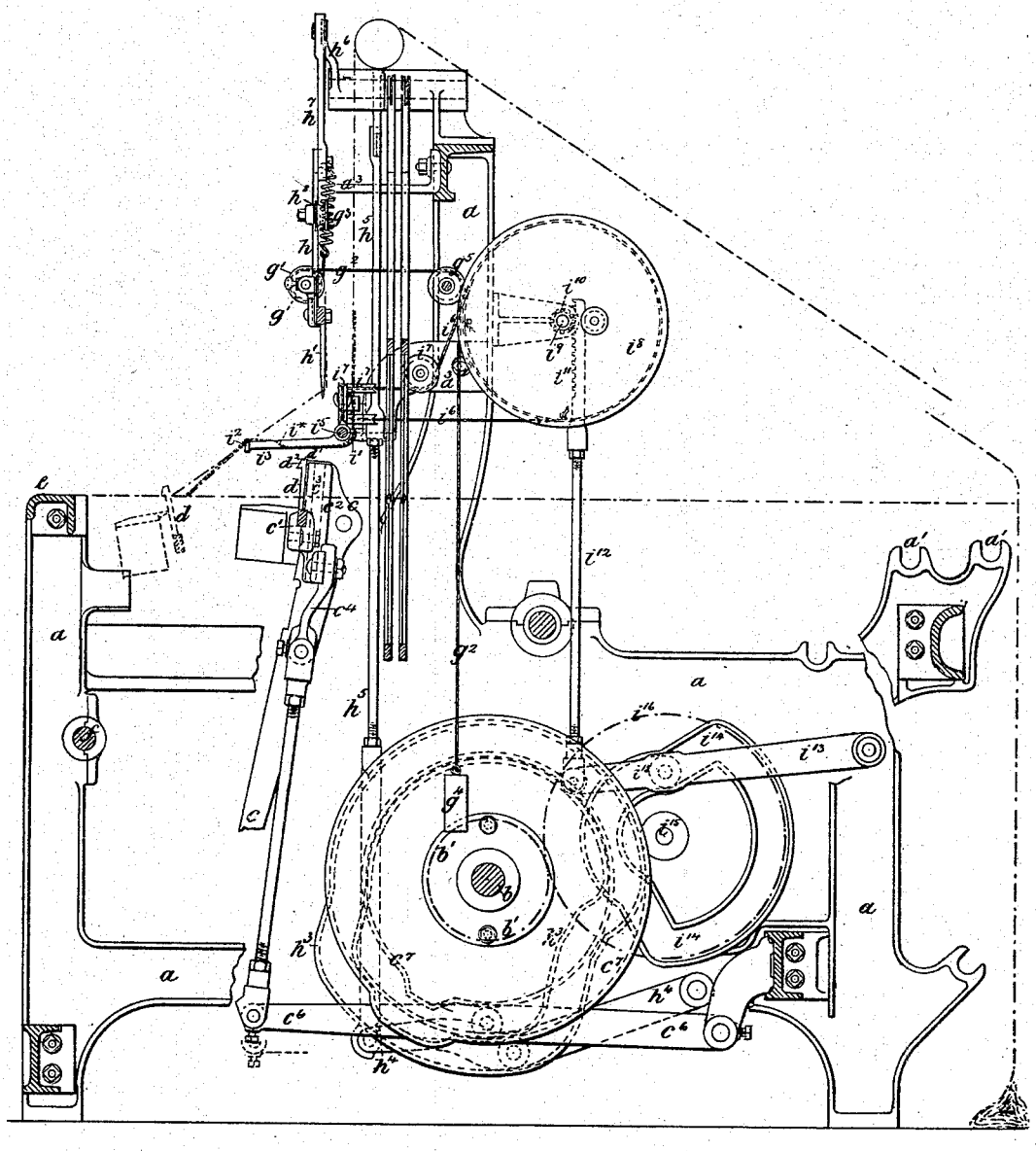
(No Model.) 5 Sheets—Sheet 1.

W. ADAM.

LOOM FOR WEAVING CHENILLE OR AXMINSTER CARPETS AND RUGS.

No. 263,085. Patented Aug. 22, 1882.

Fig. 1.



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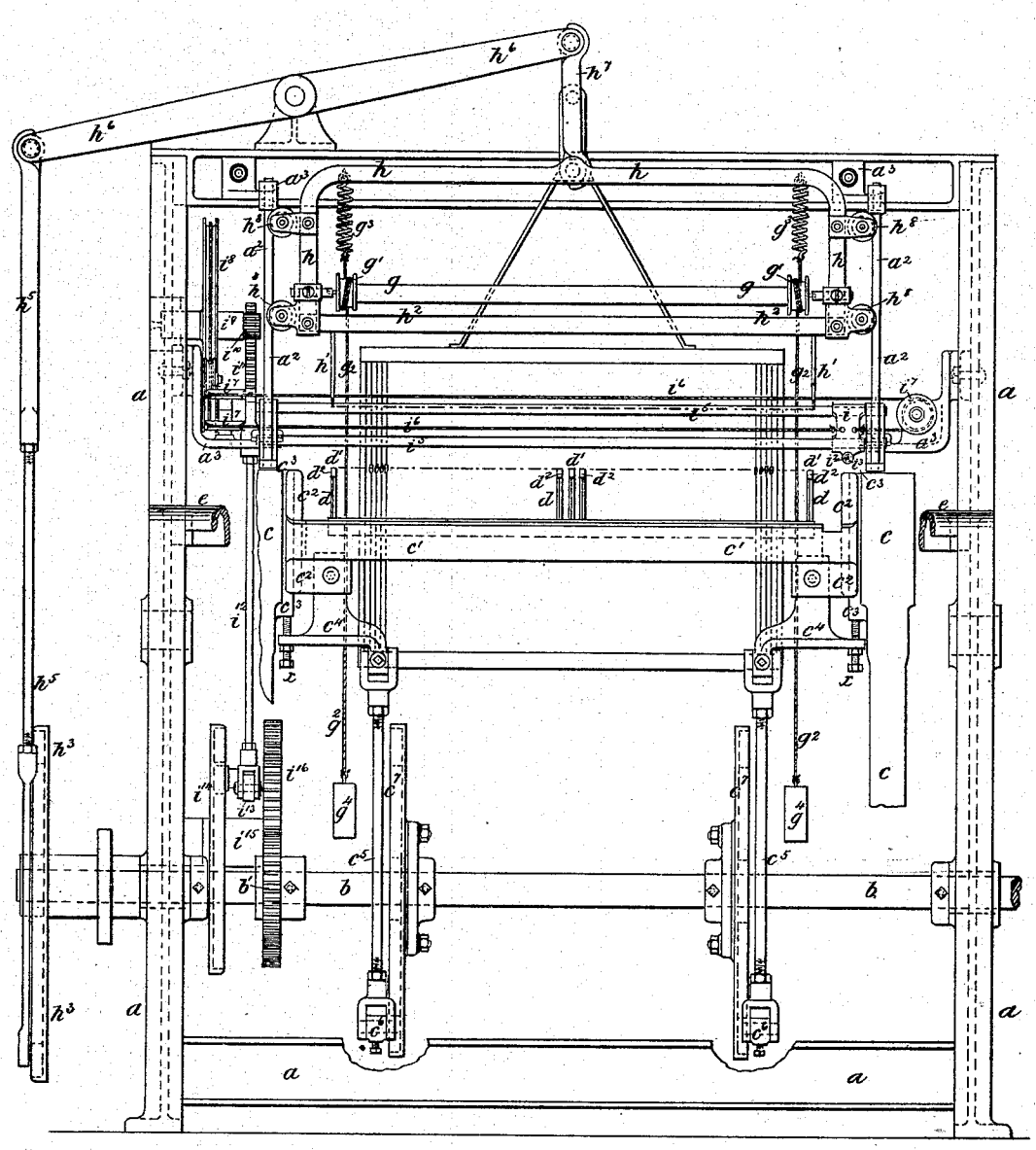
LOOM FOR WEAVING CHENILLE OR AXMINSTER CARPETS AND RUGS.

No. 263,085. Patented Aug. 22, 1882.

Fig. 2.



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LOOM FOR WEAVING CHENILLE OR AXMINSTER CARPETS AND RUGS.

No. 263,085. Patented Aug. 22, 1882.

Fig: 3.

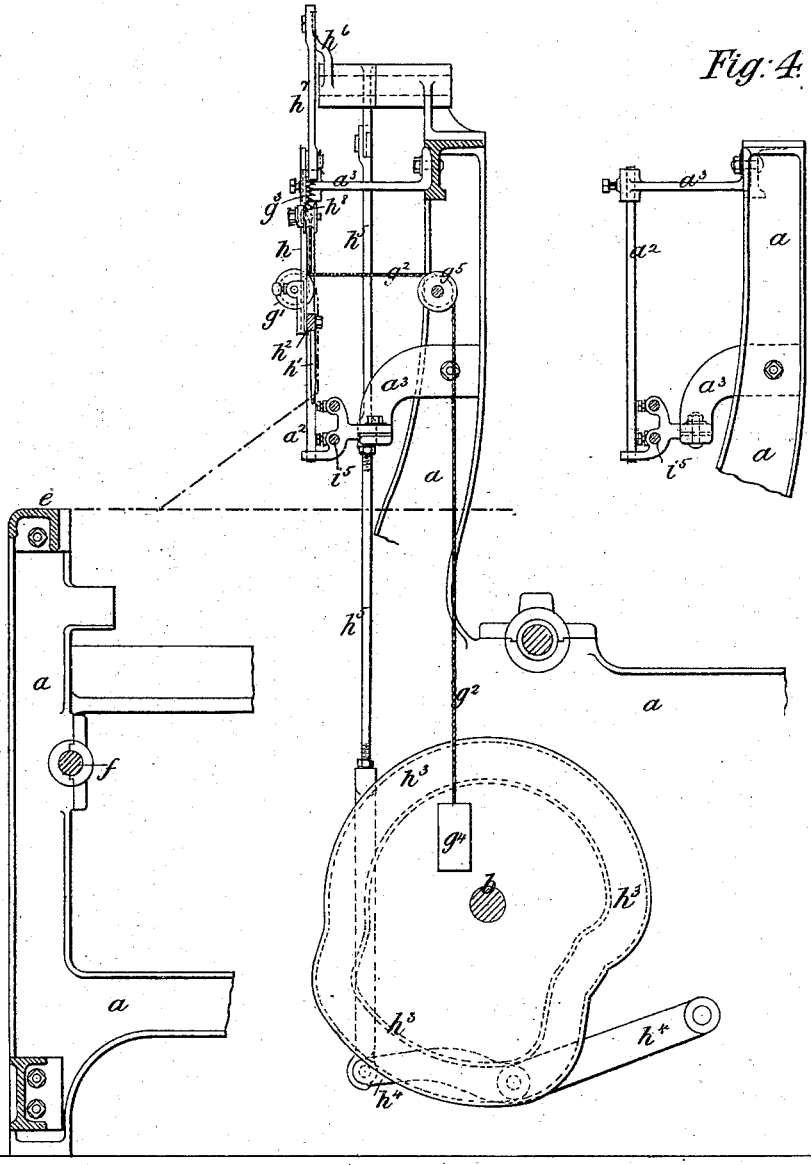

Fig: 4.

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LOOM FOR WEAVING CHENILLE OR AXMINSTER CARPETS AND RUGS.

No. 263,085. Patented Aug. 22, 1882.

Fig: 5. Fig: 6. Fig: 7.

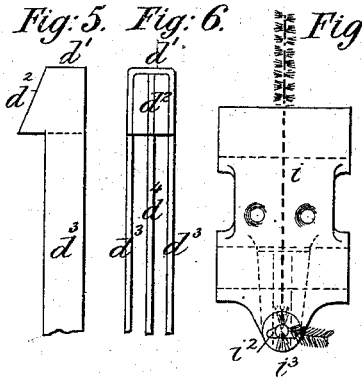


Fig: 9.

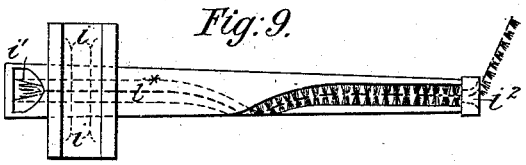


Fig: 8.

Fig: 11.

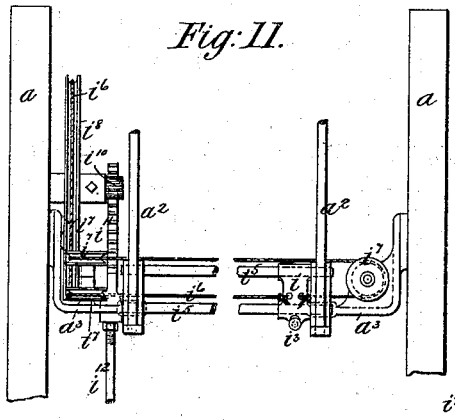
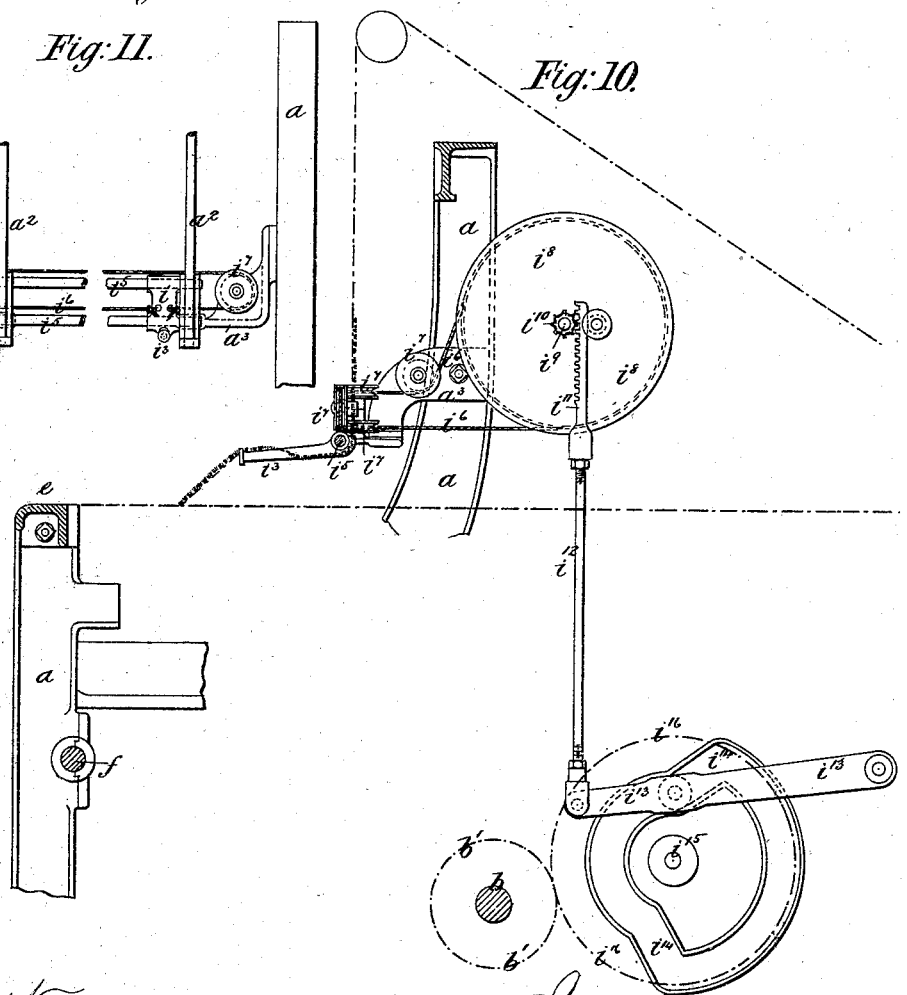


Fig: 10.



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LOOM FOR WEAVING CHENILLE OR AXMINSTER CARPETS AND RUGS.

No. 263,085. Patented Aug. 22, 1882.

Fig: 12.

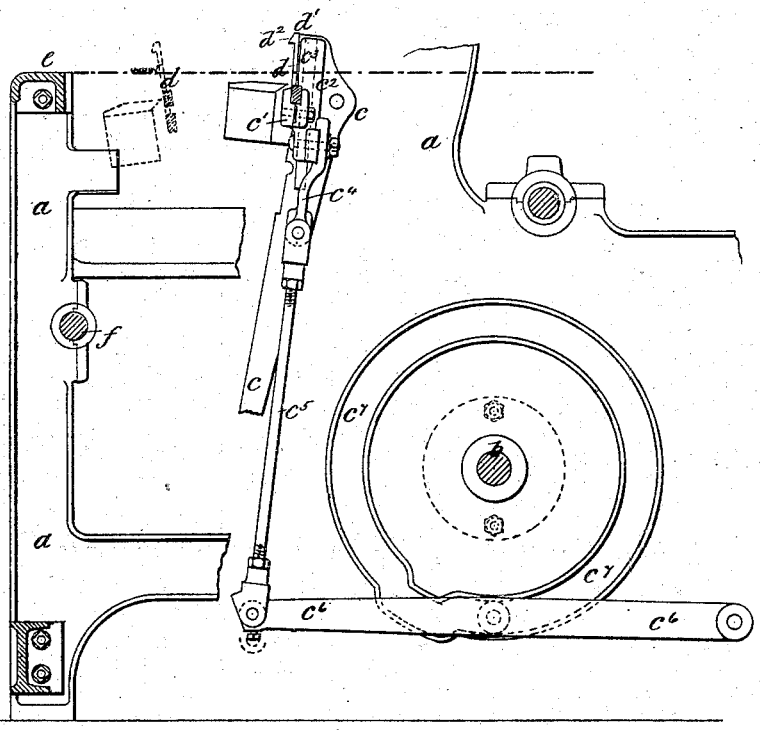


Fig: 15.

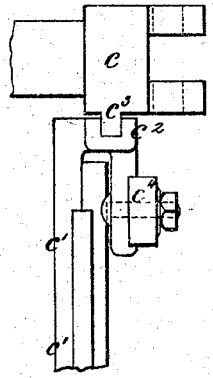


Fig: 13.

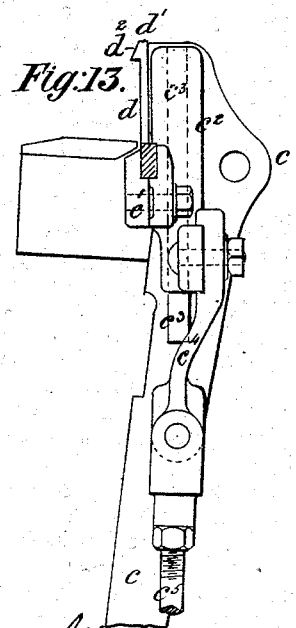
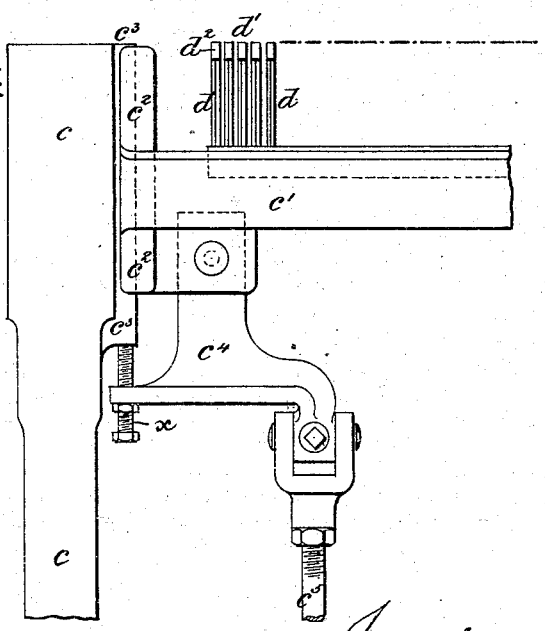


Fig: 14.



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UNITED STATES PATENT OFFICE.

WILLIAM ADAM, OF KIDDERMINSTER, COUNTY OF WORCESTER, ENGLAND.

LOOM FOR WEAVING CHENILLE OR AXMINSTER CARPETS AND RUGS.

SPECIFICATION forming part of Letters Patent No. 263,085, dated August 22, 1882.

Application filed June 25, 1881. (No model.) Patented in England November 22, 1880, No. 4,842.

To all whom it may concern:

Be it known that I, WILLIAM ADAM, of the firm of Tomkinson & Adam, carpet and rug manufacturers, a subject of the Queen of Great Britain, residing at Kidderminster, in the county of Worcester, England, have invented certain new and useful Improvements in Looms for Weaving Chenille or Axminster carpets and Rugs, (for which I have received Letters Patent in England, No. 4,842, dated September 22, 1880,) of which the following is a specification.

The invention has for its object improvements in looms for weaving chenille or Axminster carpets and rugs, whereby greater speed than heretofore is obtained in the weaving of such description of carpets and rugs.

According to my present invention I am enabled successfully to weave the chenille weft or fur from a beam or bobbin or from a basket.

In carrying my invention into effect I employ a bar of needles set to the required gage, and through the eyes of which the "catcher" or binding-warp passes from a small roller or bobbin with flanged ends, on which it is wound. The bar of needles is fixed to a frame mounted with capability of being moved up and down in suitable fixed guides carried by the framing of the loom. The catcher-warp roller or bobbin is mounted in bearings carried by the needle-frame just above the needle-bar, and moves up and down with it, and such catcher-warp roller or bobbin is provided at one or both ends thereof with suitable letting-off and taking-up appliances. In order to allow the catcher-warps to enter their respective spaces in the reed, the latter is made in the form of a comb, with spaces at intervals, through which the catcher or binding warp passes. The tops of the dents between the open top spaces are united together and filled in solid, and I prefer to form the outer dents in one strip of metal bent over at the top in order to give increased strength to such parts. I also form the front or face of such solid tops inclined slightly forward from the upper to the lower part thereof, for the purpose hereinafter described.

The chenille weft or fur is wound on a beam or large bobbin, or it may be placed in a basket. The beam, bobbin, or basket is placed in any convenient position, and the end of the chenille weft or fur is passed through one or more guides carried by a finger fixed to a slide which runs to and fro on one or more guide rods or bars fixed to the loom behind the catcher-warp needles, and such slide is moved at the required times from one side of the loom to the other, with the projecting finger traveling between the top of the reed and the points of the catcher-warp needles, whereby the chenille weft or fur will be carried across the loom in front of the reed, ready to be pulled by the attendant to the fell of the work. The reed is then moved forward in such a position that the bottom edge of the solid tops of the reed shall ride upon the ground-warps and press the chenille weft or fur to its proper place, to assist which the reed has a rising motion imparted to it just as the lathe is completing its forward motion, thus bringing the fur to its proper place without the aid of a comb, which it has hitherto been found necessary to employ in this class of loom. When beating up the ground-weft the reed is moved to and fro in the ordinary manner; but when pressing the chenille weft or fur to its place the motions above described are imparted to it.

The slide employed in carrying the chenille weft or fur into the open shed may be operated in any convenient manner; but the way I have found to answer, and which forms part of my present invention, consists in attaching one end of a cord or other flexible connection to one side and the other end of the cord to the other side of the slide and passing such flexible connection partly around wheels or pulleys at each side of the loom, whence it passes to a wheel which receives the required reciprocating rotary motion at the proper times from a cam and suitable connections.

In order that my said invention may be more clearly understood and readily carried into effect, I will proceed, aided by the accompanying drawings, more fully to describe the same.

In the drawings, Figure 1 is a vertical cross-section, and Fig. 2 is a front elevation, of so much of a loom for weaving chenille or Axminster carpets and rugs as will enable me to describe my present improvements; and Figs.

3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15 are various views more clearly illustrating various portions of my invention.

a a represent the framing of the loom; *b*, the cam-shaft; *e*, the lathe-swords; *d*, the reed; *e*, the breast-beam, and *f* the axis of the work-beam. The warps to form the ground of the fabric are carried by beams mounted in bearings *a'* in the usual manner; but in lieu of carrying the catcher or binding warp on a beam, as heretofore, I adopt the arrangement shown at Figs. 1, 2, and 3, and wind it upon a smaller roller or bobbin, *g*, with flanged ends. This roller or bobbin is provided with a pulley, *g'*, at each end thereof, and is mounted in bearings carried by a frame, *h*, mounted, with capability of being moved up and down in or upon fixed guides a^2, which are carried by brackets a^3, fixed to the main framing of the loom; or such guides may be formed and fixed in other suitable manner, so long as the frame *h* in its motions is correctly guided. Around each of the pulleys *g'* is passed a cord, g^2, one end of which is attached to the spring g^3, connected with the needle-frame, and the other end to a weight, g^4. The said cords g^2 are also passed over guide-pulleys g^5, mounted in any convenient position. By these means the catcher-warp has suitable friction applied thereto, and is enabled to be drawn off the roller or bobbin *g* as required for the work while the slack of the catcher-warp is taken up as required. The catcher-warps are passed through the eyes of needles *h'*, fixed to a bar, h^2, carried by the sliding frame *h*, and the latter is moved up and down at the required times in the following manner, (see Figs. 1, 2, 3:)

On the cam-shaft *b* is fixed a cam, h^3, which gives motion to a lever, h^4. The latter is, by link or connecting-rod h^5, connected to one end of a lever, h^6, the other end of which is, by a link, h^7, connected to the sliding frame *h*. In the drawings I have represented the frame *h* as provided with guide wheels or rollers h^8 to run against the guides a^2; but, if desired, the sliding frame *h* may be otherwise guided and the fixed guides may be otherwise formed, provided the frame *h* is rigidly controlled in its motions.

In order to enable the catcher-warps to enter their respective places in the reed *d*, the latter is made somewhat in the form of a comb, with spaces at intervals, through which the catcher or binding warp passes in order to make a shed. The hand-rail of the lathe is dispensed with and the reed is supported only at the lower part thereof. The tops *d'* of the dents d^3 d^4 between the open top spaces are united together and filled in solid with tin, iron, solder, lead, or with any suitable material, and I prefer to form the outer dents, d^3, of each section of the reed *d*, as shown more clearly at Figs. 5 and 6, in one strip of metal bent over at the top, in order to give increased strength to such parts. I also form the front or face d^2 of such solid tops inclined slightly forward from the upper to the lower part thereof, for the purpose hereinafter described.

The chenille weft or fur is wound on a beam or large bobbin, or it may be placed in a basket. The beam, bobbin, or basket is placed in any convenient position, and the end of the chenille weft or fur is passed through guides i' i^2, formed on or fixed to a finger, i^3, carried by a slide, *i*, (shown separately at Figs. 7, 8, 9,) which runs to and fro, and is guided by rods or bars i^5, fixed to the loom behind the catcher-warp needles *h'*. The chenille weft or fur, in its passage from the eye or guide i' to the eye or guide i^2 at the outer end of the finger i^3, is suitably guided by passing along a groove or channel, i^*, formed, as shown, in the finger i^3, to deliver the fur or chenille in the proper position and without putting twist therein. The slide *i* is moved, as hereinafter described, at the required times from one side of the loom to the other, causing the finger i^3 to carry the chenille weft or fur with it in front of the reed, ready to be pulled to the fell of the work at the end of its course. Cord i^6, fixed to each side of the slide *i*, is passed around guide wheels or pulleys i^7, one end of the cord passing to the top, the other end to the bottom, of a wheel, i^8, which wheel is fixed on a shaft or axis, i^9, as shown in Fig. 2. The said cord i^6 is then carried around such wheel i^8 a suitable distance and fixed thereto. At one end of the said shaft or axis i^9 is fixed a toothed pinion, i^{10}, which is taken into by and receives rotary motion, first in one direction and then in the other, at the desired times, from a toothed rack, i^{11}, fixed on the upper end of a rod, i^{12}. This rod i^{12} is at its lower end pin-jointed to a lever, i^{13}, operated by a cam, i^{14}, which is fixed on a counter-shaft, i^{15}, receiving rotary motion from the cam-shaft *b* by toothed wheels *b'* and i^{16}. By these means rotary motion is given to the shaft or axis i^9, and consequently to the wheel i^8, at the required times, first in one direction and then in the other, and as the cord i^6 passes back and forth on the pulleys i^7 in contrary directions, it follows that while it is going one way it will pull the slide *i* across the loom in one direction, and when going the other way it will pull the slide *i* across the loom in the opposite direction at the required time. The ends of the cord i^6 are passed through holes in the rim of the wheel i^8, and are there fixed by clamps, staples, screws, or in any other manner convenient. The wheel is formed with a flat surface, and is flanged to prevent the cord running off, and such cord is caused to take preferably two turns around the wheel i^8, so as to enable such wheel to give the required motion.

The reed *d*, when beating up the chenille weft or fur, is moved forward in such position that the bottom edge of the solid tops *d'* of the dents shall ride upon the ground-warps and press the chenille weft or fur to its proper place, to assist which the lathe or the reed *d* has a rising motion imparted to it just as it is completing its forward motion, thus bringing

the chenille weft or fur to its proper place without the aid of a comb, which it has hitherto been found necessary to employ in this class of loom. When beating up the ground-weft the reed is moved to and fro in the ordinary manner; but when pressing the chenille weft or fur to its place the motions above described are imparted to it. The peculiar motion to the reed above described for pressing the chenille weft or fur to its proper place may be given thereto in the following manner, as represented in the drawings at Figs. 1, 2, 12, 13, 14, and 15.

The lathe *c* may be moved to and fro by cranks and connecting-rods, as is well understood, or it may be operated by cams, as has before been proposed. The reed *d*, instead of being fixed rigidly in the lathe, as has heretofore been usual, is shown fixed to a bar, *c'*, which has slides c^2 fixed thereto, capable of sliding up and down on fixed guides c^3 formed on or fixed to the lathe-swords *c*. To the bar *c'* are fixed descending lugs or ears c^4, which, by links or connecting-rods c^5, are connected to levers c^6, operated by cams c^7 fixed to the cam-shaft *b*. Instead, however, of giving these motions to the reed only, a similar motion may be imparted to the entire lathe; but I prefer the plan above described.

x is a screw-bolt or set-screw to assist in the adjustment of the reed.

I have not shown or described the apparatus for inserting the ground-weft nor other well-known parts of the loom, as they do not form part of my present invention, and I would remark that the ground-weft may be inserted by means of a shuttle or by means of weft-inserting needles, in the manner now well understood.

The various movements of the loom will take place in the order adopted when weaving by hand—that is to say, the following movements will be made in one revolution of the main shaft of the loom:

First. Two or four shoots of ground-weft will be put across, as the case may be. This can be done either by shuttle or by weft-inserting needle.

Second. The chenille weft or fur will then be carried once across by the slide *i*, when the latter will rest till the next revolution of the main shaft, as will be seen by reference to the gearing and other parts at Figs. 1 and 2.

Third. The rising motion of the reed or lathe to bring the chenille weft or fur to its place.

Fourth. The catcher-warp will be carried down to bind in the chenille weft or fur, the heddles will be operated to form the necessary sheds, and the weft will be inserted to bind in the catcher-warp and to form the ground of the fabric while the apparatus for inserting the chenille weft or fur is standing still.

Fifth. The chenille weft or fur will then again be carried across and the various operations repeated as before.

Having thus described the nature of my said invention and the mode in which I carry the same into effect, I would have it understood that what I claim is—

1. The combination of finger i^3 and slide *i* with the fixed guide-rods i^5 and suitable operating mechanism, the said finger being adapted to deliver the weft with the pile uppermost, as set forth.

2. The combination of finger i^3, formed with groove i^* and slide *i*, said finger and slide being formed with guides *i' i²*, with the rods i^5, and suitable means for moving the finger sidewise to and fro across the warps, as set forth.

3. The combination of the finger i^3, slide *i*, fixed cross-bars i^5, flexible cord or connections i^6, guide-wheels i^7, operating-wheel i^8, shaft i^9, cam i^{14}, lever i^{13}, rod i^{12}, rack i^{11}, and toothed pinion i^{10}, as set forth.

4. The combination of needle-frame *h*, means for imparting vertical movement thereto, catcher-warp roller *g*, mounted on the needle-frame, pulleys *g'* on the ends of the roller, springs g^3, secured to the needle-frame, weights g^4, and cords g^2, passing around the pulleys and attached at their ends to the springs and weights, respectively, as set forth.

5. The open-topped reed *d*, having dents d^3 d^4, formed with inclined faces d^2, and a lathe, combined with means for giving a rising motion to said reed, as set forth.

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