G. SPIESS.

DEVICE FOR PLACING SINGLE SHEETS IN EXACT POSITION BEFORE DELIVERY.

APPLICATION FILED MAY 16, 1914.

1,126,584.

Patented Jan. 26, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

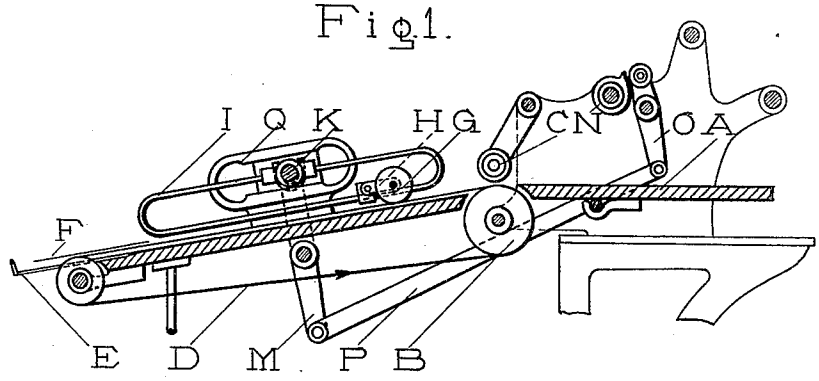
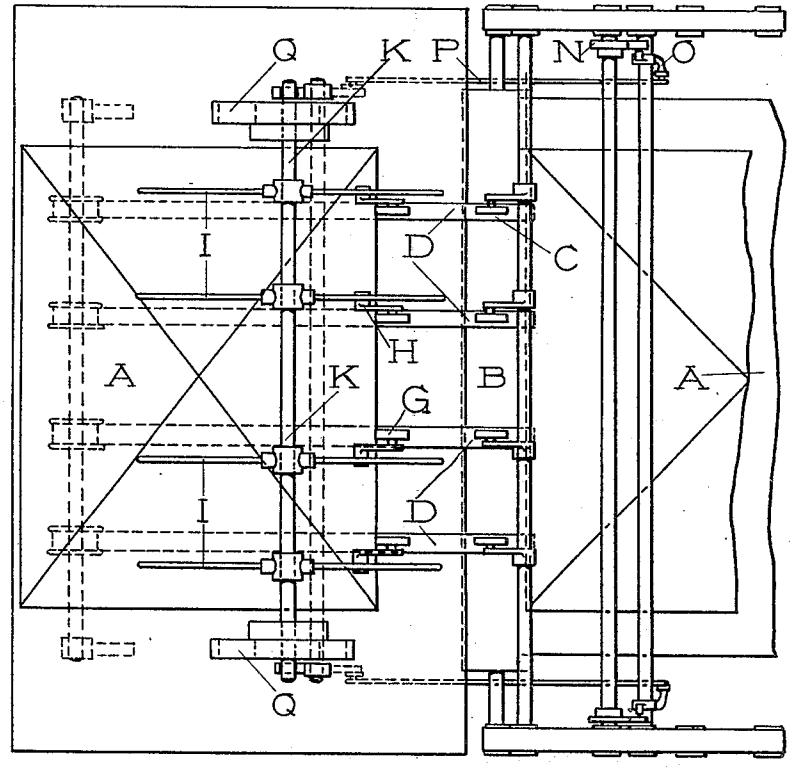


Fig. 2



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2 SHEETS—SHEET 2.

Fig. 3.

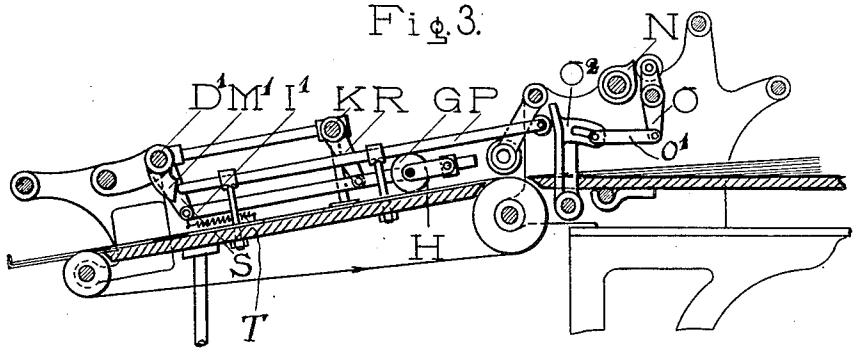


Fig. 4.

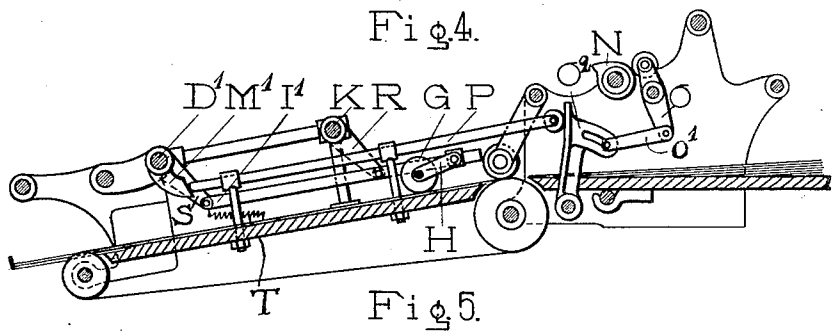
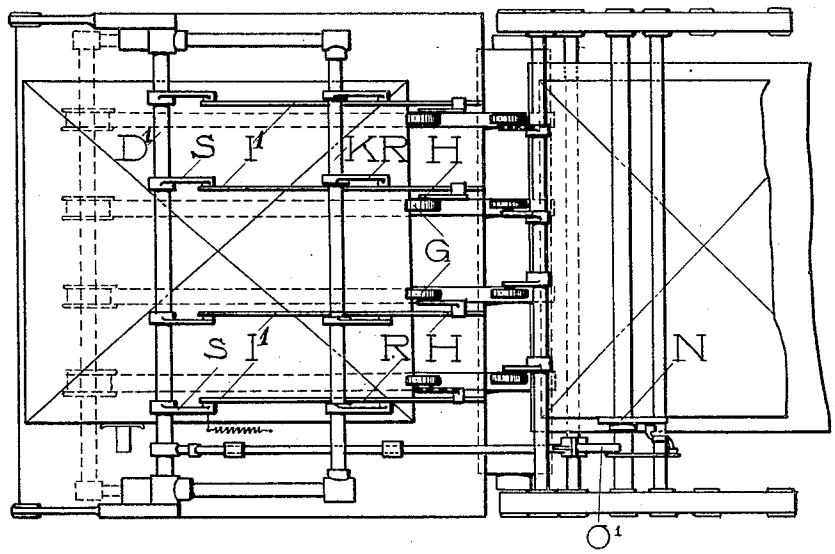


Fig. 5.



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UNITED STATES PATENT OFFICE.

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DEVICE FOR PLACING SINGLE SHEETS IN EXACT POSITION BEFORE DELIVERY.

1,126,584. Specification of Letters Patent. Patented Jan. 26, 1915.

Application filed May 16, 1914. Serial No. 838,953.

To all whom it may concern:

Be it known that I, GEORG SPIESS, a citizen of the Empire of Germany, and a resident of Leipzig-Reudnitz, Germany, have invented certain new and useful Improvements in Devices for Placing Single Sheets in Exact Position Before Delivery, of which the following is a specification.

This invention has reference to a novel device for placing single sheets in exact mathematical position against the front stop of a paper feeder.

The single sheets, as supplied by a sheet delivery device to a printing machine, folding machine, pamphlet machine, paper bag machine, sorting machine and the like, must be straightened and placed in an exact mathematical position before they are supplied to these machines. Each sheet passes through guide rollers of which the upper rollers are usually suspended from an arm so that they bear on the sheet of paper by their weight only. As the sizes of the sheets vary and as these rollers always remain in the same location this arrangement of mounting the upper rollers is insufficient for guiding and placing each sheet in the exact position desired, against the front stop bar. If the sheets are too short they will not reach the front stop bar and if the sheets are too long they will be pressed against the same and crumple, wrinkle or fold. Assuming that sheets shall be supplied to a rapid printing press then there are, in addition to the front stop bars for the sheets, also lateral gripping fingers which are purposed to place the sheet in an exact position against the sides of the device. This lateral movement, however, is disturbed when the guide rollers remain upon a sheet which is too long and weigh it down. Other devices are known which are provided with special means for placing printing sheets against the front stop bar. This means represents a pushing device which is brought from below into the plane of the way traversed by the sheet and moves it. These pushing devices suffer from the known defects of leaving the sheet before the front stop bar in case the sheet is a little too small and push it against the front stop bar when it is a little too large. Even in transporting thin sheets this forward pushing to the stop bar is very unreliable because the thin paper easily crumples, wrinkles and forms folds.

It is the purpose of the present invention to avoid the described defects. This has been primarily attained by arranging these guiding rollers which are above the way of transportation so that they are adapted to perform a to and fro motion and first follow the sheet for a certain distance up to shortly before it reaches the front stop bar then the said rollers move backwardly beyond the sheet leaving it completely free.

In order to render this invention entirely clear reference is had to the accompanying drawing in which:

Figure 1 represents in elevation a device for placing sheets in exact position against the front stop bar of a paper feeder, embodying in desirable form the present improvements. Fig. 2 is a plan view of the same. Fig. 3 illustrates in elevation a somewhat modified form of device. Fig. 4 is a similar view of a somewhat modified form. Fig. 5 is a plan view of Fig. 4.

In the device illustrated in Figs. 1 and 2 the single sheets supplied by the paper feeder A from a feathered bank of sheets, one after another, pass through the guiding and transporting rollers B, C upon the transportation bands D. These may be so constructed that they rotate with decreasing speed so that the sheet F is slowly conducted against the front stop bar E of the device. For each single sheet a repetition of the operation of the machine takes place in so far as the sheet is passed onto the transportation bands D with a maximum speed. However, during the transportation of the sheet its speed must decrease so that the sheet F is conducted against the front stop bar E with a minimum speed or rather while coming to a rest.

According to the present invention special guiding rollers G are mounted on a swing arm H which rollers press the sheet against the transportation bands D. Each swing arm H in turn is connected to an adjustable support I having parallel longitudinal arms upon which it may be longitudinally shifted so that the swing arm, in one instance, is close to such front stop bar E and in another instance farther away therefrom. The supports I are secured to a shaft K which is adapted to perform a swinging to and fro motion. This is accomplished by means of a two-armed lever M. This motion is transmitted from a cam disk N which actuates a lever arm O and a pulling rod or bar P pivotally connected to the lever M. In this

manner all the supports I and all the swing arms H connected thereto and the guide rollers G carried by the swing arms perform a to and fro motion. Accordingly, the rollers G are guided along the sheet performing a rolling motion and thus follow the motion of the sheet toward the front stop bar E for a certain extent. This is accomplished because the guiding rollers G rest upon the sheet which is transported by the transport bands D and a rolling motion is imparted to the said rollers G. If now the sheet reaches the front stop bar E whereby its further movement is prevented then the rotary motion of the rollers G ends in so far as they have been rotated by the friction of the moving sheet on the said rollers but they slide over the quietly resting sheet so far as the forward motion of the shaft K and the supports I lasts. During the backward motion of the supports I the rollers G are taken along and brought back so far that they even pass beyond sheets of larger sizes.

In the device illustrated the bearings for the shaft K of the supports I are not directly secured to the lever M. The shaft K rests in slide guides Q so that the guide rollers G receive a reliable to and fro motion during each operation of the device. The steering mechanism N, O, P M for the guiding rollers G is regulated to a very fine point. When the rollers have made a backward movement a slight reaction appears to take place and the rollers slightly move forward for a moment exerting a very mild pushing effect which tends to place the sheet exactly against the front stop bar E.

The modified form shown in Figs. 3 and 5 is provided with arms H carrying the guiding rollers G. The arms H, however, are suspended from a supporting bar I^1 which bar is supported by articulated arms R, S. The arm R is mounted on the shaft K and the arm S on the shaft D^1. The to and fro motion of the articulated arms R, S accordingly imparts the same to and fro motion to the roller arms H. Figs. 3 and 4 show these parts in the end positions of their motion.

It is immaterial for the present invention by what source of power the device is actuated. In the device illustrated in Figs. 1–5 the cam disk N imparts a swinging motion to the lever O which moves a swing arm O^1 and thereby a rod or arm O^2. A rod or bar P having on its end a roller bears against the arm O^2 which is in connection with the arm O^1. The opposite end of the rod P bears against an arm M^1 which is secured upon the shaft D^1 upon which are also mounted the articulated joints S. By means of a spring T the arm M^1 is constantly pressed against the rod P. Otherwise this modification does not differ from the device hereinbefore described. The guide rollers G aiding in the transportation of the passing sheet by friction must not rest on the sheet when its lateral adjustment is effected.

I claim as my invention:

1. A sheet adjusting machine having means for moving each sheet, a device above the sheet moving means for placing each sheet in exact position for delivery to a printing press and the like, comprising a front stop bar against which each sheet is finally placed, swinging arm supports, adjustable swing arms thereon, guide rollers suspended from said swing arms and pressing the sheet against its moving means, so arranged that said rollers first move forward and aid in transporting the sheet and then move backward beyond the sheet leaving it free for lateral adjustment.

2. A sheet adjusting machine having means for moving each sheet, a device above the sheet moving means for placing each sheet in exact position for delivery to a printing press and the like, comprising a front stop bar against which each sheet is finally placed, swinging arm supports, adjustable swing arms thereon, guide rollers suspended from said swing arms and pressing the sheet against its moving means, and means in connection with swinging arm supports to assure a secure to and fro motion to the guide rollers.

3. A sheet adjusting machine having means for moving each sheet comprising a device for placing each sheet in exact position for delivery to a printing press and the like, a front stop bar in said device against which each sheet is finally placed, guide rollers above the sheet, swing arms from which the rollers are suspended, supporting arms for said swing arms, articulated arms carrying said supporting arms and mounted on shafts, said guide rollers being thus adapted to perform a to and fro motion.

Signed at Leipzig, Germany, this 6th day of May, 1914.

GEORG SPIESS.

Witnesses:
RUDOLPH FRICKE,
ALICE DUNGER

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D.C."