

(Specimens.)

F. WEVER.
CIRCULAR KNITTING FRAME.

3 Sheets—Sheet 1.

No. 579,621.

Patented Mar. 30, 1897.

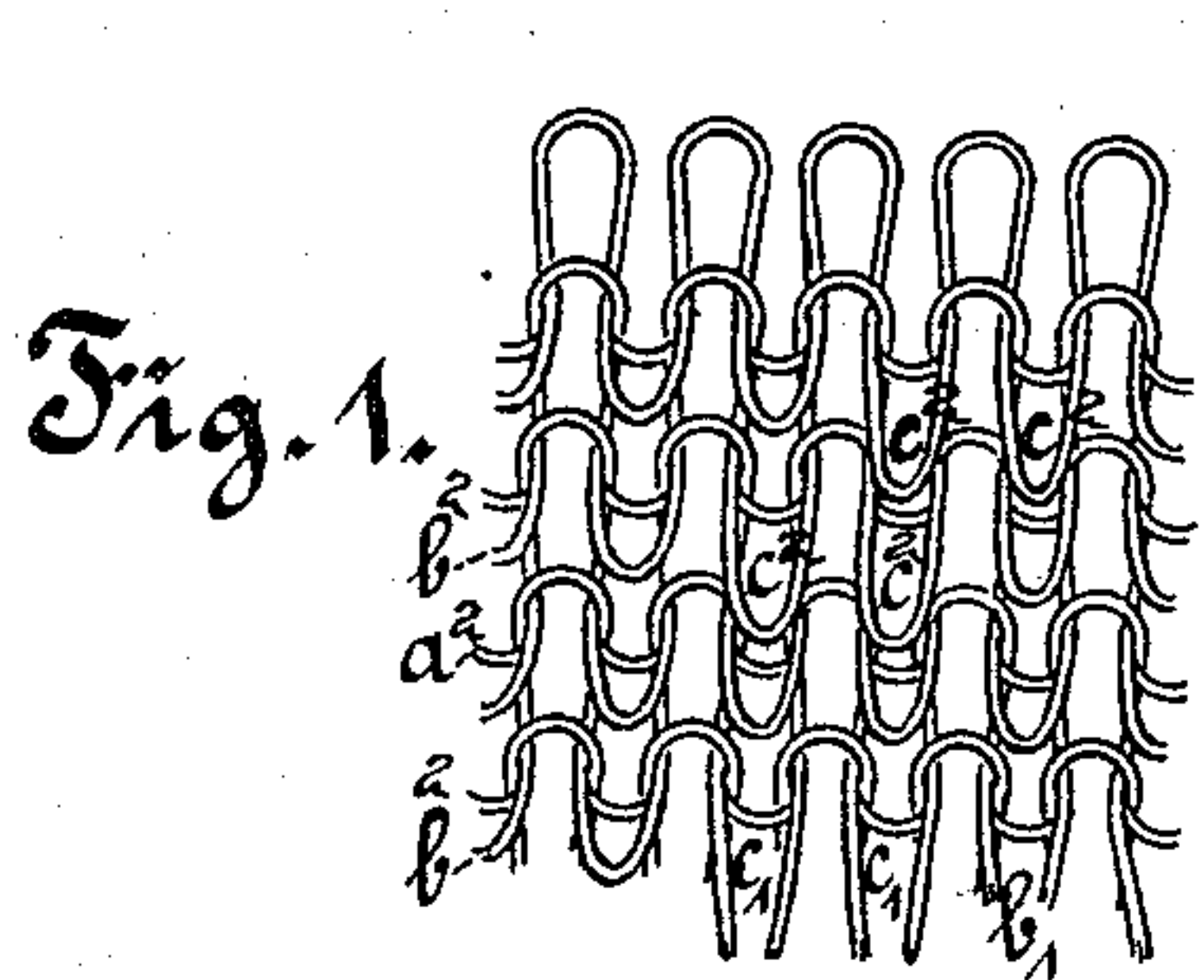


Fig. 2.



Fig. 3.

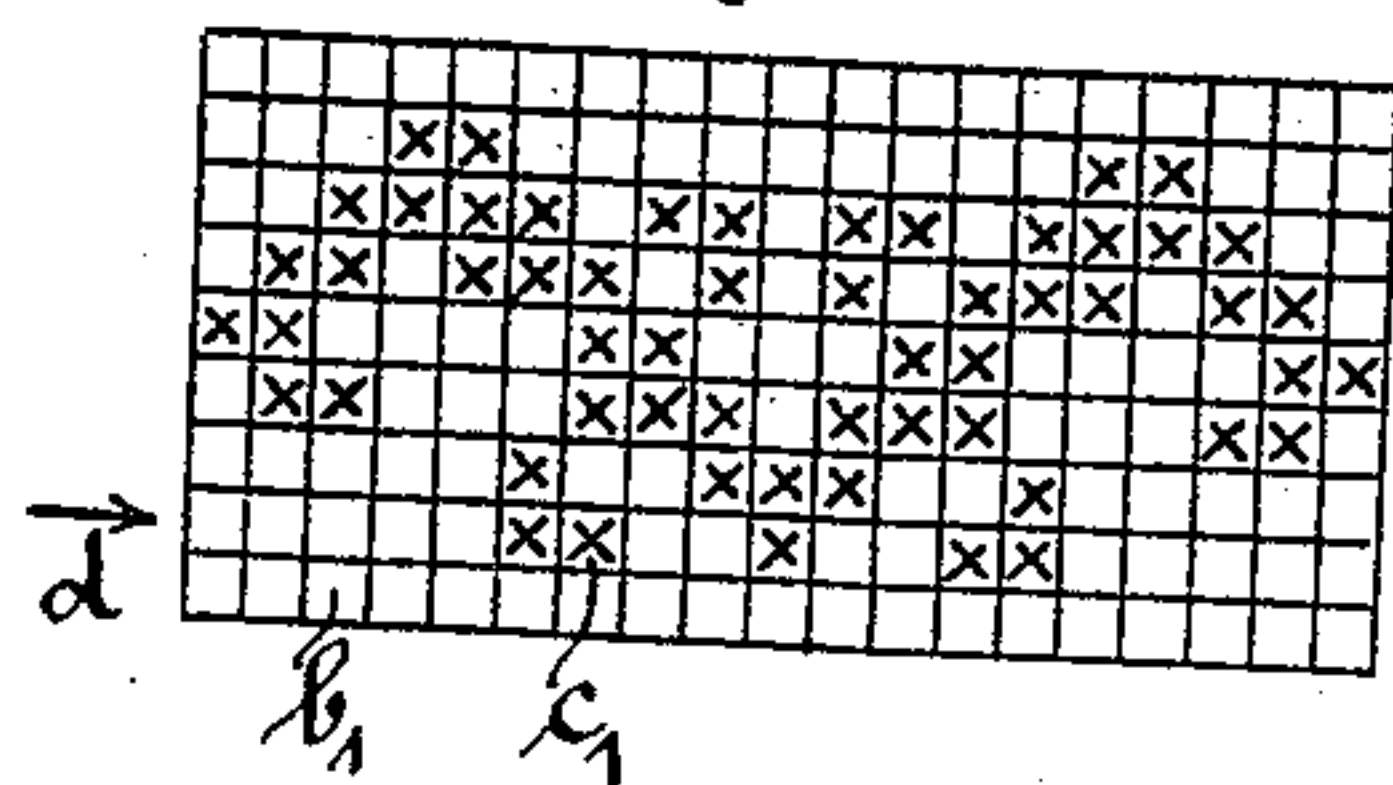


Fig. 4.

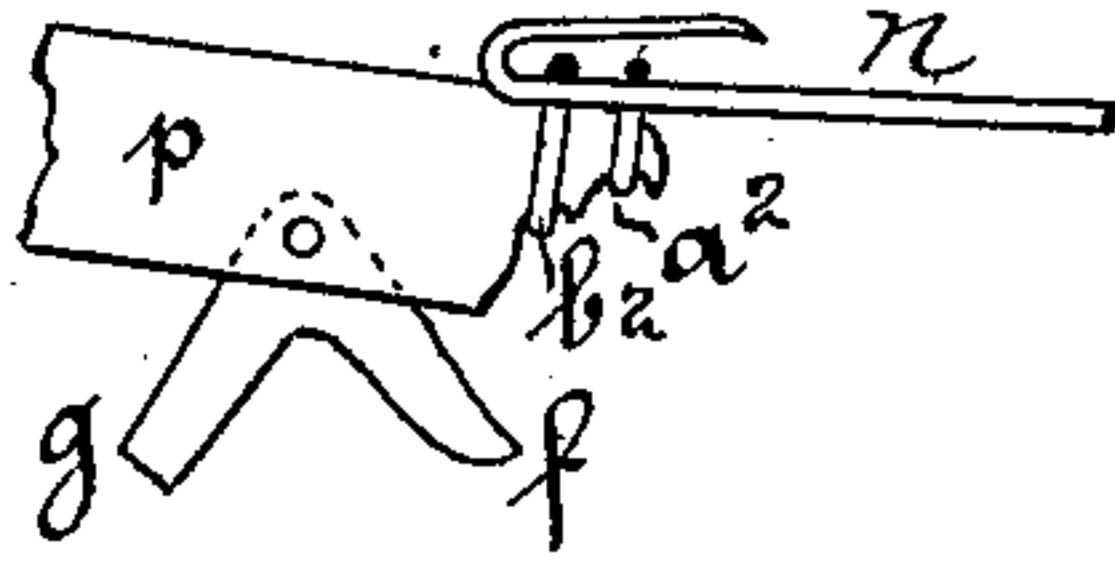


Fig. 5.

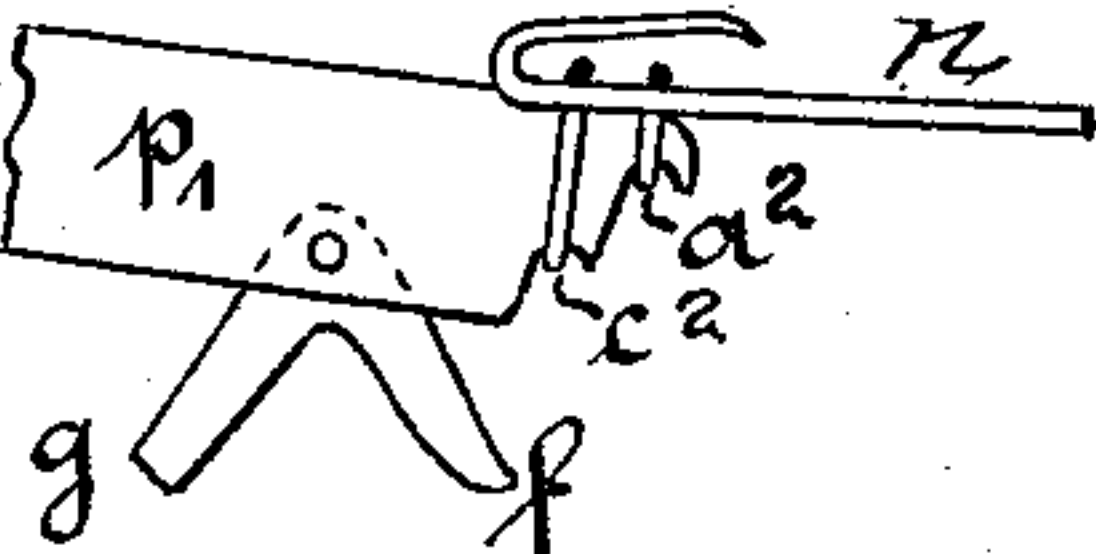


Fig. 8.

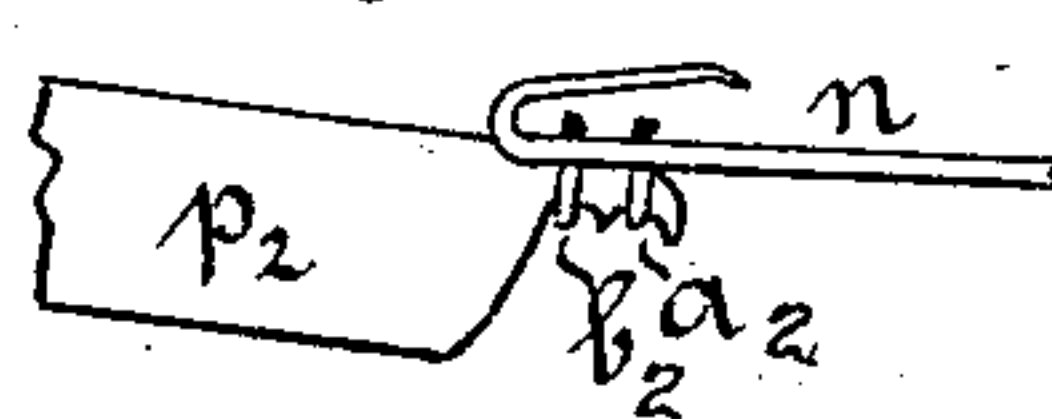


Fig. 6.

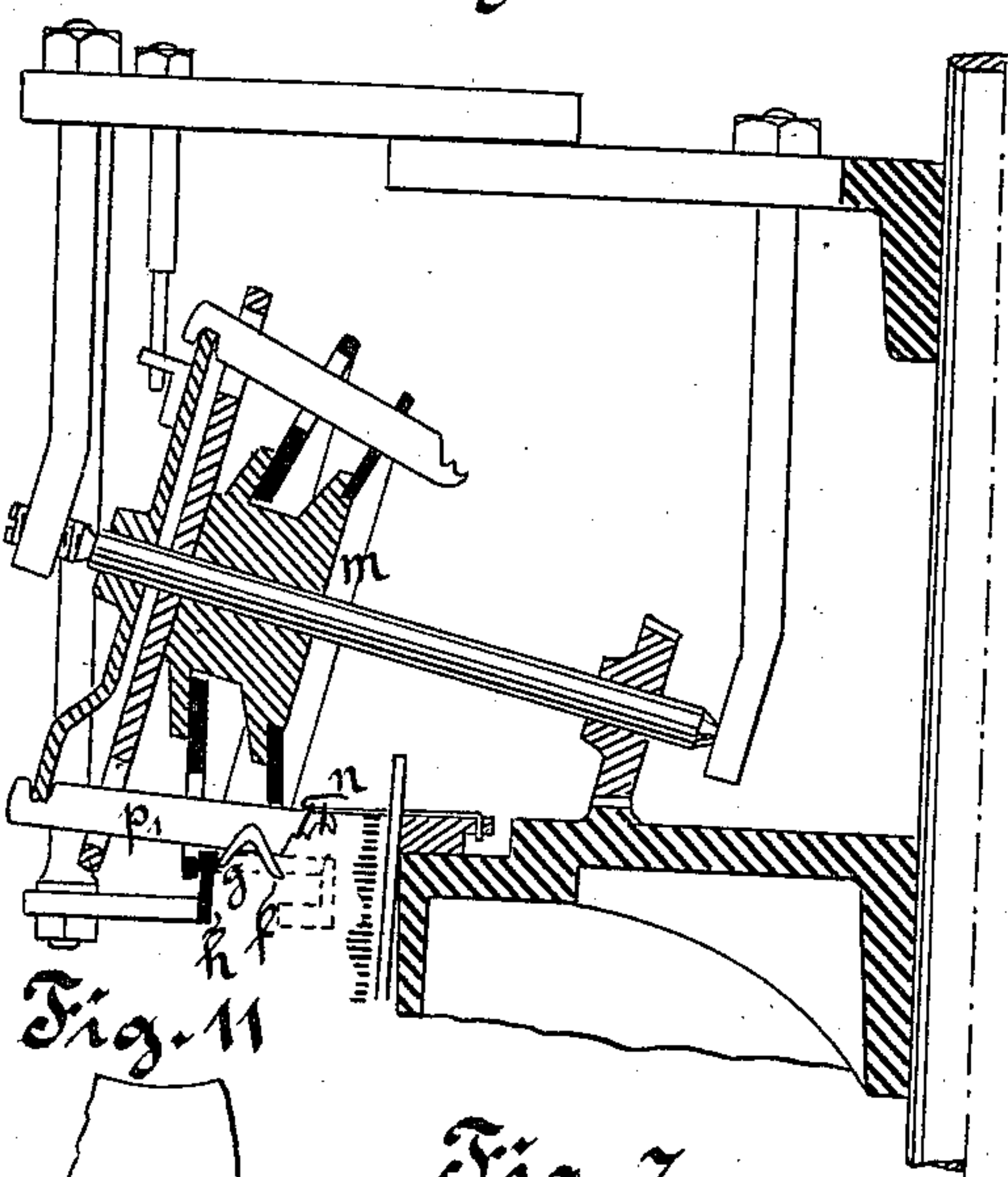


Fig. 10.

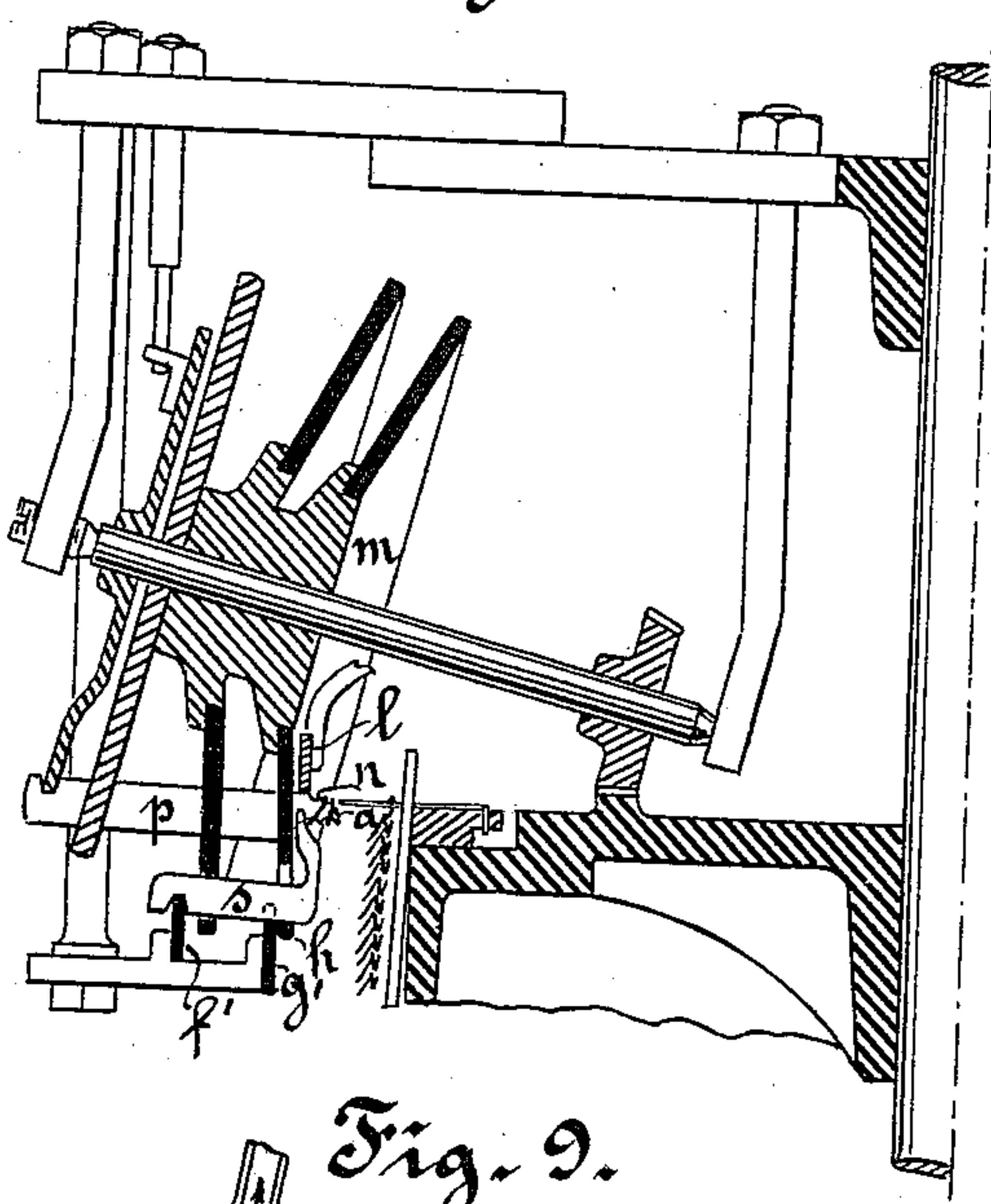


Fig. 11.

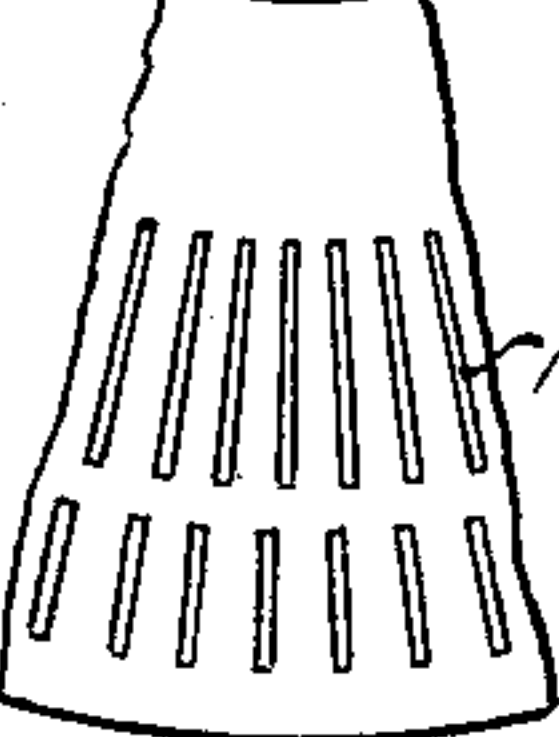


Fig. 7.

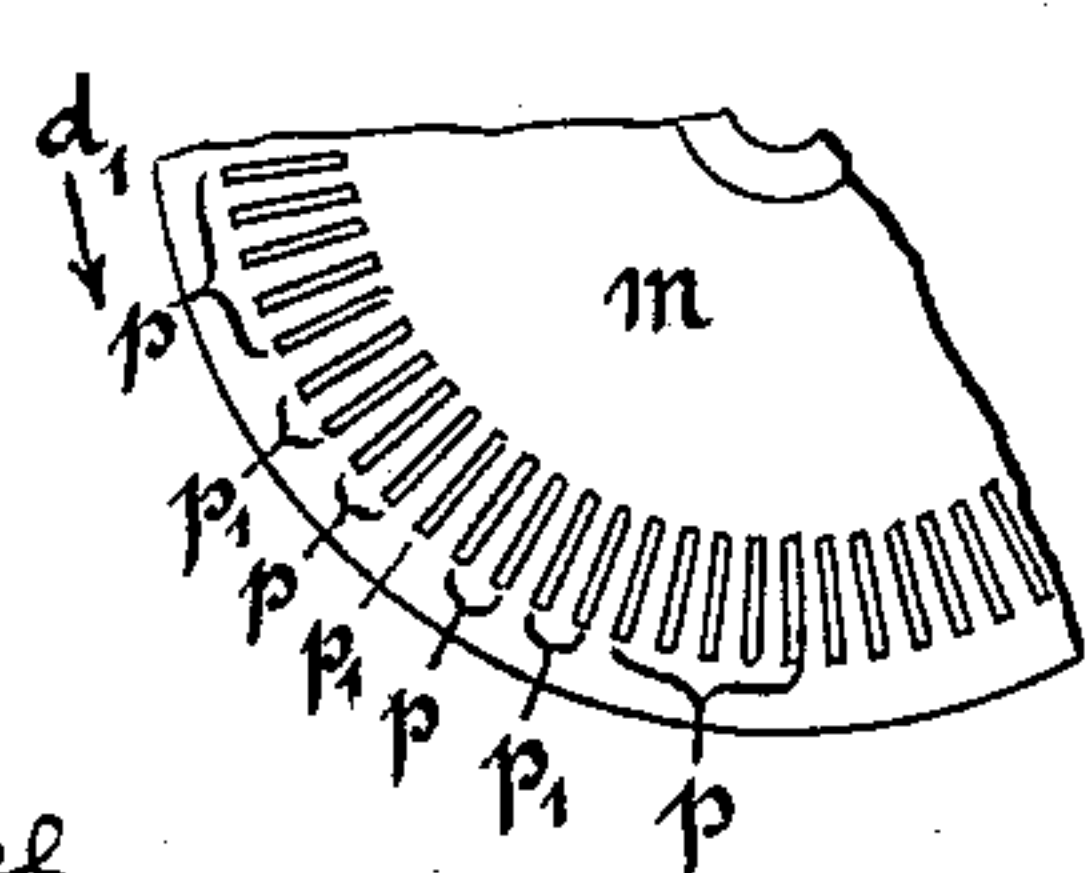
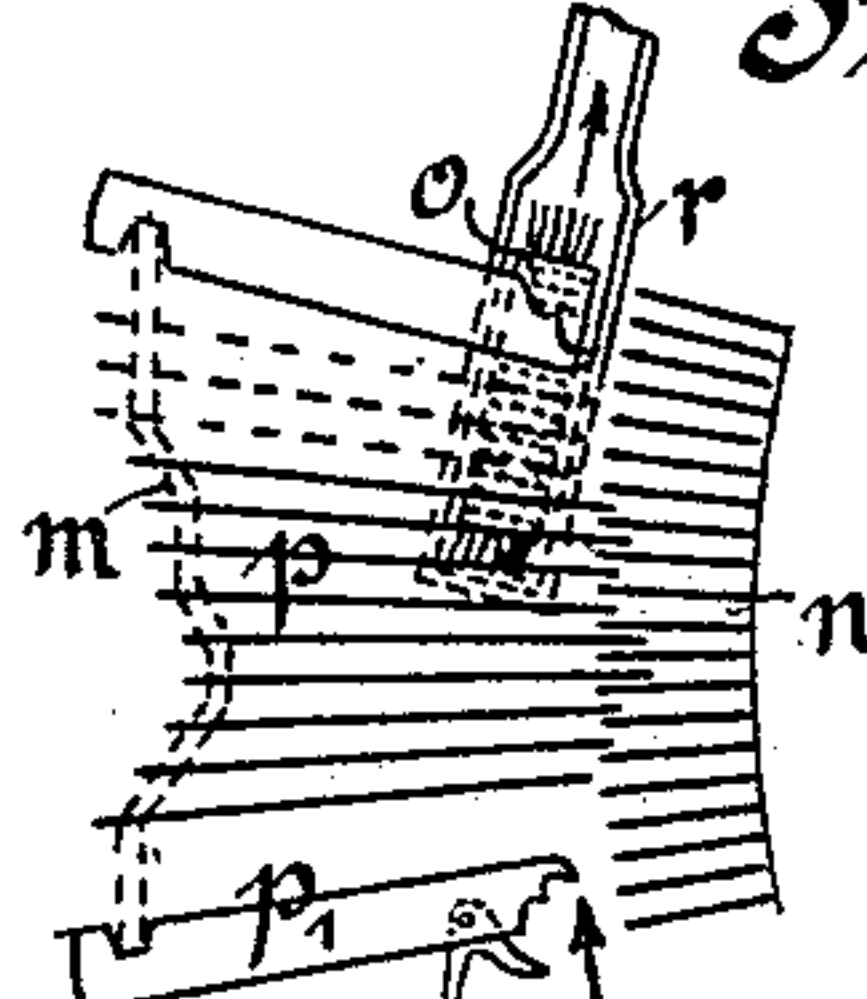


Fig. 9.



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Fig. 12.

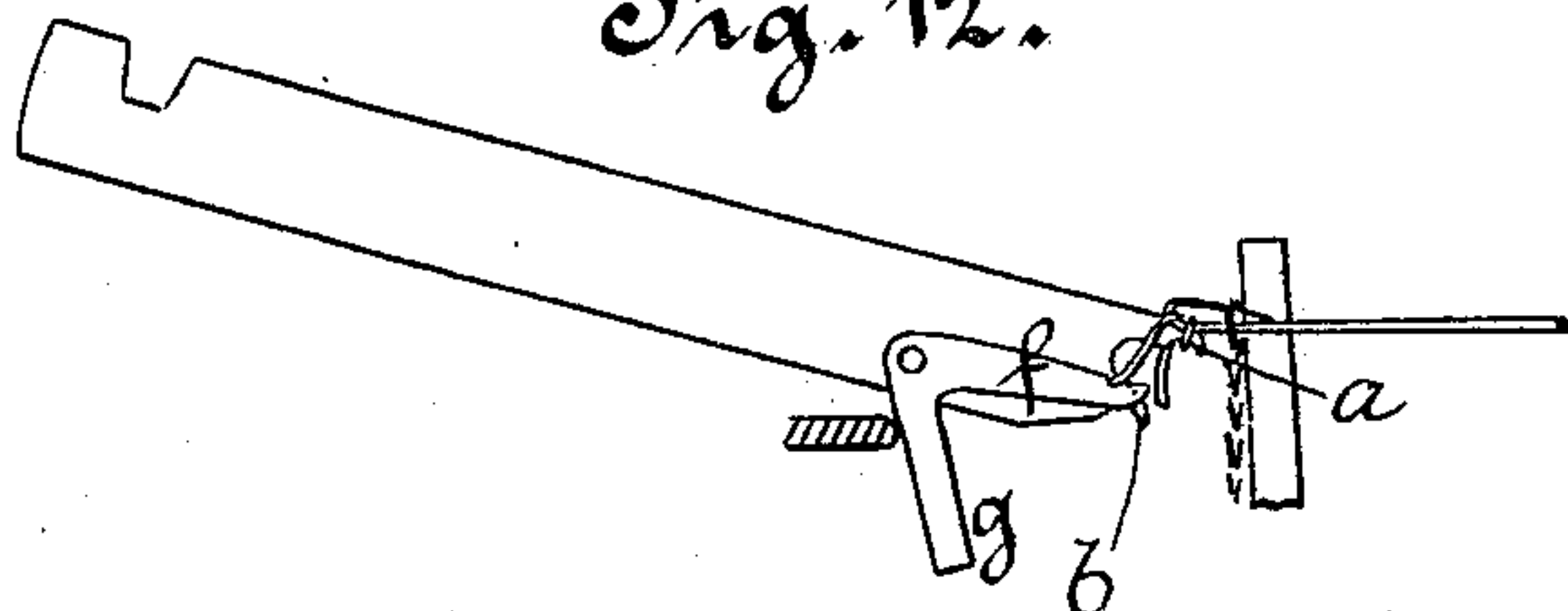


Fig. 13.



Fig. 14.

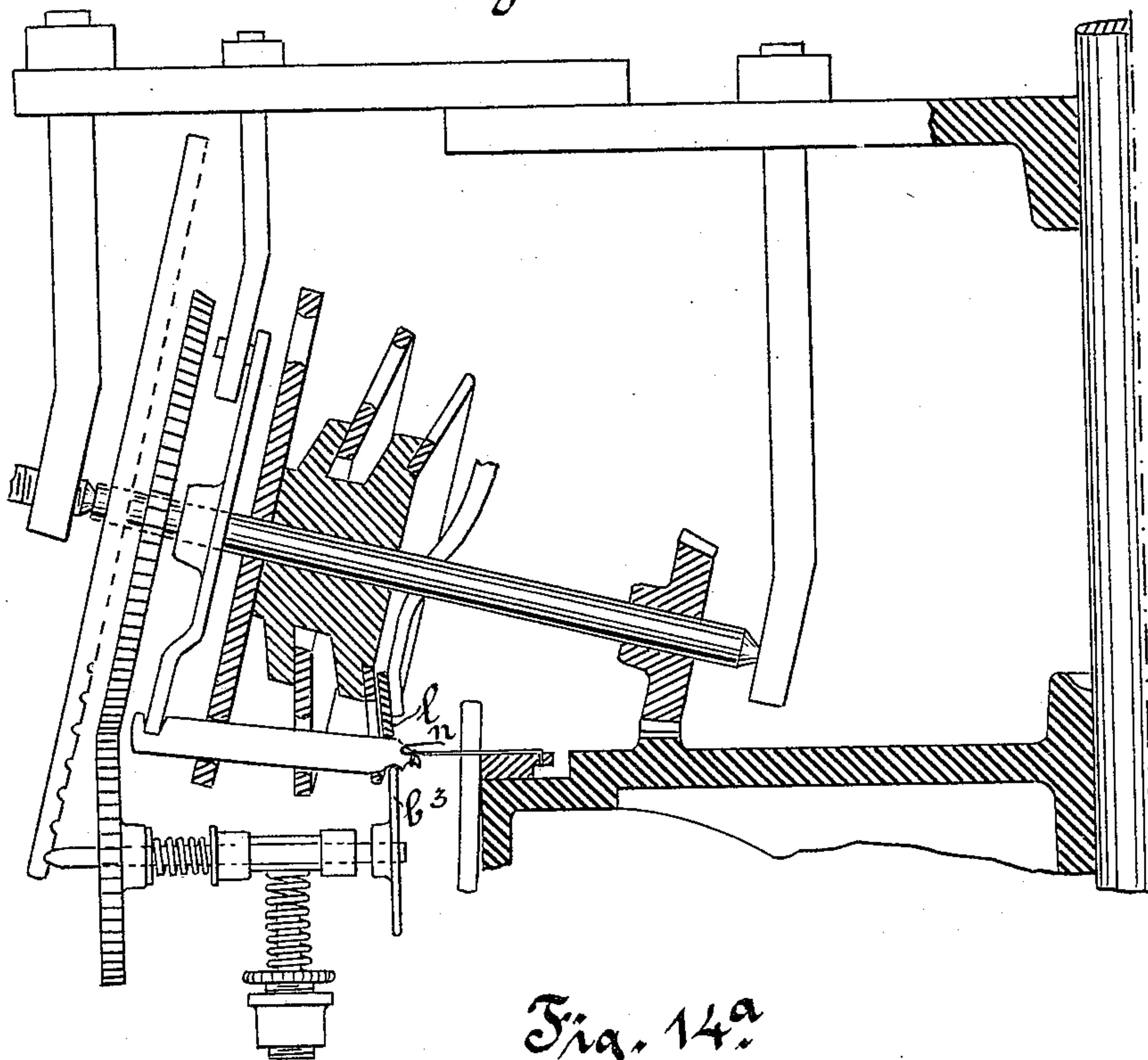
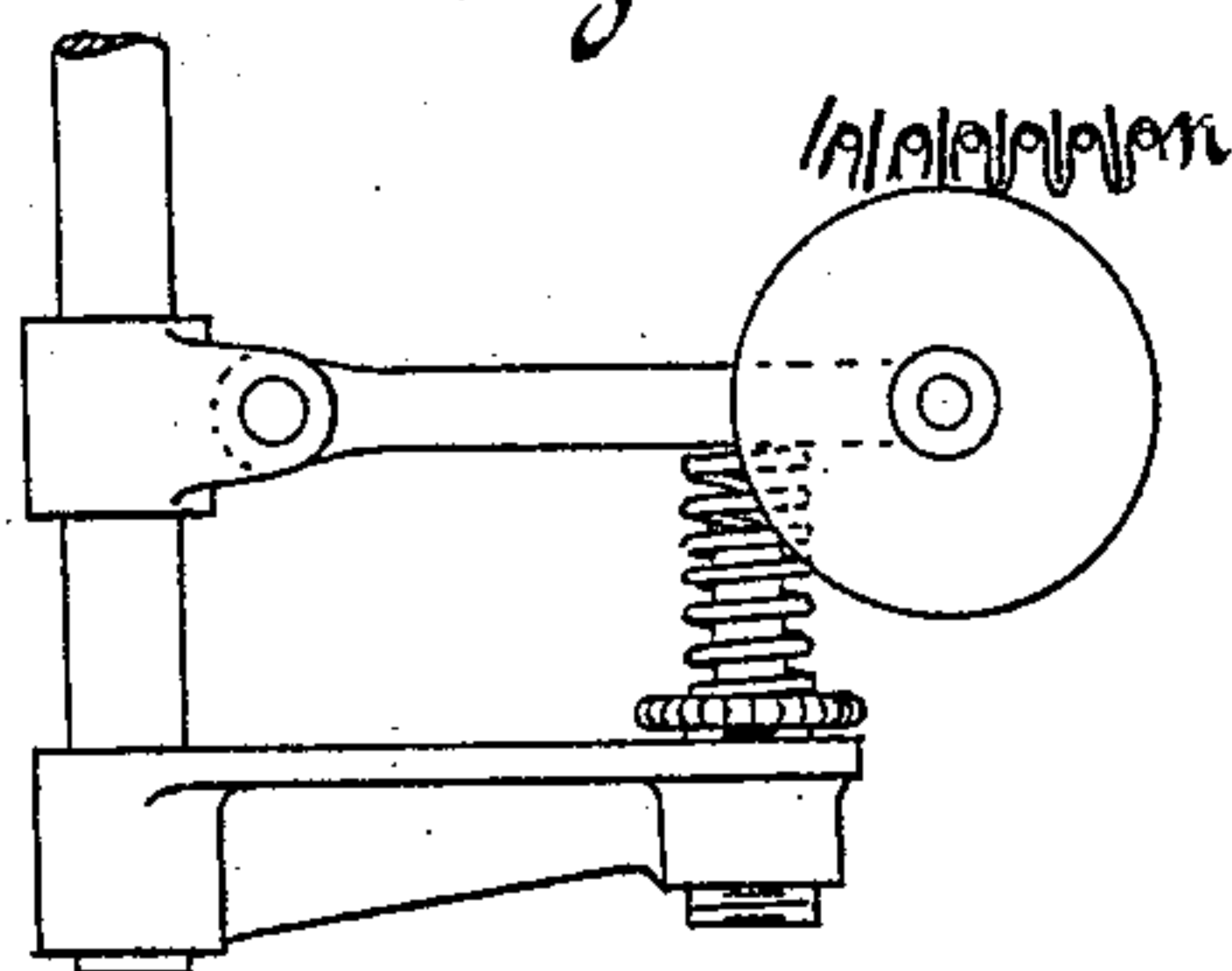


Fig. 14a



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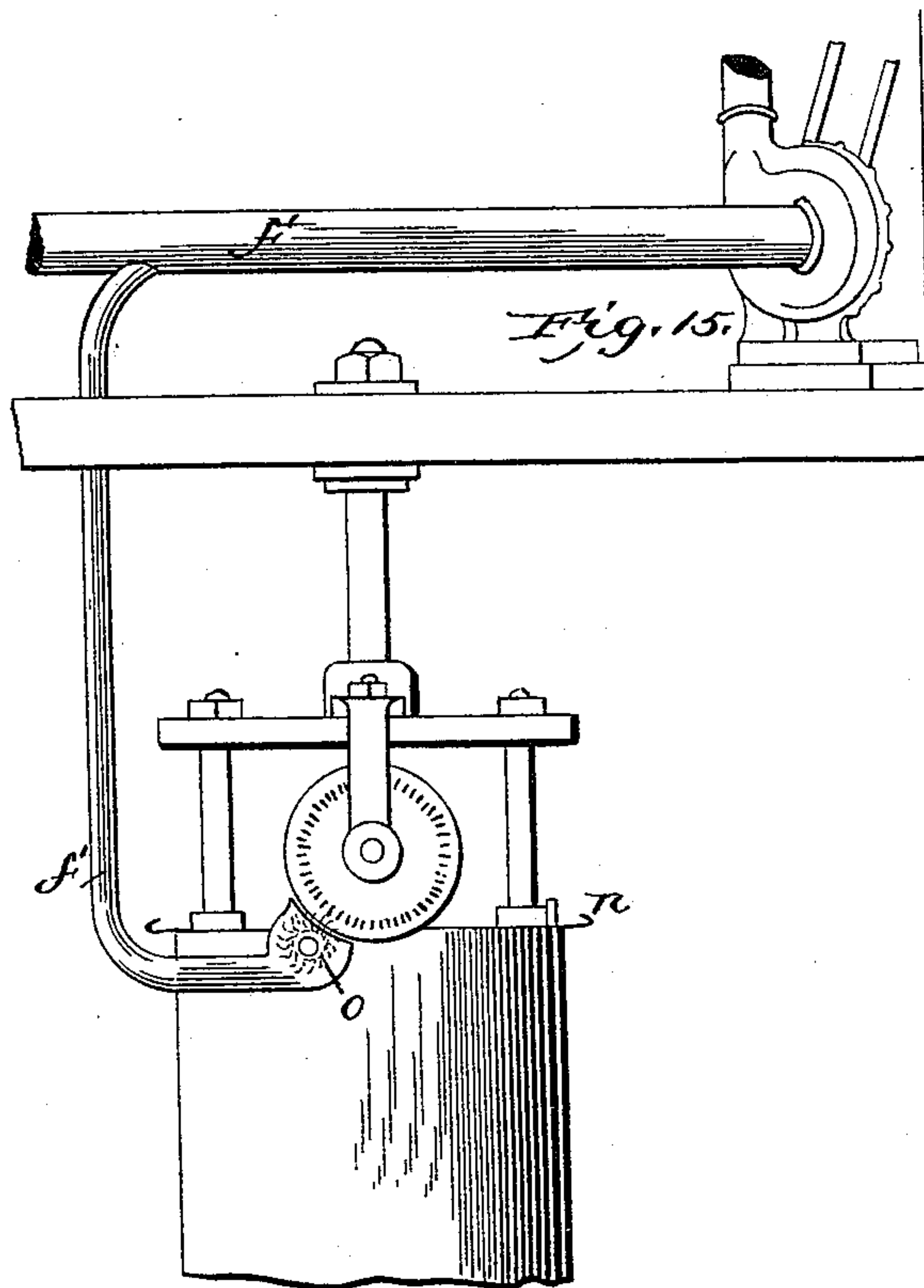
(Specimens.)

3 Sheets—Sheet 3.

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No. 579,621.

Patented Mar. 30, 1897.



Attest
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J. L. Madsen

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UNITED STATES PATENT OFFICE.

FRITZ WEVER, OF CHEMNITZ, GERMANY.

CIRCULAR-KNITTING FRAME.

SPECIFICATION forming part of Letters Patent No. 579,621, dated March 30, 1897.

Application filed March 28, 1895. Serial No. 543,494. (No model.) Patented in Germany July 6, 1893, Nos. 73,161, 77,975, and 79,328, and in Austria-Hungary November 25, 1893, No. 43/4,891.

To all whom it may concern:

Be it known that I, FRITZ WEVER, a subject of the King of Saxony, residing at Chemnitz, Germany, have invented certain new and useful Improvements in Knitting-Machines, (for which I have obtained Letters Patent in Germany, Nos. 73,161, 77,975, and 79,328, dated July 6, 1893, and in Austria-Hungary, No. 43/4,891, dated November 25, 1893,) of which the following is a specification.

Part of the invention has been patented in Germany, No. 82,613, dated August 7, 1895. The feature of a cutter for the loops is shown in German patent of October 22, 1891, No. 62,072, granted to me.

Figures 1 and 2 are digrammatic views of the fabric having short and long loops. Fig. 3 is a view of a pattern-card. Figs. 4 and 5 show the needles and sinkers, with means for cutting the loops. Fig. 6 is a sectional view of the loop-wheel and part of the needle-bed. Fig. 7 is a detail view. Fig. 8 is a view of a sinker adapted to form two loops of the same depth to make an uncut plain portion of plush fabric. Fig. 9 is a detail view showing means for removing lint. Fig. 10 is a view, similar to Fig. 6, of a modification. Fig. 11 is a detail. Figs. 12 and 13 show modified forms of sinkers. Fig. 14 is a view, similar to Fig. 6, of a further modification. Fig. 14^a is a detail relating to Fig. 14. Fig. 15 is a view of the means for removing the lint.

In a circular-knitting frame plush goods are made by loop-wheels *m*, Fig. 6, which have sinkers *p*, with two hooks or nibs *a* and *b*, Fig. 12, of different depth, the lower one laying a long loop of one thread, while the upper one lays a short loop of another thread. (See, for instance, Willkomm's *Technologie of Framework-Knitting*, Vol. II, page 168, translated by W. T. Rowlett. London, W. Kent & Co.) Each stitch of the fabric, Figs. 1, 4, and 5, is thus composed of double thread—that of the groundwork *a*², Fig. 1, which makes plain fabric, and that of the plush pile *b*² *c*², the long sinker-loops of which hang full at the back of the fabric. These long loops *b*² *c*² are cut, as at *b'* *c'*, by the sinkers themselves, which may have different cutters, as, for instance, the shears *g* *f* of Figs. 4, 5, and 6, which are moved by suitable guides *h* and

are sharpened at the upper front part, the sinker itself being sharpened at the hook or nib *b*, which sinks the plush loop, both parts working together like a pair of scissors and cutting the thread, as shown in Fig. 12; or there may be used a set of steel plates *s*, Fig. 10, in the loop-wheel round the sinkers *p* or in a special guide-ring extending around the loop-wheel, and these blades *s* are moved by guides *f'* *g'* in such a manner as to work in conjunction with the sinker-nib at the upper sharpened part near *l* like a pair of scissors; or the sinker has a sharp edge *l* 2, Fig. 13, at the nib, which tears the thread; or there is a hard-steel disk *b*³, Fig. 14, pressed against the sinkers, and, being moved a little to and fro, crushes the thread of the plush loop.

Fig. 15 is a detail view in elevation of means for drawing away lint and dust from the sinkers. In this plush fabric patterns can be made by working the two different sorts of plush, such with cut loops *b*² *c*², Figs. 1 and 2, and others with uncut loops *b*, (see Figs. 1 and 2,) at different places in one fabric, and these patterns may again be changed in many ways by producing plush loops of different length, such as *c*² and *b*² or *c'* and *b'*. These combinations are to be obtained by putting different sorts of sinkers into a loop-wheel—that is, sinkers with or without cutters, Figs. 4, 5, and 8, and sinkers which have the nib for sinking the plush loop higher up or lower down, as *b*² in Fig. 4 or *c*² in Fig. 5. The order in which these sinkers are to be put into the loop-wheel for producing a certain design is to be found in a pattern-card shown in Fig. 3, and it may be understood that an empty square is to represent a stitch in the fabric with a short loop *b'*, and a filled square represents a stitch with a long loop *c'*, both of cut plush. Then there are only sinkers with cutters to be put into the loop-wheel; but these sinkers are to have different nibs or hooks for the plush loop, like *p* and *p'*, Figs. 4 and 5. The order and quantity of these short and long hooked sinkers *p* and *p'* is to read off from the card, Fig. 3, exactly in the same way as the order of the teeth and spaces in a tuck-presser wheel is to be found in a similar design. For instance, in the row *d* read in the direction of the arrow. The result will be five sinkers *p*,

(short-hooked for making loops b^2 ,) which are brought into the loop-wheel m , Fig. 7, in the direction d' , and two sinkers p' , (long-hooked for making loops c' .) The sum of stitches in a pattern is equal to the sum of sinkers in the loop-wheel or in the loop-wheels, if there is more than one used for producing the pattern. Then the loop-wheel will work the designed pattern as a plush of longer or higher loops than the other common fabric, all in cut plush.

Many varieties can be produced. For instance, had all the sinkers been taken without cutters the pattern would present itself as longer uncut plush among the short uncut plush fabric, or all the plush loops may be of equal length, but only those of the design (the filled squares in the drawing Fig. 3) may be cut, the other fabric having uncut plush. Then the sinkers have the same form and length of the plush hook p , Fig. 4; but the empty squares in Fig. 3 signify sinkers without cutters and the filled squares such sinkers with cutters. By changing these two sorts of sinkers the inverse pattern is produced. The design is uncut plush and the other fabric is cut plush. Or in another case the pattern may be long cut plush and the other fabric short uncut plush. Then the empty squares signify sinkers p without cutters and the filled ones sinkers p' with cutters. Exchanging both sorts will give the inverse case. The pattern may be of cut plush and the other fabric only plain goods. Then the sinkers p^2 , Fig. 8, are put into the loop-wheel corresponding to the empty squares, and these sinkers have both hooks for the loops a^2 and b^2 of the same depth. The plush thread makes only an ordinary loop like a . The filled squares signify sinkers p or p' with cutters, or if these sinkers have no cutters the result is an uncut plush pattern in plain goods. There may also be variety of plush loops in one row of the fabric, similar to $b' b'$, Fig. 2, the loops getting longer and shorter again by degrees, producing another sort of pattern in the fabric. For this case sinkers of increasing and decreasing depth of hooks b are used. By cutting the plush threads a good deal of fibrils and dust is produced, which comes between the sinkers and cutters and the guides in the loop-wheel. As it hinders the movement of these parts, it has to be removed from them. For that purpose a rotary brush o , Fig. 9, is placed in a frame or casing r below the loop-wheel m , so as to gear into the sinkers, by which it is turned around its axis. This roller-brush takes the dust from the sinkers

and cutters, and as the frame r is connected by a tube f' with an exhausting-fan, which draws the air from r , this air takes the dust away from the brush, as shown in Fig. 15. The needles are shown at n .

I claim—

1. A circular-knitting frame for producing designs in plush goods, comprising means for forming the loops and means for cutting certain back-loops leaving others uncut, substantially as described.

2. A circular-knitting frame with the needles and the loop-wheel, and means for cutting the plush loop during process of knitting and before the old loops are knocked over, said means comprising sinkers acting in conjunction with the needles, to sink the yarn between the needles in forming the ordinary loops of the fabric, substantially as described.

3. A circular-knitting frame with needles and loop-wheels, the sinkers acting in conjunction with the needles to sink the thread and means for crushing the plush loop comprising a hard-steel roller or disk with means for pressing the same against and moving it lengthwise of the sinkers, substantially as described.

4. In combination, the needles and the loop-wheel carrying movable sinkers, a portion of said sinkers having means acting in conjunction with their hooks for cutting the loops while the remainder of the sinkers leave the loops uncut, substantially as described.

5. In combination with a knitting-frame, a loop-wheel with its sinkers, a rotary brush operating in connection therewith, a casing-brush, and an exhaust-fan and exhaust-tube for drawing lint and dust from the sinkers of the loop-wheel, substantially as described.

6. In combination in a knitting-machine, the needles and the plurality of series of sinkers, said series having similar nibs a , for forming the ground of the fabric and having also nibs b for forming a plush pattern, the nibs b of the one series differing in height from those of the other series to draw different lengths of plush loops, substantially as described.

In testimony whereof I have hereto set my hand in presence of the two subscribing witnesses.

FRITZ WEVER.

Witnesses:

GOTTFRIED VON WEISE,
FRITZ RÜBSAMEN.