

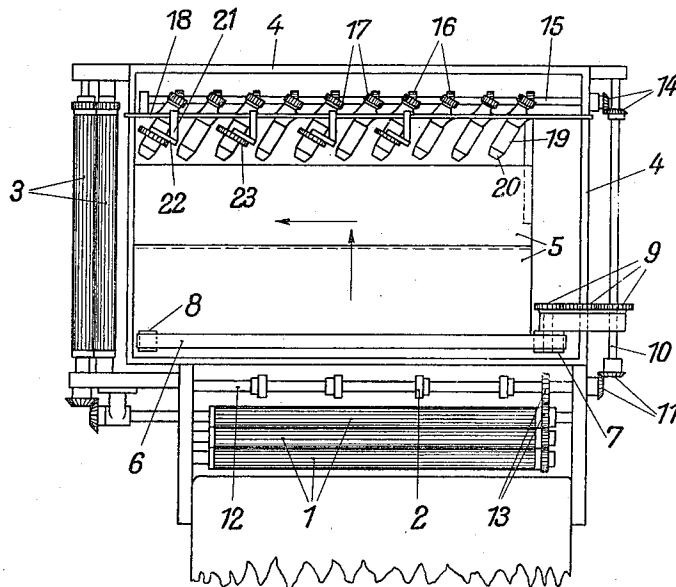
Sept. 21, 1937.

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2,093,937

SHEET FEED TABLE

Filed July 8, 1936



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UNITED STATES PATENT OFFICE

2,093,937

SHEET FEED TABLE

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Application July 8, 1936, Serial No. 89,637
In Germany May 8, 1935

1 Claim. (Cl. 271—52)

The present invention relates to sheet feed tables and more particularly to a sheet feed table having an inclined drive against a registering rule, especially for use as a corner feed table wherein the delivery is perpendicular to the registering rule in transverse folding machines for buckling folding. Feed tables of this kind are known in which the sheet is gripped only at the registering edge by pairs of rollers arranged in a direction which is inclined to the registering rule, and is fed onwards along the rule whilst being continuously drawn up against the latter. Since, with this arrangement, the under side of the sheet slides for the most part on the base and opposes the friction of the feed, a torque arises which is unfavourable for the registration of the sheets and necessitates a comparatively high feed friction on the rollers. A high frictional pressure of the pairs of rollers arranged in an inclined direction with regard to the feed direction is, however, again unfavourable for the registration, inasmuch as the latter, as soon as the sheets have come to bear against the rule, necessitates the possibility of free displacement of the sheets with regard to the inclined feeding means. In another constructional form of a sheet feed table having automatic registration of the sheets by means of an inclined drive advancing them against a registering rule, which construction of feed table is also used as a so-called corner feed table with alteration of the feed direction in buckling folding machines for transverse folding, the lower inclined driving rollers are constructed in the form of inclined rollers or cylinders extending over the whole breadth of the table, so that the sheet is subjected on its whole under side to the feed friction of the inclined rollers. These inclined roller feed tables are disadvantageous, inasmuch as the surface of the sheet is subjected to harmful friction which is particularly unfavourable on account of the constant displacement of the sheet fed rectilinearly along the rule with regard to the inclined feed rollers. In the case of printed sheets this very easily leads to a displacement of the print. A further disadvantage resides in the fact that with corner feeding the front part of the sheet first coming into contact with the rollers already experiences a feed friction in the sense of the new feed direction, whilst the rear part of the sheet is still held by the devices serving to feed it in the previous direction. When the sheet is released from these devices it may easily happen that it performs a turning movement. When the sheet is

forwarded by feed rollers on to the corner feed table, it is not possible to avoid the occurrence that the sheet at the moment of release from the feed rollers, which have hitherto prevented a turning movement of the sheet by the action of the inclined feed means of the corner feed table, is turned round, inasmuch as the rear part of the sheet only comes under the action of the sheet feeding means later on.

According to the present invention the defects above set forth are eliminated by arranging that, in combination with the known inclined feed rollers or the like arranged along the registering rule, an adjustable feed band running parallel to the registering rule, of a kind likewise known per se in feed tables, is arranged in such manner that the sheet which is to be fed onwards perpendicularly to the previous feed direction is engaged at the one edge by the feed rollers and at the other edge by the feed band and is moved over the otherwise smooth feed table exclusively by their action. The band preferably runs at a feed velocity which is equal to the sheet speed produced by the inclined feed means in combination with the registering rule, and is of such a breadth that there is sufficient feed friction to obtain the said feed velocity of the sheet.

The invention thus consists in arranging two feed devices, the one of which is provided with an inclined drive engaging at the side registering edge, in such manner that they engage approximately simultaneously the side edges running parallel in the new feed direction, and the strips of the surface bounding the side edges, in order thereby to eliminate on the one hand the torsional forces which, with unilateral engagement of the inclined feed means, are caused in the sheet by the sliding of the free part of the sheet on its base, and on the other hand the turning moment, which, with inclined feed with complete engagement of the inclined feed means, arises on the whole under side of the sheet in the case of corner feed as a result of the fact that the part of the sheet directed towards the registering rule is engaged by the inclined feed means and advanced in the new direction earlier than the opposite part of the sheet. Both in the case of corner feed and also in the case of purely unilateral engagement of the sheet feeding means, the front edge of the sheets—considered with reference to the direction of delivery—comes into contact with the inclined feed means only shortly before striking against the registering rule, and after striking against the registering rule

a uniform feed action takes place at both lateral edges—considered with regard to the new feed direction. The feed direction of the inclined feeding means may, as compared with the frictional pressure of the inclined feed means which engage only unilaterally, be greatly reduced, and as compared with the feed tables having inclined feeding means engaging the whole surface of the sheet, the advantage of diminished surface friction is obtained.

A preferred constructional form of a sheet feed table according to the invention is illustrated by way of example in the only figure of the accompanying drawing, which shows the plan of a corner feed table of a transverse folding device, which serves the purpose of conveying the sheet discharged from a folding machine up to a transverse folding machine in a direction at right angles to the direction of discharge.

Referring to the drawing:

The reference numeral 1 denotes rollers of a folding machine from which the folded sheet passes over pairs of rollers 2 on to a corner feed table on which it is conveyed at right angles to the direction of discharge onwards to the following transverse folding machine 3. The corner feed table consists of a frame 4 with two plates 5 which are arranged in the frame 4 so as to be capable of being displaced over one another transversely to the new feed direction. Over the one table plate 5 at the edge directed towards the folding machine 1 a feed band 6 runs, which is guided on the one hand over a driving roller 7, and on the other hand over a reversing roller 8. The roller 7 is driven through pinions 9, a shaft 10 journaled in the table frame 4 and a bevel wheel drive 11 from the shaft 12 of the feed rollers 2, which latter themselves receive their drive through the medium of pinions 13 from a folding roller 1.

From the shaft 10 by means of a bevel wheel gear 14 a shaft 15 is driven on which a number of helically toothed wheels 16 are mounted so as to be non-rotatable. The helically toothed wheels 16 mesh with helically toothed wheels 17 which are mounted on short shafts, which latter are mounted on the registering rule 18 parallel to one another but inclined to the said rule, and are provided on the other side of the rule with short feed rollers 19 having truncated conically shaped free ends 20. The rule 18 is arranged in known manner so as to be adjustable on the frame 4, this arrangement being, however, not shown in

the drawing. The bearings of the shaft 15 are connected with the rule for the purpose of common adjustment and in correspondence herewith the bevel wheel 14 mounted on the shaft 10 is arranged so as to be displaceable and adapted to be fixed in position on its shaft. On the rule 18 holders 21 are also fixed to the ends of which arms 22 are pivotally connected so as to be freely movable, the said arms carrying at their free ends a small rotatable roller or a small brush wheel 23. The brush wheels 23 are provided with axles running parallel or approximately parallel to the rollers 19 and bear freely on the said rollers 19.

The sheets coming from the folding machine 1 are conveyed by the rollers 2 on to the table plates 5 and arrive, as a result of the force of the discharge, in the range of action of the rollers 19 and brush wheels 23. By the co-operation of these two latter elements the sheets are drawn up against the rule and during the course of the further feeding operation are maintained permanently in contact with the rule. Simultaneously or approximately simultaneously the sheets come into contact at the opposite edge with the feed band 6 which assists the feeding of the sheet in the new feed direction along the rule 18. By displacement of the rule 18 and pushing together the table plates 5, the feed table can be adapted to any desired dimensions of sheet. Upon delivery of the sheet on the feed table in the direction of the feed to the folding machine 3, the sheets likewise come approximately simultaneously under the action of the inclined rollers 19 and the feed band 6.

I claim:—

In a corner sheet feed means for folding machines and the like, the combination of a table having a surface over which sheets travel, feeding in means to feed sheets onto said table from one side edge thereof, a conveyor belt extending over said table parallel to said side edge and adjacent thereto, a guide rule extending along said table adjacent and parallel to the opposite side edge of the table, diagonal feed rolls in spaced parallel relation at the last mentioned side of the table, feeding off means at one end of the table, and means to drive said belt and rolls constructed and arranged to cause the belt and rolls to move sheets over the table in the direction of said feeding off means.

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