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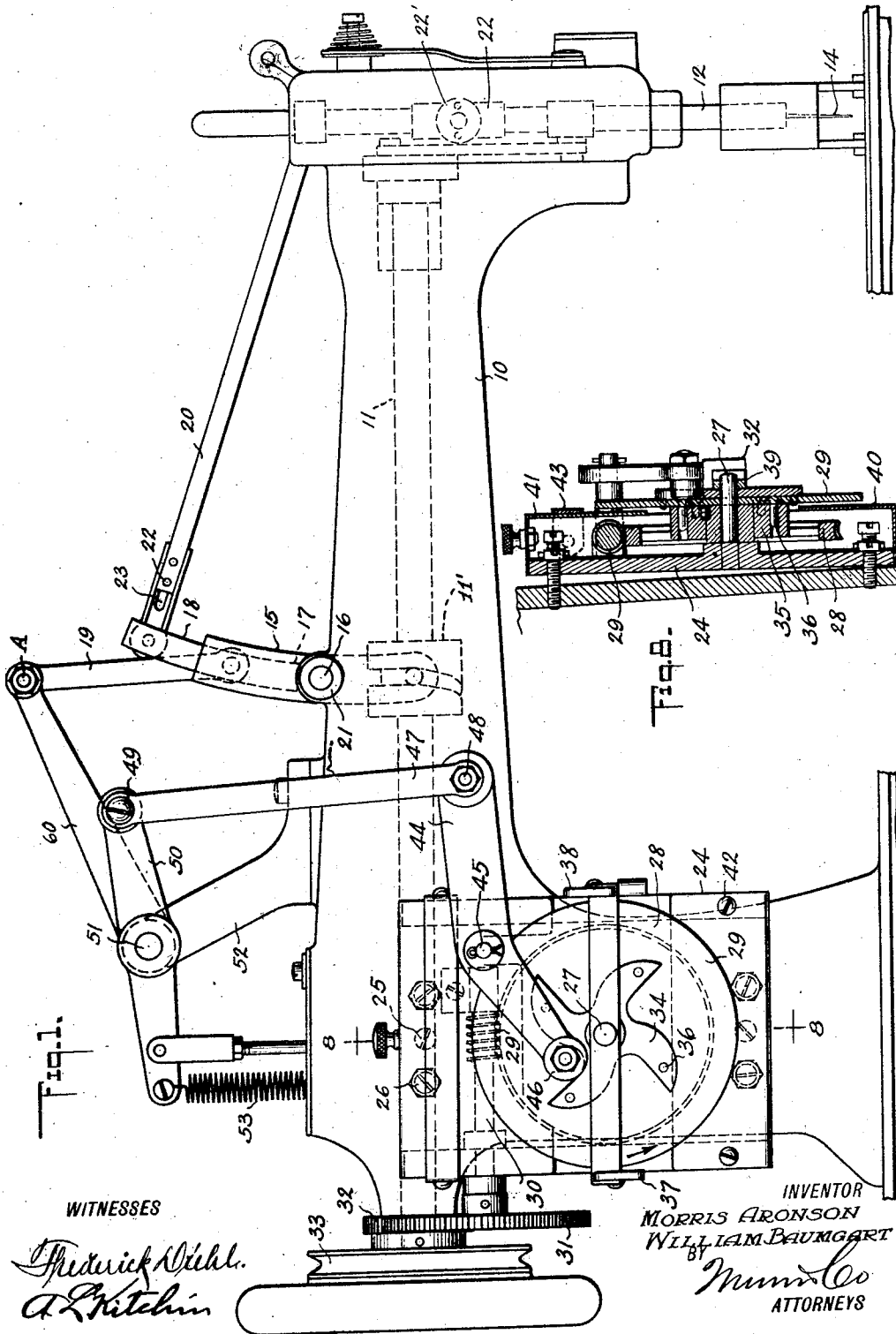
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M. ARONSON ET AL

EMBROIDERY MACHINE

Filed Jan. 17, 1925

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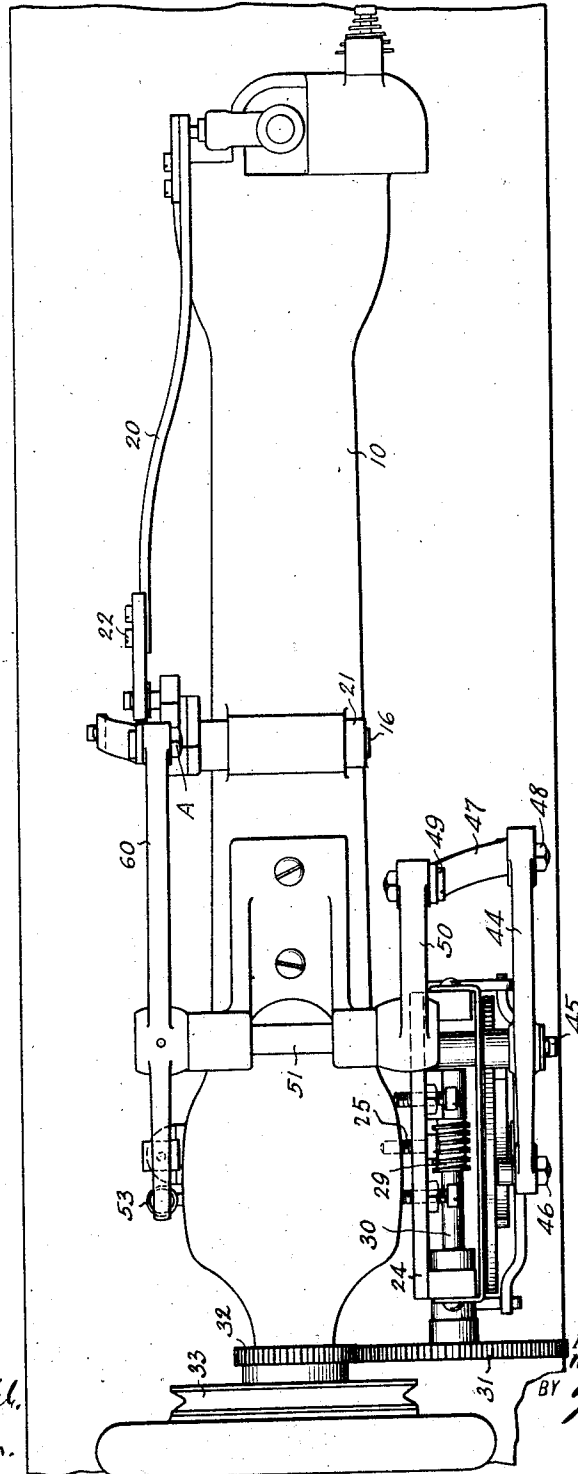
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Fig. 2.



WITNESSES

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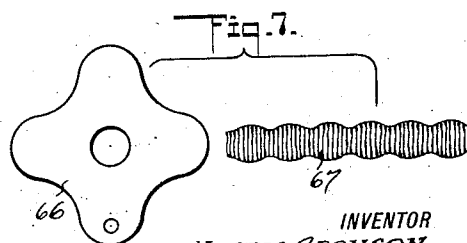
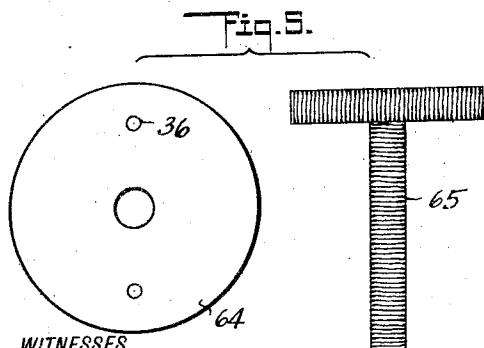
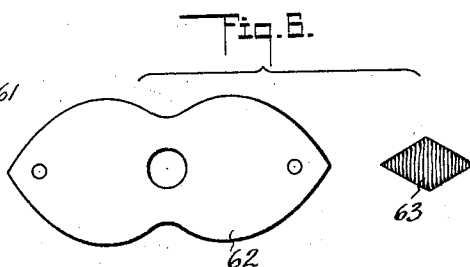
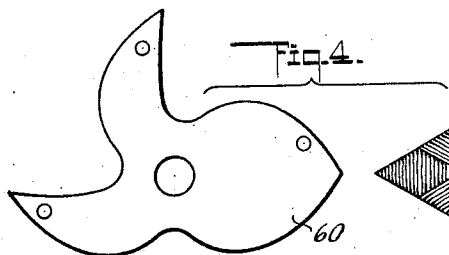
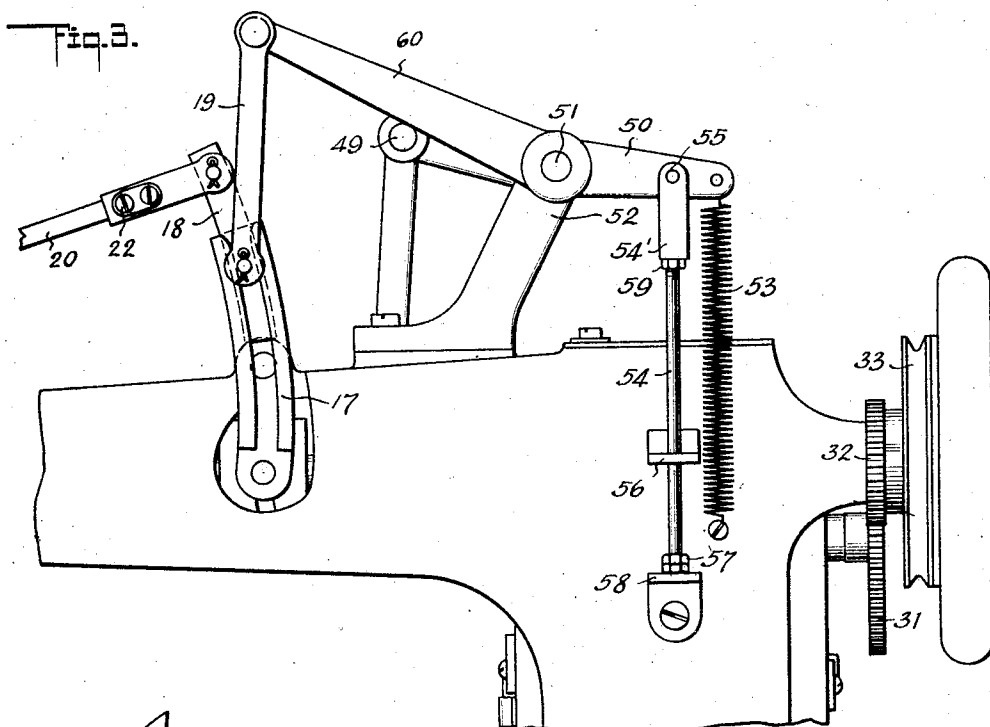
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EMBROIDERY MACHINE

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3 Sheets-Sheet 3



WITNESSES
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UNITED STATES PATENT OFFICE.

MORRIS ARONSON AND WILLIAM BAUMGART, OF NEW YORK, N. Y.

EMBROIDERY MACHINE.

Application filed January 17, 1925. Serial No. 3,141.

To all whom it may concern:

Be it known that we, MORRIS ARONSON and WILLIAM BAUMGART, both citizens of the United States, and residents of the city of New York, borough of the Bronx, in the county of Bronx and State of New York, have invented a new and Improved Embroidery Machine, of which the following is a full, clear, and exact description.

This invention relates to embroidery machine attachments and has for an object to provide an improved combination of driving elements, the structure being an improvement over my Patent No. 1,512,738.

Another object of the invention is to provide simple and efficient means for shifting the means for regulating the length of the embroidery machine stitches while at the same time producing constantly an accurate drive so that there will be no slip between the respective parts.

A further object of the invention, more specifically, is to provide a gear driving mechanism associated with removable cams whereby different patterns may be produced and an accurate number of stitches provided in each pattern.

In the accompanying drawings—

Figure 1 is a side elevation of an embroidery machine showing the embroidery attachment embodying the invention mounted thereon.

Figure 2 is a top plan view of the structure shown in Figure 1.

Figure 3 is a rear elevation of part of the machine shown in Figure 1.

Figure 4 is a plan view of a cam and the design to be embroidered thereby.

Figure 5 is a view similar to Figure 4 but showing a different cam and, consequently, a different embroidery design.

Figure 6 is a plan view of a third form of cam and the design to be produced thereby.

Figure 7 is a plan view of a fourth form of cam and the design produced thereby.

Figure 8 is a detail sectional view through Figure 1 on line 8—8.

Referring to the above mentioned draw-

ings, an embroidering machine head is shown including a casing 10 in which a main drive shaft 11 is rotatably mounted. A needle bar 12 carrying a needle 14 is slidably mounted in a sleeve 22 pivotally mounted at 22' so that as the needle bar is given its vertical motion it may also be given an oscillating motion. A rock arm 15 having a groove 17 cut in one face is provided with a shaft 16 which is rotatably mounted in a bearing 21. Slidably mounted in the groove 17 is a block 18 to which link 19 is pivotally connected and also link 20, said links being connected at opposite ends of the block 18. The link 20 is preferably made in two pieces telescopically fitting as shown in Figure 1. Suitable clamping screws 22 are provided which extend through a slot 23 whereby the effective length of this link may be varied as desired. By providing the block 18 of considerable length, the throw of the links 19 and 20 may be appreciably greater.

In operation, the arm 15 is rocked about the axis of the shaft 16 by means of a suitable cam 11' connected to the shaft 11 and operated thereby. The rocking of arm 15 causes the needle bar 12 to oscillate and the degree of oscillation of the needle bar is controlled by moving the block 18 along the groove 17. The further that the block is moved from the axis of shaft 16, the greater will be the oscillatory movement of the needle. If the block 18 is moved to any position and retained there, then the figure embroidered will have parallel sides. If, however, the block 18 is moved along the groove as the machine operates, stitches of different lengths will be taken so that different patterns may be embroidered. The usual machine is provided with means for manually operating the block to control the length of the stitches and to vary them so as to embroider patterns of different shapes and sizes. A suitable feeding mechanism is also provided which may be the usual feeding foot now in common use. Associated with the links 19 and 20 and connected parts are suitable links and levers together with driving means including removable

cams whereby the block 18 may be held against longitudinal movement or moved gradually for producing various designs.

As indicated particularly in Figures 1 and 2, a supporting plate 24 is connected to the casing 10 by suitable screws 25 and is braced against accidental tilting or shifting by suitable bracing or set screws 26. The plate 24 carries a shaft 27 which is preferably rigidly secured thereto and on which is rotatably mounted a worm gear 28 meshing continually with the worm 29 rigidly secured to the shaft 30. The shaft 30 is rotatably mounted in a suitable bearing member carried by the plate 24 and is rigidly secured to a gear wheel 31 continually meshing with the pinion 32 which is rigidly secured to the belt pulley 33 of the machine by any suitable means, as for instance, clamping screws. By this construction and arrangement, whenever the shaft 11 which operates the needle bar 12 attempts to function, movement will be transmitted to the worm gear 28 and from thence to the cam 34 mounted on the disk 29 which is rigidly secured in any desired manner to the gear wheel 28.

From Figure 8 it will be noted that suitable apertures are provided in the plate 29 as well as in the hub 35 of the gear 28 whereby the various pins 36 extending from the cam 34 may be readily accommodated. A pair of hook members 37 and 38 are connected to plate 24 in any desired manner, hook member 37 facing upwardly while hook member 38 faces downwardly. A retaining bar 39 is pivotally mounted on the shaft or journal pin 27 and is adapted to be swung to the position shown in Figure 2 with the ends fitting into the respective hook members 37 and 38 whereby a cam 34 cannot accidentally move off of the pin 27. Preferably, covering and protecting members 40 and 41 are carried by plate 24 and supported in any desired manner. The plate 40 is preferably supported by screws 42 while plate 41 is preferably held in place by a comparatively thin strap or metal band 43 held in place by screws extending through the bent ends thereof and into plate 24. In order to cause the cam 34 to properly function and control the action of needle 14, a lever 44 is provided, said lever being pivoted substantially centrally on the pin 45. The outer end of lever 44 carries a friction roller 46 adapted to engage the cam surface of the cam 34 whereby as the cam 34 rotates, the lever 44 will be swung in one direction. A link 47 is pivotally connected at 48 to the end of lever 44 and is also pivotally connected at 49 to the lever 50, which latter lever is pivotally mounted on the pin 51 carried by a suitable bracket 52. A spring 53 is connected with one end of lever 50 and is also connected with the cas-

ing 10 whereby the anti-friction roller 46 is always maintained in contact with the cam 34. In order to limit the action of spring 53 in swinging lever 50, a rod 54 is pivotally connected at 55 to lever 50 and extends through a suitable guide 56. Preferably one or more nuts 57 are arranged on the lower end of rod 54 so as to present a foot adapted to engage the stop 58. The upper end of rod 54 is threaded into the bifurcated member 54' and is locked against accidental movement by the jamb nut 59. In case it is desired to change the movement of the lever 50 under the action of spring 53, jamb nut 59 is loosened and the rod 54 is screwed further into the member 54' or further out of the same to push the effective length of rod 54. An arm 60 is rigidly connected to the lever 50 in any desired manner, said arm at the outer end being pivotally connected with the link 19 whereby when the cam 34 swings the lever 44 in one direction, link 19 will be moved downwardly and when the cam 34 permits spring 53 to function, link 19 will move upwardly. The construction of the cam shown in Figure 1 is such that the downward movement of link 19 is very gradual but the upward movement is quick. As the cam 34 may be readily removed at any time so that other cams may be substituted, it is evident that an indefinite number of designs may be produced.

As an example, Figures 4 to 7 show different forms of cams and each cam is adapted to produce a different design. For instance, the cam 60 in Figure 4 produces the design 61 while the cam 62 in Figure 6 produces the diamond-shaped design 63. The circular cam 64 of Figure 5 is adapted to produce the T-shaped design 65 while the four-pointed cam 66 will produce the wavy design 67. The various pins 36 in these cams are so positioned as to fit into certain of the apertures in the plate 29 and the hub 35.

When the machine is set in operation, the main shaft 11 transmits power to the shaft 30 through the gears 31 and 32 and associated parts whereupon gear wheel 38, disk 29 and cam 34 will be rotated. As the cam 34 rotates, the roller 46 follows the shape of the cam and rocks the lever 44. This motion will be transmitted through link 47, lever 50 and arm 60 to link 19 and from thence to the block 18 whereby the link 20 will be actuated and the needle bar 12 shifted to cause the needle 14 to function in the desired manner.

What we claim is:

An attachment for an embroidery machine having a needle and driving mechanism, said attachment including a supporting plate, a disk adapted to be driven from said machine, a pin for rotatably support-

ing said disk, a cam removably mounted on said disk, a hook member arranged on each side of said disk, one hook member facing upwardly and the other downwardly, 5 and a retaining bar for preventing said cam from moving off of said disk, said retaining bar being loosely pivotally mounted on said pin with its ends projecting into said hook members, said retaining bar being capable of rotation so as to move out of said hook 10 members and then longitudinally of the pin until disengaged therefrom whereby the cam may be readily removed.

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