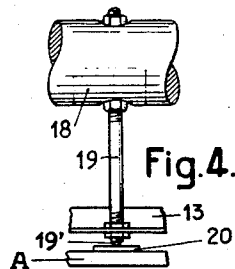
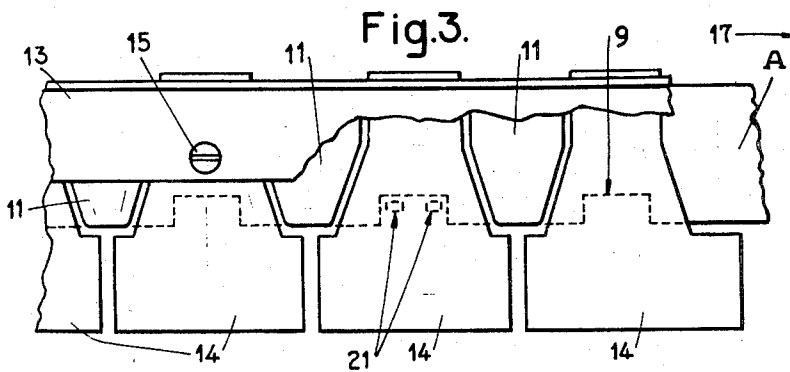
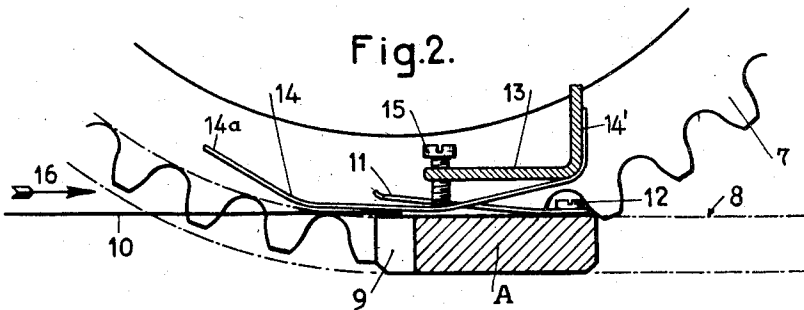
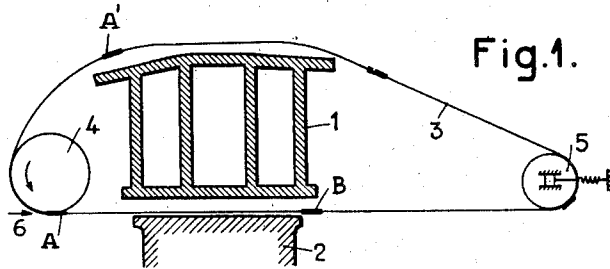


Aug. 26, 1958

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2,849,235

MACHINES FOR OPERATING ON SHEETS, SUCH FOR EXAMPLE
AS A STRIP-CUTTING PRESS OR A PRESS FOR
CORRUGATING CARDBOARD SHEETS
Filed March 30, 1955



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MACHINES FOR OPERATING ON SHEETS, SUCH FOR EXAMPLE AS A STRIP-CUTTING PRESS OR A PRESS FOR CORRUGATING CARDBOARD SHEETS

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Application March 30, 1955, Serial No. 498,079

Claims priority, application Switzerland April 5, 1954

3 Claims. (Cl. 271—50)

It is known in machines for operating on sheets, for example in presses for cutting or corrugating paper or cardboard, to transport the sheets between endless chains which serve to move gripper bars.

Figure 1 diagrammatically illustrates an example of this arrangement and shows a frame 1, a vertically-movable lower platen 2 and chains 3 which pass, in particular, over wheels 4 and 5 with the object of carrying the gripper bars around the frame.

At each operation of the press one of these bars occupies the station A, the so-called sheet engagement station at which the registered sheets are held, and another station B at which it holds a sheet between the tools operating thereon.

U. S. Letters Patent 2,258,880 describes fully how the tools are operated by means of toggle levers and U. S. Letters Patent 2,385,581 explains how the gripper bar carrying chains are alternatively moved and stopped each time such bars attain the stations A and B.

The sheets are introduced to the station A in the direction of the arrow 6 and are brought against the pins which are adapted to align them, and at the same time to introduce them into the jaws of the gripper bars A', which at this moment open.

To prevent an inopportune raising of the front edge of the sheet and to ensure correct penetration into the said grippers, so-called sheet knock-down devices have previously been provided, these being adapted to strike the sheets whilst guiding them, and then being lifted by means of more or less complicated mechanisms at the instant the grippers start to travel forward again.

The object of the present invention is to simplify the construction of such sheet knock-down devices, to which end it is provided that, in a machine of the kind referred to, the chain wheels above the station at which the registered sheets are engaged are interconnected by at least one transverse member or beam which is parallel to the axis of these wheels and carries wings which are adapted to be disposed, at each stop, above the bar occupying the aforesaid station, thereby to oppose inopportune lifting of the front edge of a sheet about to be gripped, said wings extending to this end along a practically cylindrical surface which is co-axial with the axis of the wheels and is tangential to the upper face of the bar and in front of the latter.

The drawing illustrates an embodiment of the subject of the invention, this being given by way of example.

Figure 1 is a view showing the device of this invention in its general environment;

Figure 2 is a partial view of the lower part of a chain guide wheel, showing a gripper bar at the position A and a wing-carrying beam of the sheet knocking-down device in section;

Figure 3 is a partial plan view, partly broken away, of the knocking-down devices, of the bar, and of the grippers;

Figure 4 illustrates the way in which the knocking-

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down device simultaneously forms an abutment which opposes bowing of the bar.

In Figure 2, the lower part of a chain wheel above the sheet engaging station A is seen at 7, together with the bar, which is shown in section at A, guided by the chain 8.

The bar has notches 9 which allow the passage of pins (not shown) against which each of the sheets introduced into the grippers of the bar are registered, as in the case of the sheet of which the front end is seen at 10.

It will be noted in particular that the edge of this sheet is located between the upper face of the bar A and a resilient blade 11 which constitutes part of a series of such blades which are placed side by side over the whole length of the bar and are held by screws such as 12. Means which have not been illustrated because they do not form part of the invention hold the grippers open, i. e. the blades 11 raised.

Since the clearance between the blades and the bar is very small (it has even been exaggerated in the drawing) it is necessary to guide the sheets at this part whilst preventing inopportune lifting thereof.

They cannot, in contrast, be lowered since they are in fact guided by a table (not shown in the drawing) of which one part, carrying the marginal locating pins, oscillates to enable the bars to pass.

In the present instance the chain wheel 7 illustrated, and that which faces it in front of the plane of the drawing, are connected by an L-shaped angle iron forming a transverse beam 13 which is parallel to the axis of the wheels.

Attached to this beam are wings which are made of metallic sheet and have a certain degree of resilience, one of these being shown in side view at 14 and including inclined portions 14a.

It will be observed that it is attached to the beam at 14' and from there extends freely away from the beam and the spacing between these two may be varied by operation of a regulating screw 15. It will also be observed that it forms a wing which extends practically tangentially to a cylindrical surface co-axial with the wheel 7 and which, in part, bears against the upper face of the bar A at a level below that to which the blades 11 rise.

Thus a sheet or wing of this character provides for a sheet 10, arriving in the direction of the arrow 16, a guide which ensures proper introduction thereof into the grippers of the bar.

The arrangement just described is seen in plan as shown by the partial view of Figure 3.

Extending parallel to the gripper bar A carrying the resilient blades or grippers 11, and above this bar, is the transverse angle beam 13 which is supported by the chain wheels and participates in the rotary movement of the latter.

One of these wheels is located in the plane of the chain dotted line 17 and the other at the opposite side, to the left and off the drawing, the portion illustrated corresponding to about one half of the total length of the bar and of the beam.

The wings 14, fixed to the beam 13 and passing below the latter, appear in front of the same and one of the screws for regulating the position of such wing is observed at 15.

There are plurality of side by side wings, and not a strip extending over the whole width of the sheets, because it is necessary to provide gaps for the passage of the blades 11 when raised.

It will be evident that, during the rotation of the chain wheels between two periods of arrest of the bars, the arrangement described provides for complete clearance of the space occupied by the pins. Moreover the wings

14, which are brought into place simultaneously with the bars, do not strike the latter and moreover dispense with special means to provide for the passing of the bars and the grippers thereof when a sheet has been introduced.

In addition to this, and as illustrated by Figure 4, it is possible to use the angle iron 13 or any other equivalent transverse member to obtain proper application of the bar, at its centre, and avoid flexion.

Thus there is shown at 18 the shaft of the chain wheels, one of which is to the right and the other to the left of the central portion of the shaft illustrated, and at 13 the beam or angle iron supporting the sheet knocking-down wings. A radial rod 19 passes through these two elements and is connected to them in adjustable fashion by means of nuts, this rod projecting from the angle iron towards the bar A.

By this means the position thereof is adjusted in such a way that the end 19' of the rod bears without effort against an abutment plate 20 which is carried centrally by the bar. Thus this radial rod, which is firmly anchored in the shaft 18, forms a rigid bearing which prevents any flexion of the central part of the bar at the moment that the elements opening the grippers apply a pressure to the same.

This abutment rod (of which a number may be provided) rotates with the chain wheels and there is no shock when it encounters the bar which moves in at the same speed as the bearing point thereby provided, and the latter accompanies the bar to the position A and then passes away therefrom without any friction.

It is to be noted that in Figure 3 the small rectangles 21 represent the pins against which the sheets abut and

which, for this purpose, are lifted within the notches 9 of the bars.

What I claim is:

1. In a sheet processing machine including bars with grippers for grasping the sheets and chains for conveying the bars, the chains being adapted to be driven by toothed wheels, each sheet being fed to its grippers at a level defined by a tangent to the circle described by the base of the teeth; a guide device comprising a pair of wheels for driving the chains, an axle supporting said wheels, a transverse beam parallel to said axle, said transverse beam being rigidly positioned with respect to said axle and rotating therewith, at least one wing supported by said transverse beam in a position substantially tangent to the circle described by the base of the teeth, and an inclined portion included in said wing for guiding each sheet tangent to the circle and thereby to the grippers.

2. A guide device as claimed in claim 1 comprising adjusting means on said transverse beam for regulating the position of said wing relative to said transverse beam.

3. A guide device as claimed in claim 2 comprising an adjustable rod extending radially from the axis and coupled to said transverse beam intermediate its ends for supporting said transverse beam.

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