

(No Model.)

3 Sheets—Sheet 1.

J. S. WINSOR.

LOOM FOR WEAVING FLAG MATTING.

No. 280,891.

Patented July 10, 1883.

Fig. 1.

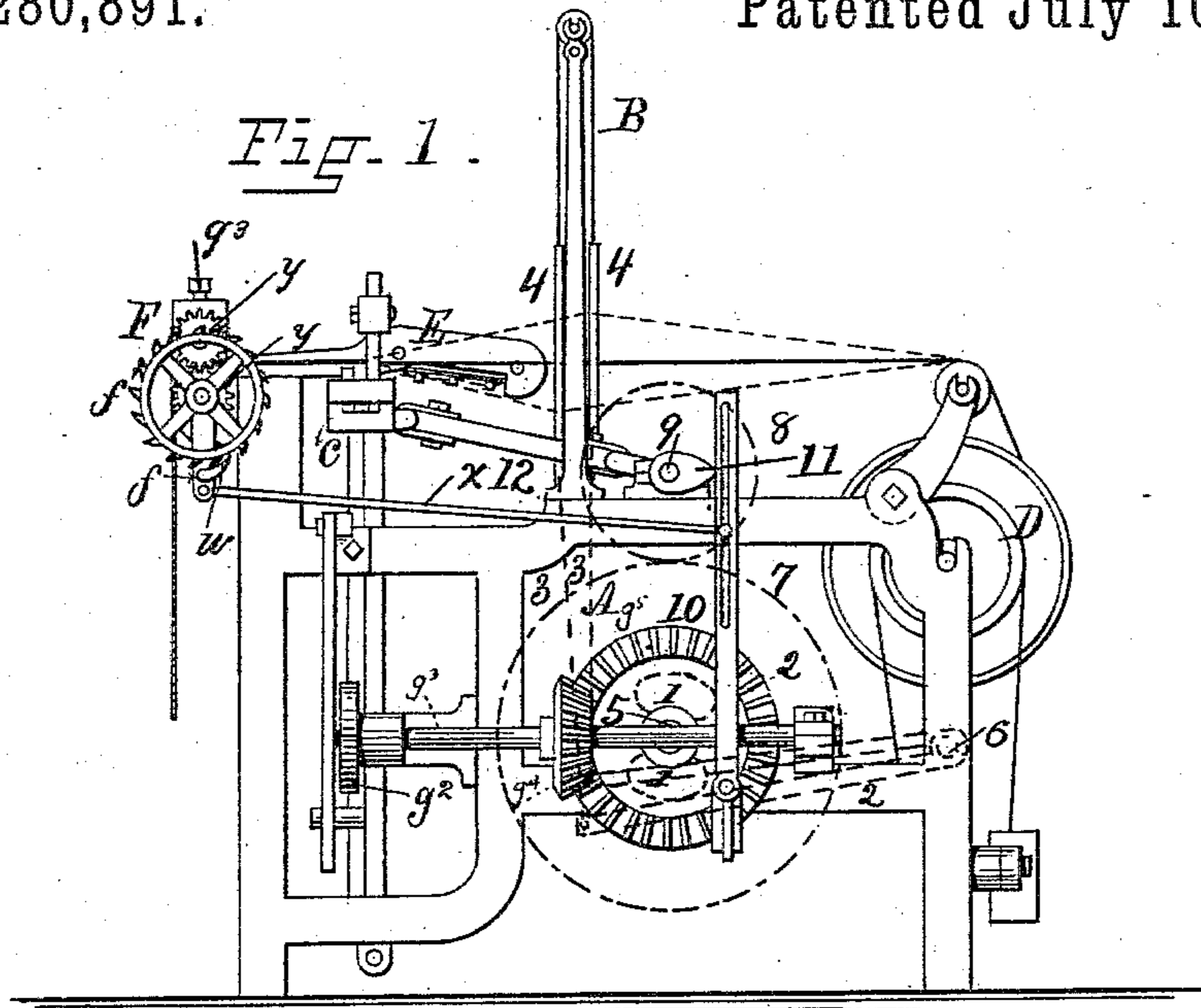
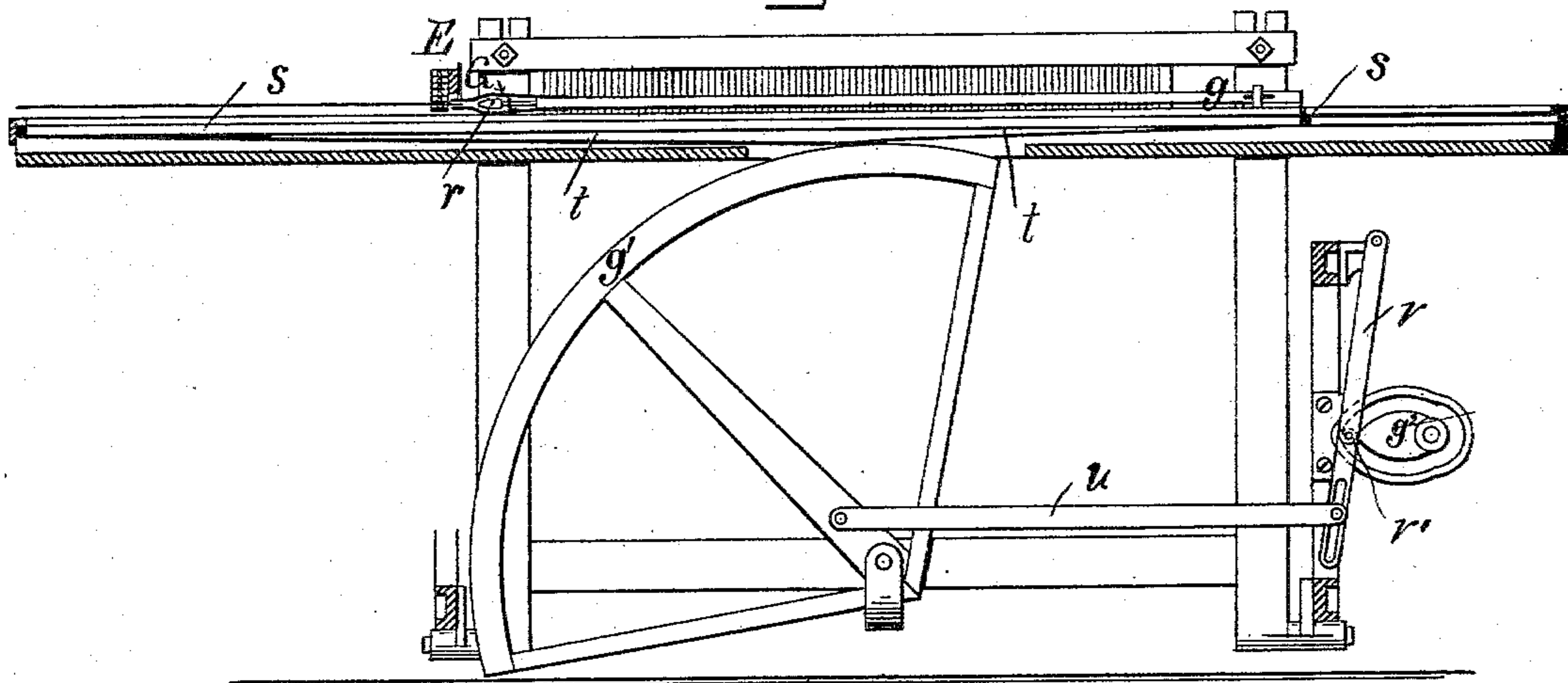


Fig. 2.



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INVENTOR:

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(No Model.)

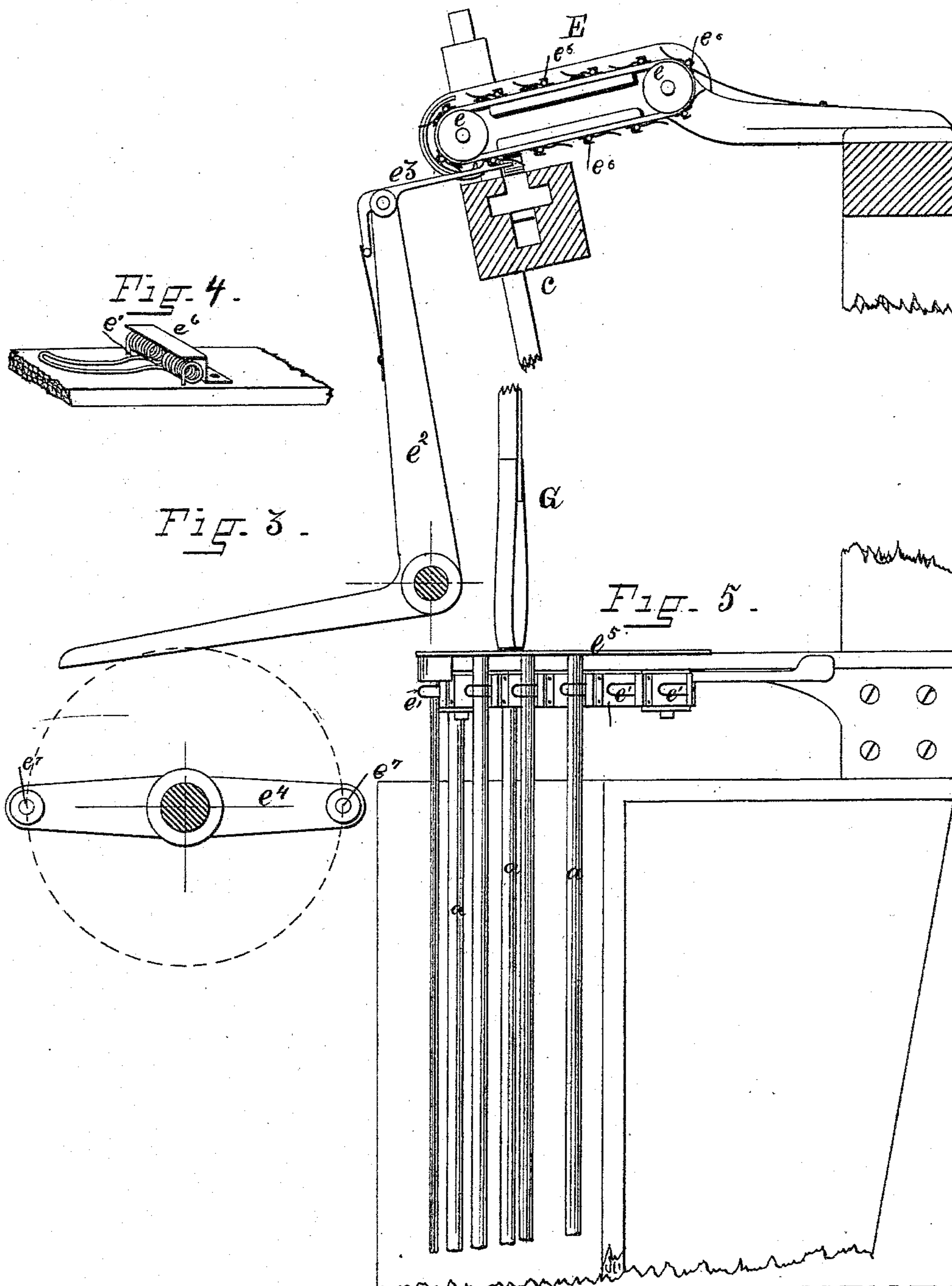
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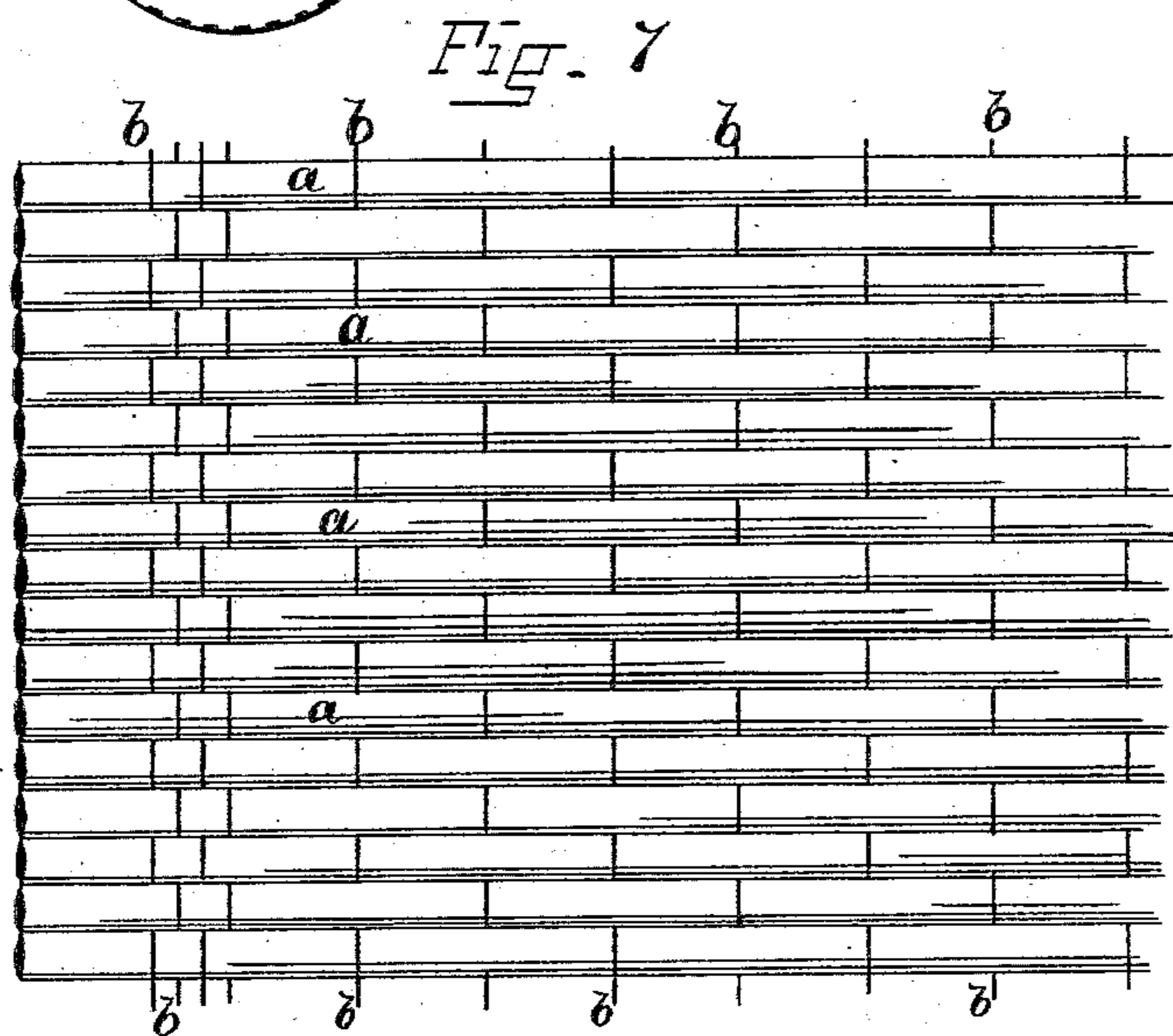
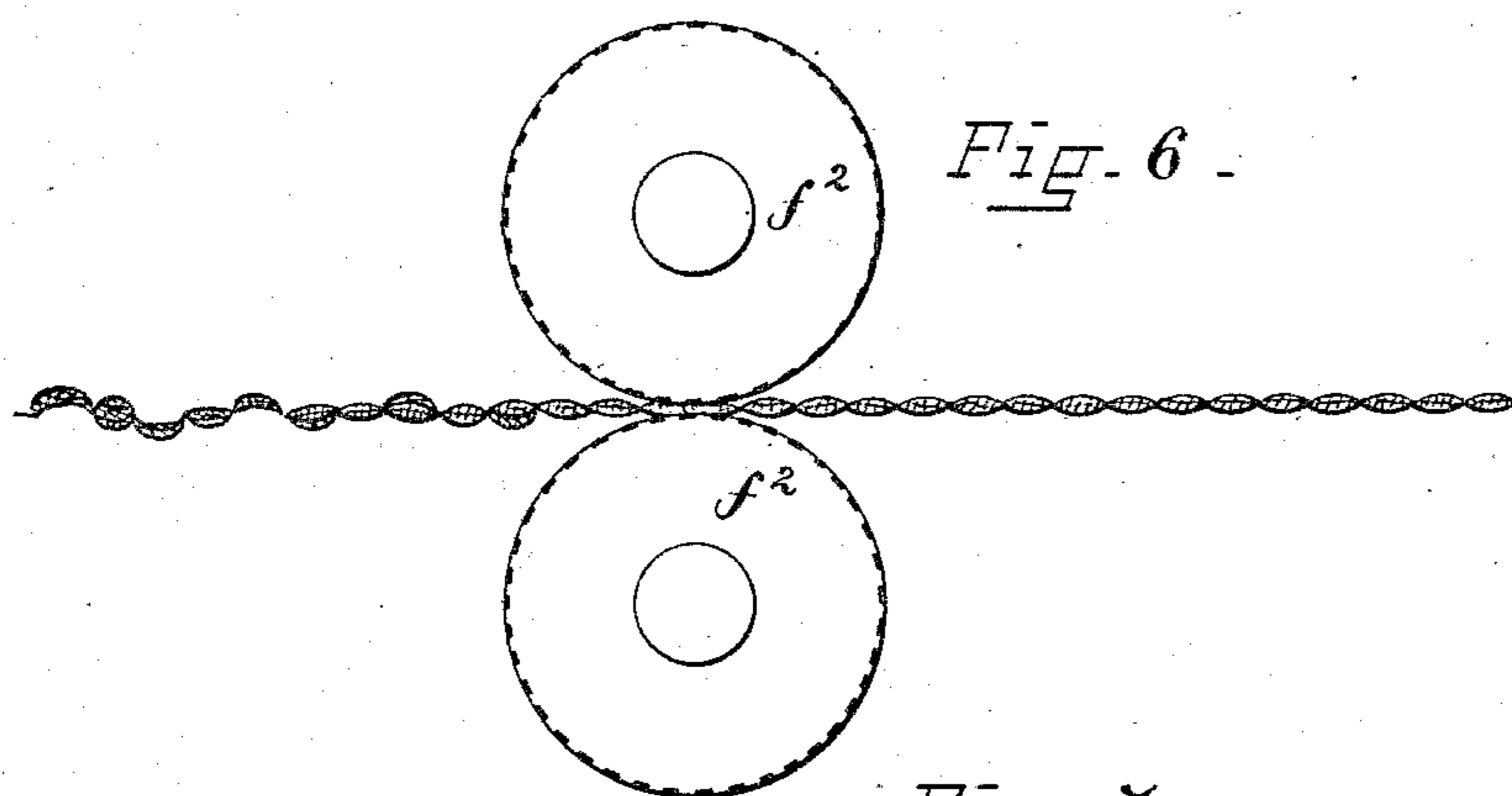
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# UNITED STATES PATENT OFFICE.

JOSEPH S. WINSOR, OF PROVIDENCE, RHODE ISLAND.

## LOOM FOR WEAVING FLAG MATTING.

SPECIFICATION forming part of Letters Patent No. 280,891, dated July 10, 1883.

Application filed September 26, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH S. WINSOR, of the city and county of Providence and State of Rhode Island, have invented a new and useful Improvement in Looms for Weaving Flag Matting; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference to looms for the production of matting made from what is popularly known as "flag," "sweet-flag," or "sweet-sedge"—a plant having sword-shaped leaves from three to eight feet in length, mostly growing in moist situations in various parts of America and Europe; and it consists in the construction of the loom, as will be more fully set forth hereinafter.

Figure 1 is an end view of the improved loom for weaving the flag matting. Fig. 2 is a longitudinal sectional view of the same, showing the device for drawing the flag into the shed of the warp. Fig. 3 is an enlarged sectional view, showing the lay and the devices for supplying the flag. Fig. 4 is an enlarged view of one of the spring-clips for holding the flag. Fig. 5 is an enlarged plan view of the flag-supplying device and the nipper for drawing the flag into the shed of the warp. Fig. 6 is a sectional view, showing the calender-rolls of the take-up motion, by which the flag is compressed and evened. Fig. 7 is a view of the flag matting.

The leaf of the flag-plant is of considerable length, varying from three to eight feet and sometimes even more. It is, when properly dried, composed of a strong outer sheath or covering filled with an elastic cellular tissue. The width of the leaf varies considerably, being from one-third of an inch to one and one-half inch, and it is sweet-scented. When woven into matting, it is peculiarly well adapted to form a base for carpets of all kinds, as it is soft, yielding, and elastic. It is not attacked by moths, but, owing partly to its scent and partly to its peculiar surface, is avoided by the same. Owing to its irregular thickness and width, it presents a very irregular surface, and when woven in the manner of the ordinary rush matting makes an uneven and unsightly fabric.

In the drawings, in Fig. 7, *a a a* are the long leaves of the flag-plant, placed flatwise, with their thin edges touching each other, forming a mat of flags secured together by the warp-threads *b b b*. These warp-threads may be laid in pairs side by side, or be placed singly an inch or more apart. Near the edge of the matting I prefer, however, to place four or more warp-threads close together, as is shown in Fig. 7, so as to form a kind of selvage by which the edge is protected.

Referring now to the loom for weaving this flag matting, A is the loom-frame. B are the harnesses for springing the warp. C is the lay, on which a reciprocating nipper is operated to draw the leaves of flag into the open sheds of the warp, as into the ordinary hair-cloth loom, in which the hairs are drawn into the warp in a like manner. In the present loom the nippers open vertically, so as to grasp the flag on its two sides and draw the same into the warp with the broad sides of the flag lying on the warp, so that the thickness of the flag and not its width forms the thickness of the matting. D is the warp-beam. E is the device for supplying the flag, and F is the take-up motion, consisting of two rollers held firmly together, so that while taking up the matting as it is woven the flag is compressed or calendered, so as to make the matting of uniform or nearly uniform thickness and present an even surface. 1 1 represent (in dotted lines) cams on shaft 5, which operate the treadles 2 2 to move the harness or heddles 4 4 through the connections 3 3. The treadles may be pivoted at 6. Wheel 7 on shaft 5 is driven from the wheel 8 on the crank-shaft 9, which serves to operate the lay.

The device E for supplying the flags is placed on one side of the loom, and consists of an endless belt or chain passing over the pulleys *e e*, supported on brackets extending from the frame, or in other suitable manner, the chain or belt being provided with a number of the spring-clamps *e'*. (Shown enlarged in Fig. 4.) The belt is moved by means of a spring-pawl, *e''*, as is shown in Fig. 3, carried by the upper end of the bell-crank lever *e''*, the spring-pawl being hinged to said lever, and it engages with projections *e'* on the endless belt or chain and turns the same. The bell-crank lever *e''* is operated by extensions *e'* from the revolving

arms  $e^4$ , striking the lower arm of the lever. In inserting the flags their ends are placed against the plate  $e^5$ , which is raised above the upper side of the endless belt or chain, but does not extend down below the same, so that the nipper is free to grasp the flag on the lower side.

G is the nipper, secured to the end of the tubular rod  $g$ . Within operates a rod having a wedge-shaped head, by which the two sides of the nipper are separated to open the same and allow the flag to enter, as shown at  $r$ , Fig. 2, the rod being operated by means substantially such as are shown by English Patent No. 261 of 1872. The rod  $g$  is reciprocated in the lay by means of the segment  $g'$ , to which the rod is connected in the manner ordinarily used on hair-loom—that is to say, the rod is connected to a slide,  $s$ , which reciprocates in a groove in the lay, and the slide is connected by means of flexible bands or wires  $t$ , passing from each of its ends to the segment  $g'$ , so that by the swinging of the segment the slide and the rod  $g$  are reciprocated. The swinging of the segment  $g'$  is produced by the rotation of the cam  $g^2$  by means of swinging lever  $v$ , pivoted to the frame at one end, and connected by pin  $v'$  with a race in said cam, the swinging end of said lever being connected by pitman  $u$  with the segment  $g'$ , as is shown in Fig. 2. Cam  $g^2$  is mounted upon shaft  $g^3$ , which is driven by gearing  $g^4$   $g^5$  from the cam-shaft 5.

The rollers of the take-up and calendering device F are operated by a pawl,  $w$ , secured to the swinging arm  $f$ , constructed to engage with the ratchet-wheel  $f'$ , which is fast on the shaft of one of the rollers, and the arm is connected by a connecting-rod,  $x$ , to the swinging lever 10, which is operated by the cam 11 on crank-shaft 9, which shaft drives the lay through the usual connecting-rods, 12. Two take-up and calender rolls,  $f^2$   $f^2$ , as shown enlarged in Fig. 6, are used, and these two rolls are geared by gears  $y$   $y$ , so as to rotate together, as is shown in Fig. 1, and are held together under pressure by screws  $g^3$ , which bear on the upper roll. If the upper roll be heavy enough, its weight will give sufficient pressure. By means of these

rollers the matting is taken up as it is woven and subjected to pressure, whereby it is compressed and flattened. As the motion of these rolls is slow, the pressure is exerted during a considerable time.

I do not herein claim the matting woven on the loom described. If such be patentable, I reserve the right to claim it in a separate application.

I am aware that it is not new, in looms somewhat similar to mine, to use a series of clamps on the top of a vertical shaft as clasps to carry horse-hair to the loom. These clamps form a series which rotate in a horizontal plane. Such I do not claim.

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

1. The combination, with the warp-beam, the harness, the lay, and means for operating the harness and the lay, of the flag-delivering device consisting of the endless belt or chain provided with spring-clamps  $e'$ , constructed to deliver flags, as described, means for moving said belt, and means for inserting flags into the warp, all substantially as described.

2. The combination, with the warp-beam, the harness, the lay, and means for operating the harness and the lay, of the flag-delivering device consisting of the endless belt provided with spring-clamps, means for operating said belt, means for inserting the flag into the warp, and a take-up mechanism consisting of calender-rolls geared together, and means for operating the same, all substantially as described.

3. The combination, with the warp-beam, the lay, the harness, and means for operating the lay and the harness, of the endless belt for feeding flags, said belt having spring clamping-fingers to hold the flags, and projections which are engaged by the feed-pawl, the said feed-pawl, and means, substantially as described, for operating the feed-pawl and for conveying the flags to the warp, all substantially as stated hereinbefore.

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Witnesses:

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