

Oct. 29, 1940.

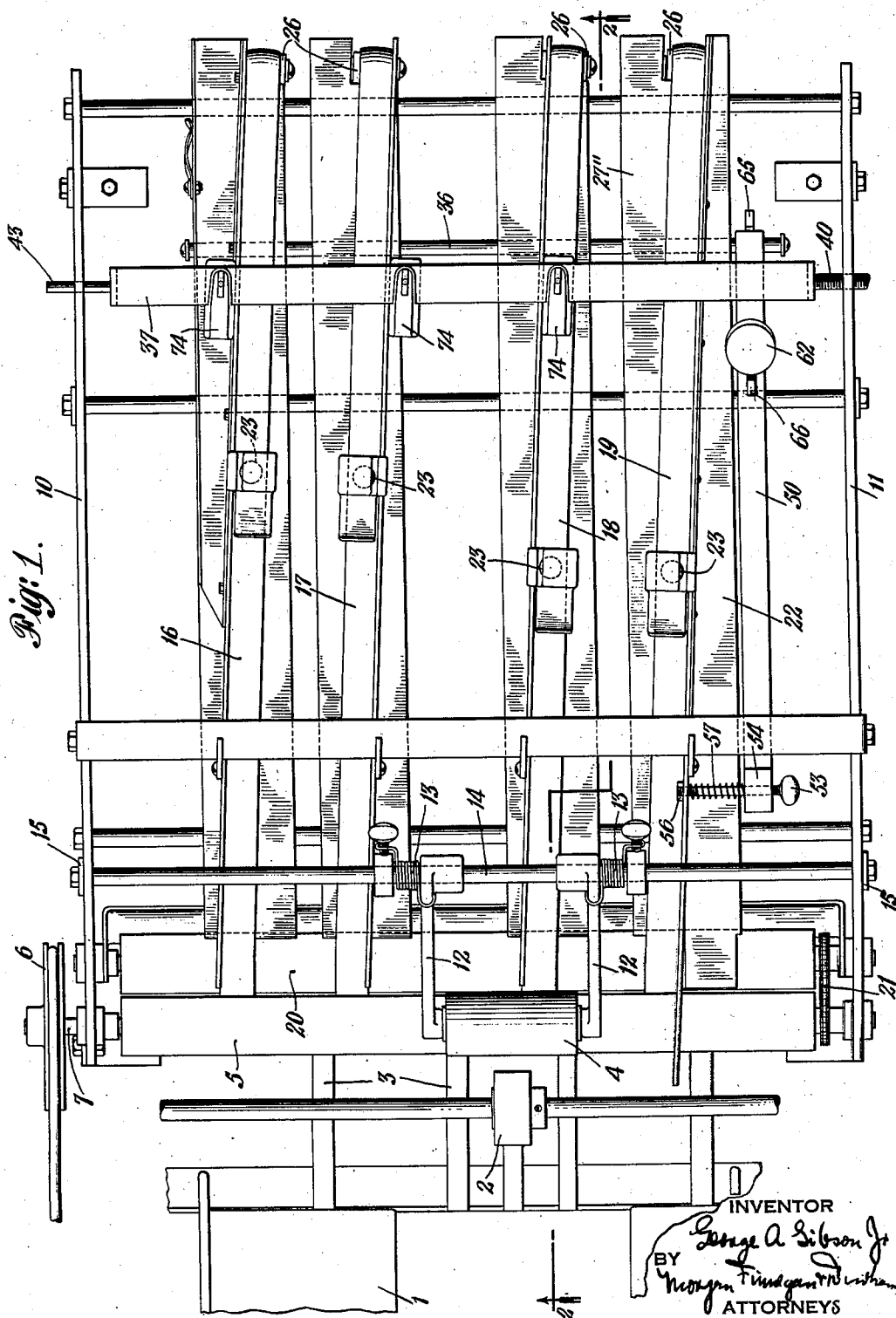
G. A. GIBSON, JR

2,219,892

SHEET FEEDING MECHANISM

Filed Sept. 9, 1939

2 Sheets-Sheet 1



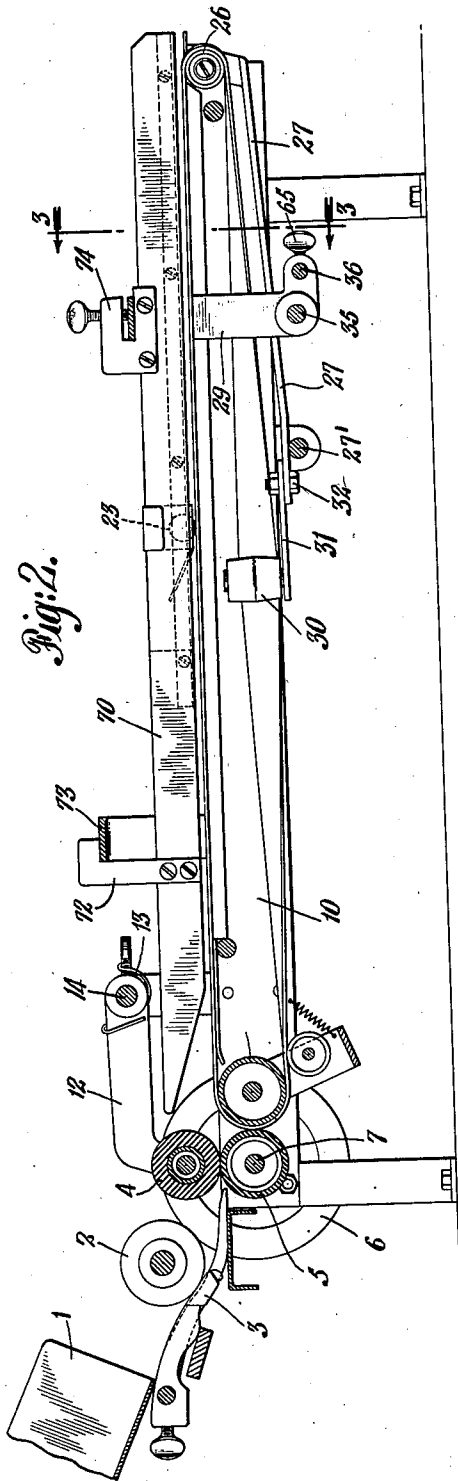
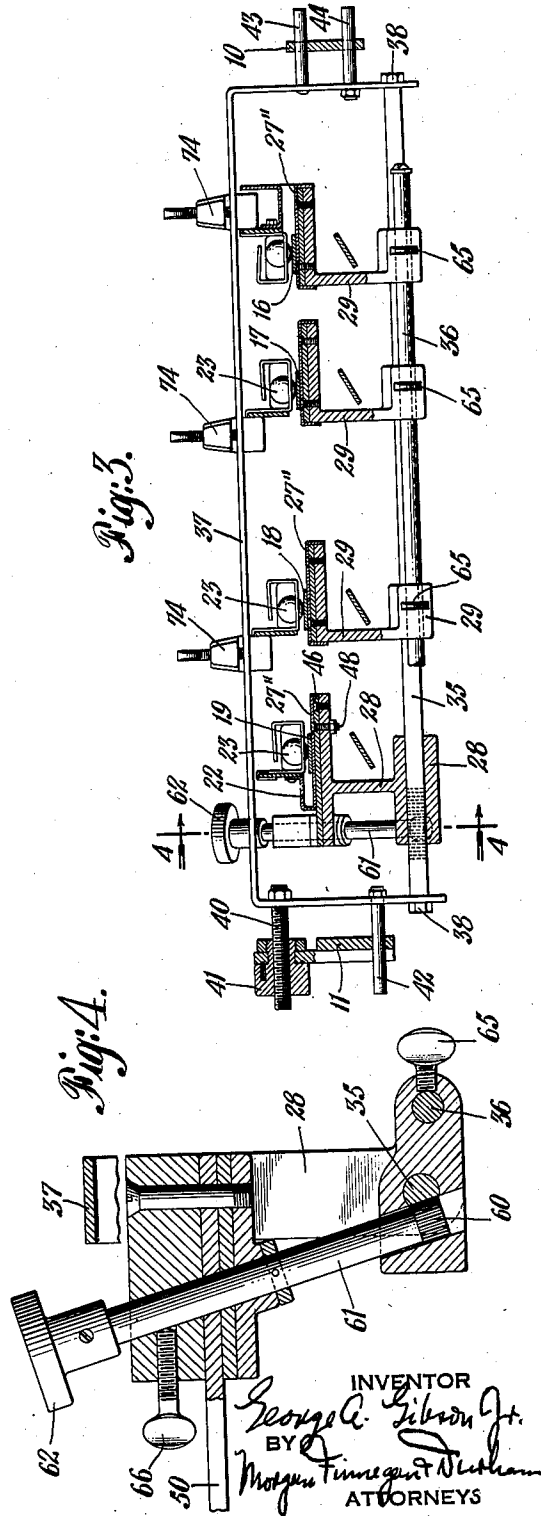
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2 Sheets-Sheet 2



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SHEET FEEDING MECHANISM

George A. Gibson, Jr., New York, N. Y.

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3 Claims. (Cl. 271-49)

The present invention relates to feeding and registering mechanism for handling paper sheets, envelopes and the like.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawings, referred to herein and constituting a part hereof, illustrate one embodiment of the invention, and together with the description, serve to explain the principles of the invention.

Of the drawings:

Figure 1 is a top plan view of a typical and illustrative embodiment of the present invention; Figure 2 is a sectional view taken on the line 2-2 of Figure 1;

Figure 3 is a detailed fragmentary sectional view taken transversely of the feeding device on the line 3-3 of Figure 2; and

Figure 4 is a fragmentary detailed section taken on the line 4-4 of Figure 3.

The object of this invention is to provide a conveyor and registering device of simple construction, easily and accurately movable for width of stock and lateral position with reference to the printing, folding or other machine to which blanks are being fed one at a time.

Further objects of my invention therefore are to provide convenient means of setting guides, tapes, idlers and other registering means to accommodate the width of the blank and into the approximately correct lateral position for printing or folding, etc.; to provide screw adjusting means of moving this entire set-up of cooperating registering means into exact lateral position as desired; and to provide means whereby all tapes effectually actuate the blank to points equally near the receiving parts of the printing or other machine.

A further object is to provide a pivotally mounted side guide, an obliquely running tape, and adjustable idlers, all mounted so as to be transversely movable as a unit.

This application is in part a substitute for my abandoned application Ser. No. 105,141, filed October 10, 1936.

Referring now in detail to the illustrative embodiment of the invention as shown by the draw-

ings, the blanks are placed in hopper 1 and fed one at a time between feed roller 2 and separator 3 to the coacting pull-out rolls 4 and 5 driven by belt on pulley 6. Lower pull-out roll 5 is fixed to driven shaft 7 running in bearings 8 fixed in side plates 10 and 11. The upper pull-out roller 4 runs on a shaft carried by the arms 12 which are under tension of springs 13, all being supported by the cross rod 14 carried by the plates 15 bolted to the side plates 10 and 11.

The pull-out rolls pass the blank on to the obliquely running tapes 16, 17, 18 and 19, which pass around the roller 20 mounted in the side plates in the same manner as the lower pull-out roller 5. This tape driving roller 20 is driven from the pull-out roller 5 through the chain 21 and sprockets fixed to these rolls. As soon as the blank is free from the pull-out rolls, it is carried by the obliquely running tapes toward the guide 22 as well as toward the delivering end of the conveyor. Idlers such as balls 23 assist in giving the tapes more or less positive action on the blank.

The sheet forwarding tapes 16, 17, 18 and 19 are preferably parallel to each other and are spaced laterally apart so as to support the entire width of the sheet, and these tapes are driven by means of the roller 20 which is positioned near the feed end of the device. The other ends of the tapes are supported by means of the idler pulleys 26 which have their axes inclined with reference to the roller 20 but normal to the run of the tapes, these rollers being supported by means of the arms 27 which project forwardly from and may be integral with the brackets 28 or 29, while the rearwardly projecting portion of the arms 27 is supported by means of the cross rod 27' on which they are slidable.

Underneath each of the channels 27' forming the tape supports is supported an idler 30 having vertical axis and rotatably mounted on the arms 31 which extend rearwardly for a considerable distance and are pivotally supported on the rear ends of arms 27 by means of bolts 32 so as to bear against the lower reach of the tapes and deflect the corresponding tape and insure its continued running at an oblique angle over the pulley 26.

Brackets 28 and 29 are mounted for movement in unison on a frame which is shiftable laterally of the feeding device and comprising rod 35 extending transversely of the frame and supported by a strap 37 which extends across the tapes and downwardly to each end of the

rod 35, the rod being secured therein by means of the nuts 38 on its threaded ends.

Means are provided for laterally shifting the frames and the supported brackets 28 and 29, together with the associated idler pulleys 26 and 30, and the tapes 16, 17, 18 and 19 and comprise a screw-threaded member 40 passing through a knurled nut 41 which is freely rotatably mounted in the side frame member 11 and held against axial movement, one end of the member 40 being securely fastened to the upper end portion of the strap 37. Means are also provided for securely holding the frame and comprise the guide rods 42, 43 and 44 which project from the strap 37 through suitable guiding apertures in the frame members 10 and 11. By turning the nut 41, the complete feeding assembly (except driving roller 20) may be shifted transversely of the sheet and held in any desired position.

Means are also provided for accurately registering the side of the sheet as it is fed forwardly by the tapes. For this purpose a U-shaped guide channel 22 which is relatively thin in a vertical direction and is of gradually narrowing width forwardly of the sheet travel is provided at the side of the feeding device, and as the sheets are moved forwardly and slightly towards the channel due to the oblique run of the tapes, the edge of the sheet is forced into the channel so as to cause the sheet to be fully registered before it is fed from the feeding means.

Guide channel 22 is pivotally mounted on a plate 46 by means of the screw 48 and is supported on bracket 28 so that it has angular movement with respect to the run of the belt 19, and means are provided for minutely angularly moving the guide and holding it in the desired position so that it can be accurately positioned. These means comprise a bar 50 secured to plate 46 and thereby to bracket 28, extending rearwardly of the bracket 28, preferably along the closed edge of the guide channel 22, and at its rear edge bar 51 is provided with a thumb screw 53 threaded into block 54 secured to the bar, the other end of the thumb screw passing through an aperture in the upstanding edge of the guide 22 and provided with an enlarged portion 56 by which the guide may be angularly moved against compression of spring 57.

Means are also provided for minutely laterally moving bracket 28, guide 22, tape 19 and the associated parts. As embodied, bracket 28 is laterally slidable on cross rod 35, and rod 35 is formed as a rack for a portion of its length. This rack portion is adapted to cooperate with the toothed end 60 of shaft 61 journaled in the bracket 28, and a knurled wheel 62 is fixed to the upper end of shaft 61 so as to facilitate turning the shaft for lateral movement of the bracket 28. A set screw 65 serves to secure the bracket 28 rigid with

respect to tie rod 36, and the other brackets 29, while set screw 66 serves to hold the shaft 61 against rotational movement. The rod 36 also serves to transmit this lateral movement to the other brackets 29 so as to move them a corresponding amount, but bracket 28 may be moved alone by loosening its set screw 65 so that as hand wheel 62 is turned the other brackets 29 are not shifted. Also, the brackets 29 can be shifted by bodily movement without moving bracket 28 by loosening the proper set screws 65.

Means may also be provided for holding the sheets against fluttering as they are fed forwardly, and these means comprise the angle pieces 70 extending parallel to and above the tapes from a point adjacent the roll 4 to the pulleys 26. These pieces 70 are each provided with a hanger 72 by which they are supported on the cross straps 73 fixed to the side plates 10 and 11, and at their forward ends are fixed to a clamp 74 by which they are secured in the desired lateral position by means of the transversely extending laterally movable strap 37 so that they may always remain above the tapes even when the feed mechanism is laterally shifted by the turning of the knurled nut 41.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim is:

1. In a sheet conveyor, a side guide, a plurality of individual belt-like tapes running in a direction oblique to said guide, a roller for driving the tapes and pulleys inclined with respect to the roller and over which the tapes run, and a laterally movable frame on which the pulleys are rotatably mounted for varying the run of the tapes.

2. In a sheet conveyor, a side guide, a plurality of individual belt-like tapes running in a direction oblique to the guide, pulleys over which the tapes run, a laterally movable frame on which the pulleys are rotatably mounted in an inclined position for varying the run of the tapes, and means for driving the tapes in any of their lateral positions.

3. In a sheet conveyor, a side guide, means for forwarding a sheet past and against the guide, comprising a frame, means for laterally moving the frame, driven belts carried by the frame and movable therewith and a roller with respect to which the frame is laterally movable for driving said belts, said guide comprising a pivoted member also carried by the frame and means for pivotally moving the guide.

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