

Nov. 23, 1948.

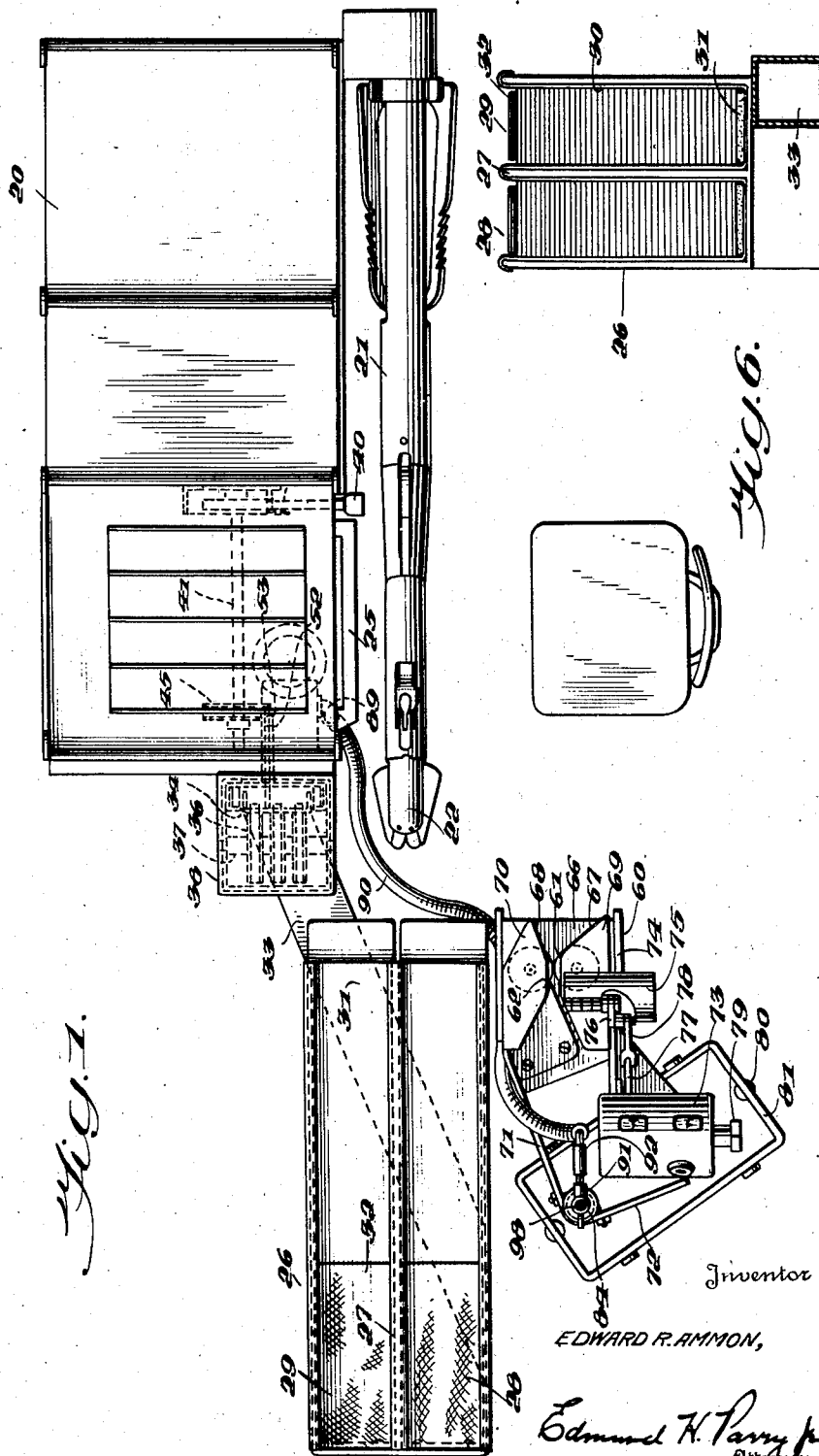
E. R. AMMON

2,454,622

HOSIERY HANDLING AND INSPECTING APPARATUS

Filed May 21, 1946

3 Sheets-Sheet 1



EDWARD R. AMMON,

Edmund H. Parry Jr.
Attorney

Nov. 23, 1948.

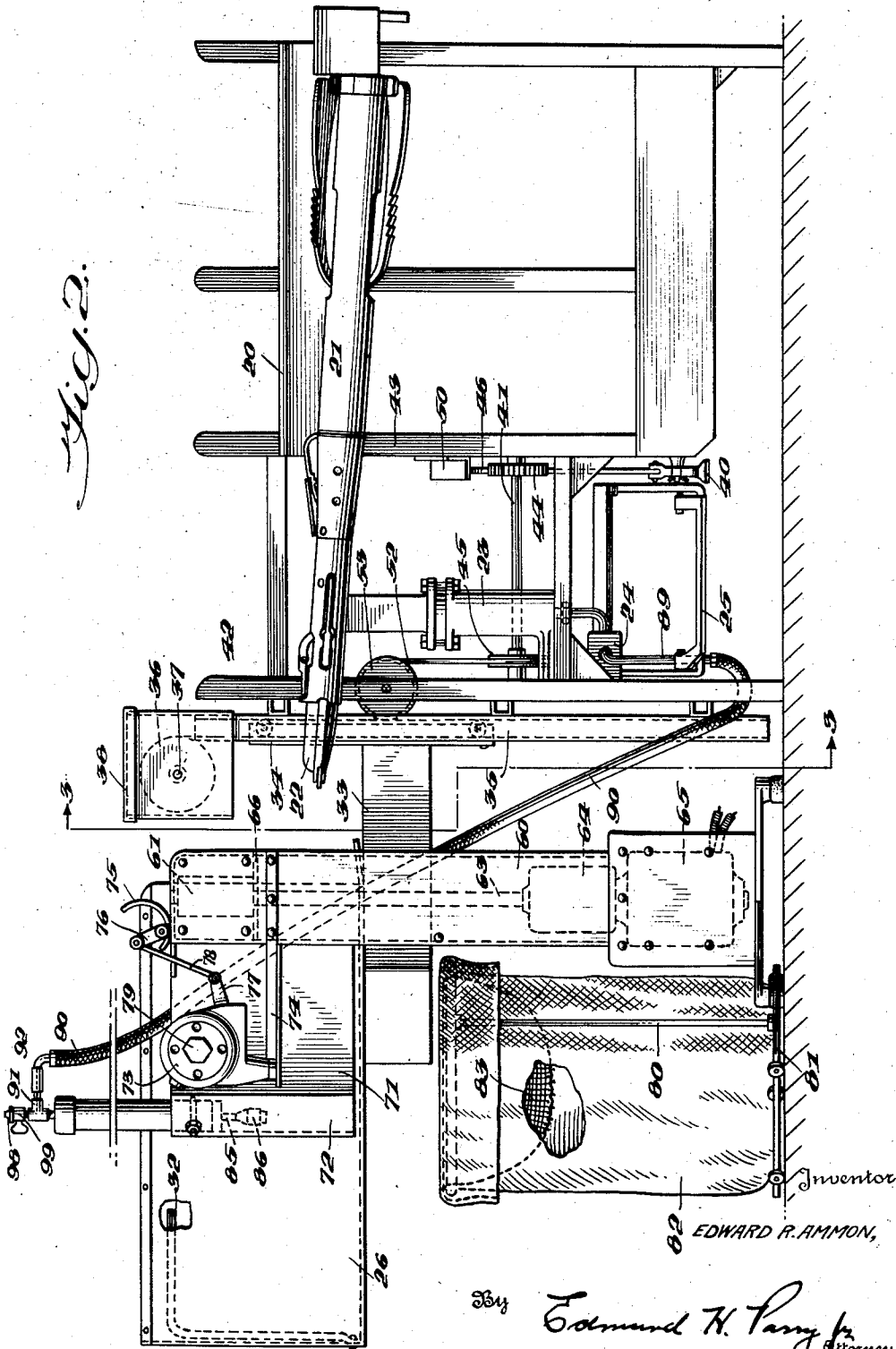
E. R. AMMON

2,454,622

HOSIERY HANDLING AND INSPECTING APPARATUS

Filed May 21, 1946

3 Sheets-Sheet 2



Nov. 23, 1948.

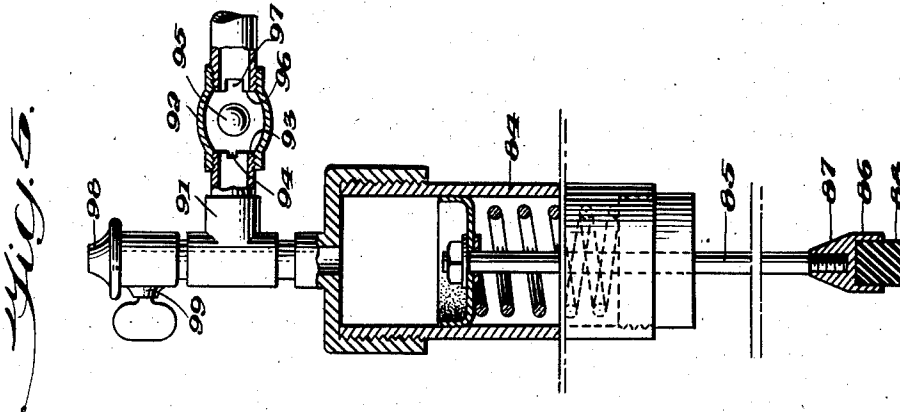
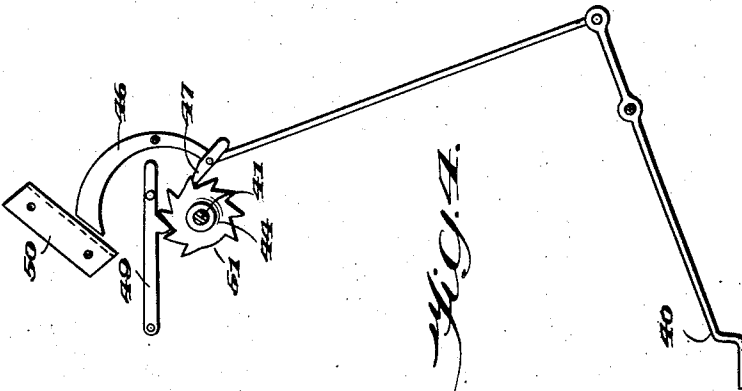
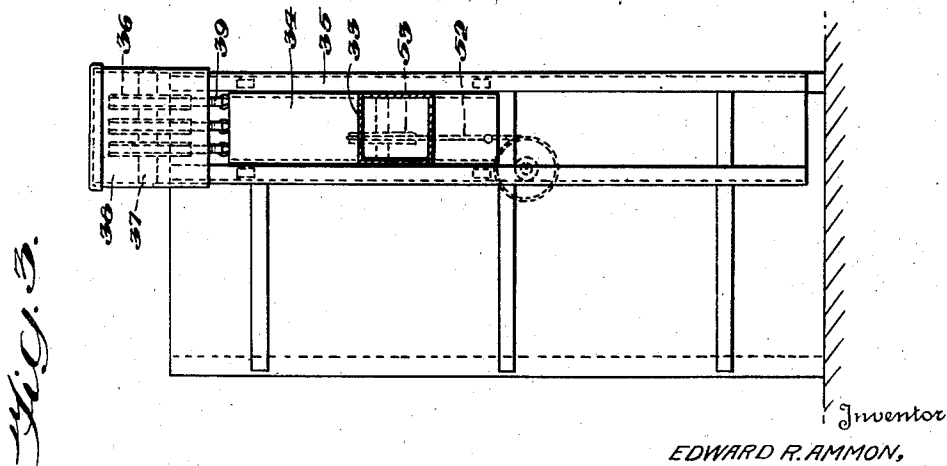
E. R. AMMON

2,454,622

HOSIERY HANDLING AND INSPECTING APPARATUS

Filed May 21, 1946

3 Sheets-Sheet 3



334

Edward H. Parry
Attorney

UNITED STATES PATENT OFFICE

2,454,622

HOSIERY HANDLING AND INSPECTING
APPARATUS

Edward R. Ammon, Reading, Pa.

Application May 21, 1946, Serial No. 671,221

16 Claims. (Cl. 223-77)

1

This invention is directed to apparatus for handling hosiery intermediate the seaming and dyeing operations and adapted to carry out certain useful functions calculated to eliminate in some instances, and simplify in other instances, various conventional time-consuming and labor-consuming operations incident to the inspection of the hosiery for defects and the preparation of the inspected hosiery for dyeing. Through the practice of the invention the physical and mental effort required of employees in such production stages is minimized with the result that the employees can operate more efficiently and rapidly, and with less fatigue, and can handle a substantially larger volume of hosiery.

After a stocking is seamed by the seaming machine operator it is transferred to the inspection department to be checked for defects. The inspection operation is carried out by placing the stocking on a form adapted to stretch the stocking at various vital points. Forms of this character are fully disclosed and described in various of my prior patents, including No. 2,010,172, granted August 6, 1935, No. 2,023,946, granted December 10, 1935, and No. 2,090,883, granted August 24, 1937. While such inspection forms can be caused to expand the stocking through force exerted by the operator, fluid motor or other power means is now preferably employed for expansion.

According to accepted practice the seaming machine operator binds the seamed stockings in bundles of one dozen with pieces of tape or fabric strips, and such bundles are then delivered to the inspecting machine operator. The latter operator must then untie each bundle, straighten out the stockings which in many instances are left partially inside out by the seamer, and arrange the stockings in a pile from which she can withdraw them one by one for application to the inspection form. Following completion of the inspecting operation, the inspecting machine operator then ties the stockings again into bundles of one dozen for transportation to the dye house. The inspected bundles must then be untied in the dye house, and then loosened from each other to facilitate proper dyeing, and in such condition lots of three dozen silk stockings, or four dozen Nylon stockings, are placed in a net dye bag. A plurality of the netted stocking bundles are then introduced into the dye machine.

I have determined as a result of study that various of the handling operations just referred to are unnecessary and can be dispensed with

2

without sacrifice, and that other handling operations can be simplified and speeded up. In particular I have found that in a great many cases more than one-half of the time of the inspecting machine operator, who is necessarily a skilled employee, is consumed in preparing the hosiery for inspection and in preparing the same after inspection for delivery to the dye house, whereas it is obviously desirable that the work of such an operator should be so simplified that she be not required to perform time and labor-consuming tasks which interfere with her efficient operation of the inspecting machine and cut down the production capacity of such a machine so that a larger than necessary number will be required to handle normal hosiery production of a given mill. Further, I have found that certain of the duties with which the inspecting machine operator has been charged are unnecessary, and can be dispensed with entirely without imposing additional burdens upon, but rather simplifying the work of, the seaming machine operator and employees of the dye house.

In dealing with the problems referred to it is now proposed that the seaming machine operator shall arrange the stockings flat in convenient piles of a plurality of dozen pairs with the welts of the stockings aligned so that they will be ready for quick application to the inspecting machine without further preparatory work by the inspecting machine operator.

At the inspecting machine the stockings are quickly applied without appreciable effort by the operator to the inspection form, removed therefrom, and incident to withdrawal introduced by the operator without banding into a dye net. Each net receives three or four dozen pairs of stockings which upon being transported to the dye house is ready for immediate delivery to the dye machine without further preparation by the dye house employees.

Under the procedure just outlined the duties of the inspecting machine operator are confined to drawing the stockings onto the inspection form, inspecting the stockings, drawing them off, and bringing a new dye net into position when one net has received the proper quantity of stockings. In accordance with the invention certain mechanisms are employed as adjuncts of the inspecting machine of such nature that the complete operation is carried out in a minimum amount of time with little motion and effort of the operator.

The mechanical adjuncts referred to include:
(1) a stocking delivery device in which are placed

the flat piles of stockings delivered from the seaming department, and adjustably disposed in proximity to the toe end of the inspection form so that the top stocking of the pile can be drawn onto the form with a relatively short motion by the hands of the operator without visual effort; (2) a stocking netting device arranged beside the stocking delivering or holding device, and also located in proximity to the toe end of the form so that in the reverse of the motion of applying a stocking to the form the operator without conscious effort delivers the stocking to the netting mechanism incident to withdrawal from the form; (3) a counting device which registers each stocking delivered to the netting mechanism which will advise the operator when the desired number of stockings have been introduced into one net so that she may place another net into position in the netting mechanism; and (4) a tamping device for insuring proper disposition of the stockings in the nets which is caused to operate automatically without attention of the operator at appropriate times.

The operating procedure and the adjunctive mechanism of the hosiery inspection form machine employed therein will be more fully understood from the following detailed description and the preferred embodiments of the mechanical features of the invention illustrated in the accompanying drawings.

In the drawings:

Fig. 1 is a top plan view of a stocking handling and inspecting apparatus according to the invention;

Fig. 2 is a front elevation corresponding to Fig. 1;

Fig. 3 is a sectional elevation taken on line 3—3 of Fig. 2;

Fig. 4 shows certain details of the apparatus;

Fig. 5 is an enlarged fragmentary view partly in section and partly in elevation of other details of the apparatus; and

Fig. 6 is a transverse elevation of the stocking holding means of Figs. 1 and 2, and showing the manner in which the stockings are disposed therein for feeding to the inspecting form.

The hosiery inspecting machine proper comprises, as formerly, a supporting structure in the form of a table 20 mounting at the front side thereof, a hosiery inspecting form 21 over which the stocking is drawn from the toe end 22. The form is provided with a plurality of laterally movable elements at different portions thereof adapted to subject vital areas of a stocking to lateral stretch for inspection purposes as explained in my patents above referred to. A fluid pressure motor 23 is provided to actuate the form stretching elements through suitable linkage. An inlet and exhaust air valve 24 operable by a control member 25, which is here a foot pedal, controls the air motor. When the pedal is depressed air is supplied through valve 24 to motor 23 to cause the stretching elements of the form to be expanded to stretch a stocking placed on the form. When the pedal is released the air from the motor is exhausted back through valve 24 and the stretching elements of the form are collapsed for the withdrawal of the stocking from the form after inspection.

As before mentioned the invention contemplates arrangement of the stockings to be inspected such that the operator may draw them onto the inspecting form with a minimum of arm motion and without visual concentration. To this end the stockings are disposed in a pile extending

generally axially of the form beyond the toe end thereof with their welts facing the form toe. As a matter of convenience the lengthwise direction of the pile of stockings may be inclined somewhat in a horizontal plane to the form axis so as to be disposed at an obtuse angle to the front side of the table. The welts of the pile of stockings will be disposed in relatively close proximity, say six inches, from the form toe, being merely far enough removed so that the stockings after inspection may be easily withdrawn by the operator on the front side of the stocking pile as will be more fully hereafter explained.

The mechanism for holding the stockings to be inspected for delivery to the form under the conditions mentioned comprises a relatively deep tray 26, preferably formed of sheet metal, open at its right end facing the toe 22 of the form 21. The tray may have one compartment for holding a single pile of stockings, but it is deemed preferable in order that the supply of stockings in the tray need replenishing less frequently with a saving in time for the operator, the tray may be provided with a central vertical partition 27 dividing the same into a plurality of compartments 28 and 29 extending side by side each adapted to hold piles of stockings made up of a plurality of dozen pairs. The side walls of the compartments are provided with a canvas or other fabric liner 30, and the bottom of the compartments will preferably be provided with a lining 31 of sponge rubber. The purpose of the linings 30 and 31 is not merely to insure against snagging of the stockings on the tray but to provide frictional surfaces which will resist disturbance of the pile of stockings in a compartment when the top stocking of the pile is drawn off by the operator for application to the inspecting form.

Retaining means may also be provided to avoid disturbance of the pile of stockings incident to withdrawals, the same being adapted to anchor the feet of the stockings in the pile from flying up and folding over incident to withdrawals. I have found that a simple and effective means for this purpose may consist of a flexible member 32 comprised of a plurality of layers of muslin anchored at one end to the bottom corner of the compartment at the closed end and being of sufficient length as to overlie the foot portions of a pile of stockings placed in the respective tray compartments. It will be understood of course that separate retaining means 32 will be disposed in the respective compartments. As stockings are withdrawn the flexible retaining member will prevent the feet of the remaining stockings in the pile from being drawn forwardly. As heretofore explained the stockings are arranged flat in piles by the seaming machine operator with their welts and feet in alignment and the piles of stockings are in this form when they are placed in the compartments 28 and 29 of the tray.

The tray 26 is mounted for vertical adjustment so that the top of the pile, or piles, of stockings in the tray may be maintained at approximately the same level with respect to the toe end of the form as the pile height varies under withdrawals from and replenishments of the pile. Thus the operator is able to extend her hands towards the tray at approximately the same level and grasp the open welt end of the top stocking without giving visual attention to this operation.

To this end the tray 26 is mounted on an elevator which when the tray is filled with stockings will occupy its lowermost position with the top of the tray approximately on a level with the

toe end of the form, and which as stockings are withdrawn can be raised step by step through suitable control mechanism so that when the stocking supply is substantially exhausted the bottom of the tray will be approximately on a level with the toe end of the form.

According to the present embodiment of the invention the tray 26 is mounted, preferably removably, on a horizontal arm 33, preferably comprising a sheet metal tube of rectangular cross section so as to be as light as possible. Arm 33 is supported by a vertically movable roller carriage 34 riding in a track 35 formed of channel members, which members can conveniently be mounted on the left end of table 20 of the inspecting machine.

The weight of the tray 26, arm 33 and carriage 34 is largely counter-balanced so as to facilitate elevation thereof. In the present embodiment the counter-balancing means comprises a series of self-winding spring reels 36 supported on a shaft 37 mounted in housing 38 at the top end of track 35. Winding on the reels are flexible metal bands 39 connecting at their lower end with carriage 34.

Elevation of carriage 34 and its associated parts may be effected through any suitable actuating mechanism which will effect a step by step upward movement thereof, and which when the tray has been exhausted and the stockings therein replenished will serve to effect lowering of the carriage quickly in a continuous movement to its bottom position. Because of the counter-balance arrangement, and the fact that because the withdrawal of a single stocking does not appreciably diminish the height in the tray, it is unnecessary to elevate the tray upon each withdrawal of a stocking. I employ in the present embodiment of the invention manually controlled elevating mechanism which may be operated from time to time. The actuating mechanism here comprises a pivoted operating pedal arm 40 which upon each depression a normal distance will effect elevation of the carriage 34 one step, and which upon being pressed down its maximum distance will release the carriage for lowering to its bottom position under the weight of the carriage and its associated parts against the resistance of the counter-balancing mechanism. As best shown in Figs. 4 and 2 a shaft 41 is rotatably supported by the left end wall 42 and central partition 43 of the table 20, and upon the opposite ends of such shaft are fixed a ratchet wheel 44 and a reel 45. Pivotaly mounted on table partition 43 is a pawl arm 46 provided with an actuating pawl 47 for rotation of ratchet 44 and shaft 41 as pawl 46 is actuated by the pedal arm 40 through the connecting rod 48. A pivotally mounted retaining pawl 49 serves to hold the ratchet in each adjusted position. The upper end of pawl arm 46 rides against a stationary cam plate 50 mounted on the table partition. When pedal arm 40 is depressed to its maximum extent pawl arm 46, riding on cam plate 50, is drawn to a position to release actuating pawl 47 from the ratchet wheel and also release the retaining pawl 49 so that the ratchet wheel 44 and shaft 41 may be reversely rotated for the lowering of the carriage and tray to their bottom position. It will be observed that ratchet wheel 44 is provided with a cutout 51 so as to prevent further actuation of the carriage when the same has reached its upper limit position.

Anchored to pulley reel 45 is a chain 52 which passes upwardly over pulley 53 mounted in a cutout in the end wall 42 of the table and thence

downwardly to an anchorage with the lower end of carriage 34. Each time the elevator pedal arm 40 is depressed to rotate ratchet wheel 44 and shaft 41 chain 52 winds on reel 45 and raises carriage 34 and tray 26 one step.

Equally important with the tray mechanism is the arrangement for handling the stockings upon withdrawal from the inspecting form, whereby the operator may grasp the stocking at the welt after the inspection operation has been completed and draw it off the form with substantially the reverse of the motion and direction under which the stocking was applied to the form, and whereby no conscious effort or attention need be given by the operator to the stocking. As previously mentioned for this purpose there is provided netting mechanism which receives the stocking from the hand of the operator and deposits the same in a dye net ready for delivery to the dyeing machine.

The netting mechanism is mounted forwardly of the tray 26 and its supporting structure, side by side therewith, and likewise in relatively close proximity to the toe end 22 of the inspecting form. In the present embodiment the netting mechanism is mounted independently of the table 20 so that it may be adjusted to a position best suiting the operator. As shown the netting mechanism comprises a casing 60 housing in its upper end a pair of vertically disposed coating feed rolls 61 and 62 having rubber covered surfaces. Roll 61 has a long vertical shaft 63 driven through a reduction gearing 64, preferably of a pulley and belt type, by electric motor 65 mounted in the base of casing 60.

Formed in the upper portion of casing 60 below the level of rolls 61 and 62 is a horizontal platform 66, and located thereabove are converging wall portions 67 and 68 defining a V-shaped guide opening to which the operator brings the welt end of the stocking as she withdraws it from the inspecting form. Overlying the respective rolls are spaced cover members 69 and 70 which permit free passage of a stocking between the rolls and insure that the operator may bring the welt of a stocking sufficiently far to be picked up by the feed rolls.

Inasmuch as the complete operation of withdrawing a stocking from the supply tray, disposing the same on the form, inspecting it, and then withdrawing the same and delivering it to feed rolls 61 and 62 of the netting mechanism requires only a very short time, it is more practical to have the feed rolls constantly driven by continuous operation of motor 65, but it will be understood that this is not entirely essential. The reduction gearing 64 prevents the stockings from being fed through the rolls at the high normal operating speed of the motor which might cause them to lash about and be injured.

Secured to the upper portion of casing 60 and located beyond the outlet end of feed rolls 61 and 62 is a hood constituted by walls 71 and 72 in which the stockings are received from the feed rolls. As shown such hood is open at its bottom so that the stockings after impinging on the walls of the hood fall downwardly into a collecting device hereafter to be referred to.

A mechanical counter 73, mounted on arm 74 secured to casing 60, is provided to count each stocking delivered to the netting mechanism. To actuate the counter a curved plate 75 is pivotally mounted on top plate 69 of the casing 60 in position to be engaged and turned counter-clockwise by the hand of the operator as she de-

livers the welt of a stocking through the V-shaped guide opening to the feed rolls. Rigid with plate 75 is a crank arm 76 connecting with the operating arm 77 of the counter 73 through an adjustable link 78, whereby each time the hand of the operator engages plate 75 in delivering a stocking to the feed rolls the counting mechanism is actuated to register delivery of such stocking.

Preferably the counting mechanism will comprise a pair of registering dials which will be operated by arm 77 to register each individual stocking delivered up to a total of 24, constituting one dozen pairs, and a second dial registering once for each twenty-four stockings so as to show the total number of dozen pairs delivered. With such device the inspecting machine operator will be advised when a selected number of dozen pairs of stockings have been delivered to the collecting device to which the netting mechanism discharges. A zero setting knob 79 may be provided to return the registering dials to zero at any time.

The stockings discharged from the netting mechanism are to be delivered to a dye net, and for convenience in transportation a plurality of such nets each filled with three or four dozen pairs of stockings are employed together in a delivery bag. Disposed beneath the hood of the netting mechanism is a bag holder 80, preferably mounted on a roller truck frame 81 as best shown in Fig. 2, and in which is supported a delivery bag 82 of canvas or other suitable material. The net bags in which the stockings are dyed are of substantially smaller size than the delivery bag 82. One of such dye net bags 83 is shown in operative position for receiving stockings with its mouth spread outwardly over the mouth of the delivery bag. When the counting mechanism shows that the required number of inspected stockings have been delivered by the netting mechanism to bag 83 the operator closes the mouth of the bag and lets it fall to the bottom of the delivery bag 82, and then places another net dye bag 83 in operative position. Delivery bag 82 will be of such size as to accommodate at least two dye net bags with their quota of stockings. The adjustability of the bag holder 80 through its roller truck 81 enables the same to be withdrawn from beneath the hood of the netting mechanism either or both to facilitate the insertion of a new dye net bag in a delivery bag, and also to permit the replacing of a filled delivery bag by a new bag.

Inasmuch as the stockings because of their length tend to cling to the sides of the dye net bag and interfere with the filling of the bag with the full quota of stockings constituting its normal capacity, it is found desirable to provide a tamping device operable to loosely pack the stockings into the bag so that the operator's time will not be required for this purpose. Such device in the present instance comprises a vertically disposed long air cylinder 84 secured to walls 71 and 72 of the hood of the netting mechanism and having a piston rod 85 adapted to be forced downwardly by air pressure and returned upwardly upon release of pressure by a suitable spring. Secured to the lower end of rod 85 is a tamp comprising a smooth brass cylinder 86 having a beveled upper end portion 87. Tamp 86 is hollow and inserted therein is a rubber plug 88 of a smaller diameter, and projecting therebelow.

The mounting of the tamping cylinder 84 is

such that when pressure is supplied thereto the piston rod 85 is projected downwardly into the dye net bag 83. The special construction of the tamp 86 with its beveled upper end 87 and its rubber plug 88, serves to insure proper packing of the stockings in the net bag upon the downward movement of the piston rod, and prevent the stockings from clinging to the tamp and being drawn upwardly when the piston rod rises upon the discharge of air from cylinder 84.

While not entirely necessary it is desirable that the tamping device operate each time a stocking is discharged into net bag 83, and it is desired that this operation be carried out automatically without the attention of the inspecting machine operator. This is accomplished in the present embodiment of the invention by connecting a pipe 89 to the main air intake and exhaust valve 24 controlling the expanding form motor 23. Pipe 89 connects with a flexible hose 90 communicating with the air supply connection 91 at the upper end of cylinder 84. For proper operation of motor 23 of the inspecting machine, thirty pounds of air pressure are employed. Since this would cause too rapid movement of the tamp rod 85, and possible injury to the stockings, a damping device 92 is associated with the air connection 91 of cylinder 84. As best shown in Fig. 5 such damping device is in the form of a double acting ball valve 95 having at its left end a seat 93 provided with a relatively small cutout 94. When air is supplied through hose 90 upon depression of pedal 25, ball 95 is forced against seat 93, and only a restricted quantity of air is permitted to pass through cutout 94 to cylinder 84, with the result that tamp rod 85 is moved downwardly relatively slowly. At the right end of valve 92 is a second seat 96 having a somewhat larger cutout 97. When pedal 25 is raised and hose 90 is vented through valve 24 the air in cylinder 84 forces ball 95 against seat 96, and the air escapes through cutout 97 which, because of its size restricts the speed of upward movement of the tamp rod under the action of its return spring while nevertheless insuring return of the tamp rod to its uppermost position before pedal 25 is released and the exhaust of valve 24 discontinued. By appropriate adjustment in size of cutouts 94 and 97 of damping valve 92 the tamp rod 85 can be caused to move downwardly and upwardly at approximately the same speed where so desired. To lubricate the piston of rod 85, which ordinarily will be of a leather cup type an oil intake cup 98 controlled by petcock 99 is provided at the upper end of cylinder 84.

According to the invention as herein described the duties of the inspecting machine operator are simplified, and at the same time certain time-consuming operations formerly performed in part by such operator and in part by dye house employees are eliminated. The inspecting machine operator draws a stocking from the top of a pile in one of the compartments 28 and 29 of tray 26, by grasping the welt thereof between her thumbs and fingers and draws the same in substantially a straight line towards the right onto the inspecting form 21. Through adjustment of the elevator pedal arm 40 the tray 26 is adjusted from time to time by the operator without appreciable exertion or attention so that the level of the stocking pile in the tray is always at the approximately same height, and the operator is always enabled to easily grasp the top stocking of the pile without giving visual attention to this operation. After

the stocking has been drawn onto the form the pedal 25 is depressed to expand the stretching element of the form, and incidental to this operation tamp rod 85 is actuated to pack down the previously inspected stocking which has now passed through the netting mechanism into the dye net 83 in bag 82.

As soon as the operator has completely inspected the stocking, pedal 25 is released to collapse the stretching elements of the form and the operator then draws the same with her hands grasping the welt to the left, turning the stocking right side out during the course of withdrawal. As the welt is drawn off the toe end 22 of the form the right hand releases the stocking and the left hand moves a short distance farther towards the left and forwardly of tray 26 to deliver the welt of the stocking to feed rolls 61 and 62 of the netting mechanism, the hand traveling above the top of casing 60, and the stocking welt being guided to the feed rolls through the V-shaped guide without visual attention of the operator. As soon as the stocking welt is engaged by the feed rolls the operator releases the same, and the rolls serve to draw the remaining portion of the stocking off the inspecting form.

In the course of the movement referred to the left hand of the operator strikes plate 75 which causes the stocking to be registered on the counting machine 73. The stocking passes through the feed rolls into the hood of the netting mechanism formed by walls 71 and 72 which discharges the stock downwardly into the underlying net bag 83. The stocking so delivered will be tamped down in the bag through the tamping device when the inspecting machine is operated in the course of inspection of the next stocking.

When one net bag 83 is filled with its quota of stockings the operator closes the end thereof and allows it to drop down into the delivery bag 82 and then places a new net bag 83 in operative position. This operation can be carried out very rapidly by the inspecting machine operator.

It will be understood that the construction of the handling mechanism herein illustrated, adjunctive to the inspecting machine, is merely illustrative, and that the scope of the invention is to be determined in accordance with the scope of the appended claims. In particular it should be observed that for convenience in illustration, the stocking netting mechanism casing 60 has been shown in Fig. 1 as extending parallel to the axis of the form and close to the delivery tray 26, whereas in practice the netting mechanism is usually spaced more forwardly of tray 26 and inclined in the direction of the toe end 22 of the form so that the operator may more easily deliver stockings from the form to the feed rolls 61, 62 of the netting mechanism. Further in Figs. 1 and 2 the spacing from the toe end of the form of both the open end of tray 26 and the netting mechanism is quite short, whereas in practice it may be found desirable to employ a somewhat greater spacing so that the hands of the operator will have sufficient space to transfer stockings from the tray to the form, and from the form to the netting mechanism, with an easy swinging movement and without abrupt change in direction.

This application is a continuation of my prior copending application Serial Number 389,430, filed April 19, 1941, now abandoned.

I claim:

1. Stocking handling apparatus for handling stockings following inspection on a stocking in-

specting form including stocking receiving means to which stockings are delivered by the hand of the operator as they are withdrawn from a stocking inspecting form following inspection, a stocking counter, and a manual counter actuating lever mounted at the inlet end of the stocking receiving means out of the path of delivery of stockings to the receiving means but so close thereto as to be actuatable by the hand of the operator as the hand is delivering a stocking to the receiving means.

2. In a stocking inspecting machine, a horizontally mounted stocking inspecting form, a casing spaced outwardly of the toe end of the form a distance sufficient to permit delivery of stockings to the form for inspection without interference by the casing, power driven stocking feeding rolls mounted in the casing to which stockings are delivered by the hand of the form operator as they are removed from the form after inspection, stocking receiving means at the outlet end of said feed means, a stocking counter, and a manual actuating lever for the counter mounted on said casing adjacent the inlet end of the stocking feeding means out of the direct path of delivery of stockings but so close thereto as to be actuatable by the hand of the operator in delivering stockings to said feed means.

3. In a stocking inspecting machine, a horizontally mounted stocking inspecting form, a pair of power driven stocking feed rolls spaced outwardly of the toe end of the form and laterally offset therefrom so as not to interfere with the delivery of the stockings to the form for inspection, casing means forming a horizontal channel through which stockings as they are withdrawn from the form following inspection are delivered by the hand of the operator to the feed rolls, stocking receiving means at the outlet end of the feed rolls, a stocking counter, and a manual actuating lever for the counter mounted on the casing adjacent the channel but out of the path of the stockings so as to be actuatable by the hand of the operator in delivering a stocking to the feed rolls.

4. Apparatus for handling stockings following inspection on a stocking inspecting form comprising a support, a stocking receiving hopper having a bottom discharge opening mounted on the support to provide a bag space below the hopper discharge opening, casing means on the support forming a horizontal channel through which stockings as they are withdrawn from an inspecting form are delivered by the hand of the form operator, power driven feed rolls receiving stockings in said channel and delivering the same to the hopper, and vertically reciprocating tamping means mounted beyond the outlet of the feed rolls and above the hopper and working through the hopper discharge opening to pack stockings in the bag space below the hopper.

5. Stocking handling mechanism for handling stockings following inspection on a stocking inspecting form comprising a bag holder adapted to support a stocking receiving bag with its mouth open and to which stockings are delivered one by one as they are withdrawn from an inspecting form following inspection, a power driven vertically reciprocating tamp rod mounted above the bag holder for packing stockings in the bag, and a smooth surfaced stocking-engaging head on the lower end of said tamp rod free from surfaces that might injure the delicate stocking fabric, said head having a friction-surfaced lower end portion adapted to press

11

stockings down in the bag as the tamp rod moves downwardly and having a tapered upper end portion adapted to avoid disturbance of the stockings in the bag as the tamp rod moves upwardly.

6. In a stocking inspecting machine, a stocking inspecting form mounted in horizontally fixed position, a holder for supporting stacked articles for manual delivery to the inspecting form for inspection extending substantially lengthwise of the form and located in outwardly spaced relation to the toe end of the form so as not to interfere with the delivery of stockings from the form after inspection, stocking bagging means also spaced outwardly of the toe end of the form so as not to interfere with the delivery of stockings from the holder to the form and being located on one side of the holder in laterally offset relation to the axis of the form, conveyor means for delivering stockings as they are withdrawn from the form horizontally to the bagging means, and vertically reciprocating tamping means associated with said bagging means to deliver stockings from the bagging means into a bag and pack the same therein.

7. Stocking handling and inspecting apparatus comprising a supporting frame, a hosiery inspecting form having an unobstructed toe end and mounted horizontally on and spaced from the supporting frame, an elongated stocking holding supply tray having an open delivery end and having a horizontal bottom portion and spaced opposite side portions adapted to support a stack of flat horizontally extending stockings with the welt ends of the stockings at the delivery end of the tray, and a tray support offset transversely and lengthwise from the form mounting the supply tray to extend substantially lengthwise of the form with the delivery end of the tray opposite but spaced outwardly less than stocking length of the toe end of the form, whereby stockings may one by one be manually withdrawn from the supply tray and applied for inspection to the form over the toe end in a horizontal direction and then withdrawn after inspection from the form to one side of the supply tray.

8. Stocking handling and inspecting apparatus comprising a supporting frame, a hosiery inspecting form having an unobstructed toe end and mounted horizontally on and spaced from the supporting frame, an elongated stocking holding supply tray having an open delivery end and having a horizontal bottom portion and spaced opposite side portions adapted to support a stack of flat horizontally extending stockings with the welt ends of the stockings at the delivery end of the tray, and a tray support secured to the supporting frame and projecting therefrom outwardly beyond the toe end of the form and mounting the supply tray to extend lengthwise of the form with the delivery end of the tray opposite but spaced outwardly of the toe end of the form.

9. Stocking handling and inspecting apparatus comprising a supporting frame, a hosiery inspecting form having an unobstructed toe end and mounted horizontally on and spaced from the supporting frame, an elongated stocking holding supply tray having an open delivery end and having a horizontal bottom portion and spaced opposite side portions adapted to support a stack of flat horizontally extending stockings with the welt ends of the stockings at the de-

12

livery end of the tray, a movable tray support mounting the supply tray to extend lengthwise of the form with the delivery end of the tray opposite but spaced outwardly of the toe end of the form, an elevator carriage supporting the tray support and mounted for vertical movement on the supporting frame, and actuating means for elevating said carriage step by step to raise the supply tray with respect to the form as the level of the stack of stockings is lowered in the tray by withdrawal of stockings therefrom onto the form.

10. Stocking handling and inspecting apparatus comprising a supporting frame, a hosiery inspecting form having a toe end and mounted in fixed position horizontally on and spaced from the supporting frame, a pair of coacting power-driven stocking feed rolls, an upstanding support located outwardly of the toe end of the form mounting at its upper end the pair of feed rolls for rotation about vertical axes substantially at the level of the form in outward spaced relation to the toe end of the form adapted to pick up stockings as they are manually withdrawn from the form and discharge them in a horizontal direction, and a vertical wall spaced outwardly of and opposite the discharge end against which the stockings are discharged by the feed rolls to stop their horizontal movement and adapted to cause the stockings to drop downwardly.

11. Stocking handling and inspecting apparatus comprising a supporting frame, a hosiery inspecting form having a toe end and mounted in fixed position horizontally on and spaced from the supporting frame, a pair of coacting power-driven stocking feed rolls, an upstanding support located outwardly of the toe end of the form mounting at its upper end the pair of feed rolls for rotation about vertical axes substantially at the level of the form in outward spaced relation to the toe end of the form adapted to pick up stockings as they are manually withdrawn from the form and discharge them in a horizontal direction, a stocking receiver extending below the discharge end of the feed rolls, and a vertical wall spaced outwardly of and opposite the discharge end against which the stockings are discharged by the feed rolls to stop their horizontal movement and adapted to cause the stockings to drop into the stocking receiver.

12. Stocking handling and inspecting apparatus comprising a supporting frame, a hosiery inspecting form having a toe end and mounted in fixed position horizontally on and spaced from the supporting frame, a pair of coacting power-driven stocking feed rolls, an upstanding support located outwardly of the toe end of the form mounting at its upper end the pair of feed rolls for rotation about vertical axes substantially at the level of the form in outward spaced relation to the toe end of the form adapted to pick up stockings as they are manually withdrawn from the form and discharge them in a horizontal direction, a vertically disposed hopper mounted at the outlet end of the feed rolls in elevated position having an open lower discharge end adapted to be located over a bag and deliver stockings thereto, said hopper including a wall portion spaced outwardly of and opposite the discharge end of the feed rolls and adapted to baffle into the hopper stockings discharged horizontally by the feed rolls.

13. Stocking handling and inspecting apparatus comprising a supporting frame, a hosiery inspecting form having a toe end and mounted in fixed position horizontally on and spaced from the

13

supporting frame, a pair of coacting power-driven stocking feed rolls, an upstanding support located outwardly of the toe end of the form mounting at its upper end the pair of feed rolls for rotation about vertical axes substantially at the level of the form in outward spaced relation to the toe end of the form adapted to pick up stockings as they are manually withdrawn from the form and discharge them in a horizontal direction, stocking bagging means located below the discharge end of the feed rolls and guide means for directing stockings discharged horizontally by the feed rolls downwardly into the bagging means.

14. Stocking handling and inspecting apparatus comprising a supporting frame, a hosiery inspecting form having a toe end and mounted in fixed position horizontally on and spaced from the supporting frame, a pair of coacting power-driven stocking feed rolls, a support mounting the pair of feed rolls for rotation about vertical axes substantially at the level of the form in outward spaced relation to the toe end of the form, and a pair of spaced opposing guide members mounted on said support and projecting outwardly in divergent relation beyond the inlet end of the feed rolls towards the form and providing an open-topped guide channel through which stockings manually withdrawn from the form are guided to the feed rolls.

15. Stocking handling and inspecting apparatus comprising a supporting frame, a hosiery inspecting form having a toe end and mounted horizontally in fixed position on and spaced from the supporting frame, a stocking holding supply tray having an open discharge end and having a horizontal bottom portion and spaced opposite side portions adapted to hold a stack of flat horizontally extending stockings with their welt ends at the discharge end of the tray, vertically movable supporting means mounting the supply tray in outward spaced relation to the toe end of the form, means for actuating said supporting means to elevate the supply tray relative to the form as the level of stockings diminishes to maintain the level substantially on the horizontal level of the form, for delivery to the form, a pair of power-driven coacting stocking feed rolls, supporting

14

means mounting the feed rolls independently of the supply tray for rotation about vertical axes in fixed position substantially level with the form in outward spaced relation to the toe end of the form and laterally offset from the form and the supply tray, and stocking receiving means extending below the discharge end of the feed rolls.

16. Stocking handling and inspecting apparatus comprising a supporting frame, a hosiery inspecting form having a toe end and mounted horizontally in fixed position on and spaced from the supporting frame, means for supplying stockings to the form for inspection and for bagging stockings after inspection including an elongated stocking holding supply tray having an open discharge end and having a horizontal bottom portion and spaced opposite side portions adapted to hold a stack of flat horizontally extending stockings with their welt ends at the discharge end of the supply tray, means mounting the supply tray lengthwise of the form for vertical movement relatively to the form in spaced outward relation to the toe end of the form, stocking bagging means mounted outwardly of the toe end of the form independently of the supply tray and including a pair of power-driven coacting stocking feed rolls mounted for rotation about vertical axes on a fixed level substantially on the horizontal level of the form and laterally offset from the form and the supply tray adapted to discharge horizontally stockings received from the form, a baffle spaced outwardly of and opposite the discharge end of the form for deflecting stockings downwardly and means below the feed rolls for delivering the stockings into a bag.

EDWARD R. AMMON.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
968,497	Scholler et al.	Aug. 23, 1910
1,308,944	Gagnon	July 8, 1919
2,116,478	Poeschmann	May 3, 1938