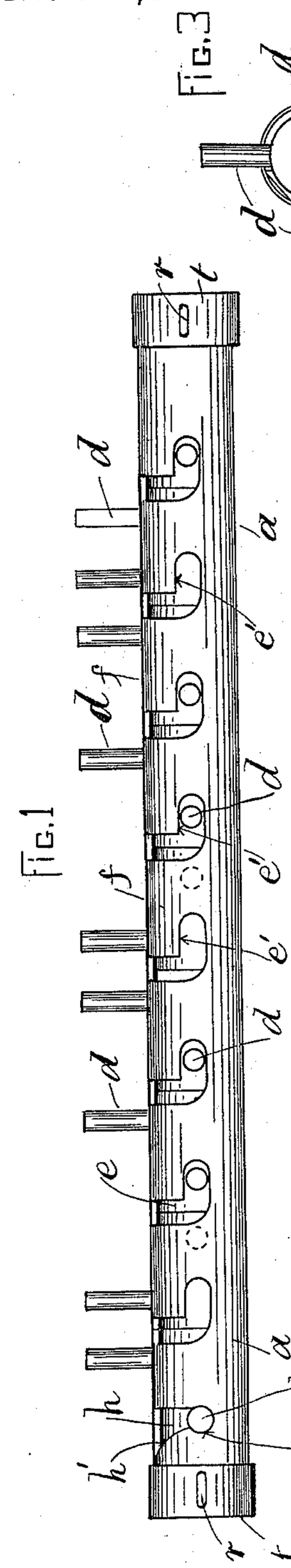
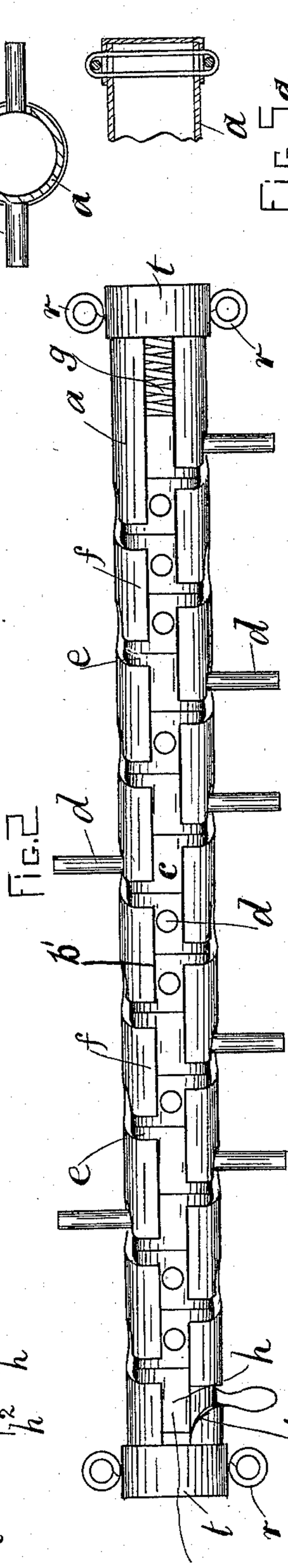
(No Model.) 4 Sheets—Sheet 1.

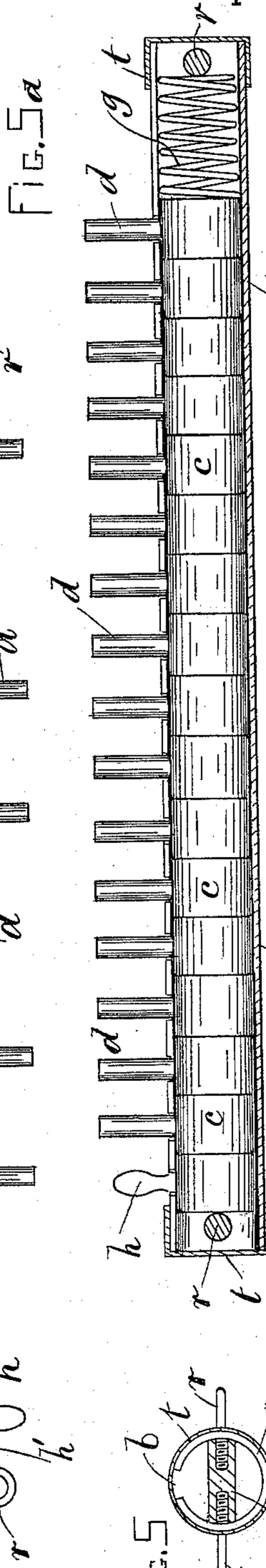
W. A. & D. CRABTREE.

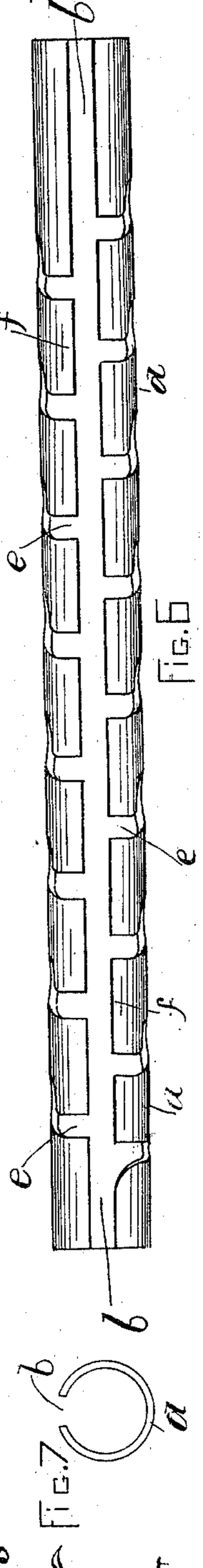
LOOM PATTERN CHAIN.

No. 568,162. Patented Sept. 22, 1896.









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(No Model.) 4 Sheets—Sheet 2.

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LOOM PATTERN CHAIN.

No. 568,162. Patented Sept. 22, 1896.

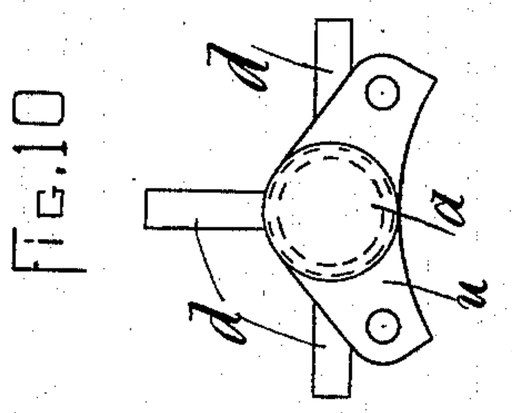

Fig. 10

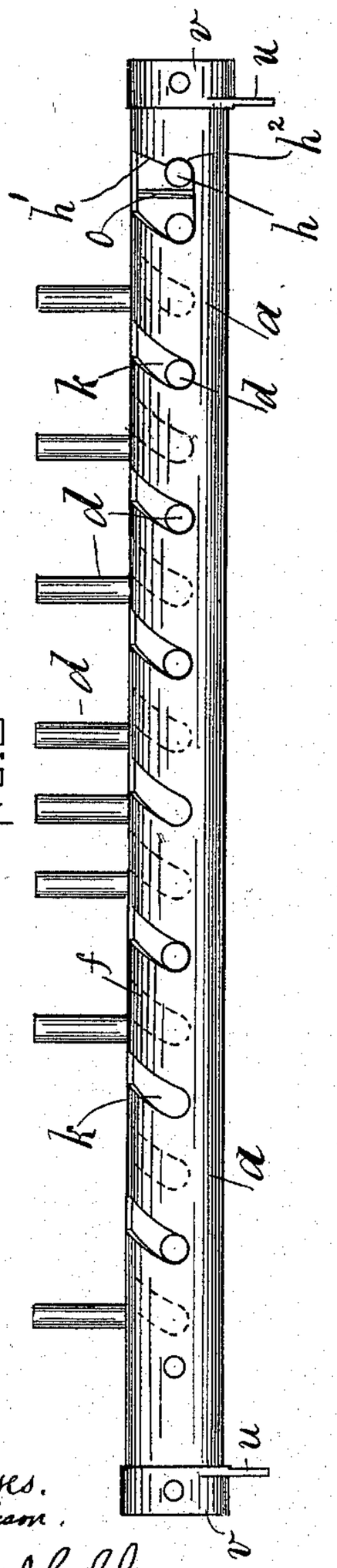

Fig. 8

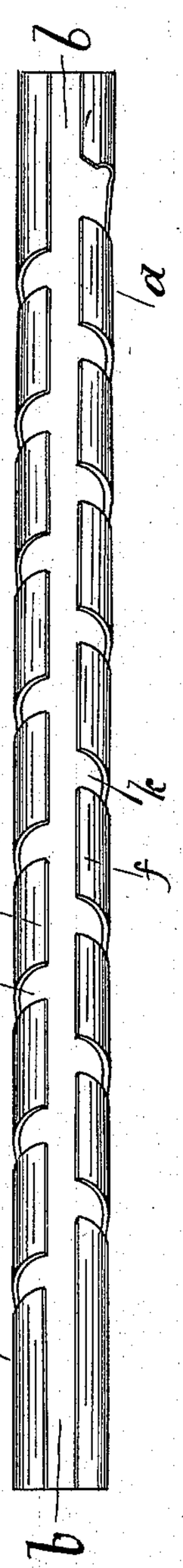

Fig. 12

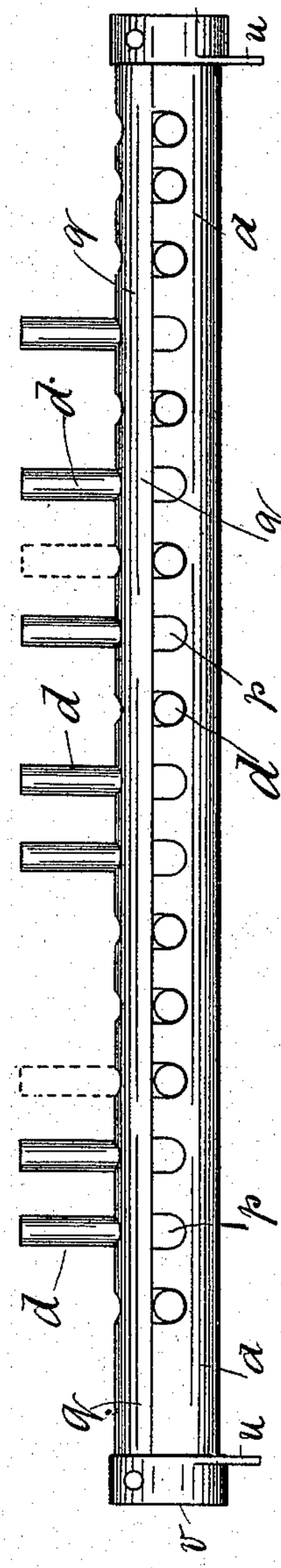

Fig. 16

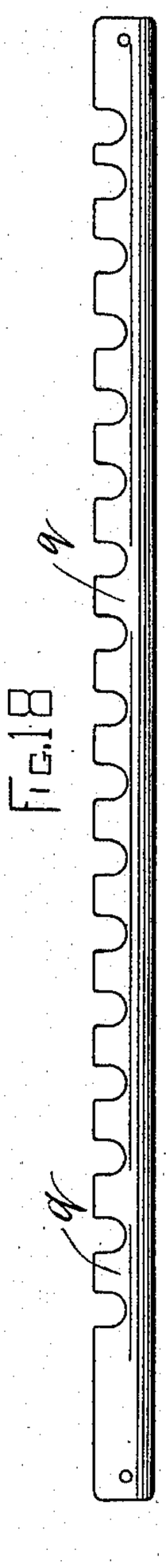

Fig. 18

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4 Sheets—Sheet 3.

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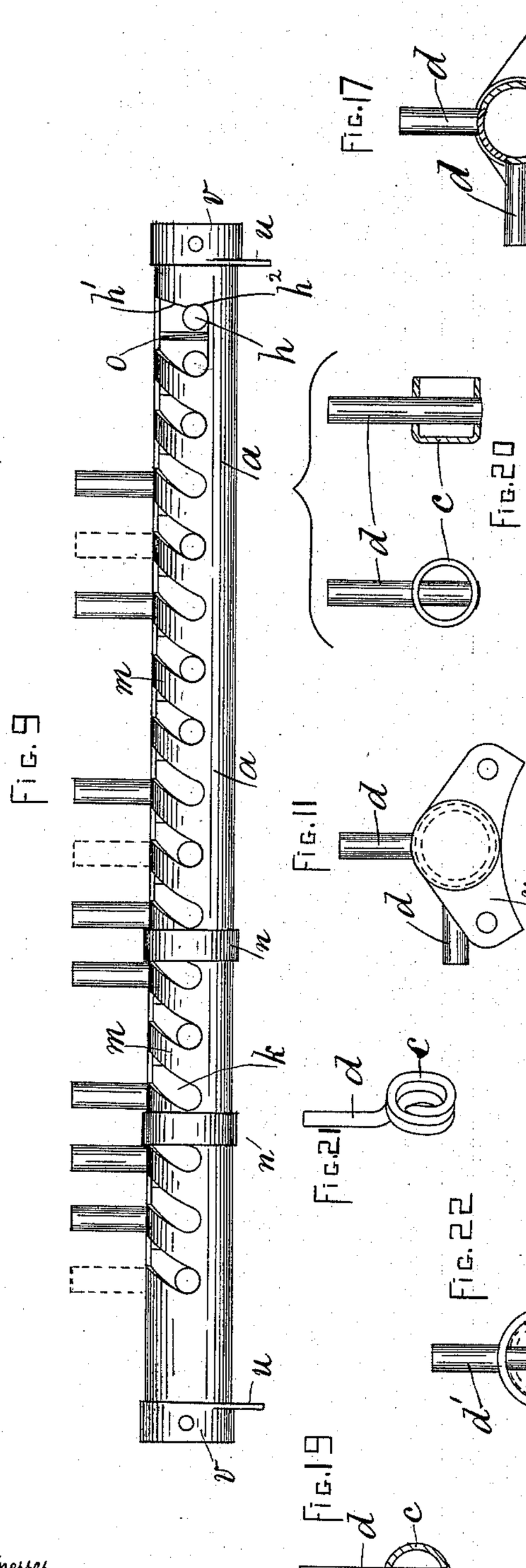
LOOM PATTERN CHAIN.

No. 568,162. Patented Sept. 22, 1896.



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LOOM PATTERN CHAIN.

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Fig. 24

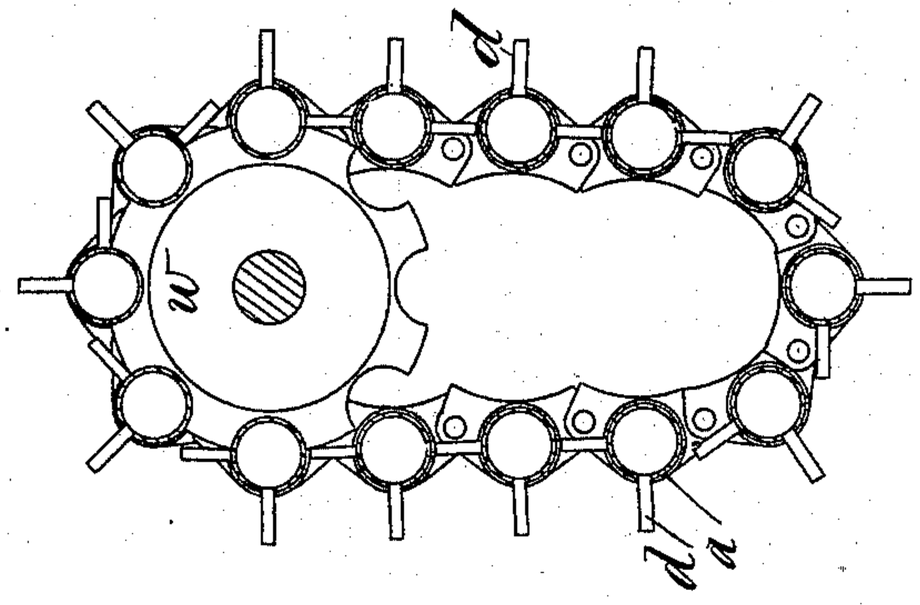
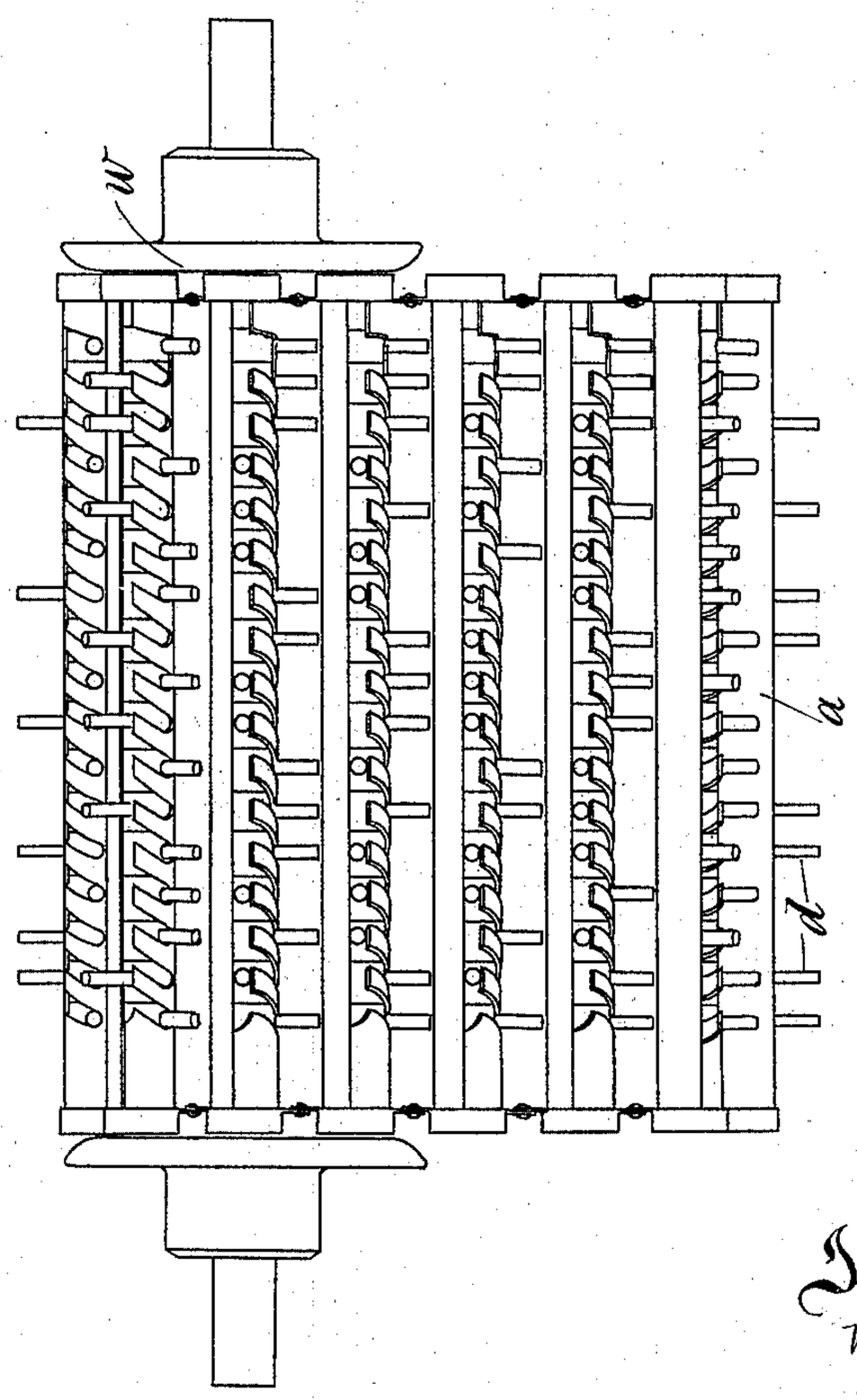


Fig. 23



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UNITED STATES PATENT OFFICE.

WILLIAM ARTHUR CRABTREE AND DAVID CRABTREE, OF SHIPLEY, ENGLAND.

LOOM PATTERN-CHAIN.

SPECIFICATION forming part of Letters Patent No. 568,162, dated September 22, 1896.

Application filed May 6, 1895. Serial No. 548,295. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM ARTHUR CRABTREE and DAVID CRABTREE, subjects of the Queen of Great Britain, residing at Windhill, Shipley, in the county of York, England, have invented a new and useful Improvement in Loom Pattern-Chains, of which the following description, aided by the sheets of drawings, is a specification, that is to say—

It relates to pattern-chains for use in connection with looms for weaving, as well for controlling the movements of the shuttle-boxes as for controlling those of the dobbies or healds operating mechanisms, taken in this instance as forming parts of such looms; and our said invention consists of forming, constructing, and arranging the several parts constituting the said pattern-chain so that the pattern-surface thereof may be changed, regulated, or altered to produce any design within its range without any of such parts having to be detached.

In the accompanying sheets of drawings, illustrative of our invention, Figures 1, 2, and 3, are respectively side, top, and sectional end views of our improved lag with the pattern-pegs arranged within it in their several positions as when in effective operation in the loom. Fig. 4 is a sectional side view of the lag with all of the pegs in their erect positions as when ready for being allowed to remain so or to be turned down, as will hereinafter be explained. Fig. 5 is an end view of the lag, illustrating a method that may be followed in preparing same for the attachment of coupling-links which join the whole series together to form the pattern-chain. Fig. 5^a is a longitudinal section of a portion of a lag and shows a certain form of coupling-link. Figs. 6 and 7 are top and end views illustrative of the body or main part of the lag. Figs. 8 and 9 are similar views to Fig. 1, but illustrate modifications hereinafter described. Figs. 10 and 11 are end views of parts shown by Figs. 8 and 9, respectively. Figs. 12 and 13 are top views illustrating the body parts of the lags, shown by Figs. 8 and 9, respectively. Figs. 14 and 15 are side and end views of the part shown by Fig. 13. Figs. 16 and 17 are side and end views of a modification in the formation or construction of our improved lag. However, in this case a certain part has to be displaced when any alteration in the positions of the pegs has to be effected. Fig. 18 shows in detail the formation of a certain part for use in connection with the parts shown by Figs. 16 and 17. Figs. 19, 20, 21, and 22 are illustrative of varied forms of pegs that may be used in connection with our improved lag. Figs. 23 and 24 are front elevation and end views of a series of our lags linked together to form a pattern-chain and show them as applied to a cylinder.

Similar letters of reference indicate similar parts throughout the several views.

To carry our invention into effect, each cross-bar, or what may be and is usually styled "lag" a' is formed of a cylindrical tubular shape, with a slot b extending lengthwise upon that part of it which forms its upper surface, so that on an appropriately-shaped base-piece c, made to fit within the hollow part of the lag a, being placed in a position therein the projection or peg d, formed upon or attached to it, (said piece c,) may extend out of this slot b and radially from the tubular lag a.

Referring first to Figs. 1, 2, 3, 4, and 6, there are extending laterally from the longitudinal slot b in the tubular lag a other slots e, corresponding in number with that of the base-pieces c. These slots e are made for a certain portion of their length at about right angles to the slot b, while the remainder of their length is made about parallel with the said slot b, preferably half of the number of such slots e being made on one side of the slot b and half on the other side in order that the intervening parts f of the bar a may be left as strong as possible. At one end of the lag a is mounted a spring g, while at the opposite end is placed a locking-piece h, toward and against which the spring g always presses the spacing-pieces c.

Provided that all the pegs d are in their erect positions, as shown by Fig. 4, in which case they are all opposite their respective lateral slots e, any or these pegs d may be turned down into their said slots while the remainder may be left erect, as the nature of the effect that they have to produce requires. Then by turning the locking-piece h down

into its slot, during which movement the inclined surface h' of its said slot will have caused it to advance, the spacing-pieces c are also moved, overcoming the pressure of the spring g until the position is reached by each peg d, where it is either opposite a full part b' of the edges along the slot b or it is opposite the overhanging part e' in the slot e, as the case may be, as to whether it is, respectively, in its erect or recumbent position, in either of which positions it will be seen that it is firmly and securely held until the locking-piece h is released or moved out of its notch h^2, on which the spring g is allowed to react and bring each piece c so that its peg d may be adjusted as desired.

Instead of making the slots e of the shape shown by Figs. 1, 2, and 6 they may be made spirally from or at an inclination to said slot b, as shown at k, Figs. 8, 9, 12, 13, and 14, but in this case when any upward pressure is brought to bear upon those of the pegs that are in their recumbent positions the inclined edges of the slots k do not hold them so firmly and securely as do the overhanging edges e' of the slots e, Figs. 1, 2, and 6, although they answer their purposes thoroughly. Again, instead of half of the number of slots k being made on one side of the slot b and half on the other side of it, as shown by Figs. 8 and 12, they may all be formed on one side thereof, as shown by Figs. 9, 13, and 14. However in this case the intervening parts m are not so strong as are the parts f, yet they may be made to perform their functions and they may be strengthened by loose strengthening-hoops n being loosely placed thereon.

Instead of employing the spring g a spring o may be placed between the locking-piece h and its neighboring spacing-piece c, since it will thus be able to retain said locking-piece h within its notch h^2, and thus make the device perfectly operative, although it would not answer the purpose of bringing each peg d opposite its slot on the releasing of the locking-piece h, as does the spring g.

Respecting the formation of lag shown by Figs. 16, 17, and 18, the same tubular form of bar as heretofore described is employed. It has also a longitudinal slot for the pegs d to pass through, and it has also lateral slots p, but on account of these being formed straight and at right angles to the slot b a separate holding-piece, as the strip q, is required, and this holding-piece q has at all times to be removed when any change in the positions of the pegs d has to be effected. This said piece q is held in position in the lag a by its extremities taking under the covering-caps v, which are in turn secured to said lags a in any suitable manner.

Varied methods of constructing the peg d and base-pieces c may be followed, but we preferably, for the sake of lightness, make the piece c hollow or annular, as shown by Fig. 19, and arrange the peg d to pass diametrically through it, or the hollow form shown by Fig. 20 may be used, or, again, the base-piece c and peg d may be formed all out of one piece of wire by same being bent or wound, as shown by Fig. 21.

It will further be seen that instead of the base-pieces c being made to fit within the lags a they may be made to take over same as would the one shown by Fig. 22, in which case the peg d' is made to extend within the base-piece c', so that its end d^2 may enter the longitudinal and lateral slots in the lag a, in which case the spring g would not be placed within the tube a, but on the outside of it to encircle it, as do the pieces c.

The attachments to the lags a to enable them to be linked or joined together may consist of the loops or hooks r, screwed into the nut s, placed within the lag a, and the cap t, which serves to cover the end of said lag a, as shown in Figs. 1, 2, and 5, or a flange u may be formed on the covering-cap v, which is riveted or otherwise attached to the lag a, as shown in Figs. 8, 9, 10, 11, 16, and 17, or a piece of wire may be passed through an opening made in both the lag and its cap, as shown by Fig. 5^a, the connecting-links thereto being used for keeping it in position, or a straight piece of wire may be passed through and a hook formed on each end of it, as is the case in the ordinary wooden lags at present in use, while intervening links or mere coupling-pins for joining one lag to the other to form the complete chain may be used as may be desired, or as may be found necessary to meet the requirements of the cylinder w, around which the chain of lags passes, as shown in Figs. 23 and 24.

Having thus described our invention, what we claim is—

1. A loom pattern-lag comprising a tube having a longitudinal slot and lateral slots leading out of it, peg base-pieces loosely engaging the tube and carrying pegs projecting through the slots, and means for confining the pegs at different adjustments in the slots.

2. A loom pattern-lag comprising a tube having a longitudinal slot and laterally and angularly extending slots leading out of said longitudinal slot, peg base-pieces loosely engaging the said tube and carrying pegs projecting through the slots, and means for confining the pegs at different adjustments in the slots.

3. A loom pattern-lag comprising a tube having a longitudinal slot and one or more series of slots leading out of said longitudinal slot substantially at right angles thereto and then extending substantially parallel therewith, peg base-pieces loosely engaging the tube and carrying pegs projecting into the slots, and means for holding the pegs at different adjustments in the slots.

4. A loom pattern-lag comprising a tube having a longitudinal slot and laterally and angularly extending slots leading out of said longitudinal slot, peg base-pieces loosely en-

gaging the said tube and carrying pegs projecting through the slots, a spring applied to the said base-pieces to press them together and toward one end of the tube, and a movable locking-piece coacting with the spring to hold the said base-pieces.

5. A loom pattern-lag comprising a tube having a longitudinal slot and laterally and angularly extending slots leading out of said longitudinal slot, peg base-pieces fitting the interior of said tube and longitudinally and rotatively adjustable therein, said base-pieces carrying pegs projecting through the slots in the tube, a spring applied to said base-pieces within the tube to press them together and toward one end of the tube, and a locking-piece having its main portion fitted to the interior of the tube and a projecting portion protruding through a slot in the tube to coact with an inclined and notched side of said slot, the said locking-piece being longitudinally and rotatively movable in the tube and coacting with the spring to hold the pegs in place substantially as described.

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