

No. 612,519.

Patented Oct. 18, 1898.

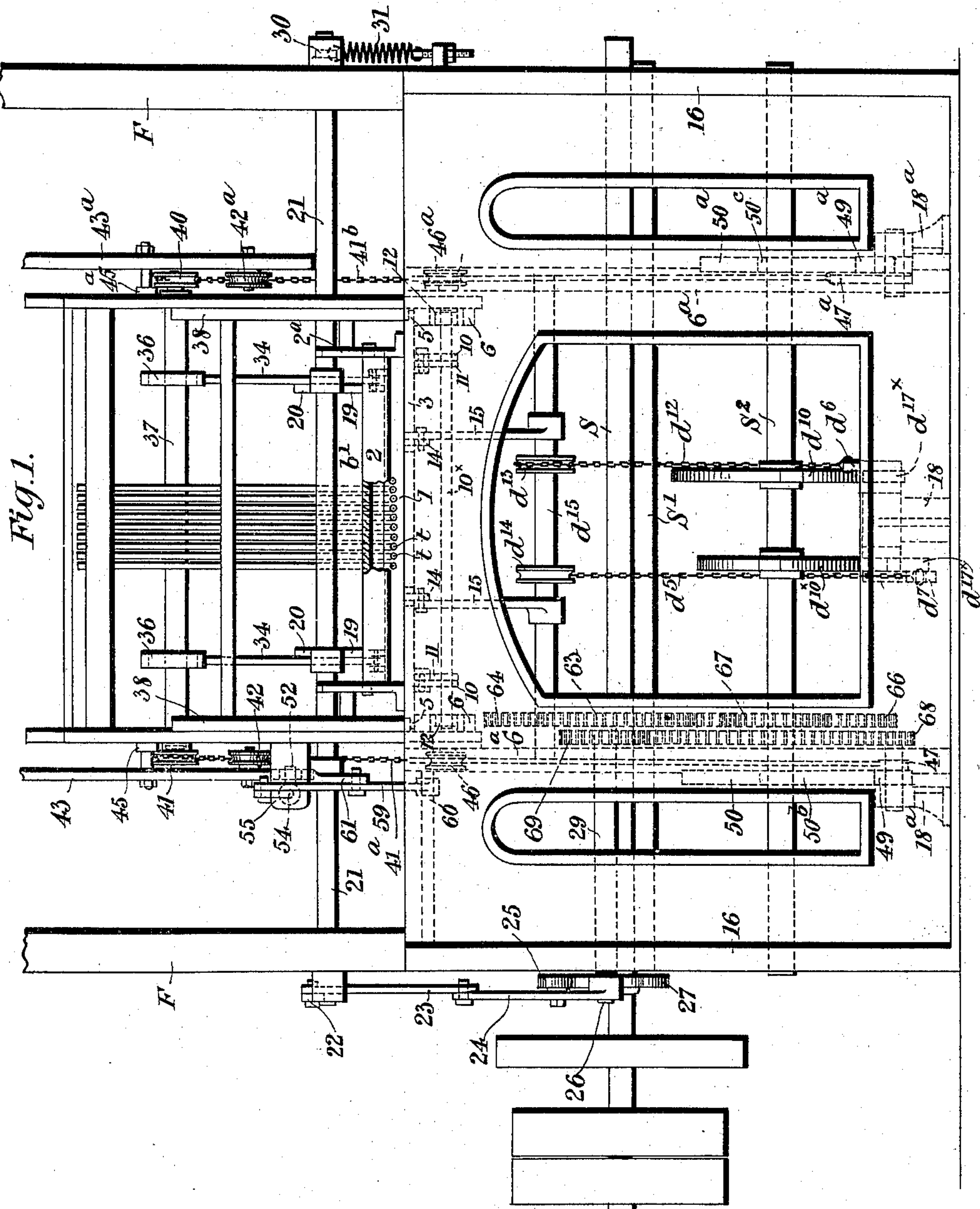
E. HODDER.

WEAVING COIR YARN MATS OR OTHER FABRICS.

(Application filed Dec. 28, 1897.)

(No Model.)

4 Sheets—Sheet 1.



WITNESSES.

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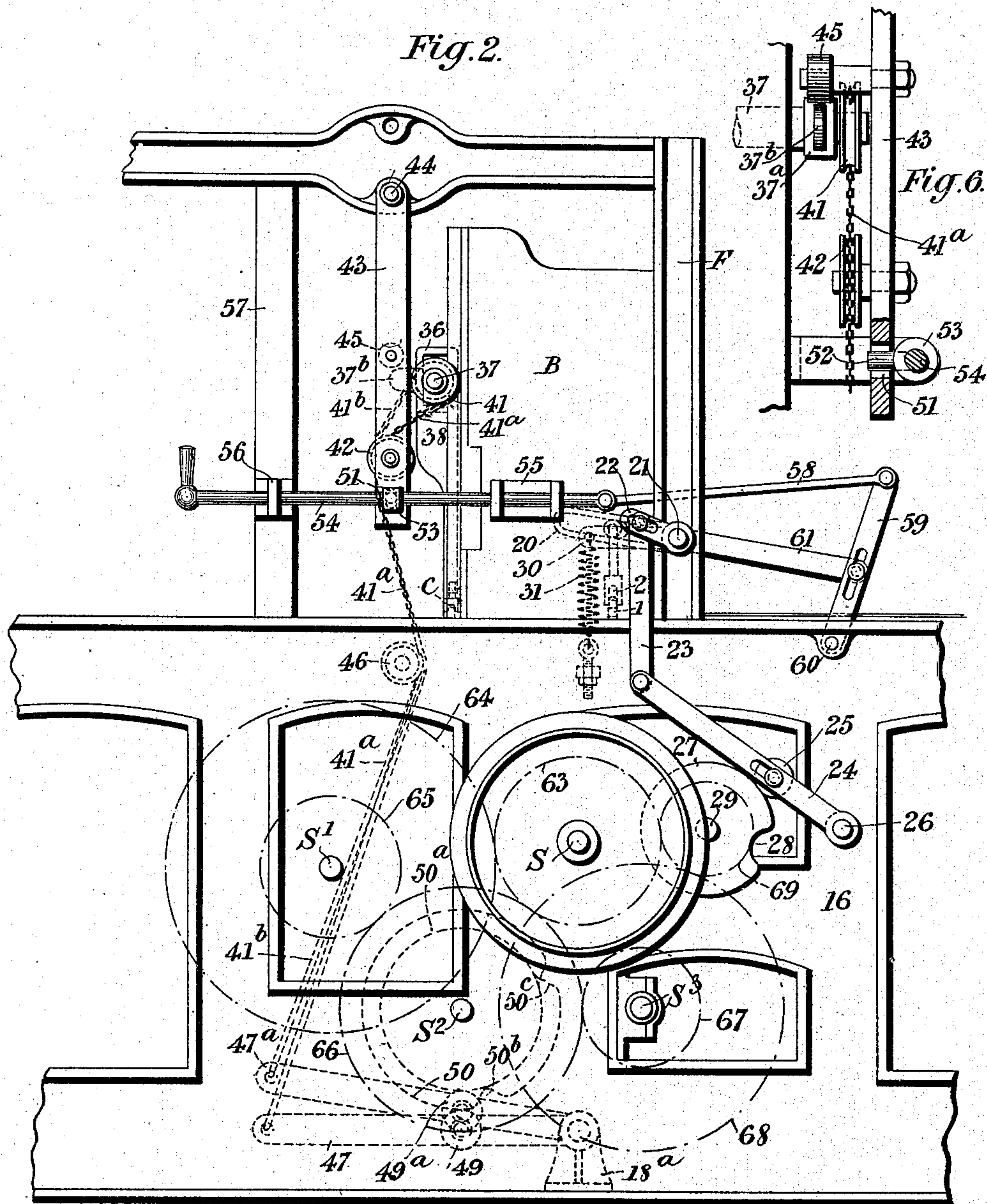
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(No Model.)

4 Sheets—Sheet 2.



WITNESSES.

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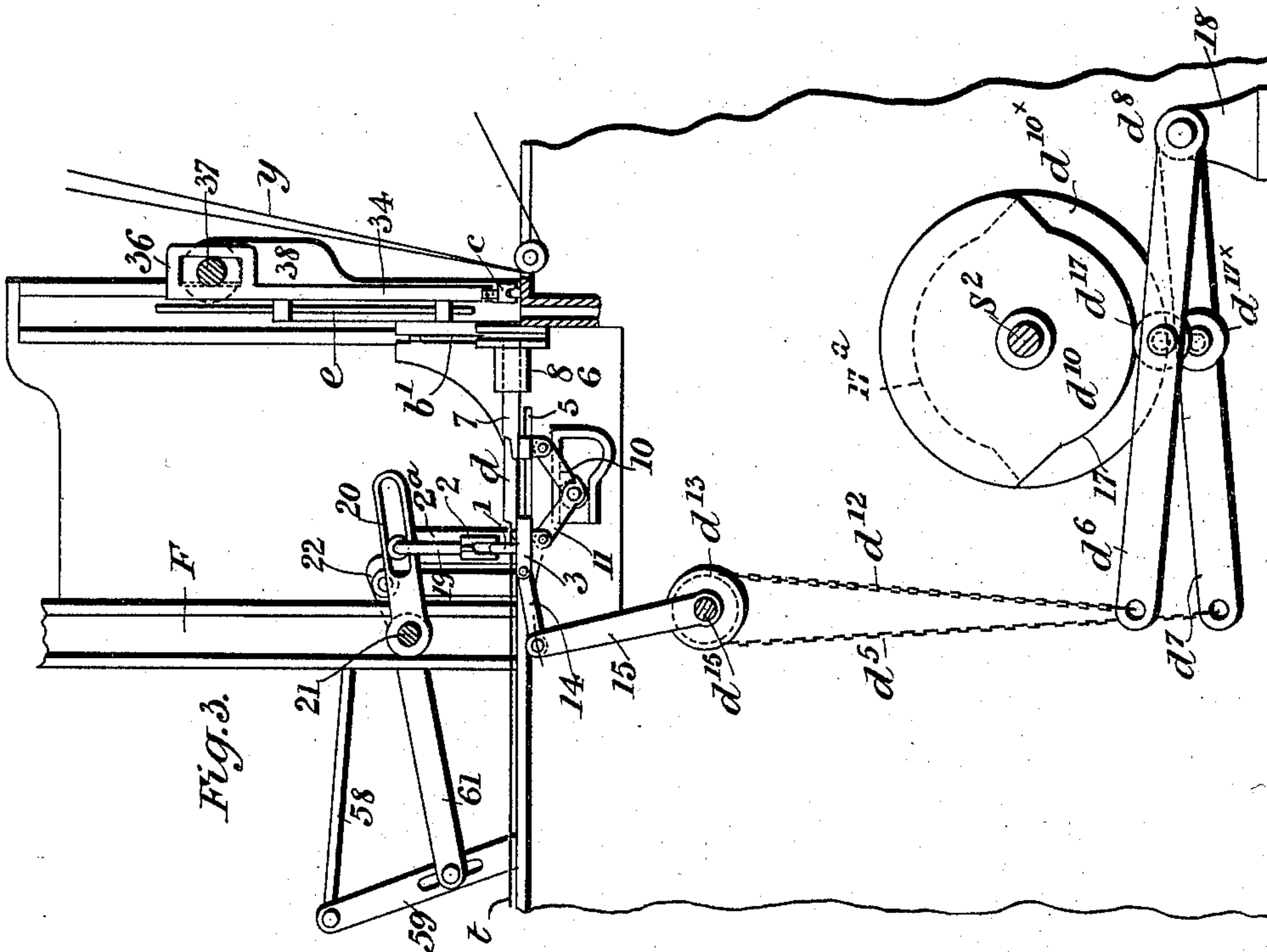
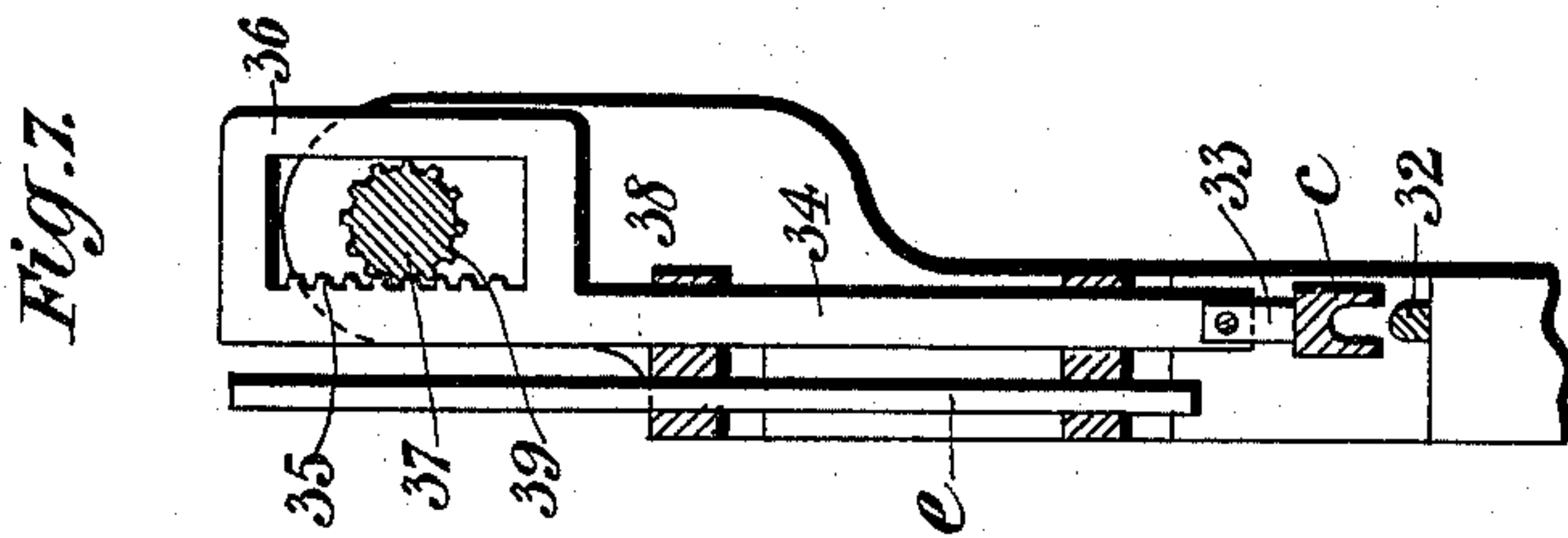
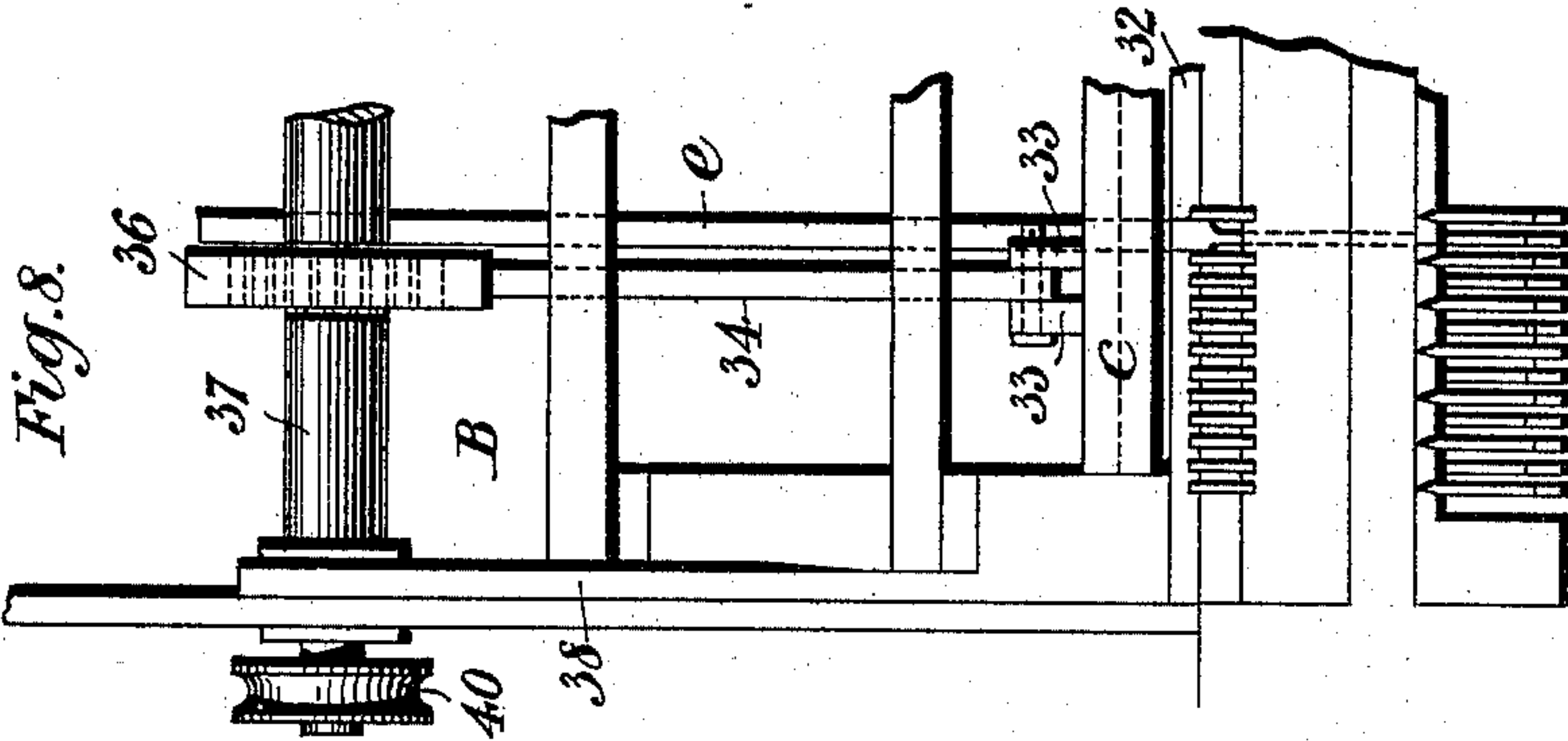
E. HODDER.

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(Application filed Dec. 28, 1897.)

(No Model.)

4 Sheets—Sheet 3.



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4 Sheets—Sheet 4.

Fig. 4.

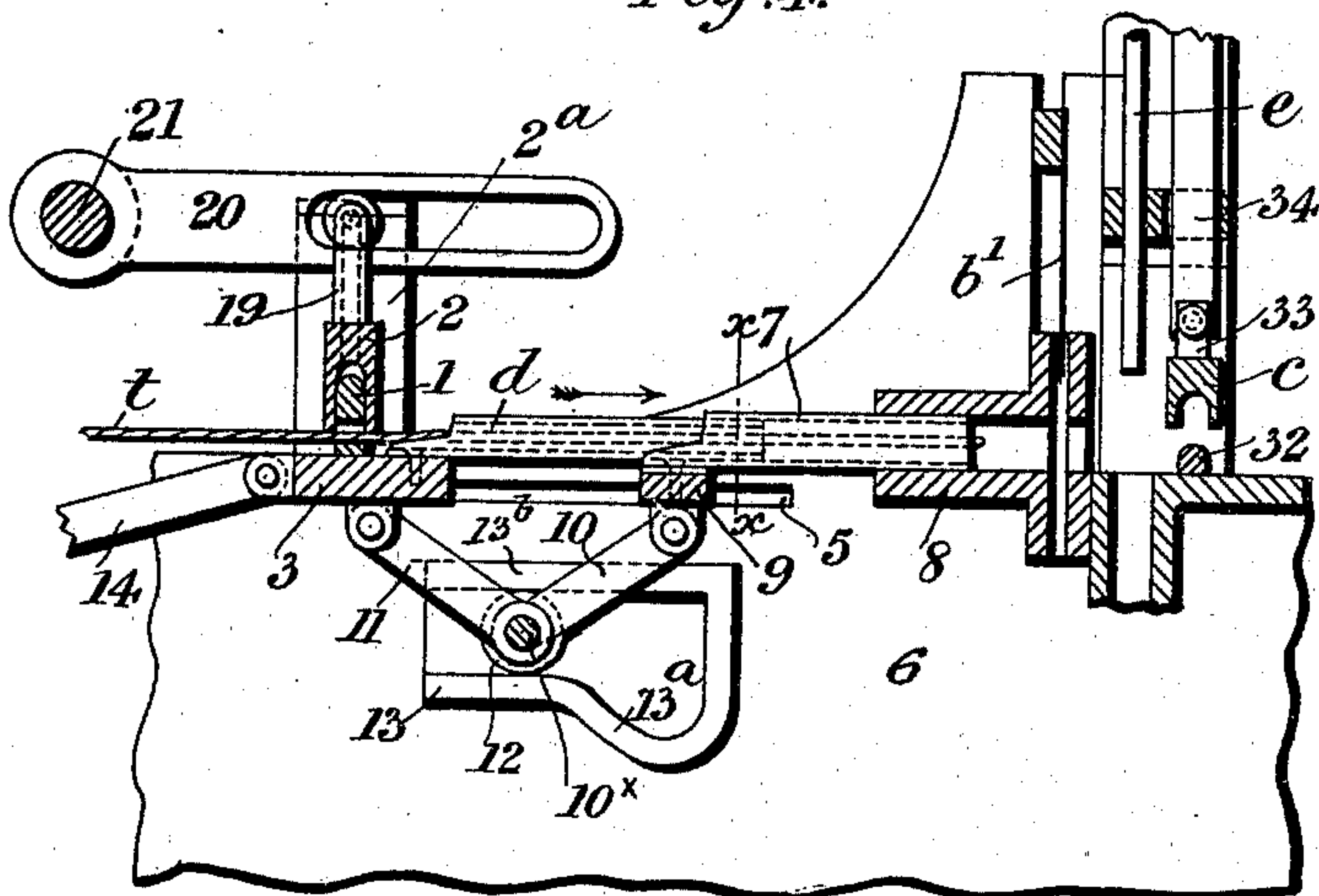
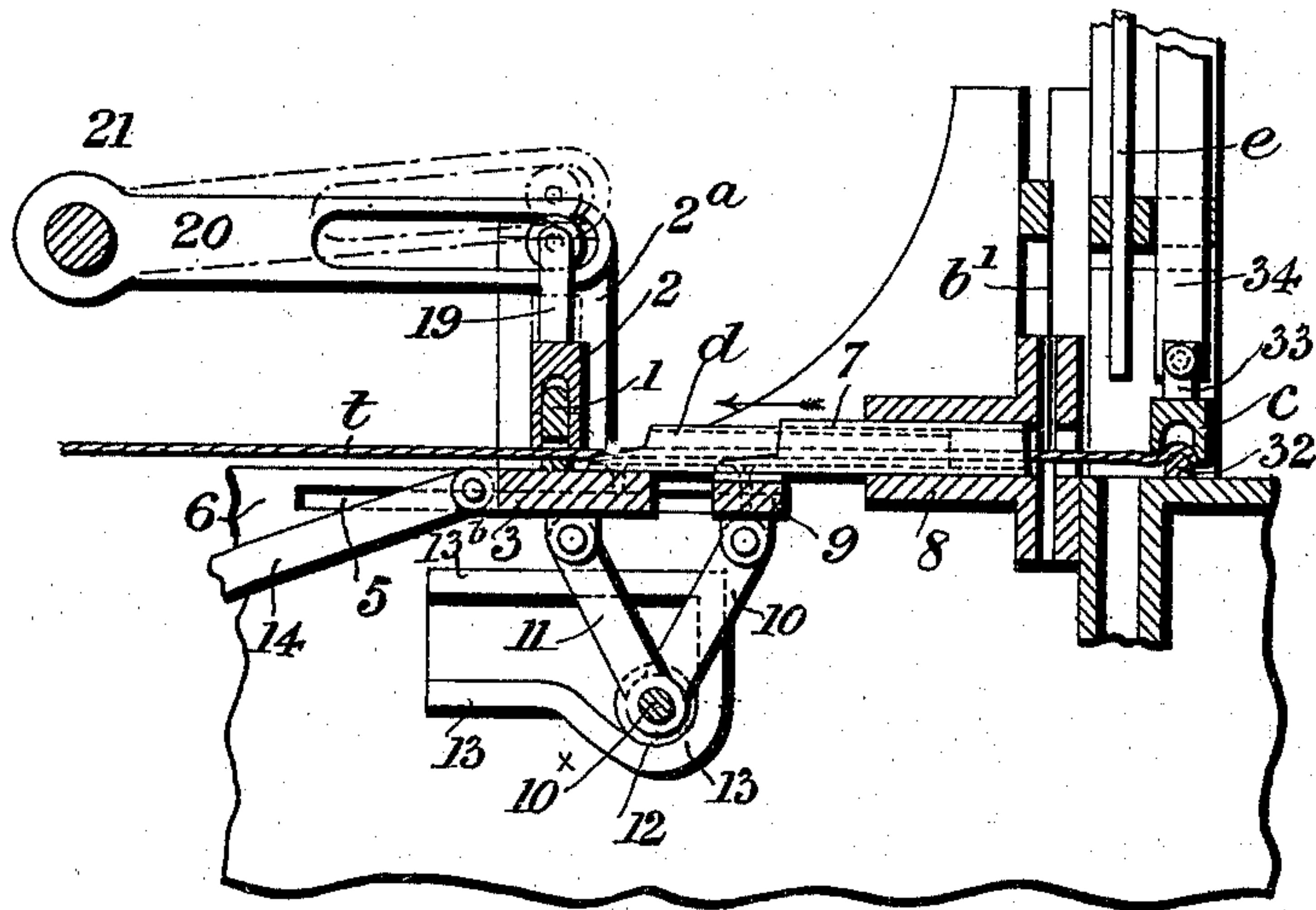


Fig. 4.^a

d 7

Fig. 5.



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UNITED STATES PATENT OFFICE.

EDWARD HODDER, OF LONDON, ENGLAND, ASSIGNOR TO WILLIAM GOOD-
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LOOM FOR WEAVING COIR-YARN MATS OR OTHER FABRICS.

SPECIFICATION forming part of Letters Patent No. 612,519, dated October 18, 1898.

Application filed December 28, 1897. Serial No. 663,958. (No model.) Patented in England June 5, 1894, No. 10,940.

To all whom it may concern:

Be it known that I, EDWARD HODDER, a subject of Her Majesty the Queen of Great Britain, residing at London, England, have
5 invented a certain new and useful Improvement in Looms for Weaving Coir-Yarn Mats or other Similar Fabrics, (for which I have obtained Letters Patent in Great Britain under date of June 5, 1894, No. 10,940,) of which
10 the following is a specification.

My invention relates to a certain improvement in looms for weaving coir-yarn mats and other similar fabrics; and it consists of improvements upon and additions to certain
15 parts of the machine for which I have obtained Letters Patent of the United States under date of November 19, 1895, No. 550,174.

Briefly, my invention relates principally to the means for feeding the yarn for producing
20 the tufts or thrums, to the clip for holding such yarn during cutting, and to the means for operating and putting out of operation said devices.

I have illustrated my invention in the accompanying drawings, and for the purpose of more readily comprehending same I have employed a few letters of reference used in the specification of my prior patent, such letters being used upon parts which correspond or
30 nearly correspond with those shown therein. For the rest I have generally used numerals to designate the parts.

In the drawings, Figure 1 is a view of the back end of the loom, sufficient only being
35 shown to illustrate my present improvements. Fig. 2 is a partial side view of same, looking from the left-hand side of Fig. 1, the back end being consequently at the right-hand side. Fig. 3 is a side elevation showing the means
40 for feeding and holding the tuft or thrum yarn, taken from the opposite side to Fig. 2, the back end of the loom being at the left-hand side. Fig. 4 is a side elevation of some of the same parts on an enlarged scale. Fig.
45 4^a is a cross-section of the tube through which the yarn is fed, taken on line *x x* of Fig. 4. Fig. 5 is a similar view to Fig. 4, showing the parts in a different position. Fig. 6 is a detail of parts shown in Figs. 1 and 2, partly in
50 section and on an enlarged scale. Fig. 7 is a side elevation, partly in section, of the means

for lifting the clip which holds the yarn during cutting; and Fig. 8 is an elevation of same, looking from the right-hand side.

According to my present invention the yarn
55 for forming the tufts or thrums enters the machine (from suitable bobbins) by way of a perforated bar 1, Figs. 1, 3, 4, and 5, upon which rests a bar 2, having an inverted-U-shaped groove which forms what I term the "back
60 clip." The bar 2 is guided at its ends by uprights 2^a in slots, in which it moves. The bar 1 is mounted upon a plate 3, extending partly across the machine and capable of sliding in guides 5, carried by the inner side
65 frames 6 6. Such plate 3 also supports the uprights 2^a. In front of this clip and secured to the plate 3 are a number of rectangular rear tubes *d*, one for each piece of yarn, one end of each of which tubes *d* slides in a similar, but larger, forward tube 7, the front end
70 of which slides in a fixed guide 8. The rear end of the tube 7 is secured to a plate 9, which is also supported and can slide in the guides 5, and the two plates 9 and 3 are connected
75 at each end by levers 10 11, which unite and are pivoted on a shaft 10^x, having rollers 12 at each end working in guides 13 on the side frames 6. The levers are adapted to rock on the studs of the rollers 12; but the amount
80 they may open is limited by the upper part 13^b of the guide 13, so that they may open to a certain point, but no farther. The guide 13 at its forward part is depressed, as at 13^a, or has an eccentric or cam portion or face for
85 a purpose hereinafter described.

To the plate 3 are attached connecting-rods 14 14, pivoted to levers 15 15, secured on a shaft *d*¹⁵, extending across between inner side frames 6^a 6^a. On shaft *d*¹⁵ are wheels *d*¹³ *d*¹⁴,
90 over which pass (as in my prior specification) chains *d*¹² *d*⁵, secured on opposite sides of said wheels and connected, respectively, to levers *d*⁶ *d*⁷, the lever *d*⁶ having a roller *d*¹⁷ and the lever *d*⁷ a roller *d*^{17x}, both levers being pivoted on a bracket 18 and operated by cams
95 *d*¹⁰ and *d*^{10x}, respectively, carried by shaft S², supported in suitable bearings in the outer side frames 16. In this way, as described in my prior specification, the shaft *d*¹⁵ will be
100 rotated in opposite directions alternately as the levers *d*⁶ *d*⁷ are raised and lowered by the

cams, each of which has a depressed surface 17 17^a, respectively, so that one lever is free to rise when its roller reaches such depressed surface as the other one is forced down by the plain or larger diameter of the other, the cams being so arranged that one lever will be up and the other down alternately. By this reciprocation of the shaft *d*¹⁵ the levers 15, together with the arms 14 and plate 3, will be moved to and fro. As the plate 3 moves forward the forward plate 9 will also be moved with it by means of the levers 10 11, the two tubes and plates preserving their relative positions as they are carried forward until the rollers 12 reach the depressed or cam portion 13^a of the guides 13, when the lever 10 will dwell, so that the continued forward movement of the plate 3 will cause the lever 11 to close up to lever 10, so that the inner tube *d* is slid into the outer tube 7 until the parts are brought into the position shown in Fig. 5. During this forward movement the yarn is held by the back clip as the bar 2 is forced down upon all the yarns *t* simultaneously as such yarn passes through the perforated bar 1, thus gripping same. This movement is effected by the means hereinafter described. About the end of the bar 2 are lugs 19, projecting upwardly and carrying on their ends rollers which work in slots in arms 20 20 on a shaft 21, carried in the upper side frames F. This shaft carries at one end a slotted arm 22, Figs. 1 and 2, to which is pivoted a connecting-rod 23, (said rod having play in the slot,) attached at the other end to an arm 24, carrying a roller 25, loose in a slot therein, said arm being pivoted on a stud 26 on the outside of the frame 16. The roller 25 bears on a cam 27, having a gap 28, said cam being on a shaft 29. The shaft 21, at the opposite end to the arm 22, has an arm 30, to which is attached a spring 31, the other end of which is attached to the outside of the frame. It will be seen that the bar 2 of the clip is up while the roller 25 is in contact with the surface of the cam 27, but that when the gap 28 comes opposite the roller the spring 31 will rock the shaft 21 by forcing the roller 25 through parts 22 23 24 into the gap 28, so that the clip is closed for a comparatively short period, the slot in the arm 24 prolonging the dwell, and is then opened again as the continued movement of the cam forces the roller 25 out of the gap.

In front of the tubes 7 are the knives *b'* and plungers *e*, the latter carrying the thrum or tuft formers, the construction and operation of which are fully set out in said prior specification. On the other side or in front of the thrum-plungers *e* is what I term the "front clip." This consists of a bar *c*, (shown in most of the figures, but particularly in Figs. 7 and 8,) such bar being grooved in a similar manner to the bar 2 and passing over a bar 32, on the edge of which the ends of the yarns as they are forced forward are allowed to rest until the clip portion *c* descends and holds them all at the same time.

At about each end of the bar *c* and projecting upwardly are a pair of lugs 33, between which is pivoted the end of a rod 34. The upper ends of these rods are provided with a rack 35 and a frame 36, which surrounds a shaft 37, carried in bearings in uprights 38, forming part of the thrum-box B. This shaft has a pinion 39, or teeth cut thereon which gear with the rack 35. At either end are wheels 40 41. The wheel 41 has a chain 41^a affixed to it, as shown in Figs. 2 and 6, which passes partly round a pulley 42, carried on a stud on a bar 43. This bar is secured at one end to a rocking shaft extending across the frame F and capable of rocking therein and carries in addition a roller 45, mounted on a stud. From the pulley 42 the chain passes down partly round a guide-pulley 46, carried by the frame 16, and thence to the end of a lever 47, pivoted on one of the brackets 18^a, and carrying a roller 49, which engages with a cam 50, secured on the shaft *S*², such cam having a depression 50^b, extending a considerable distance round the working surface of same and into which the roller will drop. The shaft 37 also carries a boss 37^a, having a finger 37^b, against which when in its perpendicular position the roller 45 of the hanging bar 43 bears. There is a similar arm 43^a secured on the shaft 44 on the other side of the frame, and this arm carries the same parts as the arm 43 and engages by roller 45^a with a similar finger to the finger 37^b at the other end of the shaft 37. A chain 41^b is attached to the wheel 40 of the shaft 37, but passes round same in the opposite direction and from thence over the guide-pulleys 42^a 46^b, round which it passes in the same direction, as shown by the dotted line in Fig. 2, and down to a lever 47^a, pivoted on one of the brackets 18^a, a roller 49^a on said lever engaging with a cam 50^a, such cam having a projection 50^c instead of a depression, as the other cam 50 has. The bar 43 has a slot 51, into which projects a pin 52, carried by a boss 53 on a rod 54, supported in bearings 55, attached to the side of the thrum-box B, and in a bearing 56 in the upright 57, which forms part of the heeld-guide. The rod 54 is jointed to another rod 58, pivoted to a lever 59, rocking on a point 60 on the frame. To a slot in this lever 59 is attached an arm 61, the other end of which is attached to the shaft 21.

It will be seen that the levers 47 47^a are alternately moved in opposite directions by the depression 50^b of the cam 50 and the projection 50^c of the other cam 50^a, one being pulled down while the other is stationary and the latter being operated while the first remains stationary, so that through the chains 41^a 41^b, wheels 40 41, pinions 39 39, and racks 35 the rods 34 34 are raised and lowered and with them the front clip *c*.

The rollers 45 45^a act as stops for the fingers 37^b, of which there is one at each end of this shaft 37. When the handle which is provided at the end of the rod 54 is pushed in,

the pin 52 rocks the bar 43, (and through it the bar 43^a and its connected parts on the opposite side,) so that the pulleys 42 and 42^a allow the chain to slacken, and consequently their levers 47 47^a to fall, so that the clip is no longer operated. The movement of the rod 54 forces forward the rod 58 and rocks the lever 59, forcing down the arm 61 in the slot of the lever and rocking the shaft 21, which raises the arm 22 and clips 2 and with it the connecting-rod 23, which acts to raise the arm 24, thus keeping the roller out of the gap 28 of the cam 27. In this way the motion of the back or feeding clip *c* is stopped, so that the tuft or thrum yarn ceases to be fed and the pile to be woven; but as the warp *y*, Fig. 3, is not interfered with and the shuttle still carries the weft across it a plain fabric is produced, (which forms a division between the pile fabric or mat,) which will continue to be made so long as the rod 54 is in that position.

S is the main shaft of the machine, and motion is imparted from it to the shaft *S'* by the aid of the pinion 63, which gears into a pinion 64 on said shaft *S'*, a farther pinion 65 on said shaft gearing with a pinion 66 on shaft *S*², which pinion 66 gears with a pinion 67 on shaft *S*³, a pinion 68, also on said shaft *S*³, driving a pinion 69 of the shaft 29.

In the general operation of the machine as far as the present invention is concerned it will be seen that the tuft or thrum yarn is held in the perforations of the bar 1 by the downward movement of the clip-bar 2 produced by the rocking of the shaft 21 and that as the arm 14 is forced forward by the forward rocking movement of the shaft *d*¹⁵ the plate 3 and clip are moved forward, the roller carried by the lugs 19 of the clip moving in the slot in the arm 20. The movement of the clip draws the yarn off the bobbins and at the same time forces forward the inner tubes *d*, together with the tubes 7 and plate 9, until such tubes 7 are within a very slight distance of the knife *b'*, the position being shown in Fig. 5. At this point the roller 12 falls into the depression 13^a of the guides 13, so that the movement of the parts 10, 9, and 7 are stopped; but the motion of the arm 14 being continued the tubes *d* close up into the position shown in Fig. 5, pushing forward the yarns out of tubes 7 over the bar 32 of the front clip, which is then operated and brought into the position shown in Fig. 5. The yarns being now held, the knife *b'* descends and cuts off a length of each, after which the bar *c* of the clip is raised to release them to enable them to be operated on by the thrum-formers *e*. The back clip 2 is then raised by its operating parts. The plate 3, the clip, and the tubes *d* are withdrawn, the yarn passing freely into the tubes *d* in the backward movement of the latter until the roller 12 is out of this depression 13^a, when the levers 10 11 again move together a short distance back, (by means of the part 13^b, which prevents them opening farther,) withdrawing the tubes 7,

after which the clip 2 comes down again, and the parts are in the position shown in Fig. 4 and ready for the next feeding movement. 70

What I claim is—

1. In a loom for weaving coir-yarn mats and other similar fabrics and in combination, a rear tube, a forward tube in which the rear tube is capable of sliding and means for moving said rear tube and forward tube together for a certain distance, and then stopping the forward tube and moving the rear tube only to protrude the yarn from the former, substantially as described. 80

2. In a loom for weaving coir-yarn mats and other similar fabrics and in combination, a rear and a forward tube for carrying the tuft or thrum yarn, means for moving same independently for portions of their movement, and together for other portions, and means for holding down the yarn and releasing it at intervals, such means moving with the rear tube, substantially as described. 85

3. In a loom for weaving coir-yarn mats and other similar fabrics and in combination, a bar 1 having a series of holes for the tuft-yarn to pass through, a bar 2 having a groove adapted to receive the bar 1, guides for the bar 2, and means for raising and lowering the said bar 2 to nip all the yarns on the bar 1 simultaneously substantially as described. 90

4. In a loom for weaving coir-yarn mats and other similar fabrics, the combination of a rear tube and a forward tube for carrying the tuft or thrum yarn, reciprocating means for supporting and guiding the tubes, levers in connection with the rear and forward tubes, respectively, at one end and with each other at the opposite end, a roller at the point of junction of the levers, and a guide for said roller having a cam portion adapted to cause the roller to dwell, and means for moving the rear tube so that the rear and forward tubes are moved together by the levers until the roller is operated on by the cam portion of the guide, when the rear tube will be forced into the forward tube, which has then stopped its movement, so that the yarn in the rear tube is forced through the forward tube, substantially as described. 100 105 110 115

5. In a loom for weaving coir-yarn mats and other similar fabrics and in combination, a bar over which the thrum or tuft yarn is fed, a clipping-bar over said bar, means for raising and lowering said clipping-bar, chains for operating said means, means for slackening the chains to put chains out of operation and means for operating the chains at other times substantially as described. 120 125

6. In a loom for weaving coir-yarn mats and other similar fabrics and in combination, feeding and cutting devices for the tuft or thrum yarn, a bar 32, a superposed bar *c* having a groove adapted to receive the bar 32, on the edge of which latter all the ends of the yarns are adapted to rest as they are forced forward by the feeding device and means for raising and lowering the bar *c* so that the 130

yarns may be clipped, and the pieces then released substantially as described.

7. In a loom for weaving coir-yarn mats and other similar fabrics, the combination of
5 pivotally-hung bars 43, 43^a, rollers 42, 42^a carried by same, a shaft 37, wheels 40, 41 on same, chains secured on opposite sides of said wheels and passing round the rollers on the bars 43, 43^a, which are out of line with the
10 shaft 37 pinions on said shaft, bars 34 having racks operated by the pinions, a clip for the tuft or thrum yarn carried and operated by said bars 34 and means for operating the chains substantially as described.

15 8. In a loom for weaving coir-yarn mats and other similar fabrics and in combination, pivotally-hung bars 43, 43^a, rollers 42, 42^a, a chain passing over each roller, means for op-

erating the chains, a shaft 37 wheels 40, 41 carried thereby to which wheels the chains 20 are attached on opposite sides, a forward clip for the tuft or thrum yarn operated by the rotation of said shaft, a movable rod 54, carrying means for rocking one of said bars to slacken the chains and prevent them operat- 25 ing, a rear feeding-clip for the yarn and means operated by the rod 54 for raising same, so that the yarn is not fed substantially as described.

In testimony whereof I have hereunto set 30 my hand in the presence of two subscribing witnesses.

EDWARD HODDER.

Witnesses:

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W. M. HARRIS.