Nov. 29, 1927. 1,651,189

P. COLQUHOUN

JOGGING MECHANISM

Filed Sept. 4, 1926 3 Sheets-Sheet 1

FIG. - 5

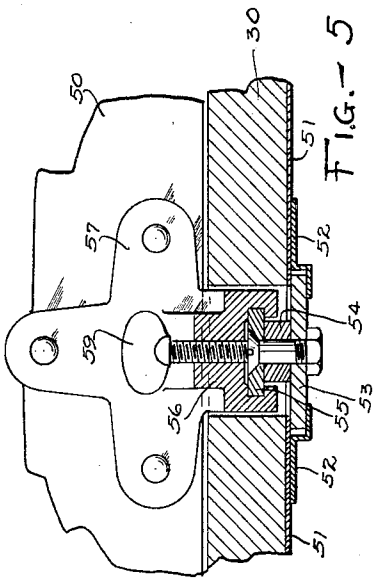


FIG. - 1

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JOGGING MECHANISM

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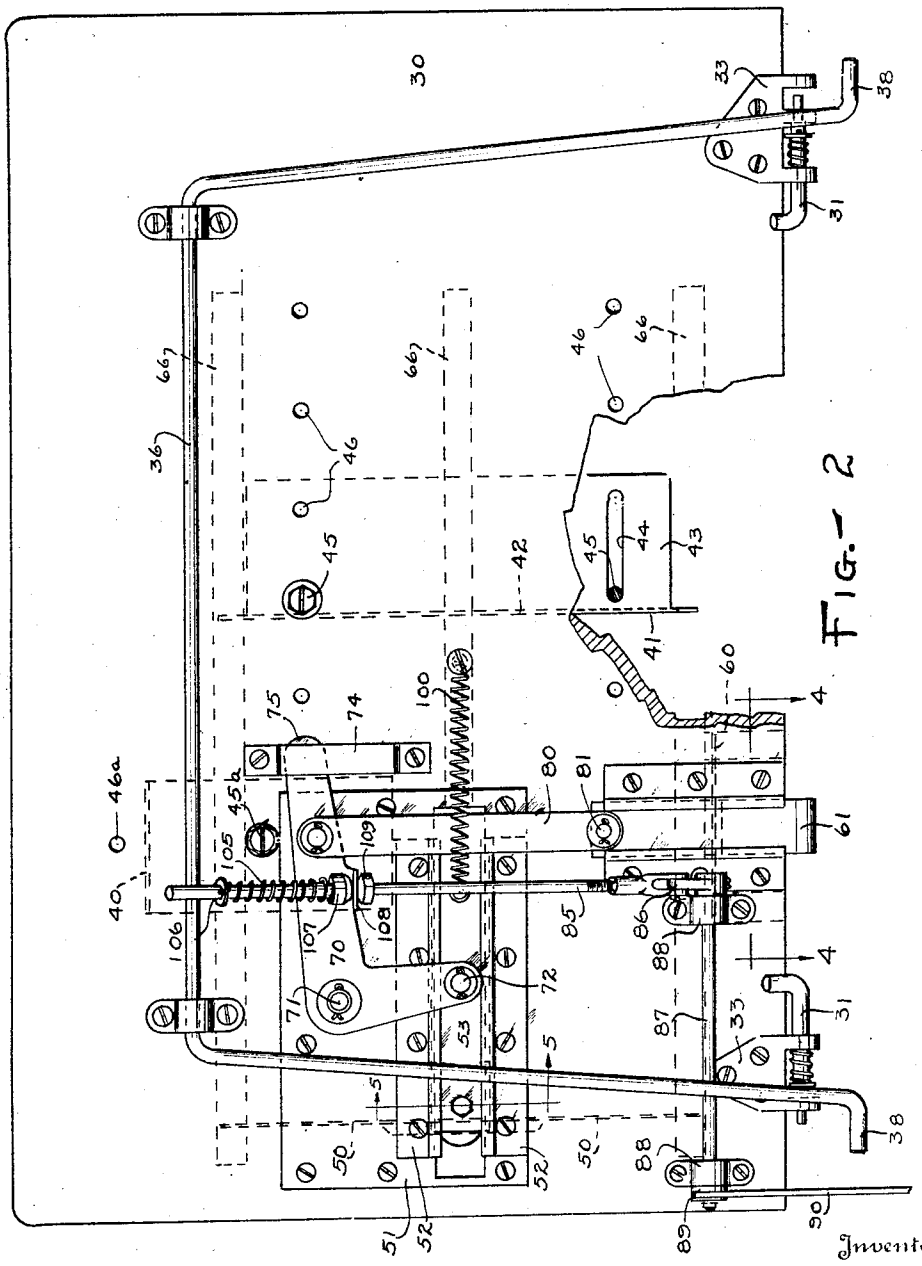


FIG. 2

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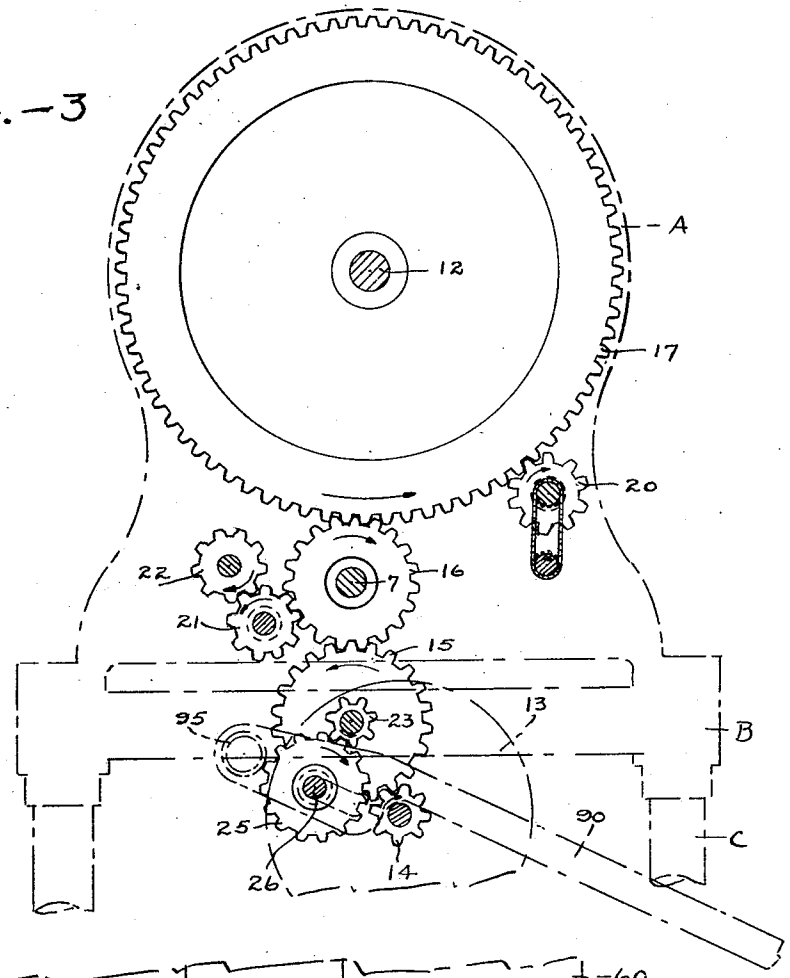
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JOGGING MECHANISM

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FIG.-3



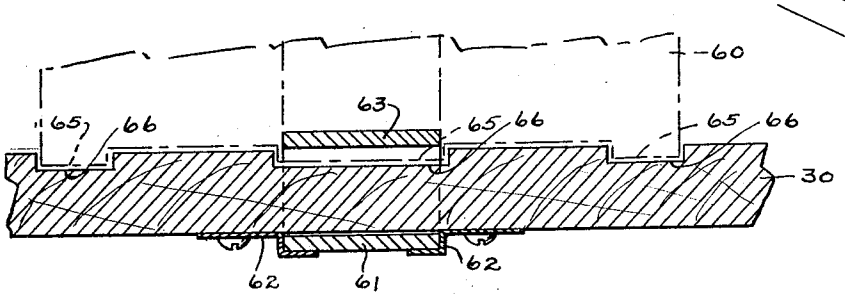


FIG.-4

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UNITED STATES PATENT OFFICE.

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JOGGING MECHANISM.

Application filed September 4, 1926. Serial No. 133,559.

This invention relates to jogging mechanism for paper sheets or cards and particularly to a sheet receiving attachment for a printing machine, which attachment may be so arranged that sheets fed from the machine into substantially the same position may be neatly and automatically arranged in a regular pile.

The object of the invention is to provide an efficient and comparatively simple jogging mechanism which will be cheap to construct and satisfactory in operation. A specific object is to provide an improved jogger arranged to act on two adjacent edges of a pile of sheets to force the other two adjacent edges against respective abutments. A further object is to provide a jogger attachment for a rotary printing machine which will be conveniently operated intermittently from the same source of power which operates the printing machine.

Other objects and features of the invention will become apparent from the following description relating to the accompanying drawings wherein I have shown my preferred form. The essential characteristics will be summarized in the claims.

In the drawings, Fig. 1 is a side elevation of my jogging mechanism attached to a rotary printing machine, a portion of the printing machine being broken away to illustrate certain parts, Fig. 2 is a plan of the jogging mechanism proper, Fig. 3 shows a convenient mechanism by which the printing elements and jogger elements may be driven in timed relation to each other, Fig. 4 is a cross sectional detail view taken along the line 4—4 on Fig. 2, Fig. 5 is a similar detail view taken along the line 5—5 on Fig. 2.

Briefly, the mechanism, as shown, comprises a platform arranged to be conveniently secured to the base frame structure, for example, of a multigraph. The platform has two normally stationary upright plates against which the sheets are stacked, and two upright reciprocable plates normally withdrawn to allow a sheet, fed from the machine, to come to rest within the confines of the four plates, the reciprocable plates being capable of moving upwardly until the theoretic rectangular area defined by the four plates is substantially the same as the area of the sheets to be stacked. Each of the reciprocable plates has a slidable mounting, and the mountings are connected by suitable linkage which is in turn connected to a cam follower contacting with a cam controlled by the multigraph drum driving mechanism.

Referring in detail to the drawings, A represents the multigraph machine resting on a suitable horizontal base plate B, having supporting legs C. Such supporting legs are usually four in number (two being shown). The multigraph machine has side frame members 1 in which is journalled a shaft 2 for a printing form drum or segment carrier 3. A form carrying segment is shown as comprising an arcuate shell like member 4 secured to the shaft by hooked spring plates 5, and maintained in definite position by cross rods 6. The cooperating printing element, the impression member, is shown at 6 mounted on a shaft 7 carried by the side frame members. There are also shown paper feed rollers 8 and 9 and a paper ejector roller 10. These parts may all be driven by a belt 12 extending upwardly from the driving wheel of a suitable motor (not shown) located on a platform (not shown) carried by the legs C. Such belt may drive a pulley indicated by broken lines in Fig. 3 at 13 rigid with a small spur gear 14. This gear drives a larger spur gear 15 meshing with an impression platen driving spur gear 16, and the gear 16 drives a large spur gear 17 rigid with the drum support 3. There are other gears meshing with or driven from the gears 16 and 17 for operating the paper feed and ejector rolls, 20 being the ejector roll gear, and 21 and 22 the paper feed gears. Driven by a small spur gear 23, rigid with the gear 15 is a spur gear 25 mounted rigidly on a shaft 26 journalled in the side portion of the base frame B. This shaft is arranged to drive the jogging mechanism which I will now describe.

The jogger platform or paper support preferably comprises a rectangular flat piece of material, such as wood, indicated at 30, and which may be attached to the multigraph supporting base by latch pins 31 (Fig. 2) secured in brackets 33 fastened near the front edge of the member 30. These pins are resiliently mounted in order that they may be manually withdrawn, and the ends of the pins forced into openings 34 in ears 35 (one being shown in Fig. 1) on the base. By this means the platform may be swung up or down at any desired angle and re-

tained in place in such position by a bail-like member 36 secured as by straps 37 to the under side of the platform and having its free ends bent outwardly as at 38 to engage openings (not shown) positioned along the inner sides of the rear legs C.

As shown, the paper positioning plates, consist of a rear abutment plate 40, adjustably secured to the platform 30, substantially centrally located with reference to the printing drum, another adustable side abutment plate 41, Fig. 2, and two reciprocable plates 50 and 60 positioned opposite the plates 41 and 40. The plate 41 has an upright portion 42 and horizontal portion 43 resting on the platform and arranged, as shown in Fig. 2, to be secured as by bolts 45 in any pair of a double series of openings 46 on the platform. When so secured the plate may be moved within definite limits by reason of slots 44 in the portion 43, by simply loosening the bolts. The plate 40 may be similarly mounted, for example by a bolt 45^a, arranged to be placed in any one of a series of openings 46^a and a slot (not shown) in the horizontal portion of the plate for receiving the bolt.

The jogger mechanism includes the slidable plates 50 and 60, the plate 50 reciprocating laterally of the platform, and the plate 60 forwardly and rearwardly. The mounting for the plate 50, as shown, comprises a slideway formed by a flat plate 51 and having overhanging strips 52 secured thereto to form horizontal recessed guides on the bottom of the platform. The platform has an opening therethrough extending a little beyond each end of the strips 52. The carriage for the jogger plate comprises a rectangular strip 53 embraced by the recesses of the slideway, this strip carrying a filler member 54 surmounted by a strip 55 having its edges overhanging the member 54. The overhanging edges of the strip 55 form a guideway for a bracket 56 shown as having an upwardly extending portion 57 secured to the jogger plate 50. By this means the bracket 56 may slide along the overhanging edges of the plate 55 and be clamped into any desired position by a thumb screw 59, which may engage the top of the plate 55.

There is a slideway for the plate 60 which is somewhat similar to that of the plate 50 but, as shown, allowing for no adjustment. This is desirable since all the necessary adjustments may be effected by the other three plates. This slideway comprises a bent member 61 slidably mounted in plates 62, bent to embrace the member 61 as shown in Fig. 4. The member 61 extends upwardly around the forward edge of the platform 30 as at 63 and has a vertical extension 64 to which the plate 60 is secured.

To prevent the paper from getting under the plates, any or all of the plates may have on their lower sides lugs, such as indicated on broken lines in Fig. 4 at 65, which lugs traverse slots 66 in the upper surfaces of the platform 30. These slots may extend for any convenient length, for example, as shown in dotted lines in Fig. 2, there are slots 66 extending across the greater portion of the platform, these slots being common to both the plates 42 and 50. By this means the paper is prevented from getting under the plates, as it always rests above the floors of the slots 66, the lugs bearing against the edges of the sheets to shove them along, in the case of the reciprocating plates. The lugs on the normally stationary plates prevent the paper from being shoved under them by the reciprocating plates.

Means for simultaneously operating the two reciprocating plates consists, as shown, of a bell crank 70 pivoted at 71 to the lower side of the platform, one arm of the bell crank having a loose pin connection at 72 with the sliding member 53. The other arm 75 of the bell crank 70 may move back and forth in a strap 74, secured to the platform and overhanging the end of the arm as a guide. Intermediately of the ends of the arm 75 is pivotally attached a link 80 connected at one end as at 81 with the bent member 61 to which the plate 60 is attached.

To reciprocate the bell crank 70, I have shown a link 85 connected at one end with a rock arm 86 on a rock shaft 87 secured in brackets 88 on the platform, the end of the rock shaft opposite the rock arm 86 having another rock arm 89 connected to a two part cam follower supporting link 90. The link 90 as shown in Fig. 1 extends diagonally upwardly and is slidably supported at its upwardly extending end by reason of a slot 92 therein, embracing the shaft 26. The slot support for the link 90 allows the platform to be swung up or down as required and the link 90 may be adjusted by reason of bolts 90^a each extending through respective holes and slots in the link parts, to maintain the follower in contact with the cam for any position of the platform.

The link 90 is reciprocated by reason of a cam follower roller 95 mounted on the link which bears against a cam 96 rigid with the rock shaft 26. The cam has a low point shown as a flat surface 98 on one side thereof, which allows the link 90 to assume its rearmost position, at which time the jogger plates are in their active or jogging position. The cam in the normal rotation of the machine rotates clock-wise, the flat surface 98 gradually merging into a circular arc. This gradually pulls the plates apart, then holds them for a considerable portion of the rotation, and then somewhat abruptly allows a spring 100 secured at one end to the platform and at the other end to the carriage member 53 to pull both jogger plates against the pa-

per. A suitable adjustment may be provided between the shaft 26 and cam 96 wherefore the jogging takes place at the proper time relative to feeding the paper from the machine. Preferably this should be so arranged as determined by the length of the sheet to be stacked, so that the jogging takes place a moment after the sheet comes to rest on the platform or pile of sheets.

In order to minimize shock to the machine and to provide for emergency, as in case some foreign matter should prevent the return of the jogger plates to normal position, I have shown resilient means interposed in the connection between the cam and the bell crank 70 which operates the slides. This resilient connection preferably comprises a compression spring 105 suitably retained on the link 85 against outward movement by a washer and spring, indicated generally at 106, and bearing at its rear end against a slidable knob which in turn bears against an upturned lip 108 on the bell crank. The link has a similar knob 109 rigid therewith on the side of the lip opposite the slidable knob 107. Both these knobs are shown as rounded to compensate for the tilting movement of the link, relative to the ear 108.

It will be apparent that should foreign substances prevent the return of either of the plates 50 or 60 to normal position after jogging the paper the mechanism will not be damaged, the cam action since that action in such case will be simply to compress the spring 105, the button 109 drawing away from the lip on the bell crank 70. Under normal conditions the spring 105 is strong enough to hold the knob 107 snugly against the lip 108 to insure the withdrawal of the plates after jogging.

To set the device for a given size of sheet, the operator first turns the multigraph drum to position the cam approximately as shown in Fig. 1, so that the reciprocating plates are in their jogging position. The plate 42 is then adjusted to such position that the sheet as fed from the machine just clears it. The plate 50 may then be brought toward the plate 42 with a little less space between them than the paper width in order that at each reciprocation of the jogger plates the stack will be slightly compressed. The plate 40 is then moved toward the plate 60 leaving space enough for the paper length. It will be noted that the plate 40 is very narrow, hence it may pass between the plates 42 and 50 in case very short sheets are to be stacked.

I have found the jogging mechanism made in accordance with the above disclosure to be very effective in stacking sheets and to be very easily adjusted for a great range of sizes of rectilinear shapes. Furthermore, the device is very little likely to get out of order and practically all the parts may be very easily reached for repairs or attention by simply taking off the platform and inverting it.

I claim:

1. In combination with a printing machine having a printing couple, a paper support arranged to receive sheets of paper successively delivered by the printing machine, interconnected jogger plates reciprocably mounted on the support, spring means to move the plates toward the paper to stack it, means in driving relation to the machine and having a connection normally operative to withdraw the plates from the paper, there being resilient means interposed in the said connection whereby said second named means operates idly in the event that the withdrawal of the plates is restrained.

2. In combination with the multigraph, of a stand therefor, power drive mechanism mounted on said stand, a paper receiving platform pivoted to the stand, a movable jogger plate on the platform, mechanism for operating the jogger plate including a rock shaft parallel with the pivoted axis of the platform, and mechanism connecting said rock shaft with the power drive including an adjustable link.

3. A jogging mechanism for a printing machine, comprising a platform, adapted to be supported by the frame of such printing machine, relatively reciprocable jogger plates mounted above the platform, a driving connection between one of the plates and one of the printing elements to operate the jogger, said platform having grooves in the upper face thereof, one of said jogger plates having lugs at its side edges extending into the grooves for preventing sheets of paper from entering between the plate and platform, a flange at the base of said jogger plate extending at right angles thereto, and guide slots in said flange for adjustably guiding the plate.

4. A jogging mechanism for a printing machine, comprising a platform adapted to be supported by the frame of such printing machine, jogger plates mounted above the frame and operating at right angles to each other, linkage carried below the platform for connecting the jogger plates so that both move simultaneously, means constantly acting on the linkage to cause such movement in a direction to jog the paper, and a driving connection between the linkage and one of the printing elements to cause movement of the plates in the opposite direction, including a yielding means of greater force than the constantly acting means.

5. A jogging mechanism for paper sheets, comprising a platform, a pair of adjustable normally stationary plates, and a pair of reciprocating plates rising upwardly from the platform, said plates defining a theoretical rectangle, one of the reciprocatory plates

having a slideway beneath the platform and an adjustable connection between the plate and slideway extending through the platform, the other reciprocatory plate having a connection with its slideway extending around the edge of the platform, and linkage for connecting the slideways together, whereby both may be operated simultaneously.

6. A jogging mechanism adapted to be attached to a printing machine, comprising a platform, means for adjustably and pivotally attaching one end of the platform to the printing machine, reciprocatory jogging means mounted on the platform, a rock shaft connected therewith also mounted on the platform, a cam shaft and cam in geared relation to the printing machine, a link having a slot embracing the cam shaft for support at one end and having a connection with the rock shaft at the other, and a cam follower carried by the link for engaging the cam, said link being adjustable lengthwise to permit the raising and lowering of the platform about the pivotal attachment.

7. A jogging mechanism adapted to be attached to a printing machine, comprising a platform, means for pivotally attaching one end of the platform to the printing machine, means for raising and lowering one edge of the platform about the pivotal attachment, jogger plates slidably mounted on the platform at right angles to each other, sheet abutment means opposite the plates, linkage connecting the plates together, and a rock shaft secured to the lower side of the platform operably connected to the linkage, a cam shaft in geared relation to the printing machine, a cam thereon, and a link having a slot engaging the cam shaft for support at one end and connected at the other to the rock shaft, means whereby, the cam operates the link, and an adjustment in the link whereby the platform may be raised or lowered without changing the operating relation between the link and cam.

8. A jogging mechanism adapted to be attached to a printing machine comprising a platform, means for pivotally attaching one end of the platform to the printing machine, a pair of jogger plates slidably mounted on the platform at right angles to each other, sheet abutment means opposite the plates, a bell crank operating in a plane parallel to the platform and having a connection with both the slidable plates, a rock shaft secured to the lower side of the platform and means connecting the bell crank to the rock shaft, a link connected to the rock shaft at one end and having an operating connection with the machine for oscillating the rock shaft, an adjustable bracket for raising and lowering one edge of the platform about the pivotal attachment there being an adjustment in said link whereby the printing machine may operate the jogging mechanism with the platform raised or lowered by the bracket.

In testimony, whereof I hereunto affix my signature.

PETER COLQUHOUN.