Sept. 14, 1965 G. MEYER-JAGENBERG 3,205,739

# METHOD OF INSERTING MARKING STRIPS INTO STACKS

Filed Oct. 21, 1963 2 Sheets-Sheet 1

Fig. 1

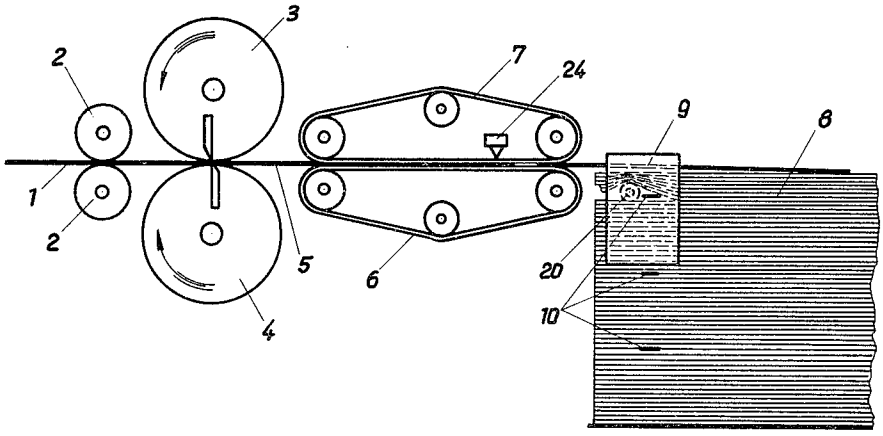



Fig. 3

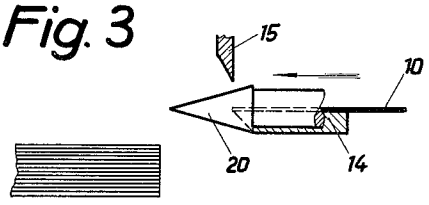



Fig. 6

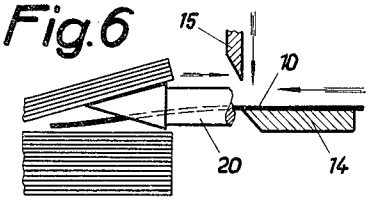



Fig. 4

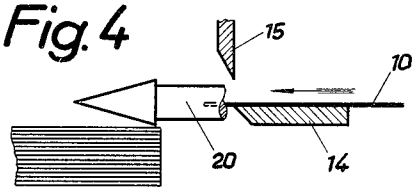



Fig. 7

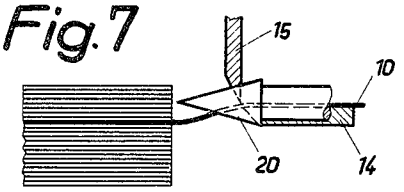



Fig. 5

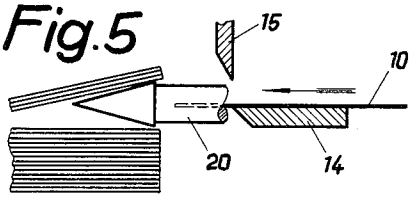
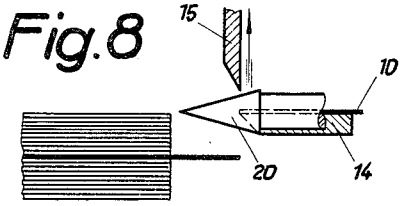



Fig. 8

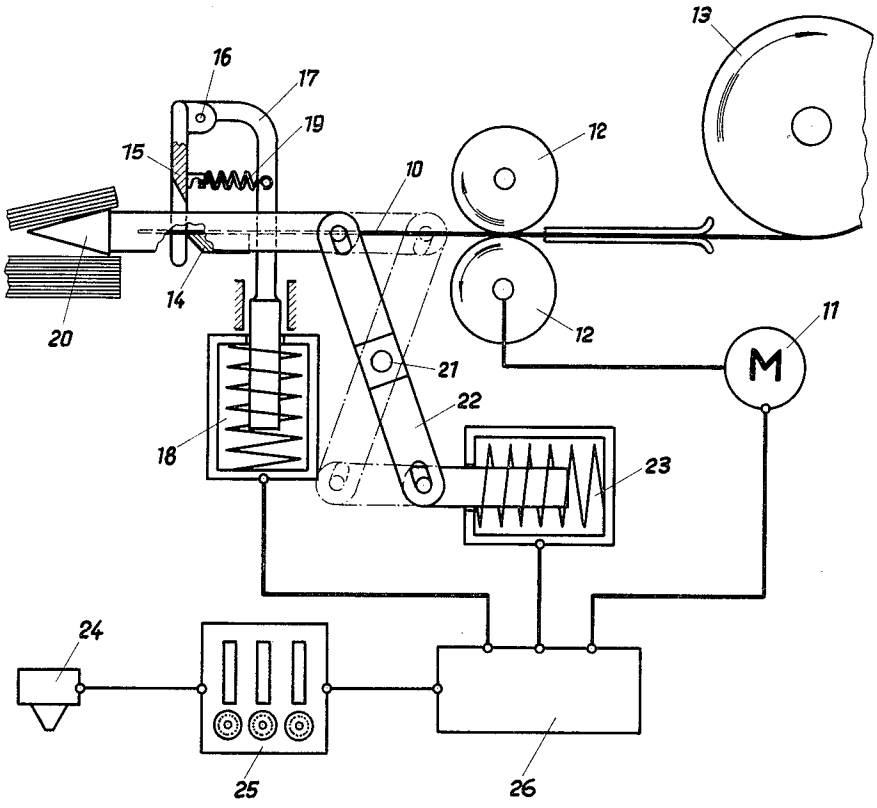


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METHOD OF INSERTING MARKING STRIPS INTO STACKS

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Fig. 2



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3,205,739

# METHOD OF INSERTING MARKING STRIPS INTO STACKS

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Claims priority, application Germany, Oct. 27, 1962, J 22,563
2 Claims. (Cl. 83—23)

The present invention relates to a method of and apparatus for inserting, marking or identifying strips or equivalent components into stacks of sheets, and more particularly for inserting marking strips into stacks of sheets delivered from transverse cutters or other machines ejecting sheets.

In connection with the presently known machines for inserting marking strips, there are, by virtue of the high operating speeds of the transverse cutters, difficulties which arise due to the rapid succession of the sheets, which renders it substantially impossible to effect a correspondingly rapid and trouble-free insertion of the marking strips. In addition, in the majority of cases, compressed air is employed as the medium for assisting and accelerating the stacking phase, and such technique adversely affects the insertion of relatively thin marking strips. In fact, experience has demonstrated that even when the strip has been inserted, the strip can be shifted or displaced so that the strip is completely covered by subsequently deposited sheets thereby making such strip invisible or the airstream dislodges the strip from the surface of the sheet stack.

Accordingly, a salient object of the present invention is to overcome the above and other problems existing in the art.

Viewing the invention broadly, it comprises providing a gap or space between the sheets previously stacked and the sheets to be subsequently stacked thereby allowing a marking strip to be inserted into the gap. More specifically, from the instant the marking strip is to be inserted, the succeeding sheets are prevented from being deposited fully upon the sheets previously stacked, and the gap or space produced between the stacked sheets and the sheets to be stacked is closed following the insertion of the marking strip by lowering the sheets positioned above the marking strip after which the marking strip which is fed from a supply roll is severed from such supply roll.

By virtue of the invention, there is provided a trouble-free insertion of the marking strip even where there is a rapid succession of sheets since the maintenance of the gap or space permits the feeding, inserting and severing of the strip to be effected slowly and independently of the rapid succession of the sheets with the elimination of the gap or space following insertion of the strip and the lowering of the sheets located above the strip occuring prior to the severing of the strip from the supply roll, whereby there is assured in all operating cycles, a proper lodgement or anchoring of the marking strip.

In order to accomplish the objects of the invention, there is provided means for inserting the marking strip spaced laterally of the stack of sheets which is cooperable with a spacing means which can be moved into and away from the area of the stack for producing the gap or space between the previously stacked sheets and the sheets to be deposited onto the stack. The relationship is such that the means for feeding, inserting and severing the marking strip are coupled for sequential operation with respect to the spacing means.

In regard to the direction of movement of the sheets, the spacing means is located in the front region of the stack directly above the upper level of the stack, whereas



the inserting maens for the inserting strip is positioned directly rearwardly of the spacing means.

The timing of the inserting cycle is determined by a scanning or sensing means located in the travel path of the sheets with the impulses of such scanning or sensing head being effected by a pre-adjustable counting means, which upon counting a predetermined number of sheets initiates the functioning of a programming control for the actuation of the spacing means, strip feeding means and the severing means.

Further objects and advantages of the invention will become more fully apparent to one skilled in the art from the following detailed description and annexed drawings, and in which drawings:

FIG. 1 is a side elevational view illustrating diagrammatically the present invention;

FIG. 2 is a side elevational view showing diagrammatically the means for inserting the marking strip, and

FIGS. 3–8 depict diagrammatically the individual steps for inserting the marking strip.

With reference to FIG. 1, it will be noted that a paper web **1** on a supply roll (not shown) is moved by means of feed rollers **2** into the zone of a transverse cutting means C. The cutting means C is defined by rotatable upper and lower circular knives **3** and **4**, respectively.

Sheets **5** severed from the web **1** by the cutting means C pass between lower and upper endless conveyor belts **6** and **7** and are fed thereby to a stack denoted **8**.

Located laterally with respect to the stack **8** is means denoted generally **9** for inserting marking strips **10**. With respect to the direction of movement of the sheets **5**, it will be noted that the inserting means **9** is located in the forward area or zone of the stack **8** in order that the front or forward edges of the sheets **5** are passed over the components of the inserting means which are intermittently positioned in the area of the stack **8**.

More particularly, as illustrated in FIG. 2, the inserting means for the strips **10** includes feed rollers **12** driven by electric motor **11** in timed relation with the machine operation which withdraws the marking strip from a supply roll **13** and moves the same into the region of a cut-off means M, constituted by a stationary lower knife **14** and an upper knife **15** movable upwardly and downwardly with respect to the lower knife. The upper knife **15** is pivotally connected as shown at **16** to an arm **17** which is an extension of the core of an electromagnet **18**. The pressure contact between the knives **14** and **15** is determined by a tension spring **19** which has its ends connected to the knife **15** and the arm **17**.

Immediately forward of the cut-off means M is spacer means **20** adapted to be moved forward and backward in a slide means (not shown) in timed relationship to the operating cycle. The rearward end of the spacer means **20** is connected to a lever **22**, as shown at **22***a*, with the lever being swingable about a fixed pivot point **21** with such lever being actuated by core **23***a* of an electromagnet **23**.

There is further provided a photo-electric scanning or sensing head **24** located in the path of movement of the sheets **5** between the cutting means C and the stack **8**. A pre-adjustable three-tens counter **25**, and an electric, electromagnetic or otherwise suitable programming control **26** of known type are operably associated with the scanning head **24**, the electro-magnets **18** and **23**, and the motor **11**. By virtue of this arrangement, the proper sequential actuation of the marker inserting means is determined.

While the operation of the invention is deemed readily apparent, it may be summarized as follows:

When the front edge of the sheet **5** moves in a forward or feed direction between the cutting means C and the

stack **8**, impulses are generated by the scanning head **24**, which impulses are transmitted to the counter **25** and stored in such counter. When a pre-selected number of sheets have been delivered to the stack an output impulse is imparted to the programming control **26**. Initially (FIG. 3) the control **26** moves the spacer means **20** into the forward or advance position illustrated in FIG. 4 by virtue of the energization of the magnet **23**. In such position, the spacer means **20** prevents positively the deposition of any sheets **5** moved in the direction of the stack in rapid or fast sequence. Hence, there is provided a gap or space in such area for allowing the insertion of the marking strip **10**.

The motor **11** is now actuated, and thus drives the rollers **12** which withdraw a predetermined length of marking strip **10** from the supply roll **13** and inserts the same into the gap or space produced by the spacer means **20** (FIGS. 5 and 6). After the magnet **23** has been de-energized, the spacer means **20** is moved to its initial position (FIG. 7) by spring means (not shown), and such action allows the sheets above the marking strip **10** to drop upon the stack.

Finally, the upper knife **15** is displaced in a downward direction by the activation of the magnet **18**, thereby severing the marking strip from the supply roll. Upon the de-activation of the magnet **18**, the knife **15** is moved into the position illustrated in FIG. 8, and at such time the entire apparatus has assumed its starting position.

The present invention is not to be confined to the showings in the drawings, but changes or modifications may be made therein, so long as such changes or modifications mark no material departure from the spirit and scope of the appended claims.

What I claim is:

**1.** A method for inserting marking strips into stacks of sheets delivered from transverse cutters and similar machines ejecting sheets, comprising the steps of feeding sheets to form a stack, temporarily introducing a spacer between the uppermost sheet on the stack and the sheets to be later fed in a direction transverse to the movement of the sheets to the stack for providing a gap between such sheets, inserting a marking strip from a supply source into the gap, continuing to feed sheets while the marking strip is being introduced, withdrawing the spacer from the stack whereby the sheets above the marking strip are lowered on the stack thereby closing the gap and anchoring the marking strip in the stack, and then severing the inserted strip from the supply source.



**2.** A method for inserting marking strips into stacks of sheets delivered from transverse cutters and similar machines ejecting sheets, comprising the steps of feeding sheets to form a stack, temporarily introducing a spacer between the uppermost sheet on the stack adjacent the forward end of the stack and the sheets to be later fed in a direction transverse to the movement of the sheets to the stack for providing a gap between such sheets, inserting a marking strip from a supply source into the gap, continuing to feed strips while the marking strip is being introduced, withdrawing the spacer from the stack whereby the sheets above the marking strip are lowered on the stack thereby closing the gap and anchoring the marking strip in the stack, and then severing the inserted strip from the supply source.

**References Cited by the Examiner**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 1,176,860 | 3/16 | Schumacher | 83—29 |
| 1,296,934 | 3/19 | Drovilly | 83—29 |
| 1,613,182 | 1/27 | Maxson | 83—373 |
| 2,122,710 | 7/38 | Bidwell et al. | 93—93 |
| 2,197,260 | 4/40 | Pickett | 83—373 |
| 2,395,490 | 2/46 | Matthews | 93—93 |
| 2,619,883 | 12/52 | Andren | 93—93 |
| 3,095,193 | 6/63 | Sorenson | 214—6 |

FOREIGN PATENTS

| | | |
|---|---|---|
| 712,761 | 7/54 | Great Britain. |

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