(No Model.) 3 Sheets—Sheet 1.

C. K. PICKLES & J. A. HOFF.

STENCILING MACHINE.

No. 543,891. Patented Aug. 6, 1895.

Fig. 1.

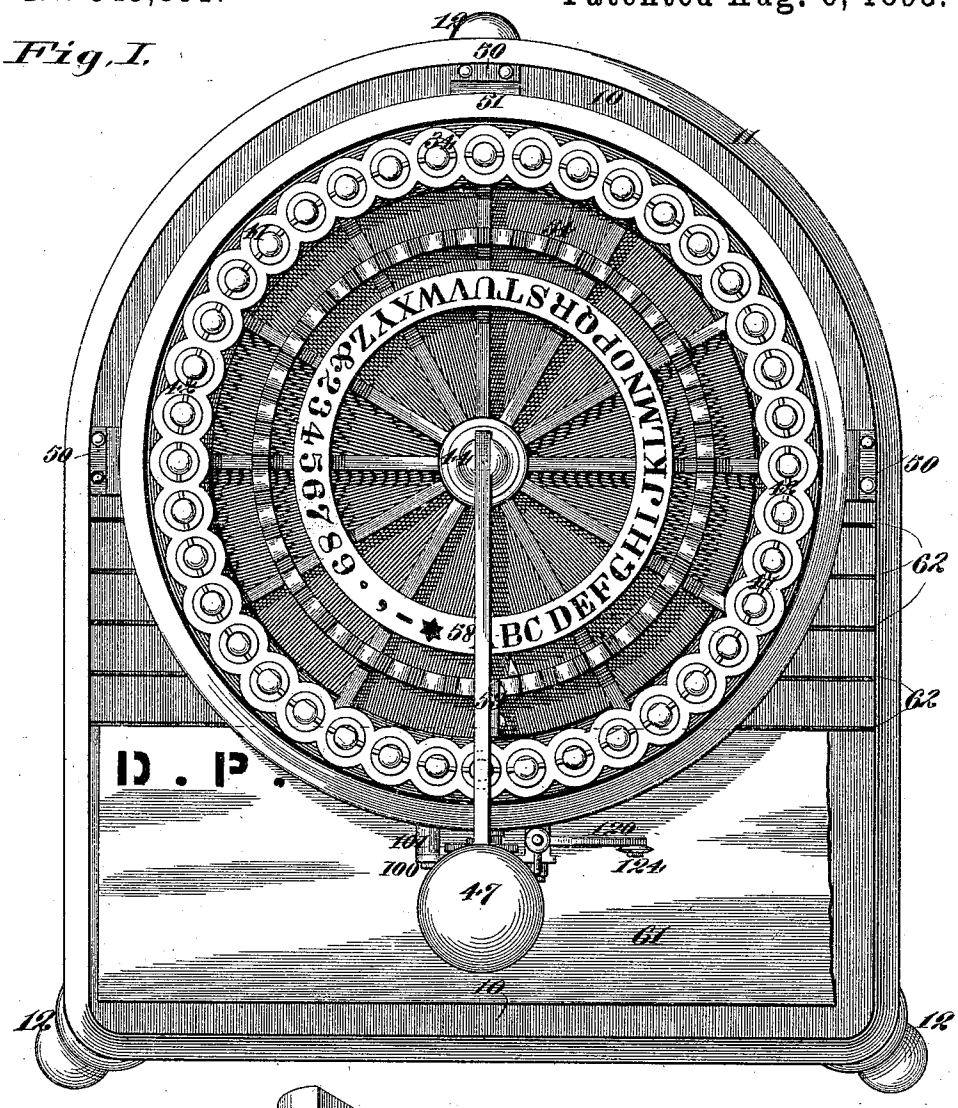


Fig. 2.

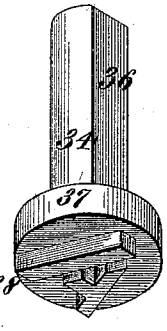
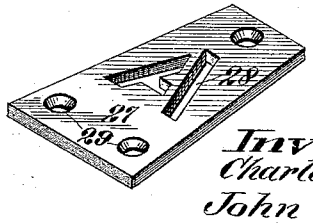


Fig. 3.



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(No Model.) 3 Sheets—Sheet 2.

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Fig. 4.

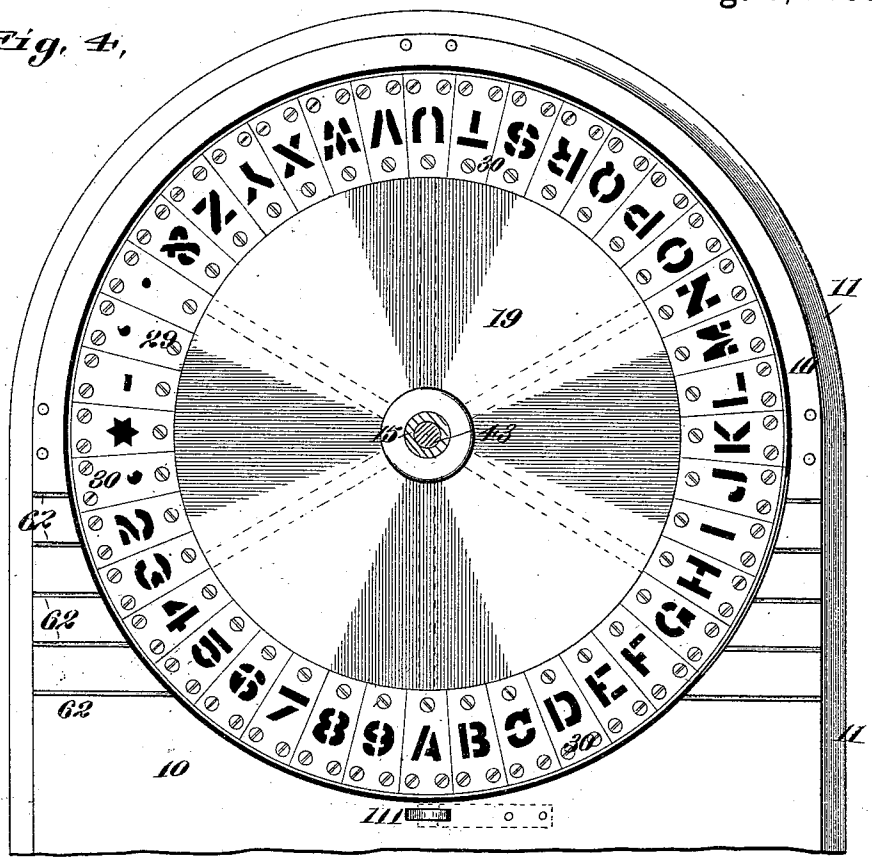


Fig. 5.

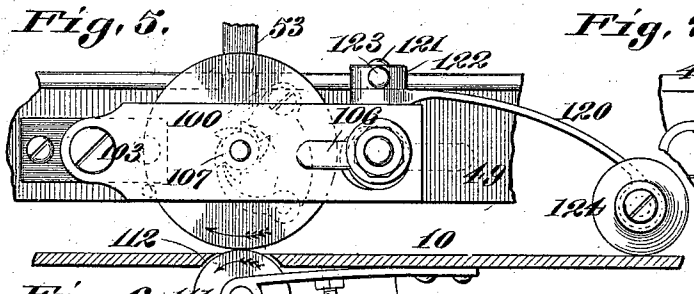


Fig. 7.

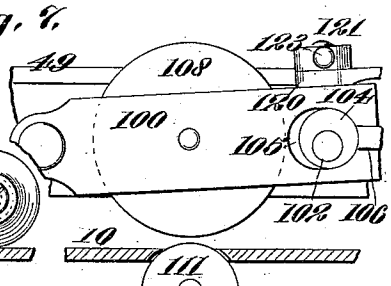


Fig. 6.

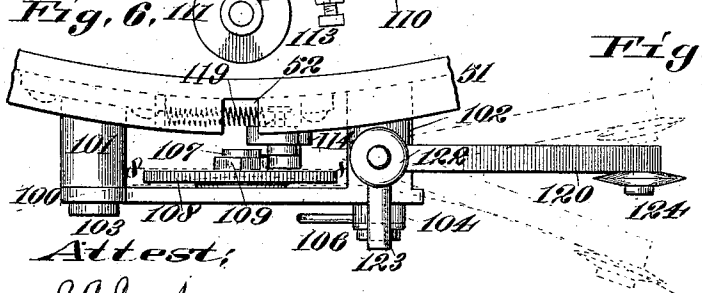
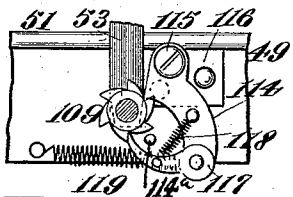


Fig. 8.



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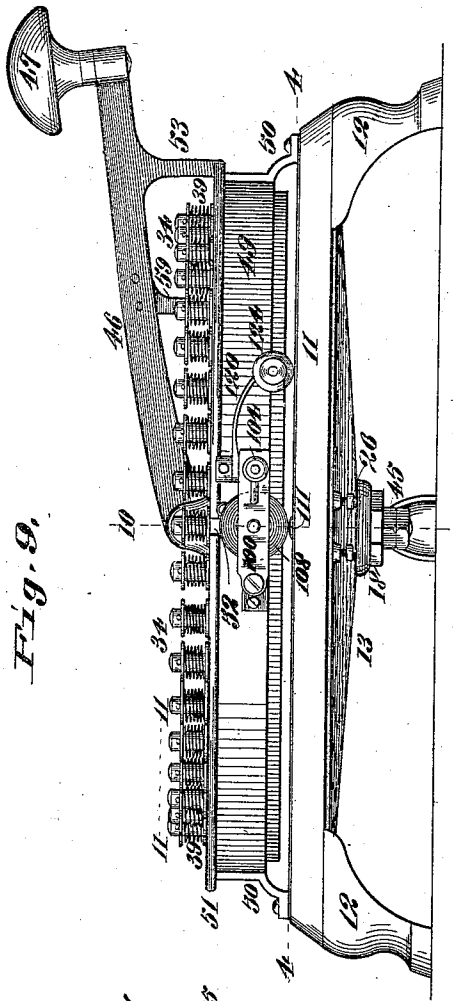

Fig. 9.

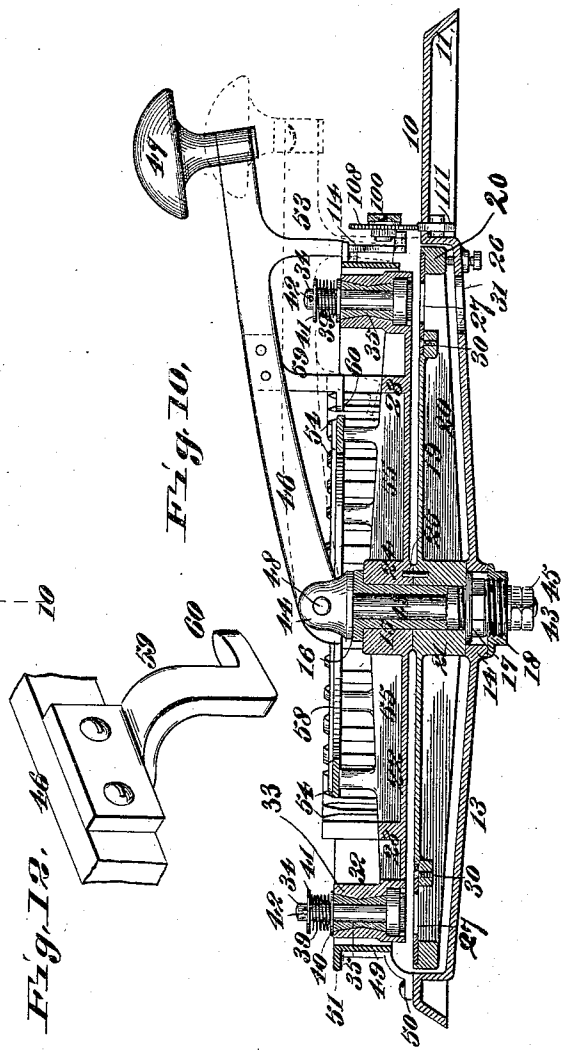

Fig. 10.

Fig. 12.

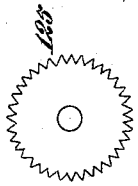

Fig. 13.

Fig. 11.

Fig. 15.

Fig. 14.

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UNITED STATES PATENT OFFICE.

CHARLES K. PICKLES AND JOHN A. HOFF, OF ST. LOUIS, MISSOURI, ASSIGNORS, BY MESNE ASSIGNMENTS, TO THE AMERICAN STENCIL MACHINE COMPANY, OF EAST ST. LOUIS, ILLINOIS.

STENCILING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 543,891, dated August 6, 1895.

Application filed September 18, 1894. Serial No. 523,425. (No model.)

To all whom it may concern:

Be it known that we, CHARLES K. PICKLES and JOHN A. HOFF, of the city of St. Louis and State of Missouri, have invented a certain new and useful Improvement in Stenciling-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

The object of this invention is to provide improved means for making stencils of paper board or analogous suitable material.

Our invention consists in the construction, arrangement, and combination of elements, hereinafter set forth, pointed out in the claims, and illustrated by the accompanying drawings, in which—

Figure 1 is a plan view of the complete machine carrying a partly-formed stencil. Fig. 2 is a perspective of a patrix. Fig. 3 is a perspective of a matrix. Fig. 4 is a sectional plan view on the line 4 4 of Fig. 9. Fig. 5 is a detail elevation of the feeding and guiding mechanisms. Fig. 6 is a detail plan of Fig. 5, the dotted lines indicating possible lateral positions of the guiding mechanism and interior construction. Fig. 7 illustrates the vertical adjustment of the feeding mechanism. Fig. 8 is a detail elevation on the line 8 8 of Figs. 6 and 10. Fig. 9 is an elevation of the complete machine. Fig. 10 is a sectional elevation of the machine on the line 10 10 of Fig. 9, the dotted lines indicating the limit of downward movement of the operating-lever. Fig. 11 is a detail plan on the line 11 11 of Fig. 9. Fig. 12 is a detail perspective of the index and guiding member of the operating-lever. Fig. 13 is a detail elevation of a modified form of feeding or guiding disk. Fig. 14 is a detail bottom view of a modified patrix. Fig. 15 is an elevation of the patrix shown in Fig. 14.

In the construction of the machine as shown the numeral 10 designates a base-plate or table mounted upon and secured to a rim 11, which rim is provided with legs 12. The base-plate or table 10 is approximately oval in form, being rectangular with rounded corners and ends.

An annular portion 13 of the plate 10 is depressed, the degree of depression increasing toward the center of said portion, and a bearing 14 is formed in the apex of said depressed portion, in which bearing is vertically mounted a sleeve 15, having a horizontal marginal flange 16 on its upper end and a nut 17 on its lower end, a jam-nut 18, mounted on the sleeve outside the nut 17, retaining said nut 17 in position and impinging against the lower surface of the bearing 14. A matrix-plate 19, having a rim 20 and hub 21, is loosely mounted on the sleeve 15, the said sleeve passing through a central vertical aperture or bearing in said hub. A patrix-plate 22, having a rim 23 and hub 24, is loosely mounted on the sleeve 15, the said sleeve passing through a central vertical aperture or bearing in said hub, the marginal flange 16 of said sleeve bearing against the top surface of the hub 24, and in conjunction with the nut 17 connecting the plates 19 22, a further connection between said plates being secured in the provision of a dowel-pin 25 seated in the hubs 21 24. A pair of adjusting-screws 26 26 are seated vertically in screw-seats formed in the margin of the portion 13 adjacent to the front of the machine, upon which screws the rim 20 of the matrix-plate rests and travels. A series of apertures are formed in the matrix-plate 19, and a corresponding number of matrices 27 are mounted on said plate above and covering said apertures.

The matrix 27 is illustrated in Fig. 3, and the arrangement thereof relative to the plate 19 is clearly shown in Fig. 4.

The matrix 27 comprises a flat strip or section of sheet metal, pierced or stenciled with a letter, symbol, or character 28, and having a plurality of counter-sunk screw-seats 29, adapted to admit screws 30, whereby the strip is secured to the matrix-plate 19. An aperture 31 is formed in the portion 13 of the table adjacent to the screws 26 26, which aperture is of such dimension as to admit the passage therethrough of the stencil-chips.

The patrix-plate 22 is provided with an upwardly-extending marginal rim 32, in which rim are formed a series of hubs 33, Fig. 11, corresponding in number and coinciding in vertical alignment with the matrices 27. Reference to Fig. 10 will disclose that each of the

hubs 33 is vertically bored, the bore thus formed being double conoidal in form—*i. e.*, of less diameter in the center than at the ends of the hub.

A patrix 34, Fig. 2, is mounted in each of the hubs 33 in the bores of said hubs, and bushed therein with Babbitt metal or suitable bushing material 35, the specific shape of the said bores retaining the said bushing against vertical movement independently of the hubs.

Each patrix 34 comprises a shank having a flattened face 36 and a head 37 having a relieved or projected symbolical configuration 38 corresponding in size, shape, and vertical alignment with the stenciled symbol 28 in the matrix 27 next beneath said patrix.

The shank only of the patrix 34 is bushed within the hub, the head 37 normally occupying a recess in the lower portion of said hub, and is retained in the limit of its upward movement by the resilience of an expansive spring 39 coiled about a portion of the patrix shank above the upper surface of the hub, the said spring being retained by inclosure between two washers 40 41, loosely mounted on the said shank, and a key 42, seated in and transversely of said shank above the washer 41 and in engagement with said washer.

An axial spindle 43 is loosely mounted, for horizontal rotation, in the sleeve 15, which spindle is provided with a bifurcated laterally-flanged head 44, resting on the upper end of the said sleeve, and nuts 45, removably mounted on the lower end of said spindle and impinging against the jam-nut 18, serve to maintain a secure positioning of said spindle.

An operating-lever 46, having a handle 47 and adapted for manual actuation, is seated at one end in the bifurcation of the spindle-head 44 and fulcrumed on a pin 48 transversely positioned in said head.

A ring 49 is provided, which ring is sustained by brackets 50, fixed to the table 10, and has a marginal flange 51 on its upper edge. The ring 49 is continuous, and a notch 52, Figs. 6 and 9, is formed in the flange 51 at a point in vertical alignment with a plane centrally located between the screws 26 26.

An arm 53, having a slightly convergent lower end, Fig. 5, is formed on and extends downwardly from the lever 46 in the plane of said lever, which arm normally rides on the flange 51 of the ring 49, and is adapted at times, as hereinafter more fully set forth, to enter the notch 52.

The ring 23, formed on and extending upwardly from the patrix-plate 22, is concentric with the rim 32, and is provided with a series of upwardly-extending posts 54, corresponding in number with patrices 34.

Diametric bars or ribs 55 extend across the upper surface of the patrix-plate 22, and upwardly-extending posts 56 on said bars sustain an annular index-plate 57, the upper surface of which index-plate bears symbols 58, Fig. 1, corresponding with the symbols 38 on the patrices 34. The index-symbols 59, the spaces between the posts 54, and the patrices 34 are arranged in aligning radial planes extending from the axis of the spindle 43.

A guiding-arm 59, Fig. 12, is fixed to the central portion of the operating-lever 56, and extends downward and laterally therefrom to a plane below a right line from the axis of the pin 48 to the lower extremity of the arm 53, the thickness of said arm 59 corresponding with the distance between two of the posts 54 54. Integrally formed on the lower end of the arm 59 and extended in a horizontal plate toward the spindle 43 is a pointer or index-finger 60. The arm 59 is located normally in one of the spaces formed by the contiguous positions of the posts 54 and one space to the right of that one of said spaces in the vertical plane of the lever 56, and consequently the pointer 60 indicates or is directed to that index-letter one degree removed to the right of the index-letter directly beneath the said lever.

Reference to Figs. 1, 9, and 10 will more fully reveal the operation of the cutting or stenciling operation of the machine, which is as follows: The sheet 61, in which a stencil is to be made, is placed on the table 10 and introduced between the plates 19 22 until the forward edge of said stencil aligns with one of the graduating-lines 62, provided to aid the eye of the operator in determining the proper location for said sheet. The outer end of the lever 56 is elevated by manual force until the guiding-arm 59 clears the tops of the posts 54, and the said lever moved laterally, rotating on the axis of the spindle 43 until the guiding-arm reaches a point immediately above the space between two posts 54 in alignment with the index symbol being sought; or, in other words, the lateral or rotary movement is continued until the pointer 60 indicates that symbol sought, and which it is desired to employ in the formation of the first puncture of the stencil-sheet. The lever is now permitted to descend, the guiding-arm entering the aforesaid space and establishing a relation between the lever and the patrix-plate through the medium of the posts and ring 23. A rotary movement of the lever on its axis results in the rotation of the patrix-plate, and the continued rotation of the lever and plate brings the arm 53 into alignment with the notch 52 in the flange 51, at which time the said lever and arm are depressed, as shown by dotted lines in Fig. 10. By the aforesaid movement of depression the lever is caused to contact with the patrix 34 in the vertical plane thereof and move said patrix downwardly out of its normal seat, the projected or embossed symbol 38 thereon contacting with and cutting a way through the sheet 61 and finding a temporary seat in the apertures 28 of the matrix 27, thereby expelling or cutting out a clip from said sheet which is precipitated by gravity through the aperture 31 in the depression 13 of the table. The successive and progressive continuation of the aforesaid movements and

operation will result in the production of an indefinite number of stenciled apertures in the sheet 61 of as diversified character as the range of dies will permit. It will be observed that in the operation of the passage of the member 38 through the stencil-sheet the matrix-plate is sustained against the downward pressure by the adjusting-screws 26 26.

We have illustrated in Figs. 14 and 15 a patrix 34 in which the space about the symbolic projection 38 is flushed or filled with a yielding compressible elastic substance 63, such as india-rubber. This construction provides a pad which engages the stencil-sheet synchronously with the face of the patrix, and, yielding, permits the advance of the projection 38 through the sheet, the said pad yet retaining a contact with said sheet, and, expanding, upon the withdrawal of the patrix by the resilience of the spring 39, holds the sheet until said projection is clear therefrom. This construction also assists in retaining the sheet against lateral movement.

Having described the construction and operation of a mechanism whereby any number of individual stenciling acts may be performed, we will now describe a feeding and guiding mechanism whereby the sheet to be stenciled is automatically fed across the plane of the patrices and its line of travel determined and defined.

Referring to Figs. 5, 6, 7, and 8, it will be seen that a clip 100 is mounted on studs 101 102, seated in the ring 49, one end of said clip being pivotally connected to the stud 101 by means of a screw 103, the remaining end of said clip being connected to the stud 102 by means of an eccentric 104, seated for rotation on said stud and passing through an elliptical slot 105 in said clip, the eccentric 104 being provided with a thumb-piece 106, whereby the same may be manually rotated. A spindle 107 is horizontally positioned in the central portion of the clip 100 and a feed-roller 108 is loosely mounted on said spindle and has secured thereto a ratchet-wheel 109. A tension-bar 110 is fixed to the lower side of the table 10, and carries on one end an idle feed-roller 111, which is in vertical alignment, and has a path of rotation coincident with the roller 108. The roller 111 has a portion of its perimeter extended through a slot 112 in the table 10 into engagement with the face of the roller 108, being held in such position by the resilience of the tension-bar 110, which bar is adjusted as to its tension by the screw 113, seated therein and impinging against the table 10. A lever 114 is fulcrumed on a pin 115, seated in a block 116, fixed to the ring 49, and depends from said pin. A pawl 117 is pivotally mounted by one end on the lower end of the lever 114, the opposite end of said pawl engaging the lower teeth of the ratchet-wheel 109, and being held in such engagement by a retractible spring 118 fixed at its opposite ends to the said pawl and lever respectively. Secured to the ring 49 is a stop-pin 114^a, the purpose of which is to limit the travel of the arm 114 when retracted by means of the spring 118. The lever 114 and pawl 117 are conjunctively approximated to the ratchet-wheel 109 by a retractile spring 119, fixed at its opposite ends to the said lever and the ring 49, respectively. A depressing spring-arm 120 is pivotally connected at one end to a pin 121, vertically positioned in the stud 102, and is retained adjustably relative to said stud by a binding-nut 122, provided with a laterally-extending thumb-piece 123, adapted for manual actuation. The lower end of the arm 120 carries a disk 124 in rotatable connection therewith, which disk is formed with an attenuated perimeter and is adapted for engagement with the stencil-sheet 61. The varying positions of the arm 120 and disk 124 are shown by dotted lines in Fig. 6.

In Fig. 13 we have illustrated a disk 125, having a serrated perimeter, which disk may be substituted for either of the rollers 108 111 or the disk 124. In the downward movement of the lever 46 and arm 53, heretofore described, the arm 53 passes through the notch 52 and engages with the lever 114, thereby moving said lever laterally against the resilience of the spring 119 and positioning the pawl 117 relative to the ratchet-wheel 109, as shown in Fig. 8. Upon the upward movement of the lever 46 the arm 53 is withdrawn from engagement with the lever 114, and the pawl 117, influenced by the spring 119, rotates the said ratchet-wheel, and thereby the feed-roller 108, which feed-roller 108, acting in conjunction with the roller 111 advances the sheet 61 one degree to the left and into position for a further operation of the lever 46. Owing to the relation of the horizontal planes of the patrix ends, the lower extremity of the arm 53, and the point on said lever engaged with the patrix, the patrix will be fully withdrawn from the stencil-sheet before the release of the lever 114 by the arm 53, thus providing for the free action of the feeding mechanism. The disk 124 is held in engagement with the stencil-sheet 61 by the arm 120, and during the rotation of the feed-rollers acts on said sheet to determine the line of feed of the said sheet, the line of feed depending upon an alignment or differentiation of the path of rotation of the said disk relative to the path of rotation of the feed-rollers.

When it is desired to introduce the stencil-sheet to or remove the same from the plane of the patrices, the eccentric 104 is rotated by the thumb-piece 106, and, engaging the clip 100 within the slot 105, elevates said clip at one end, thereby elevating the feed-roller 108 and disk 124 clear of the table or sheet. A reverse rotation of the eccentric will result in the seating of said disk and roller in contact with the sheet, or as shown in Fig. 5.

What we claim is—

1. In a stenciling machine a patrix plate having a series of hubs, vertically bored, said bores being of less diameter in the centers than at the ends and a patrix having a flattened vertical face, bushed in each of said bores.

2. In a stenciling machine, a feeding and guiding mechanism comprising a driven roller, a mating idle roller, a vertically adjustable tension bar and a runner carried by said bar, the said bar being adjustable rotatably to align or differentiate the path of said runner relative to the rotary path of the driven roller.

3. In a stenciling machine, a feeding and guiding mechanism comprising a driven roller, a mating idle roller, a vertically adjustable tension bar, and a disk carried by said bar, the said bar being adjustable rotatably to align or differentiate the path of rotation of said disk relative to the rotary path of the driven roller.

4. In a stenciling machine, a feeding and guiding mechanism comprising a clip pivoted on a stud at one end, an eccentric connecting the opposite end of the said clip to a stud, a spindle mounted in said clip, a feed roller and ratchet wheel mounted on said spindle, a pending lever, a pawl on said lever spring approximated to said ratchet wheel, a mating idle feed roller, a tension arm rotatably adjustably mounted on one of said studs, a guiding disk mounted on said arm, and means for actuating said pending lever and pawl against the spring influence.

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