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FOIL FEEDING DEVICE FOR STAMPING MACHINES

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Fig. 1.

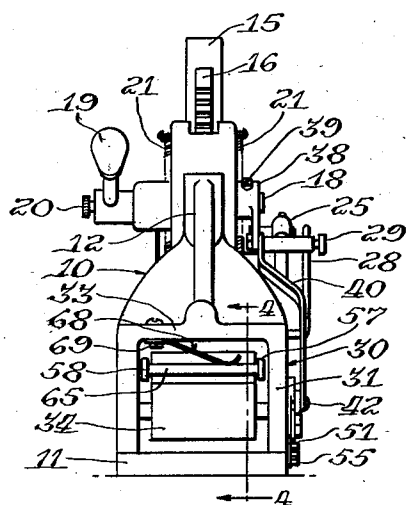


Fig. 2.

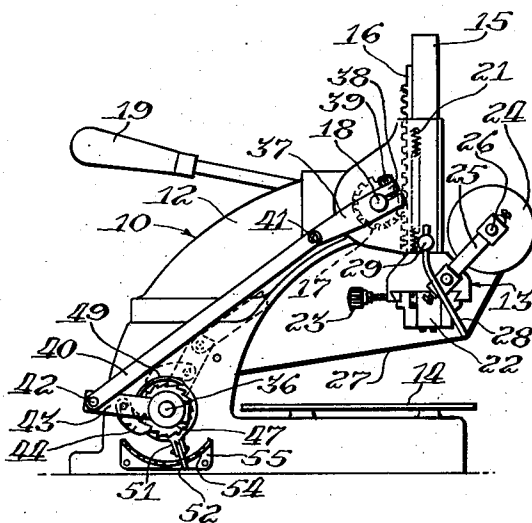


Fig. 3.

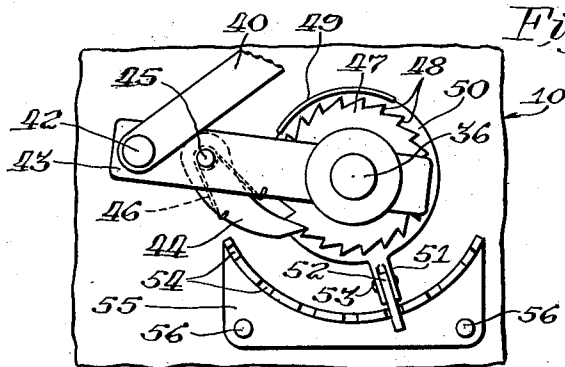


Fig. 4.

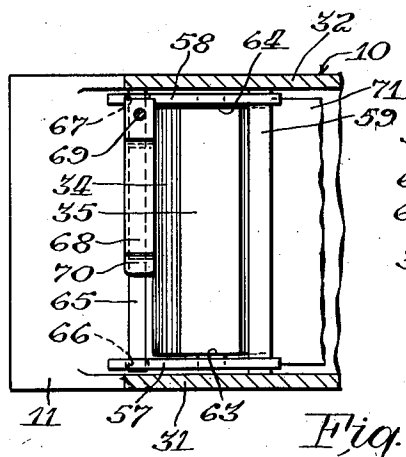
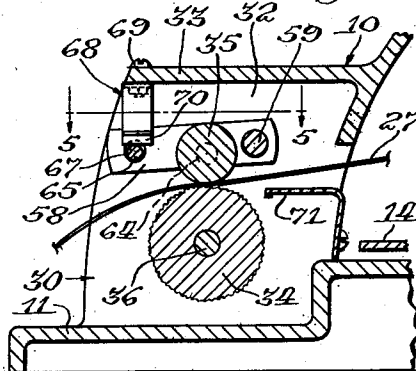


Fig. 5.

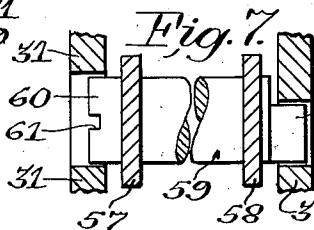
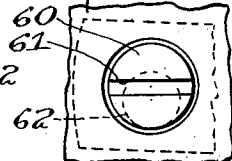


Fig. 7.

Fig. 6.



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FOIL FEEDING DEVICE FOR STAMPING MACHINES

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2 Claims. (Cl. 271-2.3)

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This invention relates to a new and improved foil feeding device for stamping machines.

There are a variety of stamping machines now on the market which employ foil such as gold foil in the imprinting and monogramming of items such as napkins, billfolds, fountain pen barrels and many other articles. Various feeding devices of foil have been employed on these prior stamping machines. However, very few of these machines have taken into account the variance in the amount of foil used when there is a change in the number of lines of type to be imprinted. Another inadequacy in prior machines was the inability of the machine to maintain the foil supply spool and the foil take-up spool in proper alignment so that the foil would be properly centered beneath the type and would not have a tendency to move to one side or the other.

It is therefore a principal object of this invention to provide a foil feeding device for printing machines in which the foil feed may be regulated to compensate for the number of lines of type to be imprinted and will therefore use foil to the best economical advantage.

An important object of this invention is the provision of means for adjusting the amount of foil feed commensurate with the number of lines of type to be imprinted whereby only that amount of foil will be used that is necessary to enable the type to imprint foil over its full surface.

Another important object of this invention is to supply an accurately adjustable device capable of varying the foil feed in an imprinting machine in increments of an amount equal to the width of one row of type.

A further object of this invention is to provide means wherein the movement of the stamping head will cause a corresponding movement of the foil, an amount equal to the width of the combined totals of the number of rows of type being imprinted.

A still further important object of this invention is to provide a means for maintaining the foil used in an imprinting press in proper alignment beneath the type to make the imprinting impression.

Another and still further important object of this invention is to provide cooperative milled rollers adapted to feed foil in a stamping machine and arranged and constructed whereby one of the rolls is spring mounted with respect to the other of the rolls to accomplish a resilient pressure of the one roll against the other roll, over the full length thereof and thereby affect a uniform feeding of the foil.

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Another and still further important object of this invention is to provide cooperative rollers for accomplishing foil feeding in a gold stamping machine in which the one of said cooperative rolls is mounted on spring mounted arms which are eccentrically pivoted on and with respect to a housing and thereupon make possible a minute adjustment of the one roll with respect to the other roll to maintain constant parallelism therebetween.

Other and further important objects of this invention will become apparent from the disclosures in the following specification and accompanying drawing.

In the drawing:

Figure 1 is a rear elevational view of the stamping machine employing the foil feed of this invention.

Figure 2 is a side elevational view of the device of Figure 1.

Figure 3 is an enlarged side-view detail of a portion of the device as shown in Figure 2.

Figure 4 is a sectional view taken on the line 4-4 of Figure 1.

Figure 5 is a sectional view taken on the line 5-5 of Figure 4.

Figure 6 is an enlarged side-view detail of the eccentric adjusting screw for the cooperative roller foil feed.

Figure 7 is an enlarged sectional view showing the eccentric adjusting screw of Figure 8.

As shown in the drawings:

The reference numeral 10 indicates generally a frame or supporting structure having a base 11 and an upwardly and forwardly extending C-shaped member 12 forming a support for a stamping head 13 which is reciprocable vertically between an upwardly disposed position as shown in Figure 2, and a platen 14 mounted on the base 11. The stamping head 13 includes an upwardly extending piston member 15, having a gear rack 16 on the rear side thereof. A gear wheel 17 mounted on a shaft 18 is adapted to engage the gear rack 16. Upon rotational movement of a handle 19 which is fixed to the shaft 18 by means of a set screw 20, the head 13 is moved downwardly toward the platen 14. A spring 21 normally holds the stamping head 13 in an upwardly disposed position such as shown in Figure 2. The stamping head 13 is adapted to carry the type holding stick 22. The type stick 22 is securely held in the stamping head 13 by means of a threaded set screw 23. A foil supply reel or spool 24 is mounted on bracket members 25 extending forwardly from the stamping head 13.

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The spool 24 is rotatably mounted on a shaft 26. A supply of foil such as gold foil for effecting imprinting or stamping is mounted on the spool 24 and is adapted to pass beneath the stamping head 13 as shown at 27, and thereupon pass outwardly through the rear of the stamping machine. A guide member 28 is anchored at 29 on the stamping head and provides for the uninterrupted feeding of foil 27 beneath the stamping head and thereupon out between the guide members at the rear of the stamping machine.

The present invention relates particularly to the feeding of the foil 27 out the rear of the machine. The rear side of the supporting structure 10 comprises a rectangularly framed opening 30 having spaced vertical side members 31 and 32 between which the foil 27 passes. The frame 30 is completed by a top member 33 and the base 11 forms the bottom side thereof. A pair of cooperative rollers 34 and 35 have transversely milled surfaces for the purposes of securely gripping the foil 27 as indicated in Figure 4 of the drawing. The rolls 34 and 35 are mounted between the vertical side members 31 and 32 of the rectangular frame at the rear of the supporting structure of the stamping machine. The milled roller 34 is mounted on a shaft 36 which is journally mounted in the sides 31 and 32 of the frame structure. The roller 34 is the drive roller and is the sole means for feeding the foil.

The driving means for the roll 34 is obtained from the arcuate swinging movement of the handle 19 which causes vertical reciprocation of the stamping head 13. The shaft 18 carrying the gear 17 for accomplishing vertical movement of the head has mounted thereon on the end opposite the handle 19 a short link member 37 which has a forked clamping end 38. The clamp 38 is drawn together by a screw 39 for drawing the link tightly to the shaft 18 so that rotation of the shaft causes simultaneous rotation and thus swinging of the link 37. A longer link member 40 is pivotally joined at 41 to the outer end of the short link 37 and is itself pivotally attached at its other end at 42 to a second short link 43, which is journally mounted over the shaft 36 so that it rotates separately therefrom.

As best shown in Figure 3, the link 43 carries a pawl member 44 which is pivotally attached to the link 43 at 45. A spring 46 is arranged in such a manner that the pawl 44 tends to swing toward the short link 43. A ratchet wheel 47 is fixedly mounted on the shaft 36 so that upon rotation thereof the roller 34 will also be rotated. The pawl 44 is adapted to engage the teeth 48 of the ratchet wheel and upon swinging movement of the link 43 about its journal mounting on the shaft 36, the pawl will engage the teeth and move the ratchet wheel 47 in a counterclockwise direction as viewed in Figure 3. It should be understood that upon a rotating of the handle 19 to effect a downward movement of the stamping head 13, the short link 43 will be raised in a clockwise direction causing the pawl 44 to be similarly raised and the operative end of the pawl will ride over the inclined edges of the teeth 48, whereupon no movement will be imparted from the pawl to the ratchet. However, upon the return movement of the handle 19 to its position as shown in Figure 2, after the stamping head has been moved down to the platen 14, the pawl will then pick up the ratchet teeth and engage the right angle edges of the ratchet and cause rotation of the ratchet wheel and thus also the milled roller 34. A full

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movement of the handle 19 will effect a constant movement of the pawl 44 and without other interference will effect a like rotation of the ratchet 47 and thus the roller 34 each time the handle is operated to cause imprinting of foil on some object.

In the use of this stamping machine it is possible to use a type stick which will hold one, two, three or even more lines of type, and thus it is not always necessary or even desirable to advance the foil a constant distance each time an impression is made. In order to effect a most economical usage of foil it is therefore the purpose of this machine to advance the foil a distance commensurate with the number of lines of type used in the stamping head. An arcuate shield 49 is adapted to extend around a portion of the peripheral teeth 48 of the ratchet wheel 47 and by inter-position between the ratchet wheel and the pawl 44, the effectiveness of the driving of the ratchet wheel by the pawl is thus controlled. The shield 49 is mounted on a disc like member 50 which is in turn journalled on the shaft 36 on the outside of the frame supporting structural member 31. A downwardly depending forked arm 51 of the disc 50 carries a latch member 52 which is pivoted at 53 on the forked arm 51 for the purpose of engaging any one of a series of arcuately positioned notches 54 in a bracket member 55 mounted on the side wall of the supporting structure 10 by rivets or the like 56. It will be seen that the shield 49 is adjustable in its position relative to the ratchet wheel 47, and movement of the ratchet wheel by the pawl 44 which has a constant throw may thus be varied by the various positions the shield 49 may assume. If, for example, two rows of type are employed, then it is desirable to set the shield 49 at the second notch from the right hand side of the arcuate bracket 55. In this setting and with proper calibration of the notches 54 the effective movement of the ratchet wheel will be two teeth and thus the corresponding movement of the milled roller 34 which drives the discharge of the foil 27 will be equal to two teeth of the ratchet wheel 47, which is identical to two rows of type as shown in the type stick 22. Complete economy of foil used is accomplished merely by setting the shield 49 to the proper position between the ratchet wheel 47 and the driving pawl 44 for causing discharge movement of the foil 27 only to that amount determined by the number of rows of type used in the stamping head. The dashed line position of the pawl 44 and its respective connecting link 43, is shown in Figure 2 of the drawings wherein the pawl 44 is on top of the shield 49.

The milled roller 34 is the driving factor for the foil 27. However, the cooperative milled roller 35 is for the purpose of maintaining the foil in driving relationship with the roller 34, and it must be provided with a resiliency and yieldability to compensate for various thicknesses or irregularities in the foil being used in the imprinting process.

A pair of spaced arms 57 and 58 are substantially parallel one to the other and each is disposed adjacent one of the side members 31 and 32 respectively of the rectangular frame 30 in the rear of the stamping machine. The ends of the arms 57 and 58 which are disposed forwardly in a direction defined by the forward end of the stamping machine are supported by a shaft 59 which as best shown in Figure 7 is journally supported within the members 31 and 32. The

shaft 59 is provided with a concentric end 60 for its journal mounting within the frame member 31. The end 60 is further provided with a slot 61 for reception of a screw driver or like tool to effect rotation of the shaft 59. The other end of the shaft 59 is equipped with an eccentric end portion 62 for its journal within the frame member 32. It will be apparent that as the shaft 59 is rotated as indicated by means of a tool engaging the cross slot 61, the arm 58 will have relative longitudinal movement with respect to the arm 57 so that very accurate alignment of the arms 57 and 58 may be had with respect to the supporting structure 10 of this stamping machine.

The roll 35 is provided with shaft members 63 and 64 for journalling within the arms 57 and 58 respectively at points spaced rearwardly of the pivotal attachment of the arms within the supporting structure 10. The milled roller 35 is thus capable of arcuate swinging movement about the shaft 59 and by means of the eccentric adjusting means associated with this shaft 59, the milled roller 35 can be accurately adjusted for parallelism with respect to its cooperative driving milled roller 34, whereby the foil 27 fed therebetween has no tendency whatever to have sidewise movement.

The rearward ends of the arms 57 and 58, or at least those ends of the arms disposed opposite the ends of pivotal attachment on the shaft 59 carry a loosely journalled shaft 65. The shaft 65 is disposed parallel to the pivotal shaft 59 and also the milled cooperative roller 35. The cross shaft 65 is journalled within openings 66 and 67 in the arms 57 and 58 respectively. These openings are of considerably greater diameter than the outer diameter of the shaft 65 and thus permit relative angular tilting of the arms 57 and 58 without constricting interference by reason of the shaft 65. A leaf spring 68 is anchored by means of a bolt or the like 69 to the top portion 33 of the frame supporting structure 10. The spring 68 has a downwardly curved portion 70 adapted to bear downwardly against the shaft 65 substantially midway between the ends thereof as best shown in Figure 1. In view of this particular construction it is now evident that the foil 27 is fed rearwardly from its source of supply 24, beneath the stamping head 13, and thereupon outwardly through the rearward end of the machine over a guiding or feeding shelf member 71. The foil passes through the cooperative feeding rollers 34 and 35 and the roller 35 yields to assume any position dependent upon arising contingencies. Should the foil be of greater thickness at one side than at the other side, the roller 35 will be able to raise at that one side and still maintain contact at the thin side of the foil.

It is believed that herein is provided a novel feeding means for foil imprinting machines. The adjustable means for effecting variable drive of the foil in combination with the means for effecting accurate parallelism between the cooperative milled driving rollers and the yieldably floating milled roller at the top of the cooperative rollers combine to form a complete and very desirable foil imprinting machine.

I am aware that numerous details of construction may be varied throughout a wide range without departing from the principles disclosed herein, and I therefore do not propose limiting the patent granted hereon otherwise than as necessitated by the appended claims.

What is claimed is:

1. A foil feeding mechanism for foil imprinting machines comprising a supporting structure having spaced portions, a pair of cooperative rolls, the first of said rolls journally mounted in said supporting structure and rotatably driven, means mounting the second of said rolls for movement toward and away from the first of said rolls, spring means normally urging the second of said rolls to a contacting position with the first of said rolls, said means mounting the second of said rolls including separate spaced apart arms, mounting means for each of said arms for pivotal attachment to said supporting structure at spaced apart portions thereof, said second roll carried by said spaced apart arms at points spaced from their pivotal attachments, said mounting means including a shaft spanning said spaced portions of the supporting structure, said shaft having one end thereof concentrically journalled in one portion of the supporting structure and the other end thereof having an eccentric extension and journalled in the other spaced portion of the supporting structure, and means for rotating said shaft whereby the arm adjacent the eccentric extension may be shifted from its original relationship with respect to the other arm and thereupon the second of said rolls may be accurately adjusted to parallelism with respect to the first of said rolls.

2. A foil feeding mechanism for foil imprinting machines comprising a supporting structure having spaced portions, a pair of cooperative rolls, the first of said rolls journally mounted in said supporting structure and rotatably driven, means mounting the second of said rolls for movement toward and away from the first of said rolls, spring means normally urging the second of said rolls to a contacting position with the first of said rolls, said means mounting the second of said rolls including a pair of separate spaced apart arms, mounting means for each of said arms for pivotal attachment to said supporting structure, said second roll carried by said separate spaced apart arms at points spaced from their pivotal attachments, a cross shaft loosely journalled in the ends of said separate pair of spaced apart arms opposite their pivotal attachment, and said spring means including a leaf spring anchored to said supporting structure and arranged and constructed to bear against a central portion of said cross shaft, whereby the second of said rolls yieldingly contacts the first of said rolls regardless of irregularities in thicknesses of foils used.

PETER J. HAHN, Sr.

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