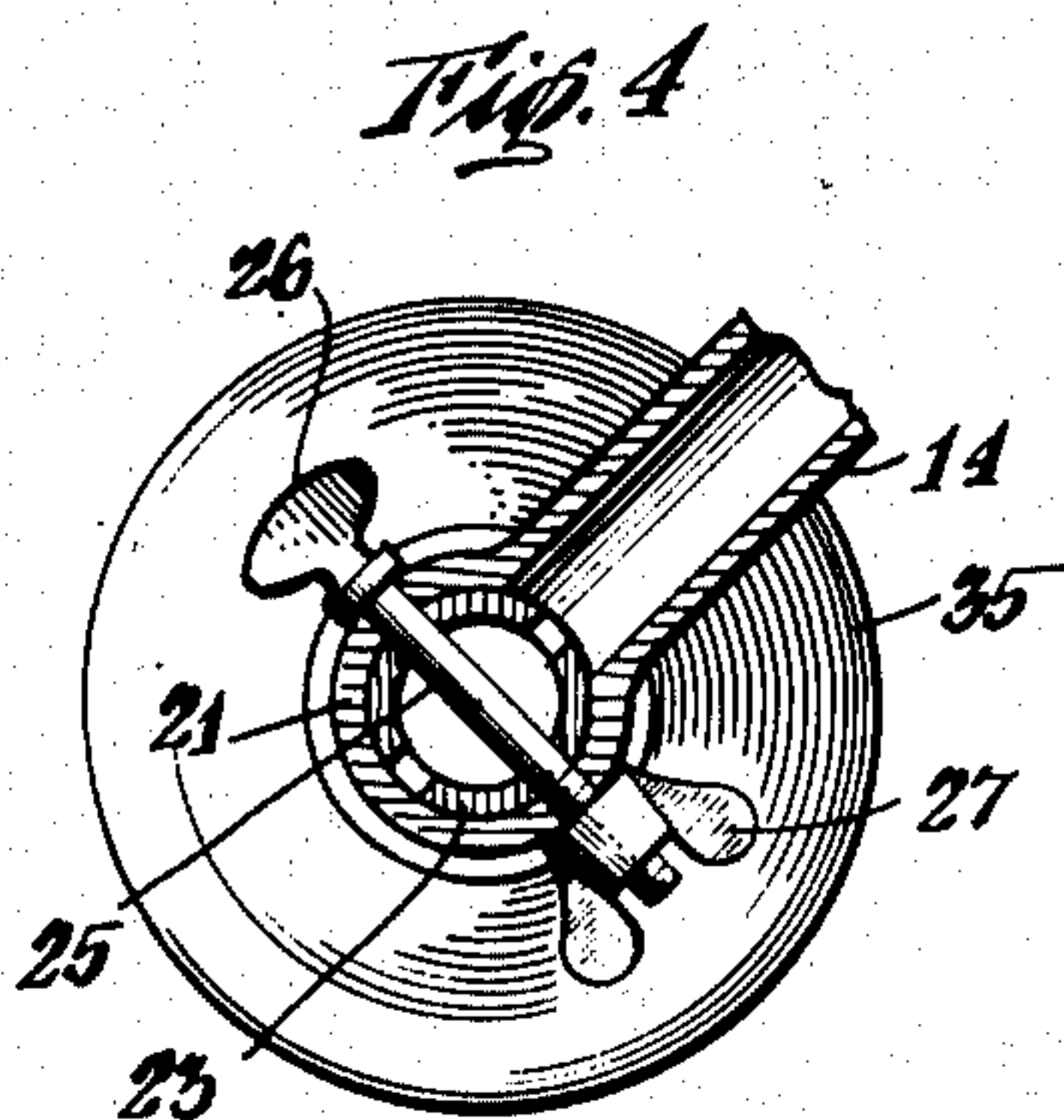
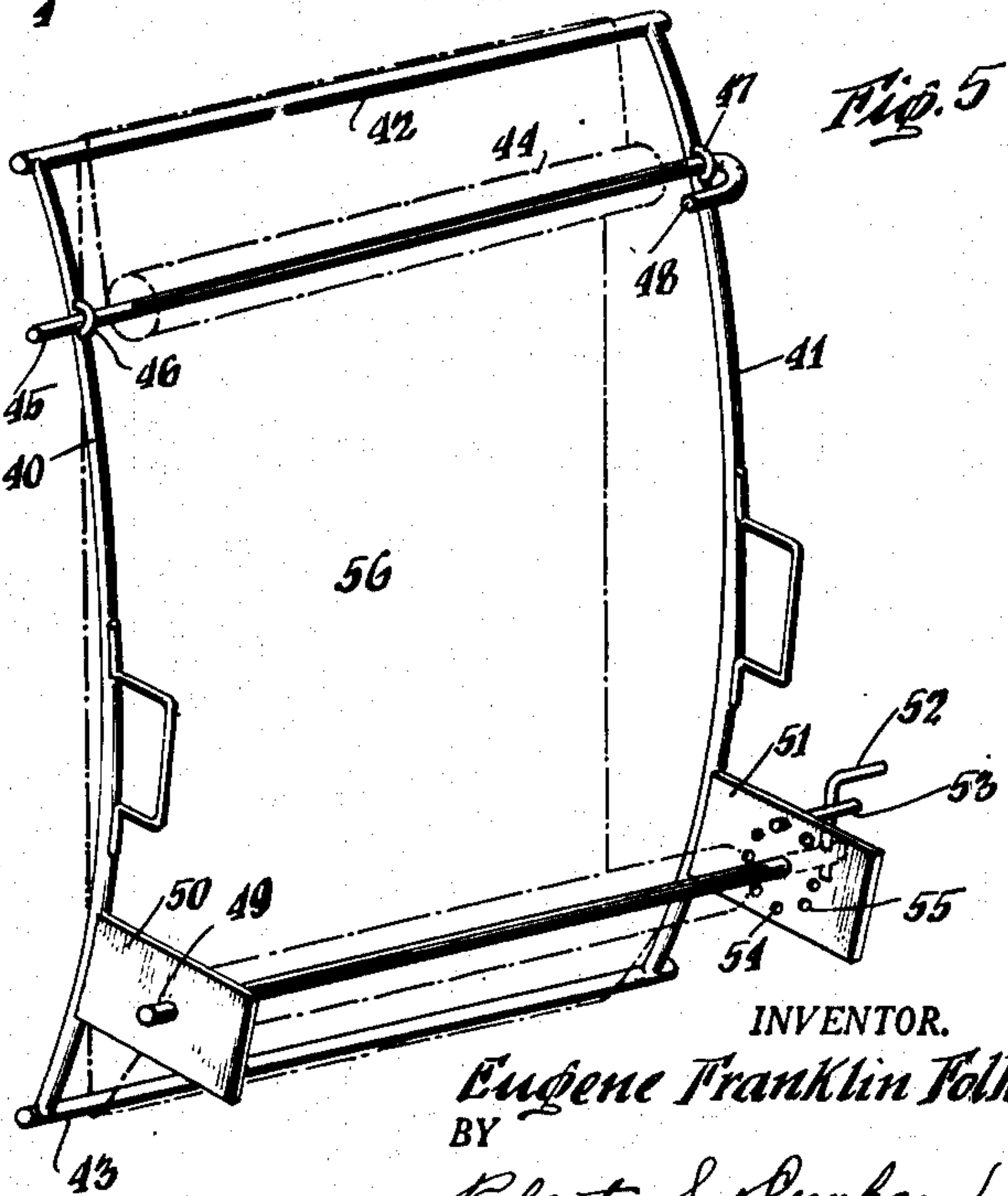
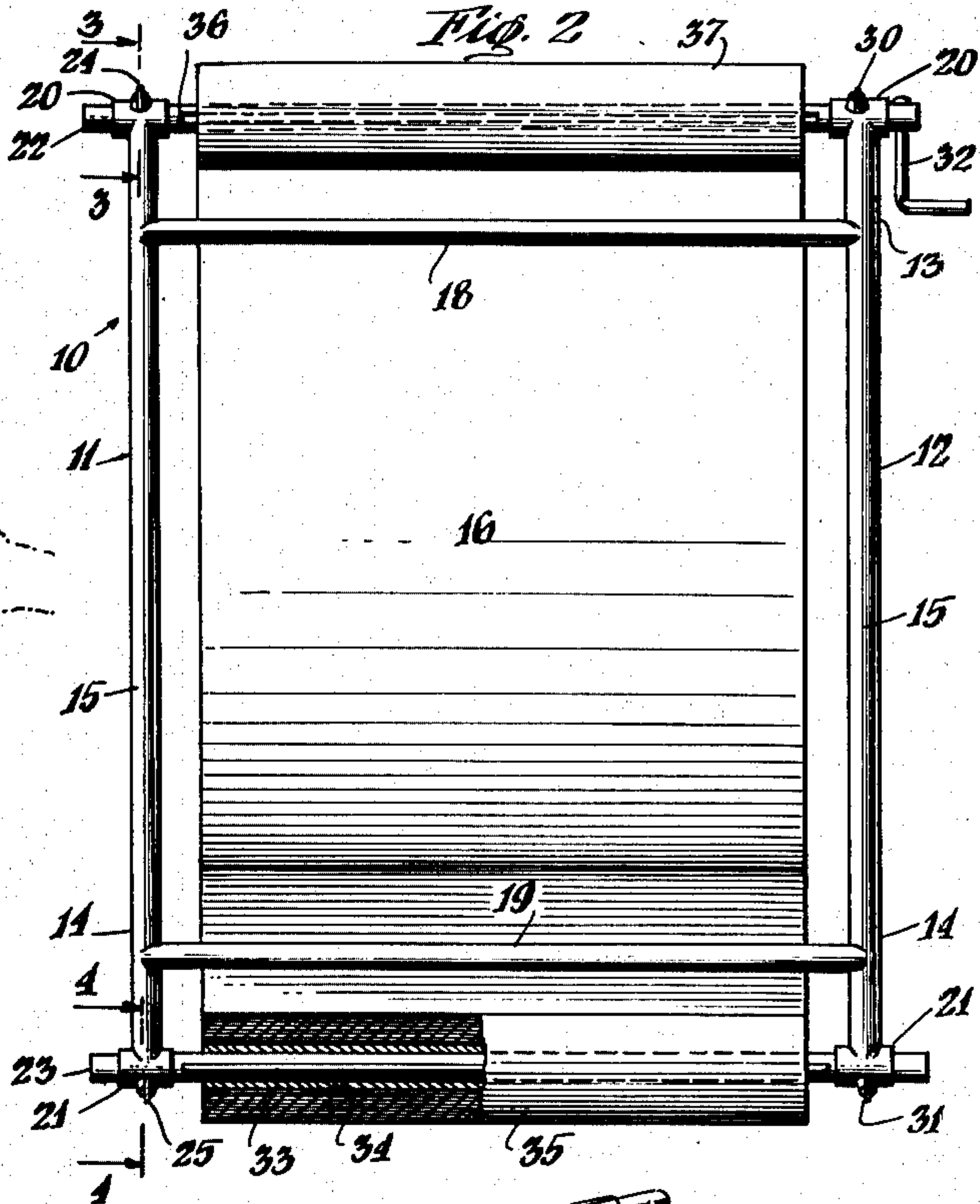


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SURFACE FINISHER

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This invention relates to a device for finishing the surface of a plastic body before the surface hardens.

An object of the invention is to provide a device capable of producing a relatively smooth surface upon a formed body of plastic material such as mortar when the device is held in contact with the surface of the body as it is rotated, or by passing the device over the surface.

Another object of the invention is to provide a manipulative frame and carrier for supporting the ends of a flexible web in such a manner as to allow an intermediate portion of the web to bear upon the cylindrical surface of a rotating body and to provide in such a carrier an arrangement which is so constructed as to enable the changing or replacement of the intermediate portion of the web which bears upon the surface to be finished.

Other objects and uses of the invention will appear from a detailed description of the same, which consists in the features of construction and combinations of parts hereinafter described and claimed.

In the drawings,

Fig. 1 shows a side view of the device and a manner of use;

Fig. 2 is a general view of the device as seen from the right of Fig. 1;

Fig. 3 is a section on line 3-3 of Fig. 2;

Fig. 4 is a section on line 4-4 of Fig. 2, and

Fig. 5 is a perspective view of a modification of the device.

In Figs. 1 and 2 there is illustrated a frame 10 having similar side members 11 and 12, each of which is shaped to provide terminal portions 13 and 14 extending away and to one side of an intermediate graspable portion 15. The curvature or angularity of the side members as viewed from one side, Fig. 1, should be such as to provide for the presentation of a substantial area of a web of flexible material 16 against the exterior of a cylindrical body 17 whose surface is to be finished.

The side members 11 and 12 are connected together in spaced relationship by bars 18 and 19 which are conveniently placed to serve the function of providing with the side members 11 and 12 a suitably rigid frame. The side members and crossbars may be made of tubing of aluminum alloy or other suitable material.

Adjacent the ends of each of side members 11 and 12 there are provided bearings 20 and 21 within which are mounted rods 22 and 23, respectively. These rods extend from one side member to the other and serve to support the ends of the

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web 16. The rods 22 and 23 are freely rotatable in their bearings and are axially removable from the frame when not restrained by means of pins 24 and 25 which extend through holes in the bearings and in the rods 22 and 23, respectively, as clearly illustrated in Figs. 3 and 4. Each pin is preferably provided with a finger piece 26 and a winged nut 27 for convenience in handling. For enabling variation in the length of the material 16 extending between rods 22 and 23, at least one of the rods is provided with additional pairs of holes 28 and 29, Fig. 3. Although not indispensable, the bearings of the other side member 12 may be similarly provided with locking pins 30 and 31, as shown in Fig. 2.

One of the rods is provided with a crank 32 by which the rod may be rotated to take up the used portion of the flexible web when a change of the used area of the web is desired.

In the arrangement shown in Figs. 1 and 2, rod 23 is so constructed as to support a supply roll of the flexible web. Preferably the rod is provided with a feather or spline 33 to engage a slot in the core 34 of a supply roll 35, or otherwise to create frictional engagement with the interior of the roll to prevent the roll from rotating with respect to the rod.

Rod 22 has diametrically placed openings 36 through which an end of the web 16 may be threaded for starting a new roll. If desired, spring clamps or other holding means may be employed.

The frame illustrated in Figs. 1 and 2 is particularly suited and manageable for finishing large diameter pipe. If desired, the portions of the side members thereof between bars 18 and 19 may be replaced by a single member connecting the mid-portions of the bars 18 and 19.

The frame 10 is so proportioned as to best serve the particular kind of work which is to be performed. While surfaces of other bodies may be finished, there is shown in Fig. 1 a portion of a concrete pipe 17. The exterior of the pipe may have been built up or coated with mortar in any well known manner such, for example, in accordance with the method described in the United States Patent No. 2,380,499. While the mortar is still moist and displaceable, at least on the surface, the device of the present invention is employed to present the flexible material 16 to its surface. This is accomplished in the manner illustrated in Fig. 1 with the operator exerting only sufficient pressure on the pipe to produce the effect desired. The surface of the pipe being finished changes as the pipe is rotated and by the

movement of the operator lengthwise of the pipe as different circumferential areas are smoothened. Canvas has been found satisfactory for use as the flexible material, but other materials, such as rubber, leather and available commercial composition webbing may be employed.

When the operator decides that a change in the effective area of the web is desirable, he may remove the pins and roll the used portion into a roll 37 and restore the pins when a clean area is provided between the rods 22 and 23. The flexible web lies against the pipe surface over a considerable arc whose lengths is determinable by the length of free web between bars 22 and 23. This length is adjustable by fractional changes in the locked positions of the bars 22 and 23 as determined by the engagement of the pins 24 and 25 in one or another pair of the holes in the bars.

The amount of drag which the rotating pipe or other body exerts upon the web is proportional to the area of the contacting web and the pressure applied by the operator. The dragging effect can therefore be reduced or increased by shortening or lengthening the length of the web between rods 22 and 23. Whatever the length may be, the web is always tangent to a curved surface at the ends of the contacting area and the direction of rotation of the surface being finished is therefore immaterial.

Mortar may be sprayed upon the surface of a rotating body to produce a relatively uniform covering, but when the device of the present invention is employed for finishing the surface, the surface is given a dull smoothness which improves its appearance and assures a uniform finish throughout the length of the pipe.

Since the pair of pins 24 and 30 lock the rod 22 to the side members 15 and the pair of pins 25 and 31 lock the rod 23 to the same side members, it is apparent that the cross-bars 18 and 19 may be dispensed with to provide a lighter construction and a frame which is capable of disassembly for compact storing.

In Fig. 5, there is shown a modified form of the device. This includes a frame consisting of curved side members 40 and 41 and cross-bars 42 and 43 connected to the side members. The side members 40 and 41 have terminal portions extending inwardly from intermediate portions thereof to provide the extremities of a chord or arc for each of the side members. The cross-bars 42 and 43, in this instance, determine the extremities of the chord of the frame.

The supply roll 44 is mounted upon a rod 45 which can be rotated in bearings 46 and 47 when the rod is temporarily displaced axially from the position shown in Fig. 5. The supply roll 44 is fastened to the rod 45 in any desired manner, and the rod and the supply roll are normally prevented from rotating by the engagement of a projection 48 with one of the side members 41.

The web from the supply roll passes over the cross-bars 42 and 43 and extends to a rod 49 to which it is fastened. This rod is mounted for rotation in brackets 50 and 51. The rod 49 serves as a take-up reel and is provided with a crank 52. The crank is normally held from rotating by a pin 53 which is engageable in any one of a series

of holes 54, 55, etc., in bracket 51. The length of the free surface of the web 56 between cross-bars 42 and 43 may be established by positioning pin 53 in the desired one of the series of holes 54, 55, etc. The manner of using this device is similar to that described hereinabove with reference to the device illustrated in Figs. 1 and 2.

The invention is susceptible to various changes and modifications in construction, form, and relative arrangement of parts, which will now appear to those skilled in the art, and reference may be had to the appended claims for determining the limits of the invention.

What is claimed is:

1. A device for finishing a curvilinear surface, comprising an open frame having side members spaced apart and providing graspable portions whereby the frame may be grasped by two hands, and terminal portions extending away from said graspable portions and terminating in a plane laterally displaced from said graspable portions, a pair of cross-members carried by the two of said terminal portions adjacent one end of said frame, a second pair of cross-members carried by the two of said terminal portions adjacent the other end of said frame, one of each of said pairs of cross-members being rigidly connected to said side members and spacing said side members apart from each other, bearings on said side members for rotatably supporting the other cross-member of each of said pairs of cross-members, a web extending between said rotatably supported cross-members and having end portions thereof wrapped around and supported thereby, said last-named cross-members being rotatably displaceable about the axis of their respective bearings to enable variation of the length of said web extending between said rotatable cross-members, and means for locking said rotatable cross-members against rotation with respect to said frame.

2. The device set forth in claim 1 in which the means for locking each rotatable cross-member against rotation in its bearings comprises a pin engaging a bearing and a hole in its associated rotatable cross-member selected from a plurality of holes circumferentially spaced around said cross-member whereby the length of the web between the two rotatable cross-members may be determined in accordance with the particular hole which is engaged by said pin.

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