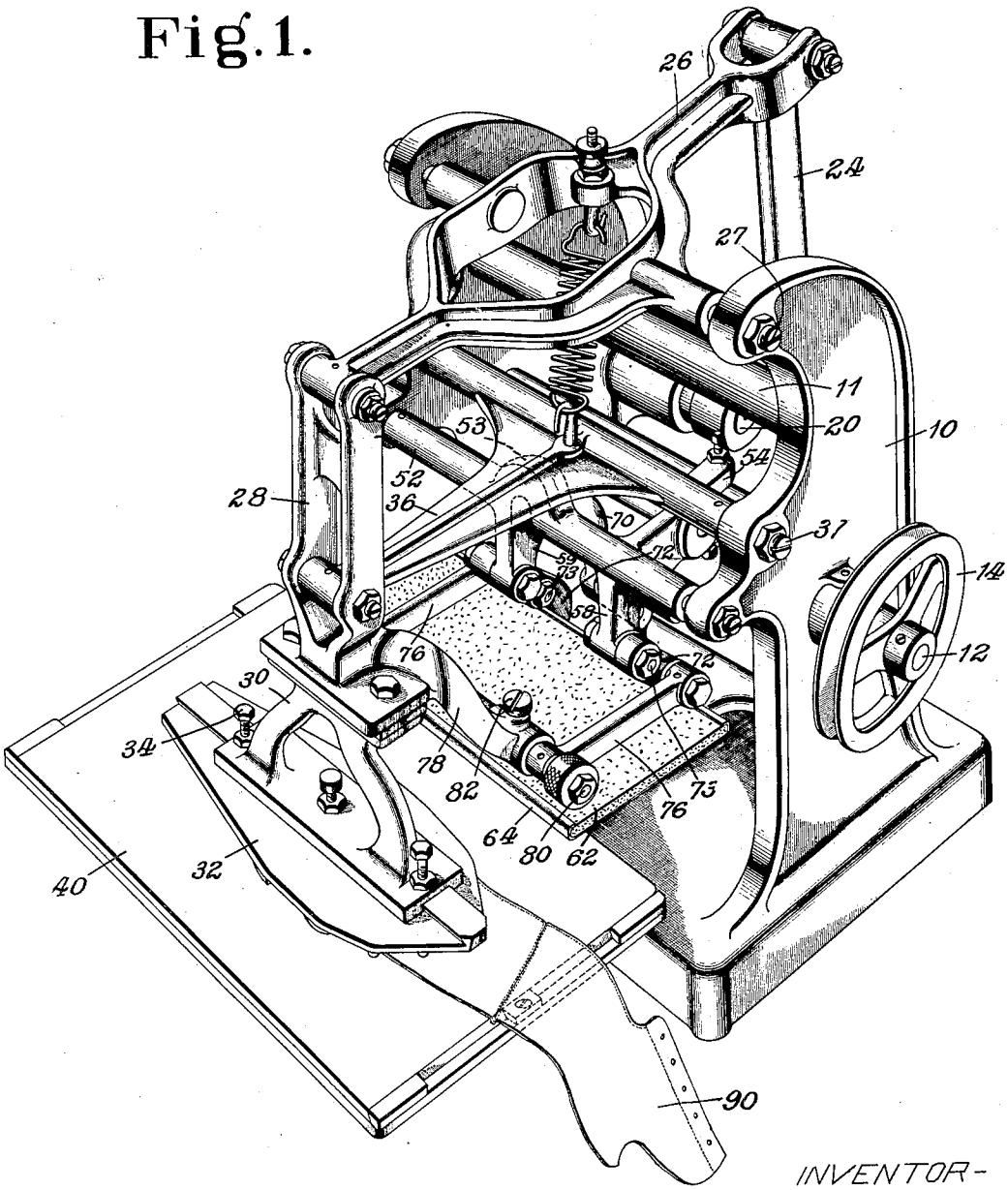
Nov. 14, 1933. W. E. NAUGLER 1,934,733

MARKING MACHINE

Filed Sept. 29, 1932 3 Sheets-Sheet 1

Fig. 1.



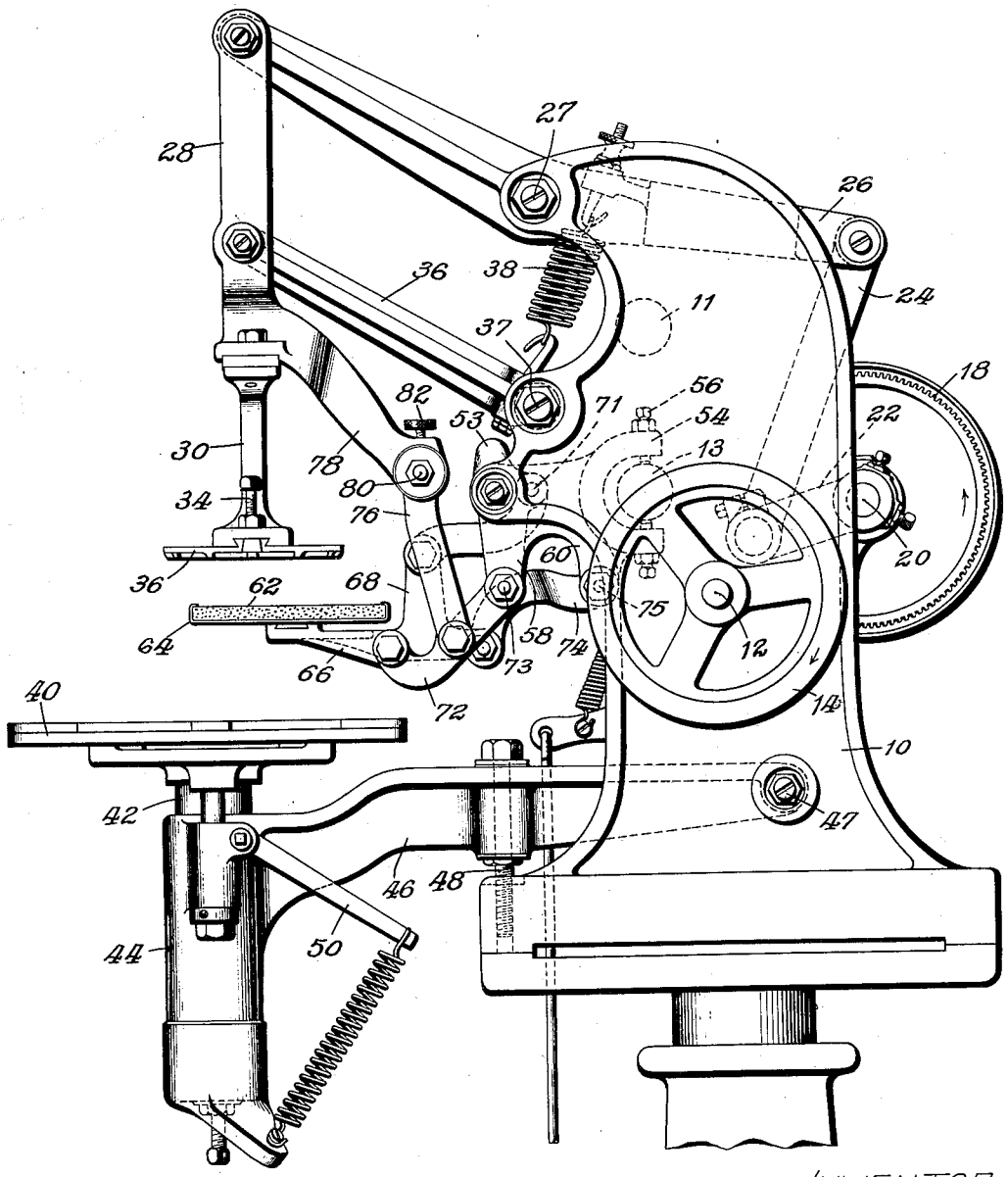
INVENTOR-
Walter E. Naugler
By his Attorney
Harlow M. Davis

Nov. 14, 1933. W. E. NAUGLER 1,934,733

MARKING MACHINE

Filed Sept. 29, 1932 3 Sheets-Sheet 2

Fig. 2.



INVENTOR-
Walter E. Naugler
By his Attorney
Harlow W. Davis

Nov. 14, 1933. W. E. NAUGLER 1,934,733

MARKING MACHINE

Filed Sept. 29, 1932 3 Sheets-Sheet 3

Fig. 3.

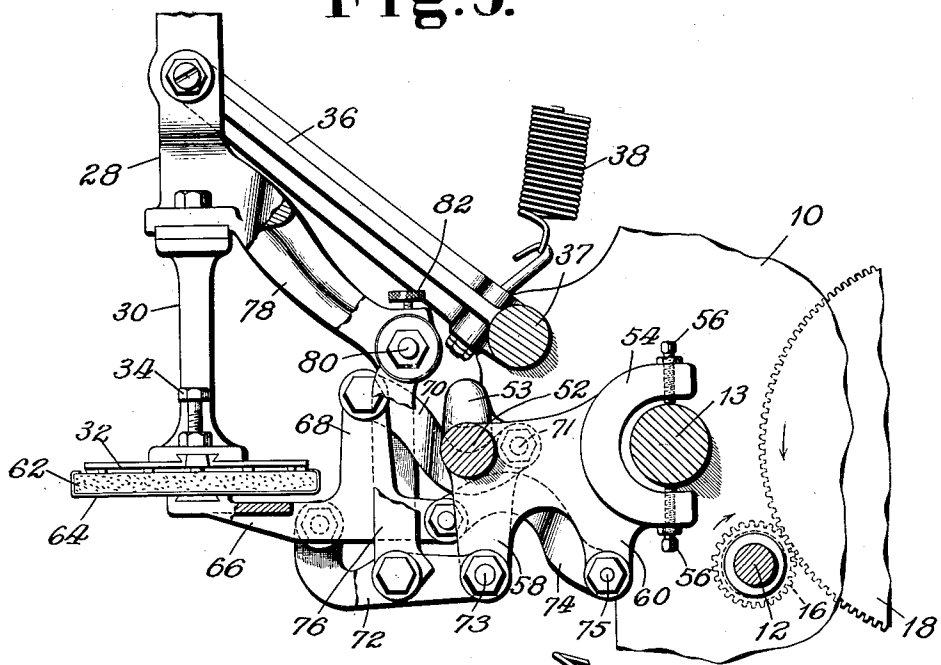
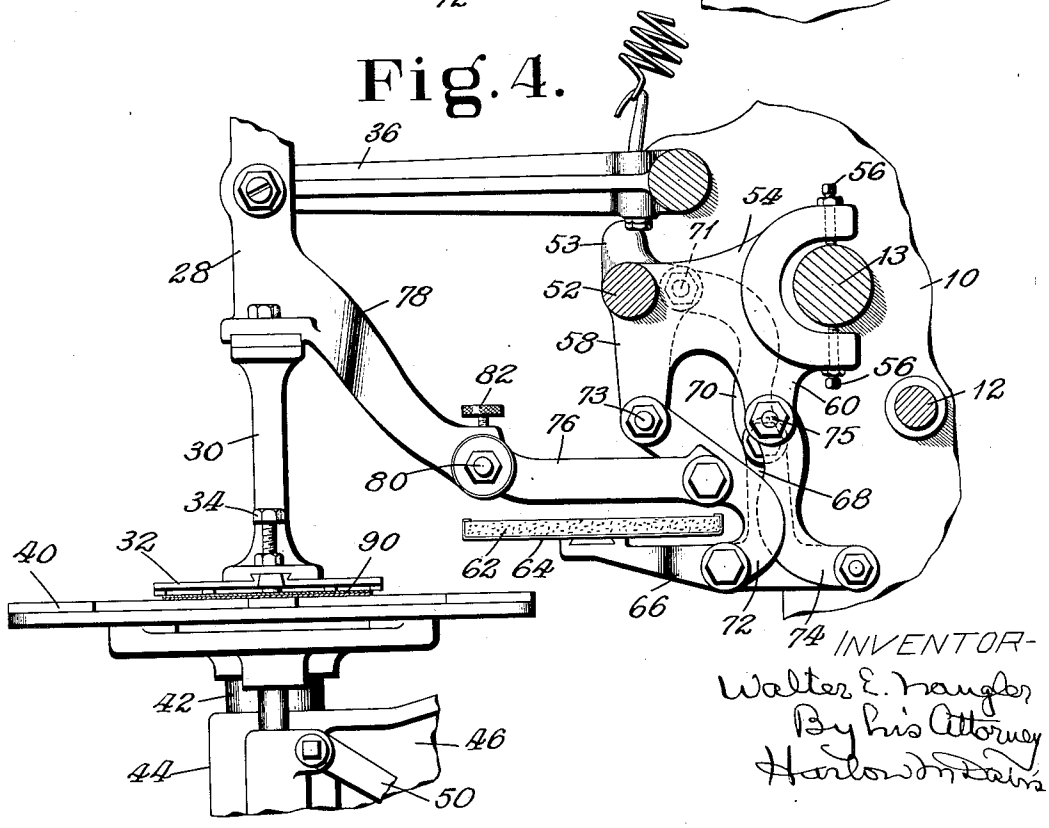


Fig. 4.



INVENTOR-
Walter E. Naugler
By his Attorney
Harlow M. Sales

Patented Nov. 14, 1933

1,934,733

UNITED STATES PATENT OFFICE

1,934,733

MARKING MACHINE

Walter E. Naugler, Beverly, Mass., assignor to United Shoe Machinery Corporation, Paterson, N. J., a corporation of New Jersey

Application September 29, 1932
Serial No. 635,398

16 Claims. (Cl. 101—335)

This invention relates to marking machines of the type in which ink or other stamping medium is applied to the face of the type or die plate prior to each marking operation. In one aspect the invention comprises a new and improved construction for supporting and moving the inking device whereby the position thereof is more accurately and reliably controlled and inaccuracies due to wear more completely eliminated than in machines of this type heretofore available.

I have discovered that the desired results may be attained by supporting the inking device by a parallel linkage system of novel design, characterized by the fact that in the critical or ink applying position of the inking device at least one of the links of the system is disposed at substantially right angles to a major element of the device. The position of the inking device is thus controlled in a positive manner and lost motion is less detrimental than is the case in constructions where a more oblique link position is established.

As herein shown, the desired results are secured by employing in the inking device a pad carrier which is angular in cross section, for example, as by having a horizontally-disposed base and a vertically-disposed upright. A link, properly connected to the upright of such a pad carrier, may be so arranged that it extends substantially at right angles thereto when the device is in ink applying contact with the type face of the stamping head. At this time it is important that there should be no relative transverse movement of the pad and the type face, as otherwise an excess amount of ink is wiped or scraped from the pad and a blurred impression is produced in the marking operation.

While it is important to control the position of the inking device accurately during the ink applying operation, it is desirable accurately to control the position and movement of the inking device during the entire cycle of the machine. Accordingly and as herein shown, other links of the parallel linkage system are so disposed that they extend substantially at right angles to the base portion of the carrier when the latter is located in its inoperative position. In that position the link which is connected to the upright may extend substantially parallel to that portion of the carrier, and during the movement of the carrier gradually assumes a position at right angles thereto while the links which are connected to the base of the carrier gradually assume a position substantially parallel thereto.

A carrier having the cross section of an inverted T, with a pad support formed in its forwardly-extending branch, is well adapted for the purposes of this invention and constitutes a feature thereof. As will be understood from the foregoing discussion, the link connections may be made with such a carrier in its rearwardly-extending branch and also in its upright portion.

The machine herein shown includes also a novel bracket particularly adapted for carrying the parallel linkage system employed. The bracket includes a shaft portion adapted to be adjustably secured in the machine frame, provided with a loop-shaped portion to permit the passage of one of the links in the ink applying position of the inking device, and with a plurality of arms supplying pivotal points of support for the inner ends of the links.

These and other features of the invention will be best understood and appreciated from the following description of a preferred embodiment thereof, selected for purposes of illustration and shown in the accompanying drawings, in which

Fig. 1 is a view in perspective of the machine;

Fig. 2 is a view in side elevation as seen from the right, showing the inking pad in an intermediate position;

Fig. 3 is a fragmentary view, on an enlarged scale, showing the inking pad in contact with the face of the marking head; and

Fig. 4 is a similar view showing the inking pad retracted and the marking head in contact with the work.

The machine frame comprises a base portion from which extend two upright side members 10 connected by tie rods 11 and 13 and furnishing bearings for the moving parts of the machine. A driving shaft 12 having a pulley 14 at its outer end is journaled in bearings formed in the side members 10 of the frame and is provided at its left-hand end with a pinion 16, shown in dotted lines in Fig. 3. The pinion 16 meshes with a large gear wheel 18 fast on the left end of a crank shaft 20 which is journaled in bearings formed in the left side member 10 of the frame. The crank shaft 20 is provided at its inner end with a crank arm 22 and this, in turn, is connected through a crank link 24 to the rear arm of the marking head lever 26, the latter being provided with trunnions or shaft sections which receive in their outer ends cone-pointed bearing screws 27 which extend through the side members 10 of the frame. The lever 26 is connected at its forward end to the upper end of a forked carrier 28 and to the lower end of the carrier is secured the type head 30. The type head 30 has downwardly diverging branches connected by a transverse member in

which is formed a dove-tailed groove for the reception of a correspondingly shaped tongue formed upon the upper surface of the die plate or type plate 32, the latter being removably held in place by clamping bolts 34. The die plate 32 herein shown is of appreciable area, being designed to imprint upon the quarter of a shoe a design for ornamental stitching. It will be apparent that this may be readily replaced by other die plates of different design or dies made up of removable type, in accordance with the marking required for the particular work in hand.

At an intermediate point, the forked carrier 28 is connected to the free end of a rocker arm 36 pivotally supported on cone-pointed bearing screws 37 between the side members of the frame. The arm 36 and the forward arm of the operating lever 26 constitute with the carrier 28 a parallel linkage maintaining the carrier and the type head connected thereto always in a vertical position so that the face of the die plate 32 is horizontal in all positions of the machine. A tension spring 38 extends between the operating lever 26 and the rocker arm 36 and acts to take up any looseness which may occur in the bearings. It will be apparent that in each rotation of the crank shaft 20 a complete reciprocation is imparted to the marking head, moving it from an initial elevated position downwardly into marking contact with work supported upon a horizontal table 40 disposed beneath it, and then returning it to its elevated initial position. Clutch mechanism, not shown, is provided for automatically stopping the machine with the marking head in its elevated position.

The work table 40 comprises a horizontal plate mounted upon the upper end of a vertical plunger 42 which is mounted in a vertical barrel or hub 44 formed in the outer end of an arm 46 pivotally mounted for vertical movement about the axis of cone-pointed screws 47 projecting through the lower part of the side members 10 of the frame. A spring locking device 50 is associated with the work table and acts to hold the latter in a position of vertical adjustment corresponding to the thickness of the work supported thereon. The initial position of the arm 46 is adjustably determined by an adjusting screw 48 which is threaded into the base of the machine frame. The mechanism of the marking head and work table forms no part of the present invention but constitutes part of a marking machine which has heretofore successfully occupied a portion of the field.

The inking pad and the mechanism for controlling its position and movement will now be described. An elongated bracket piece, including a shaft 52 having an intermediate loop-shaped portion 53, is rigidly mounted between the side elements 10 of the machine frame. It is provided with a rearwardly-extending forked arm 54 which is designed to embrace the tie rod 13 and to be adjustably clamped thereto by set screws 56 which are threaded into the forks of the arm. The bracket piece is also provided with a pair of spaced downwardly-extending arms 58 and 59, best shown in Fig. 1, and the arm 54 is provided with a downwardly-extending ear 60. The lower ends of the arms 58 and the ear 60 lie substantially in the same horizontal plane and constitute three points of suspension upon which the inking pad is mounted by links, which will presently be described.

The inking pad 62 may be of any suitable yielding absorptive material and is confined by a sheet metal frame 64. This, in turn, is rigidly but detachably mounted in the outer end of the pad carrier 66 which, in cross section, has the shape of an inverted T and carries the pad frame 64 at the outer end of its forwardly-extending branch. The upstanding element or stem 68 of the pad carrier is connected by a curved link 70 to the arm 54 by a pivot pin 71 which is located behind the shaft 52 of the bracket in position to permit the link 70 to pass into the loop-shaped portion 53 thereof. The pad carrier 66 is connected at each end by curved links 72 with pivot pins 73 projecting through the lower ends of the downwardly-extending arms 58 and 59 of the bracket piece, the point of connection of the links 72 with the pad carrier being slightly in advance of the junction of the vertical stem 68 with the body of the carrier. The rear end of the carrier 66 is connected through a link 74 with a pivot pin 75 projecting from the ear 60 of the bracket piece. While the links 72 and 74 are duplicated at each end of the pad carrier, they may be referred to in the discussion of the linkage as single links. It will be apparent, therefore, that the pad carrier is suspended by three parallel links all of the same length and all extending at the same angle from their points of support. The inking pad, therefore, is maintained always in a horizontal position parallel to the type face of the marking head.

Movement is imparted to the pad carrier by a pair of links 76 which, at their rear ends, are connected at intermediate points to the links 72, and at their forward ends are connected to a transverse rod 80 which extends between arms 78 formed integral with the carrier 28 and extending downwardly and rearwardly therefrom. One of the arms 78 is provided with a hub into which is threaded a clamping screw 82 serving to maintain the rod 80 in place. It will be apparent that when the operating lever 26 is rocked to elevate the marking head, the inking pad carrier 66 will be drawn forwardly and upwardly through the links 76, and this movement continues until the inking pad is brought into engagement with the face of the die plate 32 in the position shown in Fig. 3 of the drawings. In this position, all of the links 70, 72 and 74 extend forwardly and upwardly from their points of support at an angle of about 20°, the link 70 passing through the loop 53 of the bracket piece and the links 74 passing beneath it but in close proximity thereto. As the marking head is lowered toward the work, the links 76 push the inking pad carrier 66 first downwardly to the position shown in Fig. 2, and then rearwardly to the position shown in Fig. 4, and in this motion the inking pad 62 is moved rearwardly out of the path of the die plate and brought to rest in the inoperative position shown in Fig. 4, while the type or die is brought into contact with the work to be marked. In reaching this position, the links 70, 72 and 74 are moved through arcs of approximately 150° and now extend downwardly and rearwardly at an angle of about 60° from their stationary points of support.

The links 72 are actuated in their movement by the movement of the marking head through their connection therewith by the links 76. This point of connection is near the pivot pins 73 of the links 72, so that the angular movement imparted to the links is more rapid than that of the lever 26 and rocker arm 36 and, consequently, an overtaking movement is imparted to the pad carrier 66. The pad 62 is, therefore, brought into engagement with the face of the type or die

plate 32 when the marking head is moved upwardly and the design of the linkage is such that during the interval of contact no relative transverse movement occurs between the face of the type and the pad and, consequently, there is no tendency to wipe off excess ink upon the type. This is a feature of practical importance which contributes to insure a clean-cut impression of the type upon the work. On the other hand, when the marking head is moved downwardly, the more rapid movement of the pad carrier 66 removes it from the path of the marking head so that the die plate may make its imprinting contact with the work without obstruction.

The links 70, 72 and 74 are all curved so that they may be compactly arranged with reference to the other parts of the machine but they nevertheless constitute a parallel linkage system since the lines passing through their extremities are always parallel.

It will be seen that by reason of the angular shape of the carrier 66 the points of connection of the links are disposed at the vertices of a triangle inscribed within the cross sectional area of the carrier. The links 72 are connected to the carrier slightly in advance of the juncture of the horizontal and upright elements, the link 70 at the upper end of the upright element 68 and the link 74 at the rear side of the horizontal element. The result of this arrangement of the linkage is to eliminate lost motion and positively to control the position of the pad carrier throughout its path of movement. It will be noted that as the pad carrier approaches its upper or ink-applying position, the link 70 extends at substantially right angles to the upright element 68 of the pad carrier, while the links 72 and 74 are substantially parallel to the bottom portion thereof to which they are connected. On the other hand, when the pad carrier approaches its retracted position, as shown in Fig. 4, the links 72 and 74 extend substantially at right angles to the bottom portion of the pad carrier, while the link 70 is disposed in approximately parallel relation to the upright element 68. This right angular relation of at least one of the links of the system is desirable from the mechanical standpoint and contributes to the result above referred to. While the arrangement of the linkage is favorable while the pad carrier occupies positions at either end of its path of movement, it is also favorable during the entire movement of the pad carrier.

In Figs. 1 and 4 there is shown, for illustrative purposes, the quarter portion 90 of an oxford shoe adapted to have a more or less elaborate pattern marked thereon for ornamental stitching. The die for marking such a design is of considerable area and the problem of uniformly applying ink or other marking medium to its face involves considerable difficulty. The construction herein disclosed is adapted with particular advantage to the requirements of such work.

It will be appreciated that the pad carrier may take many shapes different from that herein shown while still affording points of connection for the linkage system which are arranged in triangular relation to each other. Any such carrier would be within the scope of the present invention.

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

1. A marking machine having a movable head with a flat type-carrying face, a pad carrier having elements disposed at right angles to each other, and parallel links connected to the carrier at three points disposed at the vertices of a triangle inscribed within the cross sectional area of the carrier.

2. A marking machine having a movable head with a flat type-carrying face, a pad carrier associated therewith and being angular in cross section, and supporting links connected to the carrier at three points, two of which are located in a plane parallel to the type-carrying face of the head and one at a point outside said plane.

3. A marking machine having a movable head with a flat type-carrying face, a pad carrier associated therewith and having a bottom portion and an upright portion extending therefrom, and parallel supporting links connected to the carrier at spaced points, two of which are located in said bottom portion and one in said upright portion.

4. A marking machine having a movable head with a type carrying face, a pad carrier associated therewith and having angularly-disposed portions, and supporting and actuating links for the carrier so connected that one of said links extends at substantially right angles to the carrier from its point of connection therewith when another link extends in a direction substantially parallel to that portion of the carrier to which it is connected.

5. A marking machine having a movable head with a type carrying face, a pad carrier associated therewith and having two portions disposed at right angles to each other, and supporting and actuating links for the carrier, one being arranged to extend at substantially right angles to that portion of the carrier to which it is connected while another extends substantially parallel to the other portion of the carrier, said links being arranged to interchange their relationship to the carrier at opposite ends of the path of movement of the latter.

6. A marking machine having a movable head with a type carrying face, a pad carrier associated therewith and having a horizontal portion and an upstanding portion, a link connected to the carrier at the outer end of said upstanding portion, and parallel links connected to the carrier at spaced points in said horizontal portion.

7. A marking machine having a frame, a marking head mounted for movement therein, a pad carrier having a base portion supplying spaced points of pivotal support and a projecting portion supplying a single point of pivotal support, and parallel links disposed respectively between said points in the carrier and said frame.

8. A marking machine having a frame, a marking head mounted for movement therein, an inking device having a transversely-extending base portion provided with points of pivotal support one behind the other, and a projecting portion having a single point of pivotal support above the two first mentioned, parallel links extending respectively from all of said points in the carrier to said frame, and an actuating connection to certain of said links.

9. A marking machine having a frame, a marking head movably mounted therein and having a horizontal type face, an inking device having a horizontally-disposed base and an upwardly extending projection, a link disposed between said frame and the upper end of said projection and extending in substantially parallel relation to said projection during a portion of the movement of the inking device, and a pair of parallel links disposed between said frame and said base

and extending substantially at right angles thereto during the same portion of the movement of the inking device.

10. A marking machine having a frame, a marking head movably mounted therein and having a horizontal type face, an inking device having a horizontally-disposed base extended forwardly to provide a pad support and rearwardly to provide a point of pivotal support and having an intermediate vertically-disposed projection providing a point of pivotal support above the base, a link connecting said latter point with the frame, and parallel links connecting said base to the frame.

11. A marking machine having a frame, a marking head movably mounted therein and having a type face, a bracket piece adjustably retained in the frame and having link-supporting arms extending therefrom, an inking device having a forwardly-projecting pad support and an upwardly-projecting portion and links extending between the arms of the bracket piece on the one hand and the inking device and its upwardly-projecting portion on the other hand.

12. In a marking machine, an inking device including a carrier having the cross section of an inverted T with a pad support formed in its forwardly-extending branch and having link connections in its rearwardly-extending branch and also in its upright stem.

13. A marking machine having a frame, a marking head mounted for vertical movement in front of the frame and having a horizontal type face, an inking device including a carrier having a vertically-disposed member therein, a parallel linkage system movably supporting said carrier in a position between the frame and said marking head when the latter is lowered, and means for swinging the links of the system forwardly as the head is lifted to bring one of the links into a position substantially at right angles to said vertically-disposed member.

14. A marking machine having a frame, a marking head mounted for vertical movement in front of the frame and having a horizontal type face, an inking device including a carrier having a horizontally-disposed base and a vertically-disposed upright, a parallel linkage system movably supporting said carrier in a position at the rear of said marking head when the latter is lowered and including two links disposed, in that position, substantially at right angles to the base, and means for swinging the links of the system forwardly as the head is lifted to bring one of them into a position substantially at right angles to said upright.

15. In a marking machine having a frame with spaced side members, a link-supported marking head and an inking device, a novel bracket comprising a shaft having loop portion therein and being of a length to fit between the side members of the frame, and a plurality of arms projecting from the shaft and supplying points of pivotal support for the links, one of such points being in such position that the link associated therewith passes into said loop portion in the movement of the inking device.

16. A marking machine having a frame, a movable marking head mounted thereon, an inking device movable to and from ink-applying contact with the head and providing three points for link attachment, one of said points being substantially offset with respect to the line joining the other two, and a parallel linkage system including links mounted on the frame and connected to the inking device at said three points.

WALTER E. NAUGLER.