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J. R. THOMAS
SHEET EJECTING MECHANISM IN BED
AND PLATEN PRINTING MACHINE

2,605,702

Filed May 11, 1949

2 SHEETS—SHEET 1

Fig. 1.

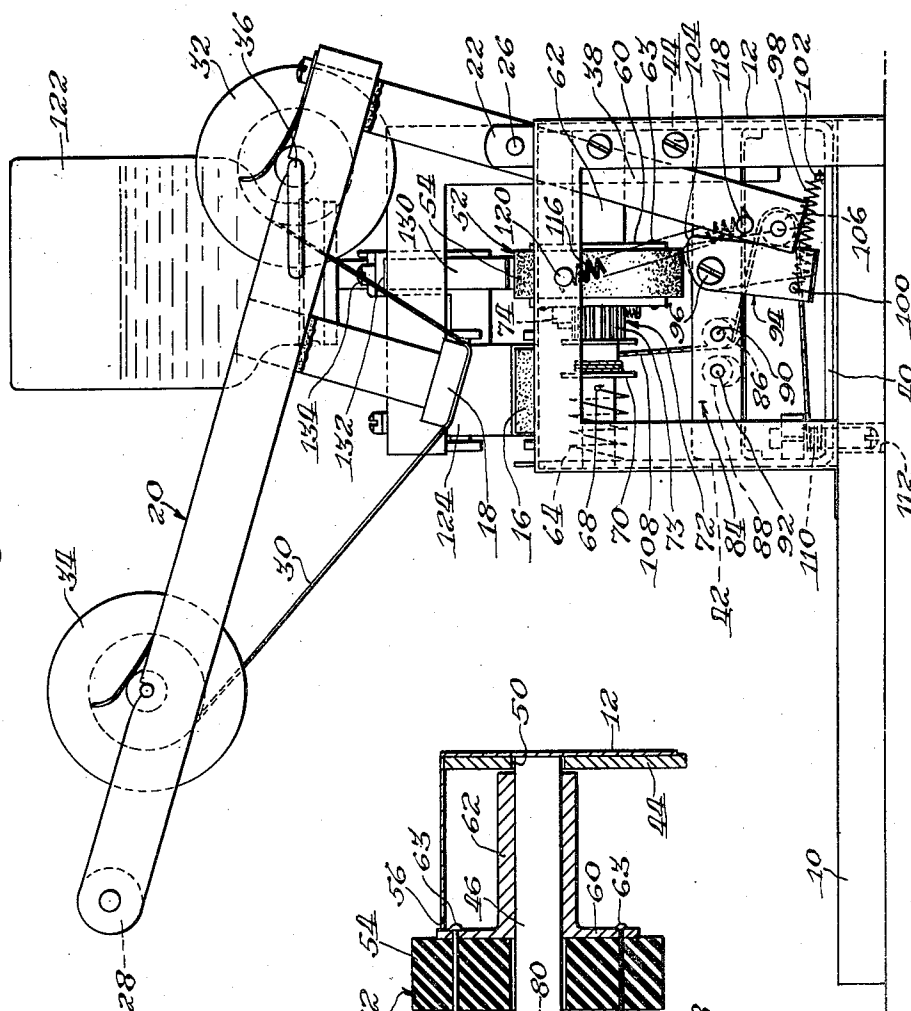
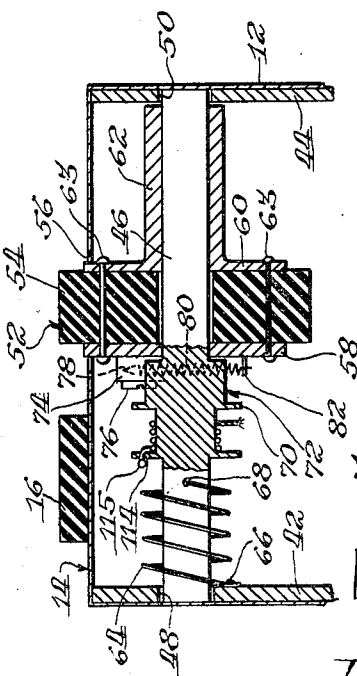


Fig. 3.



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2 SHEETS—SHEET 2

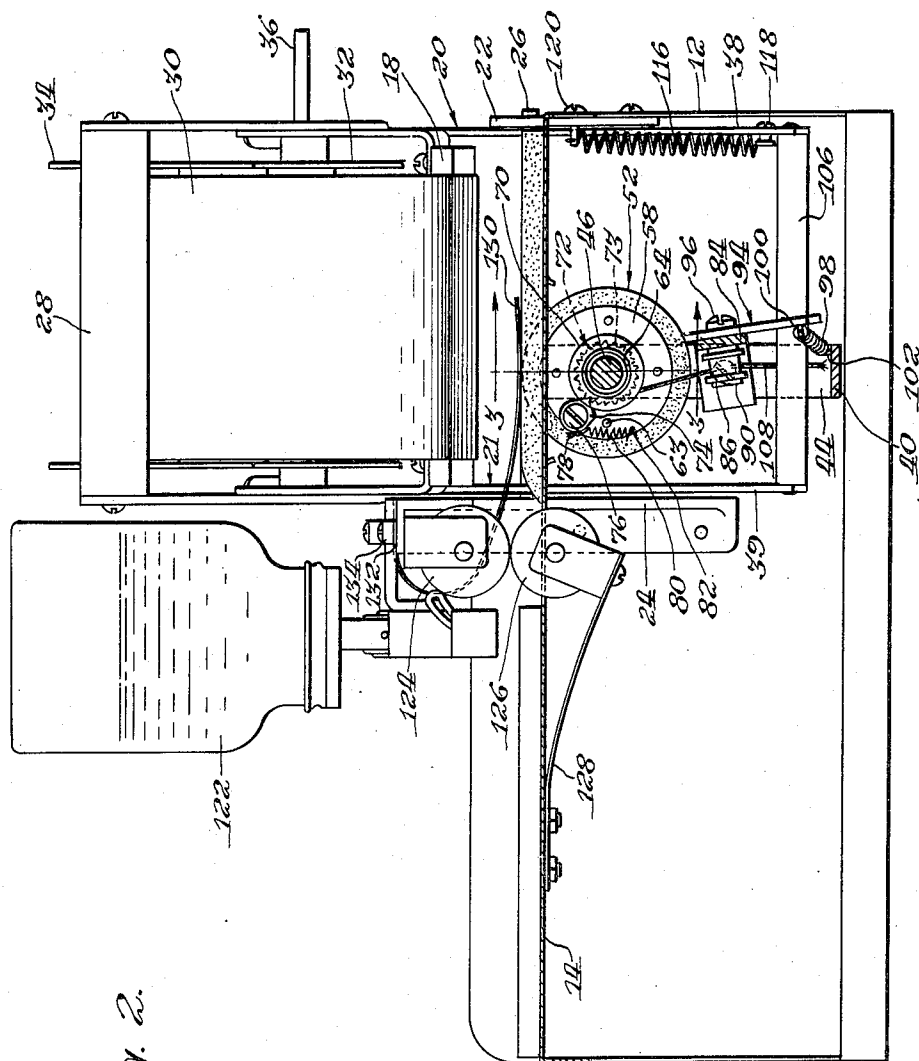


Fig. 2.

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UNITED STATES PATENT OFFICE

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SHEET EJECTING MECHANISM IN BED AND
PLATEN PRINTING MACHINESJames R. Thomas, Arlington Heights, Ill., assignor
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12 Claims. (Cl. 101—287)

1

This invention relates to a new and improved article ejecting mechanism for imprinting machines.

Imprinting or addressing machines such as shown in the copending application entitled Addressing Machine having Serial Number 63,421 and filed December 3, 1948, now Patent No. 2,542,443, require the imprinted articles to be manually withdrawn from the machine prior to insertion of a succeeding articles to be imprinted.

It is therefore a principal object of this invention to provide automatic means for causing ejection of an article after it has been imprinted.

An important object of this invention is the provision of means in conjunction with an addressing machine for utilizing the movement of the stamping head to transmit energy to an ejecting mechanism for causing automatic discharge of an addressed article such as a card or envelope.

A further important object of this invention is to supply time delay means for the commencement of operation of the article ejecting mechanism whereupon the stamping or imprinting head is completely withdrawn from the article before the article is ejected.

Another important object of this invention is to provide a mechanism responsive to vertical swinging movement of an imprinting machine head for ejecting an article previously imprinted.

Another and further important object of this invention is the provision of a spring motor energizable by movement of a stamping machine imprinting head and means for transmitting the rotary power of the spring motor to an article ejecting wheel.

Another and still further important object of this invention is to provide brake means for normally preventing rotation of an article ejecting wheel and means associated with a stamping head for effecting release of the brake means only when the stamping head is in its uppermost or non-printing position.

A still further object of this invention is the supplying of a rubber covered article ejecting wheel located adjacent the surface of a platen on an addressing machine and spring means for holding an article to be ejected down on said rubber covered wheel.

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

In the drawings:

Figure 1 is an end view of the addressing ma-

2

chine incorporating the article ejecting mechanism.

Figure 2 is a front elevational view partially in section of the machine of Figure 1.

Figure 3 is an enlarged sectional view taken on the line 3—3 of Figure 2.

As shown in the drawings:

The reference numeral 10 indicates generally a base upon which the machine of this invention is mounted. A housing or supporting structure 12 is carried on the base 10 and is equipped with a top or platen 14. On the platen is mounted a rubber strip 16 against which a stamping head 18 is adapted to be pressed.

The stamping head 18 is mounted on a pair of spaced L-shaped arms 20 and 21. The arms are held rigidly spaced apart by the stamping head 18 and are pivoted for swinging movement toward and away from the platen on spaced brackets 22 and 24 forming a part of the supporting structure 12. A hinge pin 26 is adapted to pass through the brackets 22 and 24 and the L-shaped arms 20 and 21. The spacing of the arms 20 and 21 is further facilitated by a cross handle 28 mounted at the forward ends of the arms. A copy roll 30 is carried in a supply reel 32 and passes down and beneath the stamping head 18 and is attached to a take-up reel 34. A hand crank 36 is adapted to rotate the supply reel 32 and rewind the copy roll 30 onto the supply reel from the take-up reel. This particular construction and apparatus is shown more fully in the copending application mentioned above.

The portions of the L-shaped arms which depend beneath the hinge pin 26 and the platen 14 are designated by the numerals 38 and 39. These depending portions 38 and 39 of the L-shaped arms are swingable within the housing or supporting structure 12. As best shown in Figure 1 a U-shaped supporting strap 40 is fixed by any suitable means such as welding to the supporting structure 12. The upwardly extending legs of the U strap are designated by the numerals 42 and 44. As shown in the enlarged sectional view of Figure 3 these U legs 42 and 44 carry a shaft 46 for free journaled rotation within aligned openings 48 and 50. The aligned openings 48 and 50 are relatively close to the tops of the U legs.

An article ejecting wheel 52 is journaled on the shaft 46 and has a rubber body 54 extending upwardly through an opening 56 in the platen 14. It should be noted that the upper extension of the wheel 52 is substantially equal in height

level to the height of the rubber strip 16 against which the stamping head 18 is compressed. The wheel 52 is used as an article ejecting wheel capable of moving those articles which have been imprinted from their position on the platen beneath the stamping head 18. The wheel 52 in addition to having a rubber cylindrical body section 54 is equipped with metal side plates 58 and 60. The side plate 60 has an integral elongated bearing sleeve 62 which provides a substantial bearing surface for the wheel 52 on the shaft 46. The wheel 52 is held together as a unit by rivets or the like 63 which pass through the side plates 58 and 60 as well as the intermediate rubber section 54.

A spring 64 surrounds one portion of the shaft 46 and is anchored at 66 on the U leg 42. The other end of the coil spring 64 is anchored at 68 on the shaft 46. It will thus be understood that when the shaft 46 is rotated against the action of the spring 64 there will be a normal tendency of the spring to unwind and turn the shaft 46 in the opposite direction from which it was originally turned. In other words the shaft 46 will always tend to resume its original position. Thus the shaft 46 and the spring 64 with its particular anchoring mountings constitutes a spring motor through which the article ejecting wheel of this invention obtains its rotation.

A winch or spool formed integrally with the shaft 46 is designated by the numeral 70. Positioned adjacent the winch 70 and forming an integral part of the shaft 46 and also the winch 70 is a ratchet wheel 72 having regular ratchet teeth 73. The ratchet wheel 72 terminates closely adjacent the freely journaled article ejecting wheel 52. A pawl 74 is hinged on a screw shaft 76 which threadedly engages wheel 52 and particularly side plate 58 thereof. A hook 78 is formed integrally with the pawl and extends beyond the pivotal attachment defined by the shaft 76. A spring 80 is anchored on the hook 78 and extends downwardly to a post 82 projecting from the side plate 58 of the article ejecting wheel 52. The spring 80 thus normally urges the pawl 74 into engagement with the ratchet wheel teeth 73. The pawl and ratchet just described will effect rotation of the article ejecting wheel 52 by the shaft 46 when the shaft is rotating in one direction, but not when the shaft is rotating in the other direction. Thus the pawl and ratchet provide a one-way clutch device.

As best shown in Figure 1 a cross brace member 84 is welded or otherwise fastened to and between the spaced U member legs 42 and 44. The brace is positioned substantially midway between the top and bottom of the housing 12. The cross brace 84 in addition to providing rigidity to the structure of the device of this invention is adapted to support a pair of closely spaced guide pulleys 86 and 88. Cap screws 90 and 92 hold the pulleys 86 and 88 respectively onto the brace 84 and simultaneously provide journal shaft supports for the pulleys. The screws 90 and 92 are maintained in a position to permit unhindered rotation of the pulleys. In addition to the pulleys the cross brace carries a brake arm 94. A cap screw 96 is adapted to hold the brake arm to the brace 84 and is loose enough to permit swinging of the brake arm about the cap screw as a hinge. A spring 98 is fastened to a pin 100 on the lower extension of the brake arm 94 and at its other end the spring is an-

chored to a post member 102 on the U member 40. The upper end of the brake arm designated by the numeral 104 is normally in contact with the lower periphery of the wheel 52 thus preventing rotation of that wheel. As best shown in Figure 2 a cross rod or bar 106 joins the lower ends of the depending arms 38 and 39 of the L-shaped members 20 and 21. This rod 106 is adapted to engage the lower depending portion of the brake arm 94 and by so doing shifts the arm about its hinge 96 against the action of the spring 98 to release the brake from the article ejecting wheel 52.

A cable 108 is fastened at one end to a screw member 110 mounted on the supporting structure. The member 110 acts as an adjustable winch. An opening 112 in the base board 10 permits engagement of the screw member by a screw driver or the like to thus vary the effective length of the cable 108 by rotation thereof. The cable may be wound on the screw winch 110 so that its operating length may be anything desired. The cable extends rearwardly and is passed around the rod 106 thereupon coming forwardly to a position between the pair of guide pulleys 86 and 88 and thence moves upwardly to the winch 70. The winch is provided with a hole 114 in the side flange thereof through which the cable may pass and be knotted as shown at 115 to hold it fixed with respect to the winch.

As best shown in Figure 1 a spring 116 is attached to the lower end of the arm 38 at 118 and at its upper end is attached to the supporting structure 12 at 120. The spring thus normally urges the stamping head upwardly away from the platen 14.

A reservoir tank 122 carries an ink dissolving solution which is adapted to be applied to the article to be imprinted by means of the cooperative roller members 124 and 126 as best shown in Figure 2. This apparatus and particularly the application of the solution to the envelopes or cards to be addressed is shown more specifically in the compending application mentioned above. The lower roller member is under pressure by means of the leaf spring 128 normally urging it upwardly against the roller 124. Similarly a leaf spring 130 is anchored on the supporting structure 12 at 132 by means of a screw member 134 and cooperates to hold articles being imprinted down on the ejecting wheel 52.

In operation, cards or envelopes or the like are adapted to be inserted along the platen 14 whereupon the rolls 124 and 126 apply ink dissolving solution to the article to be imprinted and the article is moved to a position beneath the stamping head and over the rubber strip 16. The article is now under pressure of the leaf spring 130 and keeps the article placed in proper imprinting position as well as in rolling contact with the ejecting wheel 52. The stamping head 18 is then moved downwardly by the handle 28 onto the card or envelope by a manual swinging of the L-shaped arms. Immediately upon moving the stamping head downwardly along the copy roll 30 for transfer of the imprinted matter thereon to the card or envelope to be addressed the brake arm 94 is under the action of the spring 98 and the wheel 52 is prevented from rotating. Concurrently with the releasing of the brake arm 94 the cable 108 is pulled downwardly from the winch 70 by reason of the rod 106 moving toward the rearward end of the machine in an arcuate path about the hinge pin 26. This causes the winch 70 to rotate as the several wind-

5

ings of the cable are removed therefrom and simultaneously the shaft 46 rotates causing the spring 64 to wind up or in other words to be placed under compression. Similarly the ratchet 72 rotates but does not impart rotation to the wheel 52 because the pawl 74 is arranged to slip over the ratchet teeth in that direction of rotation of the ratchet wheel 72. When the winch 70 is unwinding by reason of the withdrawal of the cable therefrom the pawl and ratchet will not clutch or join the ratchet wheel 72 with the article ejecting wheel 52 to cause concurrent rotation. Thus when the shaft 46 rotates by an unwinding of the cable from the winch 72 the ejecting wheel is stationary. However, the spring motor is energized with rotary motion by a winding up of the spring 64. Immediate unwinding of the shaft 46 and a rotation of the ejecting wheel is prevented by reason of the brake 94 having its portion 104 engaging the wheel 52 and preventing any rotation thereof. However, as the stamping head 18 is moved away from the platen and the article previously imprinted, the cross rod 106 strikes the bottom of the brake arm 94 causing a release of the brake and quick spinning of wheel 52 to automatically move the article just imprinted in a rightward direction off the platen 14. It is very essential to have the time delay between the imprinting of the article and the ejecting of the article for the reason that should the ejecting wheel 52 immediately actuate upon the stamping head making its impression on the article over the platen the imprinted matter would invariably be smeared and would prevent continued use of the copy roll 30. It is thus an important factor in the successful operation of this machine to brake the ejecting wheel 52 until the stamping head 18 is moved fully clear of the imprinted matter and thereafter effect a releasing of the brake member 94 by the cross rod 106. The spring arm 130 maintains the envelope or card in contact with the wheel 52 and after the brake 94 is released the pawl and ratchet lock up to impart rotation from the shaft 46 and its spring motor to the ejecting wheel 52. The shaft is permitted to unwind to drive the wheel 52 after it had been previously wound by the downward movement of the stamping head. The article just addressed is thereupon automatically ejected when the stamping head is moved clear of the article so that there will be no smearing of the article.

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. An ejecting mechanism in combination with an article imprinting machine comprising a supporting structure, a platen carried on said supporting structure and extending in a generally transverse direction, an arm pivotally mounted on the supporting structure on an axis substantially parallel to the platen, a stamping head mounted on said arm in a manner to engage said platen when the arm is swung downwardly about its hinge, a longitudinally extending shaft carried on said supporting structure beneath said platen, an article moving wheel journaled on said shaft and having a portion thereof extending above said platen, means on said shaft for accumulating rotary energy by downward movement of said stamping head arm, brake means nor-

6

mally engaging said wheel and preventing rotation, means for imparting the accumulated rotary energy to said wheel, and brake release means associated with said pivotally mounted arm whereby when the stamping head is in its up out of platen engaging position the brake release means is adapted to release the brake means from said wheel and thus permit rotation of said wheel and a lateral ejecting of the article just imprinted.

2. An ejecting mechanism as set forth in claim 1 in which the means for imparting the accumulated rotary energy to said wheel comprises a pawl and ratchet.

3. A device as set forth in claim 1 in which the article moving wheel is equipped with a rubber periphery for more effective ejection of imprinted articles.

4. A device as set forth in claim 1 in which a yieldable article hold down means is mounted on the supporting structure above the platen and arranged and constructed to hold articles down against the article moving wheel.

5. An ejecting mechanism as set forth in claim 1 in which the means on the shaft for accumulating rotary energy includes a spring motor.

6. A device as set forth in claim 5 further including cable means extending from the pivoted arm to the spring motor whereby when the arm is arcuately moved the spring motor is wound by the cable means.

7. An ejecting mechanism in combination with an article imprinting machine comprising a supporting structure, a platen carried on said supporting structure and extending in a generally transverse direction, an arm pivotally mounted on the supporting structure on an axis substantially parallel to the platen, a stamping head mounted on said arm in a manner to engage said platen when the arm is swung downwardly about its hinge, a longitudinally extending shaft carried on said supporting structure beneath said platen, an article moving wheel journaled on said shaft and having a portion thereof extending above said platen, means on said shaft for accumulating rotary energy by downward movement of said stamping head arm, brake means normally engaging said wheel and preventing rotation, means for imparting the accumulated rotary energy to said wheel, and brake release means associated with said pivotally mounted arm whereby when the stamping head is in its up out of platen engaging position the brake release means is adapted to release the brake means from said wheel and thus permit rotation of said wheel and a lateral ejecting of the article just imprinted, said means on the shaft for accumulating rotary energy including a coil spring anchored at one end on said supporting structure and wound around said longitudinally disposed shaft, winch means journaled on said shaft and affixed to the other end of said coil spring, a cable affixed at one end to said winch whereby said coil spring normally tends to wind said winch and cable in one direction of rotation, said cable arranged and constructed with respect to said pivotally mounted arm that downward swinging movement of the arm causes a pulling of the cable from the winch, and thus also a rotational movement of the winch which winds the coil spring to put it under considerable rotary tension.

8. A device as set forth in claim 7 in which the means for imparting the accumulated energy to said wheel comprises one-way clutch means

on said wheel and cooperative clutch means on said winch, said clutch means arranged and constructed whereby when the coil spring is wound up no rotary motion will be transmitted therebetween but when the coil spring is released the rotary motion will be transmitted between the clutch means so that the article moving wheel shall be rotated.

9. An ejecting mechanism in combination with an article imprinting machine comprising a supporting structure, a platen carried on said supporting structure and extending in a generally transverse direction, an arm pivotally mounted on the supporting structure on an axis substantially parallel to the platen, a stamping head mounted on said arm in a manner to engage said platen when the arm is swung downwardly about its hinge, a longitudinally extending shaft carried on said supporting structure beneath said platen, an article moving wheel journaled on said shaft and having a portion thereof extending above said platen, means on said shaft for accumulating rotary energy by downward movement of said stamping head arm, brake means normally engaging said wheel and preventing rotation, means for imparting the accumulated rotary energy to said wheel, and brake release means associated with said pivotally mounted arm whereby when the stamping head is in its up out of platen engaging position the brake release means is adapted to release the brake means from said wheel and thus permit rotation of said wheel and a lateral ejecting of the article just imprinted, said means on the shaft for accumulating rotary energy including a spring motor, said pivoted arm having a downward extension below the pivot axis and beneath the platen, a pulley means on said downward extension near the bottom thereof, a cable attached to said spring motor and extended around said pulley means and thereupon anchored on said supporting structure spaced from said pulley means whereupon swinging movement of the stamping head and associated arm causes a foreshortening of the cable and a direct winding of the spring motor.

10. An ejecting mechanism as set forth in claim 9 in which the means for imparting the accumulated rotary energy to said wheel comprises pawl means and ratchet means each of which is mounted on said spring motor or said wheel.

11. An ejecting mechanism as set forth in claim

9 in which the means for imparting the accumulated rotary energy to said wheel comprises pawl means on said wheel and ratchet means on said spring motor whereby drive between the spring motor and article moving wheel is accomplished only in one direction.

12. An ejecting mechanism in combination with an article imprinting machine comprising a supporting structure, a platen carried on said supporting structure and extending in a generally transverse direction, an arm hingedly mounted on said supporting structure for vertical swinging movement, a stamping head carried on said arm, said stamping head adapted in a down position to engage said platen and in an up position to be spaced above said platen, a longitudinally extending shaft carried on said supporting structure beneath said platen, an article moving wheel journaled on said shaft and having a portion thereof extending above said platen, spring motor means positioned between the arm and the wheel, means for imparting rotary energy to said spring motor means when the arm and stamping head are swung downwardly, a brake arm pivotally mounted on said supporting structure for movement between two limit positions, said brake arm in the first of said brake arm positions adapted to engage and hold said article moving wheel against rotation, said brake arm in the second brake arm position spaced from said wheel, spring means normally urging said brake arm to said first wheel braking position, and means associated with said stamping head arm for engaging said brake arm and shift it to said second wheel released position when said stamping head arm is in its up position away from said platen.

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