W. A. McCOOL.

BLINDSTITCH SEWING MACHINE.

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1,054,657.

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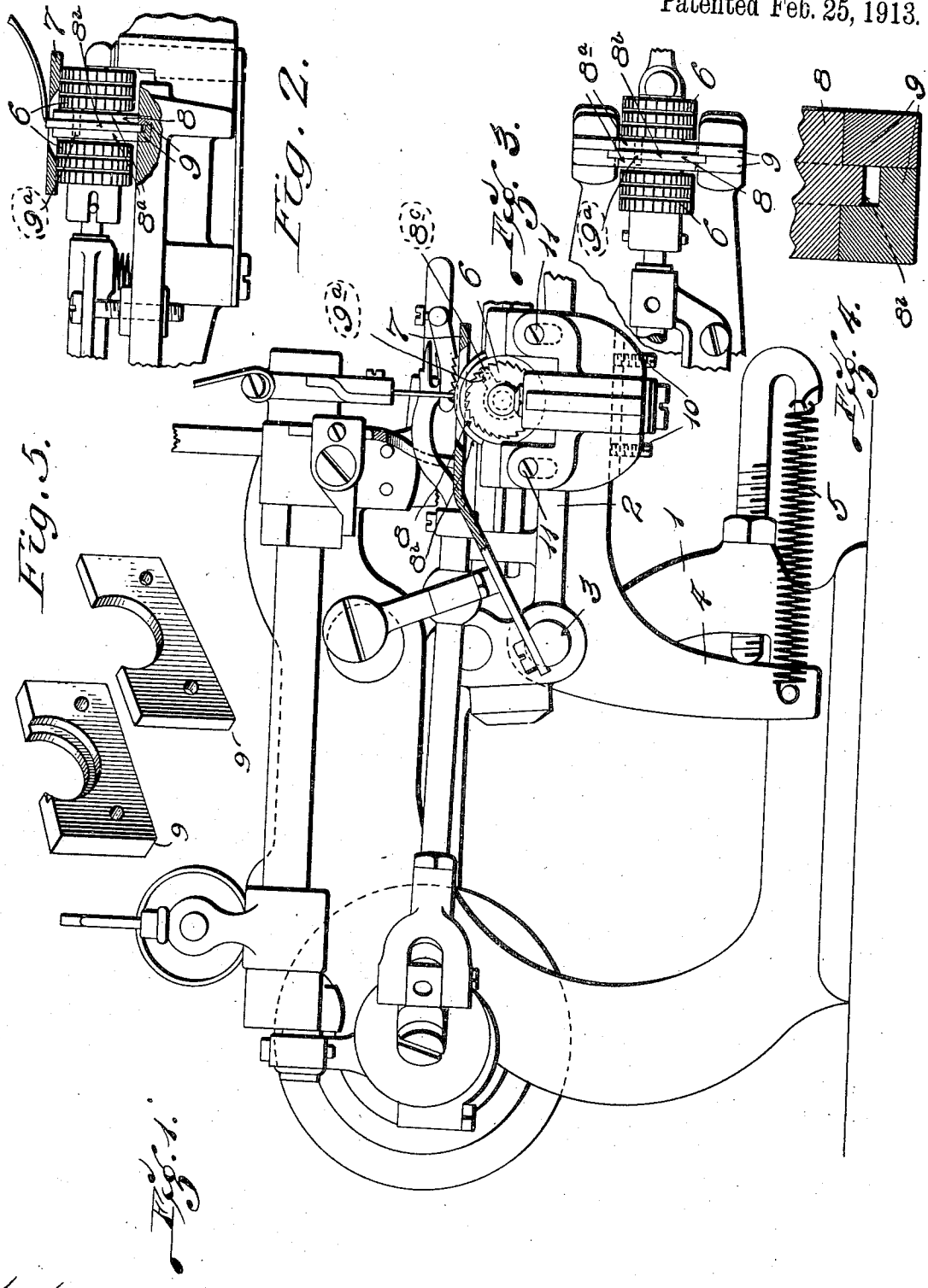

Fig. 2.

Fig. 5.

Fig. 3.

Fig. 4.

Fig. 1.

WITNESSES.

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UNITED STATES PATENT OFFICE.

WILLIAM A. McCOOL, OF BEAVER FALLS, PENNSYLVANIA, ASSIGNOR TO ACME-KEYSTONE MANUFACTURING COMPANY, OF BEAVER FALLS, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

BLINDSTITCH SEWING-MACHINE.

1,054,657. Specification of Letters Patent. Patented Feb. 25, 1913.

Application filed February 25, 1910. Serial No. 545,843.

To all whom it may concern:

Be it known that I, WILLIAM A. McCOOL, a citizen of the United States, residing at Beaver Falls, Pennsylvania, have invented a certain new and useful Improvement in Blindstitch Sewing-Machines, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1. is a side elevational view of my improved blind stitch sewing machine. Fig. 2. is a rear elevational view, partly in section of the cloth support or back guide. Fig. 3. is a plan view of said support or back guide. Fig. 4. is an enlarged, detailed sectional view of said guide mounted in its supporting plates. Fig. 5 is a detailed view of the separable plates in which a rotary back guide is mounted.

This invention relates to a new and useful improvement in blind stitch sewing machines, and particularly to that type of sewing machine illustrated in the United States patent to Dearborn, No. 679,553.

My present invention contemplates the use of a rotary back guide or cloth support over which the material to be blind-stitched is fed in the sewing operation. Heretofore in the art of blind stitching and as exemplified in the Dearborn type of machine, the feed wheels were connected to the cloth support or ridge forming rib, but this was found to be objectionable. The cloth support was then made separate from the feed wheels and immovably mounted in the yielding apron, the feed wheels being independently and yieldingly supported in said apron so as to move independently in accommodating varying thicknesses of material. In operation, the back guide forces the material up through the opening in the rigid presser foot, and the curved needle is enabled to pass through the crimp or ridge in the material to be blind stitched, entering and leaving said material upon the same side, so that the stitches will not show on the fair or under face of the goods.

In my present invention, the back guide is in the form of a rotary disk supported by a lateral flange or flanges, so that its periphery, which supports the material to be blind stitched preferably does not come in contact with the supporting housing, and hence if said periphery is scratched or mutilated by the improper action of the needle, a bur or projection formed thereon will not interfere with the rotation of said disk. The supporting faces of the disk are out of the path of the needle and are not liable to be mutilated.

In the drawings (1) indicates the main casting in which the several moving parts of the machine are mounted.

(2) is the apron pivoted at (3), and having an extension (4) to which is connected a spring (5) for yieldingly holding said apron in position. This apron has feed wheels (6) yieldingly mounted therein, and capable of being independently depressed to compensate for varying thicknesses of material passing therebetween, and the rigid presser foot (7) with which they cooperate. The feed wheels 6 are made integral with a cylindrical portion therebetween extending within the opening in the rotary back guide. These feed wheels are operated by pawl and ratchet mechanism as set forth in said Dearborn patent aforesaid.

(8) is a rotary back guide or cloth support mounted between plates (9), which plates are secured together in any suitable manner. These plates embrace the bearing faces (8^a) of the back guide, so as to rotatively hold the same in position, but said plates do not contact with the cloth bearing flange (8^b) of said back guide. In this manner, the said face (8^b) if scarred or mutilated by the needle, is free to turn between the plates (9), and will not retard or interfere in any way with the rotation of the back guide.

Separable plates 9 are illustrated in Fig. 5, in which it will be seen that one of the plates is provided with a stepped circular recess in which the rotary back guide is seated, while the other plate, when assembled, holds the back guide to its seat. The upper edges of the circular recess preferably come slightly above the center of the back guide so as to prevent accidental displacement of the same.

The back guide will tend to rotate under the feeding action of the material, but I prefer to provide the same with a radial slot (8^c) in which projects a pin (9^a) from one

of the feed wheels. The opening in the rotary back guide through which the shaft of the feed wheels passes is of such size as to permit independent movement and play of said shaft in said opening. By loosely connecting the rotary back guide to the feed wheels, the same is positively driven, and presents a new surface at each stitch, and hence the said back guide or cloth supporting rib is constantly changing and is not liable to become worn at any one place, as frequently happens where the back guide is immovable in the direction of the feed of the material, and has its face formed with a notch as a result of the wearing action of the needle operating at the same point all the time.

In order to adjust the rotary back guide, I arranged screws (10) thereunder as shown in Fig. 1, and to hold said back guide against displacement, I provided the same with slots through which screws (11) pass. These slots permit a vertical adjustment, and the screws (11) tend to clamp plates (9) in position against accidental displacement.

Another feature of this invention is the construction of the upper feed dog arranged to operate over the back guide, which as shown is constructed with a recess at its inner end, for accommodating the swell in the cloth when the needle has penetrated said cloth. This feed dog is provided with teeth behind said recess, so that as the cloth is fed to the machine, said teeth tend to hold the cloth firmly to the action of the needle. The function of these teeth is also to take a better bite or grip on the cloth at the time the said upper feed dog is operating.

The stitch forming mechanism and the means for operating the several moving parts of the machine, including the feed dog, are all set forth in the Dearborn patent before described, and therefore need not be detailed here.

I claim—

1. In a sewing machine, the combination of a rigid presser foot having an opening therein, feed wheels which are rigidly connected together and arranged to coöperate with the under side of said presser foot on each side of said opening, a rotary back guide having movement independent of said feed wheels and projecting through the opening in said presser foot and a feed dog coöperating with said back guide.

2. In a sewing machine, the combination of a presser foot, of three feeding devices coöperating with the material being stitched, two of said feeding devices being rigidly connected together, a rotary back guide loosely connected to and positively driven from the rigidly connected feeding devices on one side of said presser foot, and said back guide coöperating with the feeding device on the opposite side of said presser foot.

3. In a sewing machine, the combination of a rotary back-guide comprising a cloth supporting periphery, bearing faces on each side thereof of relatively smaller diameter than said cloth supporting periphery, a mount for said back-guide comprising a plate having a curved shouldered seat for engaging one of said bearing faces and a separable member constituting the other part of said mount for engaging the other bearing face, the combined thickness of the separable members of the mount being substantially of the same thickness as the rotary back-guide.

4. In a sewing machine, a back guide and a feed dog, mounted to operate over the back guide, said feed dog having a recess to accommodate the swell of the cloth, resulting from the needle penetration, and teeth adjacent said recess to engage and hold the cloth during the penetration of the needle.

5. In a sewing machine, the combination of a presser foot and feed wheels coöperating therewith, a rotary back guide having a loose connection with said feed wheels and driven thereby, and an upper feed dog cooperating with said back guide, said feed dog having a recess to accommodate the swell of the material at the point of penetration of the needle and said feed dog being provided with teeth adjacent said recess.

6. In a sewing machine, the combination of a rotary back-guide comprising a cloth supporting periphery, bearing faces on each side thereof of relatively smaller diameter than said cloth supporting periphery, a mount for said rotary back-guide comprising a plate having a curved shouldered seat for engaging one of said bearing surfaces and providing a free space in which the cloth supporting periphery moves, and a removable member constituting a part of said mount for engaging the other bearing face.

7. In a rotary back-guide for sewing machines, the combination of a circular disk having a medially arranged cloth supporting periphery in the form of a rib, and a separable mount therefor comprising two plates forming curved bearing seats for said rotary back-guide.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this 12th day of February, 1910.

WILLIAM A. McCOOL.

Witnesses:
W. S. HARWELL,
J. L. MOON.