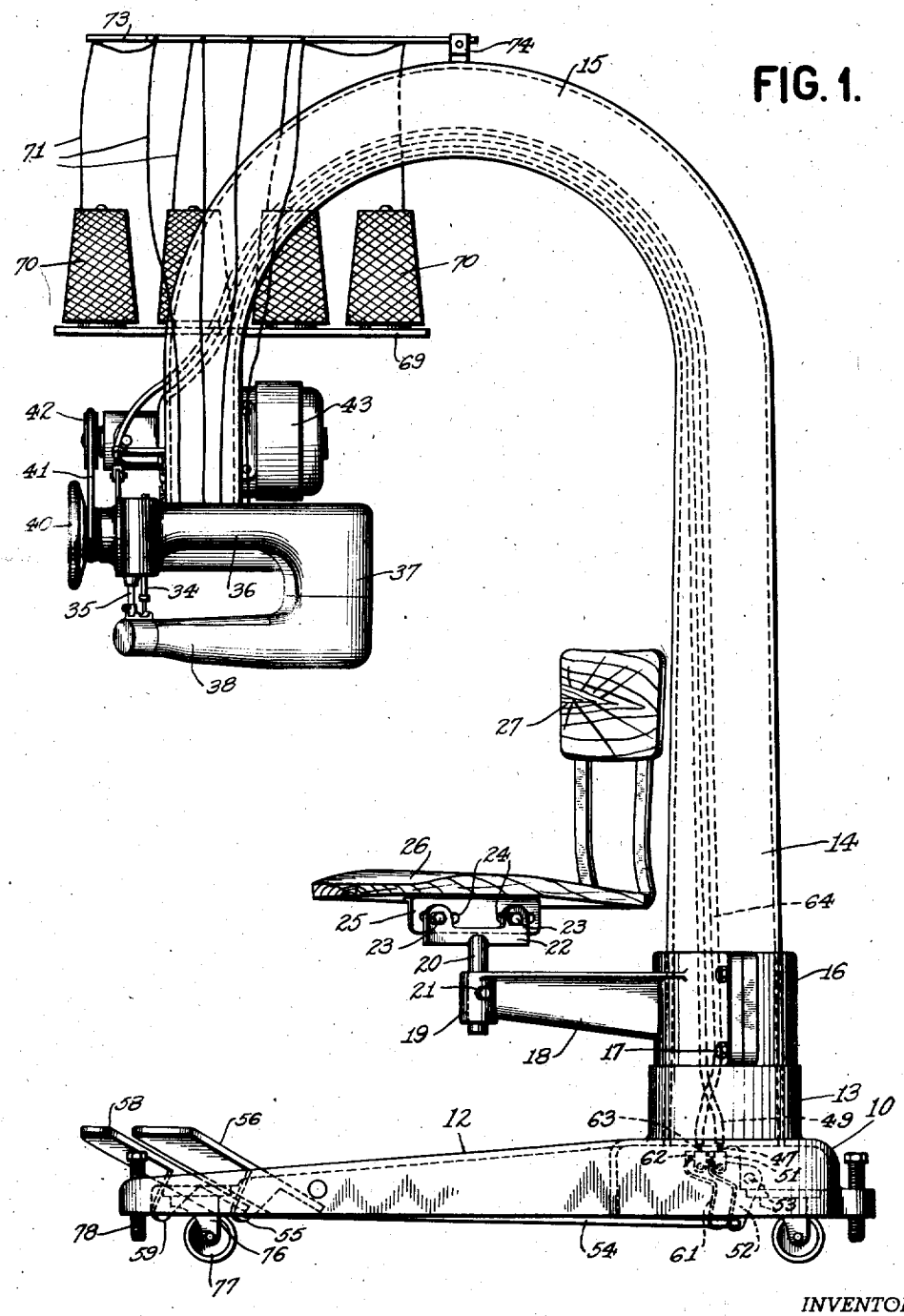
May 1, 1945. N. V. CHRISTENSEN 2,374,731

SEWING MACHINE UNIT

Filed Nov. 6, 1941 3 Sheets-Sheet 1

FIG. 1.



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SEWING MACHINE UNIT

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FIG. 2.

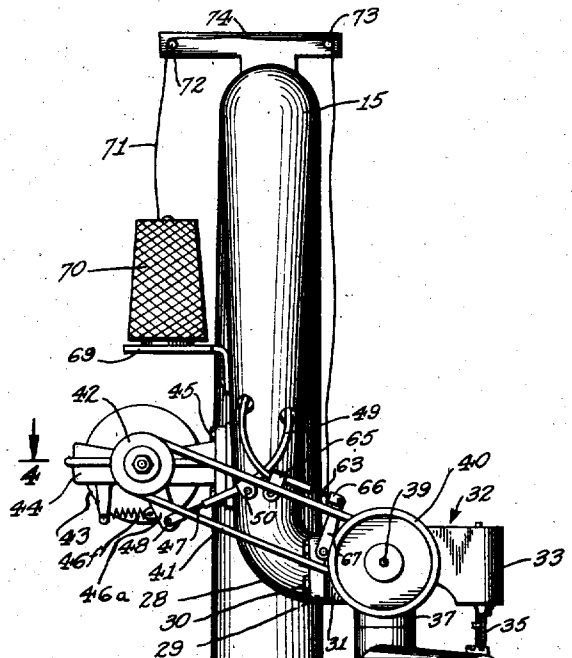
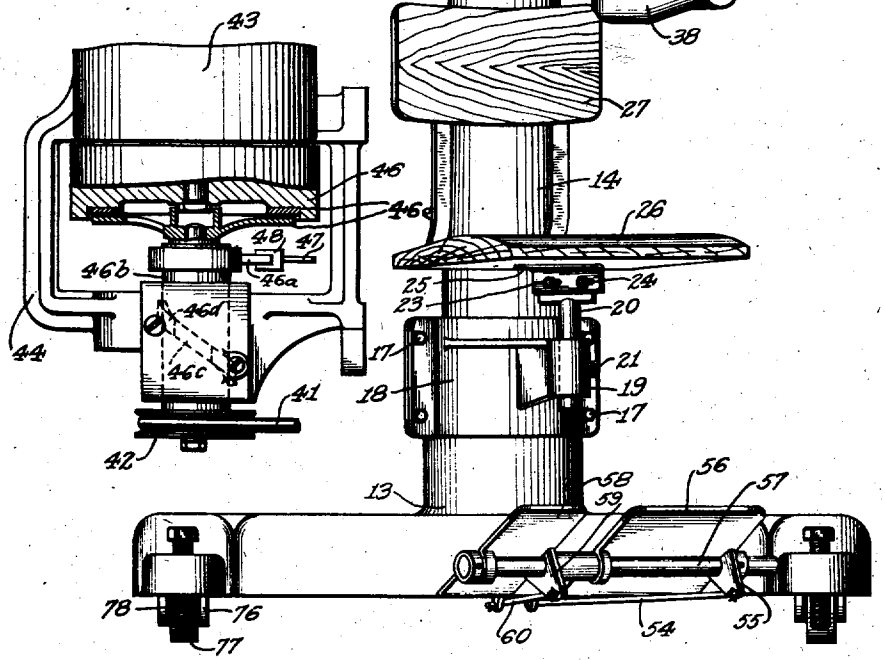


FIG. 4.



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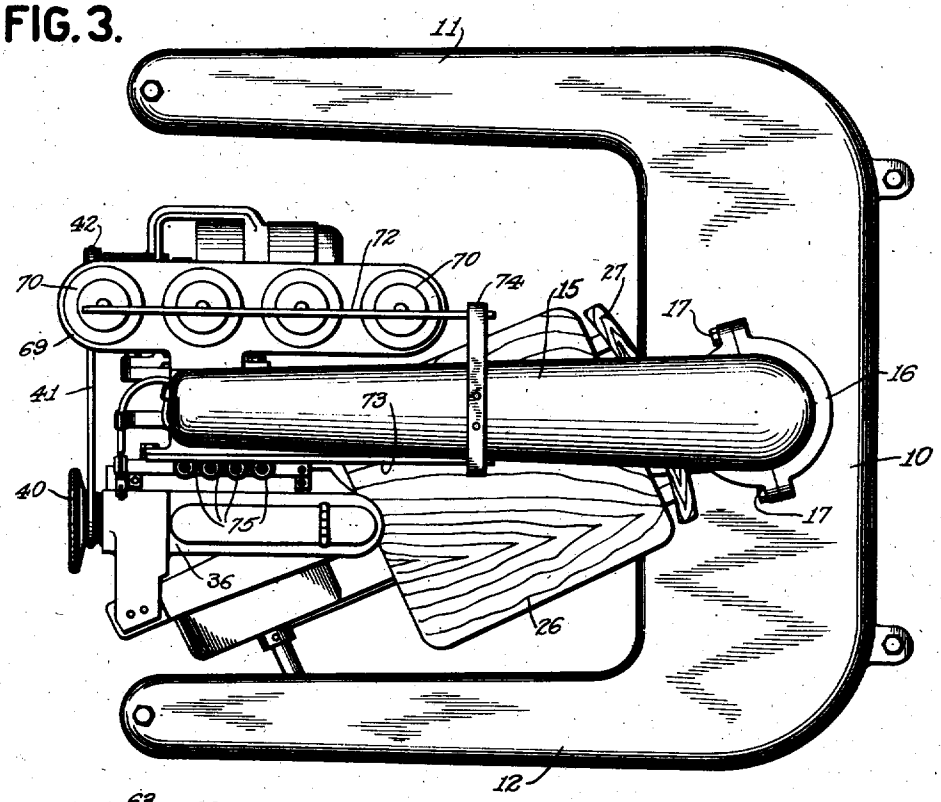
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SEWING MACHINE UNIT

Filed Nov. 6, 1941 3 Sheets-Sheet 3

FIG. 3.



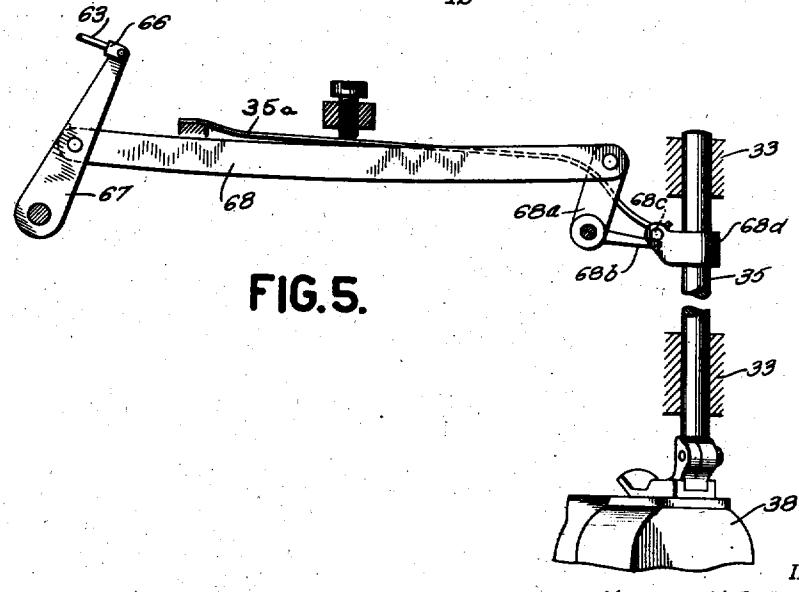


FIG. 5.

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Patented May 1, 1945 2,374,731

UNITED STATES PATENT OFFICE

2,374,731

SEWING MACHINE UNIT

Norman V. Christensen, Chicago, Ill., assignor to Union Special Machine Company, Chicago, Ill., a corporation of Illinois

Application November 6, 1941, Serial No. 417,989

10 Claims. (Cl. 112—258)

This invention relates to an improved sewing machine unit and more particularly to a unit in which a frame is provided for supporting a sewing machine and a chair in predetermined relation. The arrangement is preferably such that the sewing machine is suspended from overhead and is disposed substantially in the lap of the operator occupying the chair.

A unit of the type contemplated is especially suited for overall work, and the like, which requires as much space as possible around the sewing instrumentalities in order to facilitate the introduction and removal of the work. The operations required in the sewing of overalls may be performed more expeditiously and efficiently as a result of the ease in handling the material and feeding it to the stitch forming devices.

In the improved unit no table or other support is provided beneath the sewing machine except a carriage portion of the frame which extends along the ground and affords a convenient location for certain foot treadle controls. This makes it possible for the operator to readily pick up the material to be worked upon from a basket or the like on the floor at one side of the unit and to drop the article, upon completion of the operation, into a basket on the floor at the opposite side of the unit. The freedom from lateral supports also facilitates the handling of bulky work.

The preferred construction involves a sewing machine of the feed-off-the-arm type, so that the unit is adapted for tubular work. Certain features of the invention are, however, adapted for use in connection with other types of sewing machines.

As a special feature of the unit, the frame upon which the sewing machine and chair are mounted is of portable or readily transportable construction. It is provided with suitable casters or wheels by which it may be readily shifted about and means are also provided for locking the unit in place after it has been shifted to a desired position. This is particularly advantageous when the unit is to be used in straight line production, since it may be readily shifted from one position in the line to another, depending upon the particular sequence of operations required for different items of work.

A further feature of the invention is the provision of means for readily and effectively adjusting the relative positions of the sewing machine and chair so that different operators may be quickly accommodated.

An important advantage of the unit is that it can the operator occupy a relatively small amount of floor space. In fact the operator and the machine require little more space than comfortable room for the operator. Floor space in a factory may accordingly be used most effectively.

Other objects, features and advantages of the invention will appear from a detailed description of an illustrative embodiment of the same which will now be given in conjunction with the accompanying drawings, in which

Fig. 1 is a side elevation of a unit embodying the invention;

Fig. 2 is a front elevation of the unit;

Fig. 3 is a top plan view of the unit;

Fig. 4 is a detail view, partly in section along the line designated by the arrow 4 in Fig. 2, showing the clutch for controlling the drive for the sewing machine, and

Fig. 5 is an enlarged detail illustrating, in elevation, the presser bar lifting means.

Referring now to the drawings, the illustrative unit embodies a main base member or carriage 10 which is of U-shaped construction and has a pair of forwardly extending arms or branches 11 and 12. At substantially the mid-point of the bottom of the U formed by the base member, there is an upstanding collar 13 which receives the lower end of a tubular supporting member or vertical standard 14. The latter is secured within the collar 13 in any suitable way. At its upper end the tubular support is bent through a sweeping arc to form a large gooseneck 15. Just above the collar 13 a split or divided sleeve 16 is provided, this being adapted to be clamped about the lower end of the tubular support 14 in any desired position. A series of bolts 17 is provided for clamping the two sections of the sleeve 16 together and to retain it in any angular position of adjustment with respect to the standard.

A bracket 18, integral with one of the sections of the sleeve 16, extends forwardly therefrom and is provided with a vertically disposed sleeve or socket 19 at its outer end. This socket is adapted to slidably receive a rod or stem 20 which may be secured at any desired elevation within the sleeve by means of a set-screw 21. At its upper end the rod 20 has integrally connected therewith a plate 22 having upstanding ears apertured to receive a pair of bolts 23. These bolts cooperate with elongated slots 24 in a downwardly extending leg of an angle member 25. A seat 26 is bolted or otherwise secured to the horizontally extending leg of the angle member 25. The seat or chair may be of any suitable construction and is preferably provided with a back 27. Through

the mounting described, the position of the seat may be varied, as desired, to suit the comfort and convenience of the operator. It may be shifted angularly about the tubular support 14, in the manner explained, it may be adjusted vertically by sliding the rod 20 within the sleeve 19 or by clamping the sleeve 16 at a higher point along the standard, and it may be adjusted horizontally toward and away from the tubular support 14 through the cooperation of the bolts 23 and the elongated slots 24.

The vertical standard or support 14 is of hollow, tubular construction and, as indicated, is bent into a gooseneck form at its top. At the outer end of the gooseneck the support is bent laterally, as indicated at 28 (Fig. 2), and is provided with a flange or pad 29 to which, by means of bolts 30, there is secured a portion 31 of the frame of a sewing machine 32. The latter may be of any suitable construction, but, as shown in the drawings, it is preferably of the type disclosed in the Christensen et al. Patent No. 1,741,095, granted December 24, 1929. The portion of the frame disclosed in that patent, which extends into a base or standard by which the machine may be supported from a table, is simply eliminated and in lieu thereof, there is provided a flat surface at the end of the portion 31 to which the lower end of the gooseneck may be connected. In this way the sewing machine is quite rigidly held at its side and is suspended free of any table or other support from below.

Since the interior mechanism of the sewing machine forms no part of the present invention, its construction need not be described in detail. The machine has a needle head 33 in which a needle bar 34 and a presser bar 35 are mounted for vertical movement. This needle head extends laterally from the forward end of an upper frame member 36 which at its rearward end has connected thereto a depending portion 37. At the lower end of this depending portion, a work supporting arm 38 is attached and extends forwardly below, but at an acute angle to, the portion 36. The free end of the work supporting arm is located beneath the needle head and is provided with work feeding devices and loopers or other stitch-forming means adapted to cooperate with the needles carried by the needle bar 34. For further details as to the construction and operation of the stitch-forming and work-feeding devices, reference may be had to the above-mentioned Christensen et al. patent.

Extending longitudinally of the upper frame 36 of the sewing machine is a shaft 39 having secured thereto at its outer or forward end a combined pulley and hand-wheel 40. The latter is connected by a belt 41 with a pulley 42 connected with a member driven by a motor 43 suitably mounted in a bracket 44 whose base is secured, by means of screws or bolts 45, to a boss formed at the side of the gooseneck 15. A clutch 46 (Fig. 4) of any suitable construction is provided between the motor and the pulley 42 so that the latter may be readily connected with and disconnected from the motor, as desired. For the purpose of controlling the clutch, an arm 46*a* is provided, this being secured to a sleeve 46*b* which, when rotated by the arm, is adapted to slide longitudinally, due to the coaction of a lug 46*c* on the sleeve with a helical groove 46*d* in the fixed retaining bearing, to engage the friction surfaces 46*e*. A spring 46*f* connected with the arm 46*a* normally serves to rock the same to disengage the friction surfaces. At the lower end of the control arm 46*a* a flexible cable 47, of the Bowden type, is attached by means of a yoke 48. This cable extends through a sheath or casing 49 which is attached to the gooseneck 15 by means of a clip or strap 50. The sheath 49 is passed through an aperture in the wall of the gooseneck adjacent its lower end and then extends around the interior of the gooseneck and the vertical portion of the standard 14 down to a point within the collar 13 of the base member 10. At this point the cable 47 extends beyond the sheath and is attached by means of a yoke 51 to one arm of a bell crank 52 pivotally mounted on a rod 53 carried by the base member. The other arm of the bell crank 52 is connected by a rod or link 54 with an arm 55 extending downwardly from a foot treadle 56 rockably mounted on a supporting rod or shaft 57 secured to the arm 12 of the base member and extending inwardly therefrom at an angle to the axis of the arm 12. Preferably, the rod or shaft 57 is disposed in a vertical plane which is normal to the axis of the work supporting arm 38 and to the direction in which the seat 26 faces. It will be apparent that rocking of the foot treadle 56, by depressing its forward end, will operate the cable 47, drawing the latter downwardly at its end connected with the bell-crank 52, so that its opposite end will in turn operate the clutch control arm 46*a* to render the drive for the sewing machine effective. By rocking the treadle in the opposite direction, the cable 47 may be shifted in the opposite direction to render the sewing machine drive ineffective, or the spring 46*f* may restore the parts to clutch disabling position whenever the foot is removed from the treadle.

Adjacent the foot treadle 56, but spaced therefrom by a suitable collar on the rod or shaft 57, is a second foot treadle 58 adapted to be rocked about the supporting rod by the right foot of the operator. A downwardly extending arm 59 of this second foot treadle is connected by link 60 with a downwardly extending arm of a bell crank 61 carried by the rod 53. The other arm of the bell crank 61 is connected by means of a yoke 62 with the lower end of a flexible cable 63 which passes through a sheath or casing 64 extending, from a point adjacent the bell crank 61, upwardly through the vertical support 14, around the gooseneck 15 and out through an aperture in the wall of the latter adjacent its lower end. Here the sheath 64 is anchored to the gooseneck by means of a strap 65. A portion of the cable 63 extending beyond the sheath is connected by a yoke 66 with an arm 67 secured to a rock shaft which may serve to release the thread tensioning devices by means similar to that disclosed in the patent to Berger, No. 1,758,349, granted May 13, 1930. A link 68 connected with the arm 67 at an intermediate point has its opposite end connected with a rock lever 68*a*, the arm 68*b* of which is adapted to engage a pin 68*c* on a block 68*d* secured to the presser bar 35 so that the latter may be lifted against the action of its spring 35*a*, whenever desired, under the control of the foot treadle 58.

A bracket or shelf 69 is secured by screws or the like to the side of the gooseneck 15 above the motor 43. This bracket is provided with suitable spindles for retaining the spools 70 of the thread 71 used in the sewing operation. Any desired number of spools of thread may be provided, four being indicated in the illustrative machine. The thread from the spools is preferably led over or through suitable guides, such as rods

72 and 73, extending from a bracket 74 secured to the top of the gooseneck. These rods may be provided with appropriate hooks or apertures for receiving the thread, if desired. From the guide rod 73 the threads are passed to the sewing machine, preferably to a series of thread-tensioning devices 75 at the top of the machine from which the several threads are led to the needles and loopers of the stitch-forming means.

To facilitate the shifting of the unit from one point to another, the base member or carriage 10 is preferably provided with a series of downwardly extending brackets 76 secured to the under side of the base member and adapted to support the shafts or trunnions of a series of rollers or casters 77. Four such rollers are disclosed on the illustrative unit. If desired, each may be adapted to swivel on the carriage. Adjacent each of the rollers 77 a set-screw 78 may be provided, these being threaded through suitable portions of the base member 10. After the unit has been shifted into a desired position, it may be locked in place by turning the set-screws until their free ends engage the floor. These set-screws may also be used to level the unit and to hold it steady in spite of irregularities in the floor.

The operation of the unit is believed to be apparent from the foregoing but a brief résumé will be given. The operator, having appropriately adjusted the seat 26, in the manner explained, occupies the same, thus assuming a position beneath the gooseneck 15 facing in the direction of the arm 38. In this way the sewing machine is suspended from above directly in the lap of the operator and there is no obstruction between the work arm of the sewing machine and the operator. The unit has nothing beneath the machine other than the base portion 10 of the frame. As a result, the operator is able to feed bulky work off the end of the arm 38, without difficulty, in forming tubular members such as the legs of overalls. Complete freedom of movement of the garment is provided. The operator places her left foot on the treadle 56 and her right foot on the treadle 58. Assuming now that a leg of a pair of overalls is to be formed, the operator rocks the treadle 58 to lift the presser bar 35 and introduces the edges to be united in forming the leg beneath the presser foot. Upon subsequently releasing the treadle or rocking it back to its original position, the presser foot is permitted to descend against the work. Treadle 56 may now be rocked to cause the sewing machine to be driven and the seam formed as the two edges of the material are brought together around the work arm by the operator. Upon completion of the seam the treadle 56 is restored to its original position and the operation of the machine is arrested until the edges which are to form the next seam are correctly presented to the needles.

If desired, a supporting standard may be adapted for interchangeable connection with any of a plurality of different sewing machines. Thus, a machine adapted to perform one operation may be connected with the standard by means of the bolts 30 at one time and this may be removed and replaced by another machine best suited for a different operation, whenever desired.

While an illustrative unit has been described in considerable detail, it will be understood that numerous changes may be made in the construction and arrangement of the various parts without departing from the general principles and scope of the invention. The terms and expressions employed herein have been used as terms of description and not of limitation.

What I claim is:

1. A sewing machine unit which comprises a base, a tubular standard extending upwardly from said base, a seat carried by said standard, a sewing machine carried by said standard and suspended freely therefrom at a further distance than said seat so as to be substantially in the lap of an operator on said seat, and power means carried by said standard for driving said sewing machine.

2. A sewing machine unit which comprises a support having a portion engaging the floor and a post-like portion extending upwardly therefrom, a seat carried by said support, a sewing machine suspended freely from said upwardly extending portion at a further distance than said seat therefrom and positioned above and in front of said seat, power means carried by said support for driving said sewing machine, said sewing machine having a presser bar, and means carried by said support and having operating members mounted on said floor engaging portion and arranged in front of said seat for controlling the operation of said sewing machine and the action of said presser bar.

3. A sewing machine unit which comprises a support having a base portion engaging the floor, a seat carried by said support, said support having a tubular standard extending upwardly in back of said seat and over the top of the same, and a sewing machine suspended freely from said standard in front of and above said seat.

4. A sewing machine unit which comprises a support having a base portion engaging the floor, a seat carried by said support, said support having a hollow tubular standard extending upwardly in back of said seat and over the top of the same, a sewing machine suspended freely from said standard in front of and above said seat, foot-operated means carried by said base portion below said seat for controlling the operation of said sewing machine, and connections from said means to said sewing machine partly enclosed by said standard.

5. A sewing machine unit which comprises a readily transportable frame having a carriage portion extending along the floor and an upwardly extending post-like standard, a sewing machine having a lower work supporting member and an upper frame, said machine being supported by a connection between said upper frame and said standard and being positioned over the area defined by said carriage portion, a seat carried by said standard facing outwardly therefrom in line with said work supporting arm and adjustable angularly, vertically and radially with respect thereto, foot-operated means on said carriage portion, and connections from said means for controlling the operation of said sewing machine.

6. A sewing machine unit which comprises a frame having a carriage portion adapted to be shifted along the ground and a post-like standard extending upwardly adjacent one end of said carriage portion, the top of said standard having connected therewith a post arranged to extend over said carriage portion, a feed-off-the-arm sewing machine and a driving motor therefor carried by said extension, the work supporting arm of said sewing machine extending at an acute angle to the longitudinal axis of said carriage portion of the frame, and a seat mounted

on said frame and adapted to face in the direction of said arm.

7. In apparatus of the class described a supporting frame comprising a base portion arranged to engage the floor at widely spaced points, a vertical standard rising from said base portion and a member extending laterally from said standard adjacent its upper end, a sewing machine with a frame having a horizontally disposed upper main body portion secured to the end of said laterally extending arm, said sewing machine frame having a hollow portion depending from said main body portion with a work supporting arm projecting horizontally at the lower end of said depending portion, said work supporting arm extending in a direction laterally outwardly from said main body portion and away from the end of said member, a motor and clutch unit mounted on said member, and connections from said unit to said sewing machine for driving the same.

8. In apparatus of the class described a supporting structure comprising a base portion having widely distributed engagement with the floor and a vertically disposed portion rising from one side of said base portion, a sewing machine having a frame connected by a short, laterally extending arm with said vertically disposed portion, said frame having a main horizontally disposed body secured to the end of said arm and a horizontal work supporting arm below said main body angled outwardly from the latter, a motor and clutch unit mounted on said vertically disposed portion of the supporting structure on the opposite side thereof from said sewing machine and in balanced relation to the latter, and driving connections between said motor and clutch unit and said sewing machine.

9. In apparatus of the class described a supporting structure comprising a base portion having widely distributed engagement with the floor and a vertically disposed portion rising from one side of said base portion, a sewing machine having a frame connected by a short laterally extending arm with said vertically disposed portion, said frame having a main horizontally disposed body secured to the end of said arm and a horizontal work supporting arm below said main body angled outwardly from the latter, a motor and clutch unit mounted on said vertically disposed portion of the supporting structure on the opposite side thereof from said sewing machine and in balanced relation to the latter, driving connections between said motor and clutch unit and said sewing machine, a pair of foot treadles mounted on said base portion, and connections from said treadles to said motor and clutch unit and to said sewing machine for controlling the same.

10. In apparatus of the class described a floor engaging frame having upwardly extending post means carrying a laterally and downwardly extending support, a sewing machine with a frame having a horizontally disposed upper main body portion secured to the end of said laterally and downwardly extending support, said sewing machine having a needle head projecting laterally from one end of said main body portion and a hollow portion depending from the other end of said main body portion with a work supporting arm projecting horizontally at the lower end of said depending portion, said work supporting arm having its free end disposed beneath said needle head and being arranged to provide unlimited clearance at both sides thereof, a motor and clutch unit mounted on said floor engaging frame and connected with said downwardly extending support, and connections from said unit to said sewing machine for driving the same.

NORMAN V. CHRISTENSEN.

CERTIFICATE OF CORRECTION.

Patent No. 2,374,731. May 1, 1945.

NORMAN V. CHRISTENSEN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, second column, line 69, for "post" read --part--; line 72, for "extension" read --part--; line 73, after "extending" insert --away from said standard--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 14th day of August, A. D. 1945.

Leslie Frazer

(Seal) First Assistant Commissioner of Patents.

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