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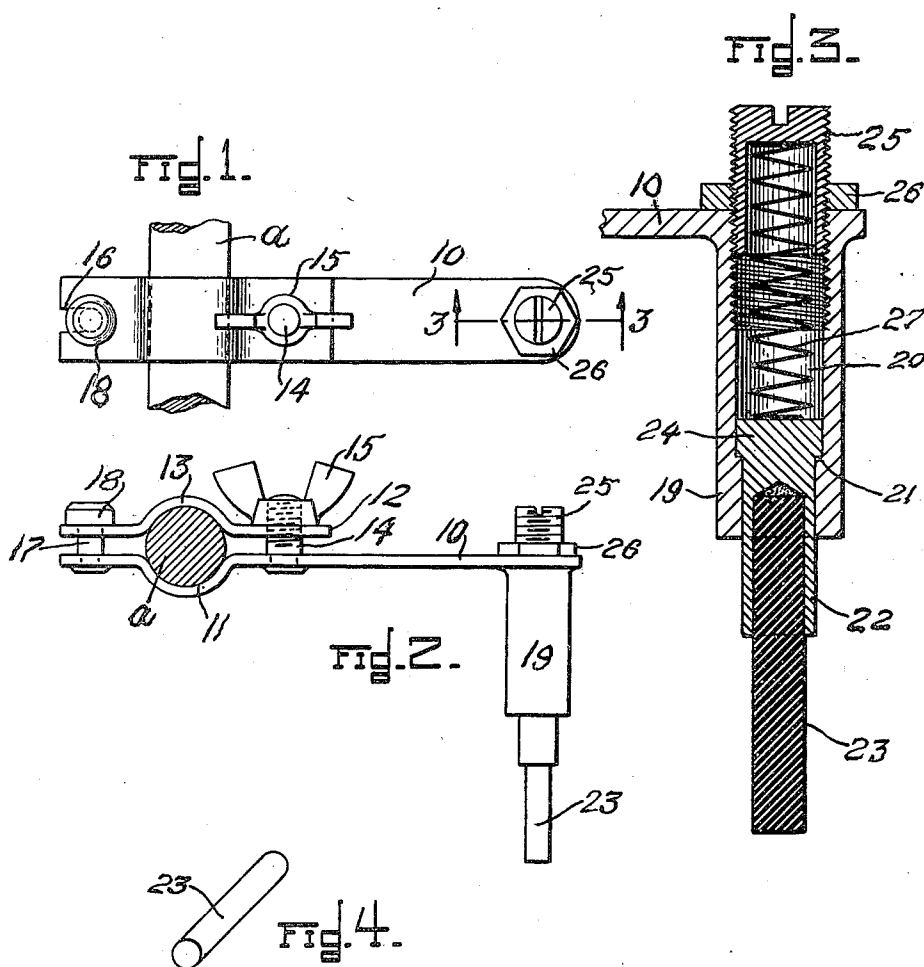
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ATTACHMENT FOR SHEET FEEDING MECHANISMS

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2 Sheets-Sheet 1



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ATTACHMENT FOR SHEET FEEDING
MECHANISMS

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2 Claims. (Cl. 271—59)

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This invention has particular reference to sheet feeding mechanisms of that class which are incorporated in, or associated with, printing presses, folding machines and the like, for justifying and accurately positioning individual sheets preparatory to the printing, folding or other operation that is performed thereon.

The invention has for its primary object to improve the construction and operation of sheet feeding mechanisms of that type which advance the sheets one at a time into position against a stop or gauge, and it is also an object of the invention to provide, as a new article of manufacture, an inexpensive and efficient attachment for existing sheet feeding mechanisms which, when incorporated in the latter, will act automatically to effect contact of the leading edge of each sheet with the stop means.

To these ends I have provided certain improvements in sheet feeding mechanisms as set forth in the following description, the several novel features of the invention being pointed out and defined in the claims at the close of the description.

In the accompanying drawings:

Figure 1 is a top plan view, full size, of my new sheet-justifying attachment showing the same applied to a rod or bar *a* which may be a part of the side-guide mechanism of a well known type of printing press.

Figure 2 is a side elevation of the attachment shown in Fig. 1.

Figure 3 is an enlarged section on line 3—3 of Fig. 1.

Figure 4 is a perspective view of the flexible rubber stem hereinafter referred to.

Figure 5 shows parts of the side-guide mechanism of a well known type of printing press equipped with my new sheet-justifying attachment.

Figures 6 and 7 are details hereinafter described.

The justifying attachment illustrated in Figures 1 to 4, inclusive, comprises a cantilever arm 10 provided adjacent to one end with a transverse socket 11 to embrace one side of a rod or bar *a* which may, as described later, be an element of the feeding or side guide mechanism of a printing press, folding machine or the like, and which is operated to swing arm 10 toward and from the sheets to be justified in timed relation with the movements of the sheets successively into position to be operated upon.

Arm 10 is rigidly fixed to the rod or bar *a* by clamping means including a short bar 12 formed

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at its middle with a socket 13 fitted against the opposite side of the bar or rod *a* and provided adjacent to one end thereof with an aperture that is occupied by a threaded stem 14 fast at its one end to arm 10 and extending laterally therefrom through the aperture of clamp-bar 12 to the outer side of the latter where it is provided with a wing nut 15. The opposite end of clamp-bar 12 is formed with a longitudinal open-ended slot 16 that is occupied by the shank of a laterally extending fulcrum stud 17, one end of said stud being rigidly fixed to the proximate end of arm 10 and the opposite end thereof being provided with a head 18 which overlies the proximate end of clamp bar 12. The nut 15 is set up tight thereby fixedly clamping the attachment to the bar *a*.

The free end of the arm 10 is made with a lateral tubular extension 19 the interior of which provides a cylindrical chamber 20 whose axis is disposed at right angles, or approximately so, to the rod or bar *a*, the lower end portion of this chamber being constricted in diameter to provide an annular shoulder 21.

Within the lower portion of chamber 20 is slidably mounted an exteriorly cylindrical stem holder in the form of a plunger 22 whose lower end portion is made tubular to receive within it one end of a straight gum rubber stem 23 which may be secured therein by friction or cement. The upper or inner end of plunger 22 is made with a head 24 which provides the plunger with an annular shoulder that normally rests upon the shoulder 21.

At its upper end chamber 20 is interiorly threaded to receive within it an adjustable abutment screw 25 that is equipped with a check nut 26 by which it is held in its adjusted position. A light coiled spring 27 is provided within chamber 20 which bears at its one end against abutment screw 25 and at its opposite end against the inner end of plunger 22. This spring serves to yieldingly hold plunger 22 normally at the limit of its outward movement with its head 24 against shoulder 21.

In the particular example of my new attachment illustrated in Figs. 1 to 4, inclusive, the characteristics of spring 27 are such that endwise compression thereof to the extent of about one-sixteenth of an inch is occasioned by pressure thereon of about one ounce, while the normal pressure of said spring upon the plunger 22 may be varied to suit the weight and thickness of the sheets being handled by adjustment of abutment screw 25, said normal pressure being less for

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lighter or thinner sheets than for heavier or thicker sheets. It is also true that the stem 23 is preferably made from very elastic and pliable gum rubber so that its resistance to lateral bending is very slight while at the same time its resistance to endwise compression is very substantial.

In Fig. 5 of the drawings I have shown my new attachment as incorporated in the side guide mechanism of the well known "Miehle" vertical printing press. This mechanism comprises a frame including a pair of oppositely disposed side arms whereof only one is shown in the drawings at *b*, said arms being rigidly connected by rod or bar *a* and a tube *c*, as usual. On the tube *c* is clamped the usual side guide *d*. The side guide frame thus constructed is automatically swung up and down on axis *e* and also reciprocated side-wise parallel with axis *e*, both in timed relation with the back and forth movements of the transfer table *f*, as usual.

Each time the transfer table *f* moves forward into the position shown in Fig. 5 carrying a sheet of paper with it, the side guide parts *a-b-c* occupy the positions indicated by the uppermost dotted lines and the leading edge of the sheet is in close proximity to the sheet-grippers *h* which at this time are projecting from the impression cylinder *j* as shown.

The side-guide parts *a-b-c* are then swung downwardly on axis *e* into the positions shown by full lines where the side-guide *d* occupies a position alongside of the sheet *g*. Then the side-guide mechanism *a-b-c* is shifted horizontally sidewise a short distance in a direction toward sheet *g* thereby to adjust the sheet laterally into its proper position relatively to the cylinder.

In order to ensure contact and alinement of the leading edge of the sheet *g* with the row of sheet-grippers *h* thereby to utilize the same as sheet-aligning stops I clamp one of my new attachments in position upon the rod *a* of the side-guide mechanism, as shown in Fig. 5, said attachment being set so that when the mechanism is swung downwardly on axis *e* to the limit of its movement in that direction the stem 23 will be against sheet *g* and in the bent condition shown by full lines in Fig. 5.

When, during the downward swinging movement of the attachment, the extremity of the rubber stem 23 contacts the sheet as shown by the dotted position of the parts indicated at B, the stem 23 is disposed obliquely with respect to the plane of the sheet and at an obtuse angle with respect to the front end portion of the table. The first effect of continued downward swing of the attachment from position B is to shift stem 23 and plunger 22 endwise toward spring 27 thereby compressing the latter, and this is accompanied by an increase in the obliquity of the stem relatively to sheet *g* until the increased pressure of the spring in combination with the increased obliquity of the stem causes the latter to buckle into the shape and position shown by full lines in Fig. 5, the free end of stem 23 moving toward the sheet grippers *h* as indicated by the arrow in Fig. 6 and carrying sheet *g* with it into position against the sheet grippers if it is not already in that position.

When the sheet thus acted upon by stem 23 is against the grippers *h* then the free end of stem 23 slides freely on the sheet because of its very pliable nature laterally.

Immediately after the attachment arrives at its lowermost position C (Fig. 5) the side guide

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mechanism is shifted laterally to cause the side guide element *d* to position the sheet laterally relatively to the cylinder and when the mechanism is thus adjusted the stem 23 is displaced laterally and idly in the direction of the arrow shown in Fig. 7, as element *d* approaches sheet *g*.

As the press continues to operate the grippers *h* are retracted into cylinder *j* to pinch the leading marginal portion of the sheet after which the side guide mechanism together with the attachment are restored to their normal positions as indicated by dotted lines at A.

What I claim is:

1. A sheet justifying attachment for a side guide mechanism of the character described, said attachment comprising an arm provided adjacent to its one end with means by which said end is fixedly attached to a cross-bar of said mechanism by which cross-bar said arm is swung angularly and also reciprocated sidewise; a laterally and downwardly directed tubular extension adjacent to the opposite end of said arm provided interiorly with a cylindrical chamber whose axis is disposed approximately perpendicularly relatively to said cross-bar when the device is in position thereon; a radial stop shoulder within said tubular extension adjacent to the lower end of the latter; a plunger slidably mounted within said chamber and having an outer end portion made with a longitudinal stem-holding socket; a straight stem of soft flexible rubber having one end thereof fixedly held within said socket with a substantial portion of said stem projecting beyond said socket for endwise engagement with the sheets fed past said mechanism and in timed relation with the operation of the latter; an exteriorly threaded abutment screw within and having threaded engagement with the interior of the upper portion of said tubular extension; a coiled spring within said chamber bearing at its one end against said abutment screw and at its opposite end against the inner end of said plunger, and means on said plunger engageable with said stop shoulder to limit the outward movement of said plunger and said stem under the influence of said spring.

2. The attachment as described in claim 1 and wherein said means for attaching said arm element to a cross-bar of said mechanism consists of a clamp-bar element provided intermediate its ends with a transverse socket occupied by one side of said cross-bar, said socket being disposed opposite a complementary transverse socket formed in said arm element and occupied by the opposite side of said cross-bar, means pivotally connecting one end of said clamp-bar element to said arm, a threaded stem carried by one of said elements and extending through an aperture formed in said other element, and a clamping nut on said threaded stem operable to force and hold said two elements in clamping engagement with said cross-bar.

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