

PUBLISHED

MAY 25, 1943.

BY A. P. C.

G. SPIESS

APPARATUS FOR REMOVING PASS DIFFERENCES

Filed Jan. 8, 1942

Serial No.

426,025

2 Sheets-Sheet 1

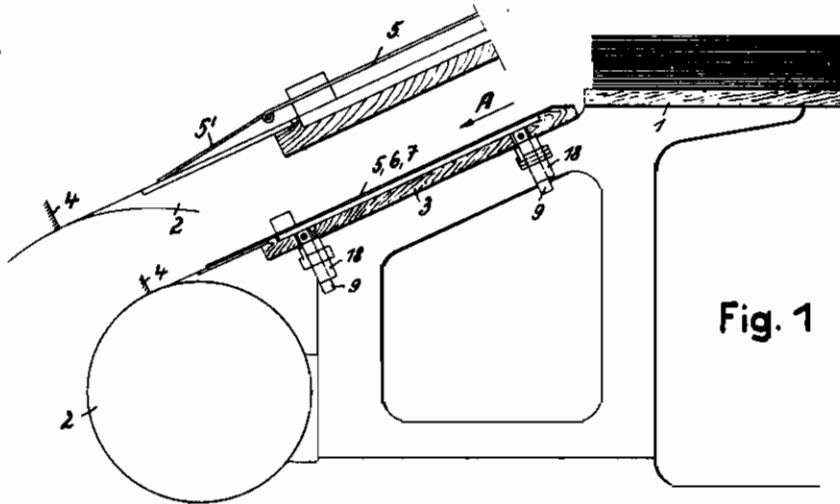


Fig. 1

Fig. 2

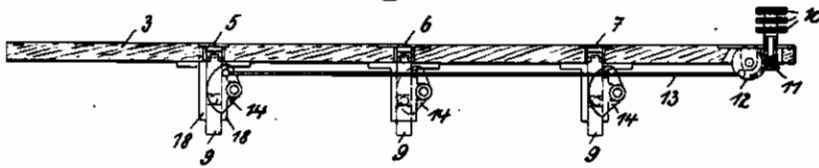
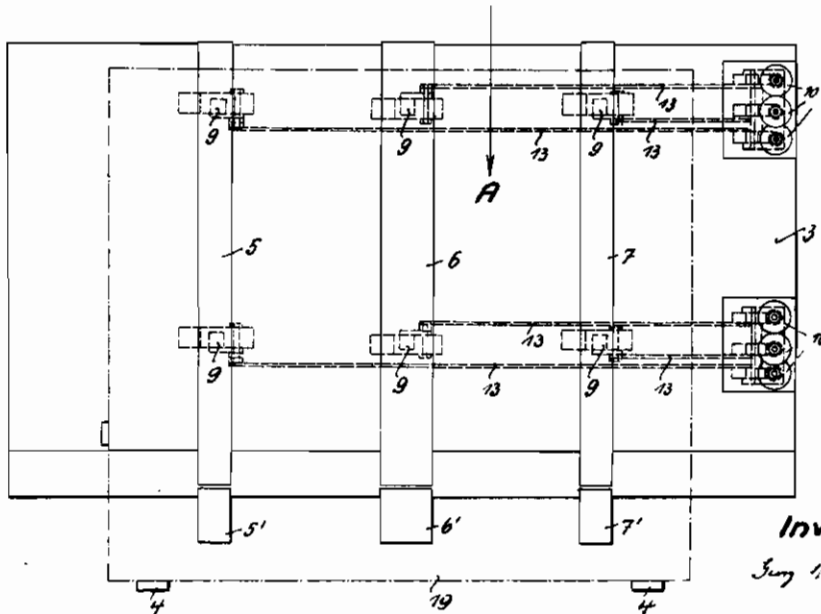


Fig. 3



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2 Sheets-Sheet 2

Fig. 4

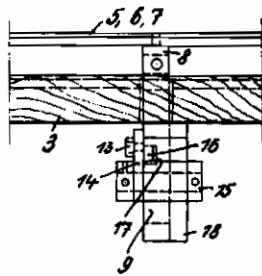


Fig. 5

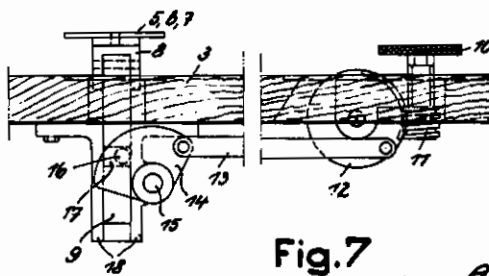


Fig. 7

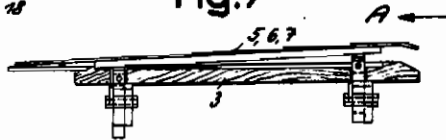


Fig. 6

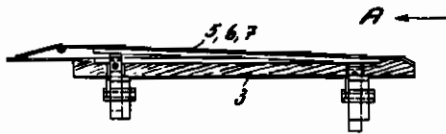


Fig. 8

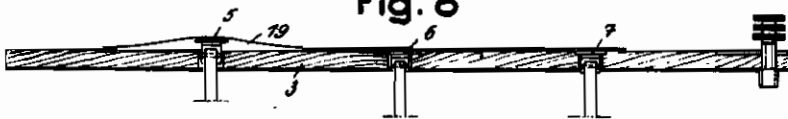


Fig. 9

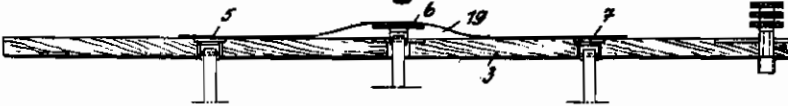
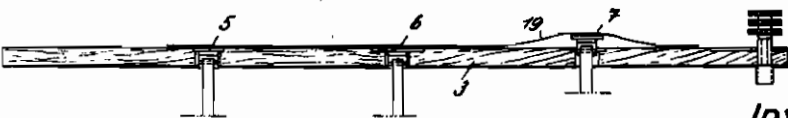


Fig. 10



Inventor
Garry Spiess

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ALIEN PROPERTY CUSTODIAN

APPARATUS FOR REMOVING PASS-DIFFERENCES

Georg Spiess, Leipzig, W. 31, Germany; vested in the Alien Property Custodian

Application filed January 8, 1942

The invention relates to an apparatus provided on the supplying table of a printing machine for avoiding pass-differences, which might occur and result from the alteration of the paper by physical influences, such as moisture and temperature.

It is a well known phenomenon that, for instance when carrying out multicolor printing, the printing sheet expands after each printing proceeding owing to the moisture taken up from the printing ink, and consequently the several successively printed on inks do not fit accurately the one on the other, so that a perfect printing result can not be obtained. The same inconvenience occurs when the percentage of moisture contained in the air alters owing to change of temperature.

An apparatus for removing this pass-difference has already become known, which is provided on the supplying table of the sheet feeding table of the sheet supplier of the printing machine. It consists of a fan-like tongue, composed of two parts and adjustable relative to the surface of the table in the height and in lateral direction, said tongue adapted to be adjusted so that the side edges of the sheet lifted by it and resting on the surface of the table can be brought into the correct position relative to the lay marks for passing through. This fan-like tongue is mounted in the middle of the feeding table, co-ordinated to the lay marks, so that the sheet to be printed can be lifted only in the middle. If, however, the differences in passing through exist only, viewed in the conveying direction, on the left or only on the right hand side of the sheet to be printed, it is not possible to avoid these passing differences with the aid of this apparatus. The same is valid, if the passing difference is greater or smaller on the one side or on the other side of the sheet to be printed than on the other side of the same.

This arrangement also possesses the inconvenience, that the front edge of the tongue terminates at a greater distance from the lay marks, and consequently the sheet is pulled back towards the rear from the lay marks at the parallel lifting of the tongue. The fan-shaped arrangement is further prejudicial in so far, as at the spreading of the two tongue-parts arranged the one above the other two different bearing planes are produced for the sheet, so that the sheet is lifted irregularly. The tongue adapted to be adjusted in lateral direction can also be adjusted only towards one side; therefrom results, however, a unilateral lifting of the sheet. All these inconveniences are avoided according to the invention in which no fan-shaped tongue is used.

According to the invention several small bars

of sheet metal or the like are arranged on the feeding table of the printing machine in the conveying direction, the one at a distance from and parallel to the other and adjustable in height and adapted to be lowered into the plane of the feeding table, and further adapted to be lifted each one alone parallel above the surface of the table as also at an angle of inclination relative to the surface of the table, descending or ascending in the conveying direction according to the requirement for avoiding the pass-difference. The adjusting of the small bars can take place during the service.

An embodiment of the invention is illustrated by way of example in the accompanying drawing, in which

Fig. 1 shows in side elevation the apparatus on a feeding table for laying on by hand,

Fig. 2 a cross section through the apparatus, perpendicularly to the conveying direction,

Fig. 3 a top plan view of the apparatus,

Fig. 4 and 5 an adjusting device, in front elevation and side elevation respectively,

Figs. 6 to 10 several adjusting possibilities by means of the apparatus.

In the embodiment illustrated, the apparatus according to the invention is provided on a feeding table for hand feeding of a printing machine between the pile table 1 and the printing machine 2 on the inclined feeding table 3. It is evident, that the apparatus may be used also in connection with a feeding table for automatic sheet supplying, in which the sheets are taken from a pile for instance by suction nozzles and fed by means of conveying bands onto the feeding table 3 of the printing machine 2, the upper sides of these conveying bands moving in the plane of the table in grooves in the table.

The sheets are adjusted in known manner on the printing machine 2 on lay marks 4, before they are taken over by the grippers of the printing cylinder.

According to the invention several bars 5, 6, 7 are mounted at a distance the one from the other and parallel the one to the other on the feeding table 3 in the direction of conveying indicated by an arrow A, the surface of said bars being normally in the same plane as the surface of the table 3, so that these bars are located in indentations of the table 3, and mounted so that each bar by itself can be raised parallel to the plane of the table 3, as shown in Figs. 8 to 10, or adjusted at an angle to the surface of the table, either descending in the conveying direction as shown in Fig. 7 or ascending in this direction as

shown in Fig. 6. Each of the bars 5, 6, 7 which, for instance, are made of thin sheet metal, is fixed on a flat iron and this flat iron is fixed in turn on two U-shaped bearings 8 which are hingedly mounted on two rams 9 mounted below the feeding table. For each bar two rams 9 are provided, one ram in the front part and the other ram in the rear part of the bar. For each ram one adjusting device is provided. This adjusting device consists, as especially shown in Figs. 4 and 5, for instance of an adjusting wheel 10, arranged on a side of the feeding table 3, the spindle 11 of this adjusting wheel having flat screw-threads and engages in a spindle wheel 12, further a control mechanism 13, which is hingedly fixed on the one hand on the spindle wheel 12 and on the other hand on a catching disc 14. This segment-shaped catching disc 14 is mounted on the axle 15 so that it can freely move on the same, and it comprises a catch 16 which engages in a recess 17 in the ram 9. The rotary movement on the adjusting wheel is therefore positively transmitted upon the ram 9 by means of which ram in turn the bar is adjusted in vertical direction. The ram 9 is then guided between its bearings 13.

The invention provides further, that by the lifting of the bars the sheet lifted by the same can not bulge inwards behind the bars towards the front marks 4, wherefrom resulted up to the present that the sheet was drawn away from the front marks. With this object in view, an extension 5', 6', 7' can be provided on each of the bars which is hingedly connected with the bars 5, 6, 7 so that the point of the extension, when the bar is lifted, remains in contact with the feeding table as shown on larger scale above the Fig. 1. The extension of the bar forms therefore a bridge for the lifted sheet, which consequently can not bulge inwards anymore. The bridge may also be formed thereby, that a transverse bar is provided which can be lowered into the feeding table and has an oblique surface, said transverse bar being adapted to be adjusted from below upwards so that the inclination descends in forward direction.

The avoiding of the pass-difference is effected by the apparatus according to the invention in the following manner:

If pass-differences have been ascertained on

both sides of the sheet to be printed in transverse direction of said sheet, and these pass-differences become perceivable, regularly or irregularly on both sides, these can be avoided in that the two bars 5 and 7 are lifted more or less uniformly or irregularly, whereby the sheet 19 to be printed, indicated in dash-dot lines, is more or less shortened in width at both sides uniformly or more on the one side and less on the other side. If only little pass-differences occurred uniformly on both sides of the sheet it is sufficient, to raise only the middle bar. At pass-differences occurring in the longitudinal direction of the sheet, i. e. in the direction of conveying, the bars are adjusted accordingly obliquely, whereby the sheet is pulled back on the lay marks or pushed forward, according to whether the bars have been inclined at an ascending or at a descending angle. If pass-differences have been ascertained only on that side of the sheet which is at the right hand side in the conveying direction, these pass-differences can be regulated either by uniform lifting of the bar 5 or by adjusting this bar at an angle. The bar 7 must be adjusted accordingly, if pass-differences have to be corrected on the left hand side of the sheet. In this instance the middle bar 6 may also be used. The attendant can therefore use the bars according to requirement and is in the position, to carry out all corrections which are necessary for overcoming pass-differences merely by corresponding adjusting of the bars.

After the adjusting of the bars, the sheet 19 to be printed is no longer laying plane on the feeding table 3, but slight bulges are produced in the sheet to be printed, and the corners of the sheet to be printed are either pulled back or pushed forward on the gripper edge.

By the employment of the apparatus the operation of the lay marks is not altered in any manner nor impaired. The bulgings in the sheet to be printed are removed during the rolling of the printing cylinder by the counter pressure of the counter pressure cylinder produced at the transmission of the picture to be printed, this being favored thereby, that the paper absorbs moisture during the printing and thereby becomes less resistant and more yieldable.

GEORG SPIESS.