Oct. 23, 1951 H. BOBST 2,572,691

REGISTERING DEVICE FOR USE WITH MACHINES HANDLING PUNCTURED SHEETS

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Fig. 1.

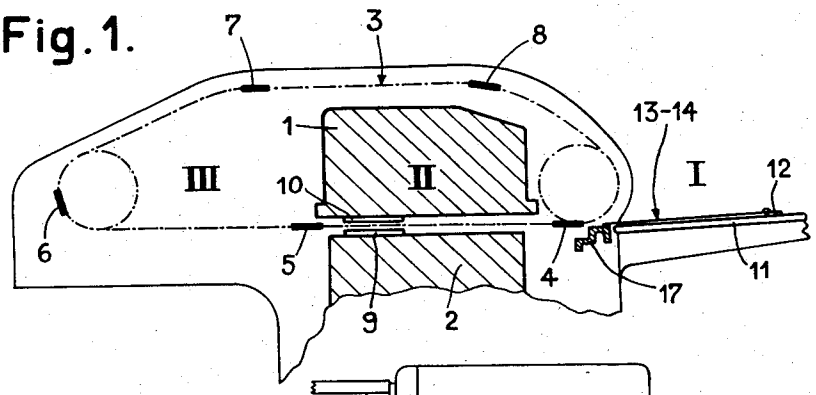


Fig. 2.

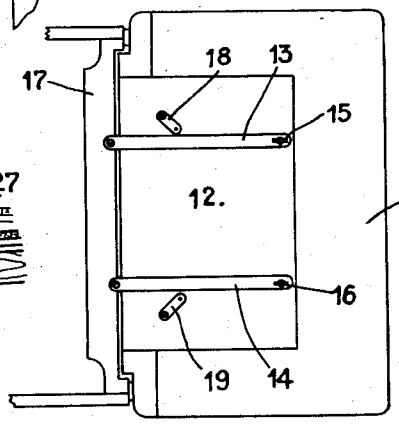


Fig. 4.

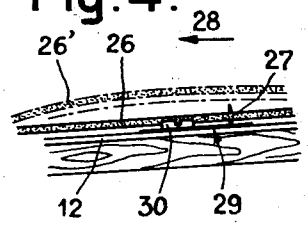


Fig. 3a.

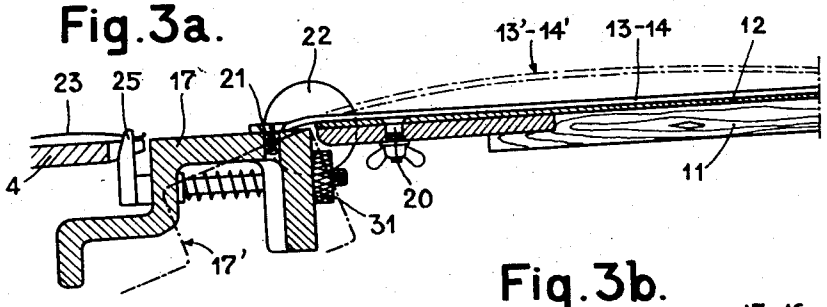
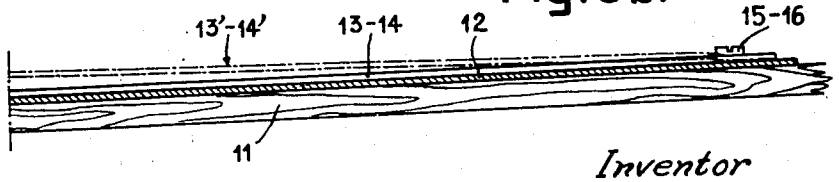


Fig. 3b.



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REGISTERING DEVICE FOR USE WITH MACHINES HANDLING PUNCTURED SHEETS

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8 Claims. (Cl. 271—60)

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The present invention relates to a device for facilitating the registering of sheets of paper, cardboard, or the like in machines for working the same, each sheet being provided with registering holes prior to said working.

In some types of machines for working paper, for example in goffering machines, the sheets are usually placed by hand on a matrix, the registering being done by puncturing. This procedure consists in perforating each sheet with two holes in predetermined places and aligning the said holes by penetration with two reference points called registering pins or punches.

In the example cited above of goffering, perfect coincidence of the goffering and of the previous printing is thus obtained the location of the two holes being first printed simultaneously with the inscriptions or designs and the holes then being made by hand in the places thus marked. This obviates any misalignment arising from an error of position between the printing and the edge of the sheet, which would of course be easier to register by means of registering marks. One source of error resides also in the fact that certain work necessitates cutting the sheets to smaller sizes, which may cause differences of cut, or prevent correct registering as a result of the smallness of the size. The process is finally applicable only in such cases where the sheets are pricked on a matrix which, in some rapid modern machines, is no longer accessible from outside and is better adapted to receive transported sheets previously registered in a previous station.

It would of course be easy to provide such a machine with punches retractible as each sheet is carried forward but, besides necessitating an extra mechanism, this latter would prove very complicated as the position of the punches might have to be changed for each new work.

The device according to the present invention is simpler, and it comprises essentially a support for the two punches and for the sheets as also for a member coming between the said support and the sheets without normally preventing them from being placed on the punches, the said member having means making it possible to connect it with an element of the machine with which the device co-operates and which moves each time a sheet is gripped and carried forward, its movement so acting then on the above mentioned member that is rises out of the support plane and thus raises and guides the sheet above the punches.

The drawing shows an embodiment of the object of the present invention, given by way of example, in the case of a goffering platen press with endless chain and gripper-bar transport of the sheets.

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Fig. 1 is a schematic view of the press and of the device in place on the press.

Fig. 2 is a plan view of the device on a bigger scale.

Figs. 3*a* and 3*b* follow each other, in so far as Fig. 3*b* is a continuation of Fig. 3*a* towards the right. The whole forms a section of the device and of elements of the press on a bigger scale than the preceeding figures.

Fig. 4 is a lateral partial view of the device and of an element of the press, showing a punch and how a sheet is separated therefrom.

The press shown is composed principally of a fixed upper platen 1 and of a mobile lower platen 2, between which endless chains 3 convey gripper bars 4, 5, 6, 7, 8 destined to transport sheets from an introduction and registering station I, to the working station II between the platen, then to the delivery station III, where the sheets are laid in a pile.

The lower platen carries the goffering matrix 9 and the upper platen carries the corresponding counter-matrix 10. These are placed near the gripper bar 5 keeping the sheet in place during work, after having gripped it in the registering position at the station where bar 4 in shown in Fig. 1.

The sheets to be registered are placed one by one on the table 11 of the press, on which is seen the registering device consisting of a support in the shape of plate 12 (see also Fig. 2) on which extend, lengthwise of the direction of feed, two thin and flexible blades 13 and 14.

These blades are pierced differently at each of their extremities, the extremity opposite the machine having an oblong hole making it possible to attach the said blades to the plate 12, by means of screws 15, 16, while insuring a certain amount of longitudinal freedom of movement, and the extremity near the machine having a round hole, making it possible to screw each blade to the registering table 17 of the press which oscillates in a known manner each time a registered sheet is seized and carried into the press. Finally, two thin sheet iron blades 18 and 19 are placed on the plate each having a point constituting the punches of which details are shown on a larger scale in Fig. 4.

Thus, contrary to what has been done up to now, the punches are no longer placed in the

matrixes, but on a support forming an auxiliary table subjected to the registering table 11.

The operation of the described device is as follows:

The support 12, attached to the table 11 for example by screws 20 with winged nuts 20', carries the blades 13, 14, screwed at 21 to the registering table 17, oscillating about the axle 22 and which normally serves to register the sheets introduced into the grippers 23 of the bar 4, by means of stops 25.

In order to withdraw these stops each time a registered sheet is removed, the table 17 oscillates from the position in full lines to the position 17' in dot and dash lines.

However, the blades 13, 14, having an extremity rigidly fixed to this table 17 and the other extremity relatively free, and being moreover flexible, at each oscillation of the said table 17, they will form a "hog's back," flexing to rise to position 13', 14' shown in dot and dash, raising at the same time all sheets of paper laid thereon.

Fig. 4 shows what happens in this case: the sheet of paper 26, pricked on the punch 27, escapes from the latter and rises to 26', so that it may slide without difficulty on the blades 13', 14' as the grippers 23, engaging the leading edge of the sheet, draw the latter in the direction of the arrow 28.

Fig. 4 also shows how a punch, 18 or 19 of Fig. 2, is constituted by a plate 29 held in place on the support 12 by a screw such as 30.

The free extremity of the said plate carrying the punch may obviously be turned round the screw and by providing a preferably oblong attachment hole, it will be possible to modify very precisely the position of this element which, according to needs, will be screwed wherever useful on the support 12, which may of course be pierced and tapped as needed, unless it is previously provided with a certain number of such holes.

The sheets being registered by the punch and no longer by the stops 25, care will be taken to advance these latter further than the position of the edge of the sheets, so that the stops do not prevent correct registering of the sheets. The rowelled nut 31 (Fig. 3a) permits adjustment of the stops.

It is obvious that placing or removal of the device does not necessitate any more than screwing or unscrewing of two screws connecting the blades to the registering table and two winged nuts connecting the support to the table, which makes it possible, to transform the platen press under consideration instantaneously into a goffering machine for example.

What I claim is:

1. In combination with a machine for handling sheets having registering holes therein and including mechanism for gripping successive sheets at a pick-up station and for feeding the sheets; a sheet support surface extending toward said pick-up station, a plurality of punches projecting from said support surface and positionally adjustable relative to the latter for engagement in the holes of a sheet on the latter to register the sheet, at least one member extending over said support surface and adjacent to each one of said punches and normally lying against said surface to permit said punches to project through the sheet thereabove, and movable actuating means connected to said member and operative each time said mechanism grips a sheet at said pick-up station to displace at least the portion of said

member in the area of said punches out of the plane of said support surface a distance sufficient to raise the overlying sheet out of engagement with said punches.

2. The combination according to claim 1, wherein said member includes a flexible blade, means slidably holding one end of said blade to said support surface, and wherein said actuating means includes an oscillatable member swinging about an axis parallel to the plane of said support surface and fixed to the other end of said flexible blade so that swinging of said oscillatable member in one direction causes said blade to hump-up in the central portion thereof.

3. The combination according to claim 2, wherein said support surface consists of a table, and said holding means includes an elongated slot formed in said one end of said flexible blade and securing means extending slidably in said slot and fixed to said table so that said one end of the flexible blade is free to move along said table.

4. The combination according to claim 1, wherein said member includes a flexible blade extending in the direction of feed and means slidably holding the end of said blade remote from said pick-up station to said support surface, and wherein said actuating means includes an oscillatable member located between said support surface and said pick-up station and swinging about an axis parallel to the plane of said support surface, said oscillatable member having leading edge registering stops thereon which are displaced into and out of the feeding path in response to the swinging movement of said oscillatable member, and means fixedly connecting the end of said blade adjacent said pick-up station to said oscillatable member so that the central portion of said blade is humped-up for freeing the overlying sheet from said punches when said oscillatable member swings in the direction displacing said stops out of said feeding path.

5. A registering device for use at the pick-up station of sheet handling machines, the sheets having registering holes therein, said device comprising a support for the sheets having thereon at least two punches projecting therefrom in positions to enter the holes of the sheets as the latter lie on said support, at least one member between the sheets and said support extending adjacent to said punches, said member normally lying against the support and allowing said punches to project through the related holes of the sheets, and means connecting said member to an element of the handling machine actuated each time the machine picks up a sheet at said station, said connecting means being operative, when actuated, to displace said member out of the plane of said support a distance, in the direction in which said punches project, sufficient to raise the sheets above said punches.

6. A registering device according to claim 5, wherein said support comprises a table, said member including a flexible blade which normally is substantially flush with the top surface of said table, said blade being slidably held to said table at one end and fixed to said connecting means at its other end; and wherein said connecting means moves the central portion of said blade away from the table each time the machine picks up a sheet.

7. A registering device according to claim 6, wherein each of said punches comprises a flat body portion having an upstanding point at one end thereof, and means securing said body por-

tion to said table including an elongated slot formed in the other end portion of said body portion and a bolt extending through said slot and tapped into said table so that the location of said upstanding point relative to said table may be conveniently adjusted to accommodate sheets having differently positioned holes therein.

8. A registering device according to claim 5, wherein said support comprises a table having a plurality of spaced holes distributed over the upper surface thereof; and wherein each of said punches comprises a flat body portion, an upstanding point on one end of said flat body portion and a screw member extending through the other end of said body portion for tapped engagement in a selected one of said table holes so that

the positions of said punches may be adjusted relative to said table to accommodate sheets having differently positioned holes therein.

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