W. W. BURSON.

KNITTING MACHINE.

APPLICATION FILED JULY 9, 1906.

928,244.

Patented July 20, 1909.

3 SHEETS—SHEET 1.

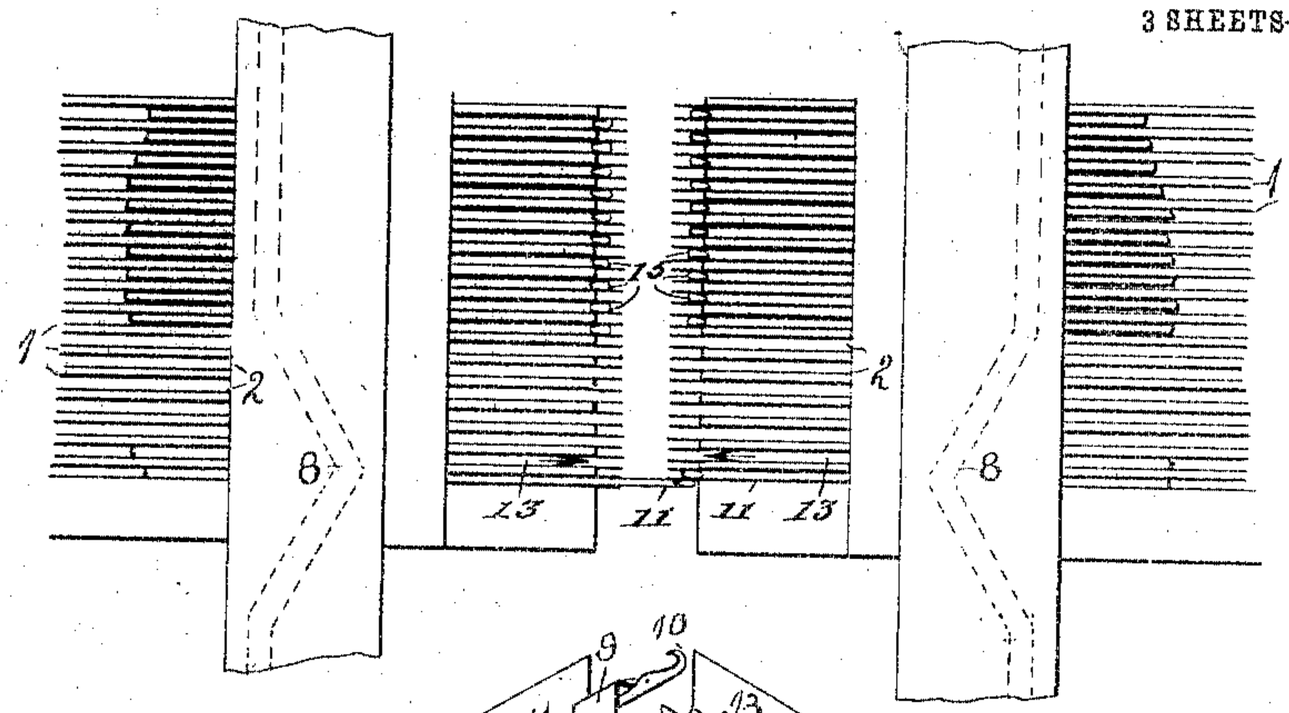

Fig. 1.

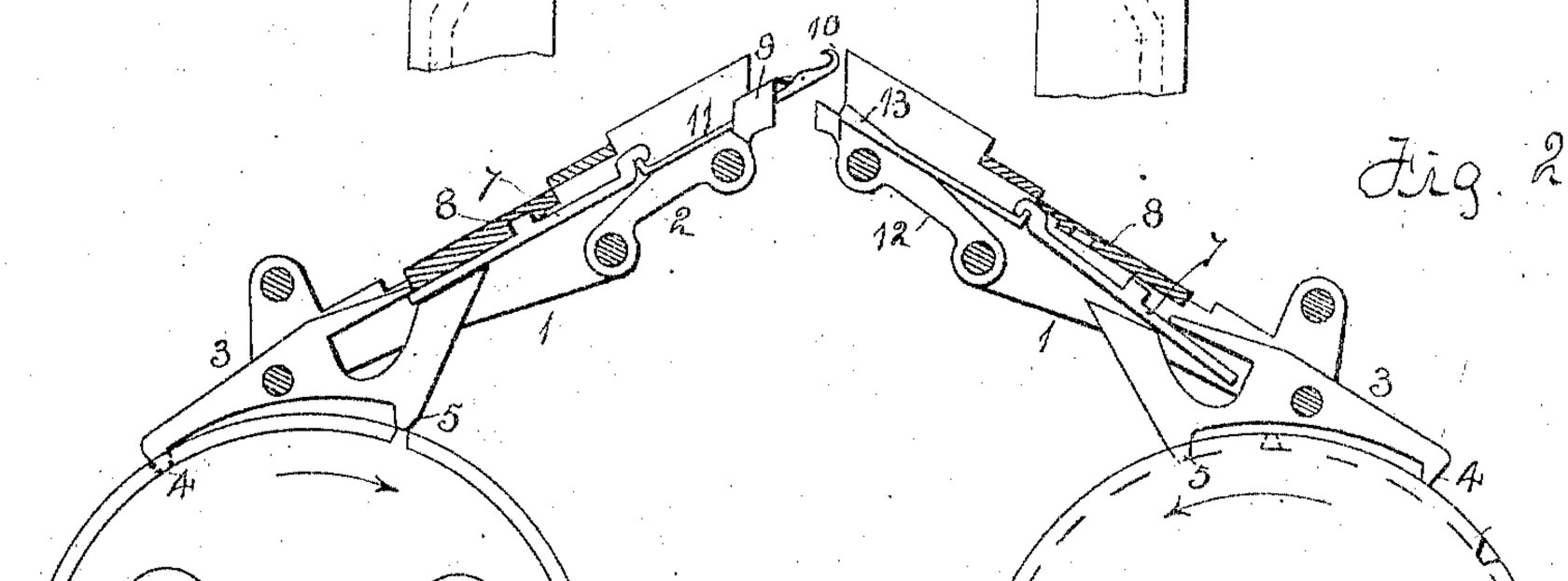

Fig. 2.

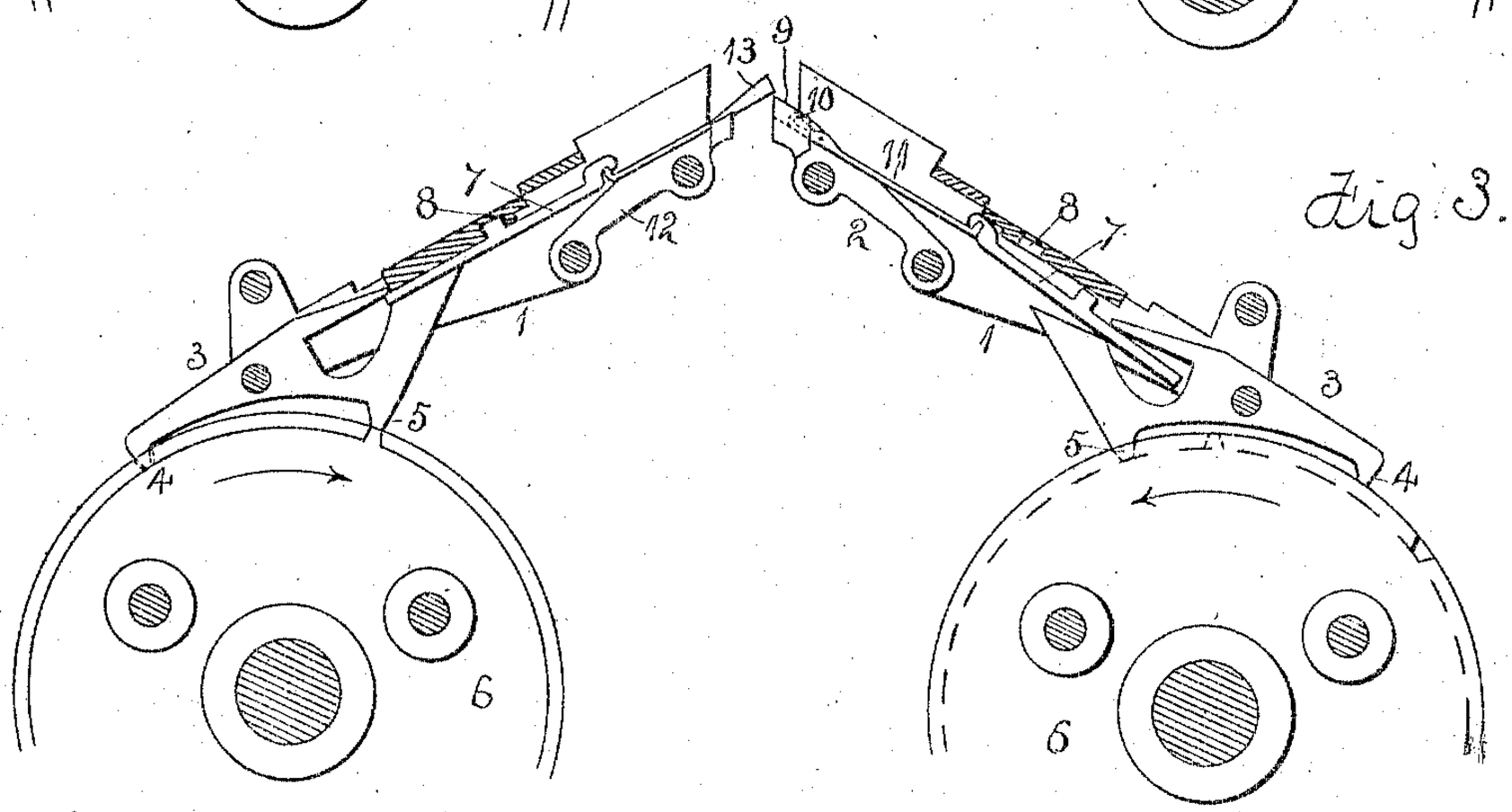

Fig. 3.

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Fig. 4.

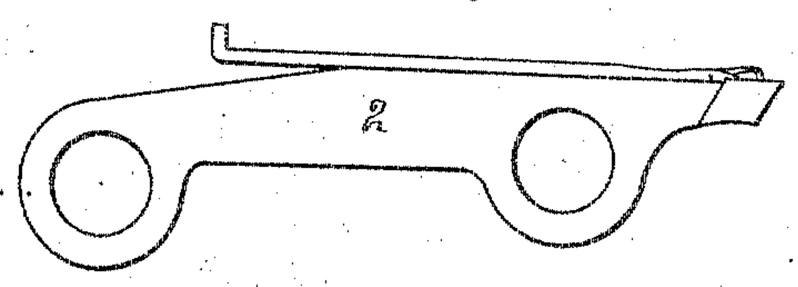


Fig. 5

Fig. 6.

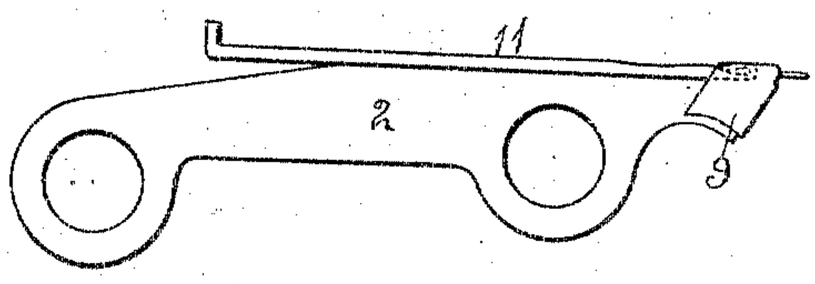


Fig. 7.

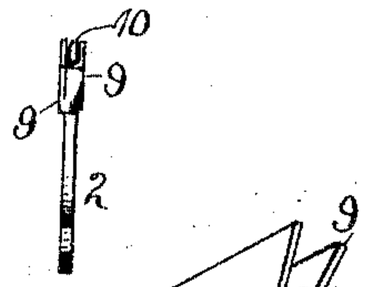


Fig. 8.

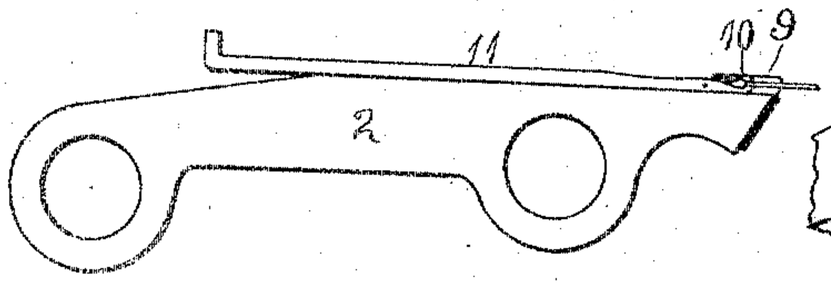


Fig. 11.

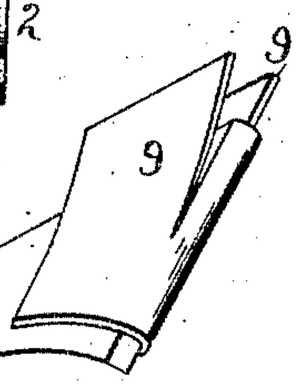


Fig. 12.

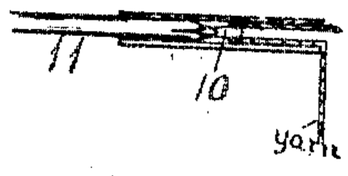


Fig. 9.

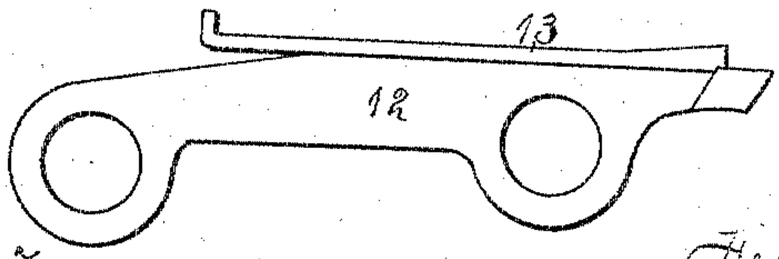
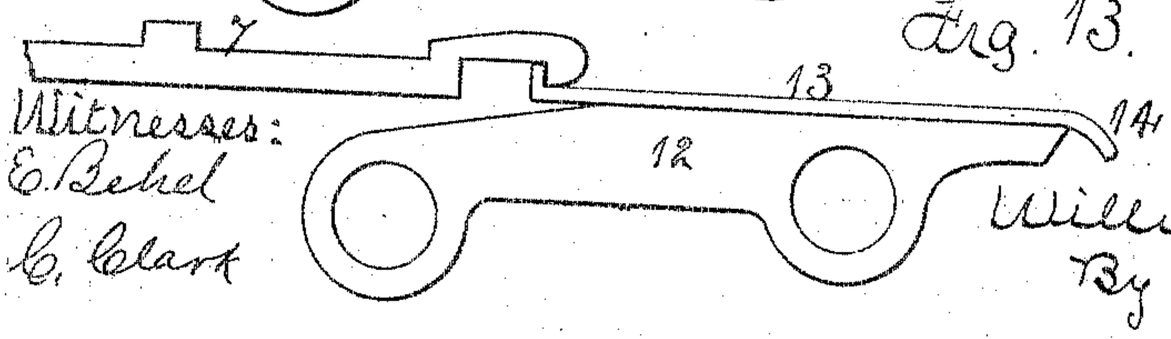


Fig. 10

Fig. 13.



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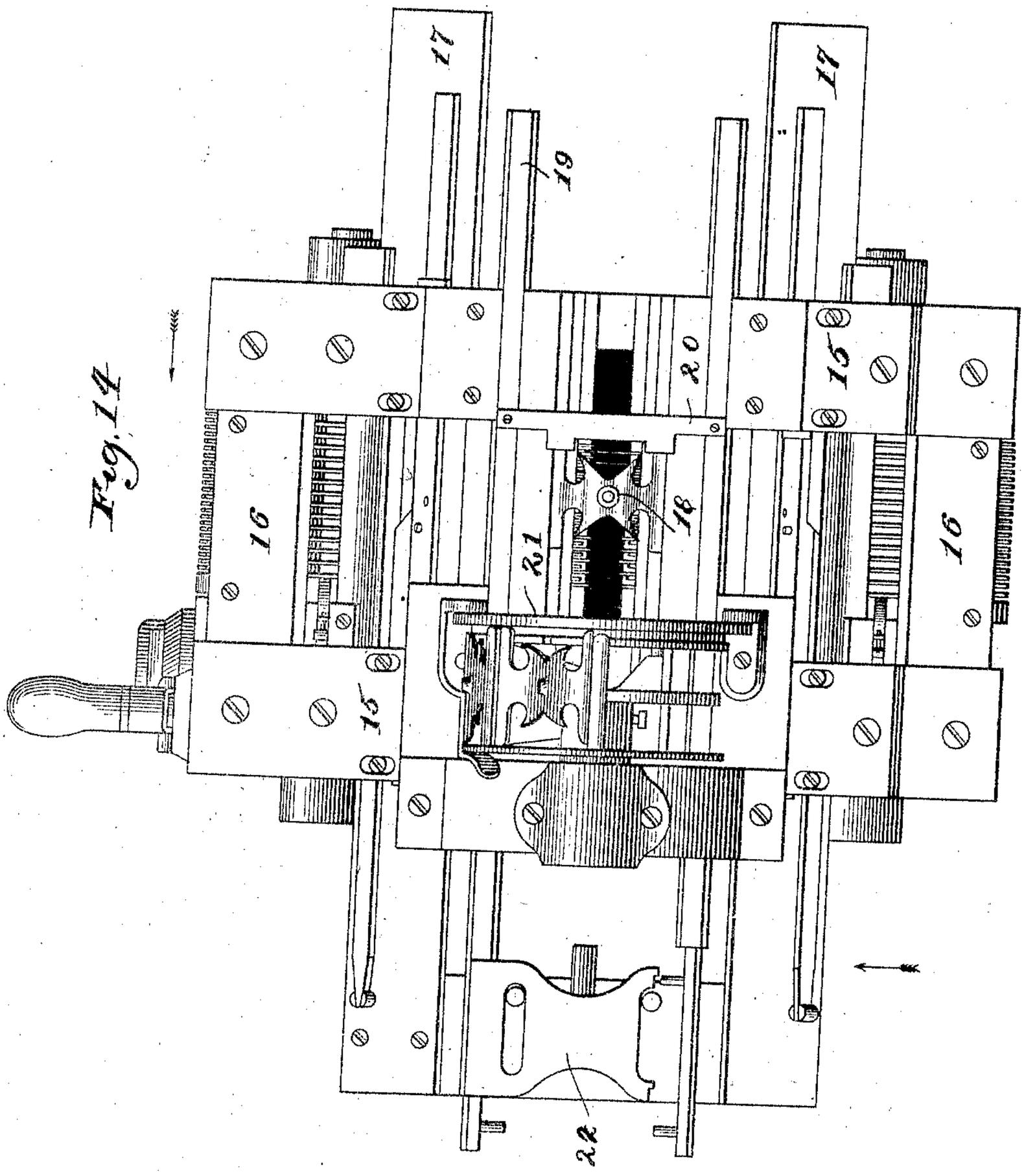
3 SHEETS—SHEET 3.

Fig. 14



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UNITED STATES PATENT OFFICE.

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KNITTING-MACHINE.

No. 928,244. Specification of Letters Patent. Patented July 20, 1909.

Application filed July 9, 1906. Serial No. 325,280.

To all whom it may concern:

Be it known that I, WILLIAM WORTH BURSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Knitting-Machines, of which the following is a specification.

The object of this invention is to provide means, in a knitting machine, for holding the yarn at the point of transfer of yarns, or between the ending of one stocking and the commencement of another.

The further object of this invention is to automatically trim the stockings in the process of knitting, thereby saving the expense of trimming by hand, also the liability of puckering the fabric by drawing the yarns, and by trimming the stockings automatically a great saving of yarn and in labor is made.

In the accompanying drawings, Figure 1 is a plan view of a portion of a straight knitting machine containing my improvements. Fig. 2 is a transverse section showing the holding needle on one side of the bed in its extended position; and the knife of the other bed withdrawn. Fig. 3 is a similar transverse section showing the knife of the bed on the same side as the holding needle in Fig. 2 extended, and the holding needle of the other bed withdrawn. Fig. 4 is a side elevation of a support for a knitting needle and a knitting needle in connection therewith. Fig. 5 is an end view of the support and needle shown at Fig. 4. Fig. 6 is a side elevation of a support for a holding needle, and holding needle in connection therewith. Fig. 7 is an end view of the support and needle shown at Fig. 6. Fig. 8 is a side elevation of a support for a holding needle, partly in section and a holding needle in connection therewith. Fig. 9 is a side elevation of a support for a knife, and a knife in connection therewith. Fig. 10 is an end view of the support and knife shown at Fig. 9. Fig. 11 is a perspective view of an end of the support for a holding needle. Fig. 12 is a plan view of a portion of the holding needle support and holding needle showing the ends of the yarn. Fig. 13 shows the knife with a hooked sharpened end. Fig. 14 is a plan view of a knitting machine of the type in which my improvements are embodied.

The knitting machine, so far as shown in the drawings, in the main, is of a construction shown in Letters Patent 616,600 and 616,601 granted to me Dec. 27, 1898, the novel features are shown in detail.

The machine in which my present improvements are embodied is generally disclosed in Fig. 14, and is of the same general type as that machine found in my Patent No. 616,600. It will be unnecessary to describe in detail the general structure of the machine, as my present improvements relate rather to detailed improvements than to general structure, and it is sufficient to point out that the machine comprises the frame parts 15 connected by the cross-pieces 16 and having the jack-slides 17 for operating the needles, yarn-holding devices and yarn-severing devices. The usual yarn carrier 18 having latch-openers is mounted in suitable ways above the needles, any usual means for moving the yarn-carrier being provided, as for example, the yarn-carrier slides 19, which are connected by the cross-bar 20. The same type of carrier-wheel 21 for the yarn-slides or carriers is provided as in my former patent, referred to, and the yarn-carrier slides are provided with a suitable cross-plate or plates 22, all as in the patent referred to.

The needle beds are made up of the division plates 1, between which are located the needle supports 2. The oscillatory-levers 3 are located between the division plates 1 and each is provided with two feet 4 and 5. The pattern wheels 6 are located with relation to the feet of the oscillatory levers 3, that the feet may be actuated thereby. Needle jacks 7 are moved by the oscillatory levers 3 into and out of engagement with the cams 8. The means for reciprocating the cams are not shown, as it is well understood.

At Figs. 4 and 5 is shown a knitting needle support with a knitting needle 15 in place.

At Figs. 6, 7 and 8 is shown a yarn holding needle support which has the side plates 9 of greater height than the side plates of the knitting needle supports, and cover the hooked end 10 of the holding needle 11. As shown at Figs. 7 and 11 one of the side plates 9 is separated, a part of its height from the needle support in order that it may yield outward under pressure.

At Figs. 9 and 10 is shown a support 12 like the needle supports, but in connection with which is shown a knife 13 having a needle shank.

At Fig. 2 is shown a holding needle ex

tended and a knife withdrawn. At Fig. 3 the knife is shown extended and the holding needle withdrawn. The holding needles and knife or knives are operated by the knitting cams and their time of movement controlled by the pattern wheel in the same manner as the knitting needles in the machine. At Fig. 1 two holding needles 11, and two knives 13 are shown, a holding needle and knife located in the needle grooves of a bed. The holding needles are extended at the time when a change of yarn is taking place and again withdrawn. The yarn will be drawn down between the side plates 9 of the needle support and will be clamped between the needle and side plates. Owing to the varying thicknesses of yarn, and to the different thicknesses of yarn that may be employed, one of the side plates is made laterally yielding. After the yarn has been seized by one of the holding needles, the return movement of the needle cam will extend the knife and sever the yarn between the holding needle and the fabric, and the continued return movement of the needle cam will withdraw the knife. The knife may be operated a number of times to insure the yarn being severed. This operation is repeated at each change of yarn or at the finish of each article. At Fig. 13 the knife is shown with a hooked sharpened end 14, and a knife of this construction will sever the yarn held by the two yarn holding needles.

In the claims I have stated that the needle beds or needle supports are formed with grooves within which are located the knitting needles, yarn holding needles and knives. I wish it understood that the grooves may be formed by the beds being built up as shown by my patent above referred to, or can be formed in the material of which the beds or supports are made.

I claim as my invention:

1. In a knitting machine the combination of a needle bed, knitting needles supported by the bed, yarn holding means located adjacent to one end of the needle bed, to hold the yarn in position for cutting, and a yarn severing knife located adjacent to one end of the needle bed, the yarn holding means and knife being movable transversely of the needle bed.

2. In a knitting machine, the combination of a needle bed, knitting needles supported by the bed, yarn holding means located adjacent to one end of the needle bed, and a knife located adjacent to one end of the needle bed and between the yarn holding means and the knitting needles, the yarn holding means and knife being movable transversely of the needle bed in parallelism with the needles.

3. In a knitting machine, the combination of a needle bed, knitting needles supported by the bed, a yarn holding needle located adjacent to one end of the needle bed to hold the yarn in position for cutting, and a yarn severing knife located adjacent to one end of the needle bed and between the yarn holding needle and the knitting needles, the yarn holding needle and knife being movable transversely of the needle bed.

4. In a knitting machine, the combination of a support formed with needle grooves, knitting needles located in some of the grooves, an independent yarn holding device located in a groove, a yarn severing knife located in a groove and coöperating with said holding device, a cam for moving the needles, yarn holding device and knife and a pattern device controlling the throwing in and out movements of the needles, yarn holding device and knife.

5. In a knitting machine, the combination of a support formed with needle grooves, knitting needles located in some of the grooves, an independent yarn holding device located in a groove, a yarn severing knife located in a groove and coöperating with said holding device, means for moving the needles, yarn holding device and knife, and a pattern device controlling the throwing in and out movements of the needles, yarn holding device and knife.

6. In a knitting machine, the combination of a needle bed formed with grooves, knitting needles located in some of the grooves, an independent yarn severing knife located in a groove, a cam for moving the needles and knife, and a pattern wheel controlling the throwing in and out movements of the needles and knife.

7. In a knitting machine, the combination of two needle beds, each formed with needle grooves, knitting needles located in some of the grooves of each bed, an independent yarn holding needle for each bed and located in a groove thereof, an independent yarn severing knife for each bed and located in a groove thereof, and independent means for moving the needles and knife of a bed.

8. In a knitting machine, the combination of two needle beds each formed with needle grooves, knitting needles located in some of the grooves of each bed, an independent yarn holding needle for each bed and located in a groove thereof, an independent yarn severing knife for each bed and located in a groove thereof, and two cams, one for moving the needles and knife of a bed.

9. In a knitting machine, the combination of two needle beds, each formed with needle grooves, knitting needles located in some of the grooves of a bed, an independent yarn holding needle for each bed and located in a groove thereof, a yarn severing knife for each bed and located in a groove thereof cooperating with said holding needle, two cams, one for moving the needles and knife

of a bed, and two pattern devices, each controlling the throwing in and out movements of the needles and knife of a bed.

10. In a knitting machine, the combination of a needle bed, knitting needles supported by the bed, an independent yarn holding needle located adjacent to one end of the bed, and an independent yarn severing knife located between the knitting needles and the yarn holding needle cooperating with said holding needle.

11. In a knitting machine, the combination of two needle beds, knitting needles supported by each bed, an independent yarn holding needle for each bed and located adjacent to one end of the bed, and an independent yarn severing knife located between the knitting needles and the yarn holding needles coöperating with said holding needle.

12. In a knitting machine, the combination of two needle beds, knitting needles supported by each bed, an independent yarn holding needle for each bed and located adjacent to one end of the bed, and an independent yarn severing knife for each bed located between the knitting needles and the yarn holding needle of a bed coöperating with said holding needle.

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