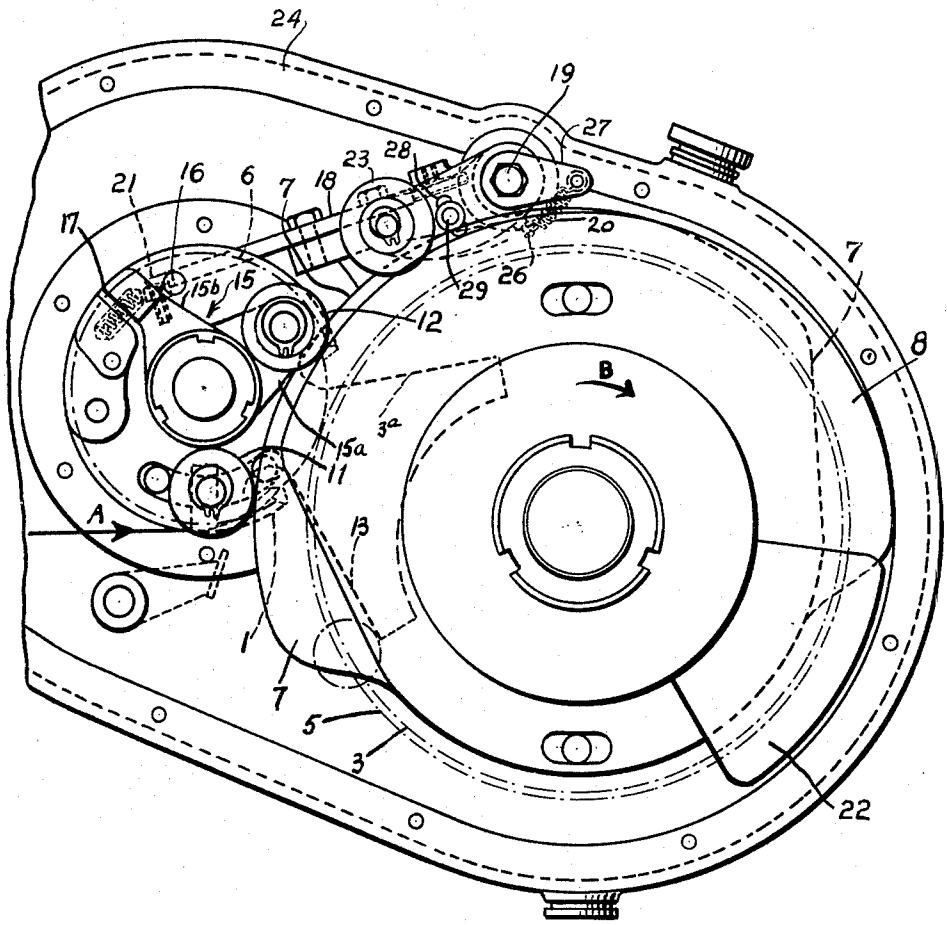
June 7, 1960 F. WHYTE 2,939,703

FEEDING AND REGISTRATION OF SHEETS TO PRINTING AND LIKE MACHINES

Filed June 17, 1957 2 Sheets-Sheet 1

FIG. 1.

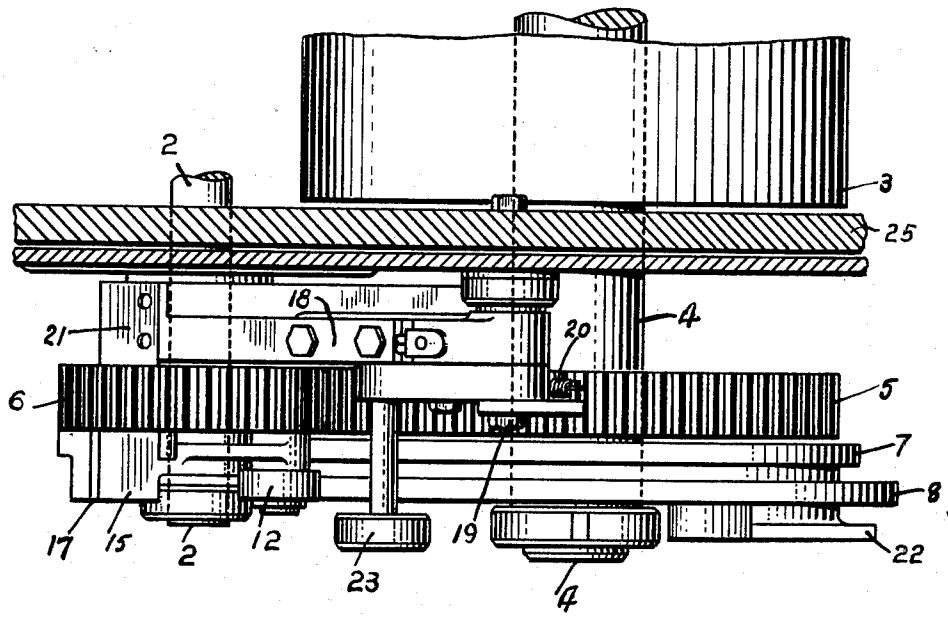


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Filed June 17, 1957 2 Sheets-Sheet 2

FIG. 2.



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2,939,703

FEEDING AND REGISTRATION OF SHEETS TO PRINTING AND LIKE MACHINES

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2 Claims. (Cl. 271—53)

This invention relates to the feeding and registration of sheets in printing and like machines and refers particularly to feed gripper and sheet transfer mechanism having an intermittent rotary type of feed gripper.

With the mechanism of this kind such for example as described in my Patent Number 2,631,849, the intermittently rotating feed grippers are arranged so as to travel slightly in advance of the extreme front edge of a sheet which has been registered in position for feeding, the grippers are then opened and rotated in the reverse direction to the actual sheet taking position where it is necessary for the feed gripper to be accurately registered in position whilst the grippers seize hold of the sheet, the front lays may now be moved clear of the sheet and the feed gripper accelerated up to the same peripheral speed as the co-operating impression cylinder, at which stage the rotary gripper becomes positively engaged in gear with the cylinder to which the sheet is subsequently transferred.

One object of the present invention is to provide a new or improved method whereby the intermittently rotating feed gripper mechanism may be accurately registered and securely held in the sheet taking position.

Another object is to provide means whereby the registration mechanism may be arranged so as to be self-adjusting so far as normal wear is concerned.

A further object is to provide means whereby one of the registration devices may be positively moved into or away from the operative position.

A still further object is to provide a registration device which may be included within the oil bath enclosure containing the operating mechanism for the intermittent rotary feed gripper.

According to the invention the feed gripper is registered and held in the sheet-taking position by means of a register stop which co-operates with another register stop member. The register stop may be mounted on the main frame of the machine whilst the other register stop may be associated with the feed gripper shaft.

More specifically, the registering and holding mechanism may comprise a pivotally mounted stop in the form of a tongue and the register stop member may consist of an abutment capable of engaging the end of the pivotally mounted stop and secured to a member on the feed gripper shaft.

The tongue may be operated by means of a bowl from a cam incline associated with the impression cylinder.

In order that the invention may be more clearly understood and readily carried into effect the same will now be more fully described with reference to and by the aid of the accompanying drawings, wherein:

Figure 1 is a fragmentary side elevation showing one form of feed gripper and sheet transfer operating mechanism, constructed in accordance with the present invention.

Figure 2 is a part sectional plan of Figure 1.

Referring to the drawings, the intermittent rotary feed

grippers 1 (one being shown) are mounted on the feed gripper shaft 2 and transfer sheets (not shown) in the normal or well known manner, to a co-operating impression or like printing cylinder 3 mounted on a driving shaft 4 and adapted to be driven at constant speed in the direction of the arrow B. On the constant speed driving shaft 4 is a gear 5 and the shaft 2 carries a segment or quadrant gear 6 which meshes at times with the gear 5, thereby imparting to the rotary feed gripper 1 a constant speed motion during a substantial portion of each cycle. Two separate follower and reversal cams 7, 8 are mounted on the constant speed shaft 4, preferably integral with each other and the driving gear 5. Co-operating witht he cams 7, 8 are two bowls or runners 11, 12 suitably mounted and spaced on the intermittent rotary gripper shaft 2 in such a manner that during the period of acceleration the cam 7 substantially follows the normal path of its corresponding bowl 11 and similarly during the period of deceleration the other cam 8 substantially follows the normal path of the other bowl 12. The two cams 7, 8 operate in opposition to cam faces 13, 13*a* on a control cam or arm 14 on the intermittent shaft 2, so that the movement is substantially postive irrespective of any changes in forces or velocities which might occur. One of the bowls 11 is mounted integrally with the quadrant gear 6 on the intermittent shaft 2, whilst the other bowl 12 is carried on an arm 15*a* of a bell crank lever 15 on the intermittent shaft 2, but is maintained in angular relationship against a suitable stop 16 on the quadrant gear 6 and on its associated cam by means of a spring pressure device 17 engaging an arm 15*b* of the bell crank lever 15. If desired either bowl 11 or 12 may be integrally mounted and the other spring mounted.

Such a mechanism is described and illustrated in my prior Patent No. 2,631,849.

During each complete rotation of the impression cylinder, the feed gripper has a stationary period, an acceleration period, a uniform travel period and a deceleration period and also a reversal period.

For the purpose of gripping a sheet during the stationary period it is desirable that the intermittent shaft 2 should be accurately located and held in position whilst the sheet is being gripped by the grippers.

The feed gripper 1 is positively and accurately held in the stationary or sheet-taking position by means of a cam operated register stop 18 pivoted at 19 to the machine frame 25 which is spring loaded at 20 and engages a register stop member 21 carried by the arm 15*b* of the bell crank lever 15 and this register stop 21 is held in engagement with the cam operated register stop 18 under the compression of the spring 17 by means of the cam bowl 11 which engages one of the follower and reversal cams 7 associated with the impression cylinder shaft 4.

A further cam incline 22 is provided for controlling the cam operated register stop 18 by means of the bowl 23 to permit operation of the mechanism in a reverse direction without fouling the stop mechanism 21. The mechanism is mounted in a casing 24 which constitutes an oil bath of the mechanism mounted on the main frame 25.

The spring 20 of the cam operated register stop 18 is connected to a stud 26 on the body of the stop 18 and to a fixed arm or bracket 27. The pivotal movement of the stop 18 about its mounting or pivot 19 is limited by means of the slot 28, through which passes the fixed stud 29 secured to the machine frame 25. The spring 20 holds the stop 18 in a down position and it is raised against the action of this spring when the further cam incline 22 engages the bowl 23 to permit the register stop to pass thereunder during the appropriate portion of the

movement of the gripper shaft toward its sheet taking position.

The invention can be used with numerous kinds of intermittent rotary type feed gripper and sheet transfer mechanism other than that specifically described without departing from the essence of the invention.

I claim:

1. In an intermittent rotary feed gripper mechanism for printing machines, and the like, including a rotary feed gripper shafts, feed grippers on said rotary feed gripper shaft, a register stop spring loaded on said rotary feed gripper shaft, a constant speed driving shaft, a pivotal register stop comprising a spring loaded tongue, follower and reversal cams on said driving shaft, and follower rollers on the feed gripper shaft, one of said follower rollers cooperating with the associated follower and reversal cam to move said register stop into engagement with the pivotal register stop and hold it in engagement therewith at the sheet taking position of the feed gripper shaft.

2. In an intermittent rotary feed gripper mechanism for printing machines, and the like, including a rotary feed gripper shaft, feed grippers on said rotary feed gripper shaft, a register stop spring loaded on said rotary feed gripper shaft, a constant speed driving shaft, a pivotal register stop comprising a spring loaded tongue, follower and reversal cams on said driving shaft, follower rollers on the feed gripper shaft, one of said follower rollers cooperating with the associated follower and reversal cam to move said register stop into engagement with the pivotal register stop and hold it in engagement therewith at the sheet taking position of the feed gripper shaft, a further cam on said driving shaft, and a bowl on said pivotal register stop, said further cam engaging said bowl to raise the pivotal register stop and permit the register stop to pass thereunder during the appropriate portion of the movement of the gripper shaft toward its sheet-taking position.

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