Sept. 28, 1937. R. P. ANDREOLI 2,094,517

AUTOMATIC RING TRAVELER GUN

Filed Aug. 12, 1936 3 Sheets-Sheet 1

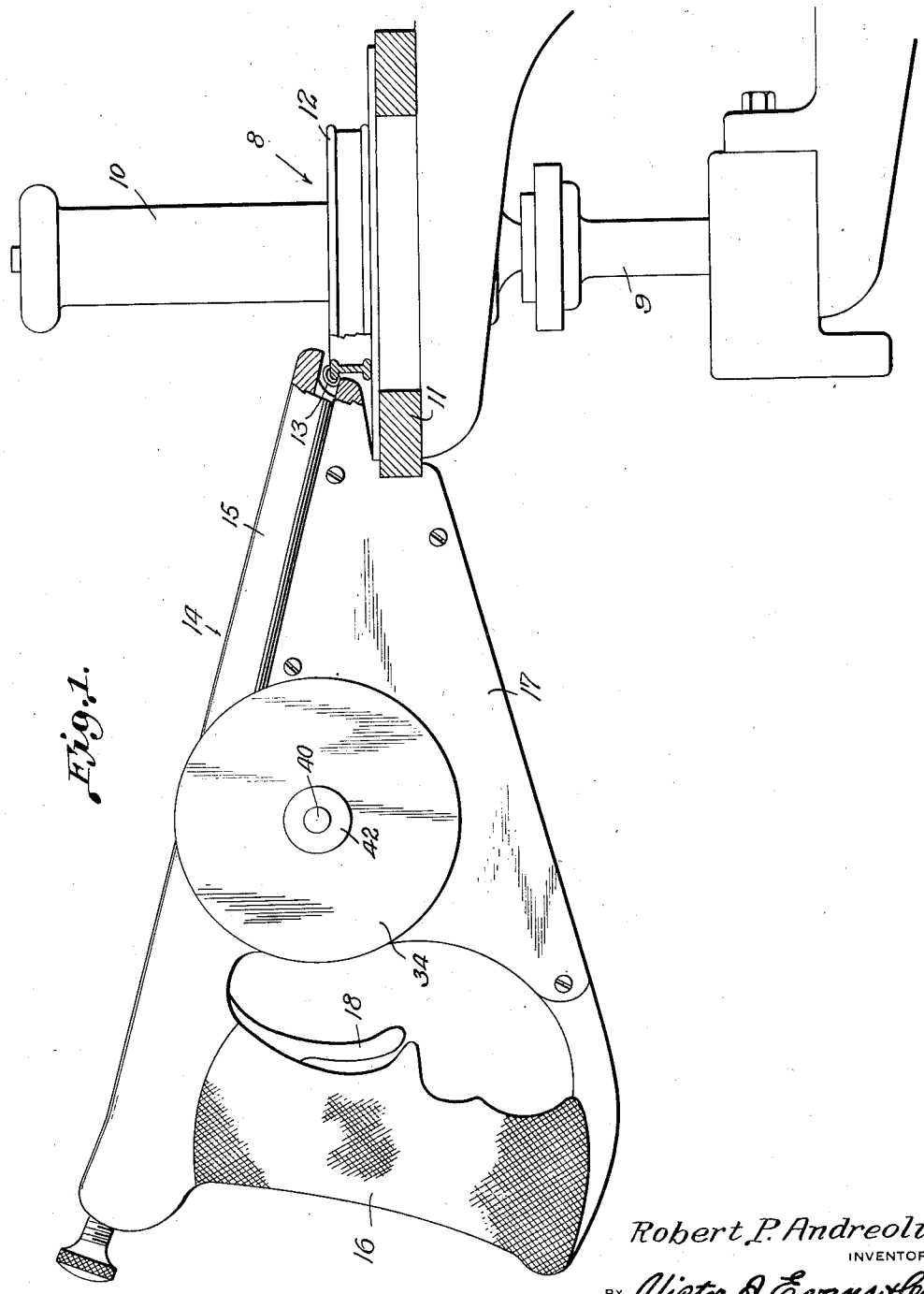


Fig. 1.

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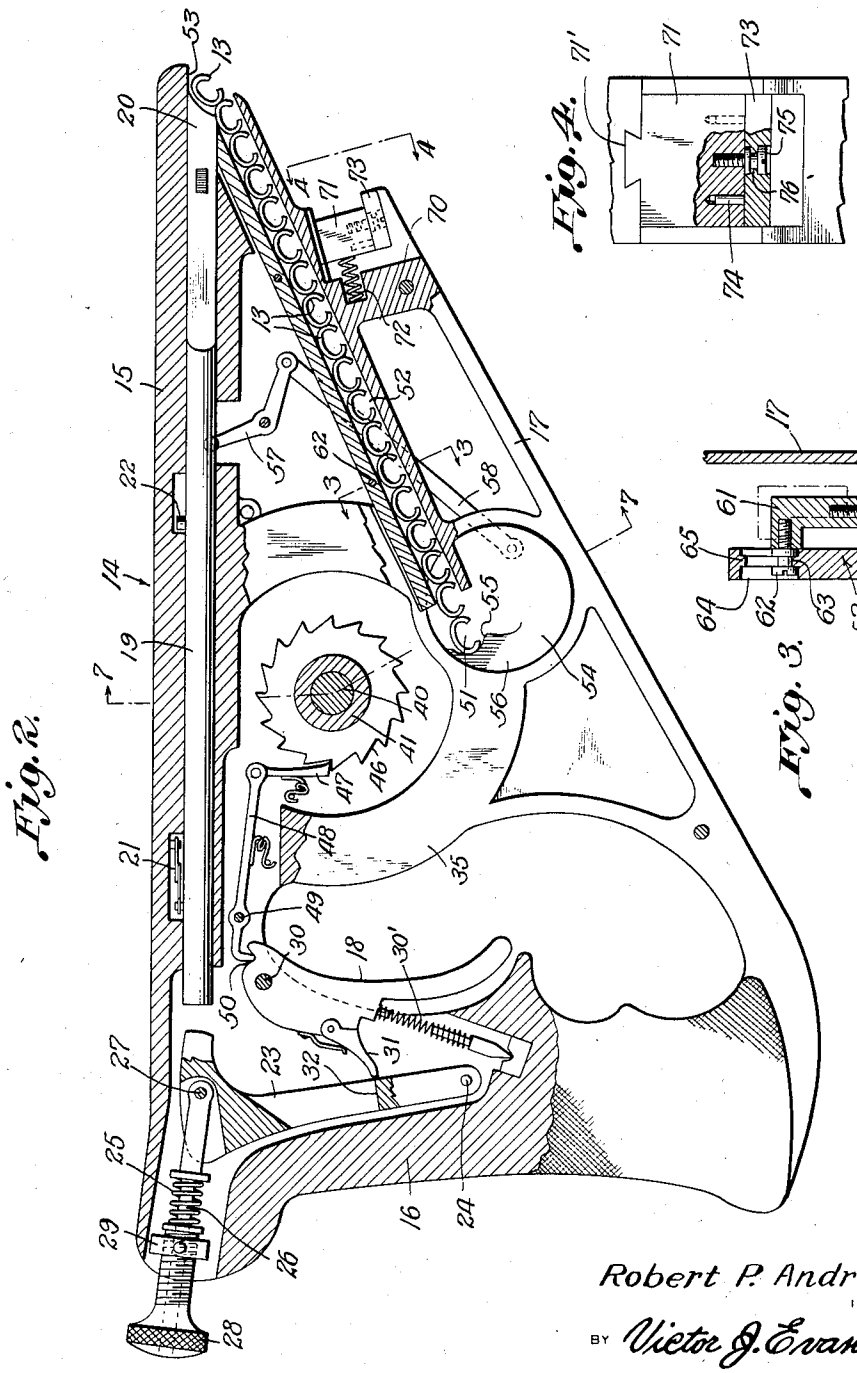


Fig. 2.

Fig. 4.

Fig. 3.

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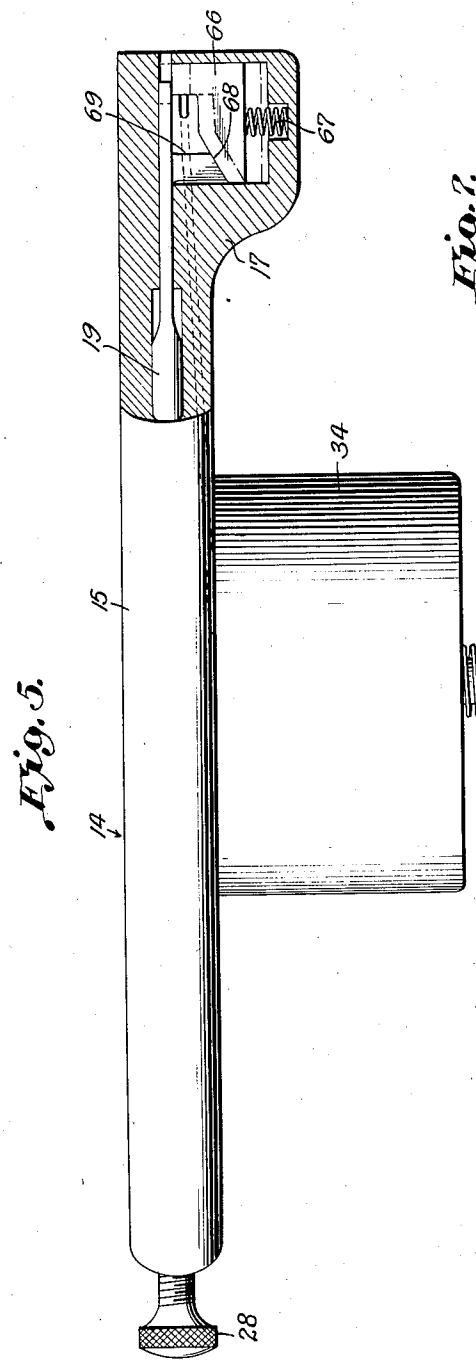


Fig. 5.

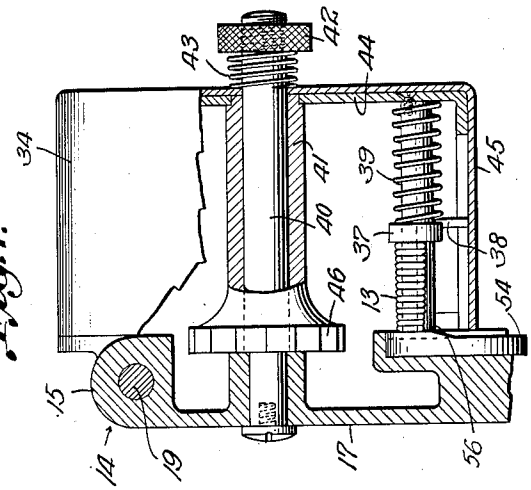


Fig. 7.

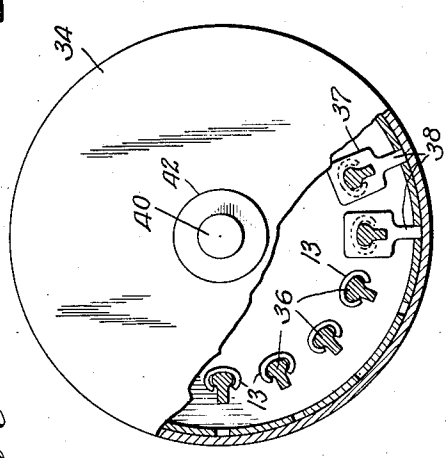


Fig. 6.

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UNITED STATES PATENT OFFICE

2,094,517

AUTOMATIC RING TRAVELER GUN

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Application August 12, 1936, Serial No. 95,674

7 Claims. (Cl. 29—84)

The present invention relates to devices for the placement of travelers on the rings of spinning machines and the like.

There is in common use in the art of textiles an appliance known to the art as a "traveler". These devices are used in great numbers and are composed of a C-shaped form of wire clip. In use, the travelers are engaged over a flange of the traveler ring forming part of a spinning or twisting machine. The placement of such travelers on the spinning machine rings by hand is a tedious and awkward operation in that same involves the springing of the traveler so as to snap it in place over the flange of the traveler ring. In view of the large number of travelers needed an appreciable amount of time is required to install these appliances by hand.

It is the primary object of this invention to provide an efficient and serviceable device resembling in general arrangement that of a pistol, the use of which will accomplish the placement of the travelers on spinning and twisting machine rings in an efficient manner.

A further object of the invention is to provide in a device of the character indicated a feeder mechanism for the travelers including a magazine adapted to contain a large number of the travelers, thereby obviating the necessity for frequent reloading.

Another object of the invention resides in the provision of an automatic ring traveler gun comprising means for driving a traveler onto the flange of a spinning machine ring and including a simple feeding mechanism arranged to operate in unison with the traveler driving means, thereby assuring the feeding of a single traveler for each operation of the device.

A still further object is to provide a traveler placement device the feeder mechanism of which may be conveniently adjusted to accommodate the tool for use with travelers of various sizes; the traveler gun also being adjustable for use on spinning or twisting machines of various dimensions.

The invention will be fully and comprehensively understood from a consideration of the following detailed description when read in connection with the accompanying drawings which form part of the application.

In the drawings:

Fig. 1 is a general side elevational view of a portion of a spinning or twisting machine illustrating the use of the device in placing a traveler on the spinning ring.

Fig. 2 is a side elevational view of the device, the cover thereof being removed, certain parts being broken away in central section.

Fig. 3 is a transverse sectional view taken on line 3—3 of Fig. 2 and illustrating the adjustability of the traveler raceway comprising the device.

Fig. 4 is a fragmentary end elevational view taken on line 4—4 of Fig. 2.

Fig. 5 is a plan view of the device as shown in Fig. 2, the nozzle portion being broken away to illustrate the traveler shunting device forming part of the feeding mechanism.

Fig. 6 is an end elevation of the traveler magazine shown in Fig. 5, parts thereof being broken away; and

Fig. 7 is a transverse sectional view taken on line 7—7 of Fig. 2, parts thereof being shown in elevation.

Reference is now directed to the accompanying drawings for a more detailed description thereof and particularly to Fig. 1, wherein is illustrated a portion of a ring spinning machine 8 comprising a spindle 9, a bobbin 10, the frame of the machine including a rail member 11. In the operation of spinning or twisting, a traveler ring 12 is clamped in place on the frame of the machine, being concentric with the bobbin 10. The traveler ring 12 of the usual form is I-shaped in cross-section, on the upper flange of which a traveler 13 is engaged by having the free ends of the traveler snapped into place under the mentioned flange.

The traveler gun indicated by numeral 14 comprises a barrel 15, a pistol grip 16 and a framework 17, the same being adapted to house the feeder mechanism of the device. In use, the gun is grasped by the pistol grip 16, the finger of the operator being disposed to press a trigger 18 by which the device is actuated.

Reference is now directed to Fig. 2 for a description of the traveler driver mechanism of the device. Within the barrel 15 is slidably retained a plunger 19, the forward end 20 of which is arcuate and inclined forwardly so as to engage the traveler 13 during the forward movement of the plunger 19 and impart to the traveler a forward and downward movement causing the same to be snapped over the flange of the traveler ring 12. The plunger 19 is urged to retracted position by a suitable spring 21 and the movement of plunger 19 is limited by a stop pin 22 riding in a groove cut in the barrel 15.

The plunger 19 is propelled by impact of a pivoted hammer 23. The hammer 23 is pivotally mounted in the grip 16 by a pin 24, the head of

the hammer 23 being disposed to strike the end of the plunger 19. The hammer 23 is actuated by a compression spring 25, the latter surrounding a rod 26 having a yoked end pivotally engaging the hammer 23 by a pin 27. The pressure of spring 25 is adjustable by means of a thumb screw 28, the same being threadedly engaged in a swiveled nut 29 mounted in the gun frame. The inner end of the thumb screw 28 engages an end of the spring 25, the opposite end of which presses the yoke of rod 26 to actuate the hammer 23.

The trigger 18 is arranged to swing on a pivot 30 and is urged to forward position by a suitable spring 30'. The trigger 18 includes a spring-backed pivoted pawl 31, the projecting end of which is disposed to engage a shoulder 32 formed on the hammer 23. The position of the trigger 18, shown in Fig. 2, is that taken by same as pressure is applied during the firing of the device. It will be observed that the hammer 23 is in retracted position preparatory to striking the plunger 19. During the initial retraction of the trigger 18 the pawl 31 rides along the surface of the hammer 23 adjacent the shoulder 32 and as the trigger 18 assumes its rearward position the pawl 31 thereof moves beyond the shoulder 32 and the hammer 23 is thus released to be driven against the plunger 19 by the spring 25.

The magazine for containing an adequate supply of the travelers 13 is illustrated particularly in Figs. 6 and 7, being indicated by numeral 34. The magazine 34 is preferably of cylindrical form, closed at one end, the open end being arranged to abut an annular surface 35 formed on the frame 17 of the device. The interior of the magazine 34 is provided with a series of axially disposed guide bars 36 of a T-shape cross-section, the flange being adapted to retain a series of the travelers 13 in alignment. The slide bars 36 are rigidly supported within the magazine 34 by suitable means and have their corresponding ends also abutting the annular surface 35. On each of the bars 36 is slidably carried a slide block 37, the same including a guide lug 38 having its end engaged in a slot cut in the periphery of the magazine 34. Each of the slide blocks 37 is backed by a compression spring 39 surrounding the rod 36 and adapted to urge the series of travelers against the annular surface 35.

The magazine 34 is mounted for rotation relative to the frame 17, being carried on a stud 40 extending transversely from the frame 17. A spindle 41 forming a part of the magazine 34 provides a journal by which the magazine is rotatably carried on the shaft 40, the spindle 41 being rigidly attached to the end wall of the magazine. To permit removal of the magazine 34 from the device for purposes of reloading, the free end of shaft 40 is threaded to receive a thumb nut 42 which, in conjunction with a suitable spring 43, holds the magazine 34 in frictional engagement with the annular surface 35. The cylinder forming the magazine 34 comprises an inner shell 44 and an outer shell 45, the latter being removed from the inner shell 44 to provide access to the slots guiding the lugs 38.

In the reloading of the magazine 34, same is removed from the shaft 40 by unscrewing the nut 42 and a plurality of travelers 13 are slid endwise onto the several guide bars 36, during which the springs 39 are contracted by holding back by suitable means the respective lugs 38. When the magazine 34 is replaced on the device the several lugs 38 are released and the respective rows of travelers 13 are pressed against the annular surface 35.

To effect the desired discharge of one traveler 13 from the magazine 34 into the feeder mechanism hereinafter described, the magazine 34 is rotated a predetermined angular distance coactively with the release of the trigger 18. The spindle 41 includes a ratchet wheel 46 at its free end adjacent the frame 17, the teeth of the wheel 46 being engageable by a spring backed pawl 47, the same being pivotally carried on a lever 48. The lever 48 is pivoted at 49 and has its opposite end operatively engaged with a notch 50 formed in the trigger 18. It will be seen from this that upon release of the trigger 18, the pawl 47 is moved downwardly, thus rotating the magazine 34 an angular distance equivalent to the spacing of the guide rods 36.

In this manner one of the travelers 13, at each actuation of the trigger 18, is delivered from the magazine 34 to a point 51 in the annular surface 35. The feeder mechanism now operates to transfer each of the travelers received from the magazine 34 to a raceway 52 which guides the series of travelers 13 to the nozzle 53 of the device, at which point the travelers 13 are driven onto the traveler ring 12. The transfer of the travelers 13 from the point 51 to the raceway 52 is effected by an oscillating transfer wheel 54, the same being journaled in a recess cut in the frame 17. The transfer wheel 54 has a substantially flat surface disposed below the annular surface 35 a spacing equivalent to the thickness of a traveler 13 and includes an upstanding arcuate shoulder 55 disposed, in one extreme of its stroke, at the point 51 to engage behind a traveler 13 discharged from the magazine 34. The top of shoulder 55 is flush with the surface 35 and diminishes into the flat surface of the transfer wheel 54 in an inclined plane 56, see Fig. 7, to permit a traveler 13 disposed at the point 51 to be engaged behind the shoulder 55 during the return movement of the transfer wheel 54. The wheel 54 is oscillated a predetermined angular distance coactively with the sliding of the plunger 19 in either direction, the movement being transmitted thru a bell crank lever 57 and a connecting rod 58 associated in the manner shown. The raceway 52 at its receiving end is arranged to project over the transfer wheel 54 so that the series of travelers 13 are delivered into the raceway without risk of clogging.

As aforeindicated the raceway 52 is made adjustable so as to accommodate various sizes of travelers, substantially as shown in Fig. 3. A bottom and side wall of the raceway 52 is formed in an angle member 60, the same being integral with the frame 17. The top and other side wall of the raceway 52 are formed by an angle bar 61, the same being adjustably carried on the member 60 to be set relative to same to fit the size of traveler to be used, as indicated in dot and dash outline. In the respective ends of the walls of the bar 61 are threadedly mounted adjustment screws 62. Each of the screws 62 has a groove 63 formed in the head thereof and each screw head is slidably retained in a slot 64 formed in the respective walls of the member 60, each of the slots 64 including a bead 65 for engagement in the groove 63. In this manner, by turning the respective screws 62, the bar 61 may be adjusted to the desired setting to accommodate the traveler to be used.

It is to be noted here that the feeder mechanism thus far described provides for delivering a series

of travelers 13 to the nozzle 53 in unison with the operation of the trigger 18. At the nozzle 53 the raceway 52 terminates to one side of the path of travel of the end 20 of the plunger 19 so as to assure proper operation of the plunger 19 in driving the traveler 13 onto the ring 12. Each succeeding traveler 13 is synchronously shunted from the terminal of the raceway 52 into the path of the plunger 19 by means of a shunting block 66. The block 66 is slidably carried in a suitable groove in the frame 17, being urged by a spring 67 toward the path of the plunger 19. The block 66 includes an inclined plane 68 against which a wedge lug 69 engages. The wedge lug 69 extends laterally from the plunger 19 so that as the latter slides in either direction the shunting block 66 is moved laterally, thereby shunting each succeeding traveler 13 from the terminal of the raceway 52 into the path of travel of the plunger end 20.

To conveniently fix the position of the traveler gun 14 relative to the spinning machine 8, as shown in Fig. 1, the frame 17 of the gun is provided with a notch 70, the same being adapted to receive the spinning machine rail 11. It will be observed that in order to accurately position the nozzle 53 of the gun 14 relative to the ring 12 it is preferred that the operator adjust the position of the gun 14 at will. To effect this the positioning notch 70 is provided with a resiliently mounted block 71, see Figs. 2 and 4, the same being backed by a spring 72. The block 71, being slidably mounted in a dove-tail groove 71' formed in the frame 17, permits of adjusting the positioning of the nozzle 53 by varying the pressure by which the gun 14 is held in place against the rail 11. To accommodate various sizes of the rails 11 the block 71 includes a projecting plate 73 forming a shoulder at the bottom of the block 71, the plate 73 being adjustable by the means shown in Fig. 4. The plate 73 is mounted on the block 71 by a pair of guide pins 74 sliding in suitable recesses in the block 71. An adjustment screw 75 threadedly engaging the block 71 and retained by a shoulder 76 in the plate 73 provides for adjusting the plate 73 to or from the block 71, as required to fit the rail 11.

It is to be understood that this improvement is capable of extended application and is not confined to the exact showing of the drawings nor to the precise construction described and, therefore, such changes and modifications may be made therein as do not affect the spirit of the invention nor exceed the scope thereof as expressed in the appended claims.

What is claimed as new is:

1. A traveler placement device comprising in combination, a frame including a grip and a barrel, a plunger slidably carried in said barrel, hammer means adapted to impact said plunger, an actuating lever operably associated with said hammer means for retracting same, feeder means including a rotatable magazine adapted to retain a series of travelers in alignment therein actuable by said lever means, means for guiding a progression of travelers from said magazine to said plunger and means adapted to deliver a single traveler from said magazine into said guiding means.

2. A traveler placement device comprising in combination, a frame having a barrel and a grip, a normally retracted plunger slidable in said barrel, operating means associated with said grip and including a spring actuated hammer adapted to impact said plunger and a lever pivoted on said grip for retracing said hammer, feeder means comprising a magazine adapted to retain a series of travelers in alignment therein, a raceway for guiding a progression of travelers from said magazine to said plunger end and transfer means adapted to deliver a single traveler from said magazine into said raceway.

3. A traveler placement device comprising in combination, a frame having a barrel and a grip, a normally retracted plunger slidable in said barrel, operating means associated with said grip and including a spring actuated hammer adapted to impact said plunger and a lever pivoted on said grip for retracting said hammer, feeder means comprising a magazine adapted to retain a series of travelers in alignment therein, a raceway for guiding a progression of travelers from said magazine to a position adjacent said plunger end and shunting means actuable by movement of said plunger for shunting a single traveler from said raceway and into the path of travel of said plunger.

4. A traveler placement device comprising in combination, a frame having a barrel and a grip, a normally retracted plunger slidable in said barrel, operating means associated with said grip and including a spring actuated hammer adapted to impact said plunger and a lever pivoted on said grip for retracting said hammer, feeder means comprising a magazine adapted to retain a series of travelers in alignment therein, a raceway for guiding a progression of travelers from said magazine to said plunger end and transfer means adapted to deliver a single traveler from said magazine into said raceway, said raceway being expandible in cross-section to accommodate travelers of various sizes.

5. A traveler placement device comprising in combination, a frame having a barrel and a grip, a normally retracted plunger slidable in said barrel, operating means associated with said grip and including a spring actuated hammer adapted to impact said plunger and a lever pivoted on said grip for retracting said hammer, feeder means comprising a magazine adapted to retain a series of travelers in alignment therein, a raceway for guiding a progression of travelers from said magazine to said plunger end and transfer means adapted to deliver a single traveler from said magazine into said raceway, said raceway being expandible in cross-section to accommodate travelers of various sizes and comprising a longitudinal angle member forming two walls of said raceway rigidly mounted on said frame and an adjustable angle bar forming complemental walls of said raceway and means for adjusting said angle bar.

6. A traveler placement device comprising in combination, a frame having a barrel and a grip, a normally retracted plunger slidable in said barrel, operating means associated with said grip and including a spring actuated hammer adapted to impact said plunger and a lever pivoted on said grip for retracting said hammer, feeder means comprising a magazine adapted to retain a series of travelers in alignment therein, said means including a series of axially disposed guide bars substantially T-shaped in cross-section, a slide block carried on each of said bars adapted to forwardly urge the series of travelers, a raceway for guiding a progression of travelers from said magazine to a position adjacent said plunger end and shunting means actuable by movement of said plunger for shunting a single traveler from said raceway and into the path of travel of said plunger.

7. A traveler placement device comprising in combination, a frame having a barrel and a grip, a normally retracted plunger slidable in said barrel, operating means associated with said grip and including a spring actuated hammer adapted to impact said plunger and a lever pivoted on said grip for retracting said hammer, feeder means comprising a magazine adapted to retain a series of travelers in alignment therein, said means including a series of axially disposed guide bars substantially T-shaped in cross-section, a slide block carried on each of said bars adapted to forwardly urge the series of travelers, a ratchet wheel mounted within said magazine and engageable with a spring backed pawl adapted to be rotated upon the actuation of said hammer, a raceway for guiding a progression of travelers from said magazine to a position adjacent said plunger end and shunting means actuable by movement of said plunger for shunting a single traveler from said raceway and into the path of travel of said plunger.

ROBERT P. ANDREOLI.