July 22, 1952

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AUTOMATIC FOIL-FEEDING MECHANISM FOR STAMPING MACHINES

2,604,387

Filed Aug. 12, 1949

3 Sheets-Sheet 1

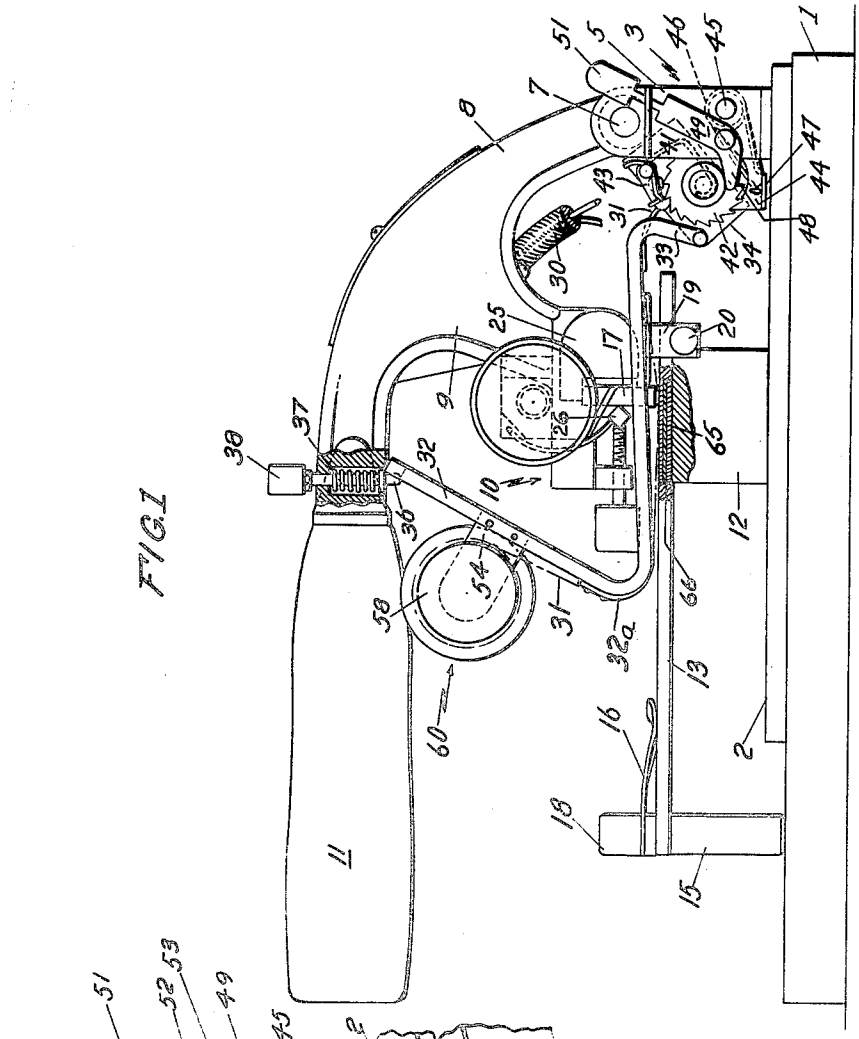


FIG 1

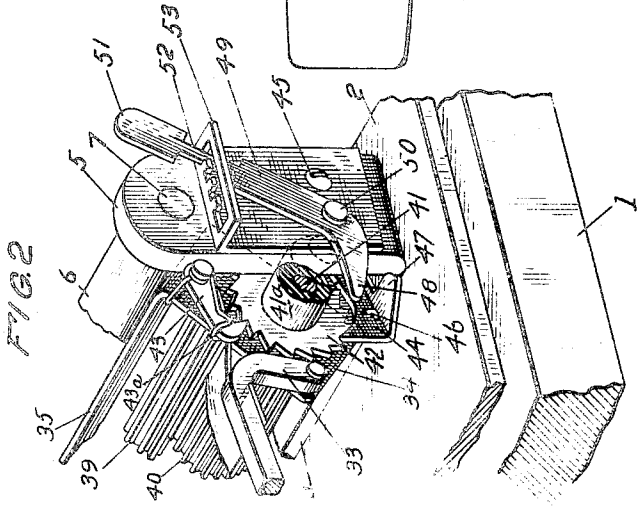


FIG 2

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FIG. 3.

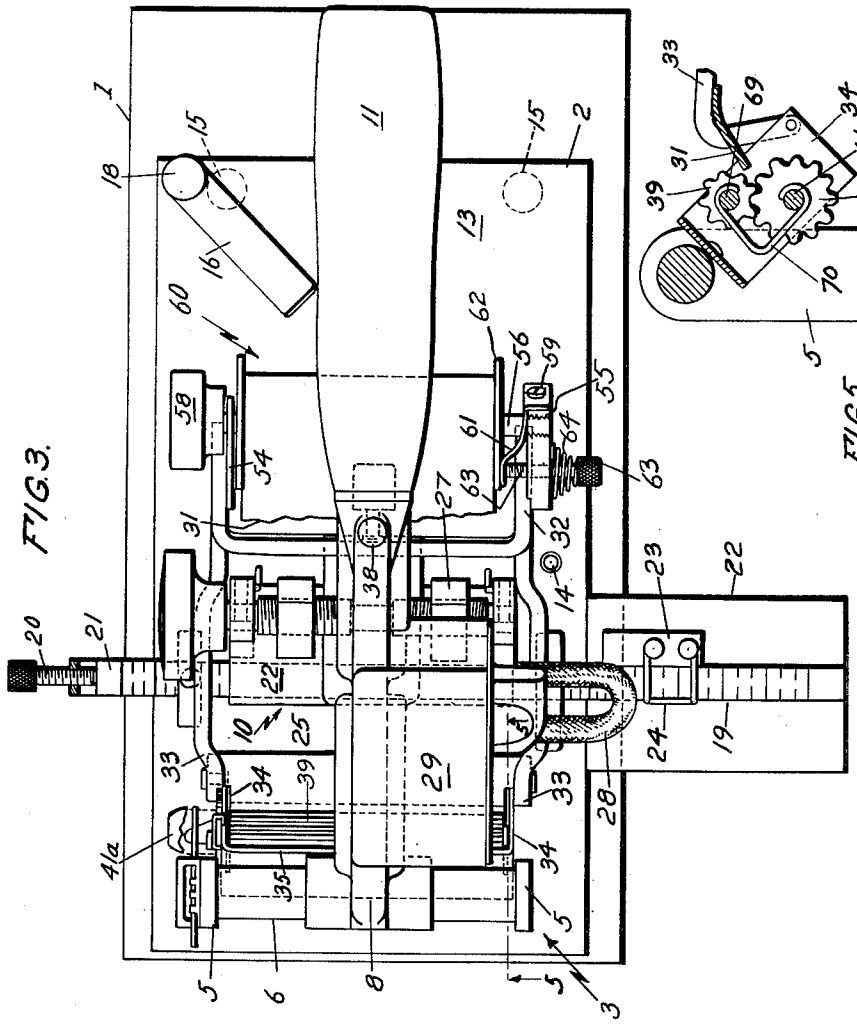
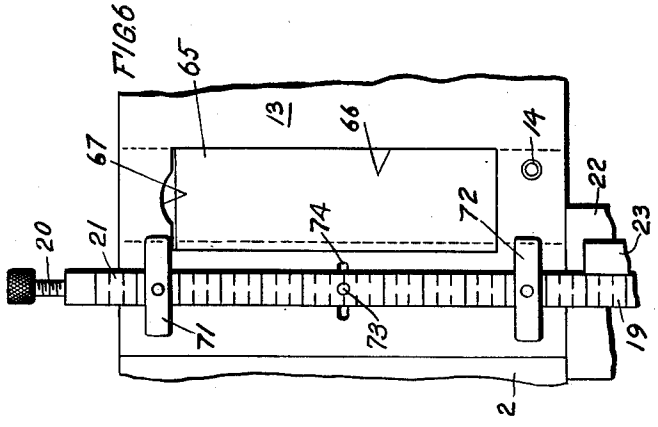


FIG. 5

FIG. 6



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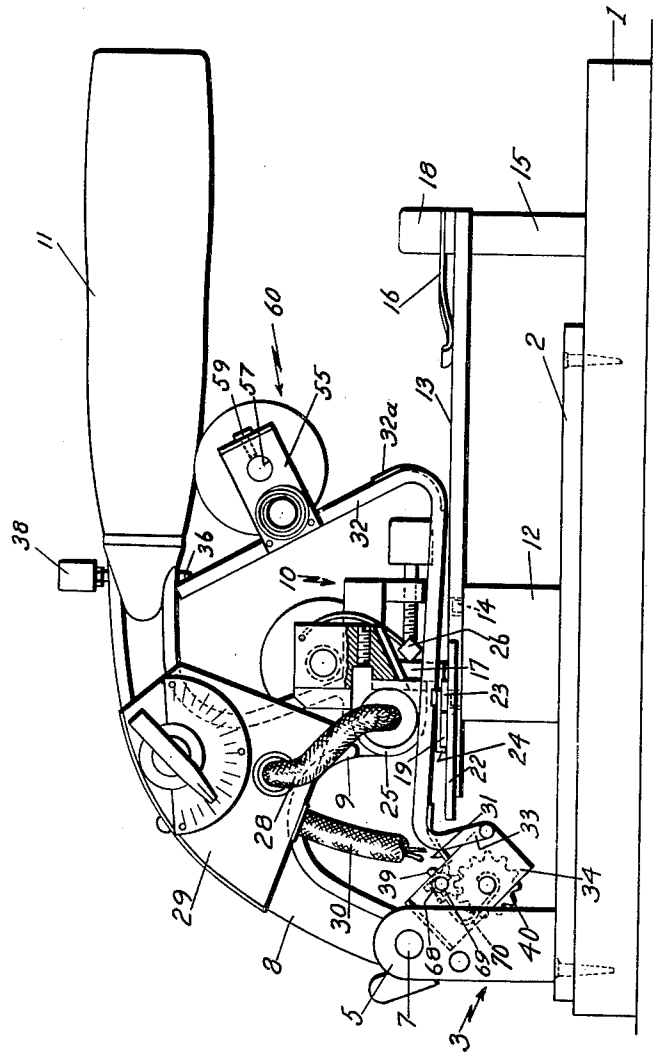


FIG 4

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AUTOMATIC FOIL-FEEDING MECHANISM FOR STAMPING MACHINES

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9 Claims. (Cl. 41—7)

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This invention relates to an automatic foil-feeding mechanism for stamping machines such as are used for branding gold letters into the surface of articles made of leather or other material.

In such stamping machines, particularly of the small manually operated type, a need has existed for an automatic foil-feeding mechanism which would be inexpensive, rugged and easily operated by the relatively unskilled operator by whom such machines are usually manipulated.

In the present invention, a frame is mounted on the movable arm and pallet structure of a stamping machine of the type as described and claimed in my copending application Ser. No. 771,483, filed August 30, 1947, for Stamping Machines, now Patent No. 2,591,369. This frame carries a spool of gold leaf or other printing foil, which foil is fed over the surface of the heated type mounted on the pallet by a novel feeding mechanism also mounted on said arm and pallet structure. The actuation of the feeding mechanism is produced by a simple yet novel adjustable detent means mounted on the base of the machine in a position to be engaged by the feeding mechanism as the arm and pallet structure is brought into the printing position.

The various novel aspects of this invention will be best understood from the following description of an exemplification thereof, reference being had to the accompanying drawings wherein:

Fig. 1 is a side elevation, with a portion of the handle broken away, of one form of the novel foil-feeding mechanism incorporated in a stamping machine;

Fig. 2 is an enlarged fragmentary prespective view showing the relationship between the adjustable detent means and driving ratchet on the driving roller of the feeding mechanism;

Fig. 3 is a top view of the machine as shown in Fig. 1;

Fig. 4 is a view of the other side of the machine from that shown in Fig. 1;

Fig. 5 is a fragmentary view, taken along line 5—5 of Fig. 3, showing the spring bias structure on the feeding rolls; and

Fig. 6 is a fragmentary view of the top of the supporting plate showing the impression pad structure.

The machine illustrated is of the type intended to brand identifying marks on leather or other articles and includes a sub base 1 upon which is mounted a base plate 2 to which is welded a frame 3. The frame 3 has a base portion 4, which may be welded or otherwise securely fastened upon the base plate 2, and a pair of upstanding side arms 5. A shaft 6 is rotatably mounted between the arms 5 by pins 7 received in corresponding bores in the arms 5. The shaft 6 carries an arm 8 which has formed thereon a branch arm 9 carrying a pallet 10 rigidly secured thereto. The arm 8 is extended to form a handle 11, whereby the entire arm assembly carrying the pallet 10 with it may be rotated about the pins 7.

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In order to provide a printing surface at the proper height, a pedestal 12 is also welded or otherwise secured to the base plate 1 and is in a location preferably directly below the pallet 10 in its stamping position. For the purpose of supporting relatively extended articles, a supporting plate member 13 is adapted to be placed upon the pedestal 12 and retained in proper position by pins 14 carried by the pedestal 12 and received into corresponding holes in the plate 13. The outer end of the plate 13 is supported by a pair of legs 15 secured to the plate 13 and resting on the sub base 1. To retain an article to be stamped, the plate 13 is provided with a spring arm 16 under which the article to be stamped may be slipped and thus, held firmly, receive the impression from the type 17 carried by the pallet 10. The spring arm 16 can be retained by some suitable means such as a screw 18. A rule and guide 19 may be clamped onto the plate 13 by a clamping screw 20 which forces a clamping block 21 into engagement with the edge of plate 13. The guide 19 is provided with an extension plate 22 which engages the other edge of the plate 13 and thus cooperates with the block 21 to retain the guide 19 in position. An end guide block 23 may be clipped into position at any desired location on the guide 19 by means of a spring clip 24 secured to the block 23. The article to be stamped may have one edge bearing against the guide 19 and an adjacent edge against the guide block 23 whereby said article is correctly oriented on the plate 13 so as to be stamped accurately.

The pallet 10 consists of a type-holding block 25 rigidly secured to the outer end of arm 9. The block 25 is formed as described and claimed in my copending application identified above to retain the type 17 in place by means of a clamping bar 26 and to center the type 17 by means of a pair of centering blocks 27.

In order to provide the proper surface beneath the stamping area, the plate 13 has inserted therein an impression pad 65, which may be made of suitable resilient material such as several layers of cardboard. Heretofore, relatively extend-

ed impression pads have been used, necessitating a removal of the guide 19 when replacing the impression pad when it has become worn. This has further necessitated the resetting of the guide 19 and other gauge members which is quite undesirable. In the present construction the size of the impression pad is limited in its dimensions to substantially the maximum area which may be covered by the type 17. Further, the impression pad 65 is received in an opening 66 in the plate 13 below the pallet 10. This plate 13 is also cut away at one side of the opening 66 at 67 in order that the impression pad 65 may readily be removed and replaced. A pin 73, secured to the rule and guide 19, projects into a slot 74 in the plate 13 so that the rule and guide 19 and its projecting arms 71 and 72 are limited in their possible positions of adjustment so as not to overlap the opening 66 or come into contact with the feed mechanism. The arms 71 and 72 prevent the article being stamped from overriding the rule and guide 19. Due to the above structure, once the guide 19 has been set and the impression pad 65 thereafter needs to be replaced, the guide 19 is not disturbed while the old pad is removed and a new pad inserted.

Before operating on the work in devices of this kind, it is usually desirable to heat the type to a relatively high temperature to secure the proper transfer of the gold leaf or other printing foil to the article to be stamped. For this purpose the block 25 has contained within it a heating element supplied with heating current through a cable 28 extending from any suitable and well-known adjustable current controlling means 29 which has its input current supplied from a cable 30.

The printing foils used in machines of this kind usually consist of a strip of paper or plastic coated on one side with a layer of gold leaf or a deposit of metal powder. Such a foil is indicated by the dot-dash line 31 in Fig. 1 and more directly at 31 in Fig. 3. As shown in Fig. 1, this foil must be interposed between the face of the type 17 and the surface of the pad 65 with the coated side of the foil next to the pad 65 whereby the coating is transferred by the heated type 17 to the article to be stamped. In order to support and feed the foil 31, a frame 32, made of an elongated metal bar bent into the desired shape, is pivoted at its ends 33 to the side walls 34 of a frame 35 rigidly secured to the shaft 6. Thus the frame 35 moves as a unit with the combined handle and pallet structure. The outer central portion of the frame 32 snaps under and is retained in position by a spring pressed detent 36 mounted on the arm 8 near the handle 11. The spring is shown at 37 in Fig. 1. The detent may be released from the frame 32 by a button 38. At the forward bend of the frame 32 is mounted a guiding plate 32a over which the foil 31 passes. This guiding plate also serves to brace and strengthen frame 32.

Two corrugated feeding rollers 39 and 40 are rotatably mounted on the side walls 34 of the frame 35. The foil 31 is adapted to be received between the feeding rollers to be advanced thereby. As will be seen most clearly in Fig. 4, the corrugations of the smaller upper roller 39 engage in the corrugations in the larger roller 40 in the manner of a pair of gears so that rotation of the roller 40 positively turns the roller 39. The foil 31 engaged by the corrugations is likewise positively advanced by such rotation. In order to accommodate different thicknesses of foil, the openings 68 in the plates 34 in which the shaft 69 of the roller 39 is received are slightly larger than the shaft itself as shown in Fig. 4. The two rollers 39 and 40 are resiliently urged toward each other by a pair of spring clips 70 which engages the opposite end of shafts 69 and 41 of the rollers 39 and 40. This structure at one of the rolls is shown most clearly in Fig. 5. This spring bias structure not only enables the device to accommodate foils of different thicknesses but also takes up any wear so that the feeding rollers 39 and 40 always firmly engage and feed the foil 31.

In order to produce the desired rotation of roller 40, that roller has the shaft 41, by which it is mounted in one of the side walls 34, extending through said side wall and provided with a ratchet plate 42. The shaft 41 may be provided with a head 41a for manual rotation of the roller 40. The ratchet plate 42 is normally held in position by means of a spring biased detent 43 pivoted to the side arm 34 and biased by a spring 43a. This arrangement prevents a counter-clockwise rotation of the feeding rollers 39 and 40 as viewed in Fig. 1 and thus prevents a retrograde motion of the foil 31. The feeding motion of roller 40 is produced by the engagement of the ratchet plate 42 with a detent pawl 44 pivotally mounted by a pin 45 in one of the side arms 5 of the frame 3. The detent pawl 44 is biased upwardly by a spring 46 coiled around the pin 45. The pawl 44 is provided with a side plate 47 adapted to engage a stop 48 as the pawl 44 moves upwardly by the spring 46 when the arm 11 is moved upwardly and carries the frame 35 together with the ratchet 42 away from the pawl 44. The stop 48 fixes the level at which the ratchet 42 stops in such upward movement.

The stop 48 is mounted at the outer end of an arm 49 pivoted by pin 50 to one of said side arms 5. The arm 49 carries at its upper end an arm 51 so that the position of said arm and of its stop 48 may be adjusted. The arm 49 is held in any one of a plurality of positions by having a reduced section 52 thereof receivable in notches formed in a plate 53 secured to said side arm 5.

Upon the side of the frame 32 adjacent its upper ends are fastened two arms 54 and 55 adapted to receive a rod 56 having one end threaded into a corresponding threaded opening 57 in arm 55. The other end of the rod 56 has a head 58 whereby the rod may be turned into position. The rod 56 is adapted to pass through and support a spool 60 upon which is wound the printing foil 31. The rod 56 is made removable as above described so that any desired printing foil may be placed in the machine. In order to exert a tension on the foil 31 so as to keep it in close contact with the type 17, a friction brake arm 61, held in place by set screw 59, is mounted on the arm 55 so that its outer end bears against an end plate 62 of the spool 60. The degree of pressure between the brake arm 61 and the end plate 62 may be regulated by a screw 63 threaded through the arm 55. A spring 64 interposed between the head of screw 63 and arm 55 tends to prevent screw 63 from turning unless manipulated by the operator.

The operation of the machine is as follows. The button 38 is pulled upward to release the frame 32 from the handle 11 and arm 8. Thereupon said arm and handle may be rotated upwardly, leaving the frame 32 resting on the plate 13. This exposes the pallet 10 upon which the

type 17 may then be assembled as described in my above-identified copending application. A selected spool of printing foil may then be inserted between the arms 54 and 55 and secured in place. At this point, the frame 32 may be swung up and snapped in position under the detent 36. Thereupon the end of the foil 31 is pulled over the guide plate 32*a*, over the face of the type 17 and then inserted between the feeding rollers 39 and 40. A few turns of the head 41*a* will pull the foil through the rollers and take up any slack in the foil against the tension of the brake arm 61. The cable 30 is then energized and the current controlling means 29 set for the proper degree of heating of the type. When the proper temperature has been reached, the stamping may begin. The article to be stamped is suitably fixed on the plate 13 and the handle 11 is lowered to bring the type 17 and foil 31 into engagement with that article. Just prior to the time the foil 31 engages the article, the ratchet 42 comes into position where the pawl 44 engages one of the ratchet teeth. Further rotation of the arm 8 forces the pawl 44 downward against the action of spring 46, and, at the same time, the pawl 44 rotates the ratchet plate 42 which turns the roller 40, advancing a fresh portion of the foil 31 over the type 17. This motion of the ratchet, feeding roller and foil ceases just as the coil comes into contact with the article to be stamped and further pressure on the handle 11 completes the stamping operation. When the handle 11 is subsequently raised, the ratchet 42 rises to permit the pawl 44 to rise to the level at which it is stopped by the stop 48.

It will be noted that the higher the pawl 44 rises, the sooner it will engage the ratchet 42 on the next stamping stroke. This means that the pawl 44 will engage a lower tooth of the pawl 42 and thus produce a greater rotation of the collar 40 and a greater feeding of the foil 31. Thus the position of adjustment of the arm 49 and its stop 48 adjusts the amount by which the foil 31 is fed on each stroke. This permits the feeding of the foil 31 to be matched to the size of type used for maximum utilization of the foil. It should also be noted that, by feeding a fresh area of foil onto the type immediately prior to the imposition of stamping pressure, an exact uniformity of stamping conditions is obtained irrespective of the interval of time elapsing between printing strokes.

This completes the description of the above embodiment of the invention in which many equivalents of the details described will suggest themselves to those skilled in the art.

What is claimed is:

1. A stamping machine comprising a base having a supporting surface adapted to support a member to be stamped, an arm rotatably mounted at one end thereof on said base, means mounted on said arm for supporting stamping type, means carried by said arm for supporting an elongated strip of printing foil in contact with the face of said type, which foil is to be moved over the face of said type, feeding means also carried by said arm for thus moving said foil, detent means mounted on said base in a position to engage and move said feeding means as said arm is rotated toward its stamping position, and means on said feeding means to be engaged by said detent means to actuate said feeding means to advance said foil over the face of said type.

2. A stamping machine comprising a base having a supporting surface adapted to support a member to be stamped, an arm rotatably mounted at one end thereof on said base, means mounted on said arm for supporting stamping type, means carried by said arm for supporting an elongated strip of printing foil in contact with the face of said type, which foil is to be moved over the face of said type, feeding means also carried by said arm for thus moving said foil, a ratchet connected to said feeding means to actuate said feeding means by motion of said ratchet, and a pawl mounted on said base in a position to engage and move said ratchet as said arm is rotated toward its stamping position.

3. A stamping machine comprising a base having a supporting surface adapted to support a member to be stamped, an arm rotatably mounted at one end thereof on said base, means mounted on said arm for supporting stamping type, means carried by said arm for supporting an elongated strip of printing foil in contact with the face of said type, which foil is to be moved over the face of said type, feeding means also carried by said arm for thus moving said foil, and means for actuating said feeding means to advance said foil over the face of said type just prior to the final stamping motion of said arm.

4. A stamping machine comprising a base having a supporting surface adapted to support a member to be stamped, an arm rotatably mounted at one end thereof on said base, means mounted on said arm for supporting stamping type, means carried by said arm for supporting an elongated strip of printing foil in contact with the face of said type, which foil is to be moved over the face of said type, a pair of feeding rollers rotatably mounted on said arm, a ratchet fixed to one of said rollers, and a pawl mounted on said base in a position to engage and move said ratchet as said arm is rotated toward its stamping position.

5. A stamping machine comprising a base having a supporting surface adapted to support a member to be stamped, an arm rotatably mounted at one end thereof on said base, means mounted on said arm for supporting stamping type, means carried by said arm for supporting an elongated strip of printing foil in contact with the face of said type, which foil is to be moved over the face of said type, feeding means also carried by said arm for thus moving said foil, a ratchet connected to said feeding means to actuate said feeding means by motion of said ratchet, a pawl mounted on said base in a position to engage and move said ratchet as said arm is rotated toward its stamping position, and means for adjusting the position of said pawl on said base, whereby the amount of movement of said feeding means for each actuation thereof may be adjusted.

6. A stamping machine comprising a base having a supporting surface adapted to support a member to be stamped, an arm rotatably mounted at one end thereof on said base, means mounted on said arm for supporting stamping type, means carried by said arm for supporting an elongated strip of printing foil in contact with the face of said type, which foil is to be moved over the face of said type, a pair of feeding rollers rotatably mounted on said arm, said rollers being corrugated with the corrugations thereof intermeshing with each other, a ratchet fixed to one of said rollers, and a pawl mounted on said base in a position to engage and move said ratchet as said arm is rotated toward its stamping position.

7. A stamping machine comprising a base having a supporting surface adapted to support a member to be stamped, an arm rotatably mounted at one end thereof on said base, means mounted

on said arm for supporting stamping type, a frame having a pair of side arms each pivoted at one end on said arm, means for supporting a spool of printing foil carried by said frame, the other end of said frame being detachably secured to said arm, said frame in its attached position having its side arms lying on opposite sides of the printing face position of said type with said type freely exposed through said frame to the member to be stamped, a guiding portion interconnecting said side arms and lying substantially in the plane of said printing face position and in advance of said printing face position, whereby said foil may be guided over said portion and thus across the face of said type, a pair of feeding rollers rotatably mounted on said arm on the other side of said printing face position from said guiding portion, a ratchet fixed to one of said rollers, and a pawl mounted on said base in a position to engage and move said ratchet as said arm is rotated toward its stamping position.

8. A stamping machine comprising a base having a supporting surface adapted to support a member to be stamped, an arm rotatably mounted at one end thereof on said base, means mounted on said arm for supporting stamping type, a frame having a pair of side arms each pivoted at one end on said arm, means for supporting a spool of printing foil carried by said frame, said frame in its attached position having its side arms lying on opposite sides of the printing face position of said type with said type freely exposed through said frame to the member to be stamped, a guiding portion interconnecting said side arms and lying substantially in the plane of said printing face position and in advance of said printing face position, whereby said foil may be guided

over said portion and thus across the face of said type, a pair of feeding rollers rotatably mounted on said arm on the other side of said printing face position from said guiding portion, a ratchet fixed to one of said rollers, and a pawl mounted on said base in a position to engage and move said ratchet as said arm is rotated toward its stamping position.

9. A stamping machine comprising a base having a supporting surface adapted to support a member to be stamped, an arm movably mounted with respect to said base, means mounted on said arm for supporting stamping type, means carried by said arm for supporting an elongated strip of printing foil in contact with the face of said type, which foil is to be moved over the face of said type, a pair of feeding rollers rotatably mounted on said arm by shafts extending into bearing surfaces carried by said arm, the bearing surface for one of said rollers being sufficiently larger than the shaft therein to permit an appreciable relative motion of said rollers toward and away from each other, spring means engaging said rollers for urging them into firm engagement with each other, said rollers being adapted to receive said foil between them.

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