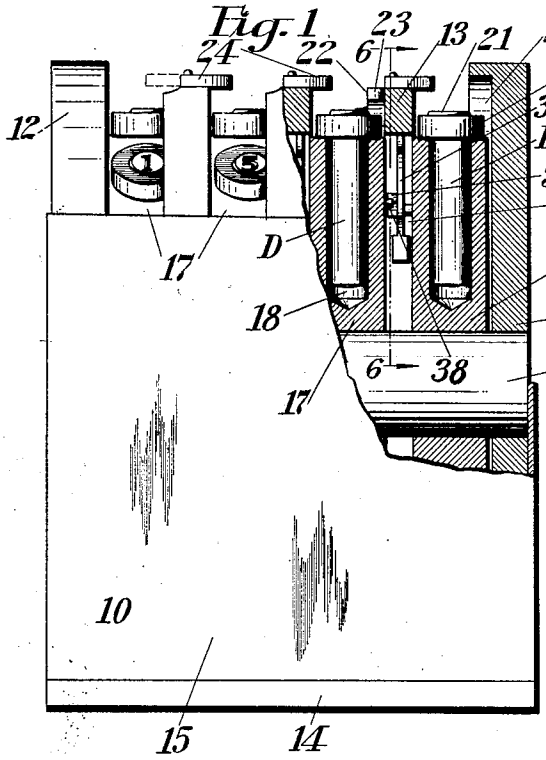
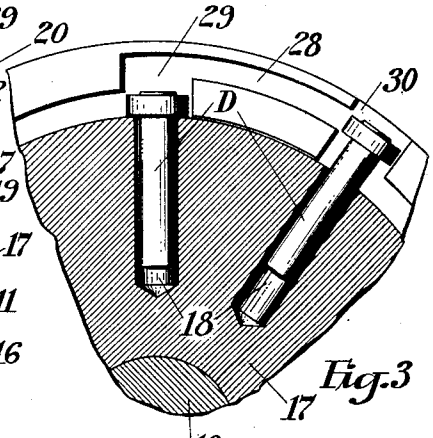
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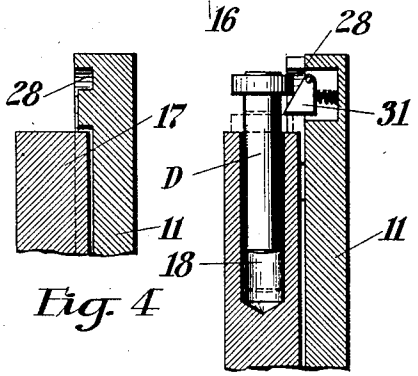
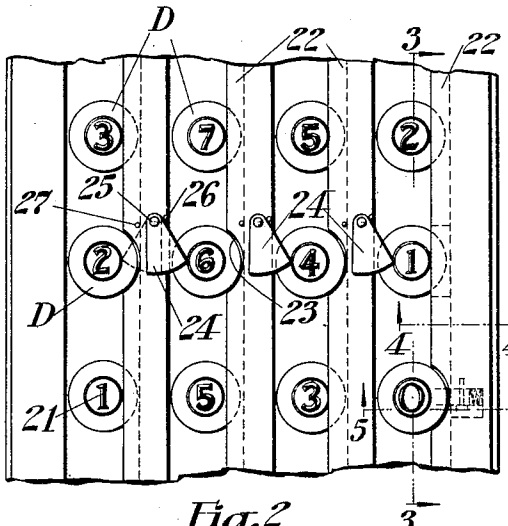
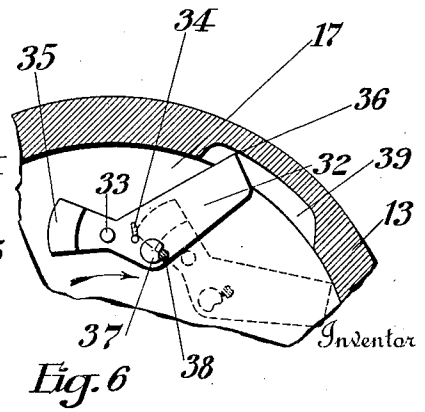


Fig. 5





Milton Tibbetts

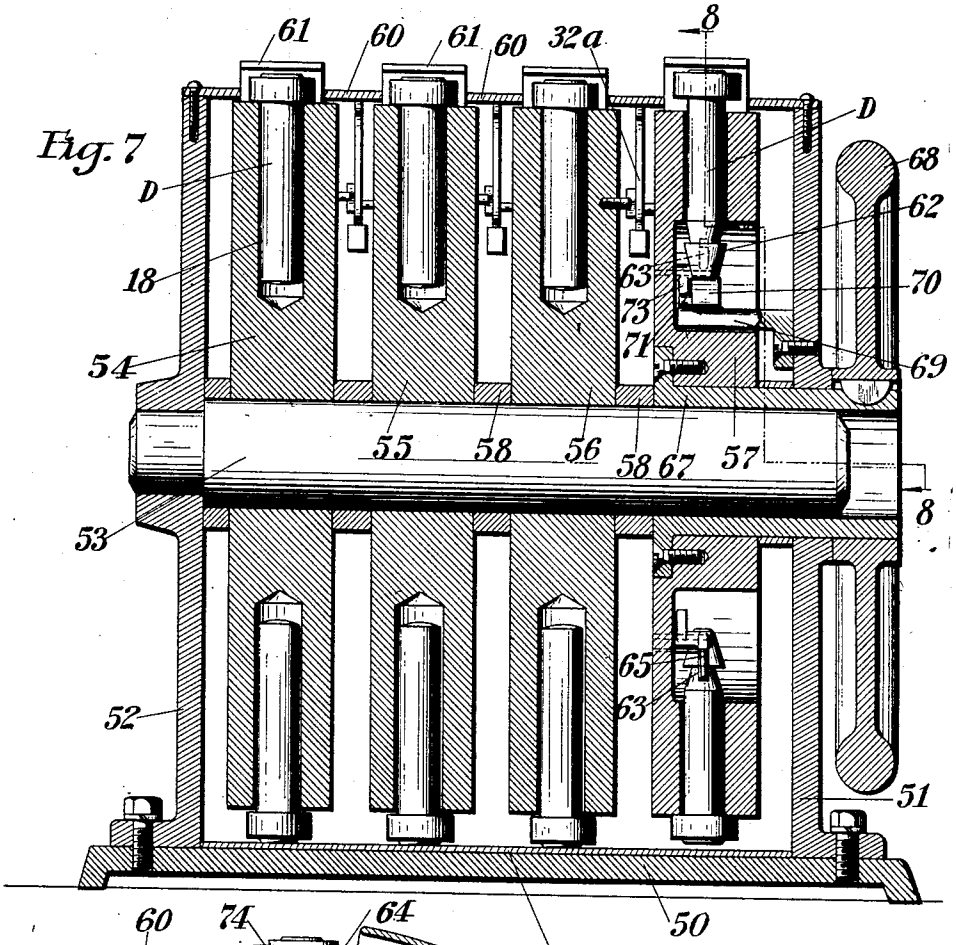
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Fig. 7



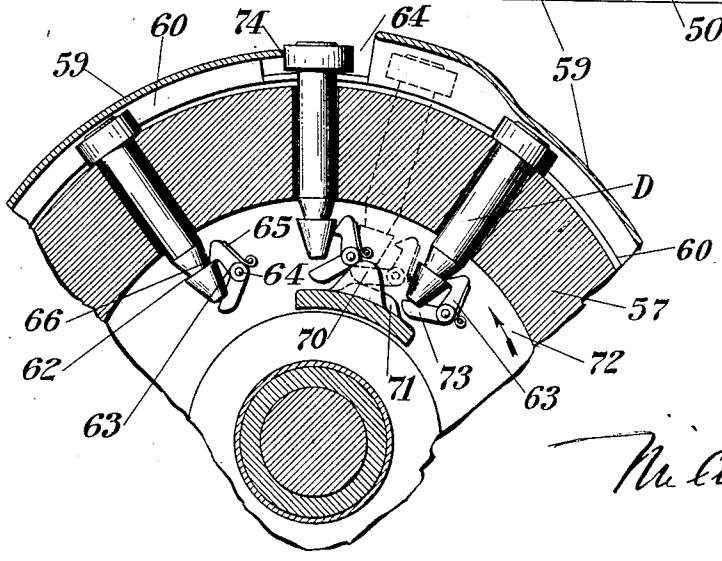


Fig. 8

Inventor

Milton Tibbetts

Patented Jan. 3, 1928. 1,655,029

UNITED STATES PATENT OFFICE.

MILTON TIBBETTS, OF DETROIT, MICHIGAN, ASSIGNOR TO PACKARD MOTOR CAR COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

DIE OR STAMP HOLDING DEVICE.

Application filed April 9, 1923. Serial No. 631,040.

This invention relates to die or stamp holding devices and particularly to devices for holding a series or several series of numbering dies.

This invention is particularly adapted for the use of hardened steel numbering dies for stamping numerals on metal articles or for rubber stamps for stamping numbers or letters on articles of any sort, but it will be understood that other forms of stamps or dies or tools of a different character from these may be used with this invention without departing from its spirit or its scope.

In the manufacture of metal articles, for instance automobile motors, some part of one of the castings or stampings is marked with a number or a letter or both to thereby give the motors an identifying mark. Successive numbering is usually employed and, of course, it is extremely important that a number shall not be duplicated on any two motors because their identity would thereby be destroyed. It is frequently just as desirable that a number shall not be skipped because frequently the amount of production for a given day or month is reckoned by these numbers, and stock taking is frequently guided by them, and there could be no accuracy if numbers were frequently skipped.

Where these identifying numbers are placed on a large casting or an inaccessible part of a motor or other manufactured article, numbering machines cannot be used and this numbering, therefore, is done by hand, the workman using ten individual number dies standing in a rack or holder. The workman then selects the various dies that he requires to make, for instance, the number 2641, using one die at a time and returning it to its place and then selecting the next die.

It is obvious that this method of numbering the castings must be checked and rechecked to positively eliminate any error because there are so many chances for the workman to make mistakes as he handles the dies in this way, and when a mistake is made it is very difficult to correct it because the numbers are deeply indented in the metal casting. If an attempt is made to fill up the number and stamp a new one over it the value of the number itself is partly destroyed because one of its functions is to make it difficult for a thief to change the numbers, particularly where the numbering is used on a motor vehicle engine or other motor vehicle parts.

It is one of the objects of the present invention to provide a device that will largely if not wholly eliminate the chances of error in applying numbers to articles with individual numbering dies.

Another object of the invention is to provide a die holding device with means whereby the correct dies only may be removed by the workman.

Another object of the invention is to provide a die holding device with means for successively presenting the dies for removal.

Another object of the invention is to provide a die holding device with means for inter-locking the individual die so that the removal of one die will lock another die in place.

Other objects of the invention will appear from the following description taken in connection with the drawings, which form a part of this specification, and in which:

Fig. 1 is a front elevation of a die or stamp holding device made in accordance with this invention, parts being broken away in vertical section to illustrate the interior construction;

Fig. 2 is a plan view of the device shown in Fig. 1;

Fig. 3 is a section substantially on the line 3—3 of Fig. 2;

Figs. 4 and 5 are transverse sections on the lines 4—4 and 5—5 respectively of Fig. 2;

Fig. 6 is a detail view of the carrying mechanism, being taken substantially on the line 6—6 of Fig. 1;

Fig. 7 is a vertical sectional view through another form of the device embodying the invention; and

Fig. 8 is a section on the line 8—8 of Fig. 7.

Referring to the drawings, 10 represents a casing or support, the principal parts of which are the two end plates 11 and 12, and circular guide pieces 13, three of which are shown equally spaced apart between the separated end plates 11, 12. These parts are suitably supported in their spaced relation by a base 14 and a sheet 15 covers the lower part of the device.

A stationary shaft 16 extends through the middle of the device and is supported at its

ends by the plates 11 and 12. On this shaft are mounted for rotation several die or stamp holders or wheels 17, the right-hand holder or wheel being positioned between the plate 11 and the first piece or ring 13, the second wheel being between that piece and the next one, and so on to the left-hand end of the device. It will be understood that there may be any number of these holders or wheels, depending upon the desired capacity of the device.

The wheels are mounted independently on the shaft 16 and with sufficient friction thereon to retain them in any set position from which they may be moved by the operator. No special frictional or pawl-and-ratchet devices are shown for this purpose as anything of that sort may be substituted for the friction mounting on the shaft without involving invention hereover.

Each of the wheels 17 is formed with a series of radial sockets or openings 18 and there are enough of these openings to receive a complete set of dies. For instance, if the holder is to be used for numbering dies there will be ten of these sockets 18 equally spaced around the periphery of the wheel, the dies being numbered respectively from "0" to "9".

In the drawings the dies are represented by the letter D and each of them is formed with a shank 19 and a head 20 upon which the numeral 21 is formed. These may be of usual hardened steel construction with the numeral raised from the face of the die so that it may be used to stamp a numeral on a metal article.

It is immaterial upon which end of the die the numeral 21 is, but as shown it is on the head end of the die and the head also forms a stop for preventing the die dropping too far into the socket 18. The head is also useful in preventing the die from falling out of the socket as the holder 17 rotates and a flange 22 on each of the circular pieces 13 and on the end plate 11 acts as a retaining means for the dies. It will be seen that the heads 20 of the dies rest against the peripheries of the holders and the flanges 22 overlap the heads so that the dies cannot fall out when the wheel is turned and the dies are in reverse position.

However, each of the flanges 22 of the guide pieces or rings 13 has a segmental notch or cut away portion at 23 so that when one of the dies is opposite that part of the flange it may be readily removed by the operator. Thus, referring to Fig. 2, it will be seen that the die with the numeral "2" on it may be withdrawn from its holder 17 because it is opposite the notch 23 and there is nothing to prevent the operator from taking it out by the head. The other three dies in the same line, however, are each retained by an inter-locking device in the form of a gate or lock 24 which is pivoted at 25 and is provided with stops 26 and 27 to determine its range of movement. The left-hand one in Fig. 2 is shown in full lines as extending over the head of the die having the numeral "6" thereon but it does not interfere with the removal of the left-hand die. When the "2" die is replaced as pointed out above, the "6" die may be immediately removed by pushing the lock 24 over the "2" die, as shown in dotted lines, and thereby releasing the "6" die. After the "6" die has been used it is replaced and immediately the next lock 24 is pushed over it thereby releasing the "4" die, and so on until the die at the extreme right-hand has been reached.

It is the intention that the removal and replacement of the right-hand die shall set the holder for the next higher number. For instance, as shown in Fig. 2 the number that will be stamped by the dies is "2641" and of course the number of the next casting to be stamped must be "2642". Therefore, when the right-hand die "1" has been used for making the last numeral of the number of the casting, its replacement must make it impossible for the workman to use it for the next numbering operation and it must at the same time cause the holder to present the next successive number for the use of the operator.

This is accomplished by mechanism which requires a one-tenth rotation of the right-hand holder 17 as the right-hand die is removed therefrom, and a locking of that die in the holder when it is replaced.

The inner face of the plate 11 is formed with an S-slot 28, one end 29 of which is in line with the notches 23 above referred to, and the other end 30 of which is circumferentially removed thirty-six degrees therefrom, as shown particularly in Fig. 3. This slot permits the operator to remove the right-hand die D by taking hold of its head 20, raising it partly so that the side of its head moves in the end 29 of the slot, then moving the die along the slot 28 until the end 30 is reached and then pulling the die out of its socket. This movement of the die along the slot 28 has, of course, moved with it the wheel 17 one-tenth of a revolution and the next numeral, which in the present case is the numeral "2", is then opposite the end 29 of the slot 28 so that it is presented for removal by the operator when he requires the next number.

When the die D is replaced in its socket after removal as above described, it falls under a spring pawl 31 which snaps over its head and prevents its removal as long as the die is opposite the end 30 of the slot. Thus this die cannot be used again until it has made a complete rotation.

Now, after the operator has used the dies

2—6—4—1, successively, and has replaced the die "1" in its socket, he will of course begin again at the left-hand side for the next number that he is to stamp on a casing. He will find the die "2" locked by the gate 24, and the dies "6" and "4" will also be locked by the other two gates, thus indicating that his last operation was the replacement of the die "1". He now unlocks the die "2", uses it, replaces it, then does the same with die "6" and die "4", and then he finds that in the right-hand holder the only die he can get out is the die "2", the die "1" having been locked by the spring pawl 31. He cannot, therefore, make the mistake of using the die "1" over again but must use its successor, the die "2". He finds also that he can only use the die "2" by moving its head in the S-slot 28 and thereby rotate the wheel 17 another step. When he returns the die "2" to its place it is likewise locked by the pawl 31 as was the other die "1".

It will be understood, of course, that if successive numbering is to be only from "0" to "9" only the right-hand holder 17 would be required, but as the higher numbers are required, without duplication, it is necessary to add one or more of the wheels 17. Four of these wheels are shown in the drawings whereby numbers may be stamped up to 9999 without duplication.

For moving the second wheel or holder 17 to present its next numbered die for removal a suitable carrying mechanism may be employed between the right-hand holder 17 and the next one to it. By a "carrying mechanism" is meant a mechanism that will move the adjoining holder one-tenth of a revolution at each full revolution of the right-hand holder 17.

One form of carrying mechanism is illustrated particularly in Figs. 1 and 6. The right-hand wheel 17 has mounted on its side adjacent the other wheel a dog 32 pivoted at 33 and provided with a pin and slot 34 to limit its pivotal movement. A weight 35 on one side of the pivot 33 keeps the nose 36 of the dog in contact with the inner surface of the ring 13 above referred to. The dog 32 has a carrying lug 37 extending outwardly from one of its faces and the next adjacent wheel 17 has a series of ten pins 38 equally spaced circumferentially. As long as the nose 36 of the dog is against the inner periphery of the ring 13 the lug 37 is radially inward of the pins 38 and does not touch them as the right-hand holder 17 is turned about its axis. But the dog 32 is allowed to turn on its pivot 33 when it is near the upper part of its movement, by reason of a slot 39 cut in the inner surface of the ring 13, as shown particularly in Fig. 6. This slot is just long enough and is so positioned with relation to the dies in the right-hand holder 17 that the dog 32 will be brought into the position in which it is shown in full lines in Fig. 6 and its lug 37 will bear against one of the pins 38 on the next adjacent holder 17, and the right-hand holder 17 will carry with it the next adjacent holder during one of its stepped movements. The dog will then be released from the pin by reason of its nose 36 coming in contact with the end of the slot 39 in the piece 13 and pushing the nose of the dog downwardly so that it is free from the pin 38 as shown in dotted lines in Fig. 6.

It will be understood that similar carrying mechanism will be arranged between the second holder 17 and third holder, and between the third holder and the fourth, and between the other holders if others are added.

The full operation of the mechanism has been described as the description proceeded and consequently no further description is necessary.

Referring to the form of the device shown in Figs. 7 and 8, the casing is formed by a base 50 and end pieces 51 and 52. A shaft 53 is supported by the end pieces and movable or rotatable wheels or holders 54, 55, 56 and 57 are independently mounted thereon. Spacers 58 are arranged between these wheels.

The wheels 54, 55 and 56 may be formed similarly to the wheels or holders 17 of the device shown in the other figures, being provided with sockets 18 and dies D as in the other form. There is also a carrying mechanism indicated generally by the numeral 32a, which mechanism is the same as in the other form and which will not be again specifically described.

The dies D are retained against falling out of their sockets or against removal therefrom by a substantially cylindrical casing 59 which surrounds the wheels and is arranged just beyond the outer ends of the dies so that the dies will rest against this casing in the lower half of their rotary movement.

The upper half of the casing 59 is depressed between the heads of the dies as shown at 60 to retain the dog of the carrying mechanism in its inoperative position and to provide a slot in the proper place to allow the dog to move to its operative position, as previously described in the other form of the invention.

At a point where the dies are to be removed by the operator the casing 59 is cut away as shown at 61 in Fig. 7 so that each die is accessible to the operator. No interlocking devices are shown in this form of the invention but devices similar to those shown in the other form may be used if desired.

Provision is made in connection with the holder or wheel 57 so that the wheel may be moved step by step by the hand of the operator and at each step one of the dies is presented for removal and the next step can-

not be taken until that die is returned to its normal position. Each of these dies D is formed with a notch 62 in its shank and the wheel 57 is provided with a catch 63 for each of the dies in the wheel, each catch being pivoted as at 64 and having a spring 65 to press the lip 66 of the catch in the notch 62 of the die so that the die is thereby locked or retained in its socket. It is evident that the die thus locked could not be removed by the operator.

Provision is made for automatically unlocking each die and moving it up slightly out of its socket to thereby present it for removal from the socket by the operator. The wheel 57 is mounted on a hub 67 which extends through the plate 51 and has at its outer end a hand wheel 68 by which the hub 67 and its wheel 57 may be rotated by the operator. If desired the hand wheel may be provided with a pawl-and-ratchet to prevent it from being turned in more than one direction. Secured to the inner face of the plate 51 is a bracket 69 upon which are two cams 70 and 71, the cam 70 being somewhat higher than the cam 71 and the cam 71 being slightly in advance of the cam 70. The movement of the wheel 57 is in the direction of the arrow 72 indicated in Fig. 8 and the cams 70 and 71 are, of course, stationary. The cam 71 is so arranged that it is engaged by a heel 73 on the catch 63 as the die which the catch controls approaches an opening 64 in the casing 59 at the upper part thereof where the die is to be removed. This engagement of the heel 73 on the cam 71 disengages the catch 73 from the notch 62 in the die and releases the latter. Immediately thereafter in the further movement of the wheel 57 the lower end of the die contacts with the cam 70 and the latter pushes the die radially outward a short distance. Immediately thereafter the heel 73 slides off of the cam 70 and the catch yieldingly presses against the lower part of the die below the notch and holds the latter in its raised position. At this point in the rotation of the wheel 57 the head of the die abuts against the wall 74 of the casing 59 in the opening 64 and stops the rotation of the wheel 57. The wheel cannot be further moved until the die is returned to its normal position with its notch 62 under the lip 66 of the catch. When it is so returned the wheel may be rotated another step.

Referring particularly to Fig. 8, the operation of the wheel 57 may be followed. The die D shown at the right-hand side of the figure is locked in its socket by the catch 63. As the wheel 57 is turned in the direction of the arrow, as by the operator manipulating the hand wheel 68, the heel 73 of the catch 63 rides on the cam 71 and thereby releases the die. A further movement causes the lower end of the die to ride on the cam 70 and thereby lift the die to the position in which it is shown in dotted lines in Fig. 8. The catch is also shown in its released position. The next movement from this dotted position will permit the heel 73 to drop off of the cam 71 and the head of the catch 63 will press against the lower end of the die just below the notch 62 and thereby retain the die in its raised position. In this position the die and catch are shown in full lines in the middle of the figure. In this position also the head of the die has struck against the wall 74 of the casing so that the wheel cannot be further rotated. The operator now removes the die, makes an impression with it on the casting to be numbered and returns it to its socket, pressing it down firmly in the socket so that its notch 62 is caught by the lip 66 of the catch 63. The die cannot again be removed until the wheel makes a full rotation, nor can another die be presented for removal until the operator has turned the wheel 57 another tenth of a revolution, which he may do by turning the wheel 68. It will be understood that as soon as the wheel 57 has by its step-by-step movement made a complete revolution and the ten dies therein have been successively used, the carrying mechanism 32^a will then move the wheel 56 one-tenth of a revolution and thereby present its next numbered die for use by the operator.

It will be understood that various forms of the invention other than those described above may be used without departing from the spirit or scope of the invention.

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

1. In a die or stamp holding device, the combination of a plurality of independent holders, a plurality of dies independently supported by each of said holders and inter-connecting means between each pair of holders.

2. In a die or stamp holding device, the combination of a plurality of independent holders, a plurality of dies independently supported by each of said holders and interlocking connections between each pair of said holders.

3. In a die or stamp holding device, the combination of a plurality of rotary holders, a plurality of dies independently supported by each of said holders and carrying mechanism from one holder to the other.

4. In a die or stamp holding device, the combination of a plurality of movable holders, a plurality of dies supported by each of said holders, and means for successively interlocking said holders.

5. In a device of the class described, in combination, a movable holder, tools removably mounted therein, and means for presenting the tools for successive removal.

6. In a device of the class described, in combination, a movable holder, tools removably mounted therein, and means for locking in the holder all but one of the tools which are in position to be removed therefrom.

7. In a device of the class described, in combination, a movable holder, tools removably mounted therein, and means for locking one of said tools in the holder as one of the other tools in unlocked therefrom.

8. In a die holding device, the combination of independent movable holders, a plurality of dies supported by each of said holders, and means for releasing said dies from the holders one at a time.

9. In a die holding device, the combination of separate movable holders, a plurality of dies supported by each of said holders, means for moving said holders and means, for releasing one of said dies as said holders are moved.

10. In a die holding device, the combination of separate movable holders, a plurality of dies in each holder, locking devices to retain said dies in the holders, and means for unlocking said locking devices successively as the holder is moved.

11. In a die holding device, the combination of individual movable holders, a plurality of dies supported by each holder, and means for moving said holders by steps and presenting one of said dies for removal at each step.

12. In a die holding device, the combination of individual movable holders, a plurality of dies supported in each of said holders, and means for successively presenting the dies upon moving the holder.

13. In a die holding device, the combination of a movable holder, a plurality of dies, means for retaining the dies in the holder as the latter is moved, and means for releasing said dies one at a time.

14. In a die holding device, the combination of separate movable holders, a plurality of dies removably supported in each holder, means for retaining the dies in the holders as the latter are moved, and means for releasing one of said dies by the movement of one of said holders.

15. In a die holding device, the combination of separate movable holders, a plurality of dies removably supported in each of said holders, means for locking the dies within the holders, means for releasing one of said dies so that it may be removed, and means for re-locking the die when it is replaced.

16. In a die holding device, the combination of a series of rotary wheels adapted to support number dies, carrying mechanism connecting the wheels so that a full rotation of one wheel moves the next wheel one step, and means for causing a step-by-step movement of one of said wheels between the successive removal and return of the dies carried thereby.

17. In a die holding device, the combination of a support, a plurality of die holding wheels mounted therein, said wheels having die sockets, dies mounted in the sockets of each wheel, carrying means between the wheels so that the rotation of an end wheel will move the next wheel a fraction of a revolution, and interlocking connections between the dies so that one die only may be removed at a time.

18. In a die holding device, the combination of a support, a shaft therein, a plurality of independently mounted die holding wheels on said shaft, decimal carrying mechanism inter-connecting the wheels, inter-locking devices mounted to permit but one die to be removed from the holder at one time, and means permitting a fractional movement of one of the wheels intermediate the successive removal and return of the dies carried by said wheel.

In testimony whereof I affix my signature.

MILTON TIBBETTS.