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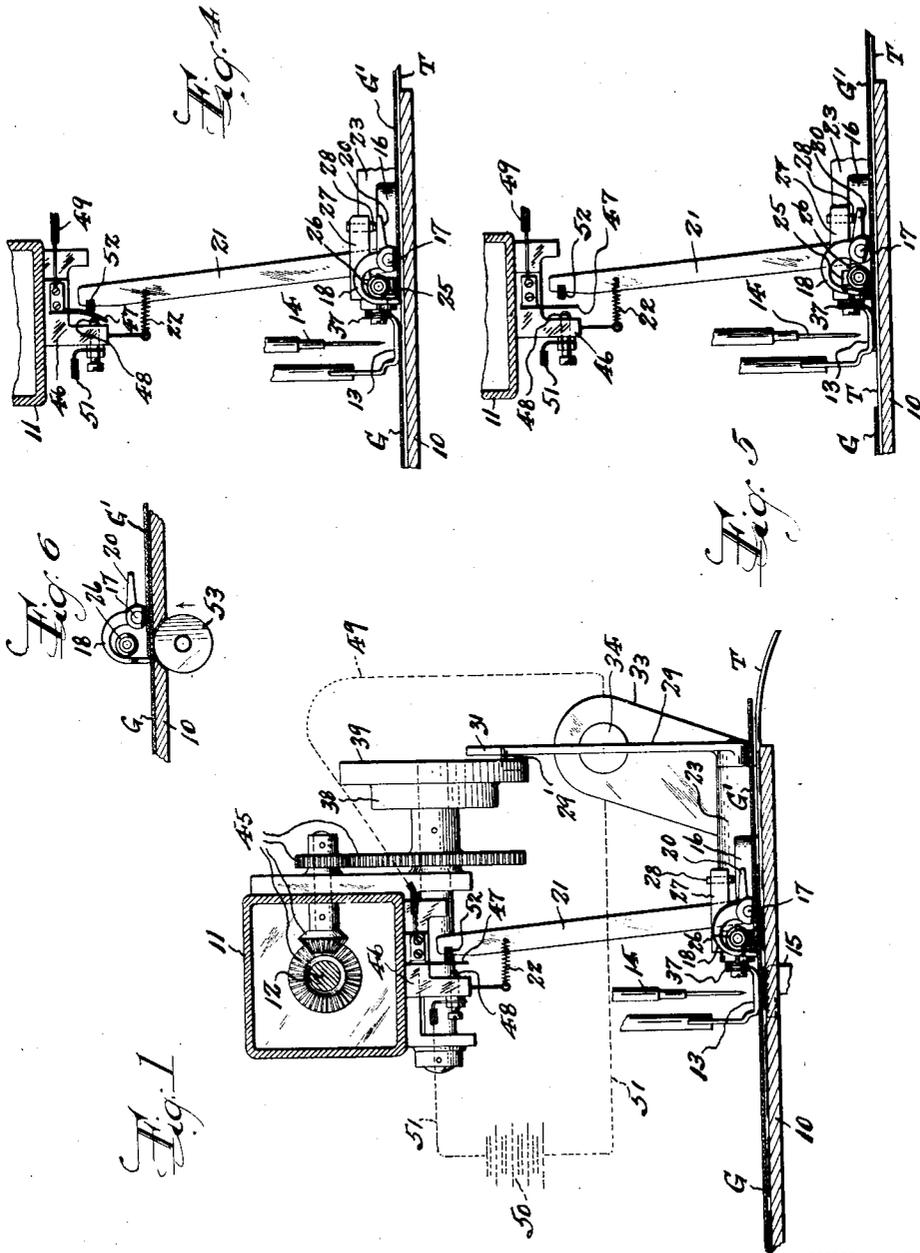
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1,724,681

AUTOMATIC WORK STARTING MECHANISM FOR SEWING MACHINES

Filed Aug. 18, 1926

4 Sheets-Sheet 1



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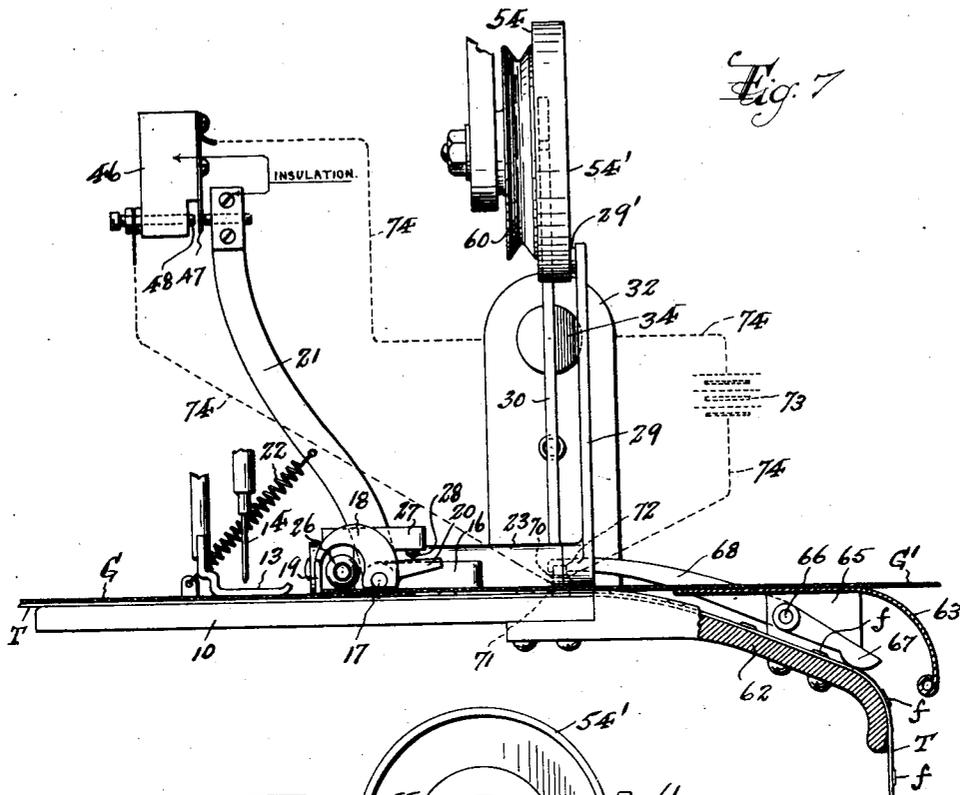


Fig. 7

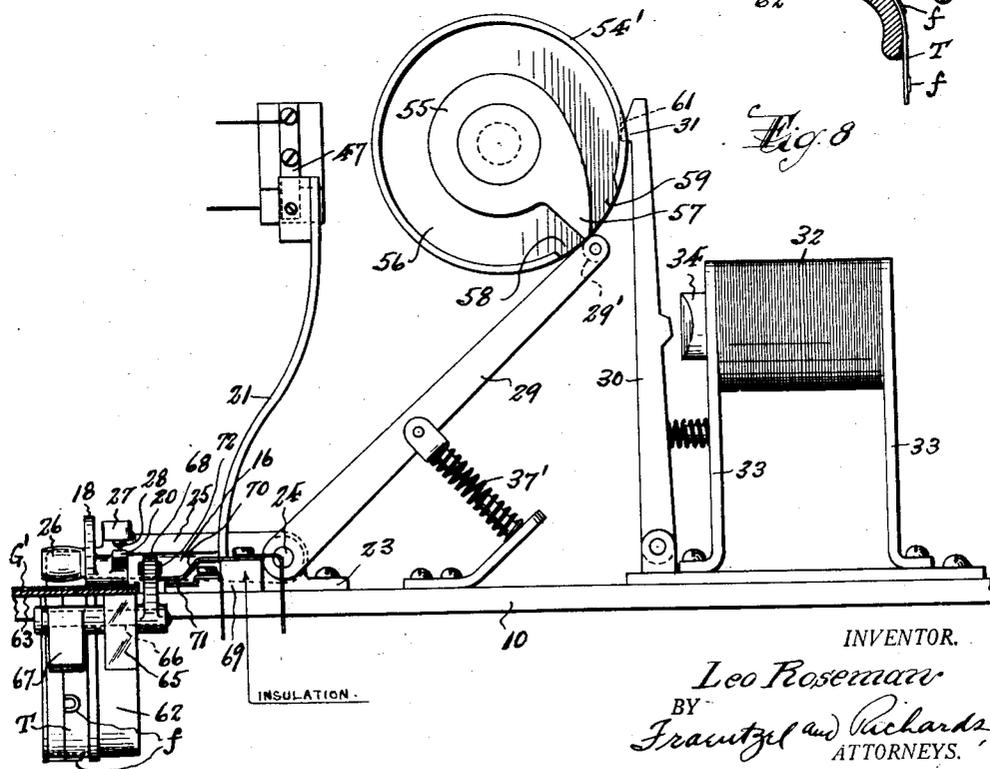


Fig. 8

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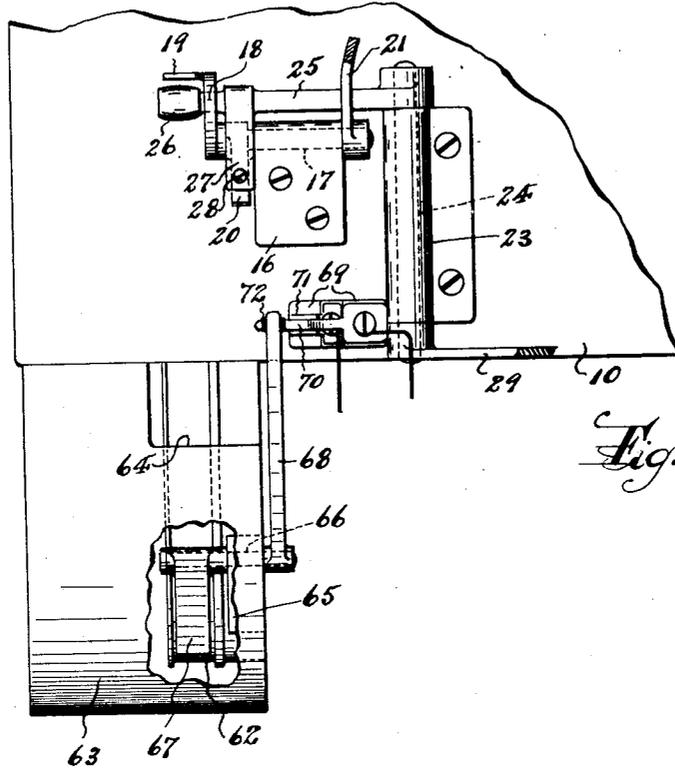


Fig. 9

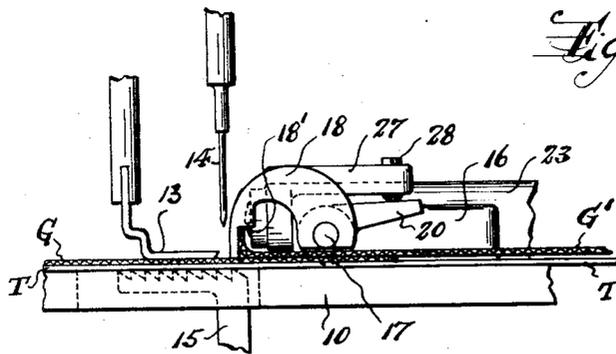


Fig. 10

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UNITED STATES PATENT OFFICE.

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AUTOMATIC WORK-STARTING MECHANISM FOR SEWING MACHINES.

Application filed August 18, 1926. Serial No. 129,880.

This invention relates, generally, to improvements in sewing machines; and the invention has reference, more particularly, to a novel construction of means adapted to automatically start the movement of work to the sewing mechanism of a sewing machine at a desired time and in accordance with predetermined conditions.

In the garment manufacturing industry, as well as in other industries wherein materials are assembled by sewing machine operations, it frequently happens that one class of material is fed continuously through the machine and sewn to successively fed units of other material; and in such operation it is frequently necessary to so feed the units of material that the continuously fed material will be assembled therewith in a certain predetermined relation thereto. For example, when sewing hook or eye fastener tape to the meeting edges of garments, the fastener tape is continuously fed through the machine, and the garment units successively fed with the continuously moving tape past the sewing mechanism, to thus sew the latter to the former. Under such circumstances, it is necessary that each garment unit be fed into engagement with the sewing mechanism at the proper moment to assure the desired predetermined relation and position of the tape and its spaced fasteners to the garment meeting edge and between the top and bottom edges of the garment. To carry on such operations with a minimum amount of waste and so as to avoid errors resulting in the spoiling of work, requires considerable skill upon the part of the operator, and consequently involves the employment of relatively highly paid workers. Even with skilled operators, errors are frequently made resulting in loss of time and material, and adding to the expense of production. It is, therefore, the principal object of this invention to provide a means for automatically starting each successive unit of work to the sewing mechanism at the proper moment following the sewing operation on a preceding unit, to the end that accuracy in assembling materials in desired predetermined relations without waste or loss of time, and without necessity for the employment of especially skilled labor, may be attained, thereby increasing production and lowering the cost of the finished work.

Other objects of this invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the same.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a fragmentary transverse section through a sewing machine head and sewing table, showing in relation thereto, one form of the novel work starting means which is the subject of this invention; Figure 2 is a side elevation of the same viewed at right angles to the section of Figure 1; and Figure 3 is a fragmentary plan view, on an enlarged scale, of a portion of said work starting means; Figures 4 and 5 are fragmentary views similar to that of Figure 1, showing phases of the operation of said work starting means.

Figure 6 is a detail view, showing a slightly modified form of said work starting means.

Figure 7 is a fragmentary transverse end elevation, having portions in section, of a modified form and arrangement of the work starting means, which embodies, however, the general principles of this invention; Figure 8 is a side elevation of the same; and Figure 9 is a fragmentary plan view of the same.

Figure 10 is a detail view showing a still further modification of certain features of the work starting means.

Similar characters of reference are employed in all of the hereinabove described views, to indicate corresponding parts.

Referring now to said drawings, the reference character 10 indicates the sewing table or base of any suitable or desired type of sewing machine, above which is spaced the sewing machine head 11, through which extends the main shaft 12 by which the sewing mechanism per se is actuated. Said sewing mechanism may include the presser foot 13, sewing needle 14 and feed dog 15 usual to sewing machines, or any other desired known type and arrangement of sewing mechanism elements.

The novel work starting means is mounted on the sewing table or base 10 in advance of the sewing mechanism, and, in the form and arrangement thereof shown in Figures 1 to 5 inclusive, comprises a releaseable stop means, controlling devices for automatically operating said stop means, and an auxiliary work advancing or propelling means. Secured on said sewing table or base 10 is a

bearing block 16 in which is journaled a rock-shaft 17, on one end of which is fixed a stop-finger 18, the body of which is upwardly arched, with its free end directed downwardly toward the surface of the sewing table or base 10; said free end being preferably provided with a lateral extension 19 which is alined with the sewing mechanism so as to extend transversely across the path of movement of the work thereto. The hub of said stop-finger 18 is provided with a rearwardly projecting tail-piece 20 for purposes subsequently set forth. Fixed to the opposite end of said rock-shaft 17 is an upwardly extending lever-arm 21; a suitably anchored pull spring 22 being connected with said lever-arm 21 to normally swing the same in a direction to move the free end of the stop-finger 18 toward the sewing table or base 10.

Mounted on said sewing table or base 10, in transverse relation thereto, is a bearing member 23 in which is journaled a rock-shaft 24. Fixed on one end of said rock-shaft 24 is a presser-arm 25, which extends forwardly beneath the arched stop-finger 18, so that its free end overhangs the path of movement of the material fed to the sewing mechanism of the machine. Rotatably mounted on the free end of said presser-arm 25 is an anti-friction roller 26 of suitable shape. Said presser-arm 25 is further provided with a lateral trip-arm which overhangs the tail-piece 20 of said stop-finger 18; the free end portion of said trip-arm 27 having adjustably related thereto a trip-stud 28 to engage said tail-piece 20 and depress the same to thereby swing upward or release the stop-finger 18 at proper times. Fixed to the opposite end of said rock-shaft 24 is a control lever 29 for producing properly timed movements of said presser-arm 25. Said control lever 29 is normally held inactive by a pivoted detent arm 30, the nosing 31 of which is normally engaged over the extremity of said control lever, said extremity being suitably shaped to receive such engagement. Means are provided for retracting said detent arm 30 to at proper times release said control lever 29 for actuation. This means, in one form, as illustrated in the drawings, comprises an electro-magnet 32, suitably supported by brackets 33 from the base 10, and so that its core 34 is opposed to the detent arm 30, which functions in connection therewith as an armature. A spring means, such, for example, as the leaf-spring 35 which is fixed on an adjacent bracket 33, by its tension serves to yieldably hold the detent arm in operative position relative to the control lever; such position being determined by a suitably supported adjustable stop-screw 36, as shown in Figure 2 of the drawings. Another spring means 37 is provided in connection with the presser-arm 25 and its rock shaft 24 and control lever 29, the tension of which tends to move said presser-arm 25 toward the sewing table or base 10 and the control lever 29 into engagement with an actuating means when the same is released from the restraint of said detent arm 30.

The means for actuating said control arm 29 comprises a cam wheel 38 provided with a peripheral flange 39 and an internal cam-member 40, the main portion of which is concentric to said flange 39 so as to provide a raceway 41 intermediate the former and the latter. Said cam-member is provided with an eccentric cam nosing 42 which projects laterally outward to the periphery of said cam-wheel 38. Said flange 39 is discontinuous adjacent to said cam nosing 42 to provide an entrance opening 43 on one side of the latter leading into said raceway 41 and an exit opening 44 on the opposite side thereof leading out of said raceway. Said cam-wheel 38 may be driven from the main shaft 12 of the sewing machine, and at a desired speed ratio relative thereto, by suitable intermediate transmission means, such, for example, as the transmission gearing 45 shown in Figure 1.

The lever arm 21 associated with said stop-finger 18 operates a suitable circuit make and break device adapted to control the delivery of energizing electric current at proper times to the electro-magnet 32. Said make and break device comprises a suitable support 46, preferably of insulation material, which is attached to the sewing machine head 11 so as to be disposed adjacent to the free end of said lever arm 21. Mounted on said support is a resilient or flexible contact finger or brush 47, the free end of which is normally spaced from a stationary contact point 48 also carried by said support 46. Said finger or brush 47 is connected by suitable circuit connections, indicated at 49 by dotted lines in Figure 1, with one pole of said electro-magnet 32, while the contact point 48 is connected, through a suitable source of electrical energy, such as a battery 50, by suitable circuit connections, indicated at 51 by dotted lines in Figure 1, with the opposite pole of said electro-magnet. The free end of said lever arm 21 normally engages the contact finger or brush 47; and, if desired, said lever arm may be provided with an abutment 52 of insulation material.

To illustrate the manner in which the novel work starting means functions, it will be assumed that the same is associated with a sewing machine arranged to assemble hook or eye fastener tape with the meeting edge portions of garment units. Such fastener tape is usually fed from a roll to pass continuously through the sewing machine, and the garment units are successively fed in proper relation to the continuously moving

fastener tape, so that the latter will be sewn to the former and thus operatively assembled therewith. In carrying on such operations, it is essential that each succeeding garment unit be started at a proper time toward the sewing mechanism of the machine, so that the tape will be so related to the garment edge as to assure the proper positioning of the spaced fastener elements carried by the tape, and especially so that the uppermost fastener element will be properly spaced or positioned relative to the upper end of the garment unit. Assuming, for example, that the fastener elements of the tape are spaced one inch apart, that the sewing mechanism produces thirty stitches to the inch, and that it is desired to space the uppermost fastener element from the top edge of the garment at a distance of one-half inch. Under such circumstances, the cam-wheel 38 is so geared relative to the main shaft 12 as to make one revolution to thirty revolutions of the latter. The fastener tape, indicated by the reference character T in the drawings is introduced beneath the presser foot 13 of the sewing mechanism, and the initial garment unit G is applied to or over the tape so that its upper edge is properly spaced one-half inch above a fastener element, thus making ready to start sewing operations. The initial garment unit G is passed under the stop-finger 18, so that the free end of the latter rides on the garment unit material. When the stop-finger is so positioned the lever-arm 21 will be disposed in a normal initial position, as shown in Figure 1, and the make and break device including the contact finger 41 and contact point 48 will be in normal circuit interrupting position. The sewing machine being now put in operation, the tape T and initial garment unit G will be fed together past the sewing mechanism which operates to sew the same together. Before the initial garment unit G passes entirely through the sewing mechanism, the operator inserts a succeeding garment unit G' over the initial garment unit G, with its upper end positioned and stopped against the stop-finger 18, as shown in Figure 1 of the drawings. The stop-finger 18 holds said succeeding garment unit G' against forward movement or shifting, while the initial garment unit G and tape T move on through the sewing mechanism. As the rearward end of the initial garment unit G passes from beneath the stop-finger 18, the latter will move or swing downward for a distance equivalent to the thickness of the garment unit. This slight downward swinging movement of the stop-finger 18 is transmitted through the rock-shaft 17 to the lever arm 21, thereby producing a forward swinging movement of the latter to thus cause its upper end to press forward the resilient contact finger 47 into circuit closing engagement with the contact point 48 (as shown in Figure 4). The electric circuit serving the electro-magnet 32 being thus closed, the latter is energized, and forthwith exerts a magnetic attraction upon the detent arm 30 operating to retract the same from restraining relation to the control arm 29. The control lever being thus freed, it will be moved by the tension of the spring means 37, so that an anti-friction roller 29' which projects laterally from the end of said control lever, will move into engagement with the external periphery of said cam-wheel flange 39. During these operations, the succeeding garment unit G' is still restrained from forward movement or shifting by its engagement with the lowered stop-finger 18. Since it is desired not to release and initiate the succeeding garment unit G' for forward movement until the tape T is so positioned relative thereto that a fastener element is positioned the desired one-half inch distant from the leading or upper edge of said succeeding garment unit G', the setting of the cam-wheel 38 is such, and its ratio of rotation relative to the operative feeding or stitch producing movement of the sewing mechanism, that the control arm 29 is held against operative movement by the riding of its roller 29' on the external periphery of said cam-wheel flange 39 until the tape T has progressed far enough to bring a fastener element into such desired relation. By the time a fastener element of the tape is so positioned, however, the cam-wheel 38 has rotated a sufficient distance to bring the entrance opening 43 of the raceway 41 opposite the roller 29', so that the latter drops into said raceway, and thereby permits an operative swinging movement of said control arm 29, which is transmitted through the rock-shaft 24 to the presser-arm 25 to cause a downward swinging movement of the latter. Such movement of the presser-arm 25 depresses its roller 26 into engagement with the succeeding garment unit G', to thereby frictionally engage the latter with the underlying tape T for accompanying forward movement therewith. Simultaneously with the depressing of the roller 26, the downward movement of the presser-arm 25 also carries downward the trip-arm 27, so that its stud 28 moves into depressing engagement with the tail-piece 20 of the stop-finger 18, to thereby immediately swing upward the latter out of the path of the forwardly moving succeeding garment unit G'. The upward swinging movement of the stop-finger 18 rocks the rock-shaft 17 to swing back the lever arm 21, thereby permitting the separation of the contact finger 47 and contact point 48, so that the circuit serving the electro-magnet 32 is interrupted, and the latter de-energized so as to release the detent arm 30 which resumes normal initial posi-

tion. In the meantime, the cam-wheel 38 continues its rotation so that the roller 29' of the control arm 29 rides around the raceway 41, thus keeping the roller 26 in operative engagement with the garment G' until it passes beneath the presser-foot 13 of the sewing mechanism, by which time the cam-nosing 42 reaches the roller 29' and guides the same outwardly through the exit opening 44, while at the same time swinging back the control arm 29 to normal initial position and returned to normal engagement with the detent arm 30. This latter movement of the control arm 29 raises the presser-arm 25, its roller 26 and trip arm 27 back to normal initial positions, thus releasing the stop-finger 18 so that the same moves down to engagement with the garment G', and in position so that the operator may insert another garment unit into stopped relation thereto ready for a repetition of the above described automatic starting operations.

In some classes of work it may be desirable to provide auxiliary feeding means to cooperate with the depressed roller 26 of the presser-arm 25. In Figure 6 I have shown such auxiliary feeding means in the form of a roller 53 which may be suitably rotated or driven by suitable connection with the transmission means of the sewing machine. This roller 53 is arranged in the sewing table or base 10 so as to be located beneath the goods fed over the same to the sewing mechanism, and so as to be aligned beneath the roller 26 of the presser arm 25.

It will be understood, that the ratio of rotation of the cam-wheel 38 relative to the operation of the sewing mechanism may be more or less varied to correspond to the desired timing of the starting movement of the work to the sewing mechanism, and to correspond to the desired relation of assembled parts of the work to be attained.

In Figures 7 to 9 inclusive, I have shown a somewhat modified construction of my novel automatic work starting means, which involves more especially an arrangement of actuating means for controlling the starting movement of the work in connection with continuously fed hook or eye fastener tape. In this construction, the general arrangement of the stop-finger 18 with its lever arm 21 operating a make and break device including the flexible contact finger 47 and stationary contact point 48, together with the presser-arm 25 and its roller 26 and control arm 29, is substantially the same as already above described, as will be apparent from the application to the detail parts thereof of corresponding reference characters. The modified structure, however, includes a secondary circuit make and break means in series with the make and break devices 47 and 48, which control the circuit serving the electro-magnet 32; and further

provides a modified arrangement and operation of the cam-wheel device for actuating the control arm 29. The cam-wheel device is suitably supported for intermittent rotation, and comprises a cam-wheel 54 provided with a peripheral flange 54' and an internal cam-member 55, the main portion of which is concentric to said flange 54' so as to provide a raceway 56 intermediate the former and the latter. Said cam-member is provided with an eccentric cam-nosing 57 which projects laterally outward to the periphery of said cam-wheel 54. Said flange 54' is discontinuous adjacent to said cam-nosing 57 to provide an entrance opening 58 on one side of the latter leading into said raceway 56 and an exit opening 59 on the opposite side thereof leading out of said raceway. Said cam-wheel 54 is provided with a belt-pulley 60 by means of which it may be rotated at proper times from any suitable source of power. Formed in the circumferential face of said cam-wheel 54 is a notch 61. The detent arm 30 and its actuating electro-magnet 32 are so positioned relative to said cam-wheel 54 that the nosing 31 of said detent arm 30 normally engages said notch 61 to normally restrain said cam-wheel from rotation, so that the same is held initially inactive. The control arm 29 is so disposed that its roller 29' is opposed to the peripheral flange 54' of said cam-wheel 54. A modified form of pressure spring which cooperates with said control arm 29 and the parts associated therewith is shown in Figure 8, the same being indicated by the reference character 37'.

Connected with said sewing table or base 10 is a tape guide plate 62, above which is a garment supporting plate 63, the latter being cut away, as at 64, to permit the tape traveling through the guide plate 62 to pass beneath and into engagement with the garment as such elements move toward the sewing mechanism of the machine. Situated between said guide plate 62 and supporting plate 63, and off-set from the path of movement of a fastener tape T over said guide-plate, is a suitably fixed bearing block 65 in which is transversely journaled a fulcrum spindle 66. Secured to one end of said spindle 66 is a lever finger 67, the free end of which rides in contact with a fastener tape T passing over said guide plate 62, and so as to be operatively engaged by the fasteners f carried by said tape. Fixed on the opposite end of said spindle 66 is a lever arm 68 which extends inwardly over the sewing table or base 10. The lever arm 68 operates a secondary make and break device, which comprises a suitable support 69, preferably of insulation material, mounted on the sewing table or base 10 adjacent to the free end of said lever arm 68. Mounted on said support 69 is a resilient or flexible

contact finger or brush 70, the free end of which is normally spaced above a stationary contact member 71 also carried by said support 69. The free end of said flexible contact finger or brush 70 extends under the free end of said lever arm 68 so as to be engageable thereby, the latter being provided, if desired, with an abutment piece 72 made of insulating material. As shown by dotted lines in Figure 7, the electric circuit serving the electro-magnet 32 is established from any suitable source of electric energy, as e. g. the battery 73, through the circuit wires 74 arranged to connect the respective make and break devices 47 and 48 and 70 and 71 in series.

In the operation of the above described modified form of my novel work starting means, the fastener tape T is continuously fed through the guide-plate 62 and over the sewing table or base 10 to the sewing mechanism of the machine together with an initial garment unit G, the stop-finger being lowered upon the initial garment G as already above described. Before the completion of sewing operations which unite tape T and initial garment unit G, the operator inserts a succeeding garment unit G' into stopped relation to the stop-finger 18. As the rearward end of the initial garment unit G passes from beneath the stop-finger 18, the latter will move or swing downward, thereby rocking the rock shaft 17 to swing the lever arm 21 into circuit closing relation to the make and break devices 47 and 48. Since, however, the make and break devices 70 and 71 are in series with the make and break devices 47 and 48 the circuit through the electro-magnet 32 is not completed until they also are closed. The closing of said devices 70 and 71 is controlled by the movement of a fastener *f* beneath the lever finger 67. Since the fasteners *f* of the tape T are uniformly spaced apart, and since the tape T moves continuously forward, the lever finger 67 may be made of proper length so that, after the initial garment unit G passes from beneath the stop-finger 18, the succeeding garment unit G' will be still held in stopped relation until a fastener *f* is carried by the moving tape to proper spaced relation from the leading end of the succeeding garment unit G', at which time a fastener *f* will have moved under and raised the lever finger 67. The raising of the lever finger 67 swings downward the lever arm 68, thereby moving contact member 70 into circuit closing engagement with the contact member, and thus entirely closing the circuit through the electro-magnet 32. The cam-wheel 54 is normally held against rotation by the detent arm 30, its drive belt (not shown) slipping on its pulley 60 under such circumstances; when, however, the electro-magnet 32 is energized, its attractive force is exerted to re-

tract the detent-arm 30 to withdraw its nosing 31 from the notch 61, thus releasing said cam-wheel for rotation. The roller 29' of the control arm 29 is normally at rest against the end of the cam-nosing 57, until the rotation of the cam-wheel is initiated, whereupon it drops into the raceway 56 in which it rides until discharged therefrom by the operation of the cam-nosing 57. The movement of the control arm upon entering the raceway causes the depression of the presser-arm 25 and its roller 26, and the simultaneous lifting of the stop-finger 18 and consequent interruption of the make and break devices 47 and 48 upon the accompanying backward swinging of the lever arm 21, all substantially in the same manner as already above described, and so that at the proper moment the succeeding garment unit G' is started toward and delivered to the sewing mechanism of the machine in desired accompanying relation to the fastener tape T. The breaking of the circuit at 47 and 48 de-energizes the electro-magnet 32 before the cam-wheel 54 completes its rotation, and consequently the detent-arm 30 moves under the urge of its spring toward the cam-wheel 54, with its nosing 31 riding on the periphery of the latter. By the time the cam-wheel 54 completes its rotation, the control lever 29 is returned to normal initial position, and the notch 61 is brought into engagement with the detent-arm nosing 31, whereby the cam-wheel rotation is arrested, and all the parts of the starting means have been caused to resume normal initial positions, ready for a repetition of the above described operations with relation to a following garment unit.

It will be apparent that the general principles of my novel work starting means as applied in the hereinabove first described construction are also embodied in the above described modified form thereof. Aside from the provision of the auxiliary or secondary make and break device adapted to be operated by the fastener tape, the only difference between the two forms is that in the first described construction the cam-wheel is continuously driven and the control arm held in arrested position by the detent-arm, whereas in the second described construction, the cam-wheel is controlled by the detent-arm so as to be subject to intermittent rotation in actuating relation to the control arm.

It is not essential in every case to employ the presser roll 26 to move the succeeding work to the sewing mechanism, and this invention in its broader aspects embraces a simplified arrangement which is shown in Figure 10 of the drawings. In this embodiment of the invention, the stop-finger 18 is provided on the rearward side of its free end portion, and off-set or spaced upwardly from its extremity, with a stop-shoulder 18'.

The means for lifting or tripping the stop-finger 18 to free a succeeding garment unit G' for starting movement may be the same as already above described. When employing this modified form of stop-finger 18, and the presser roller 26 is omitted, the stop-finger is located close to the needle 14 of the sewing mechanism and the presser foot 13 is foreshortened as shown. In operation the succeeding garment unit G' is inserted against the stop-finger, and pushed forward to cause its leading end-portion to slightly upturn against the same as limited by contact with the stop-shoulder 18' as shown in Figure 10. When in the operation of the device the stop-finger 18 is raised out of the path of movement of the garment unit G', the upturned end of the latter will drop down so as to be engaged by the needle 14 and then passed between presser-foot 13 and feed dog 15 as the unit G' moves forward with the tape T and thus is immediately started through the sewing mechanism.

It will be understood that various changes in arrangement and in detail construction of the parts and devices making up my novel automatic work starting means, other than those already above indicated may be made within the general principles of this invention; and it will also be understood that the invention is not limited for use in connection with any particular style of sewing machine or like mechanism. Generally speaking, it is to be understood the invention is not limited to any specific form or adaptation except in so far as such limitations are specified in the claims.

Having thus described my invention, I claim:—

1. In a work starting mechanism for sewing machines, a movable stop-finger positioned over and engaged with a unit of work advancing through the sewing mechanism of the machine so as to arrest movement of a succeeding unit of work overlaid upon said advancing unit of work, means for raising said stop-finger out of the path of said succeeding unit of work, means for actuating said stop-finger raising means, and means controlled by the release of said stop-finger by the passing of said advancing unit of work from beneath the same for initiating the operation of said actuating means.

2. In a work starting mechanism for sewing machines, a movable stop-finger positioned over and engaged with a unit of work advancing through the sewing mechanism of the machine so as to arrest movement of a succeeding unit of work overlaid upon said advancing unit of work, means for raising said stop-finger from the path of said succeeding unit of work and at the same time advancing the latter toward the sewing mechanism of the machine, means for actuating said stop-finger releasing and work ad-

vancing means, and means operated by the passing of said advancing unit of work from beneath said stop-finger for initiating the operation of said actuating means.

3. In combination with a sewing machine for successively stitching units of work to material continuously moving through said machine, a work starting mechanism, comprising a movable stop adjacent to the sewing mechanism of the machine, said stop being positioned over an advancing unit of work so as to arrest movement of a succeeding unit of work, means for frictionally pressing said succeeding unit of work against the continuously moving material to advance the same with the latter to the sewing mechanism, and means for simultaneously releasing said stop when said latter means is actuated.

4. In combination with a sewing machine for successively stitching units of work to material continuously moving through said machine, a work starting mechanism, comprising a movable stop adjacent to the sewing mechanism of the machine, said stop being positioned over an advancing unit of work so as to arrest movement of a succeeding unit of work, means for frictionally pressing said succeeding unit of work against the continuously moving material to advance the same with the latter to the sewing mechanism, means for simultaneously releasing said stop when said latter means is actuated, and means for timing the release of said stop and the advance of said succeeding unit of work.

5. In combination with a sewing machine for successively stitching units of work to material continuously moving through said machine, a work starting mechanism, comprising a movable stop-finger yieldably engageable with a preceding unit of work advancing through the sewing mechanism of the machine so as to arrest movement of a succeeding unit of work, a presser-arm engageable with the succeeding unit of work to frictionally press the same against the continuously moving material to advance the same with the latter, means to simultaneously raise said stop-finger out of the path of said succeeding unit of work when said presser-arm is actuated, and means to cause properly timed actuation of said presser-arm after said preceding unit of work passes from beneath said stop-finger.

6. In combination with a sewing machine for successively stitching units of work to material continuously moving through said machine, a work starting mechanism, comprising a movable stop-finger yieldably engageable with a preceding unit of work advancing through the sewing mechanism of the machine so as to arrest movement of a succeeding unit of work, a presser-arm engageable with the succeeding unit of work to

frictionally press the same against the continuously moving material to advance the same with the latter, means to simultaneously raise said stop-finger out of the path of said succeeding unit of work when said presser-arm is actuated, means for actuating said presser-arm, a detent for normally holding said presser-arm actuating means inactive, and means to release said detent operative upon the advance of said preceding unit of work beyond said stop-finger.

7. In combination with a sewing machine for successively stitching units of work to material continuously moving through said machine, a work starting mechanism, comprising a movable stop-finger yieldably engageable with a preceding unit of work advancing through the sewing mechanism of the machine so as to arrest movement of a succeeding unit of work, a presser-arm engageable with the succeeding unit of work to frictionally press the same against the continuously moving material to advance the same with the latter, means to simultaneously raise said stop-finger out of the path of said succeeding unit of work when said presser-arm is actuated, means for actuating said presser-arm, a detent for normally holding said presser-arm actuating means inactive, an electro-magnetic means for releasing said detent, a normally open electric circuit serving said electro-magnetic means, and means adapted to close said circuit operated by a preliminary movement of said stop-finger produced by the passing of said preceding unit of work from beneath the same.

8. In a work starting mechanism for sewing machines, a movable stop-finger yieldably engageable with a preceding unit of work advancing through the sewing mechanism of the machine so as to arrest movement of a succeeding unit of work, means to raise said stop-finger out of the path of said succeeding unit of work to permit its advance to the sewing mechanism, means for actuating said stop-finger raising means, a detent for normally holding said actuating means inactive, and means to release said detent operative upon advance of said preceding unit of work beyond said stop-finger.

9. In a work starting mechanism for sewing machines, a movable stop-finger yieldably engageable with a preceding unit of work advancing through the sewing mechanism of the machine so as to arrest movement of a succeeding unit of work, means to raise said stop-finger out of the path of said succeeding unit of work to permit its advance to the sewing mechanism, means for actuating said stop-finger raising means, a detent for normally holding said actuating means inactive, an electro-magnetic means for releasing said detent, a normally open electric circuit serving said electro-magnetic means, and means adapted to close said circuit op-

erated by a preliminary movement of said stop-finger produced by the passing of said preceding unit of work from beneath the same.

10. In a work starting mechanism for sewing machines, a movable stop-finger yieldably engageable with an initial unit of work advancing through the sewing mechanism of the machine so as to arrest movement of a succeeding unit of work, means for advancing said succeeding unit of work and simultaneously raising said stop-finger out of its path of movement to start the same through the sewing mechanism of the machine, means for actuating said latter means, a detent for normally holding said actuating means inactive, and means to release said detent operative upon the passing of said initial unit of work beyond said stop-finger.

11. In a work starting mechanism for sewing machines, a movable stop-finger yieldably engageable with a preceding unit of work advancing through the sewing mechanism of the machine so as to arrest movement of a succeeding unit of work, means for advancing said succeeding unit of work and simultaneously raising said stop-finger out of its path of movement to start the same through the sewing mechanism of the machine, means for actuating said latter means, a detent for normally holding said actuating means inactive, an electro-magnetic means for releasing said detent, a normally open electric circuit serving said electro-magnetic means, and means adapted to close said circuit operated by a preliminary movement of said stop-finger produced by the passing of said preceding unit of work from beneath the same.

12. In combination with a sewing machine for successively stitching units of work to material continuously moving through said machine, a work starting mechanism, comprising means for frictionally pressing a succeeding unit of work against the continuously moving material to advance the same with the latter to the sewing mechanism of the machine after a preceding unit of work is substantially completed, means for actuating said pressing means, a detent for normally holding said actuating means inactive, and electromagnetic means to release said detent means.

13. In a work starting mechanism for sewing machines operative to stitch to a continuously moving fastener tape successive garment units, a movable stop-finger yieldably engageable with a preceding garment unit advancing through the sewing mechanism of the machine and adapted to arrest movement of a succeeding garment unit, means to raise said stop-finger out of the path of said succeeding garment unit to permit its advance to said sewing mechanism, means for actuating said stop-finger raising

means, a detent for normally holding said actuating means inactive, an electro-magnetic means for releasing said detent, an electric circuit serving said electro-magnetic means, 5 a pair of circuit make and break devices connected in series in said circuit, means adapted to close one of said make and break devices operated by a preliminary movement of said stop-finger produced by the passing 10 of said preceding garment unit from beneath the same, and means adapted to subsequently close the other said make and break device operated by the movement of said fastener 15 tape to thereby start said succeeding garment unit in desired predetermined relation to said fastener tape.

14. In a work starting mechanism for sewing machines operative to stitch to a 20 continuously moving fastener tape successive garment units, a movable stop-finger yieldably engageable with a preceding garment unit advancing through the sewing mechanism of the machine and adapted to 25 arrest movement of a succeeding garment unit to prevent its advance to said sewing mechanism, a presser arm engageable with the succeeding garment unit to frictionally

press the same against said continuously moving tape to advance the same with the latter to the sewing mechanism of the machine, means to simultaneously raise said stop-finger out of the path of said succeeding garment unit when said presser-arm is actuated, means for actuating said presser arm, a detent for normally holding said actuating means inactive, an electro-magnetic means for releasing said detent, an electro-circuit serving said electro-magnetic means, 30 a pair of circuit make and break devices connected in series in said circuit, means adapted to close one of said make and break devices operated by a preliminary movement of said stop-finger produced by the passing 35 of said initial garment unit from beneath the same, and means adapted to subsequently close the other said make and break device operated by the movement of said fastener 40 tape to thereby start said succeeding garment unit in desired predetermined relation to said fastener tape. 45 50

In testimony, that I claim the invention set forth above I have hereunto set my hand this 12th day of August, 1926.

LEO ROSEMAN.