

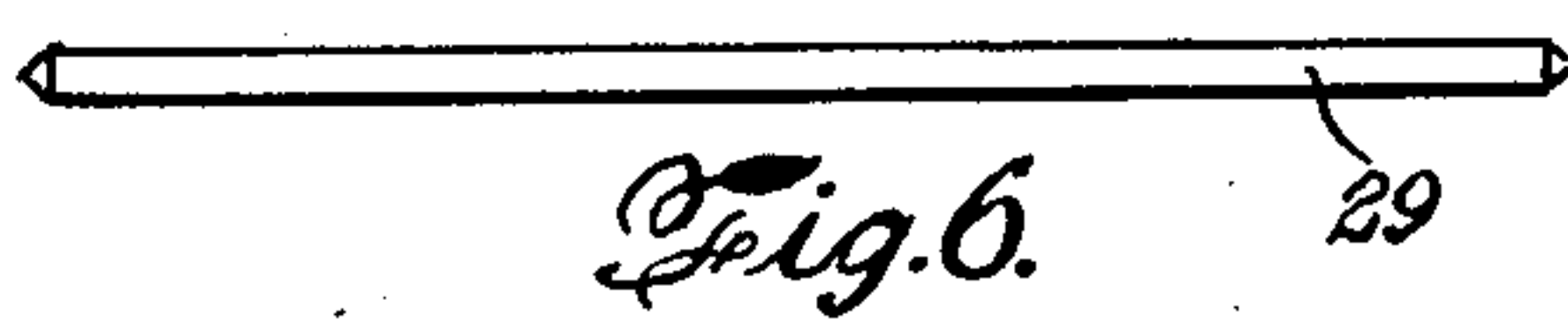
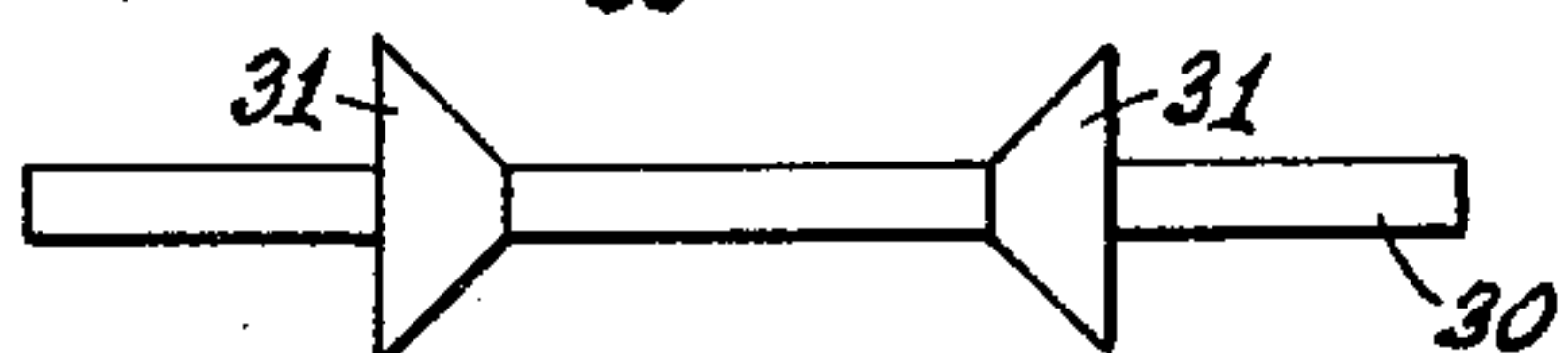
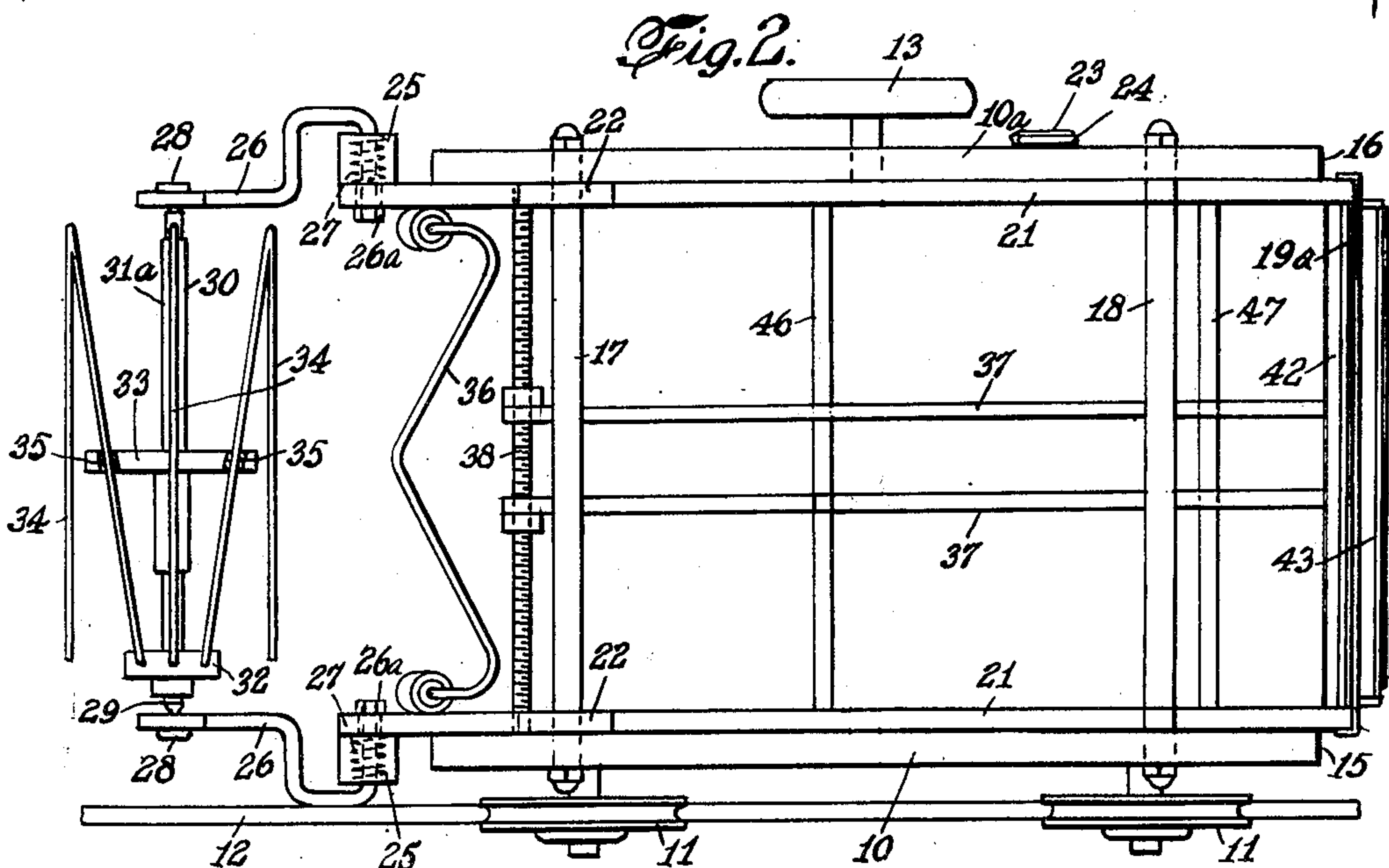
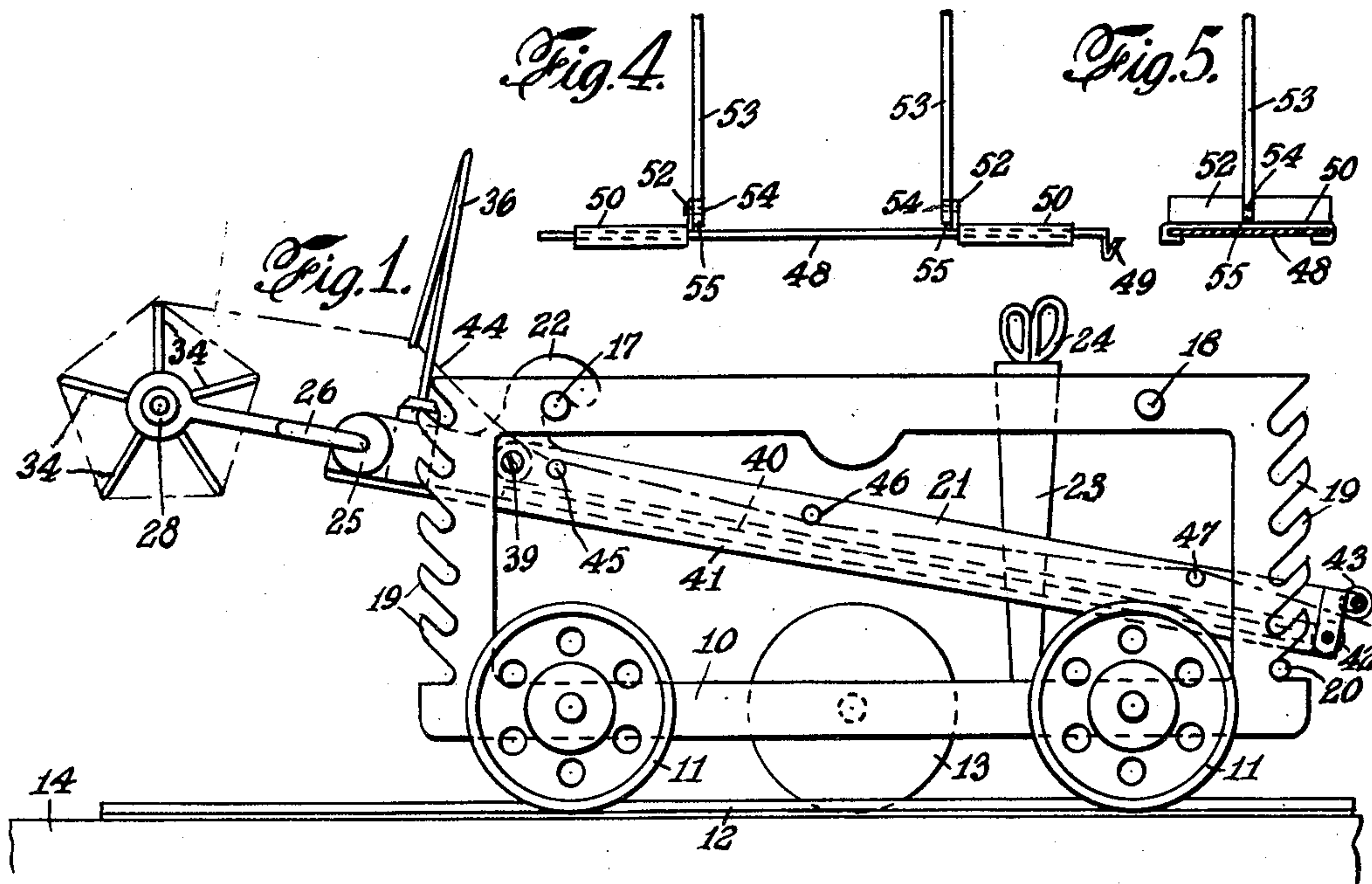
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LACE LAYING MACHINE

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2,710,187

LACE LAYING MACHINE

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5 Claims. (Cl. 270—31)

This invention relates to a machine having for its object to lay down lace or other narrow material, as will be hereinafter described.

It is an acknowledged fact that a manufacturer in laying down, for instance, silk for a nightgown would in many instances have to lay down a corresponding yardage of lace to fit the nightgown.

Hitherto, this operation has been performed manually, and thus a great amount of wasted labor has been spent, especially due to the fact that lace unfortunately in most cases comes in many short pieces; and as the cutter, or operator, drags the lace from an unwinder he suddenly finds himself with a loose piece in his hands and he will, therefore, have to walk ahead until the said loose end fits the end, left on the table; subsequently the operator has to walk all the way back to the source of material and, in turn walk forward again in order to splice the lace in the right place, and this process will repeat itself over and over again.

It is an established fact that at least seventy-five per cent of this unnecessary walking has been done away with and made superfluous by the use of the present invention.

Furthermore, the cutter always has to walk around in order to find and pick up his heavy scissors, whenever he has to cut out faulty material from the arranged lay.

Now, however, due to the fact that the scissors and the material to be laid out are carried, or placed, directly on a machine, as is the case in the present invention, the above mentioned seventy-five per cent saving of labor has been made possible.

In the drawing:

Figure 1 is a side elevational view of my invention,

Figure 2 is a top plan view of the same; while

Figures 3, 4, 5 and 6 are detail views.

Referring more particularly to the drawing, the numeral 10 indicates a frame on the track side 15 of my invention, 11 indicates two grooved wheels adapted to fit the track 12, which is solidly arranged on the side of the table 14 of my invention; the numeral 13 indicates a rubber wheel, attached to a frame 10a, and adapted to run or move, on top of the table 14.

The above designated elements of construction indicate the relation between the track side 15 and the table side 16.

The numerals 17 and 18 indicate two cross bars arranged between the frames 10 and 10a, while 19a is a brace supporting the arms 21.

In each end of the frames 10 and 10a are arranged a series of teeth 19 serving the purpose when the rod 20 is placed in said teeth to support the center frames 21 of the machine in corresponding relationship to the build up of the lay of lace placed on the table 14.

The numeral 20 indicates a rod placed in the teeth 19 in order to hold the said center frames 21 of the machine.

It should be understood that if the center frames 21 and their hooks 22 were placed on cross bars 17, the lace would be laid face to face. Now, if said center frames

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21 were changed over to the cross bars 18, when reaching the end of the table, the material would be laid face up in both directions, and a turn table effect will have been established.

The center frames 21 are provided with hooks 22 pivotally attached to the cross bars 17 or 18 in order to permit said center frames to be lifted up and down at will.

The numeral 23 indicates a scabbard attached to the frame 10a to permit the scissors 24 to be carried on the machine.

The numeral 25 denotes hubs on the side of the frames 21. Inside said hubs are placed arms 26, supported by nuts 26a, and coil springs 27, thus permitting said arms and their bearings 28 to be pulled sideways and thereby releasing shaft 29 from the bearings 28.

In order to place the lace on the machine, a tube 30 with cones 31 is used for the lace rolled on a cardboard tube (see Figure 3); on said tube are placed two cones 31; and the device shown in Figure 3 will, in turn, be placed over the pointed shaft 29 shown in Figure 6, the said shaft is subsequently placed between the bearings 28 on the end of the arms 26, and thus a three-way purpose has been solved. The shaft 29 will spin inside the bearings 28, the tube 30 will spin on the shaft 29, and said tube 30 can also move horizontally left and right because this tube is shorter than the shaft 29, thus a side movement is assured, while the bearings 28 eliminate all side thrusts.

This side movement is very important due to the fact that the lace is wound zig-zag on its cardboard tube or base, and thus when the lace is being pulled from one side of its base, it will, with help of the stirrup 36, be forced sideways toward the center, so that the delivery down through the said center without any obstruction has been secured.

Due to the fact that some lace is wound on cardboard, certain provisions have to be made to unwind such lace in a smooth way, and a collar 32 is, therefore, placed permanently on a tube 31a about an inch and a quarter from the end of the latter, thus permitting clearance between the collar 32 and the bearings 28 to obtain a free spinning against said bearings, and thus to avoid side thrusts.

A collar 33 is placed over the tube 31a in such a manner that it can slide up and down on the same.

Five bent wires 34 of springy steel are placed loosely in openings 35 and fastened to the collar 32.

It will be observed that when the collar 33 is pushed forward, the wires 34 will slide through the openings, or holes 35 and thus pull the wires together, thereby permitting the lace to be placed around the same.

Now, if the collar 33 is pushed back toward the stationary collar 32, the wires 34 will automatically be spread apart, and thus the lace will be placed firmly to be delivered over the interchangeable stirrup-shaped arm 36, which latter always will tend to let the material slide down toward the center of the machine and thus make it possible to let the lace slide between the guiding arms 37, which are placed on cross shaft 38. The said stirrup can be of any desired configuration as long as each side of the latter is sloping downwardly towards the center. Said cross shaft 38 is provided with left and right hand threads and has a slotted head 39, so that when the cross shaft 38 is turned the arms 37 will alternately come together or separate, so as to fit any width of the lace.

The arms 37 rest on a piece of Plexiglas 40, which makes inspection easy; said Plexiglas is resting inside between the arms 21 on ledges 41.

At the end of the Plexiglas 40, between the arms 21, are placed two rollers 42 and 43, one above the other and a short distance apart, 21 being the inside frame.

The material 44 will slide over the stirrup 36 between

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arms 37 and rollers 42 and 43, but it may be advantageous to add a slight friction, and for that reason cross bars 45, 46 and 47 have been placed in holes in the arms 37 in such a manner that they will not obstruct the left and right movement of the said arms.

After the material has left the rollers 42 and 43, it is necessary to find means to secure the lay or lays from tumbling over, as the size of the pile increases, and for this reason means, as shown in Figures 4 and 5, have been provided.

The numeral 48 indicates a two inch wide light piece of sheet iron bent, as shown at the angle 49. Now, if the same angle is placed between the track 12 and table 14 a base has been made to hold the pile in place.

Around the piece 48 is arranged two slides 50 (see Figures 4 and 5) and to the upright parts 52 of said two slides is placed a tubing 53, said tubing is pivoted at the point 54 to the uprights 52, the said tubing is leaded at the bottom 55 and will thus when the machine travels over the arms or tubing 53 automatically come back into upright position.

I claim as my invention:

1. In a device of the character set forth: a carriage adapted to travel on a table, said carriage comprising two side frame members; a pair of cross bars fixedly secured to the upper end portions of the respective frame members to unite the latter into a rigid open-bottomed and open-ended structure; a supporting rod removably supportable in the frame at a selected end of the structure; and a fabric guide frame disposable within said carriage, having hook elements at its one end adapted for pivotal attachment to one or the other of said cross bars, the opposite end of the guide frame then resting upon the supporting rod, the said guide frame at its lower edge being turned inwardly to afford oppositely disposed longitudinal ledges, and a sheet of transparent material being supported on the ledges.

2. In a device of the character set forth: a carriage adapted to travel on a table, said carriage comprising two side frame members; a pair of cross bars fixedly secured to the upper end portions of the respective frame members to unite the latter into a rigid open-bottomed and open-ended structure; a supporting rod removably supportable in the frame at a selected end of the structure; a fabric guide frame disposable within said carriage, having hook elements at its one end adapted for pivotal attachment

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to one or the other of said cross bars, the opposite end of the guide frame then resting upon the supporting rod; a rotatable cross shaft supported by the fabric guide frame at its hook elements end having oppositely threaded sections; and a pair of separable guide arms mounted upon the respective sections for adjustment axially thereof.

3. A device according to claim 2, wherein a reel for a supply of the material is supported by the fabric guide frame beyond its hook elements, and means are provided for axially displacing the reel in accordance with the transverse location of the guide arms.

4. A device according to claim 3, wherein a stirrup member is supported by the fabric guide frame between the separable guide arms and the reel.

5. In a device of the character set forth: a table provided with a track, and a carriage adapted to travel on said track, said carriage comprising two side frame members; a pair of cross bars fixedly secured to the upper end portions of the respective frame members to unite the latter into a rigid open-bottomed and open-ended structure; a supporting rod removably supportable in the frame at a selected end of the structure; a fabric guide frame disposable within said carriage, having hook elements at its one end adapted for pivotal attachment to one or the other of said cross bars, the opposite end of the guide frame then resting upon the supporting rod; a flat member terminating in an angle and located between the track and table, and two slides adjustably mounted on said flat member, each slide being provided with a pivoted arm adapted to permit a free passage of the carriage thereover.

References Cited in the file of this patent

UNITED STATES PATENTS

260,270	Winter	June 27, 1882
678,799	Terbush et al.	July 16, 1901
765,124	Bublitz et al.	July 12, 1904
912,738	Schneider	Feb. 16, 1909
1,257,421	Sussman	Feb. 26, 1918
1,343,339	Rosenblum	June 15, 1920
1,515,382	Cheesman	Nov. 11, 1924
1,999,276	Bloch	Apr. 30, 1935
2,355,526	Gundlach	Aug. 8, 1944
2,397,697	Shaw	Apr. 2, 1940
2,592,437	Le Pedus	Apr. 8, 1952