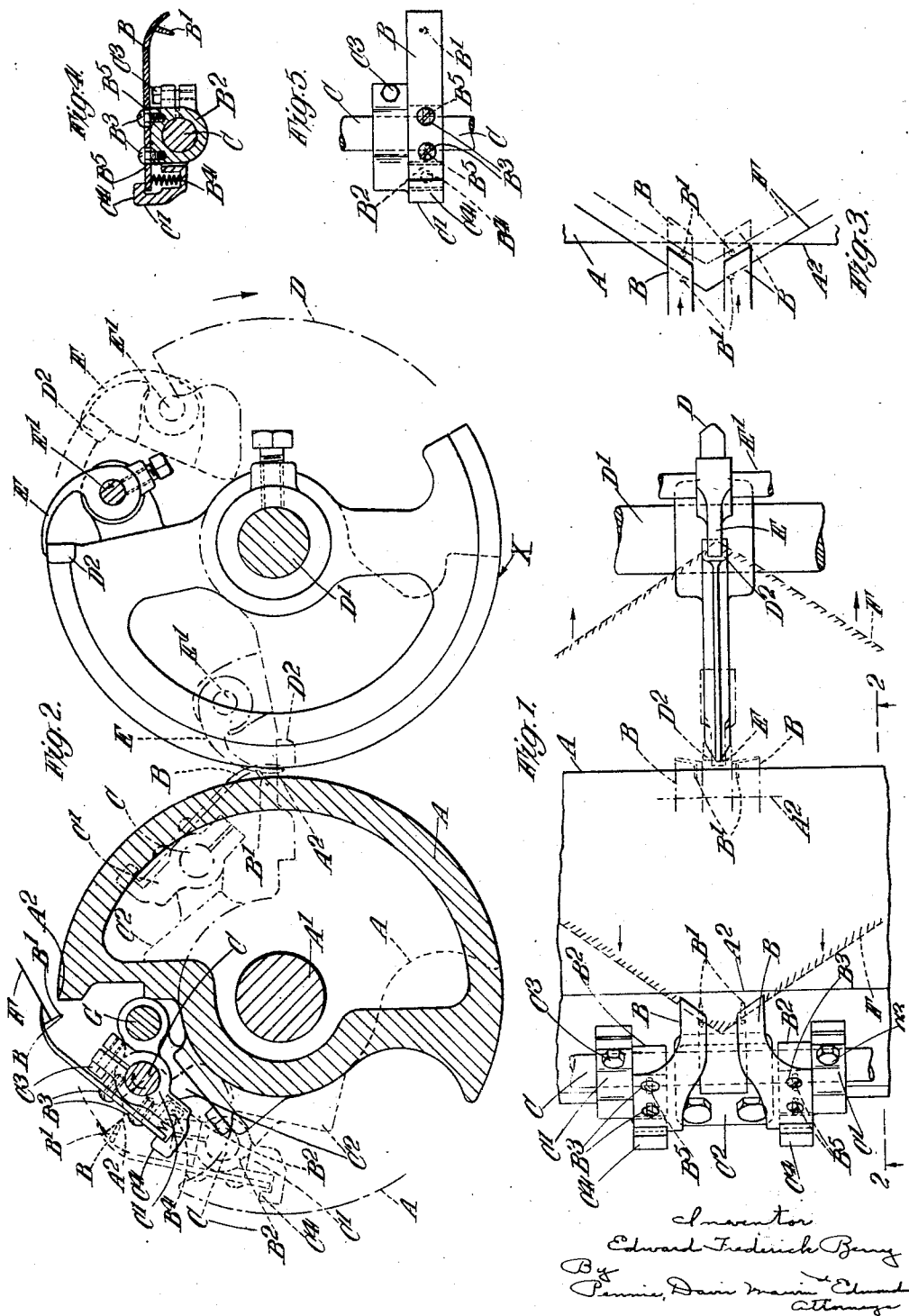


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MECHANISM FOR REGISTERING OR CONTROLLING PAPER SHEETS,
BLANKS, OR THE LIKE IN PRINTING MACHINES
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MECHANISM FOR REGISTERING OR CONTROLLING PAPER SHEETS, BLANKS, OR THE LIKE IN PRINTING MACHINES.

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This invention relates to mechanism for registering or controlling paper sheets, blanks or the like in printing machines, and has particular though not exclusive reference to such mechanism for printing machines of the rotary press type. In some machines of this type a row of stops is provided adjacent to and rotatable with the impression cylinder against which stops the straight edge of each successive sheet of paper is caused to bear as the sheets are fed or supplied to the impression cylinder so that each sheet can be held at the said edge on the impression cylinder by gripping members or fingers and thus carried round in contact with the printing cylinder to receive the impression whereupon the printed sheet is removed by means of delivery grippers and rings or other suitable means.

The object of the present invention is to provide an improved mechanism for registering envelope blanks and other sheets which are not formed with a straight feeding edge.

According to this invention a combined arresting and gripping device is provided which has two closely arranged pins or stops depending therefrom, the disposition of these two pins or stops being such that just the forward angular end or corner of the blank is received between them in order to arrest the forward movement of the blank which is afterwards gripped by the device adjacent to the part engaged by the aforesaid pins. The device preferably comprises two gripper portions each of which is formed with a pin or stop as aforesaid so as to provide the closely arranged pair of pins or stops that receive between them the angular leading part of the blank and arrest the forward feeding movement of the latter, whereupon the grippers are moved towards the impression cylinder so that as a result of this movement the stops on the grippers move the blank into the proper position for registration and when it is so registered it is engaged by the two grippers so as to be carried round on the impression cylinder. The grippers having the pins or stops thereon may be mounted on the usual gripper shaft which is adapted to be rocked to move the grippers into and out of engagement with the

impression cylinder in any appropriate or usual manner and they may be adjustable in either direction along the gripper shaft, and/or at right angles to the shaft.

In order that the said invention may be clearly understood and readily carried into effect the same will now be described more fully with reference to the accompanying drawings in which:—

Figure 1 is a plan view of a portion of an impression cylinder showing one construction of the stop and gripper device (particularly intended for dealing with envelope blanks) fitted thereto and also showing the adjacent delivery ring and gripper.

Figure 2 is a cross sectional view taken on the line 2—2 of Figure 1 and shows the stop and gripper device in different positions it occupies during the rotation of the impression cylinder.

Figure 3 is a fragmentary plan view of the improved stop and gripper device showing the change from the receiving position to the gripping position.

Figure 4 is a detail side view showing more particularly how the gripper is mounted on and controlled by the gripper shaft.

Fig. 5 is a plan view of a modified form of gripper which forms one of a pair of grippers arranged as shown in Fig. 1 and provided with closely arranged stops to receive between them the forward angular part or corner of the blank in the same way that the leading part of the envelope blank is received between the stops as shown in Figs. 1 and 3.

A represents the impression cylinder secured on a rotary shaft A' in any usual manner. B, B indicate the grippers of the improved device and B', B' indicate the stops which are provided thereon. C represents the shaft on which the grippers are mounted by means of bosses B², B³ so as to be controlled by blocks C', C' fixed on the shaft C which is mounted in bearings C² bolted on the impression cylinder in the usual manner. D indicates a delivery ring which is rotated by its shaft D' and E represents the delivery gripper which is mounted on a shaft E' supported in bearings on the said delivery ring.

In the example illustrated the two grippers B, B which are in the form of two

metal strips or fingers shaped as shown in Figure 1 and curved at their outer or gripping ends as shown in Figure 2 are secured side by side in close proximity by screws 5 B³ on the angularly movable bosses B which loosely surround the gripper shaft C, see Figure 4.

The bosses B², B² lie adjacent to the blocks C', C' which are securely fixed or clamped to the gripper shaft C by means of bolts 10 C³ and the inner ends of the grippers B are located under lugs C⁴, C⁴ in offset portions of the blocks C', C' which portions form housings for compression springs B⁴, 15 B⁴ that engage the inner ends of the grippers and tend to hold them against the offset lugs C⁴, C⁴ on the blocks C', C'. The shaft C is adapted to be rocked or angularly moved in the bearing C² by means of 20 the usual cam mechanism at one end of the shaft during the rotation of the impression cylinder for causing the outer ends of the grippers to press on the part A² of the impression cylinder and to hold the blank 25 thereon and for enabling the blocks, through the medium lugs C⁴ to move the grippers away from the impression cylinder to release the blank after printing.

The stops B' as shown are in the form of 30 pins extending downwardly from the undersides of the curved parts of the grippers B near the outer ends thereof, the stops or pins being of sufficient length and disposed at such an angle as to ensure that the forward 35 feeding movement of the blanks or the like is arrested or stopped by the blanks coming successively into contact with the said pins B', when the grippers are held away from the impression cylinder by the lugs C⁴ on 40 the blocks C'. In Figures 1 and 2 the grippers B and the stop pins B' are shown in full lines in the receiving position, that is with the ends of the grippers B maintained well away from the gripping part or surface 45 A² of the impression cylinder as clearly indicated in Figure 2, so as to provide an opening or space to enable the blank represented by F to be fed or moved forward by the usual feeding mechanism not shown, into 50 engagement with the stop pins B'. The blank F which for example may be an envelope blank of which only the leading angular part or point is shown (see particularly Figure 1) is fed forward by the usual feeding 55 mechanism with its pointed extremity foremost so that the latter passes between the stop pins B' until the angular part comes into contact with the said pins which therefore limit the forward feeding movement of 60 the blank; this position, which may be regarded as the receiving position, being illustrated in full lines in Figures 1 and 2. As the rotation of the impression cylinder continues in the direction shown, the gripper 65 shaft C is rocked or angularly moved by its cam in the usual way, with the result that the blocks C' are rocked and through the springs B⁴ engaging the grippers cause the latter to be angularly moved so that their outer curved ends approach and eventually 70 bear on the gripping part A² of the impression cylinder, as shown by the dotted lines in Figure 2. During this angular movement of the grippers B the stop pins B' thereon move slightly towards the part A² of the 75 impression cylinder and consequently push the blank slightly in the rearward direction as indicated by the dotted lines in Figure 3. This movement of the stop pins ensures that the blank is properly positioned or registered 80 to receive the impression from the printing cylinder. At the moment the proper positioning or registering of the blank is effected, the ends of the grippers B due to the continued angular movement of the shaft C 85 press the blank on the part A² of the impression cylinder and grip or hold it thereon for enabling it to be carried round with the impression cylinder to receive the impression from the printing cylinder. Owing to the 90 aforesaid springs B⁴ engaging the inner ends of the rockable grippers the latter bear on the impression cylinder in a resilient manner so as to prevent sudden contact which might injure or mark the blank and to ensure an 95 efficient and uniform grip. After being printed the blank is carried around by the two grippers B until the latter reach the position shown in dot and dash lines in Figure 2, and as the grippers approach this 100 position the gripper E on the rotating delivery ring D is brought between the outer ends of the grippers B. The gripper shaft C at this time is rocked or angularly moved by its cam control in the opposite direction from 105 that previously referred to and moves the blocks C' so that the lugs C⁴ engaging the inner ends of the grippers cause the latter to be angularly moved on the shaft C to move their outer ends away from the impression 110 cylinder and thus release the blank. The delivery gripper E which approaches the grippers B in its open position is operated by its rocking shaft to cause it to close as the grippers B release the blank so that it engages 115 the pointed extremity of the blank between the stop pins B' and holds the same on the part D² of the delivery ring so that as the latter rotates, the printed blank is carried away and is eventually released by 120 the opening of the delivery gripper at the position indicated at X in Figure 2. During the time that the delivery gripper is holding the printed blank, the next blank is fed forward and eventually it engages 125 the stop pins (as shown in the position indicated by full lines in Figure 1) which register the blank prior to the latter being held on the impression cylinder by the grippers B, as hereinbefore described. The grippers 130

B may be adjustable in either direction along the shaft C to vary the distance between them and for this purpose the blocks C' may be loosened on the shaft C by unscrewing the bolts C³ and then slidably moved with the bosses B² carrying the grippers, along the shaft to the desired position where-in they are set by screwing up the said bolts. In addition to this adjustment, the grippers may be adjusted in a direction at right angles to the shaft C so that the position of their outer ends can be varied in relation to the gripping part A² of the impression cylinder; for this purpose elongated holes B⁵ are provided in the grippers B to receive the securing screws B³ that hold the grippers on the bosses B². Any desired number of the combined grippers and stops may be used and a single gripper element may be provided and controlled by one block C', but the gripping end of the said element may be bifurcated or forked to provide a plurality of gripping parts each having a stop to register the blank prior to its being gripped by the bifurcated or forked gripping element. The gripping and registering device constituted by the grippers B and the stops B' can be used on existing machines having the ordinary grippers and the separate stops that deal with paper sheets or blanks having straight leading edges, which ordinary grippers are generally fixed on the shaft C whilst the separate stops are placed on a second shaft G (see Figure 2) which is supported in the bearings C².

Although the combined stops and grippers have been described more particularly for the purpose of dealing with envelope blanks, it will be understood that the arrangement of the stops and the formation of the outer or gripping ends of the grippers may be modified in shape, as shown in Figure 5 for instance, to deal with various kinds and shapes of blanks, the forward or leading parts of which may be of curved, irregular or other formation which could not conveniently be registered and gripped by the usual stops and grippers.

What I claim and desire to secure by Letters Patent of the United States is:—

1. A combined arresting and gripping device for registering and controlling envelope or similar blanks in printing machines, comprising gripping means, provided with two stops closely arranged and so disposed as to receive between them not more than the leading angular end or forward corner of a blank to arrest the forward movement and register the blank so that it can be engaged by the gripping means at the said end or corner in close proximity to the points where it is engaged by the said stops.

2. A combined arresting and gripping device for registering and controlling envelope and similar blanks in printing machines,

comprising two gripping portions arranged in close proximity and each carrying a stop so as to provide two closely positioned stops that receive between them not more than the leading angular end or forward corner of the blank to register it prior to this end or corner of the blank being engaged by the ends of the gripping portions.

3. A combined arresting and gripping device for registering and controlling envelope or similar blanks in printing machines, comprising two gripping members having oppositely inclined ends arranged in close proximity, and a stop-pin depending from each of the said members adjacent to the inclined ends which grip the leading end or corner of the blank as it lies between the said stop pins.

4. A combined arresting and gripping device for registering and controlling envelope or similar blanks in printing machines, comprising two gripping portions with a stop pin on each portion so that the leading end of the blank can be received between the stop pins; a shaft on which the device is mounted, and means for causing the gripping portions to be angularly moved to engage the leading end of the blank near to where it is engaged by the stop pins.

5. In a printing machine, the combination with a rotary impression cylinder, of gripping means for holding the blank on the impression cylinder; and closely disposed stop-pins on said gripping means to receive between them part of the blank for registering the latter prior to its being held by said gripping means.

6. In a printing machine, the combination with a rotary impression cylinder, of a rockable shaft; bearings for said shaft fixed on said cylinder; blocks fixed on said shaft to rock therewith; two closely arranged grippers moved by said rockable blocks; and stops on said grippers located near the outer ends of the latter to receive between them the leading end of the blank and register said blank as the grippers are caused to approach the impression cylinder for holding the registered blank thereon by bearing on the part of the blank between and adjacent to said stops.

7. In a printing machine, the combination with a rotary impression cylinder, of a shaft rotatable with said cylinder and rockable in bearings thereon; adjoining blocks on said shaft adapted to rock therewith; two grippers controlled by said blocks and projecting forwardly side by side in close proximity, and stop pins extending from the underside of the grippers, of such length and such distance apart as to receive between them the leading or forward end of the blank, which stop pins, when said shaft is rocked to move the two grippers towards the impression cylinder, register the blank in the proper posi-

tion wherein it is held on said cylinder by the grippers engaging the said leading end of the blank.

8. In a printing machine, the combination with a rotary impression cylinder, of a shaft rockable in bearings on said cylinder during the rotation of the latter; two closely arranged grippers mounted on said shaft, adjoining blocks fixed on said shaft and adapted to rock the grippers which lie in close proximity and are inclined at their outer ends and adapted to be pressed by the rocking of said shaft and blocks on to the impression cylinder; stop pins on said grippers near the inclined outer ends thereof to receive between them the leading end of the blank and adapted to approach the cylinder to register the blank when the grippers are rocked in the direction to grip the registered blank, and delivery means for taking away the printed blank as it is released by the aforesaid grippers.

9. In a printing machine, the combination with a rotary impression cylinder, of two closely arranged grippers for engaging the blank and holding it on the impression cylinder; stop pins provided on said grippers for receiving between them the forward end of the blank and for registering the latter prior to the blank being held on the cylinder by the aforesaid grippers; and means for slightly varying the distance between the grippers and the stop pins carried thereby.

10. In a printing machine, the combination with a rotary impression cylinder, of two closely arranged grippers for engaging the blank and holding it on the impression cylinder; stop pins provided on said grippers for receiving between them not more than the forward end of the blank and for registering the latter prior to the blank being held on the cylinder by the aforesaid grippers; means for slightly varying the distance between the grippers and the stop pins carried thereby and means for adjusting the grippers in the direction of their length for varying the position of the stop pins and the outer extremities of the grippers in relation to the impression cylinder.

11. In a printing machine, the combination with a rotary impression cylinder, of a shaft rockable in bearings on said cylinder; blocks mounted on said shaft so as to be adjustable along the same; two closely arranged grippers fixed on bosses by means of screws passing through elongated holes in the grippers, and located so as to be rocked

by the said blocks; stop pins at the outer or gripping ends of the grippers; springs housed in said blocks and engaging the inner ends of the grippers, which ends fit under lugs or the like on the said blocks; a rotatable delivery ring; and a delivery gripping member mounted on a rockable shaft on said ring and adapted to take up the blank and grip it to the delivery ring as it is released by the aforesaid grippers.

12. In a printing machine, the combination with a rotary impression cylinder, of a gripper shaft rockable in bearings on said cylinder; adjoining blocks fixed on said shaft and controlling a pair of closely disposed strip-like grippers curved at their outer ends to press on a part of the impression cylinder; stop pins extending downwardly at an angle from the underside of the said strip-like grippers in close proximity to the ends to receive between them the end of the blank; and a delivery gripper rotatable with a delivery ring and adapted to pass between the aforesaid grippers and stop pins and grip the leading end of the blank paper on the delivery ring as it is released by the aforesaid grippers on the impression cylinder.

13. A device for registering and controlling blanks in printing machines, comprising two strip-like grippers with inclined ends; bosses carrying said grippers and adapted to be mounted on the gripper shaft in the printing machine; adjoining blocks fixed on said shaft; resilient connections between said blocks and grippers; and stop pins provided on the underside of said grippers near the inclined ends thereof which bear on the cylinder after the blank has been registered by entering between the aforesaid stop pins.

14. A device for registering and controlling blanks in printing machines, comprising a pair of gripping members, adapted to be rockably mounted on a gripper shaft; blocks adapted to be adjustably fixed on said shaft to control said gripping members which are adjustable in the direction of their length; a spring housed in an offset part of each block and engaging the inner end of the gripper which is located under a lug on said offset part; and stop pins extending at an inclination from the outer ends of the gripping members which are curved and shaped for bearing on the impression cylinder and holding the blank thereon after it has been registered by the aforesaid stop pins.

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