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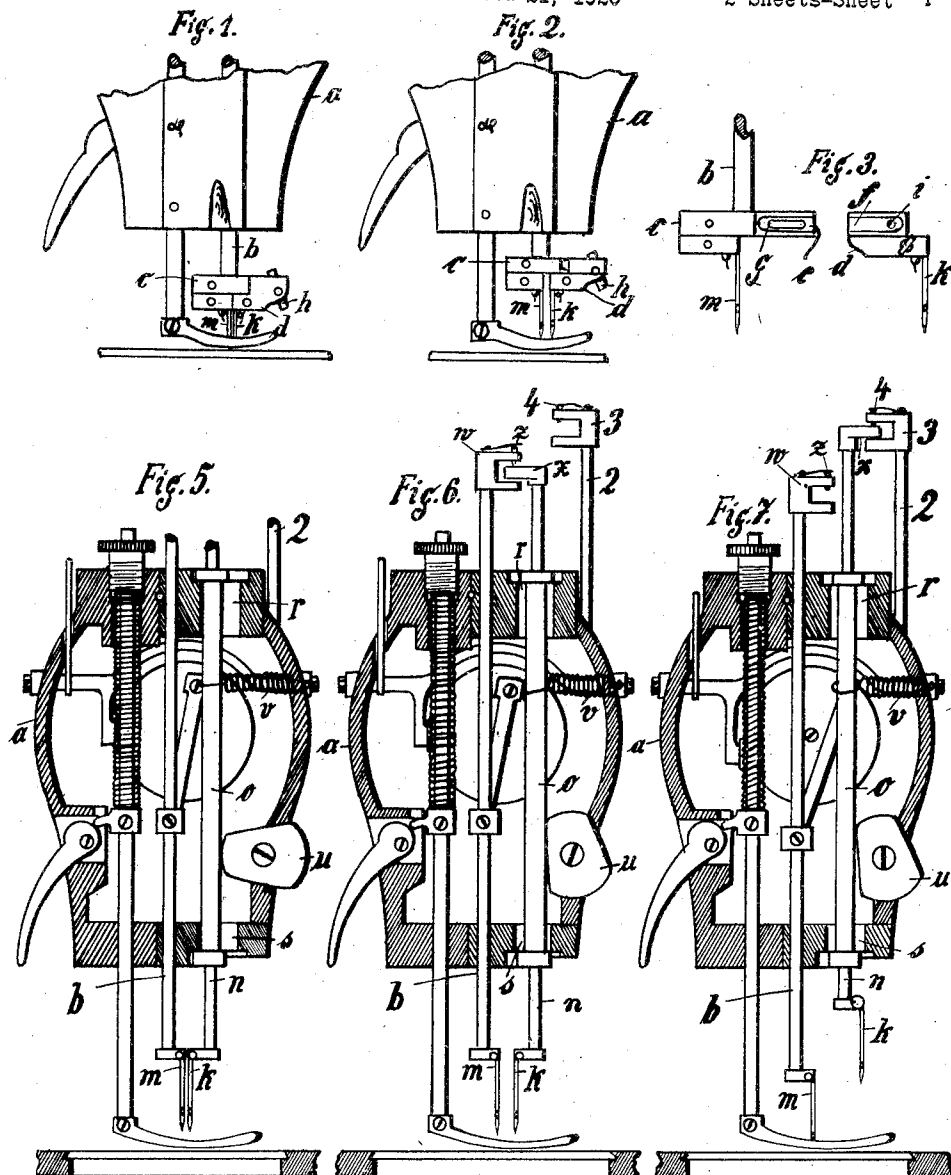
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SEWING MACHINE WITH SEVERAL NEEDLES

Filed March 21, 1925

2 Sheets-Sheet 1



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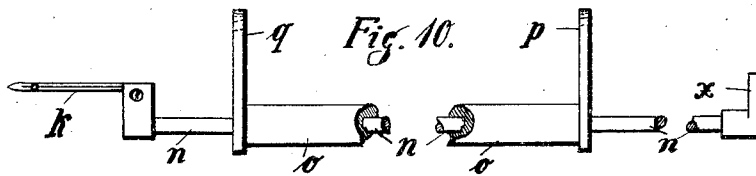
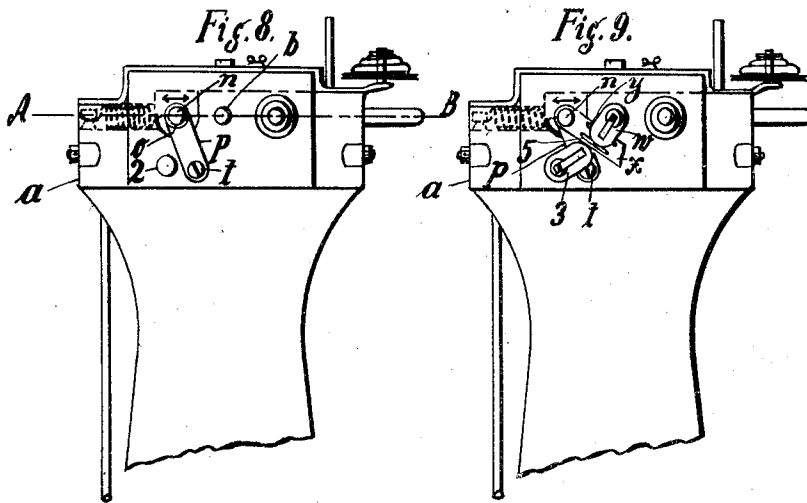
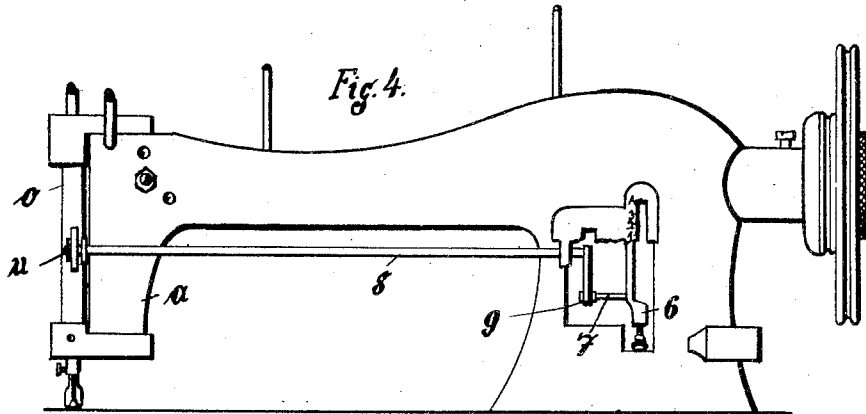
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UNITED STATES PATENT OFFICE.

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SEWING MACHINE WITH SEVERAL NEEDLES.

Application filed March 21, 1925, Serial No. 17,425, and in Germany March 21, 1924.

This invention relates to improvements in sewing-machines with several needles.

One object of my invention is to still further improve machines of this kind by providing means for adjusting the distance between the needles. The adjustment of the distance between the needles may be obtained by different ways. So for instance a head made in several parts may be arranged on the needle-bar of a sewing-machine, every part of said head preferably being capable of bearing each one needle and the parts being adjustable with relation to one another. The adjustment may be such that not only the distance of the needles from one another may be adjusted, but also that one or more of the needles may be temporarily swung out of operative position. By means of a head so constructed with several needles, any sewing-machine may be changed to a machine with several needles, having the needles arranged one behind the other within the direction of sewing in order to multiply the output of the machine, if the feed of the work is adjusted accordingly.

Furthermore instead of arranging the needles upon a common head for instance each needle could be fixed to a separate needle-bar, or a head of the kind described might be mounted upon the auxiliary needle-bar, or in case of several auxiliary needle-bars being provided, upon one or several of them. These auxiliary needle-bars may be coupled with the main needle-bar in such a manner, that the distance of the auxiliary needle-bars from the main needle-bar may be varied. The machine is so constructed that the needles or the needle-bars respectively may be lifted separately and independently. In case of the arrangement of one or more auxiliary needle-bars, this may be obtained for instance by coupling the auxiliary needle-bar with the main needle-bar in an easily detachable manner, so that by loosening said coupling the auxiliary needle-bar may be lifted alone. If it is intended to put the auxiliary needle-bar out of action said bar for instance may be fastened to a separate support. The amount of the feed of work, being in close relation to the arrangement of several needles preferably an automatic adjustment of the distance of the needles is combined with the adjustment of the feed of work.

The drawing affixed to this specification

and forming part of it shows two embodiments of my invention by way of example.

The same letters of reference indicate similar parts throughout all the figures of the drawing.

Fig. 1 shows the front view of the head of a sewing-machine having a head supporting several needles attached to the needle-bar.

Fig. 2 is a similar view, the distance of the needles being changed.

Fig. 3 represents the parts of the needle head.

Fig. 4 is a side elevation of a sewing-machine having several needle-bars arranged in its head, and showing means for regulating the feed of work corresponding to the distance of the needle-bars.

Fig. 5 shows a longitudinal section through the head of the machine taken in the line A—B of Fig. 8. This figure shows also the arrangement of the needle-bars.

Fig. 6 is a similar view the distance of the needles being increased.

Fig. 7 corresponds to Fig. 5 shows however the auxiliary needle-bar in an elevated position and secured by a support.

Fig. 8 is a plan view of the head of the machine shown in Fig. 5.

Fig. 9 is a plan view of Fig. 6, and

Fig. 10 is a detail view showing the manner of leading the auxiliary needle-bar.

With the embodiment of the invention shown in Figs. 1 to 3 *a* is the head of a usual sewing-machine having fixed a head with several needles to its needle-bar *b*. This head consists of a part *c* fixed to the needle-bar bearing one needle and of a sliding piece *d* bearing the second needle. As may be seen from Fig. 3 the parts *c* is provided with a groove *e* within which the part *d* is guided by means of a key *f*. In Fig. 3 the part *d* is shown from the rear. Furthermore the part *c* is provided with a slot *g* through which a set screw *h* may be passed engaging a threaded bore *i* of the part *d*, in order to permit the part *d* to be clamped to the part *c*, the distance of the needles being adjusted. Instead of guiding the part *d* in the part *c* by means of groove and key, for instance a slotted sleeve could be combined with the part *c* so that the part *d* engages the part *c* by means of a cylindrical portion. The slot of the sleeve of the said part *c* may communicate with one or more lateral slots, in order to lock the part *d* to the part *c* by

means of a bayonet-catch allowing the needle *k* to be swung laterally so that it is possible to sew with the single needle *m*.

With the embodiment of the invention according to Figs. 4 to 10 an auxiliary needle-bar *n*, bearing the second needle, is mounted within the head *a* of the machine. This bar is guided within a sleeve *o* which can be rocked within corresponding cavities *r* and *s* of the head of the machine by means of two levers *p* and *q*. The levers *p* and *q* are rotatably mounted on journals *t* respectively arranged at the upper and at the lower ends of the head of the machine. The distance of the sleeve *o* and at the same time the distance of the auxiliary needle-bar *n* from the main needle-bar *b* may be varied in any manner, so for instance by means of an eccentric disk *u* mounted on the head of the machine, the sleeve *o* being pressed against this disk by means of a spring *v* fixed at one end to the said sleeve and at its other end to the head of the machine. The coupling between the main needle-bar and the auxiliary needle-bar may be performed by any means. With the modification shown the needle-bars are coupled by means of a fork *w* fixed to the main needle-bar and by means of an extension *x* fixed to the auxiliary needle-bar. Said extension is provided with a slot or groove *y* (Fig. 9) engaged by a pin *z* fixed to a spring carried by and going through one arm of said fork *w*. If it is desired to lift the auxiliary needle-bar *n* the extension *x* may be turned out of the fork *w* by a slight lateral pressure, whereupon the needle-bar may be moved in the direction of its longitudinal axis. In order to be able to lock the needle-bar *n* in an elevated position if said bar is out of use a rod 2 is mounted upon the head of the machine, said rod bearing a fork 3 corresponding in construction to the fork *w*. As may be seen from Fig. 7 the extension *x* may be fixed within the fork 3. A spring supported pin 4 engaging a groove 5 of said extension *x* prevents an unintended loosening of said extension from the fork 3.

As mentioned above preferably the distance between the needles may be regulated automatically with the regulation of the feed of work. To this end an arm 7 or the like is connected to the adjusting lever of the stitch regulating device 6 regulating the feed of work, said arm engaging a fork 9 fixed to the end of a spindle 8. To the other end of the spindle 8 the said eccentric disk *u* is fixed, so that said disk may be turned correspondingly with the adjustment of the stitch regulating device varying at the same

time the distance of the auxiliary needle-bar from the main needle-bar.

What I claim as my invention and desire to secure by Letters Patent is:

1. In a sewing machine the combination of two needles arranged one behind the other in the direction of sewing, with means to vary the distance between said needles, and a stitch regulating device by means of which the distance between said needles is regulated according to the feed of the work.

2. In a sewing machine the combination of two needles arranged one behind the other in the direction of sewing, a main needle-bar and an auxiliary needle-bar each carrying one of said needles, a stitch regulating device, and means operated by said stitch regulating device for adjusting the distance between said needles.

3. In a sewing machine the combination of two needles arranged one behind the other in the direction of sewing, a main needle-bar and an auxiliary needle-bar each carrying one of said needles, a sleeve for guiding said auxiliary needle-bar movably mounted in the head of the machine, a stitch regulating device, an arm fixed to the adjusting lever of said stitch regulating device, a spindle, a crank fixed to one end of said spindle and engaged by said arm, and an eccentric disk fixed to the other end of said spindle and engaging the said sleeve guiding the auxiliary needle-bar.

4. In a sewing machine the combination of two needles arranged one behind the other, a main needle-bar and an auxiliary needle-bar each carrying one of said needles, means for varying the distance between said needles, a fork fixed to the main needle-bar, a rod fixed to the head of the sewing machine, a fork at the end of said rod, and an extension fixed to the auxiliary needle-bar adapted to engage with said forks respectively in order to bring the auxiliary needle-bar into or out of working connection with the main needle-bar.

5. In a sewing machine the combination with the head of the machine of two needles arranged one behind the other in the direction of sewing, a main needle-bar and an auxiliary needle-bar each carrying one of said needles, a pair of arms pivoted at the upper and lower ends of the head of the machine, a sleeve surrounding said auxiliary needle-bar mounted on said arms, and means for swinging said sleeve to vary the distance between said needles.

In testimony whereof I affix my signature.

WILHELM BRASE.