Nov. 20, 1928. 1,692,567

F. H. PEUCKERT

MEANS FOR PRODUCING A FABRIC BY COMBINED KNITTING AND WEAVING

Filed May 1, 1926 9 Sheets-Sheet 1

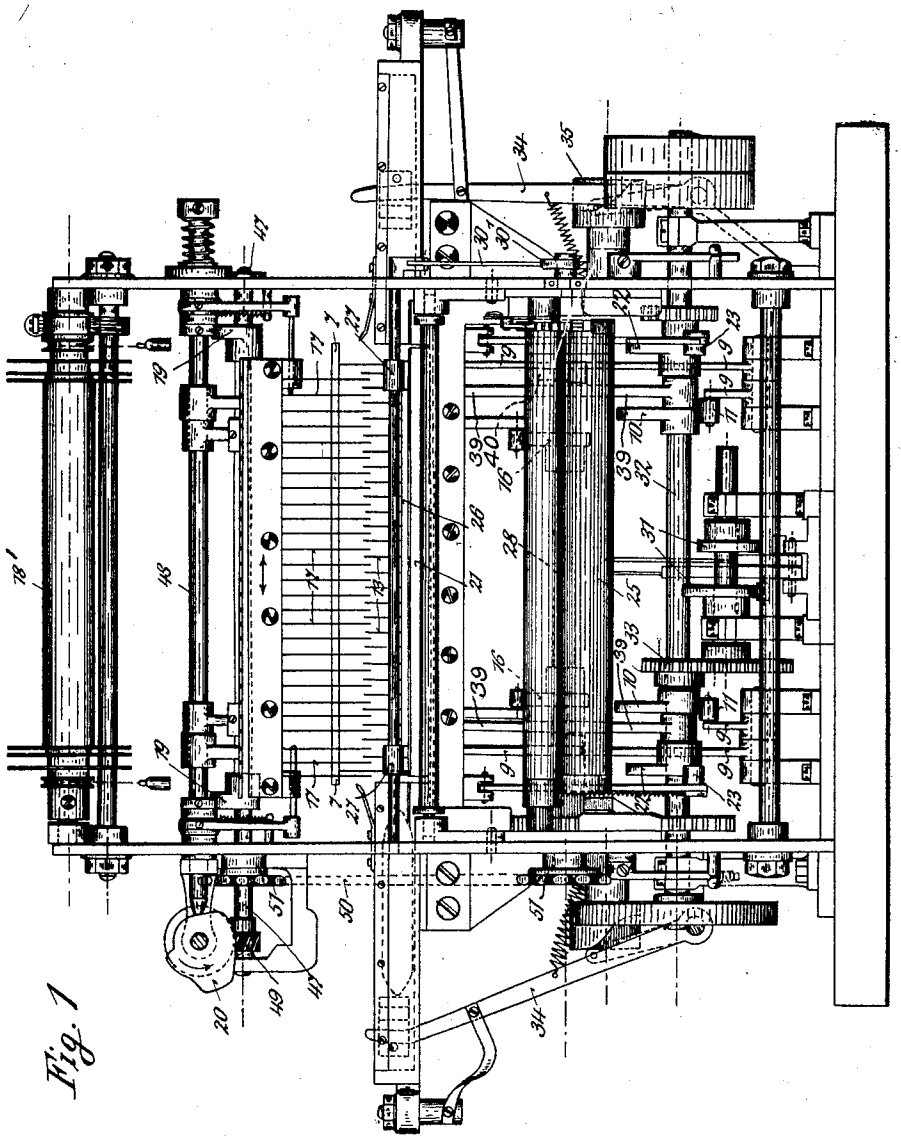


Fig. 1

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Nov. 20, 1928. 1,692,567

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MEANS FOR PRODUCING A FABRIC BY COMBINED KNITTING AND WEAVING

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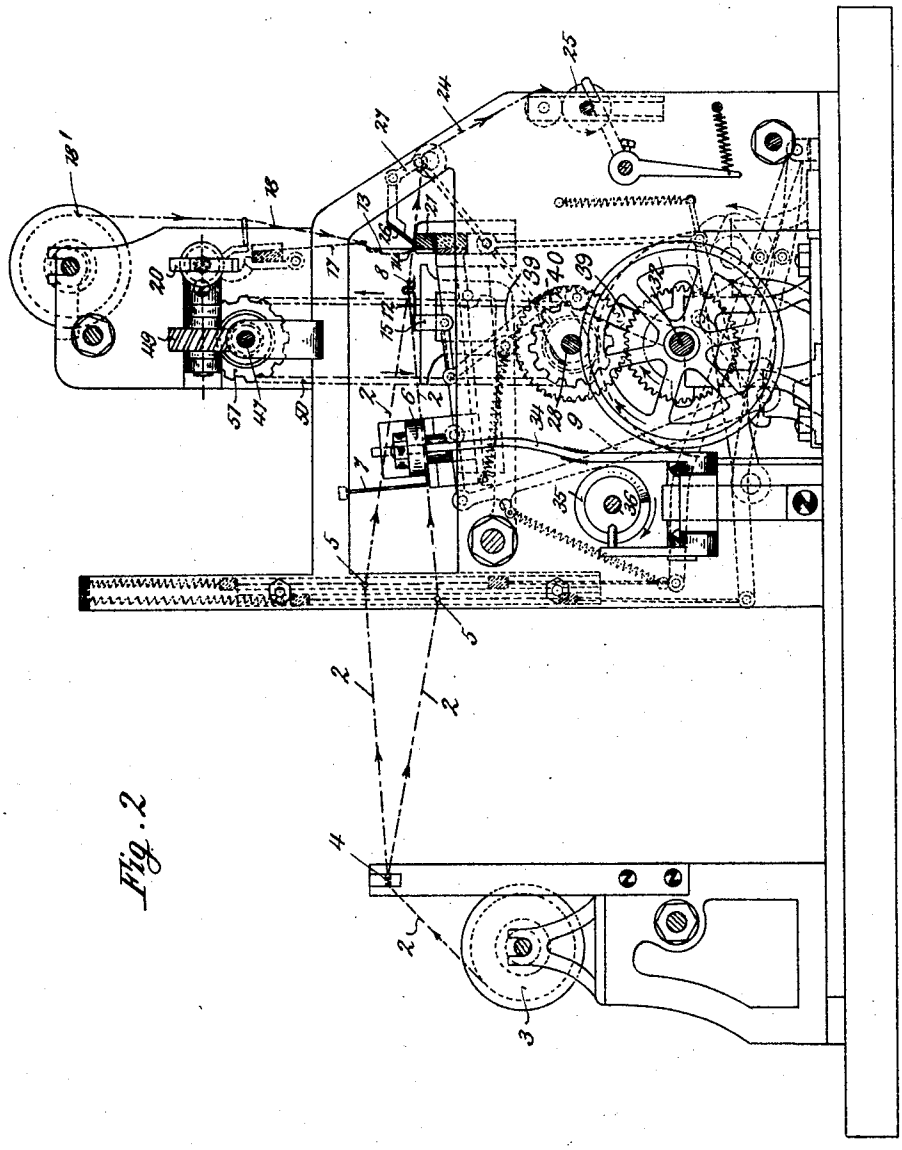


Fig. 2

Inventor
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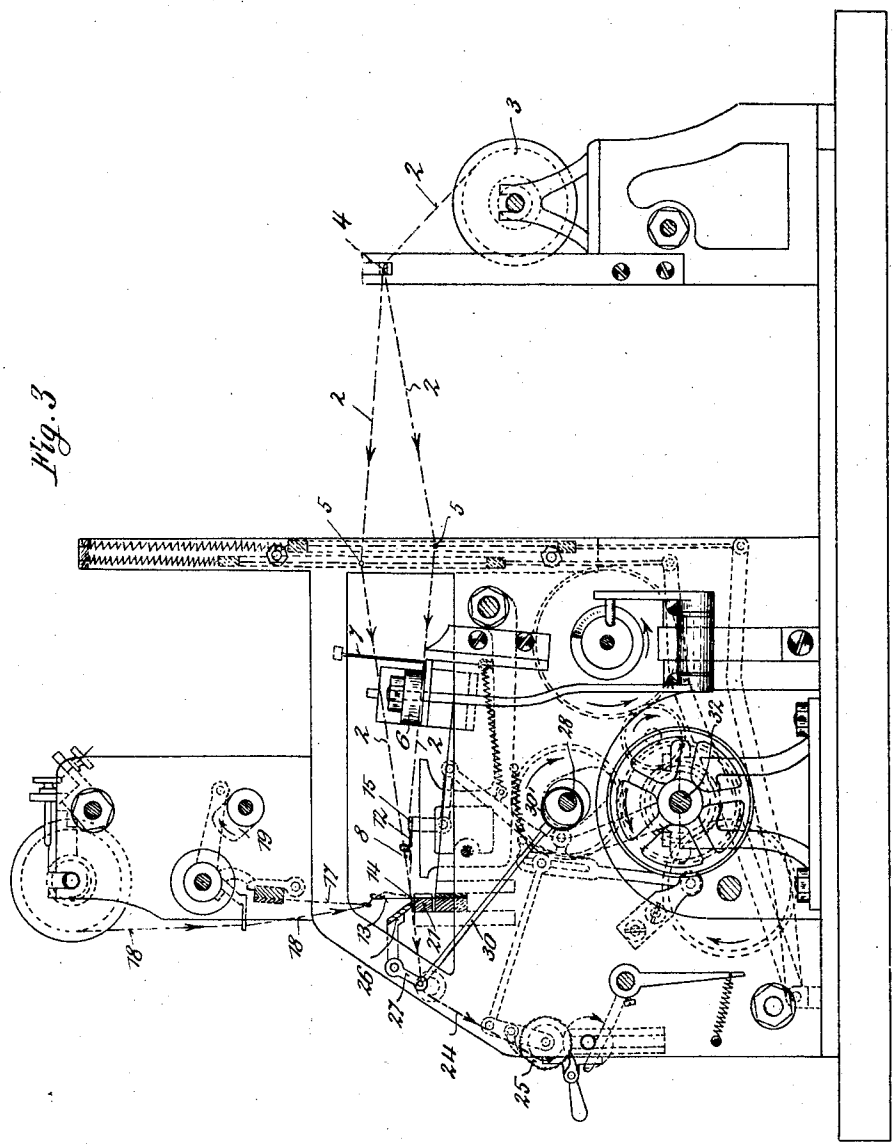
Nov. 20, 1928. 1,692,567

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MEANS FOR PRODUCING A FABRIC BY COMBINED KNITTING AND WEAVING

Filed May 1, 1926 9 Sheets-Sheet 3

Fig. 3



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Nov. 20, 1928. 1,692,567

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MEANS FOR PRODUCING A FABRIC BY COMBINED KNITTING AND WEAVING

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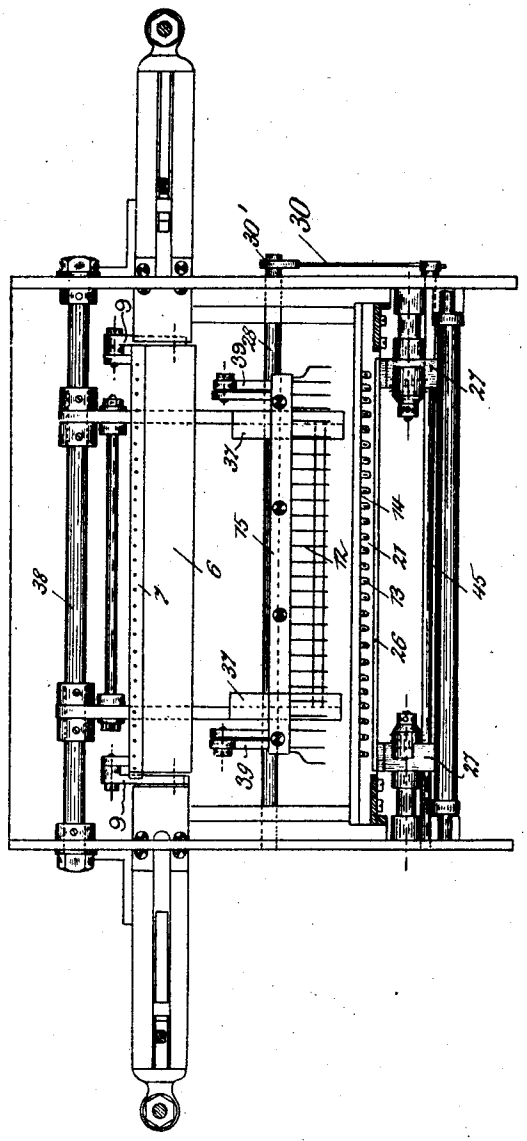


Fig. 4

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MEANS FOR PRODUCING A FABRIC BY COMBINED KNITTING AND WEAVING

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Fig. 6

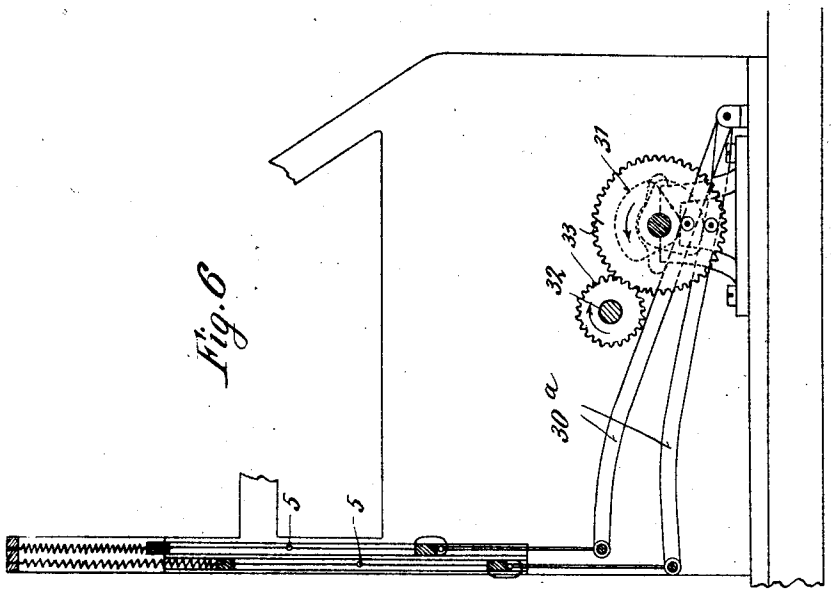
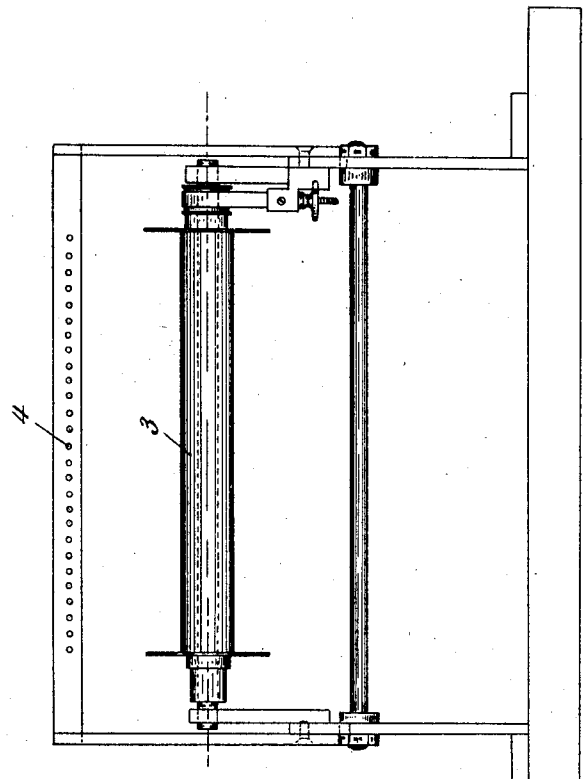


Fig. 5



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Nov. 20, 1928. 1,692,567

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MEANS FOR PRODUCING A FABRIC BY COMBINED KNITTING AND WEAVING

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Fig. 8

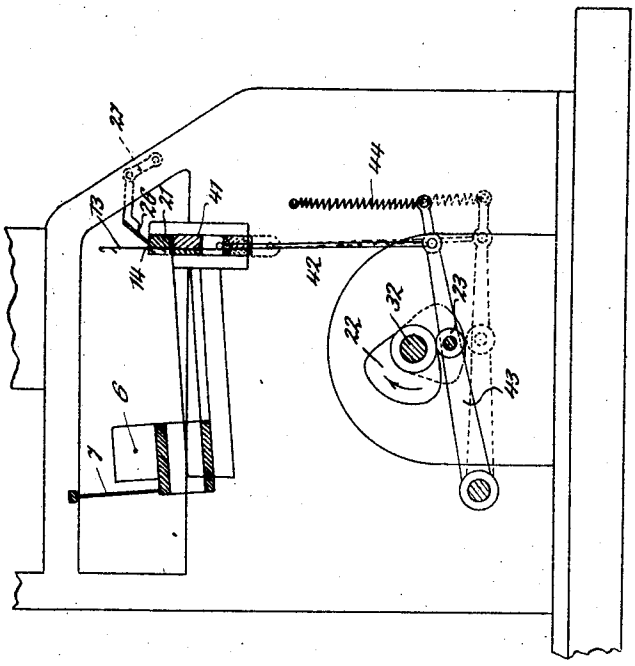
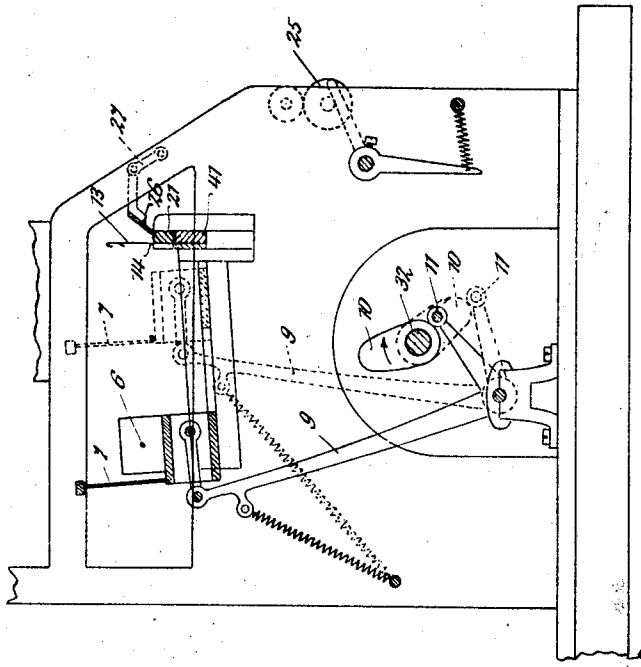


Fig. 7



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MEANS FOR PRODUCING A FABRIC BY COMBINED KNITTING AND WEAVING

Filed May 1, 1926 9 Sheets-Sheet 7

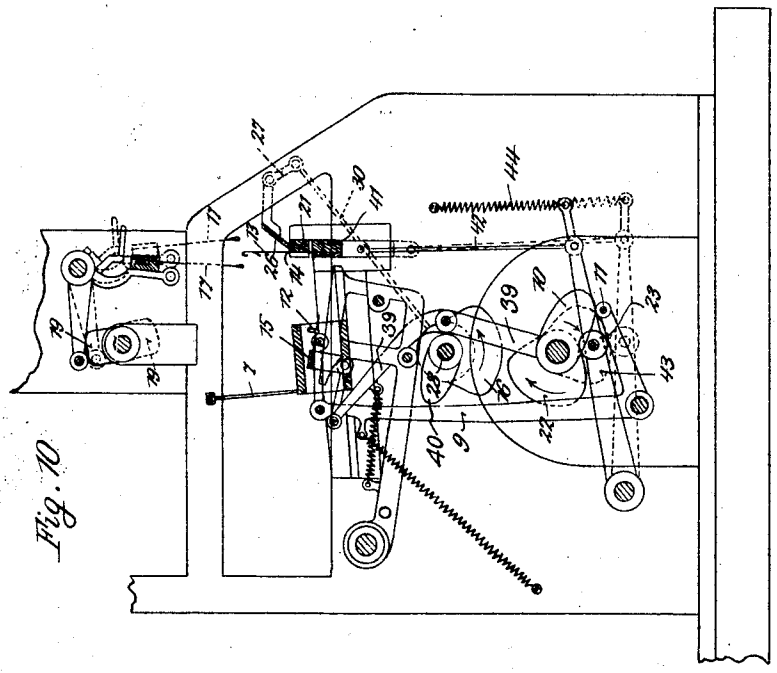


Fig. 10

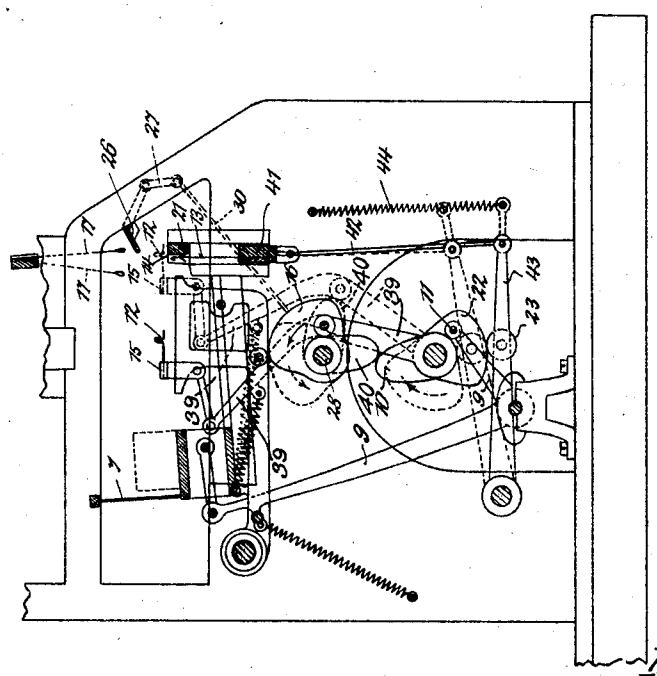


Fig. 9

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Nov. 20, 1928. 1,692,567

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MEANS FOR PRODUCING A FABRIC BY COMBINED KNITTING AND WEAVING

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Fig. 13

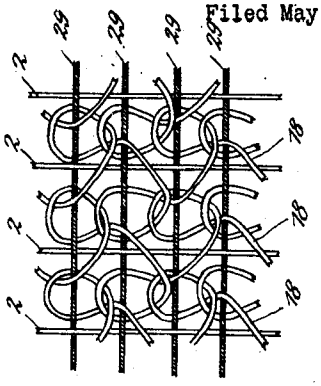


Fig. 14

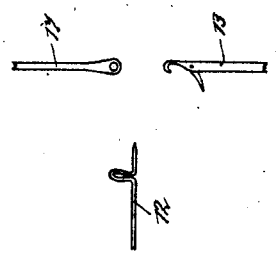


Fig. 11

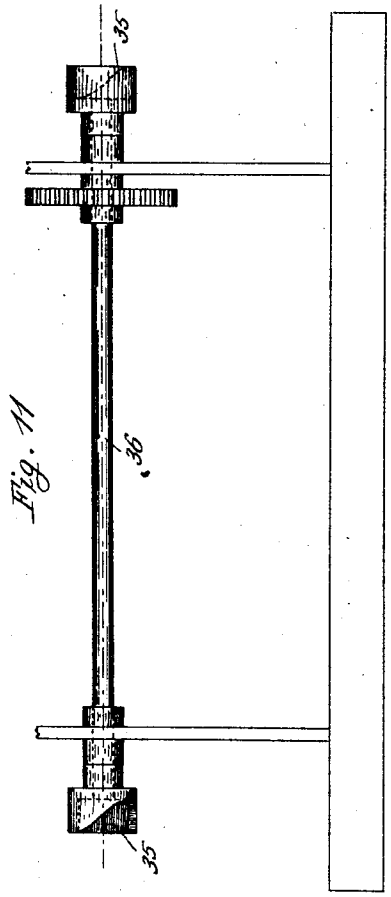
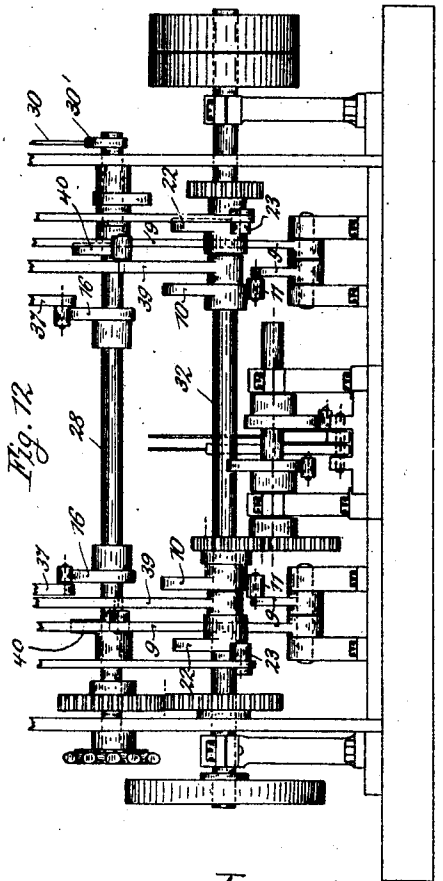


Fig. 12



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MEANS FOR PRODUCING A FABRIC BY COMBINED KNITTING AND WEAVING

Filed May 1, 1926 9 Sheets-Sheet 9

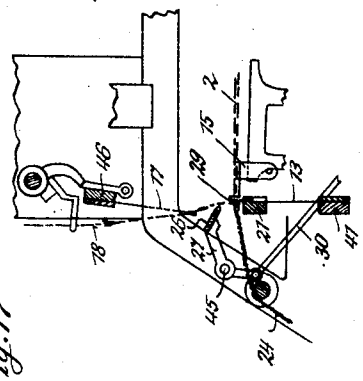


Fig. 17

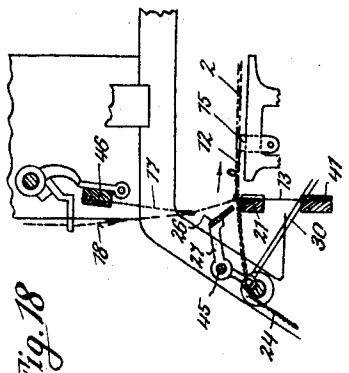


Fig. 18

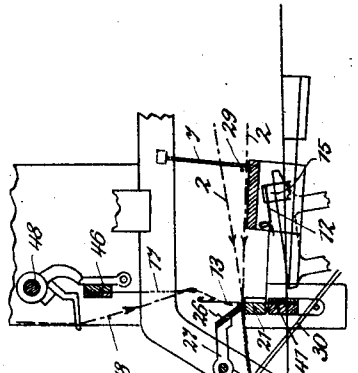


Fig. 15

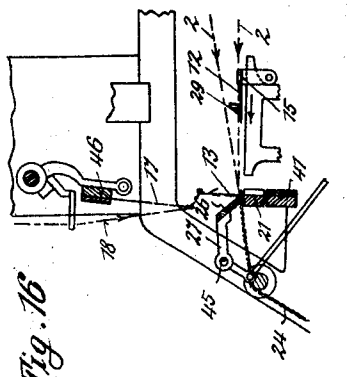


Fig. 16

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Patented Nov. 20, 1928. 1,692,567

UNITED STATES PATENT OFFICE.

FRIEDRICH HUGO PEUCKERT, OF DRESDEN-KADITZ, GERMANY, ASSIGNOR TO EDWIN WILDT, OF LEICESTER, GREAT BRITAIN.

MEANS FOR PRODUCING A FABRIC BY COMBINED KNITTING AND WEAVING.

Application filed May 1, 1926, Serial No. 106,175, and in Germany December 24, 1925.

This invention relates to means for producing a fabric by combined knitting and weaving, and the invention consists essentially in performing the knitting across the woven fabric at the beat-up point of the loom alternately with the beating-up so that the sewing threads will be enmeshed in the stitches.

This arrangement allows the weaving to proceed in the usual manner, and any desired patterning may be applied to the woven as well as to the knitted part of the fabric.

The invention also consists in the various details of construction and combination of machine parts as hereinafter set forth and claimed.

Fig. 1 of the accompanying drawings represents a front view of the machine whereby the invention may be carried out, and

Figs. 2 and 3 are opposite side views of the same.

Fig. 4 is a plan view of the machine,

Fig. 5, a view of the warp beam and the back support,

Fig. 6, a view of the shedding mechanism employed in the present machine,

Fig. 7, a view of part of the beat-up mechanism, and

Fig. 8, a view of part of the knitting mechanism.

Figs. 9 and 10, are views of the beat-up and knitting mechanisms showing the elements in different positions,

Fig. 11 is a view of the picking-shaft, and

Fig. 12 a view of the principal cam shaft.

Fig. 13 is a diagram showing the simplest form of fabric obtained by the present arrangement, and

Fig. 14, a diagram showing the relative positions of the beat-up dents, the knitting needles and the knitting thread guides.

Figs. 15 to 18 are views showing the knitting elements in their different operative positions.

The loom presents on the whole the usual appearance. The warp 2 is led from the beam 3 over the back support 4 and thence through a shedding mechanism which may be of the jacquard type so that any desired pattern may be obtained. In the drawings where the machine and the product are shown in their simplest form, two sets of spring-supported heddle eyes 5 are operated by levers 30^a (Fig. 6), and cams 31 which receive their motion from the main shaft 32 through the medium of a toothed gearing 33. The weft is supplied by a shuttle in the usual manner, the pickers 6 being operated by spring-actuated sticks 34 and helical cam faces 35 kept in motion by a shaft 36 to which rotation is imparted from the main shaft. The lay sword 9 is operated, as shown in Fig. 7, by cams 10 which are mounted on the main shaft 32 and which co-operate with rollers 11 on appropriately disposed lever arms. The reed 7 only forwards the weft as far as the point 8 (Fig. 2). From this point to the end of the shed, the beating-up is effected by reed dents 12 carried by a slide 15. The latter is guided on a frame 37 which rocks about a shaft 38 under the influence of cams 16 mounted on a shaft 28. Curved spring-controlled arms 39 which rock about the main shaft 32, are linked to the slide 15 and operated by cams 40 on the shaft 28 so as to reciprocate the slide on the guideway provided for it in the frame 37.

The beat-up point 14 is situated under a stripping bar 21 which is grooved transversely to form guides for the knitting needles 13. The latter are connected to a slide 41 which is arranged in a guideway over the bar 21 so that it can be reciprocated for passing the needles up and down through the fabric between the warp threads. The slide 41 is connected by links 42 (Figs 8) to levers 43 which are controlled by springs 44 and rocked by the co-operation of the springs with cams 22 mounted on the main shaft 32. Rollers 23 on the levers take the thrust of the cams. While the stripping bar 21 supports the fabric from below and strips the loops off the needles, a presser bar 26 supports the fabric from above while the needles are raised. The bar 26 is carried by arms 27 connected to a rock shaft 45. This rock shaft is operated by a rod 30 which is reciprocated by an eccentric 30′ mounted on the shaft 28.

The guides for the knitting threads 18 are secured to a bar 46 which is carried by arms connected to a rock shaft 48. The latter is rocked by cams 19 mounted on a shaft 47 for placing the threads in the hooks of the needles 13. The shaft 48 is also capable of axial displacement and is reciprocated by the co-operation of a spring with a pattern cam 20 so as to shift the threads into engagement with different needles. There may be more than one set of thread guides controlled by different pattern cams or by dobbies or pattern change chains, in which case a much greater variety

of patterns can be produced. The cam 20 may be driven by a worm wheel gear 49 which receives motion from the shaft 28 by means of a chain 50 and sprocket wheels 51.

The knitting threads 18 are supplied from a beam 18'. The finished fabric 24 is taken up by a cloth beam 25.

Figs. 15 to 18 illustrate the operation of the machine. In Fig. 15 the presser bar 26 is shown lowered so as to support the fabric while the needles 13 are raised through their loops behind the last weft thread for catching the knitting threads 18. The supplemental reed dents 12 are retracted underneath the shed. While the next weft thread 29 is being advanced by the reed 7, the thread guides 17 move so as to place the threads in the needle hooks. Fig. 16 shows the threads in the hooks; the reed 7 is retracted and the supplemental reed dents 12 are raised into engagement with the fresh weft thread. The needles 13 are now lowered so as to make new loops across the previously beaten-up weft thread, the new loops being pulled through the old ones which are stripped off the needles by the bar 21. At the same time, the presser bar 26 is raised, and the dents 12 are advanced so as to bring the new thread right up to the end of the shed. This position of the elements is shown in Fig. 17. The dents 12 are now retracted, while the presser bar 26 is lowered and the needles raised behind the new weft thread for forming fresh loops around the latter. If the thread guides have meanwhile been shifted laterally, the fresh loops will be formed by different threads so that the warp will also be engaged in the stitches. Fig. 13 shows a plain fabric emmeshed in this manner by knitting threads which form loops around the weft threads 29 alternately at opposite sides of the warp thread 2.

I claim:—

1. In a loom, a lay, means for operating said lay so as to effect a partial beating-up of the weft threads, reed dents adapted to enter the shed from between the warp threads, means for operating said dents so as to complete the beating-up, knitting needles arranged under the beating-up point of the loom, means for reciprocating said needles through the warp so as to form stitches around the weft threads, thread guides for the knitting needles arranged above the beating-up point, and means for moving said guides so as to feed the threads to the needles and change the threads over from one needle to another so as to emmesh the warp in the stitches.

2. In a loom, a lay, means for operating said lay so as to effect a partial beating-up of the weft threads, reed dents adapted to enter the shed from between the warp threads, means for operating said dents so as to complete the beating-up, knitting needles arranged under the beating-up point of the loom, means for reciprocating said needles through the warp so as to form stitches around the weft threads, thread guides for the knitting needles arranged above the beating-up point, means for moving said guides so as to feed the threads to the needles and change the threads over from one needle to another so as to emmesh the warp in the stitches, a stripping-bar arranged under the beating-up point for guiding the needles and stripping off the loops from the same, a presser bar arranged above the stripping bar, and means for applying said bars to the fabric so as to support the latter against the action of the needles.

3. In a loom, a lay, means for operating said lay so as to effect a partial beating-up of the weft threads, reed dents adapted to enter the shed from between the warp threads, means for operating said dents so as to complete the beating-up, knitting needles arranged under the beating-up point of the loom, means for reciprocating said needles through the warp so as to form stitches around the weft threads, thread guides for the knitting needles arranged above the beating-up point, means for moving said guides so as to feed the threads to the needles and change the threads over from one needle to another so as to emmesh the warp in the stitches, a stripping-bar arranged under the beating-up point for guiding the needles and stripping off the loops from the same, a presser bar arranged above the stripping bar, means for applying said bars to the fabric so as to support the latter against the action of the needles, and a pattern device for controlling the thread guides for patterning the knitted part of the fabric.

4. In a loom, a lay operative for effecting a partial beating-up of the weft threads, a device movable vertically into and out of the shed between the warp threads and horizontally toward the beating-in point of the loom for completing the beating-up action, knitting needles vertically reciprocable through the warp at the beating-in point so as to form stitches around the weft threads, thread guides for the knitting needles, and means for moving said guides so as to feed the threads to the needles and change the threads over from one needle to another so as to emmesh the warp in the stitches.

5. In a loom, a lay operative to effect a partial beating-up of the weft threads, a device movable vertically into and out of the shed between the warps and horizontally toward and from the beating-in point of the loom for completing the beating-up action, knitting needles arranged under the beating-up point of the loom and reciprocable vertically through the warp so as to form stitches around the weft threads, thread guides for the needles arranged above the beating-up

point, means for moving said guides so as to feed the threads to the needles and change the threads over from one needle to another so as to enmesh the warp in the stitches, a stripping bar arranged under the beating-up point for guiding the needles and stripping off the loops from the same, and a presser bar mounted for rocking movement toward and from said stripping bar and coacting therewith to clamp the fabric during the action of the needles and to release the fabric between intervals of operation of the needles.

6. In a loom, a lay operative for effecting a partial beating-up of the weft threads, a device movable vertically into and out of the shed between the warp threads and horizontally toward and from the beating-up point of the loom for completing the beating-up action, knitting needles arranged in the beating-up point of the loom and reciprocable vertically through the warp so as to form stitches around the weft threads, thread guides for the needles arranged above the beating-up point, means for moving said guides so as to feed the threads to the needles and change the threads over from one needle to another so as to enmesh the warp in the stitches, a stripping bar arranged under the beating-up point for guiding the needles and stripping off the loops from the same, a presser bar mounted to rock toward and from the stripping bar and coacting therewith for respectively clamping the fabric during the action of the needles and releasing the fabric during intervals of operation of the needles, and a patterning device for controlling the thread guides for patterning the knitted part of the fabric.

In testimony whereof I have affixed my signature.

FRIEDRICH HUGO PEUCKERT.