April 16, 1929. W. REINHOLD 1,709,096

PAPER REGISTERING DEVICE

Filed May 5, 1925 2 Sheets-Sheet 1

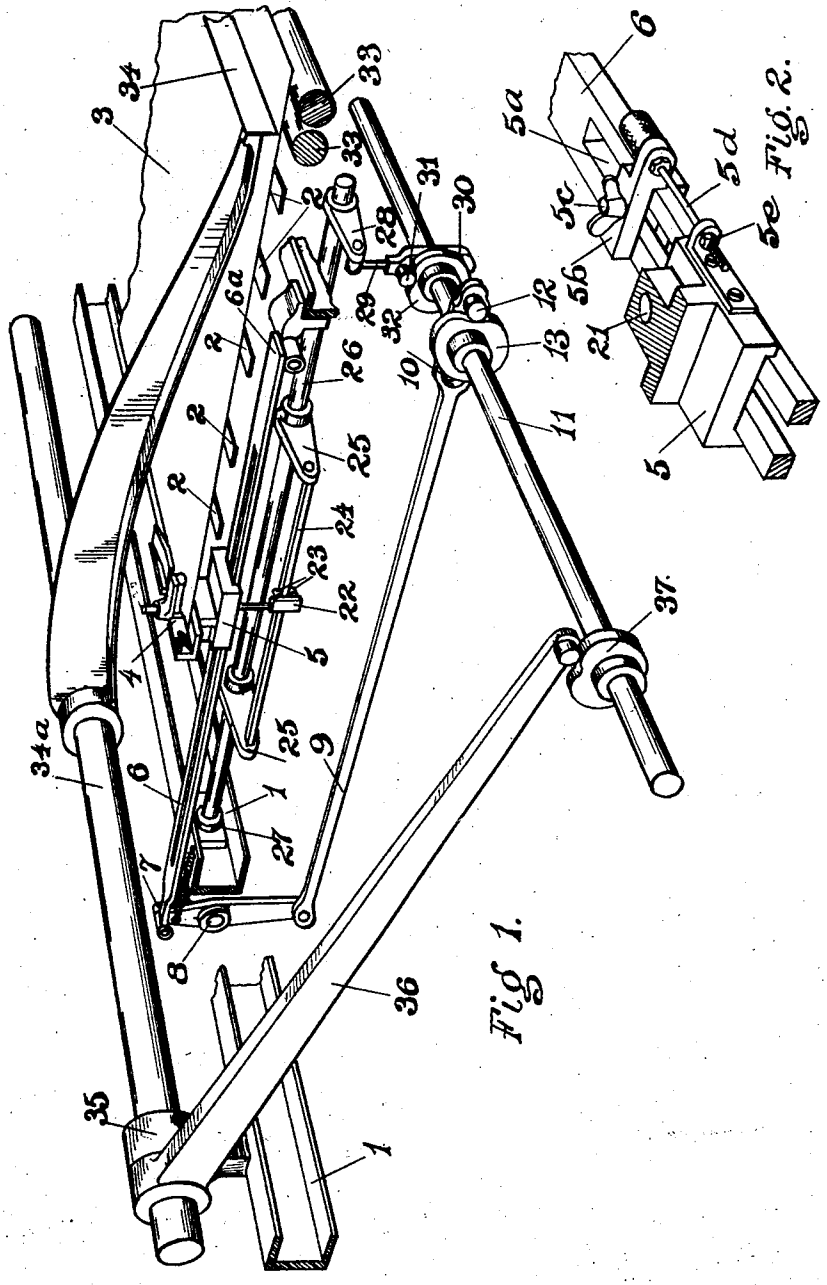

Fig. 1.

Fig. 2.

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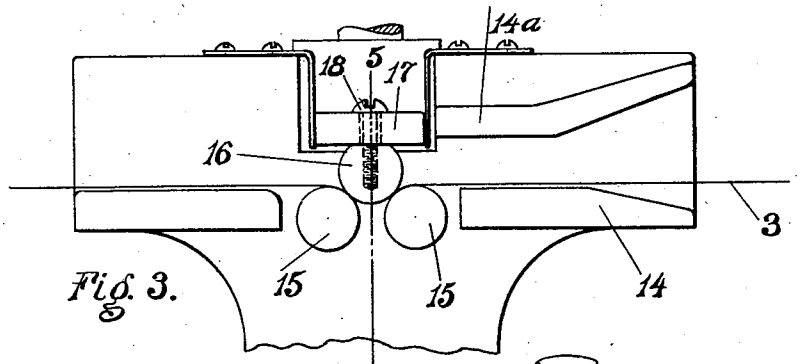

Fig. 3.

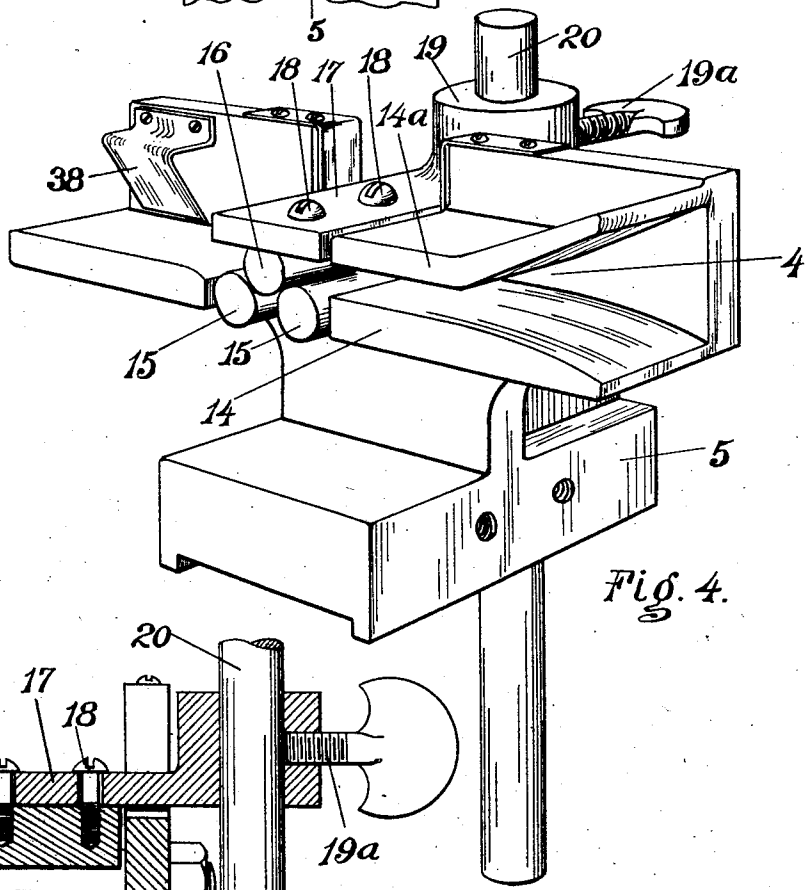

Fig. 4.

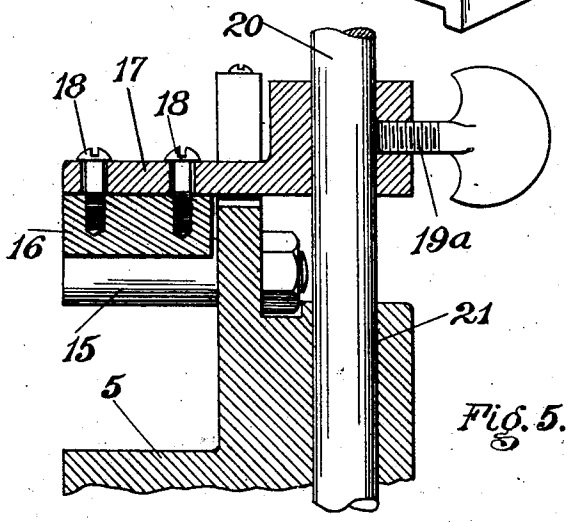

Fig. 5.

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UNITED STATES PATENT OFFICE.

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PAPER-REGISTERING DEVICE.

Application filed May 5, 1925. Serial No. 28,125.

In paper handling machines, such as paper folding machines, sheets of paper are fed into the machine on tapes or other carriers and brought to a nice registering in a direction at right angles to the movement of the tape or carrier through the action of a clamp or gripper device which engages the side of the paper and draws it to the registering position. With thin stock paper there is a tendency for the paper to curl at the edge thus disturbing the proper registering of the paper through the action of the registering device. The present invention is designed to obviate this difficulty by creasing the paper as it is gripped at an angle to the edge, thus preventing the formation or bending of the paper longitudinally of the edge of the paper. Features and details of the invention will appear from the specification and claims.

The invention is illustrated in the accompanying drawings as follows:—

Fig. 1 shows a perspective view of the device.

Fig. 2 a perspective view of an adjusting feature of the mechanism.

Fig. 3 a side elevation of the registering clamp.

Fig. 4 a perspective view of the same.

Fig. 5 a section on the line 5—5 in Fig. 3.

1 marks the frame of the machine, 2 a tape operating in the machine in the usual manner, and 3 a sheet of paper as it moves into the machine.

A registering clamp 4 is mounted on a block 5. The block 5 is slidingly mounted on a bar 6. The bar 6 has an end 6^a slidingly mounted on the frame and the opposite end secured to a lever 7. The lever 7 is pivoted at 8 on the frame. A link 9 extends from the lever. The link has a slotted end 10 through which an operating shaft 11 extends. A pin 12 on the link 9 engages a cam 13 on the shaft 11 so as to reciprocate the link 9 and consequently the bar 6.

Guides 14 and 14^a are mounted on the block 5 and the edge of the paper passes through these guides as it is carried by the tape. Jaw fingers 15—15 slightly spaced are arranged below the line of travel of the paper and a movable jaw finger 16 is arranged above the bite between the fingers 15 so as to crease the paper at right angles to the edge of the paper when the jaw 16 is moved down into engagement with the fingers 15, the line of the paper being clearly shown in Fig. 3. The jaw finger 16 is secured to a plate 17 by screws 18. The plate is carried by a hub 19 adjustably fixed on a rod 20 by a thumb screw 19^a. The rod 20 is slidingly mounted in an opening 21 in the block 5. The lower end of the rod has a head 22 with projections 23 which are adapted to engage a bar 24. The bar is carried by rock arms 25. The rock arms 25 are mounted on a rock shaft 26. The rock shaft is mounted in bearings 27 on the frame. A rock arm 28 extends from the rock shaft 26. A link 29 extends from the rock arm 28 and has a slotted end 30. A pin 31 on the rod 29 engages a cam 32 on the shaft 11.

Folding rolls 33 of the usual form are provided and a starting blade 34 operates in relation to the folding rolls, the blade being carried by a rock shaft 34^a mounted in bearings 35 on the frame. An arm 36 extends from the rock shaft 34^a and is actuated by a cam 37 on the shaft 11.

In the operation of the device the paper is fed through the guides 14, 14^a and the jaws 15 and 16 to its proper endwise position in the usual manner. The guide bar 6 at this point moves forward actuated by the cam 13 and as it approaches its extreme forward movement the clamping finger 16 is brought down creasing the paper at right angles to the edge so that the paper has this crease as it is engaged by the registering face of the clamp 4. This downward movement of the finger 16 is brought about by the action of the cam 32, the cams 13 and 32 being properly timed to effect this movement. As soon as the paper is gripped it is drawn back by the clamp through the action of the cam 13 to the registering position where the jaw finger 16 is released through the further action of the cam 32. At this point the paper is started into the folding rolls through the action of the cam 37. It will be noted that as the paper is gripped it is creased at an angle to the edge of the paper and this creasing stiffens the paper against curling longitudinally at the edge as the face of the clamp 4 engages it and thus obviates any disturbance to the registering of the paper at the edge incident to such curling.

In order to maintain the paper from being bent upwardly as it is gripped by the clamp I prefer to provide an inclined face as at 38 which tends to crowd the paper down to the registering face.

I also prefer to provide an adjustment for

the block 5. The bar 6 has a slot 5^a extending longitudinally through it. A block 5^b is mounted on the bar and is clamped to the bar 5 by a bolt 5^c. A rod 5^d extends from the block 5^b to the block 5. The block 5^b may be moved to any desired position on the bar and a finer adjustment may be made by a nut 5^e on the rod 5^d.

What I claim as new is:—

1. In a paper registering device, the combination of a paper conveyor; a registering clamp with a registering face and jaws extending from the face, the faces of the jaws being formed to crease the paper inwardly from the edge as they engage the paper; means moving the clamp with its face to the paper and to registering position; and devices operating the jaw in time with the means to crease the paper as it is engaged by the face and then clamp the paper.

2. In a paper registering device, the combination of a paper conveyor; a registering clamp with a registering face and jaw fingers extending from the registering face, the fingers creasing the paper as they are moved into clamping engagement inwardly from the edge of the paper; means for moving the clamp with its face toward the paper and to registering position; and devices operating one of the jaw fingers in time with the means to crease the paper as it is engaged by the face and then clamp the paper.

3. In a paper registering device, the combination of a paper conveyor; a registering clamp with a registering face and a jaw extending from the face, the faces of the jaw being formed to crease the paper inwardly from the edge as they engage the paper; means moving the clamp with its face to the paper and to registering position; devices operating the jaw in time with the means to crease the paper as it is engaged by the face and then clamp the paper; and guides directing the paper between the jaws.

4. In a paper registering device, the combination of a paper conveyor; a registering clamp with a registering face inclined toward the path of the paper and extending from the face, the faces of the jaws being formed to crease the paper inwardly from the edge as they engage the paper; means to crease the paper as it is engaged by the face and then clamp the paper moving the clamp with its face to the paper and to registering position; and devices operating one of the jaws in time with the means.

5. In a paper registering device, the combination of a paper conveyor; a registering mechanism comprising a block having a registering face a reciprocating bar on which the block is mounted, fixed jaws carried by the block, and a vertically movable jaw operating in relation to the fixed jaws to crease the paper inwardly from the edge, said jaws being positioned to receive the paper between them as it is conveyed into the machine; means for reciprocating the bar to move the block with its face against the paper; and devices for moving one of the jaws vertically on the block, said devices being timed with relation to the means to crease the paper as it is engaged by the face and then clamp the paper.

6. In a paper registering device, the combination of a paper conveyor; registering mechanism comprising a block having a registering face, a reciprocating bar on which the block is mounted, fixed jaws carried by the block, and a vertically movable jaw operating in relation to the fixed jaws to crease the paper inwardly from the edge, said jaws being positioned to receive the paper between them as it is conveyed into the machine; means for reciprocating the bar to move the block with its face against the paper; devices for moving one of the jaws vertically on the block, said devices being timed with relation to the means to crease the paper as it is engaged by the face and then clamp the paper; and means for adjusting the block on the bar.

In testimony whereof I have hereunto set my hand.

WILLIAM REINHOLD.