

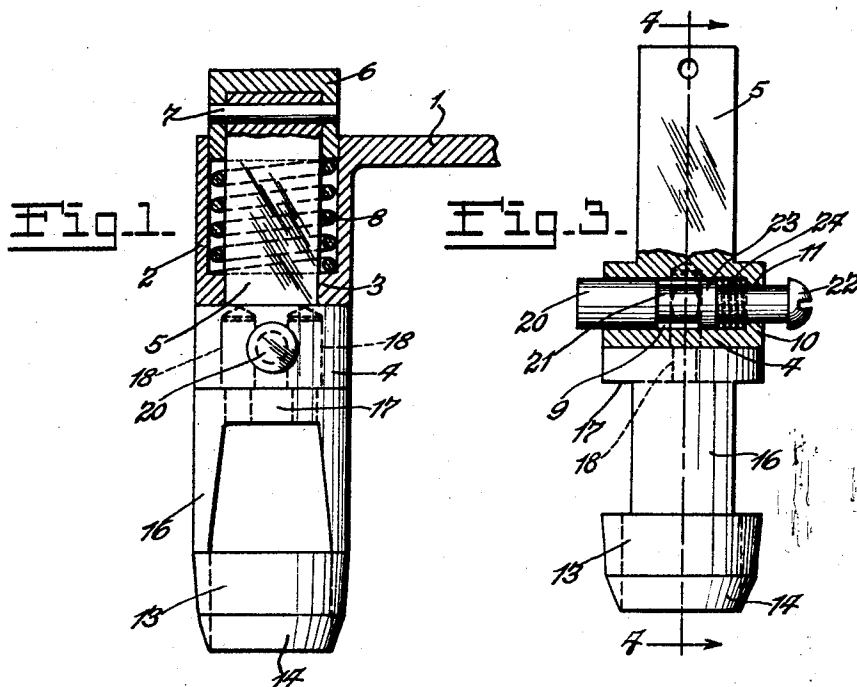
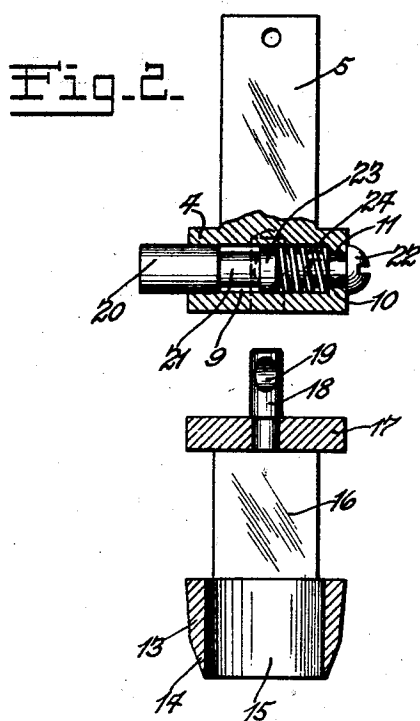
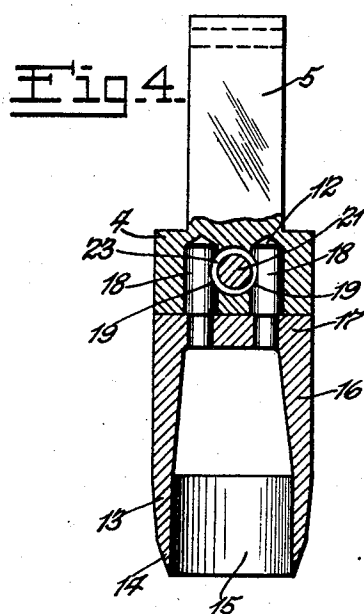
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CUTTING OR ORNAMMENTING DIE

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UNITED STATES PATENT OFFICE

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CUTTING OR ORNAMENTING DIE

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This invention relates to cutting or ornamenting dies and has special reference to a holder for such dies and equipment in connection with the holder permitting selective attachment and removal of the dies.

An object of the invention is to provide a die for cutting or ornamenting purposes and a holder for said die having a locking or latching device adapted to engage with portions of the die in order to hold the die in fixed relationship to the holder and to permit easy removal of the die.

Another object of the invention is to provide an improved die holder and means for supporting same for longitudinal sliding movements, in combination with a latch device in connection with the holder for engaging portions of a cutting or ornamenting die so as to support the die in connection with the holder whereby the die will be moved by and with the holder.

Other objects will appear from the following description, reference being made to the accompanying drawings in which I have illustrated an appropriate embodiment of the invention and in which

Fig. 1 is a side elevation of the die in connection with the holder, a portion of the holder and the carrier therefor being in section.

Fig. 2 is a view showing the holder, the die and the latch or lock for the die in connection with the holder, a part of the die and a part of the holder being in section.

Fig. 3 is a side elevation of the die in connection with the holder, a part of the holder being in section to show the latch or lock whereby the die is secured to the holder.

Fig. 4 is a sectional view on the line 4-4 of Fig. 3.

The die carrier 1 is formed with a socket 2 through the lower end wall of which a polygonal hole is formed leaving a flange 3 around the hole and at the lower end of the socket 2. This die carrier 1 may be supported in a press or other machine capable of operation to operate the die holder and thereby the die mounted on the holder toward the work so as to perform cutting or ornamenting operations by the die.

The holder which is mounted in the carrier comprises a head 4 having a polygonal stem 5 projecting for sliding movements through the hole in the lower end of the socket 2 and thence upwardly into the socket. Thus the polygonal stem which is mounted for sliding movements in the similarly shaped hole in the carrier will hold the head from turning and thus will guide and operate the die in precisely the same relationship to the carrier at each operation. A cap 6 encloses the upper end of the stem 5 and extends downwardly into the socket 2 and cooperates with that portion of the stem which is in the polygonal hole at the lower end of the socket to guide the die holder in a straight line and to prevent oscillation of the die holder. A removable pin 7 extends through the stem 5 and the enclosing walls of the cap 6 and secures these parts together but provides for detachment of the cap in order to permit removal of the die holder from the die carrier. A spring 8 is mounted in the socket 2 and has its lower end seated upon the flange 3 and its upper end seated against the lower end of the cap 6. This spring 8 is a coil spring and encircles the stem 5 and the resilient power and energy of said spring is effective to support the die holder in its idle or starting position in which the upper end of the head 4 is in abutting contact with the lower end of the socket 2. Said spring also permits downward sliding movement of the die holder by any appropriate actuator or driver and is effective to move the die holder to its idle or starting position after each operation.

The head 4 is formed with a diametrical socket 9 which may be and preferably is of uniform diameter throughout its length but in this regard the formation of the socket may be varied if desired. The end wall 10 of the socket 9 has therethrough a hole 11 of reduced diameter and concentric with the axis of the socket.

The head 4 is also formed with two spaced upwardly extending sockets 12 which intersect and open into diametrically opposite sides of said socket 9.

The cutting or ornamenting die shown comprises a head 13 equipped on its lower end

with a cutting or ornamenting device 14. In the case of the cutting die, the head 13 may be hollow, that is to say, said head may have therethrough a hole or passage 15 for the reception and movement of the waste material that is cut by the die from the work. The head 13 is connected by a number of spaced arms 16 with an end portion 17. Two spaced pins 18 project rigidly from the die end 17. These pins are spaced apart the same distance as are the sockets 12 and are of approximately the same diameter as said sockets so that they may be inserted into and withdrawn from the sockets 12. Thus in order to attach the die to the holder the pins 18 are inserted into the sockets 12 until the upper wall of the die end 17 abuts against the lower wall of the holder head 4. Each pin 18 has on its inner side a rounded notch 19 formed on a radius of curvature of the same length as the radius of the socket 9. Thus when the pins 18 are within the sockets 12 and the die end 17 abuts against the lower end of the holder head 4 the walls of the notches 19 are flush and in alignment with the wall of the socket 9.

A latch or locking device for securing the die to the holder is mounted in the socket 9. This latch or lock device comprises an outer end portion 20 of approximately the same diameter as the socket 9 and which fits within the end of the socket 9 for sliding movements. This locking or latching device further comprises a coaxial elongation 21 of reduced diameter which fits within and projects through the hole 10. A screw 22 is engaged in a threaded hole in the end of the reduced portion 5 of the lock or latching device and the head of said screw constitutes an abutment designed and adapted to engage against the wall 10 to prevent withdrawal of the locking or latching device from the die holder. On the reduced portion 21 a circumferential flange or collar 23 is arranged in such position and relationship that when the screw 22 is against the wall 10 said part 23 will engage and seat within the notches 19. That is to say, the diameter of the collar or flange 23 is approximately the same as the diameter of the socket 9 which is the same as the distance from the bottom of one of the notches 19 to the bottom of the other notch 19. Accordingly, when the die is in connection with the die holder and the collar or flange 23 engages in the notches 19 of the pins 18, the die is supported in rigid connection with the die holder; the die holder is held from rotation in the manner described; and the die is held both from turning movements with respect to the die holder by the pins 18 and is held from longitudinal movements with respect to the die holder by the engagement of said pins with the collar or flange 23.

A spring 24 is mounted on the reduced portion 21 of the locking or latching device

and has one end abutting against the socket end wall 10 and the other end abutting against the collar or flange 23. The power and energy of said spring is utilized effectively to hold the locking or latching device in position in which the head of the screw 22 is against the wall 10 and in which the collar or flange 23 is in locking or latching engagement with the pins 18, being engaged in the notches 19. The projecting end of the part 20 of the locking or latching device constitutes a handle or button for manual engagement by which said locking or latching device may be moved in opposition to the spring 24 and in a direction and to an extent to disengage the collar or flange 23 from the pins 18 so as to permit detachment of one die and substitution of another.

From the foregoing it must be apparent that I have provided an improved die holder which is designed and adapted to receive and support any selected ones of various interchangeable dies. The manner of attachment and detachment is highly simplified and the devices comprising the invention are well designed for their intended uses and functions. I am aware that the construction, arrangement and relationship of the parts may be varied within equivalent limits without departure from the nature and principle of the invention.

I claim:—

1. A device of the character described comprising a die holder having therein a socket extending transversely and a pair of spaced sockets extending transversely of the plane of said first socket and opening into opposite sides of said first socket, a die, an abutment on the upper end of said die abutting rigidly against the lower end of said die holder, projections rigid with and extending beyond said abutment and into said second sockets and having notches in their adjacent sides matching the wall of said first socket, and a device mounted in said first socket and having a circumferential part engaged in said notches and thereby supporting said die in position in which said abutment bears against the lower end of said die holder.

2. A device of the character described comprising a die holder having a pair of spaced sockets in its lower end, a die, an abutment rigidly connected with and supporting said die and abutting against the lower end of said die holder, a pair of spaced projections rigid with said abutment and extending into said sockets, and a device mounted in said die holder and engaging said projections and thereby supporting said die and said abutment in position in which said abutment is seated against the lower end of said die holder.

3. A device of the character described comprising a die holder having therein a socket

extending transversely and a pair of spaced sockets extending transversely of the plane of said first socket and opening into opposite sides of said first socket, a die, a pair of
5 projections rigid with said die and extending into said second sockets and having notches in their adjacent sides matching the wall of said first socket, a latch member mounted for sliding movements in said first socket and
10 having a circumferential groove adapted to be placed between said second sockets to permit insertion and withdrawal of said projections, a circumferential portion on said latch member, a spring actuating said latch
15 member in position in which said circumferential portion engages in said notches and permitting movement of said latch member to disengage said circumferential portion from said notches, and a detachable element
20 in connection with and limiting extent of movement of said latch member by said spring.

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