Aug. 26, 1930. L. SHARP 1,773,879

SHEET FEEDING MECHANISM

Filed Oct. 4, 1927 2 Sheets-Sheet 1

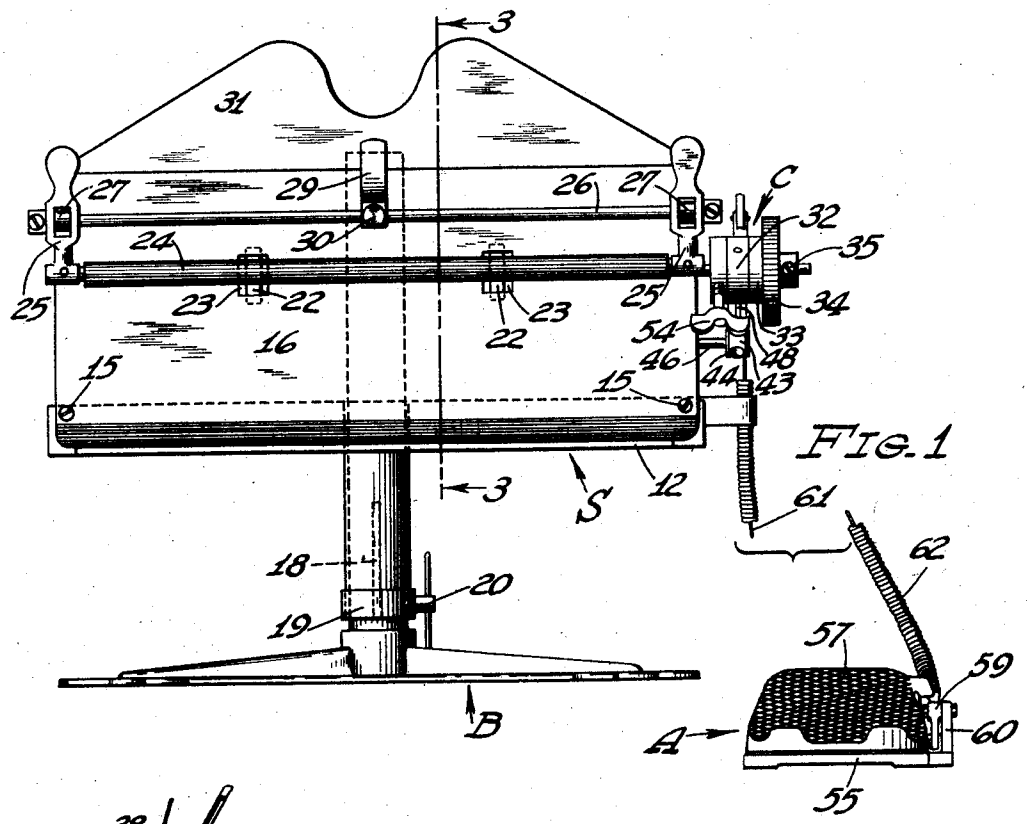


FIG. 1

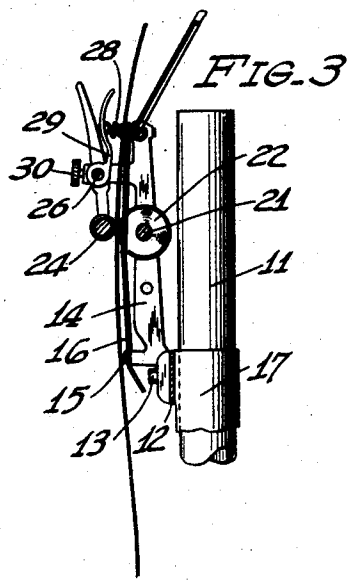


FIG. 3

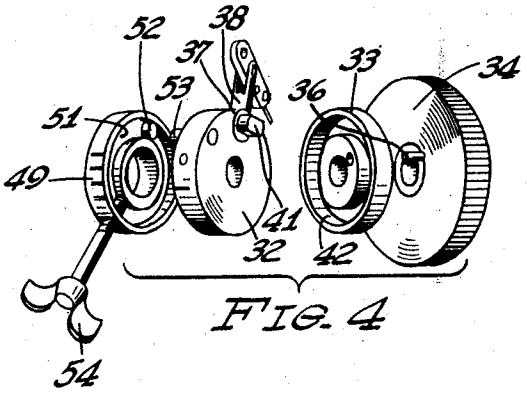


FIG. 4

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SHEET FEEDING MECHANISM

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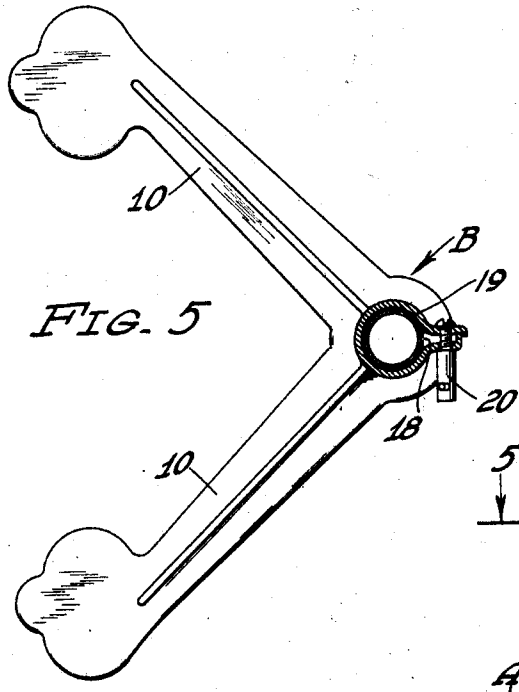


FIG. 5

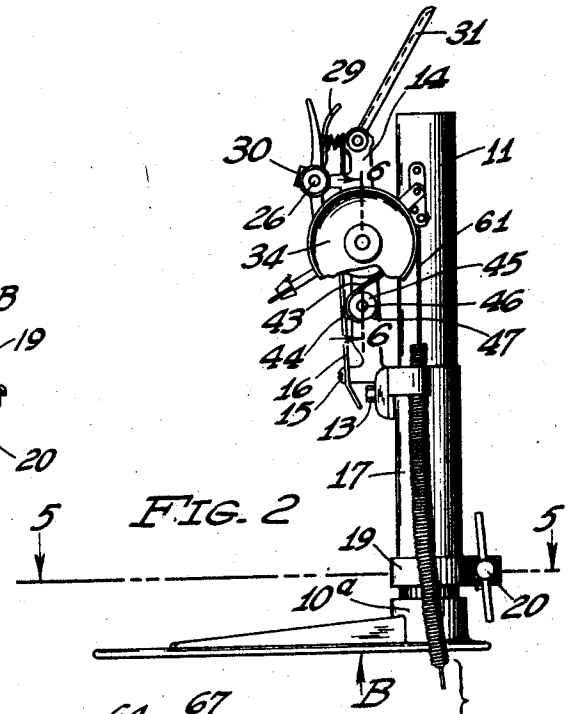


FIG. 2

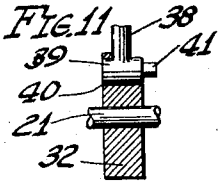
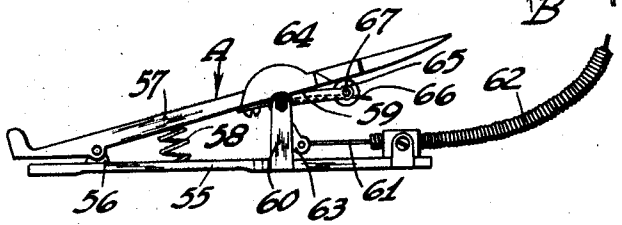


FIG. 11



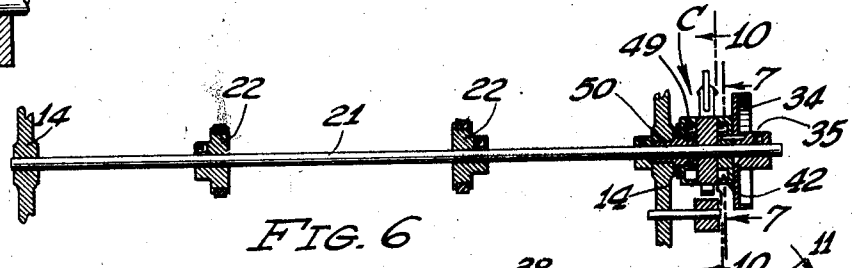


FIG. 6

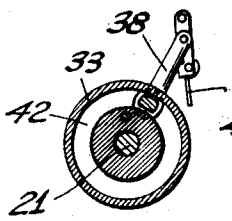


FIG. 7

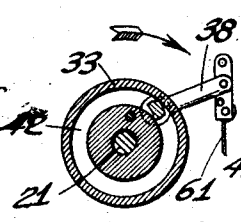


FIG. 8

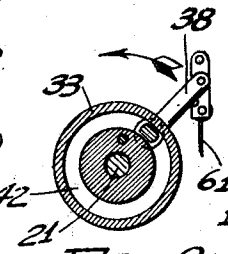


FIG. 9

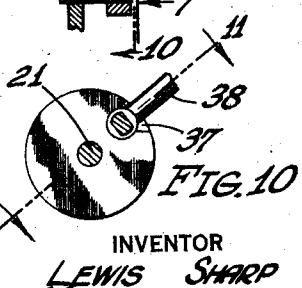


FIG. 10

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Patented Aug. 26, 1930 1,773,879

UNITED STATES PATENT OFFICE

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SHEET-FEEDING MECHANISM

Application filed October 4, 1927. Serial No. 223,989.

My invention relates to and has for a purpose the provision of a simple, durable and compact sheet feeding mechanism particularly adapted, although not necessarily, for use in copy holders and by which a predetermined line by line feed of the copy can be effected with the utmost ease and dispatch and in such manner that the rapid and accurate reading of the matter to be transcribed can be accomplished and the liability of a repetition or omission of matter by the typist reduced to a minimum.

It is also a purpose of my invention to provide a sheet feeding mechanism embodying a uni-directional clutch of simple and substantial construction, preferably although not necessarily actuated by a foot controlled device to effect a positive and progressive step by step feed of the copy, which feed can be varied at will to correspond to the spacing of lines upon a particular sheet.

I will describe only one form of sheet feeding mechanism embodying my invention and will then point out the novel features in claims.

In the accompanying drawings—

Figure 1 is a view showing in front elevation one form of copy holder embodying my invention;

Figure 2 is a view illustrating in side elevation, partly broken away, the copy holder embodied in Figure 1;

Figure 3 is a vertical sectional view taken on the line 3—3 of Figure 1 and looking in the direction of the arrows;

Figure 4 is a view illustrating in perspective the several parts comprising the clutch embodied in my invention;

Figure 5 is a horizontal sectional view taken on the line 5—5 of Figure 1 and looking in the direction of the arrows;

Figure 6 is a sectional view taken on the line 6—6 of Figure 2 and looking in the direction of the arrows;

Figure 7 is a detail sectional view taken on the line 7—7 of Figure 6 and looking in the direction of the arrows;

Figures 8 and 9 are views similar to Figure 7 and illustrating other positions of the uni-directional clutch;

Figure 10 is a detail sectional view taken on the line 10—10 of Figure 6 and looking in the direction of the arrows; and

Figure 11 is a sectional view taken on the line 11—11 of Figure 10 and looking in the direction of the arrows.

Referring specifically to the drawings in which similar reference characters designate similar parts in each of the several views, my invention in its present embodiment is associated with a copy holder comprising a base B constructed to provide a pair of angularly disposed arms 10, at the junction of which is secured in a sleeve 10^a an upright tubular standard 11 upon which a support S is mounted. The support S comprises a horizontal bar 12 of flat metal, to the opposite ends of which is secured by bolts 13 a pair of vertically disposed brackets 14, to the front side of which is secured by screws 15, a vertically disposed plate 16 of rectangular form. Medially between the ends of the bar is secured a depending tubular extension 17 which telescopically receives the standard 11, the lower end of the extension being slotted longitudinally as shown at 18 and embraced by a split clamp 19 having a clamping screw 20 by means of which the clamp and hence the extension are adapted to be constricted to clamp the support as unit upon the standard in any selected position of vertical adjustment.

Journaled in the brackets 14 is a horizontal feed shaft 21 provided with a pair of spaced apart rubber faced feed rollers 22, having a portion thereof projecting through openings 23 in the plate 16 for rolling engagement with a rubber faced idler roller 24 journaled at its ends in the lower ends of a pair of arms 25 secured to a rod 26 rotatably mounted in sleeves 27 formed integral with the brackets 14. Coil springs 28 interposed between the brackets and arms normally urge the idler roller 24 into engagement with the feed rollers 22, yet permit disengagement thereof upon the exertion of pressure against the upper end of one or both of the arms so that copy to be transcribed can be inserted between the rollers and then clamped upon release of the arms, for upward feeding movement upon rotation of the feed shaft 21.

With a copy clamped between the feed and idler rollers it can be definitely guided and supported by a guide arm 29 rotatably mounted upon the rod 26 for adjustment circumferentially and longitudinally of the rod, and provided with a clamping screw 30 adapted to be screwed into engagement with the rod to lock the guide arm 29 in a selected position of adjustment. A guide plate 31 hinged on the brackets 14 co-operates with the arm 29 to guide and support the copy between the two as the copy is fed upwardly.

For moving a copy clamped between the feed and idler rollers, upwardly by a step by step progressive movement, I provide a unidirectional clutch designated generally as C which is controlled by an actuator A in the present instance illustrated as a foot operated device.

The clutch C comprises a driving element 32 in the form of a disk rotatably mounted on the extended end of the feed shaft 21, a driven element 33 also in the form of a disk rotatably mounted on the feed shaft alongside the driving element, and fixed against rotation with respect to the shaft by means of an operating knob 34 detachably secured to the shaft by a set screw 35 and having a pin 36 projecting into an opening in the driven element to provide a separable operative connection between the two. The driving element 32 is provided with a peripheral recess 37 opening into the side of the element confronting the driven element 33, in which is freely received the inner end of an actuating member 38, comprising, in the present instance an arm having a lateral extension in the form of a pin 39 rotatably mounted in an opening 40 extending transversely in the driving element and communicating with the recess 37 so that the member 38 is mounted in the driving element for pivotal movement in the plane of rotation of the element, the movement of the member being limited upon engagement thereof with the side walls of the recess. he member is also provided with a lateral axial projection 41 in the form of a flattened head which extends into an annular groove 42 formed concentrically in the side of the driven element 33 confronting the driving element 32. In the position of the member 38 shown in Figs. 7, 9, and 10, wherein it engages one side wall of the recess 37, the projection 41 is free of the peripheral walls of the groove 42 so that rotation of the driving element 32 by the member 38 in a counter-clockwise direction as indicated by the arrow in Fig. 9, will be ineffective to rotate the driven element 33, whereas when the member is reversely moved, its projection 41 will be inclined with respect to the annular groove 42 and will have locking engagement with the peripheral walls of the groove as clearly shown in Fig. 8, so that rotation of the driving element by the member in the clockwise direction indicated by the arrow in this figure will impart a corresponding rotational movement to the driven member and hence the feed shaft 21 so that an upward feed of the copy will be effected. To insure that the member will be moved to either of its positions before its movement is transmitted to the driving element to rotate the latter in one direction or the other, a flat spring 43 is secured by a screw 44 to a collar 45 mounted on a pin 46 projecting from one of the brackets 14, the free end of the spring bearing against the periphery of the driving element as shown in Fig. 2. The collar is adjustable circumferentially on the pin 46 so that the tension of the spring exerted against the driving element, and hence the frictional resistance set up by the spring to the rotation of the driving element can be varied at will, the collar being locked in any selected adjusted position by means of a set screw 47.

The counter-clockwise rotation of the driving element is limited by a stop pin 48 projecting from the element and adapted to engage the collar 45, while the clockwise movement of the driving element is limited by means of an adjustable stop element 49 in the form of a disk rotatably mounted on a sleeve 50 projecting from one of the brackets 14 and through which the feed shaft 21 extends. The side of the stop element confronting the driving element 32 is provided with a concentric annular groove 51 in which is secured a stop pin 52 adapted to be engaged by a second stop pin 53 projecting from the driving element into the groove. The stop element is adapted to be locked in any adjusted position by means of a thumb screw 54 threaded through the element for engagement with the sleeve 50. It will thus be clear that the rotational movement imparted to the driving element by the member 38 is definitely limited and can be varied at will so that the step by step feed of the copy can be varied to correspond with the line spacing of the copy.

The actuator A in the present instance comprises a flat base 55 having an upstanding ear 56 upon which is pivotally mounted a pedal 57 normally urged to an elevated position by means of a coil spring 58 and capable of being moved by the foot of the typist to a depressed position to rock a bell crank lever 59 pivoted on a bracket 60, and cause the latter to exert a pull upon a flexible wire 61 having a flexible housing 62, and connected at one end to the arm 63 of the bell crank lever and at its other end to the actuating member 38. The arm 64 of the bell crank lever 59 is provided with a roller 65 and the bell crank lever is normally urged upwardly to maintain the roller in engagement with the underside of the pedal 57 by means of a flat spring 66 secured at one end to the base 55 and bearing at its free end against the extended end of a pin 67 forming the axis of the roller.

The operation of the copy holder is as follows:

It will be assumed that the holder is disposed on the desk of the typist and the actuator A on the floor at a point convenient for operation by the foot of the typist, while the copy having the matter to be transcribed is clamped between the feed and idler rollers 22 and 24 respectively. The normal action of the spring 58 maintains the pedal 57 elevated while that of the spring 66 maintains the actuating member 38 in its non-clutching position with respect to the driven element 33 as shown in Fig. 7, and through the medium of the member 38 maintains the driving element 32 in the position wherein its stop pin 48 engages the collar 45. Upon initial depressing movement of the pedal 57 the actuating member 38 is rocked to the position shown in Fig. 8 wherein its projection 41 will have clutching engagement with the driven element 33, so that upon a continuance of the depressing movement, the driving and driven elements 32 and 33 respectively will be rotated as a unit in a clockwise direction as indicated by the arrow in Fig. 8 until the stop pin 53 of the driving element engages the stop pin 52 of the stop element 49. The feed shaft 21 will thus be partially rotated to effect an upward feed of the copy an amount determined by the rotational movement of the driven element 33, and it will be clear that upon a release of the pedal 57 its spring 58 will return the pedal to its normal elevated position, while the spring 66 will cause a pull to be exerted upon the wire 61 to first restore the actuating member 38 to its non-clutching position shown in Fig. 9 and then through the medium of the member, rotate the driving element 32 in the direction of the arrow (Fig. 9) until the stop pin 48 again engages the collar 45. It will thus be apparent that successive operations of the pedal 57 will result in a step by step progressive feed upwardly of the copy.

The copy holder has been designed to permit it to be permanently secured by the arms 10 of the base B to the movable section of a conventional form of typewriter desk (not shown) directly at the rear of the typewriter, and the holder is of such overall dimensions that with the support S lowered on the standard 11 and the guide plate 31 swung downwardly, the holder can moved with the typewriter to an exposed position for use and a concealed position within the desk, thus eliminating the necessity of removing the holder each time the desk is opened or closed. It will be understood that the flexible wire connection to the actuator A extends through the desk between its movable section and stationary portion, there being sufficient space present in the conventional desk to permit the passage of the connection without in any way altering the construction of the desk.

Although I have herein shown and described only one form of sheet feeding mechanism embodying my invention, it is to be understood that various changes and modifications may be made therein without departing from the spirit of the invention and the spirit and scope of the appended claims.

I claim:

1. A uni-directional clutch comprising driving and driven elements adapted to be mounted for rotary movement upon a common axis, said driven element having an annular groove therein, an arm for rotating the driving element, mounted on the latter for a limited pivotal movement in the plane of rotation of the member and having a lateral axial projection extending into said annular groove, operable upon rocking of the arm in one direction to move into jamming engagement with the walls of said groove and thereby effect a driving connection between the elements for rotation as a unit in one direction by the arm, and operable upon rocking of the arm in the reverse direction to move free of the walls of said groove, whereby reverse rotation of the driving element will be ineffective to rotate the driven element, means for actuating the arm, and means for setting up a predetermined amount of frictional resistance to the rotation of the driving element for the purpose described.

2. A uni-directional clutch comprising a driving disk adapted to be rotatably mounted on the feed shaft of a copy holder, a driven disk adapted to be fixed against rotation on the feed shaft alongside the driving disk and having an annular concentric groove in its side confronting the driving disk, said driving disk having its periphery formed with a recess opening into the side of the driving disk confronting the driven disk and provided with a transverse opening communicating with the recess, an actuating arm in said recess extending outwardly from the driving disk, having a lateral extension projecting into said opening for supporting the arm for pivotal movement in said recess and in the plane of rotation of the disk, said arm having a lateral axial projection extending into said annular groove and adapted to co-act with the latter to provide a driving connection between the disks when the arm is rocked in one direction, and means for actuating said arm to effect rotation of the driving disk upon engagement of the side walls of said recess by the arm.

3. A uni-directional clutch comprising a driving disk adapted to be rotatably mounted on the feed shaft of a copy holder, a driven disk adapted to be fixed against rotation on the feed shaft alongside the driving disk and having an annular concentric groove in its side confronting the driving disk, said driving disk having its periphery formed with a recess opening into the side of the driving disk confronting the driven disk and provid-

ed with a transverse opening communicating with the recess, an actuating arm in said recess extending outwardly from the driving disk, having a lateral extension projecting into said opening for supporting the arm for pivotal movement in said recess and in the plane of rotation of the disk, said arm having a lateral axial projection extending into said annular groove and adapted to co-act with the latter to provide a driving connection between the disks when the arm is rocked in one direction, means for actuating said arm to effect rotation of the driving disk upon engagement of the side walls of said recess by the arm, said driven disk adapted to be loosely mounted on the feed shaft, a knob for preventing lateral displacement of the driven disk adapted to be detachably secured to the feed shaft, and a separable connection between the knob and driven disk for preventing rotation of the latter relative to the feed shaft.

4. A uni-directional clutch comprising a driving disk adapted to be rotatably mounted on the feed shaft of a copy holder, a driven disk adapted to be fixed against rotation on the feed shaft alongside the driving disk and having an annular concentric groove in its side confronting the driving disk, said driving disk having its periphery formed with a recess opening into the side of the driving disk confronting the driven disk and provided with a transverse opening communicating with the recess, an actuating arm in said recess extending outwardly from the driving disk, having a lateral extension projecting into said opening for supporting the arm for pivotal movement in said recess and in the plane of rotation of the disk, said arm having a lateral axial projection extending into said annular groove and adapted to co-act with the latter to provide a driving connection between the disks when the arm is rocked in one direction, means for actuating said arm to effect rotation of the driving disk upon engagement of the side walls of said recess by the arm, a stationary sleeve through which the feed shaft is adapted to extend, an adjustable stop disk rotatable on the sleeve, means carried by the stop disk for clamping the latter to the sleeve to prevent rotation of the stop disk, and co-acting means on the stop and driving disks for limiting the rotational movement of the driving disk in one direction.

5. A uni-directional clutch comprising driving and driven elements adapted to be mounted for rotary movement, an actuating member for the driving element mounted on the latter for movement relatively thereto from one position to another and having means operable upon movement of the member to one of its positions to effect a driving connection between the elements for rotation thereof as a unit in one direction by said member, and operable upon movement of the member to its other position to release the driven element, whereby reverse rotation of the driving element by the member will be ineffective to rotate the driven element, means for actuating the member, a stationary sleeve through which the feed shaft is adapted to extend, a stop member rotatable on the sleeve, means for securing the stop member to the sleeve in a selected position of circumferential adjustment, and co-acting means on the stop member and driving element for limiting the rotational movement of the driving element in one direction.

6. A uni-directional clutch comprising driving and driven elements adapted to be mounted for rotary movement, an actuating member for the driving element mounted on the latter for movement relatively thereto from one position to another and having means operable upon movement of the member to one of its positions to effect a driving connection between the elements for rotation thereof as a unit in one direction by said member, and operable upon movement of the member to its other position to release the driven element, whereby reverse rotation of the driving element by the member will be ineffective to rotate the driven element, means for actuating the member, a circumferentially adjustable stop member, means for securing the stop member in a selected position of adjustment, and means co-acting with the stop member to limit the rotational movement of the driving element in one direction.

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