July 29, 1969 J. SCHMIDT 3,458,186

DEVICE FOR INSERTION OF MARKING STRIPS INTO A FORMING STACK

Filed Sept. 8, 1966 2 Sheets-Sheet 1

FIG. 1.

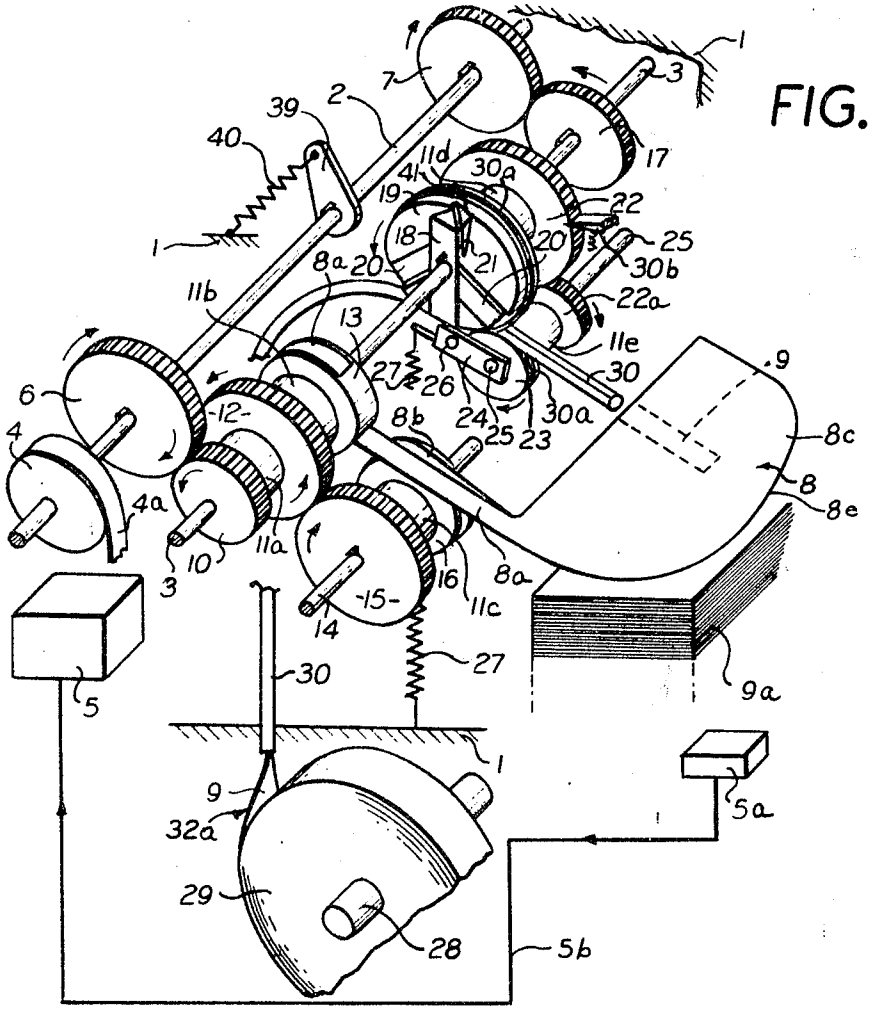
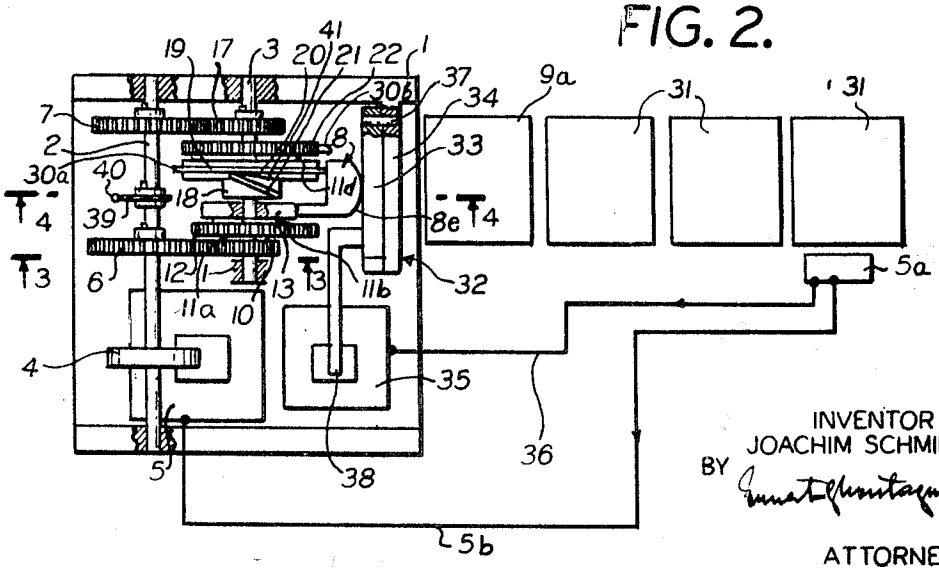


FIG. 2.



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July 29, 1969 J. SCHMIDT 3,458,186

DEVICE FOR INSERTION OF MARKING STRIPS INTO A FORMING STACK

Filed Sept. 8, 1966 2 Sheets-Sheet 2

FIG. 3.

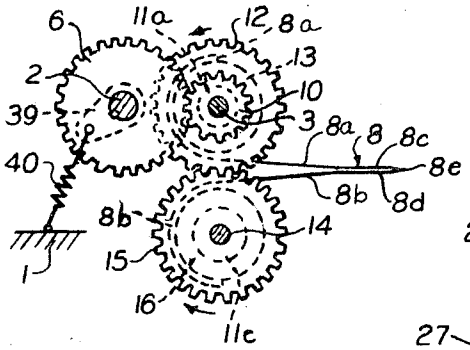


FIG. 4.

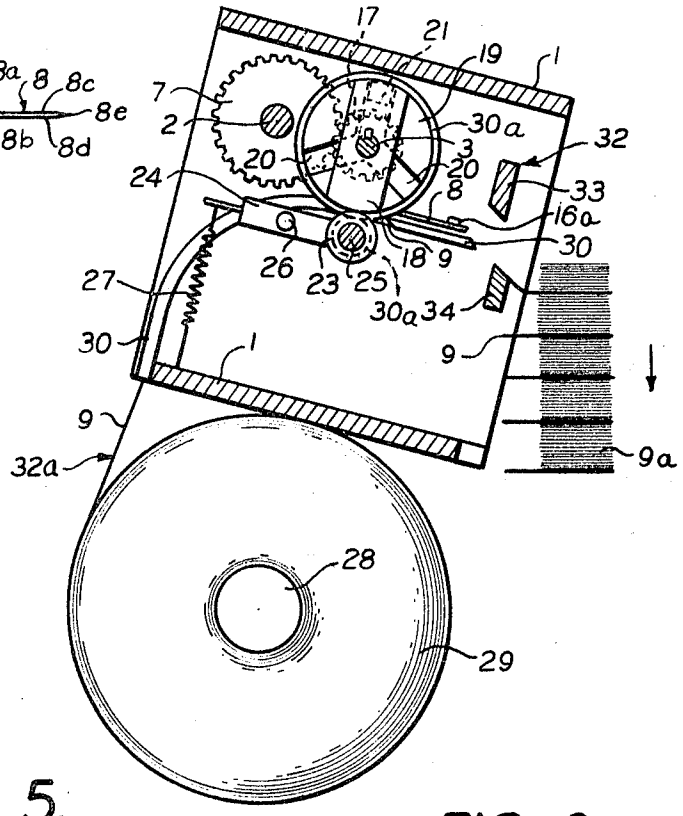


FIG. 5.

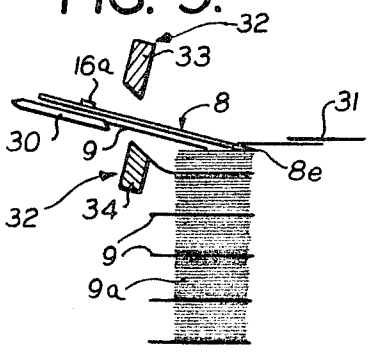
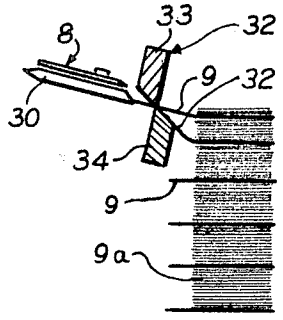


FIG. 6.



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DEVICE FOR INSERTION OF MARKING STRIPS INTO A FORMING STACK

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U.S. Cl. 270—58 15 Claims

ABSTRACT OF THE DISCLOSURE

A device for insertion of marking strips into a forming stack which comprises a rigid tongue adjacent the forming stack and a supply of marking material disposed closely underneath the tongue. Tongue and marking material means are provided for advancing the tongue angularly into the forming stack at the top of the stack, so that subsequent stacking occurs angularly on the tongue and for subsequently advancing the markings material underneath the advanced tongue above the top of the stack and extending beyond the edges of the top. Withdrawing means are arranged for effective withdrawal of the tongue from the stack, whereby subsequent stacking falls on the top and the marking material thereon.

The present invention relates to devices for the insertion of marking strips in stacks of a printing machine, or the like, in general, and to devices for the insertion of marking strips in stacks of a printing machine which are formed rapidly by sheets which are fed preferably in overlapping form, and which devices are controlled by pulse transmitters, in particular.

The marking strips in these devices are withdrawn from a supply roll and inserted directly over the sheet which is to be marked. It has proven advantageous for the individual marking strips to be held by the device until a plurality of successive sheets has been deposited.

The use of marking strips inserted into a pile as it is formed is to mark specific counted numbers of sheets and to mark misprinted sheets or mackles.

It is known to provide counting or error monitoring devices at various places of a printing machine to produce a signal or an electric pulse at a specified count or upon the detection of an error. For example, a sheet-fed printing press may include a monitoring device on the front gages of the printing press which generates a signal when a sheet does not lie in proper registry against the gages. The defective sheet is either conveyed by a sheet switch to a separate mackles pile, or advantageously as herein, marked by a defect marker which is inserted in the pile adjacent the defective sheet. A number of devices are already known for these purposes.

For example, in the case of relatively slow machines, it is possible to withdraw marking strips from a roll by using ratchet wheels for the advancing of the moving parts of the strip transport, and to place them on the pile and then cut them off after a few sheets have been applied. The insertion of the marking tape into the pile, however, in this case, is not effected in a set inpulse-like manner, but inherently is relatively slow, so that it could not be used for a printing machine producing a rapid sequence of sheets. Moreover, it cannot be used for high-speed printing machines since the marking strip would bend and be pushed down again by the following sheet. Additionally, in such devices the stepping forward of the sheet-counting is effected by mechanical contacts which are produced by each individual sheet as it is delivered (i.e., systematically by the stepping of ratchet wheels); accordingly, it cannot be used for control by pulse generating monitoring devices which are desirable for use with rapid printing presses.

As another example, with roll-sheet machines when the sheets are cut off from the web by a cross-cutter, marking strips are inserted the length of the sheet, and are somewhat longer than the sheet in order to extend beyond the edges of the sheets in the pile. In this connection it is necessary for the marking strips to come from the direction of the cross-cutter. In such a device, the control can be effected by pulses, but due to the fact that the strips must come from the direction of the cross-cutter, an excessive amount of space is required at this point of the machine which is already very constricted, and it is necessary to divert the web of paper. Furthermore, this device is arranged below the cross-cutter, resulting in poor accessibility, and great expense for machine parts.

Since the aforementioned device can be used only in connection with sheet delivery apparatus with felt-belt delivery means, further embodiments became known in which the marking strip is withdrawn from the supply roll and cut off, and then folded into a V-shape at its front end. Thereupon, the marking strip is pushed under the sheet web, or more precisely under the sheet which lies in front of the sheet to be marked so that the V-shaped fold opens up in the space between every two sheets and the bent end snaps up into the plane of travel of the sheet. A mouthpiece for the insertion of this V-folded strip is controlled by a magnet by means of a tie rod. This device has the disadvantage of requiring a very large number of machine parts and cannot be used in the case of sheets which are delivered in overlapping form since with this system of delivery there are no spaces between the individual sheets.

All of these devices have the disadvantage of not being able to be used with high-speed machines. It has been found that with sheet-cutting speeds, approximately, of more than 150 cuts per minute the known devices for the insertion of marking strips failed. Accordingly, a marking device became known in which a spray gun applies color or pigment to the sheet web for marking. The color marking is effected either on the traveling web which is to be cut, or on the sheet after it has been cut. However, this device cannot be used in connection with printing presses, since the paint or color, would interfere with the print. Furthermore, in order that the color marking can be recognized on the stacked pile, the edge of the sheet must be marked, and there is the danger that in case of three-sided trimming of the final stack of sheets, the marking will be cut away.

For all of these reasons, there are still used sheet counting devices which have a sensing member which slides over the cut edges of the completed deposited stack of sheets and converts the mechanical movements of the sensing member into electrical pulses for the actuating of a counting mechanism and for the inserting of ream marks by known devices after the predetermined number of sheets has been reached. These devices which, in themselves, are popular, however, have the disadvantage that either the entire device must be brought to the stacks of sheets, or the individual stacks of sheets must be brought to the sheet-counting device. Furthermore, there is the disadvantage that counting can be effected only at a time when, for instance, the printing press is being set up for a new order. In addition, these devices are of no benefit when it is desired to insert defect markings into the piles of sheets as the piles are formed.

Accordingly, it is one object of the present invention to eliminate the defects and disadvantages of prior marking devices, and to provide an apparatus by which subsequent counting is avoided, and additionally, which even in the case of high speed machines, e.g., sheet-cutting speeds, of approximately more than 150 cuts per minute,

can be used directly on the specific sheet-fed machine, thus offering considerable economic advantages.

It is another object of the present invention to provide a device for the insertion of marking strips in stacks of a printing machine by which either defective sheets can be characterized by insertion of a marking strip, for instance a colored strip, or a specified number of counted sheets can be marked by the insertion of a marking strip, and wherein both may be controlled by any suitable pulse generator.

It is still another object of the present invention to provide a device for the insertion of marking strips in stacks of a printing machine, fed in staggered form, or otherwise, wherein the marking strip cannot be pushed away and comes to rest, even in the case of extremely high delivery speeds, accurately and dependably on the sheet which is to be marked, and further with the ability of simultaneously introducing both defective and marking sheets.

It is yet another object of the present invention to provide a device for the insertion of marking strips in stacks of a printing machine, in accordance with the above-mentioned objectives, wherein it is possible to effect the insertion of the marking strip in very short intervals, at least in intervals of 5 seconds.

It is still a further object of the present invention to provide a device for the insertion of marking strips in stacks of a printing machine, comprising a rigid tongue and having an upper surface and a lower surface and a common junction at the front thereof, the latter extending substantially laterally to the sidewise feed direction of the articles forming the stack a distance equal to a substantial portion of the dimensions of the articles adjacent the stack, a supply of marking material disposed closely underneath the tongue, tongue and marking material means for advancing the tongue angularly into the forming stack at the then top of the stack in a direction opposite to the feed direction of the articles and such that the common junction at the front of the tongue substantially abuts the top of the stack covering the lower surface from the articles coming from the feed direction so that subsequent stacking angularly occurs on the tongue, the articles sliding up the tongue and angularly stacking thereon and for subsequently advancing the marking material underneath the advanced tongue above the then top of the stack extending beyond the edges of the then top, and withdrawing means for effecting withdrawal of the tongue from the stack, the subsequent stacking falling on the then top and the marking material thereon, stabile and reliable angular stacking and marking is achieved.

It is yet an additional object of the present invention to provide a device for the insertion of marking strips in stacks of a printing machine, in accordance with the above-mentioned objective, wherein the supply of marking material comprises a roll of marking material including a free end, the free end disposed closely underneath the rigid tongue for being advanced onto the then top of the stack, holding means for maintaining the free end stationary on the then top when the tongue is withdrawn from the stack, and the device further comprising cutting means for severing the free end from the roll of marking material after the tongue has been withdrawn from the stack by the withdrawing means leaving the free end in the stack extending thereover.

It is yet still another object of the present invention to provide a device for the insertion of marking strips in stacks of a printing machine, comprising a tape-tension roll which in known manner is combined with a magnet responsive to a pulse signal, and which drives a continuous shaft. The shaft in its turn drives by means of two gears fixed onto it, two devices, respectively, for moving a steel tonque directly, as well as for advancing the corresponding marking strip by the interposition of a unilateral spring coupling. This takes place in a manner that the movement of the steel tongue leads the movement of the marking strip so that the marking strip can be inserted under the steel tongue, which tongue extends over the pile. A second magnet is also provided for driving the cutting device. One-half of the above-mentioned spring coupling is firmly arranged on a shaft which is connected via a pinion with the first-mentioned gear and the second half of the spring coupling is formed in the manner that three radial grooves which are 120° apart are arranged, preferably, in an upper transport roller for advancing the marking strip tape. Furthermore, a lower transport roller which is rigidly connected with a gear is urged by the force of a spring against the upper transport roller and a gear rigidly connected with the latter. The circumferential profile of the two transport rollers has complementary ridge edges. The steel tongue consists of two steel bands each of which is firmly connected at its rear end with one of two winding rolls, respectively, and are brought together at their front end from the rolls and there terminate sharply in the manner of a knife. The position of the insertion path of the marking strip forms an angle of about 10° with the position of the surface of the pile.

With this invention, in addition to the afore-indicated advantages, one or more marking strip insertion devices can be arranged alongside of each other at the sheet delivery edge. Furthermore, the device of the present invention makes it possible to dependably effect the insertion of marking strips for different purposes even in the case of high-speed roll-feed rotary presses, or similar units, operating with a rapid delivery of sheets. Due to the fact that several of these units are arranged alongside of each other, the signals of varied monitoring devices of the individual units of the machines can easily be taken and, corresponding to their pulses, be evaluated and characterized by the insertion of marking strips of different colors. It is readily possible for the printer even in the case of presses operating with the highest speed to rapidly note those units of the machine which are operating defectively. If, for instance, five insertion devices are arranged at the sheet-delivery edge of a four-color roll-feed offset machine, one thereof for the insertion of ream marks and four for the insertion of defect marks, then the register monitoring members of each printing mechanism can bring about the insertion of defect marks. In this way it is possible for the printer to correct the improper register on the printing unit in question, deduct the number of defective sheets delivered from the delivery count and remove them from the pile. Furthermore, it can be dependably determined at what time the required amount of delivered sheets has been attained. Additionally, apparatus of the present invention has the advantage of being able to be easily attached, subsequently, to practically all types of existing machines.

With these and other objects in view, which will become apparent in the following detailed description, the present invention will be clearly understood in connection with the accompanying drawings, in which:

FIG. 1 is a perspective view of the marking device in accordance with the present invention;

FIG. 2 is a plan view of the marking device of FIG. 1;

FIG. 3 is a side view along the lines **3**—**3** of FIG. 2;

FIG. 4 is a side view along the lines **4**—**4** of FIG. 2;

FIG. 5 is a side view of a part of the pile of oncoming sheets, fed in staggered form, and of the inserted steel tongue, and the marking strips inserted below the tongue prior to the cutting; and

FIG. 6 is a similar view to FIG. 4, but after the withdrawal of the steel tongue and during the cutting.

Referring now to the drawings, and in particular to FIGS. 1 and 2, a shaft **2** and a shaft **3** are supported at their ends, respectively, in a housing **1**. To the shaft **2** there is rigidly connected a tape tension roller **4** which is connected via a corresponding tape *4a* with a pulling magnet **5**. The pulling magnet **5** responds to pulses given

off by an automatic (or manually operated) pulse generator 5*a*, which if automatic, detects a certain paper condition (e.g., a printing error or a certain count) and which generates a pulse in response thereto, which passes via line 5*b* to the pulling magnet 5, and which in turn places the tape tension roller 4, and thus the shaft 2, in motion in a forward (clockwise) direction, for a short time. To the shaft 2 there are rigidly connected two gears 6 and 7, by which the movement of the shaft 2 is directly transmitted to a means for moving a steel tongue 8, and to a means for inserting a marking strip 9 above the paper in the stack 9*a* to be marked.

The shaft 2 turns the gear 6 which drives a pinion 10 and which in turn is connected by suitable connecting means 11*a* with another gear 12. The two gears (pinion 10 and gear 12) idle on the shaft 3 being freely disposed thereon. The gear 12 turns an upper winding roller 13 via identical connecting means 11*b*, to which roller 13 is fastened, one of the steel bands 8*a* of the steel tongue 8. On a shaft 14 fastened to the housing 1, there is arranged a gear 15 driven by the gear 12; and rigidly connected to the gear 15 via connecting means 11*c*, is a lower winding roller 16 for the second steel band 8*b* of the steel tongue 8.

Upon actuation of the pulse generator 5*a* and consequent movement of shaft 2 and gear 6 in the forward or clockwise direction, the gears 10 and 12 are turned in the counterclockwise direction, while gear 15 is turned clockwise. Accordingly, the opposed upper and lower winding rollers 13 and 16 turn counterclockwise and clockwise, respectively, advancing the steel bands 8*a* and 8*b* and hence tongue 8 toward the stack 9*a* of papers to be marked. For directional purposes, a guide arm 16*a* is disposed slightly behind the steel tongue 8 fastened to the housing 1.

The tongue 8 is operatively substantially rigid for being inserted onto the stack and to permit subsequent papers to fall angularly thereon, providing space therebelow for the marking strip to be inserted. The tongue 8 has an upper surface 8*c* and a lower surface 8*d* and a common junction 8*e* at the front of the tongue. The common junction 8*e* extends substantially laterally to the feed direction of the sheets 31 (FIG. 2) a distance equal to a substantial portion of the dimensions of the article. The tongue 8 when moved onto the stack 9*a* is advanced angularly to the top of the stack in a direction opposite to the feed direction of the sheets 31 and such that the common junction 8*e* substantially abuts the top of the stack, thereby covering the lower surface 8*d* and preventing the subsequently fed papers from passing underneath the tongue, so that subsequent stacking occurs above the tongue, the sheets sliding up the tongue and angularly stacking dependably thereon.

The shaft 2 also turns the gear 7 which drives a pinion 17, keyed onto the shaft 3, which pinion 17 is rigidly connected via the shaft 3, with a coupling half 18, also keyed onto the shaft 3. Opposite the coupling half 18 is an upper transport roller 19, which idles on the shaft 3, which has on its coupling side three radial grooves 20 arranged 120° apart. On the coupling half 18 there is arranged a flat coupling spring 21, which upon each movement of the coupling half 18, engages in one of the grooves 20, thus turning the transport roller 19 along with the coupling half 18. To the transport roller 19 there is fastened by suitable rigid connecting means 11*d*, another gear 22 which idles on the shaft 3 as well as a pinion 22*a* fastened to a lower transport roller 23, via connecting means 11*e*, and which thus drives the lower transport roller 23. Both the transport roller 23 and the pinion 22*a* turn on a shaft 25 arranged on a rocker 24. The rocker 24 is pivotally supported approximately at its center on a pin 26 fixed in the housing 1 so that the lower transport roller 23 is pressed against the upper transport roller 19 by a spring 27 connected on the side of the rocker 24 opposite the shaft 25 to the housing 1.

On a support shaft 28 there is provided, below the housing 1, a supply roll 29 from which the marking strip 9 is withdrawn by means of a bipartite guide tube 30. In order to accurately grasp the marking strip 9, straighten the strip and impart the necessary stiffness to it, complementary ridge edges 30*a* are arranged on the upper transport roller 19 and on the lower transport roller 23.

Upon actuation of the pulse generator 5*a* consequent movement of shaft 2 and gear 7 in the forward or clockwise direction, the pinion 17, coupling half 18 and spring 21 are turned in the counterclockwise direction. The coupling spring 21, accordingly, engages the upper transport roller 19 via one of the grooves 20, turning the upper transport roller 19 in the counterclockwise direction. The gear 22 is turned counterclockwise riding over pawl spring 30*b*, turning lower gear 22*a* and lower transport roller 23 clockwise. Accordingly, the opposed turning, abutting rollers 19 and 23 advance the marking strip 9 through the guide tube 30 toward the stack 9*a* of papers to be marked.

In operation, when a pulse to the pulling magnet 5 places the shaft 2 and the entire apparatus in motion, as heretofore described, both the steel tongue 8 and the marking strip 9 advance toward the stack of papers. However, the steel tongue 8 advances quicker than the marking strip 9 since the pinion 10 associated with the means for moving the steel tongue 8 is smaller than the pinion 17 associated with the means for moving the marking tape 19. The steel tongue 8 leads the marking tape 9 upon actaution of the pulling magnet 5 so that the steel tongue 8 first insures that the oncoming sheets 31 first push or fall over the tongue 8, and that the marking strip 9, disposed closely below the tongue 8, will in all cases definitely come to lie on the sheet to be marked. For this purpose, the entire insertion device is preferably inclined about 10° to the edge of the stack. Only after several successive sheets have been delivered above the steel tongue 8 is the tongue 8 withdrawn without disturbing the marking strip 9 (as will hereinafter be described). The tongue 8 is withdrawn to behind a cutting device 32, as shown in FIG. 5, and the marking strip 9 is cut from the marking strip web 32*a*. The cutting device 32 is located adjacent the pile side of the housing 1 and comprises an upper cutter 33 and a lower cutter 34. A pulling magnet 35, actuates the cutting device 32, and is controlled either by a second pulse from the pulse generator 5*a* via line 36 or else as a function of the pulling magnet 5 via a relay time-delay (not shown). The upper cutter 33 is movable and connected by a pivot pin 37 with the lower cutter 34 and on the other side via a pull member 38 with the pull magnet 35. An additional known safety device (not shown) provides assurance that the magnet 35 can only be released when the steel tongue 8 is withdrawn to its position of rest.

In the case of high-speed rotary printing presses the sheets arrive on the pile in rapid sequence. The cutting operation herein can be started after only a few seconds, and since at this time the rest of the apparatus is already in the starting position, a new insertion operation can be started immediately after the cutting operation, i.e. the insertion operation can be repeated in at least intervals of 5 seconds.

Referring now to the withdrawing and returning operation, a block 39 is firmly fastened to the shaft 2. After the completion of the brief movement of the unit, heretofore described, which inserted first the tongue 8 and then the marking strip 9 into the stack of papers, and which was actuated by the pulling magnet 5, the shaft 2 and the tongue 8 are brought back into the starting position by a tension spring 40 arranged between the block 39 and the housing 1. In this connection, the upper and lower transport rollers 19 and 23, respectively, are held fast in position by the pawl spring 30*b* having the shape of a locking pawl which engages into the teeth of the gear 22. The shaft 2 and gears 7 and 17 and coupling half 18

now turn in the reverse direction (opposite to the heretofore described forward direction) and the coupling spring **21** disengages from the groove **20** in the upper transport roller **19** along tapered groove edge **41** adapted for sliding disengagement when the coupling half **18** turns clockwise and the upper transport roller remains locked.

As will now be apparent, the rollers **19** and **23** can only move in the direction to advance the marking tape **9**; and during reversal of the unit, for repositioning of the tongue **8**, the releasable coupling means comprising spring **21** on coupling half **18**, disengages the gears **7** and **17** from operatively connecting the rollers **19** (and **23**) which otherwise would move the tape **9** backwards. For purposes herein, operatively connecting one means with another is defined as that connection, whether directly, or indirectly through other gears and shafts, by which movement of said one means causes movement of the other, or vice versa.

The gears **6** and **10** also turn in the reverse direction, as well as the gears **12** and **15**, and consequently the winding rollers **13** and **16**, respectively, for the tongue **8**, withdraw the tongue **8** from the stack and causing the papers above the tongue to fall on the uncut inserted marking tape **9**, as shown in FIGS. 5 and 6, ready for the cutting.

As should now be apparent, the device described accordingly provides the capability to actuate the tongue **8** and marking tape **9** from a common driving means (shaft **2**) and a common actuator (magnet **5**), while having the ability to reverse the movement of tongue **8** for positioning for the next operation (by reversing the movement of shaft **2**), without reversing the movement of the marking tape rollers **19** and **23**, which otherwise would remove the tape **9** from the stack.

While I have disclosed one embodiment of the present invention, it is to be understood that this embodiment is given by example only and not in a limiting sense, the scope of the present invention being determined by the objects and the claims.

I claim:

1. A device for insertion of marking strips into a stack forming by a feed of articles from a feed direction sidewise to the stack comprising

an operative substantially rigid tongue adjacent said forming stack and having an upper surface and a lower surface and a common junction of said surfaces at the front of said tongue, said common junction extending substantially laterally to the feed direction a distance equal to a substantial portion of the dimensions of said articles,

a supply of marking material disposed closely underneath said lower surface of said tongue,

tongue and marking material means for advancing said tongue angularly into said forming stack at the top of said stack in a direction opposite to the feed direction of said articles and such that said common junction at the front of said tongue substantially abuts said top of said stack covering said lower surface from said articles in said feed direction so that subsequent stacking angularly occurs on said tongue, said articles sliding up said tongue and angularly stacking thereon and for subsequently advancing said marking material underneath said advanced tongue above said top of said stack extending beyond the edges of said top, and

withdrawing means for effecting withdrawal of said tongue from said stack, said subsequent stacking falling on said top and said marking material thereon.

2. The device for insertion of marking strips into a forming stack, as set forth in claim **1**, wherein

said supply of marking material comprises a roll of marking material including a free end, said free end disposed closely underneath said rigid tongue for being advanced onto said top of said stack,

holding means for maintaining said free end stationary on said top when said tongue is withdrawn from said stack, and

said device further comprising cutting means for severing said free end from said roll of marking material after said tongue has been withdrawn from said stack by said withdrawing means leaving said free end in said stack extending thereover.

3. A device for insertion of marking strips into a forming stack comprising

an operative substantially rigid tongue adjacent said forming stack,

a supply of marking material disposed closely underneath said tongue,

tongue and marking material means for advancing said tongue angularly into said forming stack at the top of said stack so that subsequent stacking angularly occurs on said tongue and for subsequently advancing said marking material underneath said advanced tongue above said top of said stack extending beyond the edges of said top,

withdrawing means for effecting withdrawal of said tongue from said stack, said subsequent stacking falling on said top and said marking material thereon,

said supply of marking material comprises a roll of marking material including a free end, said free end disposed closely underneath said rigid tongue for being advanced onto said top of said stack,

holding means for maintaining said free end stationary on said top when said tongue is withdrawn from said stack,

said device further comprising cutting means for severing said free end from said roll of marking material after said tongue has been withdrawn from said stack by said withdrawing means leaving said free end in said stack extending thereover,

said tongue and marking material means comprises,

common driving means for moving in a forward direction and in a reverse direction,

actuating means for moving said common driving means in said forward direction for a predetermined period,

tongue moving means responsive to said common driving means for advancing said tongue angularly into said forming stack at the top of said stack so that subsequent stacking angularly occurs on said tongue and for withdrawing said tongue from said stack,

marketing moving means responsive to said common driving means for subsequently advancing said marking material underneath said advanced tongue above said top of said stack extending beyond the edges of said top,

said marketing moving means comprises,

transport roller means for advancing and for engaging said free end and for advancing said free end toward said stack when said transport roller means is advanced,

releasable coupling means for releasably operatively coupling said common driving means to said transport roller means,

said releasable coupling means for operatively connecting said common driving means to said transport roller means thereby advancing said transport roller means when said common driving means moves in the forward direction,

said releasable coupling means for disengaging said common driving means from operative connection with said transport roller means when said common driving means moves in reverse,

said tongue means comprising,

winding roller means engaging said tongue for advancing and withdrawing said tongue into and from said stack, respectively,

said winding roller means movable in a forward direction for moving said tongue into said stack and movable in a reverse direction for withdrawing said tongue from said stack,

first gear means rigidly connected to said common driving means and rigidly operatively connected to said winding roller means,

said first gear means for moving in a forward direction and in a reverse direction when said common driving means moves in a forward direction and a reverse direction, respectively,

said first gear means for moving said winding roller means in the forward direction when said first gear means moves in said forward direction, and said first gear means for moving said winding roller means in reverse when said first gear means moves in reverse, and

said withdrawing means operatively connected to said common driving means for moving said common driving means in reverse after said predetermined period.

4. The device for insertion of marking strips into a forming stack, as set forth in claim **3**, wherein

said common driving means consists of a first shaft connected to and driven by said actuating means,

said marking moving means further comprising a second gear means rigidly connected to and driven by said first shaft, said second gear means for moving in a forward direction and a reverse direction when said first shaft moves in a forward direction and a reverse direction, respectively,

said releasable coupling means rigidly operatively connected to said second gear means and releasably connected to said transport roller means, and

said first gear means sized relative said second gear means so that said tongue leads said free end toward said stack when said first shaft is moved in the forward direction.

5. The device for insertion of marking strips into a forming stack, as set forth in claim **4**, wherein

said actuating means is responsive to electrical signals for turning said first shaft in the forward direction in response thereto for said predetermined period.

6. The device for insertion of marking strips into a forming stack, as set forth in claim **5**, wherein

said withdrawing means comprises a lever block keyed to said first shaft, and a tension spring means connected to said lever block for turning said first shaft in reverse after said predetermined period.

7. The device for insertion of marking strips into a forming stack, as set forth in claim **6**, wherein

said releasable coupling means comprises a coupling half rigidly operatively connected to and driven by said second gear means,

said coupling half for moving in a forward direction and a reverse direction when said second gear means moves in a forward direction and a reverse direction, respectively,

a spring coupling rigidly connected to said coupling half and for moving in a forward direction and a reverse direction when said coupling half moves in a forward direction and a reverse direction, respectively,

said transport roller means disposed adjacent said spring coupling and formed with radial grooves thereon adapted for receiving in rigid engagement therein said spring coupling when said coupling half and spring coupling move in said forward direction, and for advancing said transport roller means when said spring coupling is rigidly engaged in said radial grooves,

said holding means for locking said transport roller when said coupling half and said spring coupling move in reverse, and

said spring coupling releasing from said radial grooves when said coupling half and spring coupling move in reverse.

8. The device for insertion of marking strips into a forming stack, as set forth in claim **7**, wherein

said transport roller means comprises an opposed directional first transport roller and an opposed directional second transport roller,

said first and second transport rollers coplanarly disposed,

said first transport roller having said radial grooves therein, each groove oriented 120° apart, and detachably connected to said spring coupling for rigid engagement therein and for being advanced thereby when said coupling half and spring coupling move in the forward direction,

third gear means rigidly connected to said first transport roller and to said second transport roller for advancing said second transport roller in a direction counter to the direction of said first transport roller when said first transport roller is advanced,

said first and second transport rollers each having a circumferential roll surface,

said free end of said marking material being disposed on and between said circumferential roll surfaces of both said first and second transport rollers,

means for urging said second transport roller roll surface toward said first transport roller roll surface thereby engaging said free end snugly between said surfaces,

one of said circumferential roll surfaces including a ridge thereon and the other circumferential roll surface having formed therein a complementary recess, and

said holding means comprising a spring pawl means disposed adjacent said third gear means for permitting said third gear means to advance when said first transport roller is advanced and for preventing reverse movement of said third gear means when said coupling half and spring coupling move in reverse.

9. The device for insertion of marketing strips into a forming stack, as set forth in claim **8**, wherein

said second gear means comprises a shaft gear keyed to said first shaft and a pinion connected to said shaft gear,

said device further comprises a second shaft keyed to said pinion and keyed to said coupling half,

said coupling half is elongated but generally conforming to the shape of one of said radial grooves and having a triangular cross-section and an inclined face,

said coupling spring is substantially a flat spring and is rigidly connected to said inclined face of said coupling half,

said first transport roller freely disposed on said second shaft abutting said coupling spring,

a third shaft holding said second transport roller thereon, and

said means for urging said second transport roller roll surface toward said first transport roller roll surface comprising, a spring, and a rocker having two ends pivoted between said ends, said rocker connected at on end to said third shaft and at the other end to said spring for pivotally urging said third shaft towards said first transport roller.

10. The device for insertion of marking strips into a forming stack, as set forth in claim **9**, further comprising

a bipartite guide tube disposed adjacent both said first and second transport rollers at the roll surfaces thereof for directing said marking material from said roll of marking material between both said roll surfaces and from said roll surfaces, and

said bipartite guide tube consisting of one straight portion oriented parallel to said tongue and closely spaced underneath said tongue for directing said marking material from said roll surfaces.

11. The device for insertion of marking strips into a forming stack, as set forth in claim 10, wherein

said actuating means comprises an electromagnet tape-tension roller responsive to electrical pulses for driving said first shaft in the forward direction for said predetermined period.

12. The device for insertion of marking strips into a forming stack, as set forth in claim 11, wherein

said cutting means comprises an upper cutting blade and a lower cutting blade hingedly connected together and disposed in spaced vertical relationship adjacent said stack and between said free end of said marking material and said tongue, and

cutting actuating means for bringing said blades together after said tongue has been withdrawn from said stack.

13. The device for insertion of marking strips into a forming stack, as set forth in claim 12, wherein

said cutting actuating means comprises an electromagnet pulling member connected to said cutting means.

14. The device for insertion of marking strips into a forming stack, according to claim 13, wherein

said winding roller means comprises,

two opposed winding rollers disposed in spaced coplanar relationship,

said tongue connected to each of said winding rollers at its rear end away from said stack extending therefrom between said opposed winding rollers and brought together from said winding rollers terminating in a knife-shaped tongue,

rigid connecting means including gears rigidly connected between said winding rollers for moving said rollers in counter relationship for advancing and withdrawing said tongue, and

a rigid guide bar abutting said moving tongue for positioning said tongue with respect to said stack.

15. The device for insertion of marking strips into a forming stack, according to claim 14, wherein

said first gear means comprises a first gear keyed to said first shaft and a first pinion connected to said first gear,

said first pinion disposed freely on said second shaft,

pinion connecting means rigidly connecting said first pinion to one of said opposed winding rollers, and

said first gear is larger than said shaft gear, so that said tongue leads said marking medium toward said stack.

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