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G. SPIESS

2,249,186

CONVEYING TABLE FOR THE TRANSVERSE FEEDING OF MATERIAL IN SHEET FORM

Filed Sept. 6, 1940

2 Sheets-Sheet 1

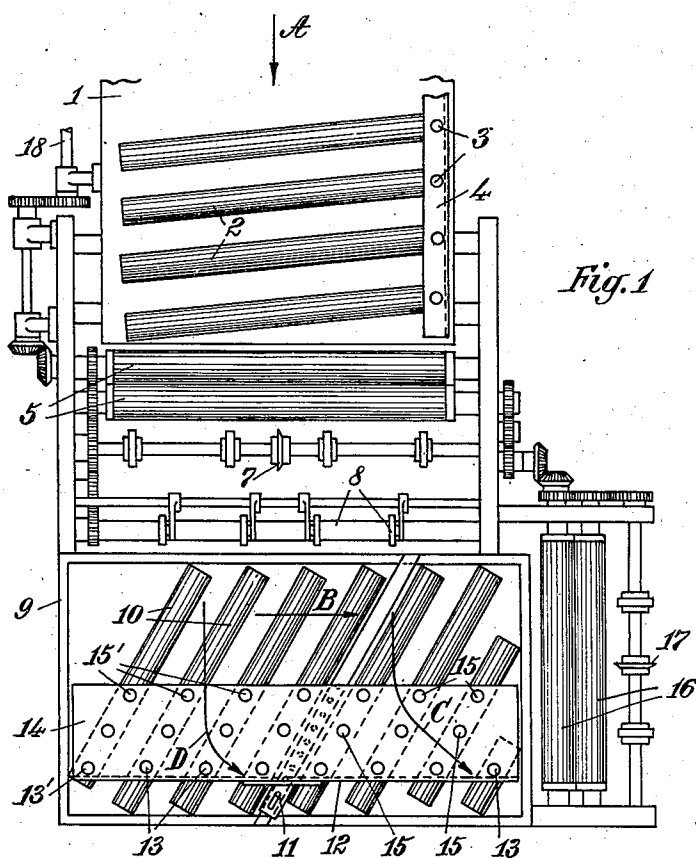


Fig. 1

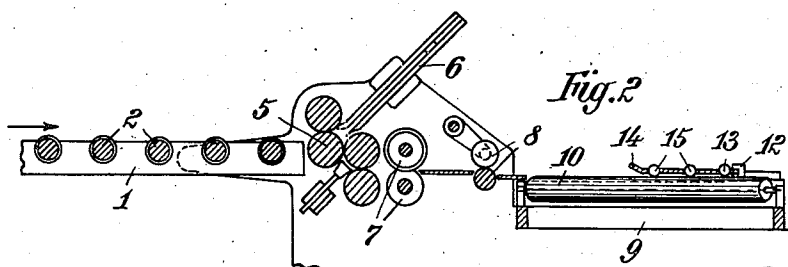


Fig. 2

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2 Sheets-Sheet 2

Fig. 3

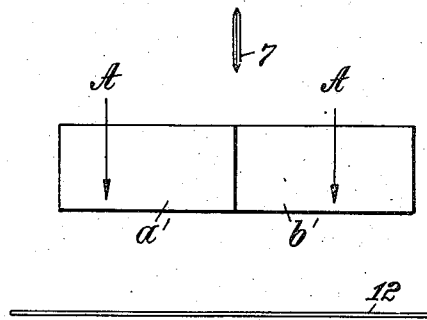


Fig. 4

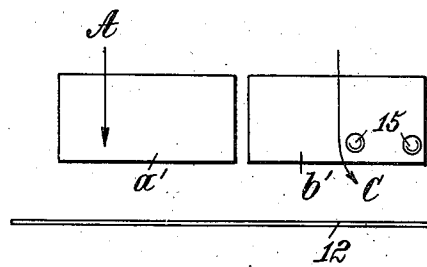


Fig. 5

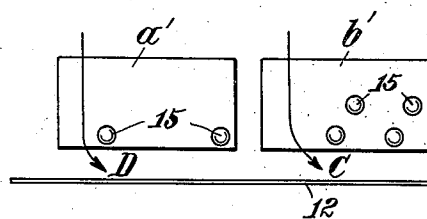
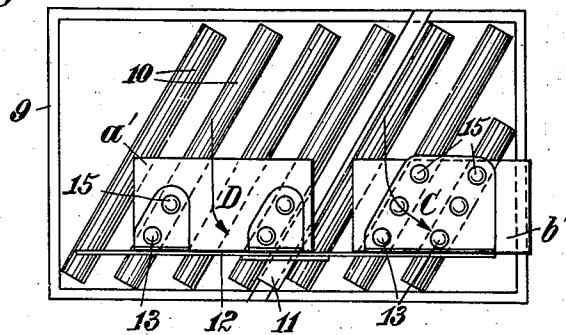


Fig. 6



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UNITED STATES PATENT OFFICE

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CONVEYING TABLE FOR THE TRANSVERSE
FEEDING OF MATERIAL IN SHEET FORM

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Application September 6, 1940, Serial No. 355,658
In Germany October 1, 1938

2 Claims. (Cl. 271—52)

The invention relates to a conveying table for the transverse feeding of sheets of paper, paste board, card board or sheet metal and other sheet-like material, equipped with oblique driving rollers, directing ruler and press bodies arranged in front of the ruler.

The invention consists in that the sheets or the like are deflected from the direction in which they enter already at a greater distance from the directing ruler of the transverse conveying table and of the press bodies coordinated to the same, i. e. balls, rollers, brush wheels or the like, that the sheets are moved towards the directing ruler of the transverse conveying table in a larger curve, and that, in preserving their movement, they go over into the transverse direction.

It is known to provide a transverse conveying table between the paper working machines arranged at an angle the one to the other, for instance between two folding mechanisms standing at right angles the one to the other, said transverse conveying table consisting of driven oblique driving rollers and of an adjustable directing ruler. On these transverse conveying tables with oblique rollers a row of press bodies such as balls, rollers, brush wheels or the like is arranged directly in front of the directing ruler and cooperates with the driven oblique rollers, that is loads on the same or is adjusted relative to the same with pressing-on pressure. This row of press bodies serves to brake the sheet in front of the directing ruler—for instance the sheet delivered at great speed from the first folding mechanism and, after it has been discharged from the delivering conveying rollers of this folding mechanism, said sheet being without positive guiding on the travel up to the directing ruler of the transverse conveying table, that is flung against this directing ruler without guidance—in order to avoid rising and upsetting of the front edge of the sheet on the directing ruler. These press bodies serve further for accelerating the sheet conveying in the transverse conveying direction. Finally it is possible that by the press bodies a distance can be formed on the transverse conveying table with oblique rollers between the successive sheets on the same in such cases when at the same time several sheets the one at the side of the other, for instance sheets cut into two parts, folded pieces or the like, are moved towards the directing ruler of the transverse conveying table, said sheets having then to be conveyed transversely into the next following folding mechanism. With this object in view press bodies of different weight or material, that is possessing different friction pressure, are arranged on the oblique rollers, said press bodies exerting different effects upon the individual sheets or the like.

In these known transverse conveying tables

with oblique rollers, the sheets, sheet parts, folded pieces or the like delivered, for instance, from the first folding mechanism are flung towards the directing ruler and braked by the press bodies arranged directly in front of the ruler, the sheets passing under this ruler. The sheets come, on the directing ruler, first into a position of rest, but are, after a short moment and influenced by the action of the driven oblique driving rollers and press bodies, further conveyed in the transverse direction. A loss of time is due to the fact that the sheets or the like must first be moved in the admission direction up to the directing ruler, come into a position of rest on this ruler and must be further moved from this position of rest, this loss of time reducing the efficiency of the machine.

It may further be mentioned that it is also known to drive the conveying rollers of this table at different speed, for instance the front group of these conveying rollers at greater revolving speed, for forming a distance between the sheets or the like successively fed on a transverse conveying table with oblique rollers. It is also known to arrange with this object in view the conveying rollers of the transverse conveying table, which rollers revolve at similar revolving speed, in a different angular position the one to the other.

According to the invention, the sheets, sheet parts, folded pieces or the like are deflected from their admission position at a greater distance from the directing ruler, moved towards the directing ruler in a greater curve and, preserving their movement, go over into the transverse direction, whereby an increase of efficiency is attained. The danger that the front edge of the sheet rises and is upset on the directing ruler in this feeding of the sheets against the directing ruler in a curve is further absolutely excluded.

An embodiment of the invention is illustrated by way of example in the accompanying drawings which show two folding mechanisms arranged at right angles the one to the other and destined for cross-folding.

Fig. 1 shows a folding machine with the transverse conveying table in top plan view,

Fig. 2 is a side elevation partly in section,

Figs. 3 to 6 are diagrammatic top plan views illustrating the simultaneous feeding of several sheets the one at the side of the other.

The sheets to be treated are fed in the direction of the arrow A on a feeding table 1 consisting, for instance, of positively driven oblique rollers 2 and lateral directing means, namely of the press bodies 3 (balls), directing ruler 4, and a folding mechanism 5 of known type containing one or several folding pockets 6. A cutting device 7, adjustable in lateral direction and removable, is arranged behind the folding mecha-

nism 5. Conveying rollers 8 are provided at the outlet end of the folding mechanism 5, by which rollers the sheets are delivered on to a transverse conveying table 9 consisting of positively driven oblique rollers 10. The transverse conveying table 9 with oblique rollers 10 is provided with a directing ruler 12 adjustable on a bar 11 according to the form of the sheet. A row of press bodies such as balls 13 is mounted in front of the directing ruler 12. Instead of balls rollers, brush wheels or the like may be used. The press bodies 13 load on the oblique rollers 10 or are adjusted to press against the same. All this is known.

In connection with the directing ruler 12 a sheet metal plate 14 is mounted roof-like above the oblique rollers 10, the front edge of this plate being bent upwards to ensure the insertion of the incoming sheets, as shown in Figs. 1 and 2. Several small size sheet metal plates may also be provided, as shown in Fig. 6.

According to the invention one or several rows of preferably exchangeable press bodies, such as balls 15, co-operating with the oblique rollers 10 are arranged in addition to the row of press bodies 13 arranged in front of the directing ruler 12, so that the sheet arriving on the transverse conveying table is positively deflected from the admission direction A, by the press bodies 15 for changing the direction of movement and cooperating with the oblique rollers 10, already at a greater distance from the directing ruler 12 and the row of press bodies 13 coordinated to this directing ruler, so that further the sheet is conveyed in a larger curve (C, D) against the directing ruler 12 and, preserving its movement, is transferred into the transverse direction B. The sheet moves then along the directing ruler 12 into the next following folding mechanism 16 and is held in the directed position by the press bodies 13. The sheet is cross-folded in the folding mechanism 16. A cutting device 17 adjustable in lateral direction and removable is arranged behind the folding mechanism 16. All positively driven elements are driven from a shaft 18 through the intermediary of intermediate gears.

Two additional rows of press bodies 15 are arranged in the form of construction shown by way of example. If from the folding mechanism 5 whole sheets get on to the transverse conveying table in the direction of movement A, balls 15 are placed into all or almost all holes 15' according to the quality of the sheet to be used. The balls of the first row may exert a different pressure from those of the second row.

If the sheets folded in the folding mechanism 5 are cut by the cutting device 7, that is if two sheet parts or folded pieces *a'*, *b'*, are fed at the same time to the transverse conveying table the one at the side of the other and in the admission direction A, as shown in Fig. 3, the balls in the first row of press bodies 15, against which, as shown on the drawing, the left hand part *a'* of the sheet runs, are removed. The right hand part *b'* of the sheet comes consequently first under the influence of the balls or of the oblique drive and is therefore deflected in a curve C, as shown in Fig. 4. Whilst the right hand sheet part *b'* moves sideways, i. e. already in transverse direction, the left sheet part *a'* first continues to move in the admission direction A and comes under the influence of the balls only in the second row of press bodies 15, as shown in Fig. 5. At this point also the right hand sheet part *b'*, which has, however, moved away from

the left hand sheet part *a'*, comes under the influence of the second row of balls, so that both sheet parts are conducted, along curves C, D, towards the directing ruler 12, as shown in Fig. 6, and brought into the transverse direction, that is conveyed along the directing ruler 12 at a distance the one from the other towards the cross-folding mechanism 16, the row of press bodies 13 arranged directly in front of the directing ruler 12 securely holding the sheet parts in their directed position.

If in the preceding description it has been stated that for obtaining the running on curves C and D, independent the one on the other, for the two arriving sheet parts, the press bodies 15 in the first row destined for the left hand sheet part *a'* are removed, the same proceeding can be carried out if on the sheet part *a'* a less great number of balls 15 act or such balls of a lower weight act, that is the magnitude of the pressures and/or the number of the press bodies is adjustable or variable.

It is evident that also more than two sheet parts can be treated or conveyed; in this instance it is merely necessary to provide a corresponding greater number of rows of press bodies and to increase the number of press bodies and to insert the press bodies in a suitable arrangement.

If from the first folding mechanism 5 sheets folded in very narrow high-form are brought on to the transverse conveying table, these sheets are prevented from tilting and assuming oblique position on the transverse conveying table according to the invention in that the sheets are held in several zones at different points by the press bodies, so that wrong folding in such narrow high-formed sheets is avoided by this several times secured sheet holding.

I claim:

1. A conveying table for sheets of paper, paste board, card board or sheet metal and for other sheet-like material horizontally arranged between two treating devices such as folding mechanisms standing the one at an angle to the other and equipped with positively driven oblique driving rollers for conveying the sheets, an adjustable directing ruler for directing the sheets to be conveyed, and press bodies arranged directly in front of the directing ruler and loading on the oblique driving rollers, comprising in addition to the row of press bodies in front of the adjustable directing ruler, a plurality of further rows of exchangeable press bodies arranged at a greater distance from the directing ruler so that the sheets coming from the first treating device and moving on to the conveying table are deflected from this conveying direction and moved in a larger curve towards the directing ruler and remaining in movement change into the transverse direction.

2. A conveying table as specified in claim 1, in which besides the additional row of press bodies arranged in front of the adjustable directing ruler, a plurality of further rows of exchangeable press bodies are provided at a greater distance from the directing ruler, the magnitude of the pressures exerted by the press bodies being adjustable so that when several sheets are simultaneously conveyed on the conveying table the one at the side of the other the running-on curves of said sheets are altered the one independently on the other.

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