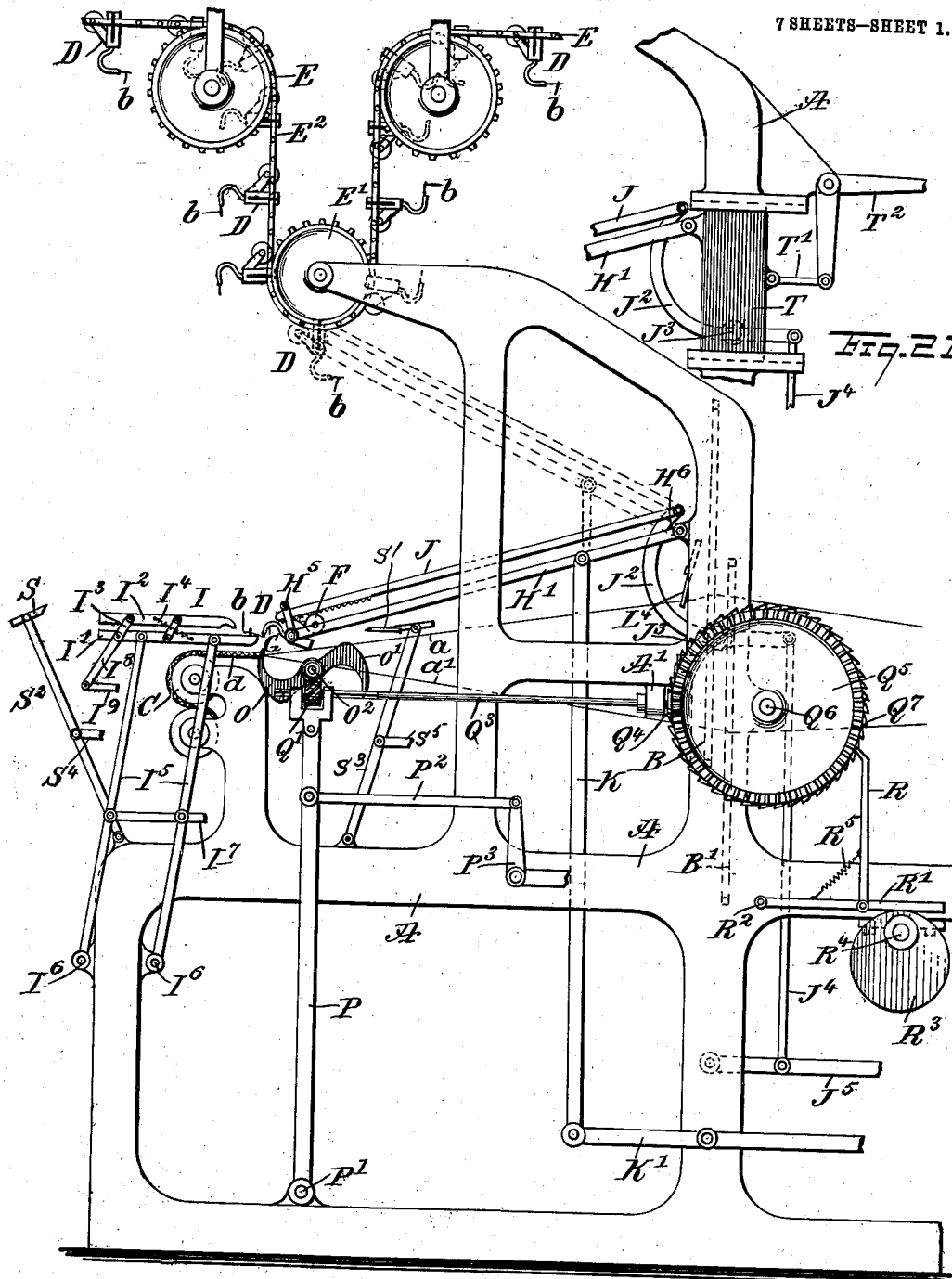


No. 858,961.

PATENTED JULY 2, 1907.

J. K. DALKRANIAN.
PILE FABRIC LOOM.
APPLICATION FILED JAN. 4, 1906.

7 SHEETS—SHEET 1.



WITNESSES:

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Fig. 1

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78 SHEETS—SHEET 2.

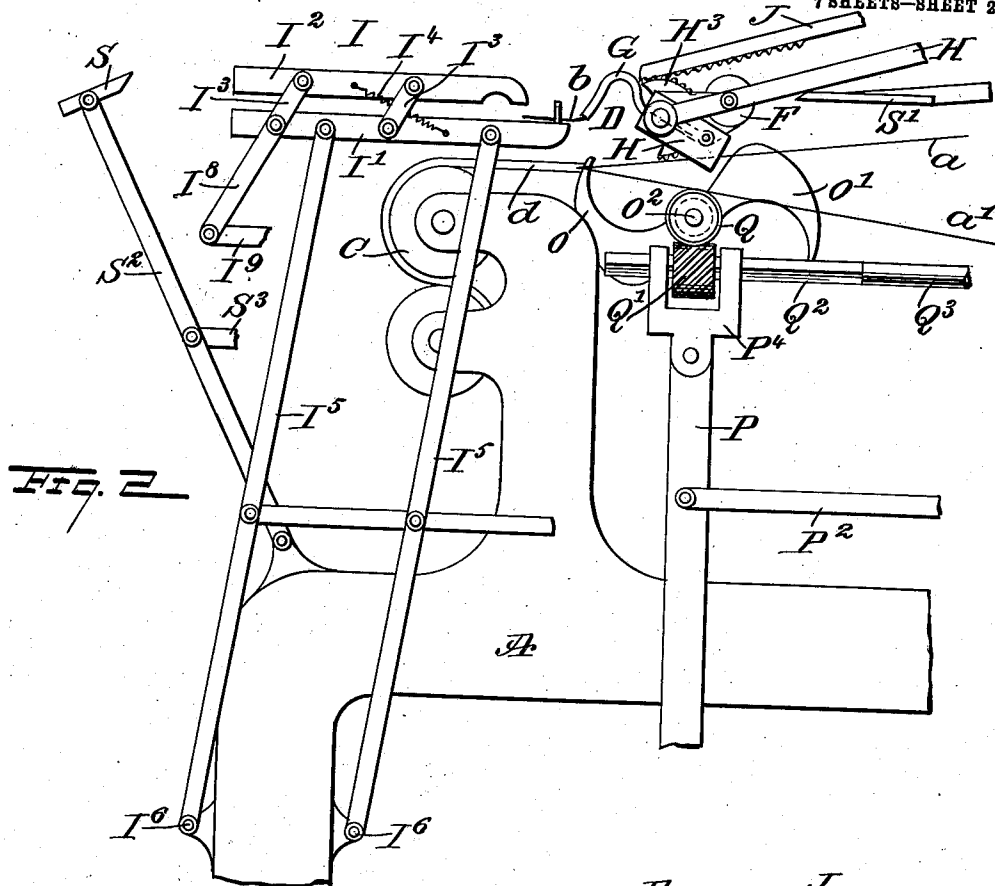


Fig. 2

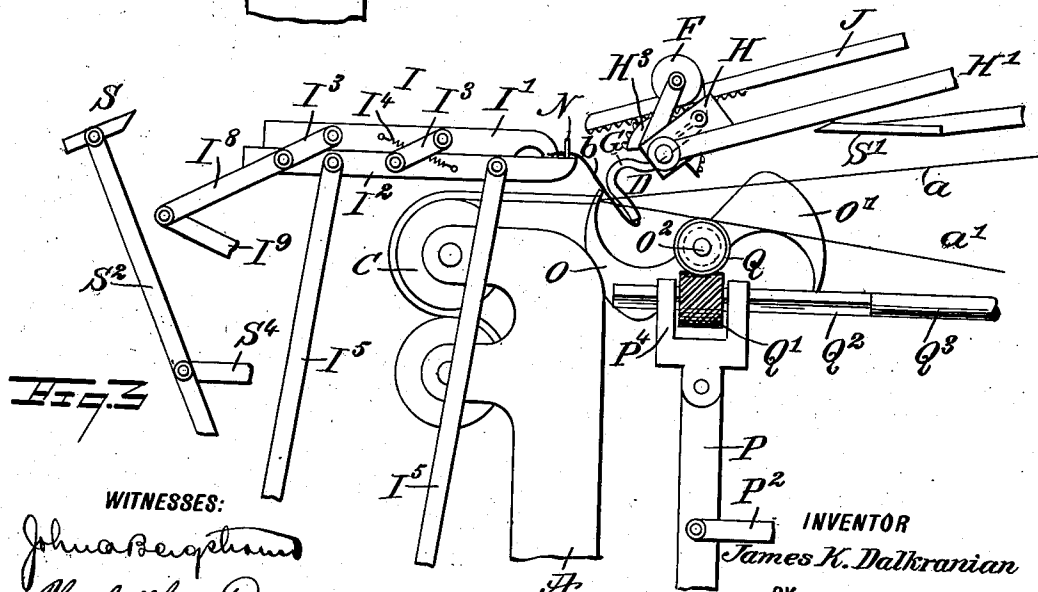


Fig. 3

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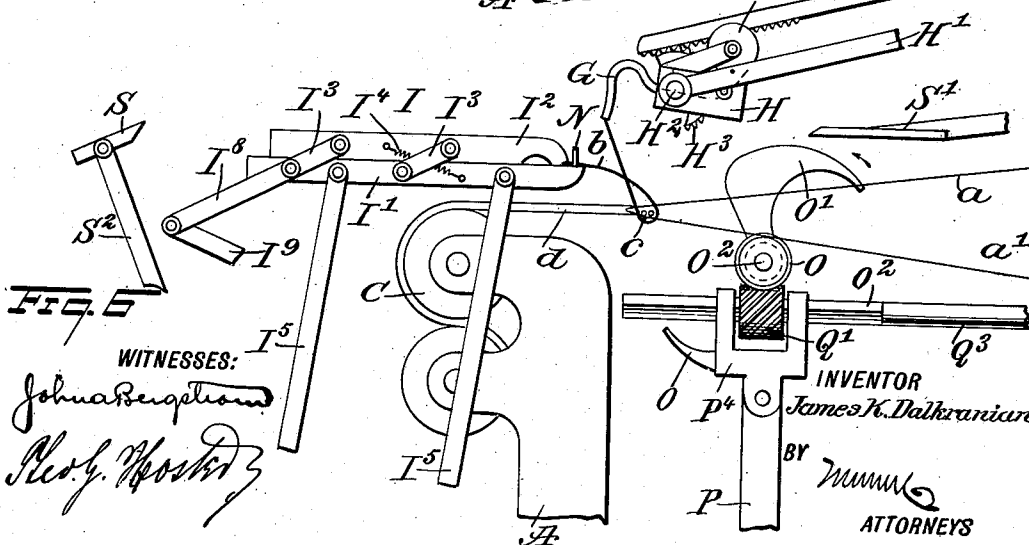
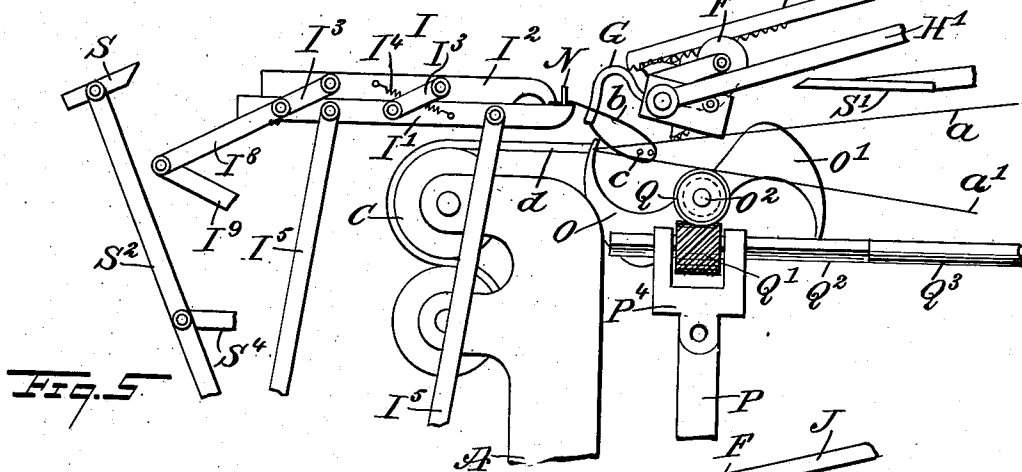
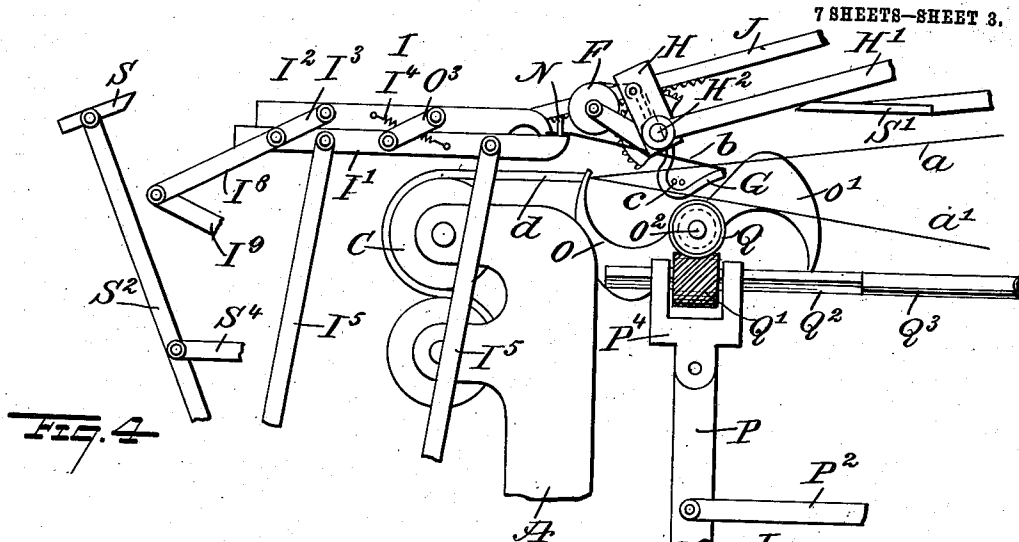
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7 SHEETS—SHEET 3.



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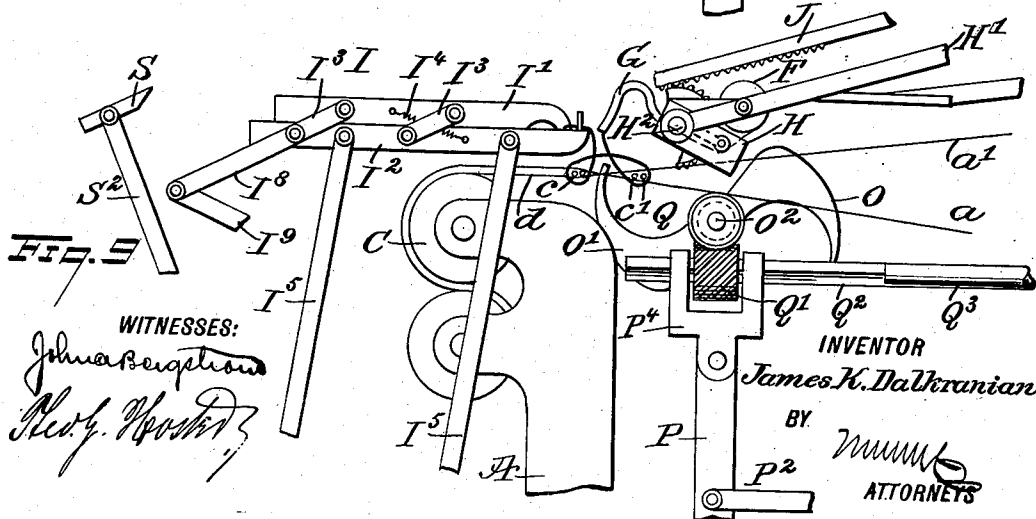
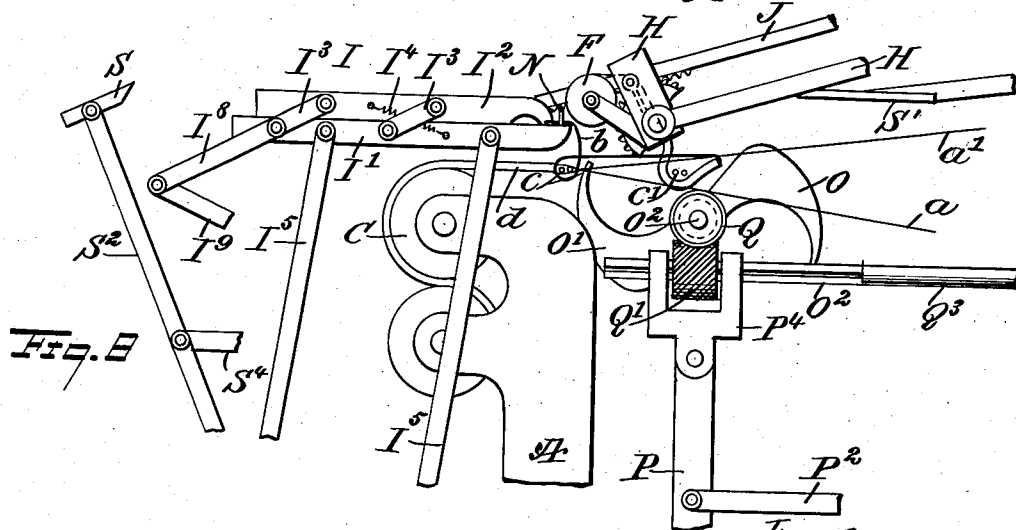
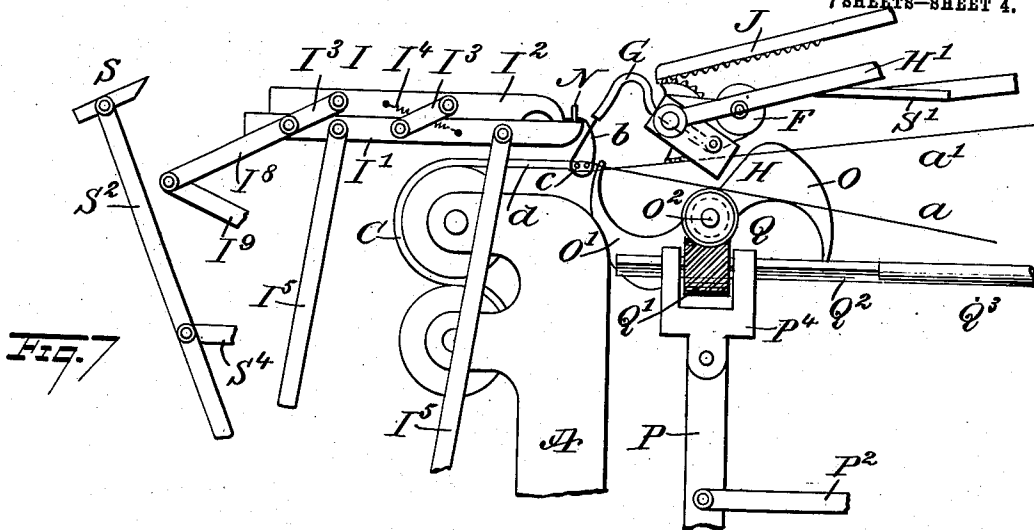
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7 SHEETS—SHEET 4.



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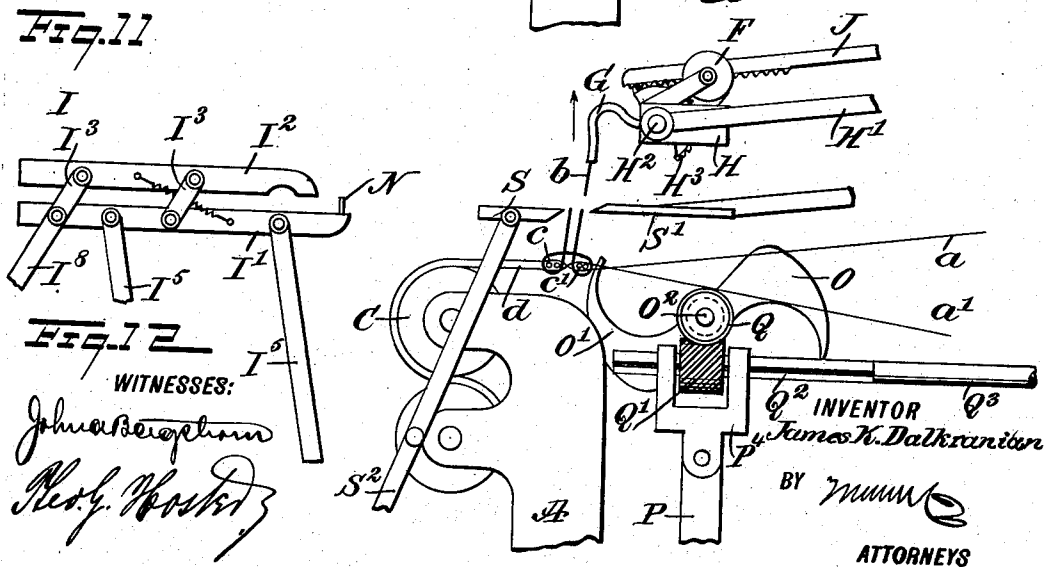
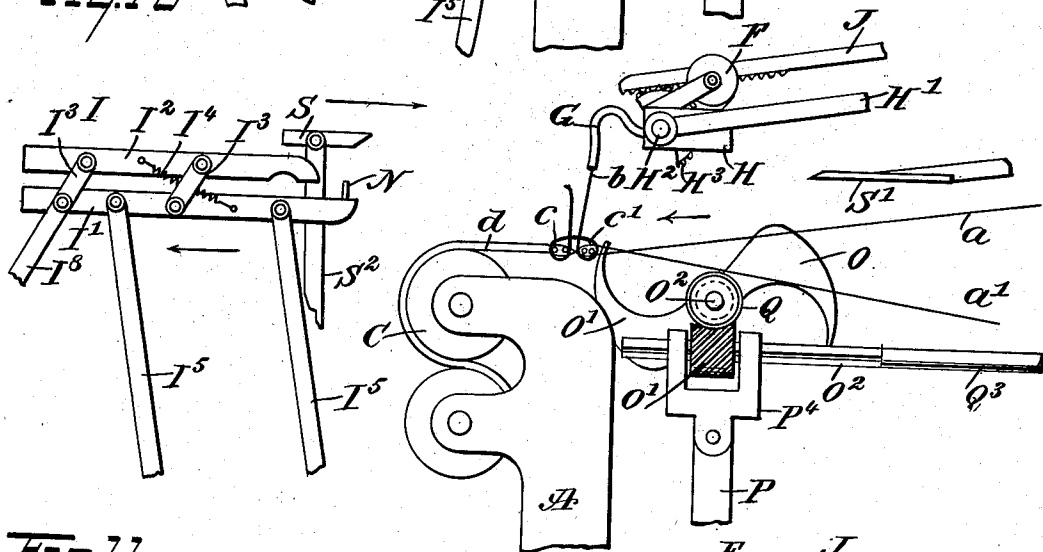
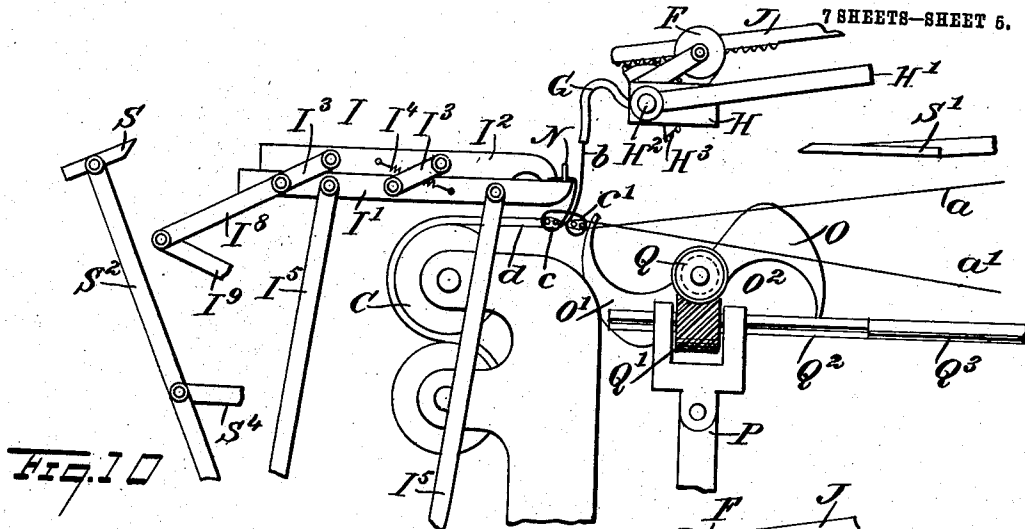
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7 SHEETS—SHEET 6.



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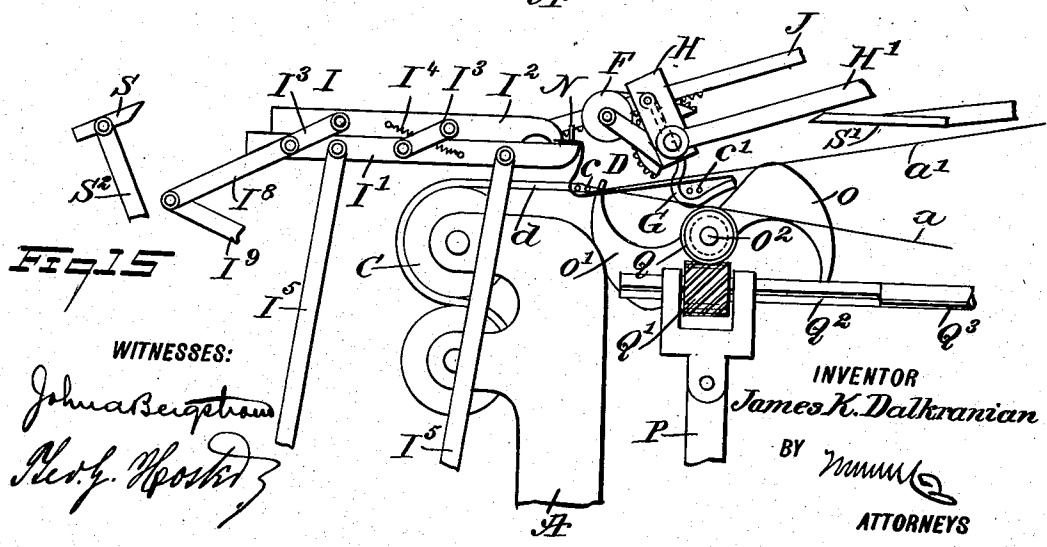
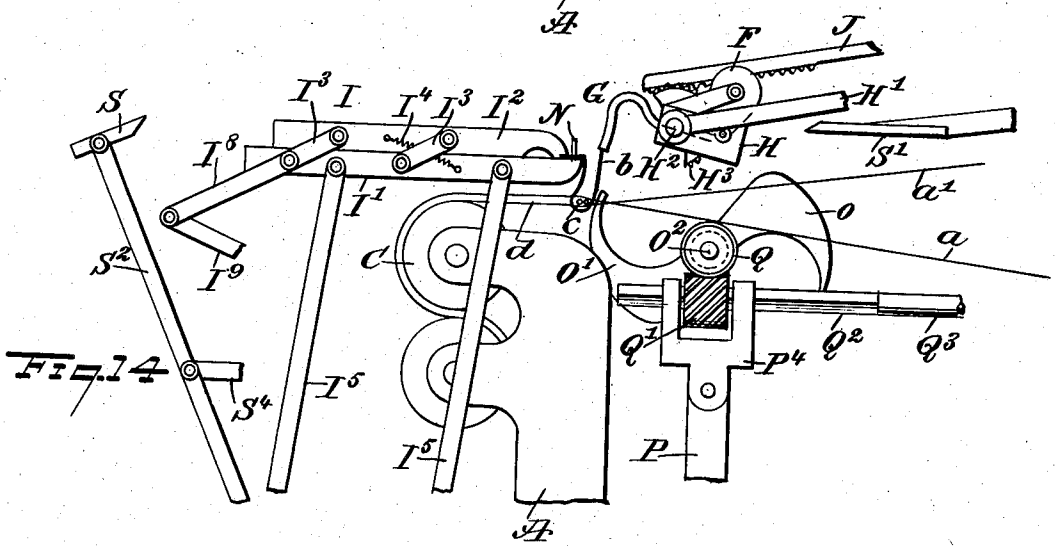
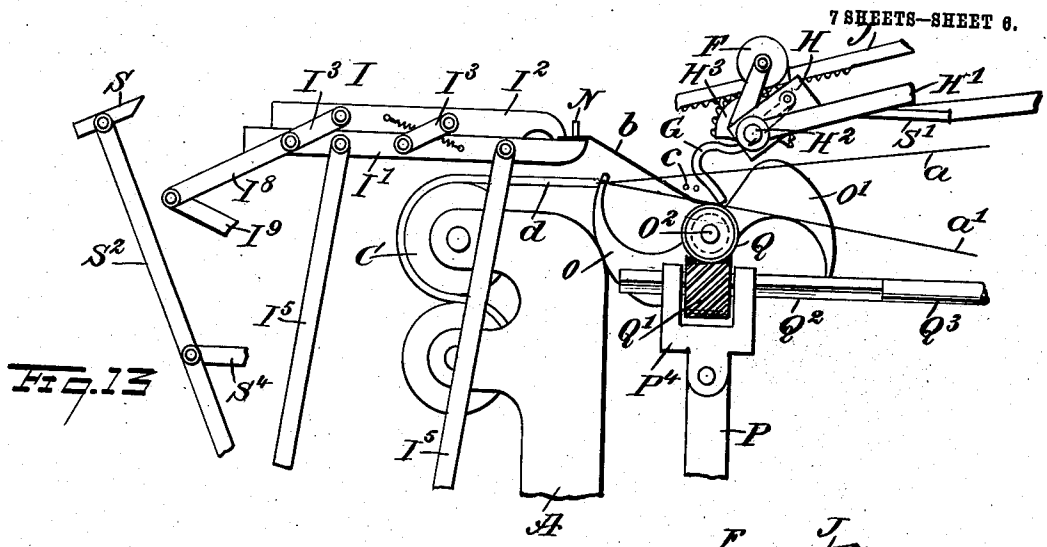
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APPLICATION FILED JAN. 4, 1905.

7 SHEETS—SHEET 7.

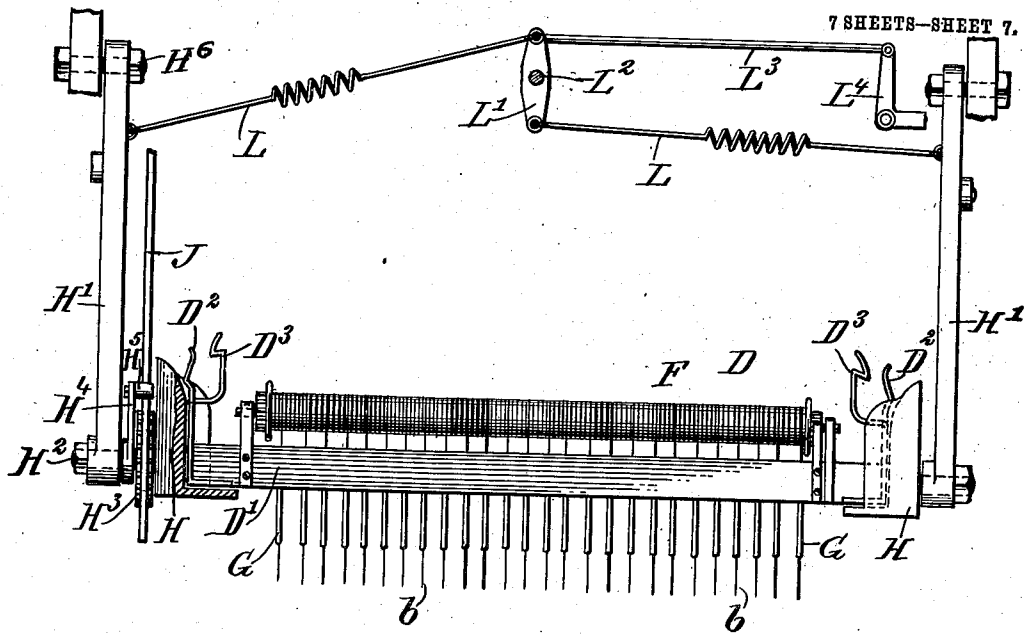


Fig. 16

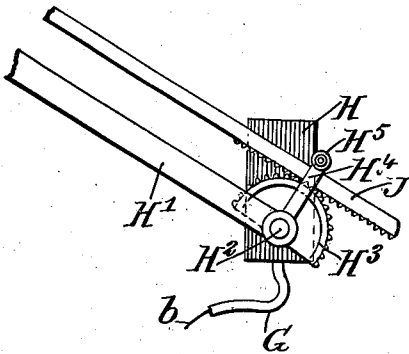


Fig. 17

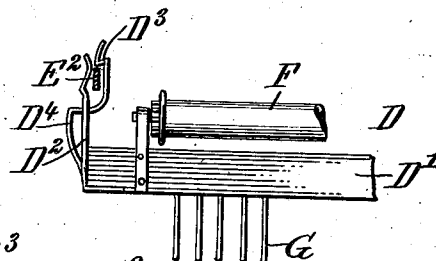


Fig. 18

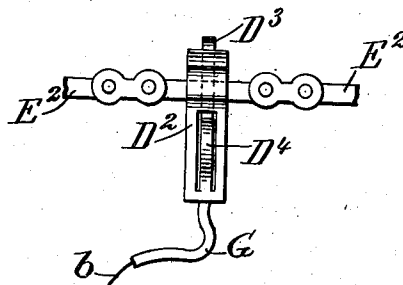


Fig. 19

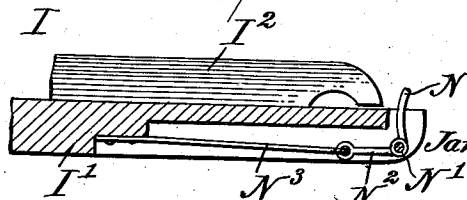


Fig. 20

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BY *Minum*

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UNITED STATES PATENT OFFICE.

JAMES KARMI DALKRANIAN, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO UNITED STATES PERSIAN CARPET COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

PILE-FABRIC LOOM.

No. 858,961.

Specification of Letters Patent.

Patented July 2, 1907.

Application filed January 4, 1905. Serial No. 239,563.

To all whom it may concern

Be it known that I, JAMES KARMI DALKRANIAN, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Pile-Fabric Loom, of which the following is a full, clear, and exact description.

The invention relates to pile fabric looms such as are used for weaving Axminster carpets, and its object is to provide a new and improved pile fabric loom for weaving pile fabrics resembling Turkish, Persian and similar weaves and permitting of weaving the fabric in any desired design and with the pile threads of any desired color.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement; Fig. 2 is an enlarged side elevation of the improvement;

Figs. 3 to 12 are similar views of the same, showing the parts in different positions, to illustrate the several steps required in the formation of a Turkish knot; Figs. 13, 14 and 15 are similar views of the improvement as arranged for forming a Persian knot; Fig. 16

is a plan view of the swing-arms and seats for carrying one of the tuft yarn frames having a set of tuft yarn tubes and pile threads; Fig. 17 is a rear side elevation of the mechanism for imparting a rocking motion to the tuft yarn frame carrying the tuft yarn tubes and pile threads; Fig. 18 is a cross section of one of the carrier chains and the tuft yarn frame carrying the tuft yarn tubes and pile threads supported thereon; Fig. 19 is a side elevation of the same; Fig. 20 is an enlarged sectional side elevation of the clamping device for holding the free ends of the pile threads in position during the time the knots are formed; and Fig. 21 is a side elevation of part of the mechanism employed for actuating part of the knot-forming device when making Persian knots.

In the fabric to be woven by the loom illustrated in the drawings, the ground warp threads *a*, *a'* are arranged in pairs, and pile threads *b*, arranged in sets, pass between adjacent pairs of ground warp threads *a*, *a'*, and the said pile threads *b* are looped around the wefts *c*, *c'* in such a manner as to produce an oriental knot, for instance, a Turkish knot, shown in Figs. 2 to 12 inclusive; or a Persian knot, illustrated in Figs. 13, 14 and 15.

In forming the Turkish knot, the pile threads *b* are completely looped around each of the wefts *c* and *c'*,

and the ends of the pile threads are extended up between the wefts *c*, *c'* (see Fig. 11, for instance), and in order to produce a weave of this kind the following arrangement is made: The ground warp threads *a*, *a'* unwind from the usual warp-beams (not shown), mounted on the loom-frame A, and the said ground warp threads pass from the warp-beams through heddles B, B' respectively to the fabric *d* passing over a breast-beam C arranged on the main frame A in the usual manner. For each two picks C, C', a different set of pile threads *b* is used, each set of pile threads *b* being carried on a tuft yarn frame D and the several tuft yarn frames D being removably mounted on an endless carrier E of usual construction and having an intermittent traveling motion. The endless carrier E is arranged overhead, and it is understood that the tuft yarn frame D which is carried by the carrier E to an operative position is disconnected from the carrier, transferred to the place of forming the knots, and after the knots are formed is returned to the endless carrier, and the latter is caused to travel, to move the following tuft yarn frame into position to be removed, the said carrier traveling intermittently in unison with the action of the loom. As shown in Fig. 1, a tuft yarn frame D reaches a removing position when passing to the bottom of a pulley E' forming part of the means for supporting the carrier E and preferably journaled on the main frame A of the loom proper.

Each of the tuft yarn frames D is preferably in the form of a transversely-extending beam D on which is journaled a tuft yarn spool F carrying the several differently colored pile threads required for forming a row of knots across the width of the fabric, each of the threads passing through a hollow curved tuft yarn-tube G attached to the beam D. On each end of the beam D' is arranged a catching device for connecting the tuft yarn frame D with the chains E² of the endless carrier E (see Figs. 18 and 19), each catching device consisting essentially of a fixed bar D² and a spring-hook D³ adapted to pass over the corresponding chain E², as plainly indicated in the said Figs. 18 and 19. Each of the spring-hooks D³ extends through an opening in the bar D², to form a cam-surface D⁴ adapted to be engaged by the wall of a seat H held on swing-arms H forming part of the mechanism for carrying a tuft yarn frame D from the endless carrier E to an operative position for forming knots, as hereinafter more fully described. Normally the spring-hook D³ is in a closed position over the corresponding chain E², so that the frame is properly supported on an endless carrier and moves along with the same, but when the spring-arms H move into an uppermost position (see dotted lines, Fig. 1) and the seats H engage the ends of the beam D and act on the cam-surface D⁴,

then the spring-hooks D^3 are opened, to disengage the chains E^2 of the carrier and consequently allow the swing-arms H to swing down with the tuft yarn frame D , to bring the latter to the operative position for forming the knots. The tuft yarn frame D , while seated on the seats H and while in an operative position above the ground warp threads a, a' , receives a rocking motion, so as to bring the tuft yarn tubes G and consequently the pile threads b between adjacent pairs of ground warp threads a, a' , it being understood that when the tuft yarn frame D is moved into operative position, the free ends of the pile threads b of this tuft yarn frame are engaged and held in a clamping device I during the time the knots are formed.

In order to impart a rocking motion to the tuft yarn frame D for the purpose described, the following arrangement is made: On the trunnion H^2 of each seat H is secured a segmental gear-wheel H^1 (see Figs. 16 and 17), in mesh with a rack J pivotally connected with a lever J^2 fulcrumed at J^3 on the main frame A and connected by a link J^4 with a cam-lever J^5 controlled by a cam (not shown), for imparting an intermittent rocking motion to the said lever J^5 , the rocking motion of the latter being transmitted by the link J^4 to the lever J^2 , which thus imparts a sliding motion to the rack J , to turn the segmental gear-wheel H^3 and hence the trunnion H^2 and its seat H . As the beam D' of the tuft yarn frame D is fitted in guideways in both trunnions H , it is evident that the rocking motion given to the trunnions causes rocking of the beam D' , to oscillate the tuft yarn frame D intermittently, to swing the tuft yarn tubes G in and out between sets of adjacent ground warp threads a and a' .

In order to hold the rack J in mesh with the segmental gear-wheel H^3 an arm H^4 is provided; fulcrumed loosely on the operative trunnion H^2 and provided with a friction-roller H^5 traveling on the top edge of the rack J .

Each of the swing-arms H' is fulcrumed at H^6 on the main frame A , and each of the said swing-arms is pivotally connected by a link K with a cam-lever K' , controlled by a suitable cam (not shown), for imparting a rocking motion to the said levers K' and consequently to the swing-arms H' , to swing the same up and down, for taking a used tuft yarn frame D back to the carrier E and for bringing the next following frame down into the operative position, for forming a new set of knots, as hereinafter more fully described. When the swing-arms H' swing into an uppermost position, to return a previously used tuft yarn frame D , then the seats H are caused to slide apart, to allow the spring-hooks D^3 to close after the chains E^2 have passed between the spring-hook and the fixed bar D^2 , so that the tuft yarn frame D under consideration is returned and refastened to the chains E^2 of the endless carrier. For the purpose described the swing-arms H' are mounted to swing transversely a sufficient distance to carry the seats H along in order, to permit closing of the spring-hooks D^3 , and the said swing-arms H' are connected by links L (see Fig. 16) with an arm L' fulcrumed on a shaft L^2 arranged on the main frame, the arm L' being also connected by a link L^3 with a bell-crank lever L^4 controlled by a cam (not shown), so that the arm L' receives a rocking motion at the proper time, to swing the swing-arms H' apart and to

move the same toward each other whenever required. As the detail construction of this portion of the mechanism is similar to ones already in use, further description of the same is not deemed necessary.

The clamping device I previously referred to consists essentially of clamping jaws I' and I^2 , of which the clamping jaw I^2 is hung on links I^3 connected with the jaw I' , and a spring I^4 connects the jaws I^2 and I' with each other, so as to normally hold the jaw I^2 in a closed position relative to the jaw I' . The jaw I' is hung on pairs of parallel levers I^5 , fulcrumed at I^6 on the main frame A and connected by links I^7 with a cam device for imparting a rocking motion to the parallel levers I^5 , to swing the jaws I' and I^2 into an operative position, as shown in Fig. 1, or out of the same (see Figs. 11 and 12), that is, whenever it is desired to cut the pile threads, as hereinafter more fully described.

In order to open the jaw I^2 relative to the jaw I' , one of the links I^3 is provided with an extension I^8 , connected by a link I^9 with a cam device, which allows the open jaw I^2 to close and engage the ends of the pile threads b as soon as a tuft yarn frame D is in an operative position and the ends of the pile threads b have engaged the top surface of the lower jaw I' (see Fig. 1). The clamping device is also reciprocated intermittently in a transverse direction after the jaws are closed, and for this purpose any suitable means may be employed.

In order to comb out the ends of the pile threads b and to place the same in proper position previous to clamping the ends between the jaws I^2 and I' , a combing device is provided, consisting of teeth N fulcrumed at N' on the lower jaw I' and extending up through recesses in the forward end of the jaw I' , so as to reach above the top surface of the jaw I' and somewhat in front of the forward end of the jaw I^2 . The teeth N alternate with the tuft yarn tubes G , so that when a tuft yarn frame D is carried into an operative position the free ends of the pile threads b , in passing on the top surface of the jaw I' , also pass between adjacent teeth N , at the time the jaw I^2 is in an open position. Thus the pile threads are kept separate and in proper alinement, and when the jaw I^2 moves into a closed position, the ends of the pile threads are clamped between the two jaws and are held in proper longitudinal alinement. As shown in Fig. 20, each of the teeth N is yieldingly mounted, that is, is provided with a rearward extension N^4 , pressed on by a spring N^3 attached to the jaw I' .

In order to beat in the wefts c and c' and their pile loops successively, a beating-in device is provided, consisting essentially of sets of curved arms, each set having two arms O and O' secured on a transversely-extending shaft O^2 journaled on a lever P fulcrumed at its lower end at P' on the main frame A . On the shaft O^2 is secured a worm-wheel Q in mesh with a worm Q' mounted to rotate with and to slide on the square end Q^2 of a shaft Q^3 , journaled at its square end Q^2 in a suitable bearing formed on the upper forked end P^4 of the lever P . The other end of the shaft Q^3 is mounted to turn in a bearing A' carried by the main frame A , and on this end of the shaft Q^3 is secured a bevel pinion Q^4 , in mesh with a bevel gear-wheel Q^5 mounted to rotate on a stud Q^6 held on the main frame A . On the peripheral surface of the bevel gear-wheel

5 Q^5 is secured or formed a ratchet-wheel Q^7 , engaged by a pawl R pivotally connected with a lever R' fulcrumed at R^2 on the main frame A . The free end of the lever R' rests on the peripheral surface of a cam-wheel R^3 in the form of an eccentric secured on a shaft R^4 receiving a rotary motion from the driving-gear of the loom. A spring R^5 presses the pawl R , to hold the same in contact with the ratchet-wheel Q^7 . When the loom is in operation, the cam R^3 imparts a swinging motion to the lever R' which, by the pawl R , imparts an intermittent rotary motion to the ratchet-wheel Q^7 and gear-wheel Q^5 , so that the shaft Q^3 is intermittently rotated, and this intermittent rotary motion is transmitted by the worm Q' and worm-wheel Q to the shaft O^2 and the sets of beating-in arms O and O' held on the said shaft. An intermittent rotary motion is given to the arms O , O' , once for each pick.

20 The sets of arms O and O' extend between adjacent sets of ground warp threads a and a' , and the arrangement is such that at least one of the said arms is always between adjacent pairs of ground warp threads a and a' , to prevent the ground warp threads from becoming entangled and to hold adjacent pairs of warp threads sufficiently far apart for the proper entrance of the tuft yarn tubes G , as previously referred to and hereinafter more fully explained. The arms O and O' are also arranged in such a manner that the free end of the outermost arm is always against the weft c or c' beaten in last by this arm, to prevent loosening of the weft last beaten in by the pulls exerted on the pile warp threads to be formed into a new loop (see Figs. 7 and 8), after the loop is completed (see Figs. 10, 11 and 12) and previous to and during the time the cutting mechanism cuts the pile threads.

35 The lever P is pivotally connected by a link P^2 with a bell-crank lever P^3 controlled by a suitable cam mechanism, to impart an intermittent swinging motion to the lever P , to shift the beating-in device and with it the worm-wheel Q and worm Q' bodily (see Fig. 6), during the time the arms O and O' are rotated.

40 In order to cut off the pile threads b after a portion thereof has been used for forming the row of knots, cutting knives S and S' are provided, normally standing in an open position and adapted to pass over each other, so as to shear off the pile threads, as will be readily understood by reference to Figs. 11 and 12. The knives S and S' are mounted on arms S^2 and S^3 , fulcrumed on the main frame and connected by links S^4 and S^5 with suitable mechanism, for imparting the desired motion to the knives S and S' , so as to cause the same to close and cut off the piles at the proper time and to then immediately open again and remain in this open position until the next set of pile threads is to be cut off.

55 It is understood that the several mechanisms referred to are driven in unison from the driving-gear of the loom, so that the several parts operate synchronously, to perform the work in the proper sequence, and it is expressly understood that I do not limit myself to any particular construction of the mechanism required for producing the work in unison, as the same may be varied without deviating from the spirit of my invention.

65 The operation is as follows: When the several parts are in the position illustrated in Figs. 1 and 2, then a

tuft yarn frame D has been moved from the endless carrier E into an operative position over the ground warp threads, the tuft yarn tubes G now extending close to the jaw I' of the clamping device I , to lay the outer ends of the pile threads b onto the top of the said jaw I' . The jaw I^2 now swings into a closed position, so as to clamp the free ends of the pile threads b in position between the jaws I' and I^2 , as plainly indicated in Fig. 3. The clamping device I , after being closed, is shifted bodily in a transverse direction to bring the side-arms of the pile threads always to the same side of the connecting cross-bar of a Turkish knot. The amount of movement given to the clamping device I in the direction mentioned is very little, approximately the distance between adjacent pile threads. After the clamping jaws are closed and the clamping device is shifted transversely, then the seats H and the tuft yarn frame D are caused to turn, to swing the tuft yarn tubes G downward between adjacent pairs of ground warp threads a and a' . During this downward movement of the tuft yarn tubes G the pile threads b are unwound from the tuft yarn spool F , as the free ends of the pile threads are held in a clamped position on the clamping device I , and consequently the pile threads are drawn through the tuft yarn tubes and carried by the latter down between adjacent pairs of ground warp threads a and a' . As illustrated in Figs. 3 and 4, the tuft yarn tubes G swing downward between the beating-in arms O and O' , and when the tuft yarn tubes G have reached the end of their downward swinging stroke (see Fig. 4), then the tuft yarn tubes, with the pile threads, form open loops in the shed, to permit of carrying the weft c through the open shed, it being understood that for this purpose a suitable weft-carrying device is provided, preferably in the form of a rod carrying a weft through the open shed in both directions, to cause the weft to consist of two weft threads, as indicated in Fig. 4. When the weft c has been passed through the open shed, then the tuft yarn frame D is caused to rock backward, and in doing so the pile threads b are drawn completely around the weft c (see Figs. 5 and 6), and in order to draw the loop very tightly around the weft c an upward swinging motion is given to the swing-arms H' (see Fig. 6), at the time the beating-in arms O and O' are rotated and moved bodily to the right, so that the tuft yarn frame D is out of the path of the advancing beating-in arm O' and the latter is bodily returned and now acts on the weft c , to beat the same home (see Fig. 7). As previously stated, the beating-in device comes to a stop as soon as the end of the arm O' reaches a final beating-in position. The heddles B and B' now change. The swing-arm H' is now again swung downward to the previous position, and then the tuft yarn frame D is again caused to rotate, to swing the tuft yarn tubes G downward into another loop-forming position at the open shed, and then the second weft c' , similar to the weft c , is passed through the open shed (see Fig. 8). When this has been done the tuft yarn tubes G swing back into an upper position (see Fig. 9), to draw the pile threads b completely around the weft c' , then the swing-arms H' are again caused to swing upward a short distance (see Fig. 10), and the beating-in device is rotated, to cause the arm O' to beat in the weft c' and to remain in the beating-in position against the weft c' , as indicated in Fig. 10. As soon as this has been accomplished the

jaw I² swings into an open position, to release the free ends of the pile threads *b* and then the entire clamping device I swings to the left, as indicated in Fig. 11 and then the knives S and S' move toward each other to cut off the pile threads *b* and also the terminal ends previously held between the clamping jaws I' and I², so that a perfect Turkish knot is left on the wefts *c* and *c'*, interwoven with the ground warp threads *a* and *a'*. By reference to Fig. 12 it will be seen that the tuft yarn frame D has been swung upward a sufficient distance so that after the knives S and S' have cut off the pile from the pile warp threads *b* then the terminal-ends of the latter extend a distance beyond the free ends of the tuft yarn tubes G, so that when this tuft yarn frame D is again brought into use at a later period, then the said free ends can be again brought into proper clamping position between the jaws I' and I², as previously explained. A final upward swinging motion is now given to the swing-arms H' to return the tuft yarn frame D to the endless carrier E, and then the swing-arms H' are caused to swing downward a short distance, after which an intermittent traveling motion is given to the carrier E, to bring the next tuft yarn frame into removing position, and then the swing-arms H' are swung upward, to engage the next tuft yarn frame and to carry the same downward into the first operative position, shown in Figs. 1 and 2, and then the above-described operation is repeated.

When forming the Persian knot (see Figs. 13, 14, 15 and 21) it is necessary to shift the tuft yarn frame D bodily forward and backward, and for this purpose the swing-arms H' and the rack J and its lever J² are mounted on a separate frame T held to slide longitudinally in suitable guideways arranged on the main frame A. A link T' pivotally connects the frame T with a bell crank lever T² fulcrumed on the main frame A and connected with a suitable cam mechanism for imparting the desired sliding motion to the frame T at the proper time. In making the Persian knot the pile threads *b* have their ends first clamped in the clamping device I, as indicated in Fig. 13, then the tuft yarn frame D is caused to rock, to swing the tuft yarn tubes G downward, but at the time the frame T has been moved into a right-hand end position, so that the tuft yarn tubes G pass beyond the open shed, to allow of placing the weft *c* into the open shed over the pile threads *b*, as indicated in Fig. 13. The tuft yarn frame D is then rocked backward, for the tuft yarn tubes G to swing upward, and then the beating-in device is actuated, for the arm O' to beat in the weft *c*, the frame T in the meantime moving to the left, so as to bring the tuft yarn frame D and the tuft yarn tubes G into the position shown in Fig. 14. The tuft yarn frame D is now rocked, to swing the tuft yarn tubes G downward to form the loops in the open shed for the second weft *c'* to pass through the open loops, and then the tuft yarn frame D is caused to return and the tuft yarn tubes G, in now swinging upward, cause the pile threads to be looped completely around the weft *c'*, the same as previously described with reference to Figs. 8, 9 and 10. After this has been done the ends of the pile threads are released by the clamping device I and then the knives S and S' advance, to cut off the pile threads, the same as previously described. From the foregoing it will be seen that in order to

from the Persian knot it is necessary to insert the weft *c* in front of the tuft yarn tubes G and the weft *c'* at the time the loops are formed in the open shed, so that each pile thread extends under the weft *c* and is then completely looped around the weft *c'* in the manner of forming Persian knots. In forming the Persian knot it is not necessary to reciprocate the clamping device I bodily in a transverse direction, as above described in reference to the formation of the Turkish knot.

Although I have shown and described the formation of Turkish and Persian knots, it is evident that other similar knots may be made by the loom by re-arrangement of some of the parts, it being understood, however, that in each case the pile threads are completely looped around at least one of the wefts.

It is understood that the heddles B and B', the carrier E, the swing-arms H', the tuft yarn frames D, the clamping device I and its rocking and transverse shifting mechanism, the beating-in mechanism, the shuttle mechanism and the cut-off device all operate in unison, to produce the result above described, and I do not limit myself to any particular means for actuating the parts in unison, as the said means and the detail construction of the parts may be varied without deviating from the invention.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A pile fabric loom provided with sets of hollow curved tuft yarn tubes for the passage of the pile threads, a spool for carrying a set of pile threads, one for each tuft yarn tube, means for holding the ends of the pile threads of a set of pile threads, and means for rocking the said tuft yarn tubes, for forming the pile threads into loops for the passage of a weft and for drawing the pile threads of a set completely around the said weft.
2. A pile fabric loom provided with sets of hollow curved tuft yarn tubes for the passage of the pile threads, a spool for carrying a set of pile threads, one for each tuft yarn tube, means for holding the ends of the pile threads of a set of pile threads, means for rocking the said tuft yarn tubes, for forming the pile threads into loops for the passage of a weft and for drawing the pile threads of a set completely around the said weft, and means for beating in the said weft and its loops.
3. A pile fabric loom provided with sets of hollow curved tuft yarn tubes for the passage of the pile threads, a spool for carrying a set of pile threads, one for each tuft yarn tube, means for holding the ends of the pile threads of a set of pile threads, means for rocking the said tuft yarn tubes, for forming the pile threads into loops for the passage of a weft, for drawing the pile threads of a set completely around the said weft, for forming a second loop for the passage of another weft thread and for drawing the pile threads completely around the second weft, and means for successively beating-in the said wefts and their loops.
4. A pile fabric loom provided with sets of hollow curved tuft yarn tubes for the passage of the pile threads, a spool for carrying a set of pile threads, one for each tuft yarn tube, means for holding the ends of the pile threads of a set of pile threads, means for rocking the said tuft yarn tubes, for forming the pile threads into loops for the passage of a weft, for drawing the pile threads of a set completely around the said weft, for forming a second loop for the passage of another weft thread and for drawing the pile threads completely around the second weft, means for successively beating-in the said wefts and their loops, and means for cutting off the pile threads between the loops and the tuft yarn tubes.
5. A pile fabric loom provided with sets of hollow curved tuft yarn tubes for the passage of the pile threads, a spool for carrying a set of pile threads, one for each tuft yarn tube, means for holding the ends of the pile

threads of a set of pile threads, means for rocking the said tuft yarn tubes, for forming the pile threads into loops for the passage of a weft, for drawing the pile threads of a set completely around the said weft, for forming a second loop for the passage of another weft thread and for drawing the pile threads completely around the second weft, means for successively beating-in the said wefts and their loops, and means for cutting off the pile threads between the loops and the tuft yarn tubes and simultaneously the terminals of the loops.

6. A pile fabric loom provided with a clamping device for clamping the free ends of the pile threads, consisting of clamping jaws, means for opening and closing the jaws, and means for rocking the jaws to and from an operative position.

7. A pile fabric loom provided with a tuft yarn frame carrying the pile threads and curved hollow tuft yarn tubes for the passage of the pile threads, seats for receiving the ends of the said tuft yarn frame and mounted to swing, a segmental gear wheel on one of the said seats, and a rack in mesh with the said segmental gear wheel, for rocking the said seats and tuft yarn frame.

8. A pile fabric loom provided with a tuft yarn frame carrying the pile threads and curved hollow tuft yarn tubes for the passage of the pile threads, seats for receiving the ends of the said tuft yarn frame, swing arms in which the said seats are journaled, segmental gear wheels on the said seats, and racks having an intermittent longitudinal movement and in mesh with the said segmental gear wheels.

9. A pile fabric loom provided with a clamping device for clamping the free ends of the pile threads, the said device having clamping jaws, and means for separating the free ends of the pile threads.

10. A pile fabric loom provided with a clamping device for clamping the free ends of the pile threads, the said device having clamping jaws, and means for separating the free ends of the pile threads, the said means consisting of yieldingly mounted teeth held on one of the jaws and extending in front of the other jaw.

11. A pile fabric loom having a set of tuft yarn tubes through which extend the pile threads, a clamping device for clamping the free ends of the said pile threads, and yieldingly mounted teeth on the clamping device, for

separating the free ends of the pile threads, the teeth being arranged alternately relative to the said tuft yarn tubes.

12. A pile fabric loom provided with heddles for operating the ground warp threads, an endless carrier having a plurality of removable tuft yarn frames, each carrying a set of pile threads and tuft yarn tubes for the same, a transferring device for removing a tuft yarn frame from the said carrier and transferring it to an active weaving position over the warp, and means for actuating the tuft yarn frame to completely loop the pile threads around at least one of the wefts of a pair of wefts.

13. A pile fabric loom provided with heddles for operating the ground warp threads, an endless carrier having a plurality of removable tuft yarn frames, each carrying a set of pile threads and tuft yarn tubes for the same, a transferring device for removing a tuft yarn frame from the said carrier and transferring it to an active weaving position over the warp, means for actuating the tuft yarn frame, to completely loop the pile threads around at last one of the wefts of a pair of wefts, and a beating-in device for successively beating in the wefts.

14. A pile fabric loom provided with heddles for operating the ground warp threads, an endless carrier having a plurality of removable tuft yarn frames, each carrying a set of pile threads and tuft yarn tubes for the same, a transferring device for removing a tuft yarn frame from the said carrier and transferring it to an active weaving position over the warp, means for actuating the tuft yarn frame, to completely loop the pile threads around at least one of the wefts of a pair of wefts, a beating-in device for successively beating in the wefts, and means for holding the free ends of the pile threads above the ground warp threads during the loop-forming and beating-in operations.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES KARMI DALKRANIAN.

Witnesses:

THEO. G. HOSTER,
EVERARD B. MARSHALL.