

Aug. 11, 1942.

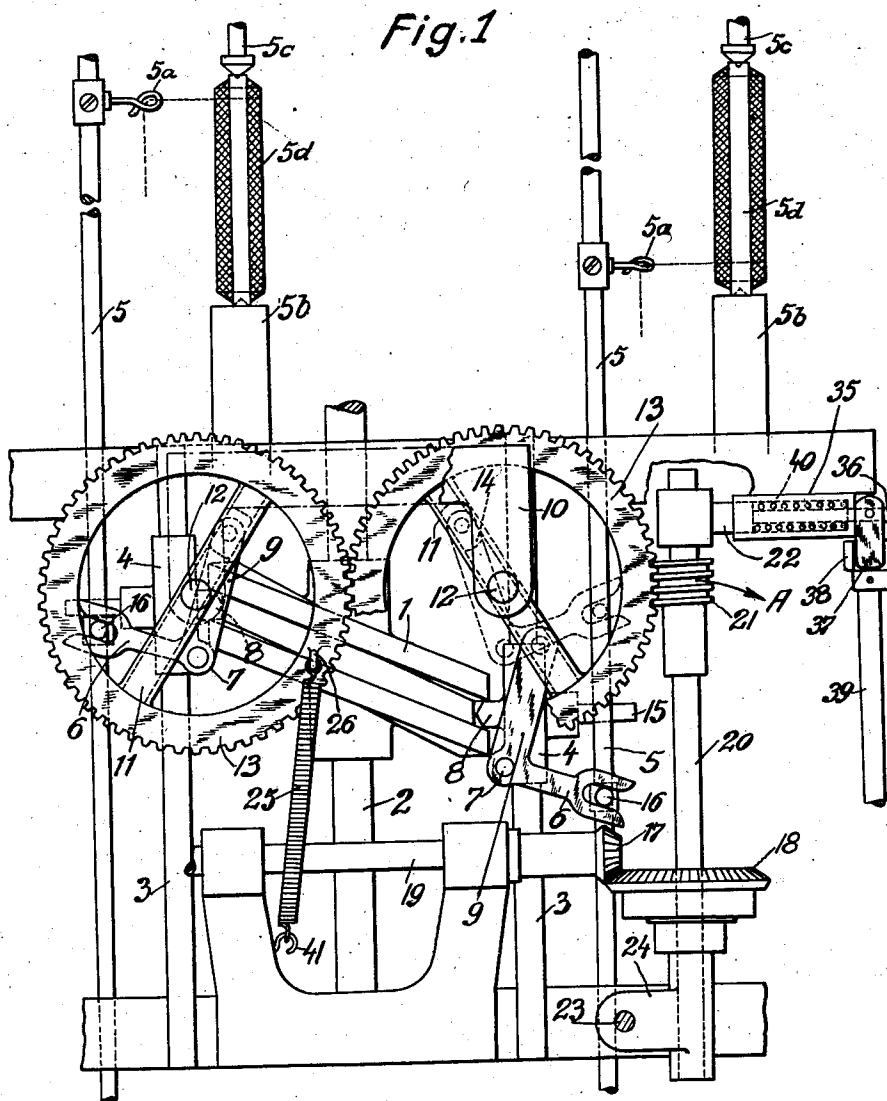
H. TRECKMANN

2,292,725

MEANS FOR CONTROLLING THE YARN GUIDE IN A WINDING FRAME

Filed Aug. 19, 1939

3 Sheets-Sheet 1



Inventor
Hans Luckemann
Ray Watson Coleman
attorney

Aug. 11, 1942.

H. TRECKMANN

2,292,725

MEANS FOR CONTROLLING THE YARN GUIDE IN A WINDING FRAME

Filed Aug. 19, 1939

3 Sheets-Sheet 2

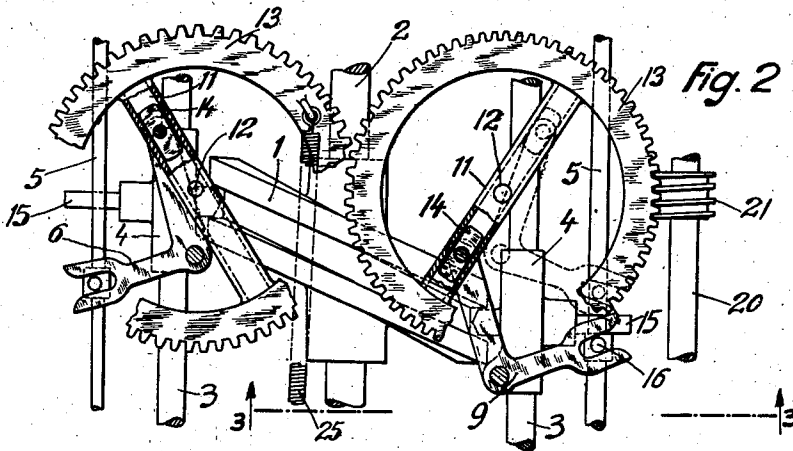


Fig. 5.



Fig. 6.



Fig. 7.



Fig. 8.



Inventor
Hans Treckmann,
By *Watson Coleman*
attorney

Aug. 11, 1942.

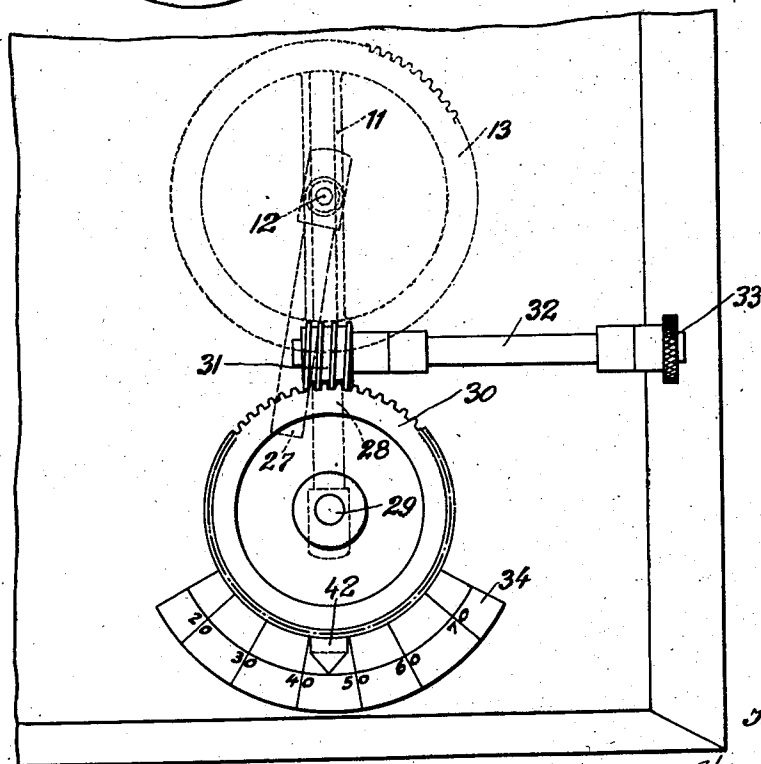
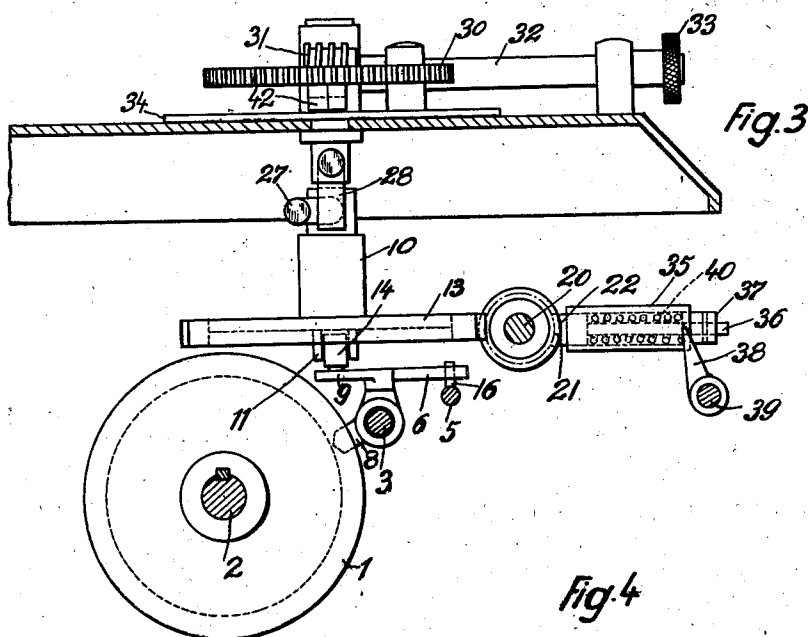
H. TRECKMANN

2,292,725

MEANS FOR CONTROLLING THE YARN GUIDE IN A WINDING FRAME

Filed Aug. 19, 1939

3 Sheets-Sheet 3



Inventor
Hans Treckmann
By Watson & Coleman
attorney

UNITED STATES PATENT OFFICE

2,292,725

MEANS FOR CONTROLLING THE YARN
GUIDE IN WINDING FRAMESHans Treckmann, Wuppertal-Oberbarmen, Ger-
many, assignor to Messrs. Halstenbach & Co.,
Wuppertal-Wichlinghausen, GermanyApplication August 19, 1939, Serial No. 291,079
In Germany March 7, 1938

6 Claims. (Cl. 242—43)

The invention relates to a winding machine for producing pirns, or cheeses, of desired form within the traverses of the thread guide, but controlled as to length, during the winding operation, by mechanism which includes a carriage that is reciprocated and bears a bell crank lever one arm of which is arranged to slide in a guide rail, or bar, the inclination of which, to the path of the lever during the reciprocation of the carriage on which it is mounted, controls the turned position of the lever, which in turn, through connecting parts, then controls the traverses of the thread guide.

The present invention pertains more essentially to mechanism for controlling the position of the guide rail, and among the objects of the invention are the following:

To provide a more positive and precise means than has heretofore been employed for controlling the position of the guide rail.

To provide a mechanism by which the guide rail may be set to occupy a neutral position, or one parallel to the path described by the lever which it is controlling; or an inclined position, from such neutral position, either to the right or left.

To provide means whereby through an adjustable stop the guide rail may be set in any desired initial position from which it is movable for varying its inclination during the operation of the machine, and returned to such initial position after the completion of a winding operation.

To provide a controlling mechanism by which pirns, or cheeses, through variation in the length in the traverses of the thread guide, may be finished, or have like finish, at their opposite ends, and of a variety of forms, without the necessity of introducing any auxiliary mechanism.

To provide a controlling mechanism by which the guide rail may be instantly released, at the termination of a winding operation, from the means acting to change its inclination.

An embodiment of the invention is illustrated by way of example in the accompanying drawings.

Fig. 1 illustrates a device for controlling two yarn guide rods. In this figure the two extreme positions of the yarn guide support for the maximum length of winding are indicated by the fact that the appertaining bell crank lever location is shown in the one extreme position in full lines and in the other extreme position in broken lines.

Fig. 2 shows the adjustment of the guide rails for shortest length of winding in their extreme

positions, in the one case in full lines and in the other case in broken lines.

Fig. 3 is a section taken on the line 3—3 in Fig. 2.

Fig. 4 is a plan view of the means for adjusting the stop for determining the initial position of the thread guide control mechanism.

Figs. 5, 6, 7, and 8 show forms of pirns such as can be wound in accordance with the invention without necessity for exchanging any of the gear parts.

In Fig. 1 a grooved cam 1 is mounted on the shaft 2, which receives its motion from the winding machine drive. The groove in the cam 1 is engaged by studs 3 on the slides or carriages 4, which perform on guide rods 3 a reciprocatory motion determined by the form of the cam 1. Rotation of the carriages 4 on the guide rods 3 is prevented by an abutment 15, which engages in a guide (not shown). Parallel to the carriage guides 3 there are mounted so as to be shiftable longitudinally the yarn guide rods 5. These rods carry the yarn guides 5a, under the action of which the yarn is wound in the desired length and form on the pirns 5d, which are held between the spindle 5b rotated by the winding frame drive and its co-operating element 5c. The yarn guide rods 5 are moved by the arm 6 of a bell crank lever, which engages with its forked end about a stud 16 on the yarn guide rod 5, is pivoted at 7 to the carriage 4, and the second arm 9 of which is controlled by a guide rail 11, which is engaged by a guide shoe 14 at the end of the arm 9 of the bell crank lever. The shoe slides in the guide rail as the carriage is reciprocated. The guide rail is borne by a rotary member 13 which turns around a pivot 12 supported by an arm 10. The guide rail occupies a diametric position on the rotary member so that the guide rail will have a turning point substantially coincident with the axis of the rotary member and substantially midway the guide rail. Thus the guide rail will have extension past the pivot 12 of the rotary member and it is offset with relation to this pivot so that as the shoe is made to slide in the guide rail, by the reciprocation of the carriage, it may pass the pivotal point, or point of turning of the guide rail, without interference with the pivot of the rotary member. In order that the guide shoe 14 may thus pass the pivotal point, or point of turning of the guide rail, as the shoe slides in the guide rail during the reciprocation of the carriage the rotary member and guide rail carried by it are arranged to bear such relation to the sliding shoe that the shoe

will pass the pivotal point of the guide rail as the shoe is reciprocated whatever may be the turned position of the guide rail during the operation of the machine.

The rotary member 13 presents a rounded edge off which it is turned through application of power to this edge, and the edge is preferably a toothed edge. For turning the rotary member 13 there meshes with the toothed edge thereof a driving worm 21 on a shaft 20. This shaft receives its motion from a shaft 19 of the winding machine drive by way of a pair of bevel wheels 17, 18. The shaft 20 is pivoted at 23 by means of an angular bearing 24. Projecting laterally from the head of the shaft 20 is a boss 22 which has an extension 36 thereon passing through a sleeve 35 on the body of the machine. Extension 36 has on its end a finger 37 which is acted upon in positive fashion by an arm 38 on a shaft 39 for moving the worm 21 out of engagement with the toothed edge of the rotary member 13 when the lever 39 is turned. A coil spring 40 within the sleeve 35 acts in such manner on the boss 22 that it will normally maintain the worm 21 in driving engagement with the rotary member 13. Accordingly as the shaft 39 is turned to and fro in reverse directions the worm 21 will be moved into and out of driving engagement with the rotary member 13. The shaft 39 may be reversely turned by any suitable mechanism, and especially lends itself to automatic control during the operation of the machine.

In the embodiment according to Fig. 1 the cam 1 acts simultaneously on two slides or carriages 4. Accordingly there are also provided two guide rails 11, 11 having two annular gears 13, 13, which mesh with one another, so that the rotary motion imparted by the worm 21 acts also in the opposite sense on the second guide rail 11.

To a hook 26 on one of the two gears 13 there is secured a coil spring 25, which is attached at its opposite end to a hook 41 on the frame of the winding machine and which tends to return the guide rails 11, 11 into their initial position immediately the gears 13 cease to be acted upon by the worm 21. If the engagement between the worm 21 and the annular gear 13 is to be broken, a partial rotation is imparted to the shaft 39 (Figs. 1 and 3), the arm 38 then acting on the transverse member or finger 37 of the boss extension 36 and thus rocking the shaft 20 about the pivot 23, whereby the worm 21 is moved out of engagement with the gear 13.

The initial position of the guide rails 11, 11 is determined by a stop 28 (Fig. 4) mounted on a spindle 29, to which there is also secured a pointer 42 co-operating with a fixed scale 34. The adjustment of the pointer 42 is effected by means of a worm 31, a shaft 32 and a knob 33, the worm 31 meshing with a gear 30, to which the pointer 42 is preferably attached. The stop 28 projects into the path of rotation of an arm 27 (Figs. 3 and 4) which is fixedly mounted on the pivot 12 and accordingly rotates together with the rotary member 13. The arm 27 on the pivot 12 is arrested, dependent on the angular position of the adjustable stop 28, when the rotary members 13, after being released by the worm 21, are returned into their initial position under the action of the spring 25.

In the arrangement according to the invention there is a neutral, positive or negative transmission of the degree of reciprocation of the carriage 4 to the yarn guide rod 5 dependent on the adjustment, i. e., the degree of inclination, of the

guide rail 11. In the case of neutral transmission the extent of movement is equal; with positive transmission the reciprocation of the rod 5 is greater than that carried out by the carriage 4, whilst in the case of negative transmission it is smaller. If the control rail 11 is parallel to the movement of the carriage 4, the same degree of movement will be transmitted to the yarn guide rod 5.

If the arm 9 of the bell crank lever is controlled by the guide rail 11 in the manner illustrated in Fig. 1, the extent of reciprocation of the rod 5 will be greater than that of the carriage 4, as indicated by the extreme positions of the bell crank arms 6 shown in full and broken lines in Fig. 1. If the arm 9 is controlled by the guide rail 11 in the manner shown in Fig. 2, there results between the two extreme positions of the carriage 4 and of the stud 16 on the rod 5 a considerable reduction in the extent of reciprocation of the latter. During the winding operation the guide rail 11 can be moved gradually out of the one position into the other. It is thus possible to vary the degree of reciprocation of the thread during the winding operation between a minimum and a maximum. In consequence it is possible to produce on the one winding frame pirns of different length and form, such as are illustrated in Figs. 6 to 9, without the fitting or removal of any gear parts. If a pirn is to be wound in which the traverses of the thread guide gradually lessen then the guide rail will be initially set in such position as will obtain the desired long length of traverse as shown, for example, by the position occupied by the guide rail as shown in Fig. 1, then by moving the rotary member 13, which is engaged by the worm 21, in a clockwise direction the traverses of the thread guide are gradually lessened until the guide rail has become moved to occupy an inclined position as shown in Fig. 2, or even beyond this inclined position. Reversely, one may start with short traverses with the guide rail set in inclined position as shown in Fig. 1, and then by moving the rotary member 13, which is engaged by the worm 21, in an anti-clockwise direction the traverses of the thread guide may be gradually increased. The traverses of the thread guide may be maintained at any particular point by maintaining the position of the guide rail, and this by holding the worm, or driving member 21, in driving engagement with the rotary member which it is engaging, but without rotating the worm.

The simplicity of the device according to the invention and also its reliability in operation will be quite obvious. It is accordingly particularly adapted for use in conjunction with completely automatic winding frames.

What I claim as new and desire to secure by Letters Patent is:

1. In a winding machine of the type specified having a thread guide, mechanism for varying the length of traverse of the thread guide during the operation of the machine including, a reciprocating carriage, a bell crank lever pivotally mounted on the carriage, means connecting said lever to the thread guide whereby the thread guide will be reciprocated as the carriage is reciprocated and the traverses of the thread guide changed as the bell crank lever is displaced about its axis on the carriage during the reciprocation of the carriage, a turnable guide rail, means borne by the bell crank lever slidable within the guide rail for displacing the bell crank lever

about its axis as aforesaid dependent upon the turned position of the guide rail, a rotary member supporting the guide rail whereby the guide rail will have a turning point substantially coincident with the axis of the rotary member and substantially midway the guide rail, said rotary member being arranged also whereby the means borne by the bell crank lever slidable within the guide rail as aforesaid will, during reciprocation of the carriage, pass the turning point of the guide rail, a rotary driving member engageable with said rotary member for turning the rotary member and guide rail borne by it and for maintaining the rotary member in turned position when said driving member is in engagement therewith, said driving member being movable into and out of driving engagement with said rotary member, means for turning the driving member, and means whereby the driving member may be moved into and out of driving engagement with the rotary member.

2. In a winding machine of the type specified having a thread guide, mechanism for varying the length of traverse of the thread guide during the operation of the machine including, a reciprocating carriage, a bell crank lever pivotally mounted on the carriage, means connecting said lever to the thread guide whereby the thread guide will be reciprocated as the carriage is reciprocated and the traverses of the thread guide changed as the bell crank lever is displaced about its axis on the carriage during the reciprocation of the carriage, a turnable guide rail, means borne by the bell crank lever slidable within the guide rail for displacing the bell crank lever about its axis as aforesaid dependent upon the turned position of the guide rail, a rotary member supporting the guide rail whereby the guide rail will have a turning point substantially coincident with the axis of the rotary member and substantially midway the guide rail, said rotary member being arranged also whereby the means borne by the bell crank lever slidable within the guide rail will, during the reciprocation of the carriage, pass the turning point of the guide rail, said rotary member presenting a rounded edge from off which it is turned, or maintained in determinate turned position, a rotary driving member for turning the rotary member and for maintaining it in turned position, said driving member being movable into and out of engagement with the rounded edge of the rotary member, means for turning the driving member, and means whereby the driving member may be moved into and out of engagement with the rounded edge of the rotary member.

3. In a winding machine of the type specified having a thread guide, mechanism for varying the length of traverse of the thread guide during the operation of the machine including, a reciprocating carriage, a bell crank lever pivotally mounted on the carriage, means connecting said lever to the thread guide whereby the thread guide will be reciprocated as the carriage is reciprocated and the traverses of the thread guide changed as the bell crank lever is displaced about its axis on the carriage during the reciprocation of the carriage, a turnable guide rail, means borne by the bell crank lever slidable within the guide rail for displacing the bell crank lever about its axis as aforesaid dependent upon the turned position of the guide rail, a rotary member supporting the guide rail whereby the guide rail will have a turning point substantially mid-

way thereof, said rotary member being arranged whereby the means borne by the bell crank lever slidable within the guide rail as aforesaid will, during the reciprocation of the carriage, pass the turning point of the guide rail, a stop for defining an initial set position of said guide rail, an element fixed to rotate with said rotary member and having engagement with said stop when said guide rail is in its initial position and which element is movable away from said stop as said rotary member is turned, means whereby said stop and said element may have adjustable relation to each other for defining initially set positions of the guide rail and from any of which positions said guide rail may be turned on turning said rotary member, a driving member for turning said rotary member movable into and out of engagement therewith, and means whereby said rotary member may be returned to its initial position and said element into engagement with said stop when said driving member is out of engagement with said rotary member.

4. In a winding machine of the type specified having a thread guide, mechanism for varying the length of traverse of the thread guide during the operation of the machine including, a reciprocating carriage, a bell crank lever pivotally mounted on the carriage, means connecting said lever to the thread guide whereby the thread guide will be reciprocated as the carriage is reciprocated and the traverses of the thread guide changed as the bell crank lever is displaced about its axis on the carriage during the reciprocation of the carriage, a turnable guide rail, means borne by the bell crank lever slidable within the guide rail for displacing the bell crank lever about its axis as aforesaid dependent upon the turned position of the guide rail, a rotary member supporting the guide rail whereby the guide rail will have a turning point substantially midway thereof, said rotary member being arranged whereby the means borne by the bell crank lever slidable within the guide rail as aforesaid will, during the reciprocation of the carriage, pass the turning point of the guide rail, a stop for defining an initial set position of said guide rail, an element fixed to rotate with said rotary member and having engagement with said stop when said guide rail is in its initial position and which element is movable away from said stop as said rotary member is turned, a driving member for turning said rotary member movable into and out of engagement therewith, and means whereby said rotary member may be returned to its initial position and said element into engagement with said stop when said driving member is out of engagement with said rotary member.

5. In a winding machine of the type specified having a thread guide, mechanism for varying the length of traverse of the thread guide during the operation of the machine including, a reciprocating carriage, a bell crank lever pivotally mounted on the carriage, means connecting said lever to the thread guide whereby the thread guide will be reciprocated as the carriage is reciprocated and the traverses of the thread guide changed as the bell crank lever is displaced about its axis on the carriage during the reciprocation of the carriage, a turnable guide rail, means borne by the bell crank lever slidable within the guide rail for displacing the bell crank lever about its axis as aforesaid dependent upon the turned position of the guide rail, a rotary member supporting the guide rail whereby the guide

rail will have a turning point substantially midway thereof, said rotary member being arranged whereby the means borne by the bell crank lever slidable within the guide rail as aforesaid will, during the reciprocation of the carriage, pass the turning point of the guide rail, an adjustable stop for defining initially set positions of said guide rail and from any one of which positions the guide rail may be turned on the turning of said rotary member, an element fixed to rotate with said rotary member and having engagement with said stop when said guide rail is in any of its said initial set positions and which element is movable away from said stop as said rotary member is turned, means whereby said stop may be adjusted and maintained in adjusted position, a driving member for turning said rotary member movable into and out of engagement therewith, and means whereby said rotary member may be returned to its initial set position and said element rotatable therewith into engagement with said stop when said driving member is out of engagement with said rotary member.

6. In a winding machine of the type specified having a plurality of thread guides, mechanism for varying the length of traverse of each of the thread guides during the operation of the machine including for each of the thread guides, a reciprocating carriage, a bell crank lever pivotally mounted in the carriage, means connecting

said lever to the thread guide whereby the thread guide will be reciprocated as the carriage is reciprocated and the traverses of the thread guide changed as the bell crank lever is displaced about its axis on the carriage during the reciprocation of the carriage, a turnable guide rail, means borne by the bell crank lever slidable within the guide rail for displacing the bell crank lever about its axis as aforesaid dependent upon the turned position of the guide rail, and a rotary member supporting the guide rail whereby the guide rail will have a turning point substantially midway the guide rail as the rotary member is turned, said rotary member being arranged whereby the means borne by the bell crank lever slidable within the guide rail will, during the reciprocation of the carriage, pass the turning point of the guide rail at different turned positions of the guide rail in the operation of the machine, means connecting the rotary members for the respective guide rails whereby all will be turned by application of power for turning one of said rotary members, a driving member for turning said one of the rotary members movable into and out of engagement therewith, means for operating said driving member, and means whereby said driving member may be moved into and out of engagement with said one of the rotary members.

HANS TRECKMANN.