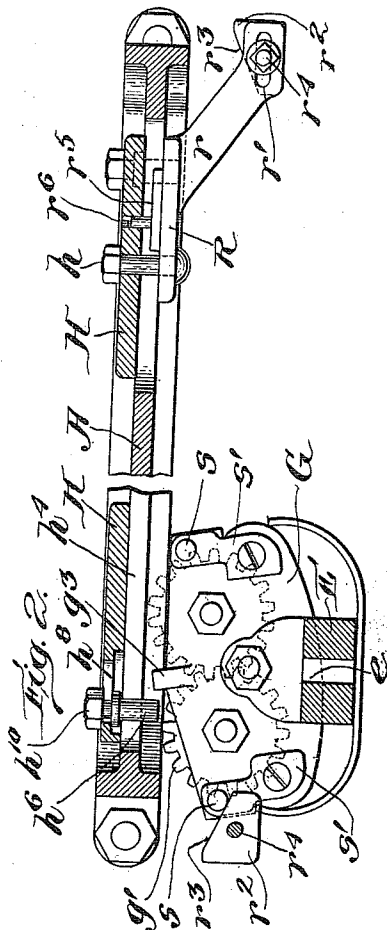
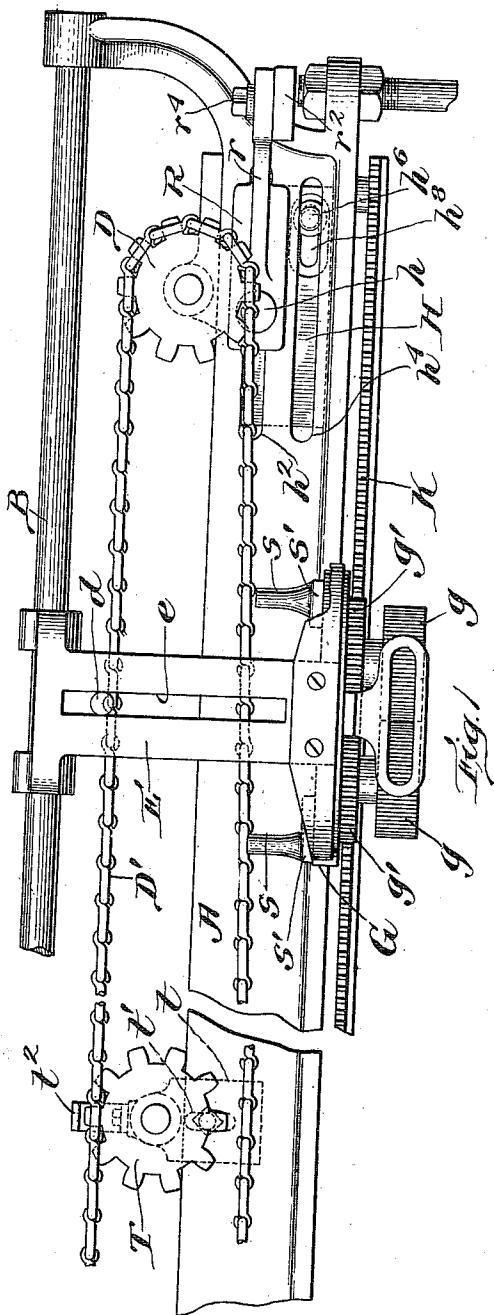


J. B. HOWE.
 REVERSING DEVICE FOR GEARED TRAVELERS.
 APPLICATION FILED FEB. 25, 1911.

994,748.

Patented June 13, 1911.



Witnesses:

Joseph H. Ryan
 Charles S. Wadsworth

Inventor:

Joseph B. Howe,
 By Robert, Robert & Sullivan,
 Attorneys.

UNITED STATES PATENT OFFICE.

JOSEPH B. HOWE, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO SYDNEY HARWOOD AND JOHN H. HARWOOD, COPARTNERS, UNDER THE FIRM-NAME AND STYLE OF GEORGE S. HARWOOD & SON, OF BOSTON, MASSACHUSETTS.

REVERSING DEVICE FOR GEARED TRAVELERS.

994,748.

Specification of Letters Patent. Patented June 13, 1911.

Application filed February 25, 1911. Serial No. 610,740.

To all whom it may concern:

Be it known that I, JOSEPH B. HOWE, a citizen of the United States, and resident of Worcester, in the county of Worcester and State of Massachusetts, have invented new and useful Improvements in Reversing Devices for Geared Travelers, of which the following is a specification.

This invention relates to feeding mechanisms for carding machines, and consists principally in certain improvements in the reversing devices for geared travelers of the character shown and described in Letters Patent of the United States No. 866,726, granted to Harry Kemp, Sept. 24, 1907. Reference may be had to that patent for a full description of the general construction and mode of operation of feeding mechanisms and reversing devices heretofore used, to which my present improvement is particularly adapted; and it will therefore be unnecessary to describe said feeding mechanism or reversing device in detail in this specification, since my present invention relates rather to improvements in the reversing device for the geared traveler, or "knock-off" as it is termed in the trade, to reverse the rocker at each end of its reciprocatory movement, than to the feeding machine as a whole.

Experience with feeding mechanisms built according to the aforesaid patent has demonstrated that when the traveler or carrier strikes the reversing stops or abutments h^6 to reverse the rocker G, so great a strain is thrown on the pin or finger link carried by the driving chain D', which reciprocates the carrier E, that the pin or finger is likely to break, thus necessitating frequent renewals. This results not only in the trouble and expense of attaching new finger pieces from time to time, but also in the idleness of the entire carding machine as well as of the feeding mechanism while the repairs are being performed. It has also been found that when the traveler strikes the abutment h^6 it has a tendency to jump or swing away from the frame, thereby at times throwing both gears g' out of mesh with the rack K, disarranging the "sliver", and preventing proper reversal of the rocker. It will be understood that the gears are held in engagement with the rack only by gravity, the traveler being hung on the guide rod B, and

capable of being swung away from the frame. It has also been found that when the traveler is being operated slowly, for example, when the card is being started up or stopped, and the traveler happens to be at the end of the frame moving slowly, the rocker at times fails to reverse at all, since it requires something of an impact or blow against the reversing abutment h^6 due to a reasonably swift movement of the traveler, in order effectively to reverse the rocker.

The principal objects of the present invention are to relieve the strain on the chain pin or finger carried by the sprocket chain, thereby prolonging its life; to hold the carrier from swinging or jumping away from the frame while the rocker is being reversed; and to insure the proper reversal of the rocker when the traveler is moving slowly as well as when it is moving swiftly.

In the accompanying drawings illustrating the invention,—Figure 1 is a front elevation, partly broken away, of a feeding mechanism for carding machines embodying one form of my improved reversing device; and Fig. 2 is a horizontal section of said feeding mechanism, partly broken away, the sectional view at the left hand end of the figure being taken through the center of the lower bridge slot, and the sectional view at the right hand end of the figure being taken through the center of the upper bridge slot.

Referring to the drawings, A represents the bridge and B the guide rod upon which is hung the traveler, the two parts together constituting the usual frame of a diagonal card feed. The traveler, which is reciprocated by a chain D' supported by sprocket wheels D, comprises the carrier E, the swivel plate or rocker G pivoted thereto, the feed rolls g and the gears g' , the latter coöperating alternately with the rack K. The brackets H on which are supported the sprockets D are fastened to the bridge A by bolts h extending through longitudinal slots h^2 . The reversing stop or abutment shown at h^6 projects through a second longitudinal slot h^4 into the path of the lug g^3 on the rocker G. The stop h^6 is adjustably fastened to the bracket H in a slot h^8 opposite the slot h^4 in the bridge, and is clamped to said bracket by the nut h^{10} .

The construction and mode of operation

of the parts thus far mentioned may all be as shown in the aforesaid patent, are well known in the art, and will be understood without further description.

5 My present invention consists essentially in providing for each end of the feeding mechanism a pair of rocker-actuating members, one of which is on the rocker, and the other of which is fixed with relation thereto, 10 one of said members having a cam or wedge-like surface adapted to engage the other member to swing the rocker toward its reverse position as the carrier approaches the end of its travel. Conceivably, the entire 15 reversing movement of the rocker could be performed by my present device, but it is preferably used as an auxiliary reversing device in connection with the reversing stop hereinbefore described. In the preferred 20 form of my improvement the cam member is that which is fixed with relation to the moving member, which is mounted on the carrier. As herein shown the device comprises certain attachments which may be 25 readily secured to feeding mechanisms such as that shown in the aforesaid patent.

R represents the base of a bracket, which may be termed the "knock-off" bracket, secured to the front face of the bridge A by 30 the same bolt h which secures the bracket H to the opposite side of the bridge A. Extending forwardly from the base R, and diagonally in the direction of the end of the frame is the arm r , the outer end of 35 which is provided with a slot r' which extends substantially parallel with the bridge. A block r^2 , the inner face of which is inclined or beveled to form a cam surface r^3 , is adjustably secured to the end of the arm r 40 by means of a bolt r^4 which passes through the slot r' . It will be understood that a similar bracket and cam block is provided at each end of the frame, identical in all respects save that they face in opposite 45 directions. In order that the bracket may be rigidly held in position it is provided with a tongue r^5 , which projects into the slot h^2 of the bridge, thus preventing any tendency of the bracket to swing on bolt h as a pivot; 50 and in order to insure the keeping of the sprocket bracket H and the knock-off bracket in the same relative position, a dowel pin r^6 is provided which projects from said tongue into a hole bored therefor in the bracket H. 55 As the abutment h^6 and the auxiliary bracket are thus both connected with the same stand, H, it will be observed that whenever the stand H is adjusted lengthwise of the frame, the abutment h^6 and auxiliary reversing 60 block r^2 will be adjusted together on the frame without disturbing their relative adjustment. Thus said two parts are adjustable both independently and together.

65 Secured to each inner corner of the rocker G is a post or stud s , which, in the form here-

in illustrated, stands upright on a base s' screwed to the top surface of the rocker G.

It will be remembered that in whichever direction the carrier may be moving it is the rear one for the time being of the two 70 gears which engages the rack K, and consequently the forward one of the two studs s which is the more removed from the bridge. As the carrier approaches the end 75 of its travel the forward stud or post s engages the cam surface r^3 , and as the carrier advances farther, said cam surface cooperating with said stud will cause the rocker G to swing on its pivot, tending to withdraw 80 the rear gear from the rack and to swing the forward gear toward the rack. The cam surface r^3 is so adjusted with relation to the final reversing stop h^6 , and the operation of the parts is so timed, that the stud s 85 will meet the cam surface r^3 a little before the lug g^3 meets the stop h^6 , thus causing the initial part of the reversing movement of the rocker G to be performed by the auxiliary reversing device. After the rocker 90 has been partially reversed the lug g^3 will engage the stop h^6 and positively effect the final reversal of the rocker G. At the left hand end of Fig. 2 the parts are shown just 95 as the forward stud s has reached the cam surface, during the movement of the traveler toward the left, and before any movement of reversal has begun. By making the stop h^6 and the cam r^2 relatively adjustable 100 as described, it will be obvious that the timing of the successive operations of the parts may be regulated so as to throw more or less work, as desired, upon the auxiliary reversing device. Or the entire reversal of the 105 rocker may be accomplished by the cam or wedge device, and the reversing stop h^6 dispensed with altogether. I believe however that the best results will be obtained by using my new device as an auxiliary device in conjunction with the reversing stops heretofore employed, so that the initial part of 110 the reversing movement will be effected by the auxiliary (cam and post) device, and the final and completed movement of reversal by the stops heretofore used.

It will be seen that as the reversing of the 115 rocker is accomplished in whole or in part by the sliding engagement between the post s and the cam surface r^3 , the latter of which has a wedge-like action much more gentle and gradual, and requiring much less force, 120 than that of the abutment h^6 , the shock and strain thrown on the chain finger or pin d in reversing the rocker is greatly reduced; also that as the cam surface engages the post s on its outer side all possibility of the 125 traveler jumping away from the bridge during the reversing movement is eliminated; and that the wedge-like action of the cam will reverse the rocker with equal certainty whether the traveler is moving slowly or 130

swiftly, since it does not depend on a blow for its certainty of operation as does the abutment h^6 when used alone.

In order to prevent the chain finger or pin 5 d from working out of its guide slot e in the carrier E, an idler sprocket wheel T is provided, carried by a bracket t , adjustably mounted on the bridge A by a bolt passing through the bridge and through a vertical 10 slot t' in the bracket t . This idler sprocket is placed at the center of the bridge and holds the upper stretch of the chain D' in proper alinement so that the chain finger d while on the upper stretch will not work out 15 of its slot in the carrier. The bracket t may be provided with an upwardly and forwardly projecting guard t^2 to hold the chain in engagement with the sprocket T. The lower stretch of the chain may be permitted 20 to sag slightly, as shown, and the outer sides of the posts s will prevent the chain from swinging away from the carrier far enough to withdraw the finger d from its slot, when said finger is on the lower stretch of the 25 chain, as the lower stretch of the chain along its middle and lowest portion will pass between the posts s and the slotted part e of carrier E.

The improvements hereinbefore described 30 may be readily applied as attachments to existing machines, as well as to new machines specially constructed therefor.

In order properly to adjust the reversing or "knock-off" devices the following course 35 is recommended: Bring the traveler to its extreme end position with the rocker G in the position it would assume after being reversed; then set the reversing stop h^6 so that it will just touch the lug g^3 on the rocker; 40 then reverse the rocker to its opposite position and move the traveler until the lug g^3 is about $\frac{1}{8}$ of an inch (in a machine of the standard commercial size) from the stop h^6 ; then set the cam block r^2 so that its cam 45 surface r^3 will just touch the post s on the rocker. By adjusting the parts in substantially this manner, the successive action of the auxiliary reversing device and the final reversing stop will be properly timed to se- 50 cure the best results, in a machine constructed substantially as shown in the drawings.

I claim:

1. In a feeding mechanism for carding 55 machines, a carrier, mechanism to reciprocate said carrier, a rocker mounted on said carrier, a rack, a pair of gears in train mounted on said rocker and adapted to engage said rack one at a time, and a pair of rocker- 60 actuating members for each end of the feeding mechanism, one of the members of each pair being carried by said rocker and the other fixed with relation thereto, and one of said members having a cam surface inclined 65 with relation to the path of the carrier, and

adapted to cooperate with the other member to swing said rocker as the carrier approaches the end of its travel.

2. In a feeding mechanism for carding machines, a carrier, mechanism to reciprocate said carrier, a rocker mounted on said carrier, a rack, a pair of gears in train mounted on said rocker and adapted to engage said rack one at a time, and a pair of rocker-actuating members for each end of 70 the feeding mechanism, one of the members of each pair being carried by said rocker and the other fixed with relation thereto, and one of said members having a cam surface inclined with relation to the path of 75 the carrier, and adapted to cooperate with the other member to swing said rocker as the carrier approaches the end of its travel, said fixed member adapted to engage the outer side of the rocker member, thereby prevent- 80 ing said carrier from swinging away from said rack during the reversing movement of the rocker.

3. In a feeding mechanism for carding machines, a carrier, mechanism to reciprocate said carrier, a rocker mounted on said carrier, a rack, a pair of gears in train mounted on said rocker and adapted to engage said rack one at a time, and a pair of rocker-actuating members for each end of 85 the feeding mechanism, one of the members of each pair being carried by said rocker and the other fixed with relation thereto, the fixed member being provided with a cam surface inclined with relation to the path of 90 the carrier, and adapted to cooperate with the other member to swing said rocker as the carrier approaches the end of its travel.

4. In a feeding mechanism for carding machines, a carrier, mechanism to reciprocate said carrier, a rocker mounted on said carrier, a rack, a pair of gears in train mounted on said rocker and adapted to engage said rack one at a time, and a pair of rocker-actuating members for each end 100 of the feeding mechanism, one of the members of each pair being carried by said rocker and the other fixed with relation thereto, and one of said members having a cam surface inclined with relation to the path of the 105 carrier, and adapted to cooperate with the other member to swing said rocker as the carrier approaches the end of its travel, and one of the members of each pair being adjustable with relation to the other. 120

5. In a feeding mechanism for carding machines, a carrier, mechanism to reciprocate said carrier, a rocker mounted on said carrier, a rack, a pair of gears in train mounted on said rocker and adapted to engage said rack one at a time, a final reversing abutment adapted positively to reverse said rocker at the end of the travel of the carrier, and an auxiliary reversing device 125 adapted to start the reversing movement 130

of the rocker before the rocker is acted upon by said final reversing abutment.

6. In a feeding mechanism for carding machines, a carrier, mechanism to reciprocate said carrier, a rocker mounted on said carrier, a rack, a pair of gears in train mounted on said rocker and adapted to engage said rack one at a time, a final reversing abutment adapted positively to reverse said rocker at the end of the travel of the carrier, and an auxiliary reversing device adapted to start the reversing movement of the rocker before the rocker is acted upon by said final reversing abutment, said auxiliary and final reversing devices being independently adjustable one with relation to the other, and also adjustable both together with respect to the carrier frame without disturbing their relative adjustment.
7. In a feeding mechanism for carding machines, a carrier, mechanism to reciprocate said carrier, a rocker mounted on said carrier, a rack, a pair of gears in train mounted on said rocker and adapted to engage said rack one at a time, a final reversing abutment adapted positively to reverse said rocker at the end of the travel of the carrier, and auxiliary reversing mechanism comprising a pair of rocker-actuating members, one carried by said rocker and the other fixed with relation thereto, and one of said members having a cam surface inclined with relation to the path of the carrier, and adapted to engage with the other member, said auxiliary mechanism being adapted to actuate said rocker through the first part of its reversing movement, and said final reversing abutment being adapted positively to complete said reversing movement at the end of the travel of the carrier.
8. In a feeding mechanism for carding machines, a carrier, mechanism to reciprocate said carrier, a rocker mounted on said carrier, a rack, a pair of gears in train mounted on said rocker and adapted to engage said rack one at a time, a final revers-

ing abutment adapted positively to reverse said rocker at the end of the travel of the carrier, and auxiliary reversing mechanism comprising a pair of rocker-actuating members, one carried by said rocker and the other fixed with relation thereto, and one of said members having a cam surface inclined with relation to the path of the carrier, and adapted to engage with the other member, said auxiliary mechanism being adapted to actuate said rocker through the first part of its reversing movement, and said final reversing abutment being adapted positively to complete said reversing movement at the end of the travel of the carrier, one at least of the members of the auxiliary mechanism being adjustable, whereby the timing of the action of the auxiliary mechanism with relation to that of said final reversing abutment may be regulated.

9. In a feeding mechanism for carding machines, a frame, a carrier mechanism to reciprocate said carrier, a rocker mounted on said carrier, a rack, a pair of gears in train mounted on said rocker and adapted to engage said rack one at a time, a post on each end of said rocker, and wedge-like rocker-actuating cams secured at the ends of the frame in the paths of said posts.

10. In a feeding mechanism for carding machines, a frame, a carrier, mechanism to reciprocate said carrier, a rocker mounted on said carrier, a rack, a pair of gears in train mounted on said rocker and adapted to engage said rack one at a time, a post on each end of said rocker, brackets secured to and projecting forward from the ends of said frame, and cam blocks adjustably supported by said brackets in the paths of said posts.

Signed by me at Boston, Massachusetts, this 21st day of February 1911.

JOSEPH B. HOWE.

Witnesses:

CHARLES D. WOODBERRY,
JOSEPHINE H. RYAN.