Oct. 12, 1926. 1,603,246

L. ROCKE

METHOD AND APPARATUS FOR ATTACHING SEPARABLE FASTENER TAPES

Filed Nov. 17, 1921 2 Sheets-Sheet 1

Fig. 1.

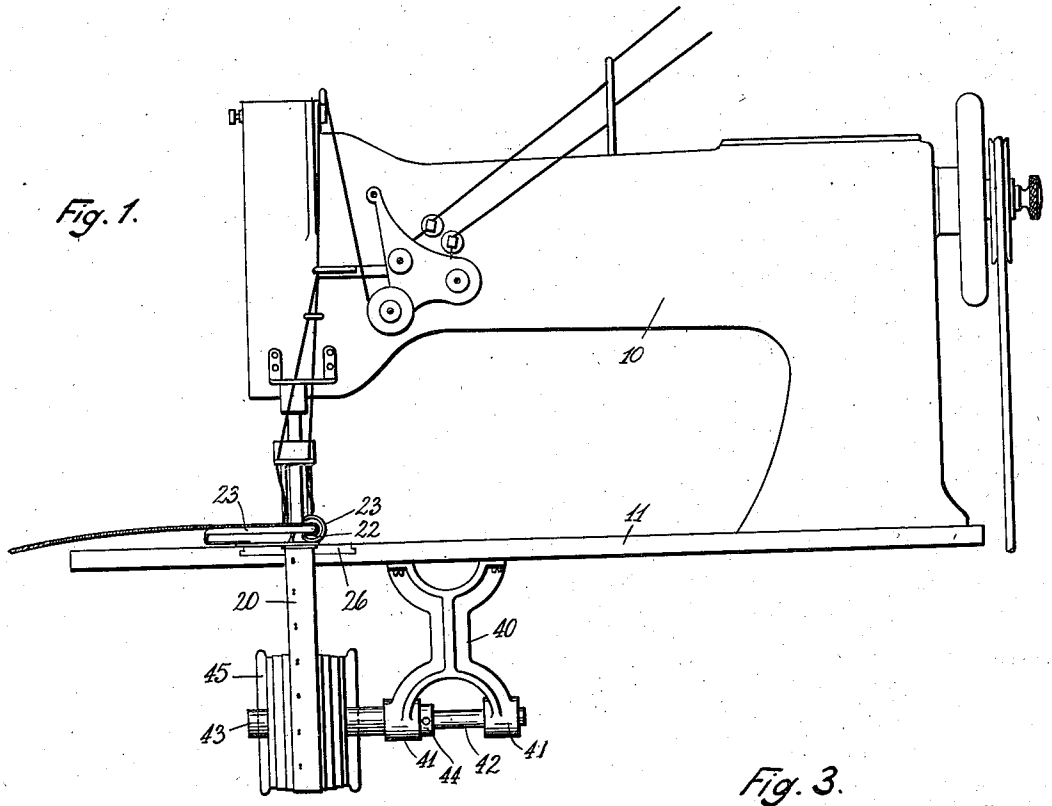
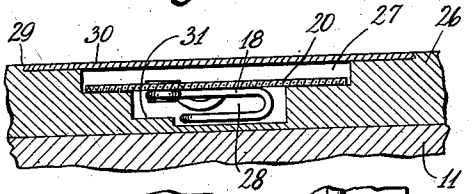


Fig. 3.



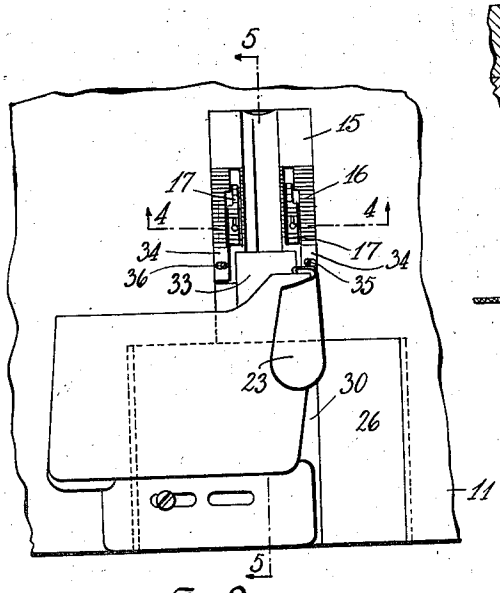


Fig. 2.

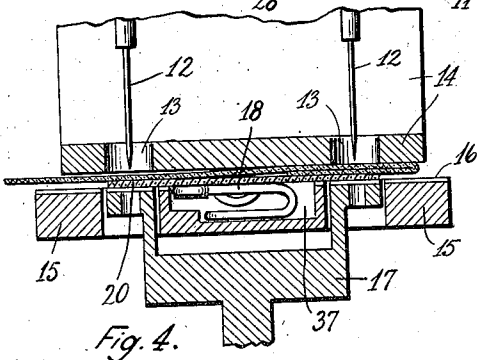


Fig. 4.

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Fig. 5.

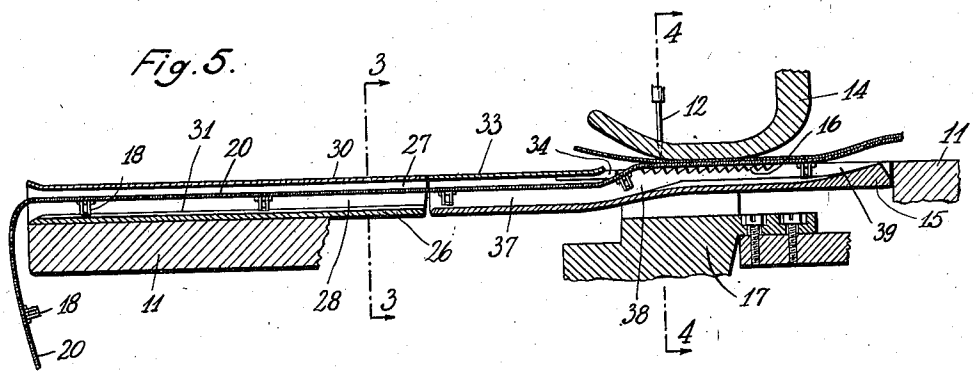


Fig. 6.

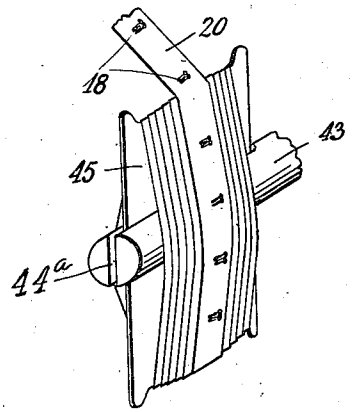
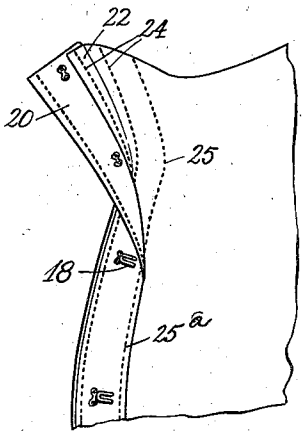


Fig. 7.



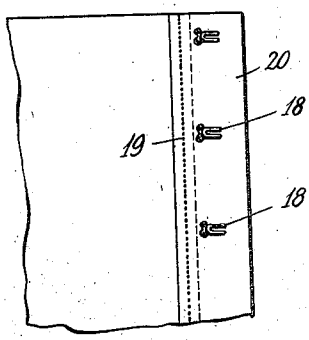


Fig. 8.

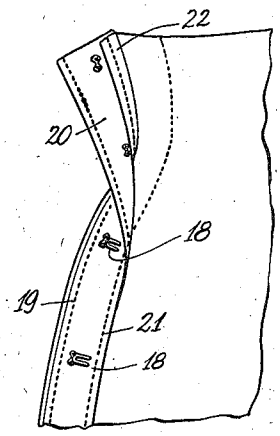


Fig 9.

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UNITED STATES PATENT OFFICE.

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METHOD AND APPARATUS FOR ATTACHING SEPARABLE FASTENER TAPES.

Application filed November 17, 1921. Serial No. 515,853.

This invention has for its principal object the provision of a new and improved method and apparatus for sewing tapes provided with fastening devices upon articles of wearing apparel.

In the garment trade it is the common practice to use a tape upon which is secured at suitable intervals hooks or eyes, or other suitable fastening devices, which tape is sewed by machine directly upon the garment thus obviating the necessity of sewing each fastener separately to the garment.

The method now in use by which these tapes are sewed to the garment involves the necessity for two operations, namely first sewing one edge of the tape to the edge of the garment and then by a separate operation sewing the other edge of the garment thus finishing the operation of securing the tape in place. It is the purpose of this invention to devise a method which will dispense with one of these operations and to fasten both edges of the tape to the garment at the one operation, and to simultaneously hem the edge of the garment.

Another object of the invention is to provide an apparatus which can be readily attached to any standard type of sewing machine to adapt the machine for carrying out the method.

A further object is to provide an apparatus which will effectively guide the tape to and through the sewing machine without requiring any special effort or attention on the part of the operator.

A further object is to provide a convenient attachment for mounting the cardboards upon which the fastener tapes are usually sold upon a rotary support from which they will be automatically fed to the sewing machine.

With these and such further objects in view as will be apparent to those skilled in the art to which this appertains, the invention consists in the method as disclosed in the following specification and as shown in the drawings, a preferred embodiment of an apparatus for carrying out the method being also described and shown.

It is to be understood that changes, variations and modifications in the apparatus for carrying out the method may be resorted to, and that the embodiment of the apparatus herein disclosed is to be construed as illustrative and not limitative, and that such changes, variations and modifications may be resorted to as fall within the scope of the appended claims.

In the drawings forming a portion of this specification,

Figure 1 is a front view of a sewing machine equipped with an embodiment of an apparatus adapted to carry out the improved method.

Figure 2 is a detail plan view of the feed plate of the machine shown in Fig. 1 showing the hemmer attachment in place.

Figure 3 is a sectional detail taken on the line 3—3 of Figure 5.

Figure 4 is a sectional detail taken on the line 4—4 of Figures 2 and 5.

Figure 5 is a sectional detail on the line 5—5 of Figure 2 with the hemmer attachment removed.

Figure 6 is a perspective detail of the reel upon which the tape card is mounted.

Figure 7 is a diagrammatic view of a garment showing a fastener tape secured thereto by my improved method, one of the seams being partly ripped away.

Figure 8 is a diagrammatic view showing a garment upon which the first operation of sewing the tape to the garment by the old method has been completed, and

Figure 9 is a view similar to Fig. 8 showing the completed second operation of the old method.

Referring to the drawings, 10 indicates generally a two needle sewing machine of the usual well known type having the usual work table 11 and a pair of needles 12, which pass through the usual apertures 13 provided in the presser foot 14. The presser foot 14 when the machine is in operation is spring pressed in the common and well known way downwardly in contact with the feed plate 15 which is provided with the usual serrations 16 to engage the fabric passing through the machine. The feed plate 15 is provided with the customary slotted openings through which project the serrated jaws 17 of the usual reciprocating feeder.

Due to the presence of the presser foot between the needles 12 and the pressure between the presser foot and feed plate it has heretofore been impossible to feed a tape upon which a number of fastening devices were secured under the presser foot, so that both sides of the tape could be sewed simultaneously as it is obvious that the fasten-

ers could not pass between the presser foot and feed plate. Therefore it has been the common practice to sew these fastener tapes upon corsets, brassières and other garments by two separate operations, in a single needle machine. The first operation by the old method as indicated in Fig. 8 consisted in placing one edge of the tape 20 adjacent the edge of the garment with the fasteners 18 facing upwardly to one side of the presser foot and then passing the garment and tape through the machine thus sewing one edge of the tape to the garment, as shown by the stitching 19. The tape then is folded over on the garment as shown in Fig. 9 and with the fasteners facing upwardly and to one side of the presser foot, the row of stitching 21 is then sewed thus completing the operation. The foregoing method of securing the tape requires the utmost amount of care and diligence on the part of the operator as the stitching must be run as evenly as possible, the overlapping edges of the tape and garment must be carefully guided by hand to insure an even overlapping of the pieces and the seam obviously can not be run too close to the fasteners.

In sewing the tape to the garment by my improved method, it is only necessary to pass the garment through the machine a single time thus avoiding one of the operations set forth above and as I also provide suitable guiding means for the tape I overcome the necessity for the operator exerting such a great degree of care and attention whereby the output of a single operator not only is greatly increased, but the tape is fastened more securely to the garment as will be noted by referring to Fig. 7 of the drawing. As shown in this figure, the hem 22 of the garment, which is turned over by any suitable hemming attachment such as indicated by the numeral 23 in Figs. 1 and 2 as the goods are fed to the needle, is fastened down by the stitching 24 which passes through two thicknesses of the garment and also through the adjacent edge of the tape 20 while the other edge of the tape is being fastened simultaneously by the row of stitching 25.

A suitable embodiment of an apparatus for carrying out my improved method may as shown in Figs. 1 to 6 consist of the following construction and arrangement of parts.

The work table of the machine is preferably slotted out to receive a channel plate 26, the top of which is flush with the top of the table 11. The plate 26 is slotted to provide a guide way 27 for the tape 20 and midway between the edges of the guide way is slotted to a greater depth to provide a channel 28 of sufficient depth to permit the free passage of the fasteners 18 therethrough. The channel plate 26 is further slotted to a slight distance below its top to provide a slideway 29 in which is received a cover plate 30 adapted to completely cover the guideway 27 and channel 28. One side of the channel is preferably provided with a ledge 31 extending the full length of the channel and adapted to form an additional guiding means for the lower face of the fasteners as clearly shown in Fig. 3.

The channel plate 26 is placed into the table with its inner edge in abutment with the feed plate 15 which is provided at the end nearest the channel plate with a guideway and channel similar to and in alignment with the guideway and channel in the channel plate. A cover plate 33 covers this portion of the feed plate and terminates a short distance from the edge of the channel plate. At each side of the feed plate adjacent the ends of the cover plate 33 an adjustable guide block 34 is secured to the feed plate as by the screws 35 which pass through elongated slots 36 in the guide block to permit the blocks to be adjusted to compensate for different widths of tape. Rearwardly of the cover plate 33 the channel 37 is curved upwardly as at 38 to bring the tape above the top of the feed plate where it will be engaged by the serrated jaws 17 of the feeder and urged beneath the presser foot 14. After the tape has passed the presser foot it encounters a second curvature 39 of the channel 37 and is thereby brought up to the top of the work table 11.

Suitable means for holding the tape supply may be provided in order that the tape may be fed automatically to the machine and as shown a bracket 40 is bolted to the under side of the work table 10, said bracket being provided at its lower end with suitably spaced bearings 41 in which is rotatably journaled the reduced end 42 of a shaft 43. Any desirable means such as the collar 44 may be provided to hold the shaft against longitudinal displacement. The shaft 43 is slotted as at 44^a to provide a kerf into which the tape card 45 may be slid and frictionally retained.

The method is carried out with the foregoing apparatus as follows, the tape is introduced into the channel plate 26 with the edges of the tape between the sides of the guideway 27 and the fasteners 18 facing downwardly and in the channel 28. From the channel plate the end of the tape is led under the cover plate 33 and over the serrations of the feed plate. The operator then introduces the edge of the garment into the hemmer 23 which turns the hem 22, the presser foot 14 is then lowered upon the goods which occupy the position shown clearly in Fig. 4. The sewing machine is then started and the goods passed through

the machine. The tape is accurately guided by the guideway 27 and the guide blocks 34 and needs no special attention on the part of the operator, the pull of the feeding device unwinding the tape from the card 45 as it is fed through the machine. As will be obvious from an inspection of Fig. 4 both sides of the tape and the hem of the garment is sewed by the needles 12 during its passage through the machine, the channel 28 providing a free passage for the tape beneath the hemmer while the channel 37 allows the free passage of the fasteners underneath the presser foot.

It is the usual practice by the old methods to measure and cut off the length of tape required for each garment before starting the operation of sewing. This is unnecessary with my improved method in which the tape supply being fed automatically to the machine it is not necessary to measure the tape beforehand, but the tape may simply be cut off when the desired amount is sewed on to the garment. In sewing a tape containing eyes to the garment it is the usual practice to sew only one side of the tape which according to my method is fed through the machine with the eyes downwardly directly under the presser foot. Therefore for sewing on an eye tape it will be obvious that my method may be carried out in a single needle machine.

It will be apparent that the improved method might be carried out by various different forms of apparatus and that various methods for holding the tape supply could be resorted to.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. In a sewing machine having a pair of spaced needles, a presser foot and a feed member, means adapted to permit the passage of a tape provided with projecting separable fasteners between said presser foot and feed member comprising a channel in and intermediate the sides of said feed member.

2. In a sewing machine, the combination of a feed plate, and means for guiding a fastener bearing tape to said feed plate, comprising a guide member arranged in advance of the feed plate, and slotted longitudinally to provide oppositely disposed guide ways to support the lateral margins of said tape, and slotted to a greater depth midway between said guide ways to form a channel permitting the free passage of fasteners secured to said tape.

3. In a sewing machine, the combination of a feed plate having one end slotted to provide oppositely disposed guide ways to support the lateral margins of a fastener bearing tape, and midway between said guide ways slotted to a greater depth to form a channel permitting the free passage of fasteners secured to said tape, and a guide member arranged in advance of said feed plate, and slotted longitudinally to form oppositely disposed guideways for said tape and an intermediate channel for said fasteners similar to, and in alignment with, the guide ways and channel of said end of the feed plate.

4. In a sewing machine, a presser foot, a feed plate, a feeding device projecting through the top thereof, said feed plate provided with a slotted guideway to engage the side edges of a tape having separable fastening devices secured thereto and said feed plate provided with a channel intermediate the edges of said guide way to permit the passage of the fasteners beneath said presser foot, said guide way provided with means adjacent said presser foot to guide said tape upwardly to and over said feeding device.

5. A sewing machine having a presser foot, a feed plate provided with a slotted guideway to engage the side edges of a tape having separable fastening devices secured thereto, said guideway terminating adjacent said presser foot, serrated feeding jaws adjacent to and in alignment with the end of said guideway to engage and feed both edges of said tape, and said feed plate provided with a channel extending between said feeding jaws to permit the free unobstructed passage of the fasteners beneath said presser foot.

6. A sewing machine having a presser foot, a feed plate provided with a slotted guideway to engage the side edges of a tape having separable fastening devices secured thereto, said guideway curving upwardly and terminating adjacent said presser foot, serrated feeding jaws adjacent to and in alignment with the end of said guideway to engage and feed both edges of said tape, and said feed plate provided with a channel extending between said feeding jaws to permit the free unobstructed passage of the fasteners beneath said presser foot.

7. A sewing machine having a pair of spaced needles, spaced feeding jaws, a presser foot adapted to contact with said jaws, a feed plate having a guideway adapted to engage and guide the edges of a tape provided with separable fastening devices, said guideway curving upwardly and terminating adjacent said feeding jaws and said feed plate provided with a channel intermediate the sides of said guideway to permit the unobstructed passage of said fasteners between said needles and beneath said presser foot.

8. In a sewing machine a feed plate slotted longitudinally at one end, to provide guide ways to support the lateral margins of a fastener bearing tape, and intermediate of said guide ways slotted to a greater depth to form a channel permitting the free pas-

sage of fasteners secured to said tape, said end of the feed plate being also provided with a cover plate.

9. In a fastener tape sewing machine, a feed plate, and a channel plate having its rear end in abutment with the forward end of said feed plate, said channel plate and the forward end of said feed plate being slotted longitudinally to form a channel in each of said plates for the free passage of fasteners secured to said tape, the channel of said channel plate being similar to and in uninterrupted connection with the channel of the feed plate.

10. In a sewing machine having a feed plate, a presser foot adapted to contact therewith and a channel plate adjacent said feed plate, means to permit the free unobstructed passage of a tape having separable fastening devices secured thereto between said presser foot and feed plate, said means comprising a channel in said feed plate, and means to guide said tape to the feed plate comprising a channel in alignment with said first mentioned channel located below the top of said channel plate and a sliding plate adapted to cover said channel.

11. The combination with a sewing machine of means adapted to guide a tape provided with projecting separable fasteners between the presser foot and feed of the machine, comprising a channel in the feed intermediate the sides thereof, whereby the feed will engage both side portions of the tape and permit the unobstructed passage of the fasteners through the machine.

12. In a sewing machine having a pair of spaced needles, a presser foot, a feed, guiding means adjacent said feed adapted to engage both sides of a tape provided with projecting separable fasteners, and said feed provided with a channel adapted to permit the unobstructed passage of said fasteners between the presser foot and feed, said channel being intermediate the sides of said feed whereby both side portions of the tape will be engaged by the feed adjacent the needles and the free and unobstructed passage of the fasteners is permitted through said channel between the presser foot and feed.

13. In a sewing machine having a work table, a pair of spaced needles, a presser foot, a feed plate, a feed projecting through said feed plate, a channel plate adjacent said feed plate, said channel plate, feed plate and feed each provided with a channel to permit the unobstructed passage of tape provided with projecting separable fasteners beneath the work table and to the needles of the machine, said channel being located intermediate said needles.

14. In a sewing machine having a work table, a pair of spaced needles, a presser foot, a feed plate, a feed projecting through said feed plate, a channel plate adjacent said feed plate, said channel plate and feed plate provided with guiding means to engage both sides of a tape provided with projecting separable fasteners and said channel plate, feed plate and feed each provided with a channel intermediate said guiding means to permit the unobstructed passage of the fasteners through said machine.

15. In a sewing machine having a work table, a presser foot and a feed, means to permit the passage of a tape provided with projecting separable fasteners between said presser foot and feed and beneath said table comprising guiding means and a channel, said guiding means and channel located beneath said table, and said channel extending rearwardly beyond the rear portions of said presser foot and feed.

16. In a sewing machine having a work table, a pair of spaced needles, a presser foot, a feed plate, a feed projecting through said feed plate, a channel plate adjacent said feed plate, said channel plate and feed plate provided with guiding means to engage both sides of a tape provided with projecting separable fasteners and said channel plate, feed plate and feed each provided with a channel intermediate said guiding means to permit the unobstructed passage of the fasteners through said machine, said channel and guiding means located beneath the top of said table.

17. In a sewing machine having a work table, a pair of spaced needles, a presser foot, a feed plate, a feed projecting through said feed plate, a channel plate adjacent said feed plate, said channel plate and feed plate provided with guiding means to engage both sides of a tape provided with projecting separable fasteners and said channel plate, feed plate and feed each provided with a channel intermediate said guiding means to permit the unobstructed passage of the fasteners through said machine and a portion of said guiding means adjacent said needle being adjustable.

18. The method of sewing a tape provided with projecting metallic separable fastening devices to a garment in a sewing machine which consists in folding over the edge of the garment, simultaneously feeding the tape and garment through the machine, engaging the side edges of the tape to guide it in a straight line through the machine and simultaneously and progressively sewing both edges of the tape to the garment and the hem while maintaining a free unobstructed passage for the fasteners in their entire passage through the machine.

19. In a fastener tape sewing machine, a feed plate, a presser foot adapted to contact therewith, and a channel plate in endwise abutment with said feed plate, and slotted longitudinally to provide oppositely disposed guide ways to support the lateral mar-

gins of a tape, and midway between the edges of said guide ways slotted to a greater depth to provide a channel to permit the free passage of fasteners therethrough, and means to permit the free unobstructed passage of said tape between said presser foot and feed plate, said means comprising a channel in said feed plate intermediate the sides of and beneath said presser foot.

20. The combination with a multiple needle sewing machine having spaced apart needles; a presser foot having a needle hole for each needle; a goods and fastener-web feeding mechanism comprising a pair of laterally spaced apart feed dogs of a fastener-web and fastener guiding device having a guide way between said feed dogs for passage between the same of fasteners on the web; the said device having a serrated surface outwardly of each feed dog and a serrated surface inwardly of each feed dog; and the presser foot having a width spanning the guide way and the thereto adjacent serrated surfaces and feed dogs.

21. The combination with a multiple needle sewing machine having spaced apart needles; a presser foot having a needle hole for each needle; a goods and fastener-web feeding mechanism comprising a pair of laterally spaced apart feed dogs of a fastener-web and fastener guiding device having a guide way between said feed dogs for passage between the same of fasteners on the web; the said device having a serrated surface outwardly of each feed dog and a serrated surface inwardly of each feed dog; and the presser foot having a width spanning the guide way and the thereto adjacent serrated surfaces and feed dogs, the bottom of the rear end of said guide way having an upwardly slanting surface.

22. In a fastener tape sewing machine, a work table, a feed plate, a presser foot adapted to contact therewith, means to permit the free unobstructed passage of a tape having fasteners secured thereto between said presser foot and feed plate, said means comprising a channel in said feed plate, and means to guide said tape to the feed plate comprising a channel plate in endwise abutment with said feed plate and slotted longitudinally to provide oppositely disposed guide ways to support the lateral margins of a tape, and midway between the edges of said guide ways slotted to a greater depth to provide a channel in alignment with the first named channel, said guide ways and channel being located below the level of the top of said feed plate, and work table.

23. The combination with a bed plate of a sewing machine having a plurality of spaced apart needles of a front fastener web and fastener guide provided with a guide-way extending in the direction of the feed of the machine and open at its front and slidable into and out of place in the bed plate and at the rear of said front guide a rear guide having a guide way alined with the guide way in the front guide and also having at each side of its guide way a feed dog and thereto adjacent, serrated surfaces, the guide way of the rear guide being open at the rear of the presser foot; and a presser foot cooperating with said feed dogs.

24. The combination with a bed plate of a sewing machine having a plurality of spaced apart needles of a front fastener-web and fastener guide provided with a guide way extending in the direction of the feed of the machine and open at its front and slidable into and out of place in the bed plate and at the rear of said front guide, a rear guide having a guide way alined with the guide way in the front guide and also having at each side of its guide way a feed dog and thereto adjacent, serrated surfaces, the guide way of the rear guide being open at the rear of the presser foot; and a presser foot cooperating with said feed dogs, the feed dogs being provided with needle point receiving apertures and the rear guide being provided with an elongated feed dog receiving slot longer than the feed dog mounted in the slot.

Signed at New York, in the county of New York and State of New York this 10th day of November A. D. 1921.

LOUIS ROCKE.