

(No Model.)

3 Sheets—Sheet 1.

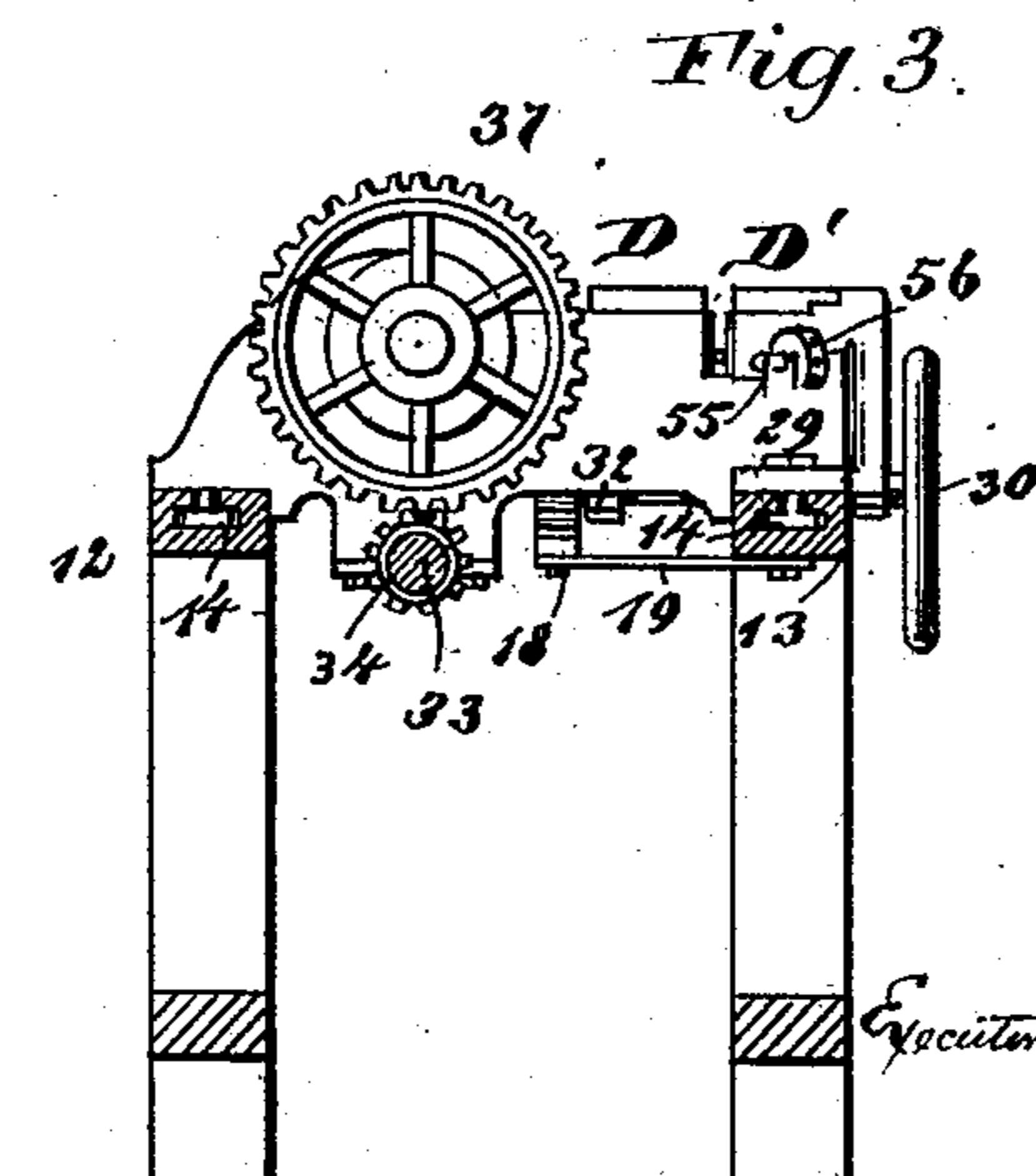
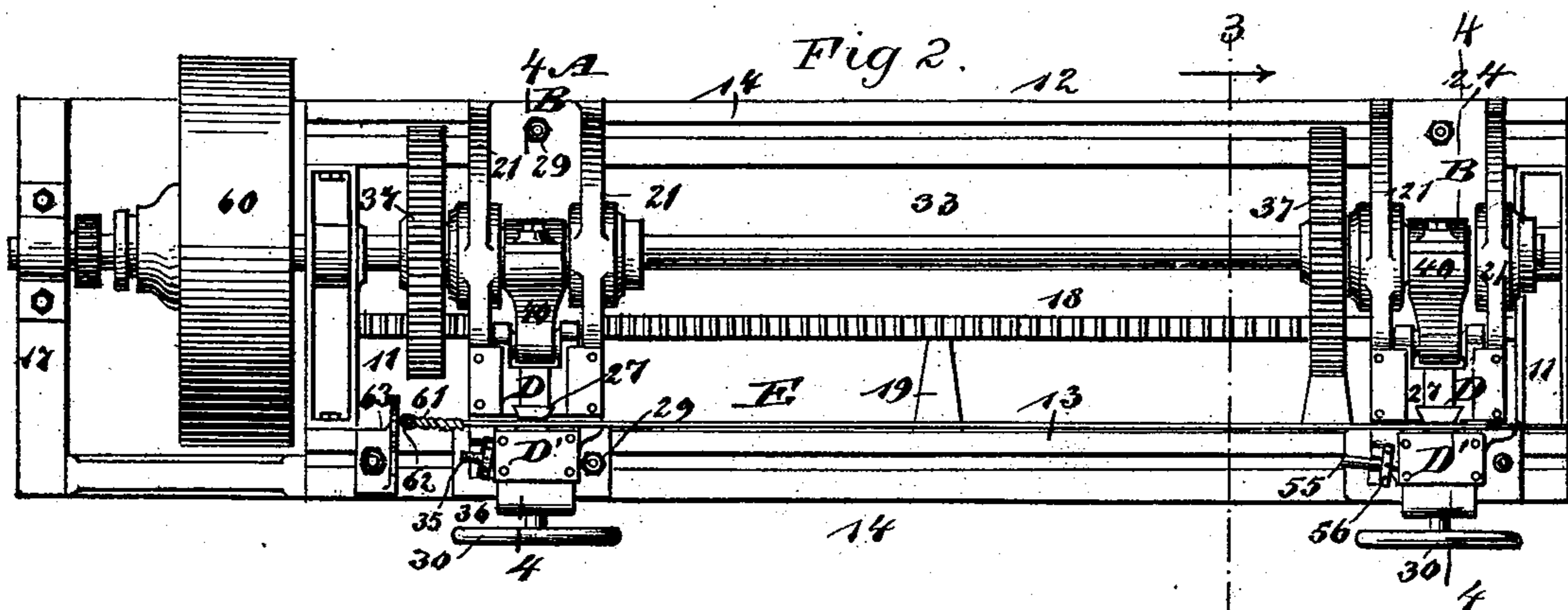
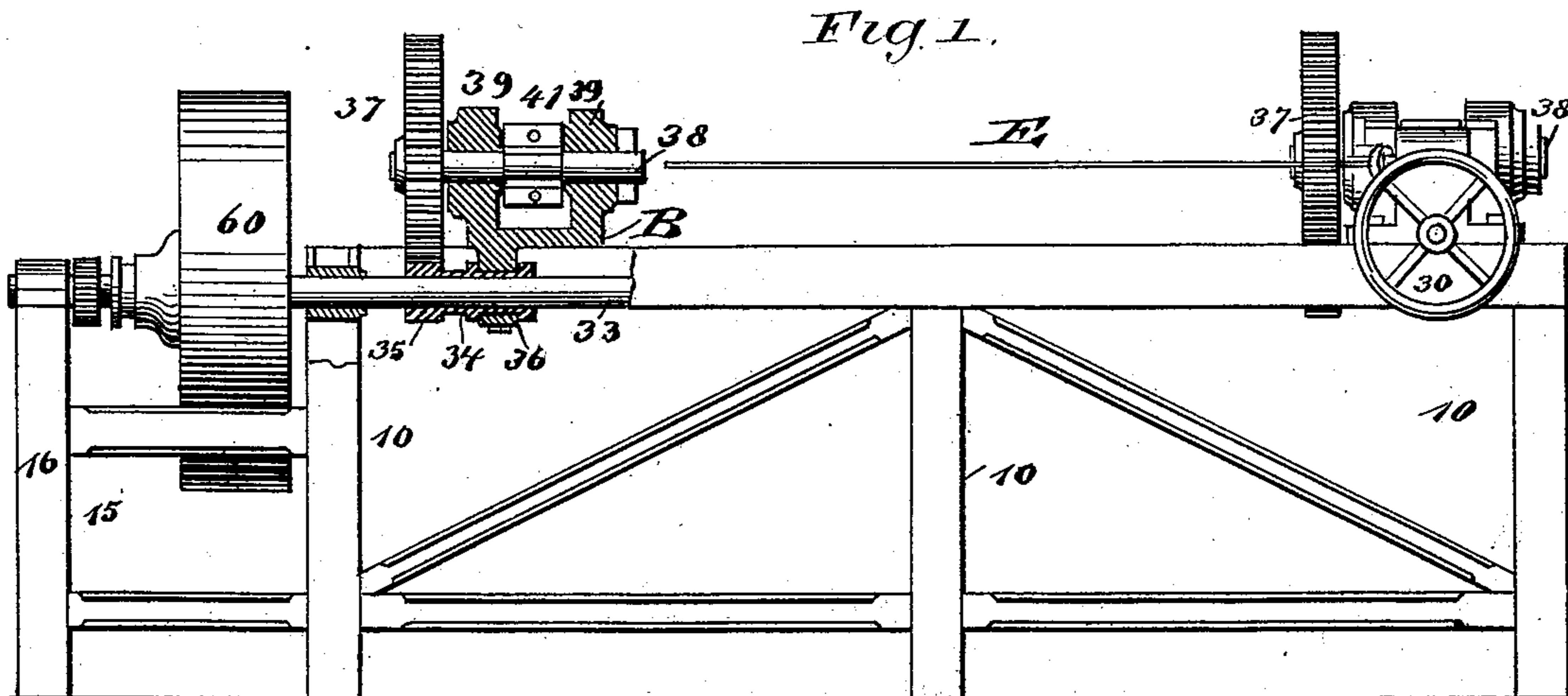
F. RAMACCIOTTI, Dec'd.

A. DE M. RAMACCIOTTI, Executor.

MACHINE FOR SWAGING WIRE FOR MUSICAL INSTRUMENTS.

No. 508,974.

Patented Nov. 21, 1893.



WITNESSES:

Paul J. Schlot
C. Sedgwick

INVENTOR

A. De M. Ramacciotti
BY Francis Ramacciotti
Munn & Co
ATTORNEYS

(No Model.)

3 Sheets—Sheet 2.

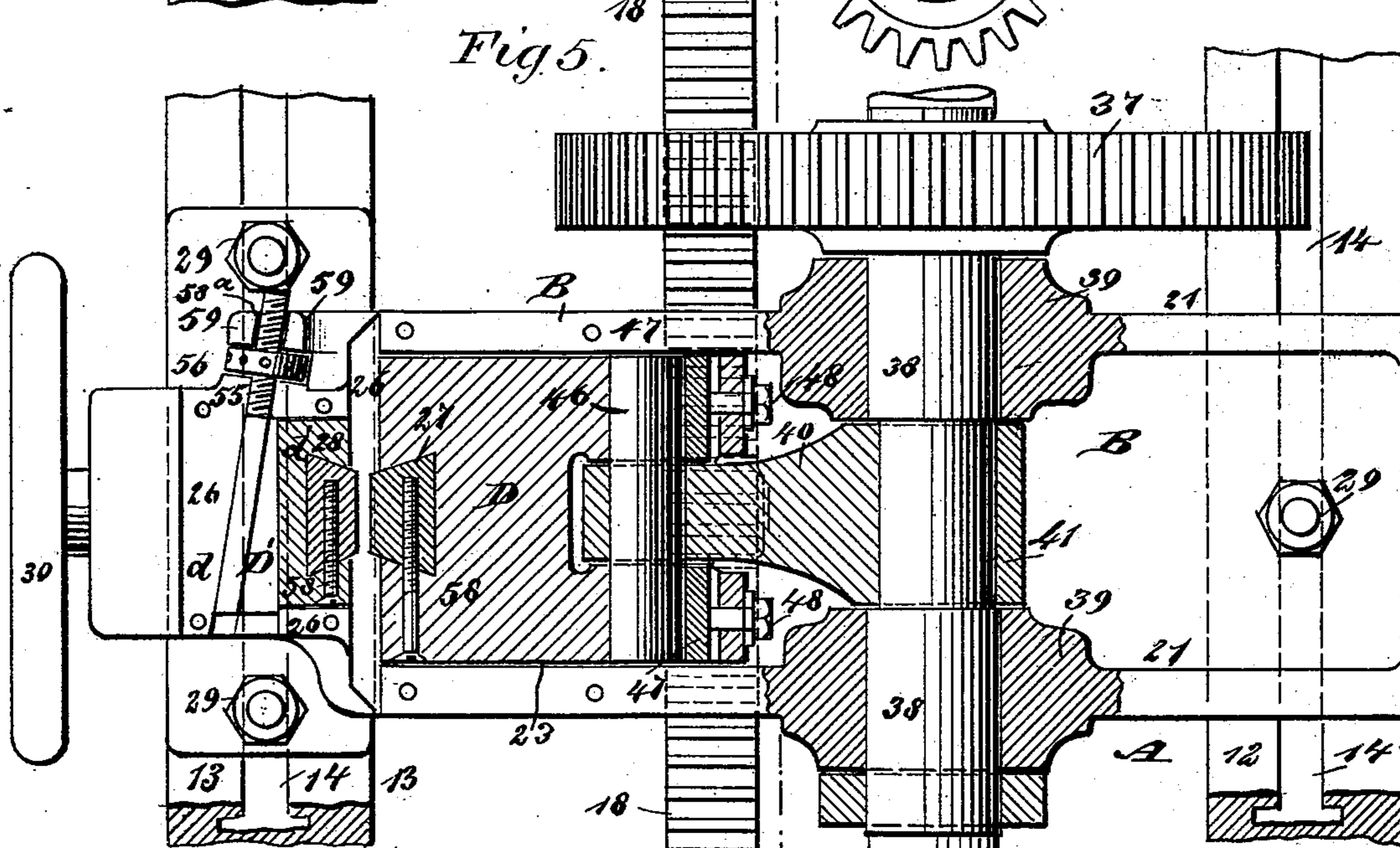
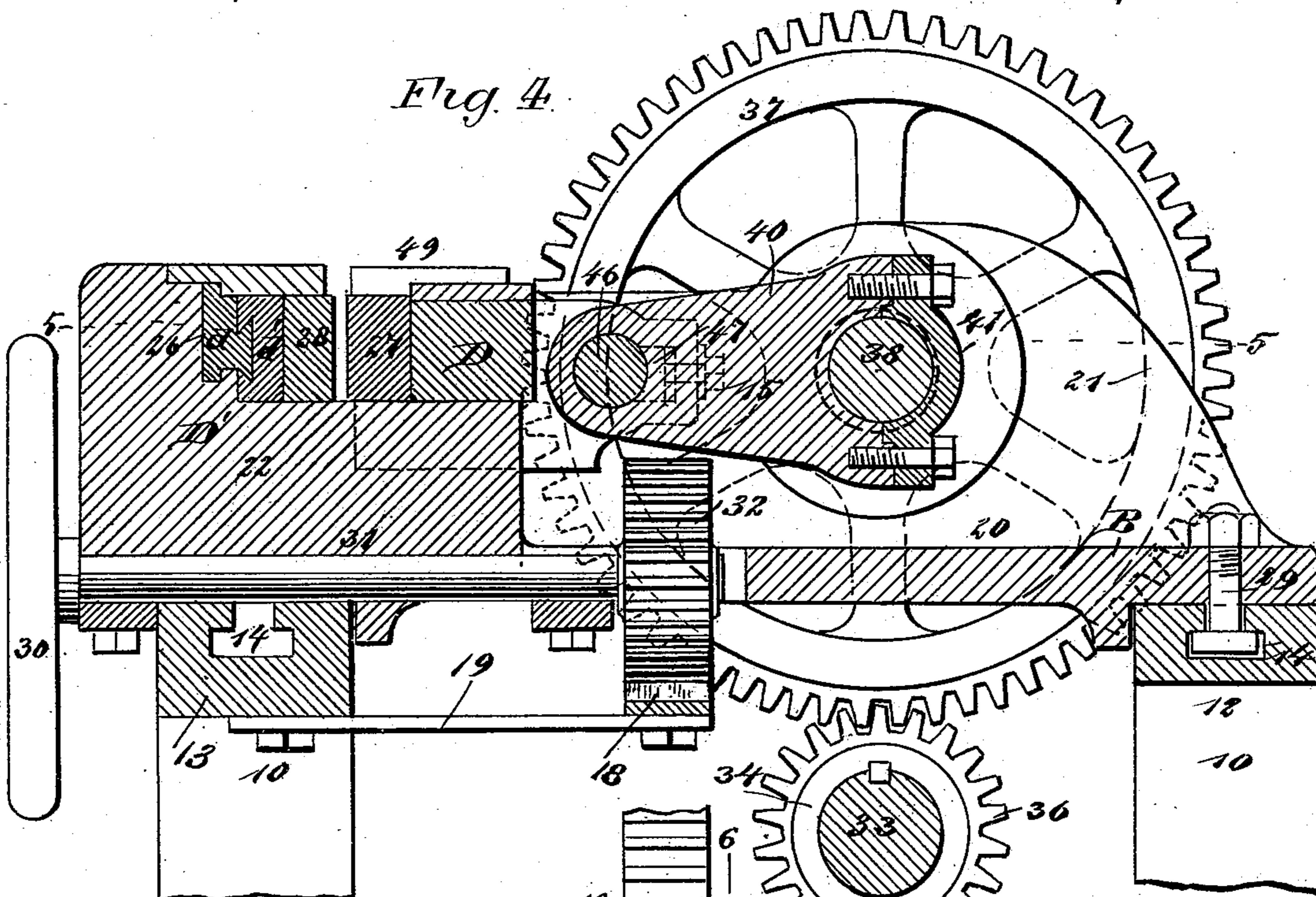
F. RAMACCIOTTI, Dec'd.

A. DE M. RAMACCIOTTI, Executor.

MACHINE FOR SWAGING WIRE FOR MUSICAL INSTRUMENTS.

No. 508,974.

Patented Nov. 21, 1893.



WITNESSES:

Paul J. Hest
C. Sedgwick

INVENTOR

A. De M. Ramacciotti
Executor of the Estate of Francis Ramacciotti
BY Munn & Co

ATTORNEYS

(No Model.)

3 Sheets—Sheet 3.

F. RAMACCIOTTI, Dec'd.

A. DE M. RAMACCIOTTI, Executor.

MACHINE FOR SWAGING WIRE FOR MUSICAL INSTRUMENTS.

No. 508,974.

Patented Nov. 21, 1893.

Fig 6.

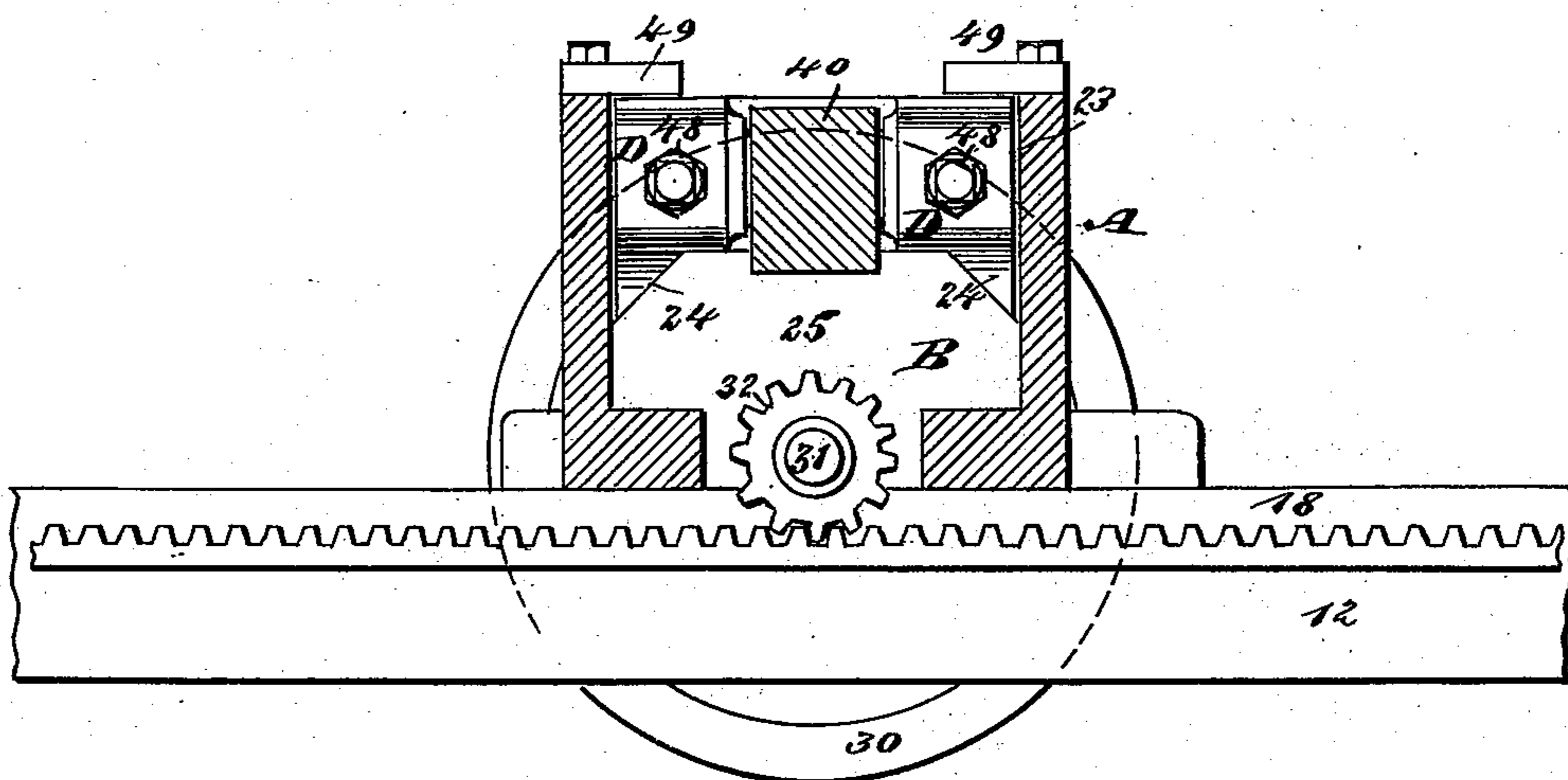


Fig 7.

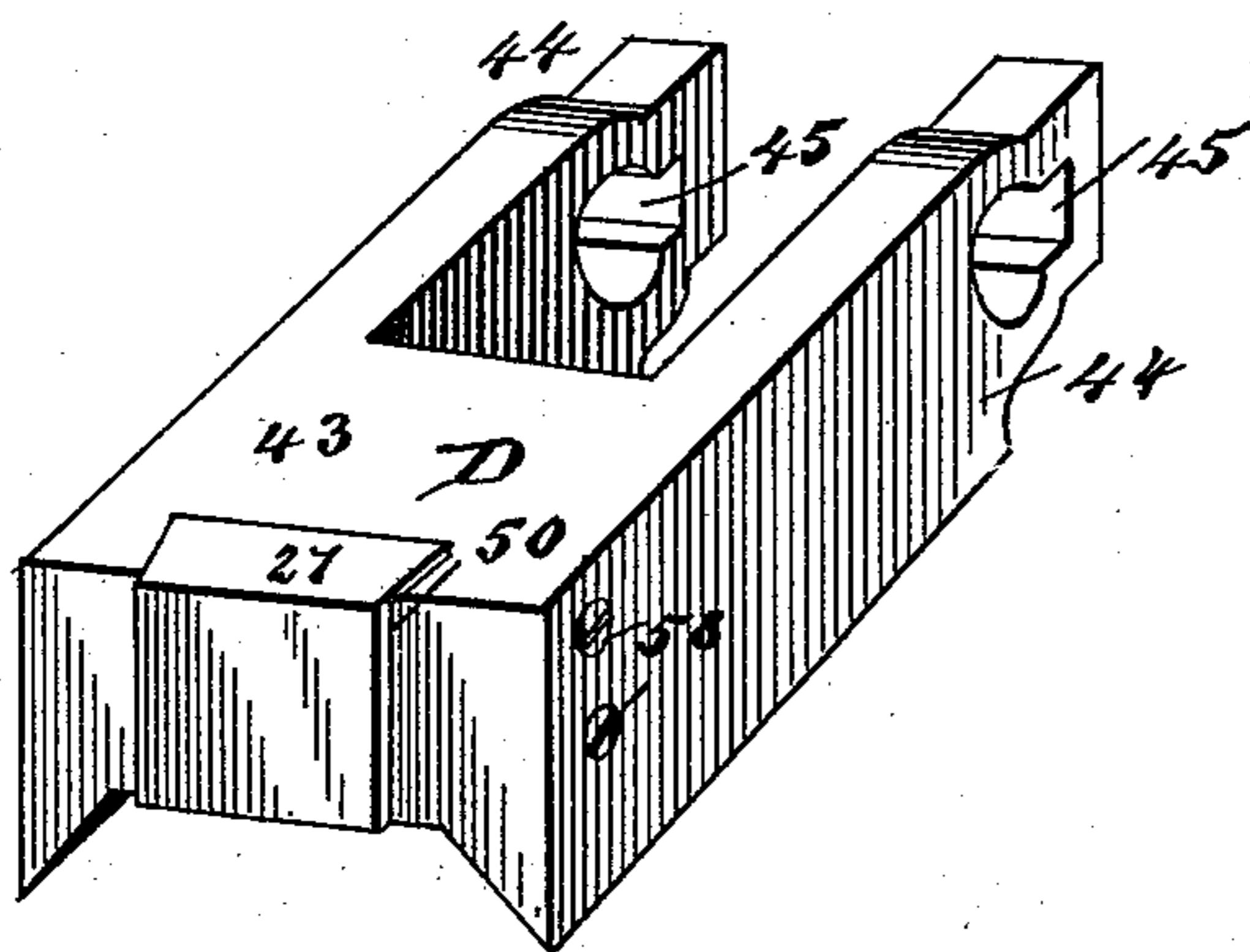


Fig 8.

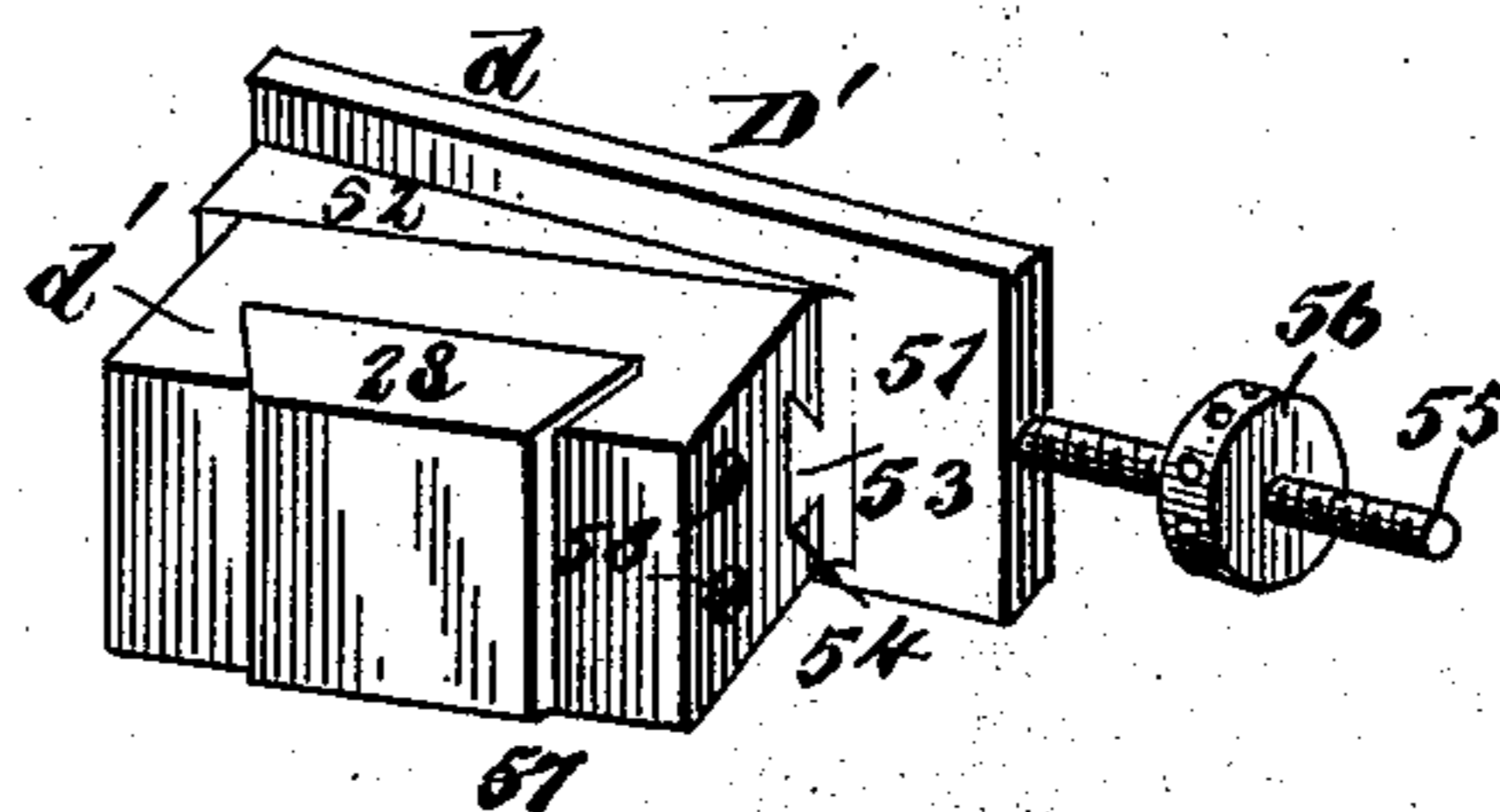
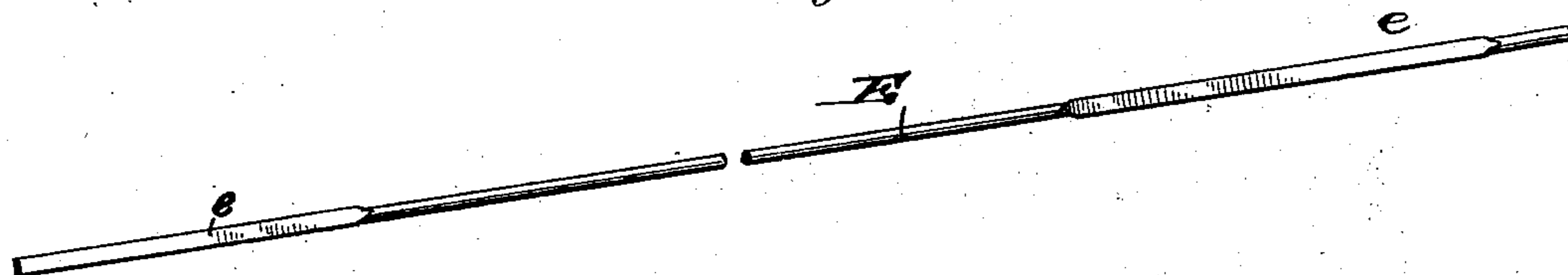


Fig 9.



WITNESSES:

Paul J. Scher
C. Sedgwick

INVENTOR

A. De M. Ramacciotti
Executor of the Estate of *Francis Ramacciotti*
BY *Munn & Co*

ATTORNEYS

UNITED STATES PATENT OFFICE.

ALBERT DE M. RAMACCIOTTI, OF NEW YORK, N. Y., EXECUTOR OF FRANCIS RAMACCIOTTI, DECEASED.

MACHINE FOR SWAGING WIRE FOR MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 508,974, dated November 21, 1893.

Application filed October 5, 1892. Serial No. 447,953. (No model.)

To all whom it may concern:

Be it known that I, ALBERT DE M. RAMACCIOTTI, a citizen of the United States, residing at New York city, in the county and State of New York, executor of the estate of FRANCIS RAMACCIOTTI, deceased, late a resident of the city, county, and State of New York, do hereby declare that the said FRANCIS RAMACCIOTTI in his life-time invented a new and useful Improvement in Machines for Swaging Wire for Musical Instruments, of which the following is a full, clear, and exact description.

The invention relates to an improvement in swaging machines, and especially to an improvement in machines for swaging wire strings for musical instruments.

The object of the invention is to provide a machine, simple, durable and economic in construction, and capable of being conveniently manipulated.

A further object of the invention is to provide a machine capable of being adjusted to successfully operate upon strings of various lengths and of high temper, leaving the strings at their flattened surfaces smooth and flawless.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a partial side elevation of the machine, and a partial longitudinal portion through one of its sections. Fig. 2 is a plan view of the machine. Fig. 3 is a transverse section taken practically on the line 3—3 of Fig. 2. Fig. 4 is a vertical longitudinal section taken practically on the line 4—4 of Fig. 2. Fig. 5 is a horizontal section taken essentially on the line 5—5 of Fig. 4. Fig. 6 is a vertical transverse section on the line 6—6 of Fig. 5. Figs. 7 and 8 are perspective views of the swaging blocks and their carriers; and Fig. 9 is a perspective view of a section of wire, illustrating the surfaces flattened thereon by the machine.

Heretofore steel wire strings for musical instruments have been flattened by a hand hammer. When strings of high temper, and the majority are such, are treated in this manner, the flattened surfaces are full of flaws, and the string is thereby rendered unreliable, that is, in many instances the wire breaks at the flattened surfaces either under the hammer or the moment the wire is vibrated or bent even to a slight degree.

The prime object of this invention is to provide a machine which will quickly flatten steel music wire of the highest temper without in the slightest degree injuring the fiber of the wire, and whereby the flattened surfaces will be particularly evenly made, rendering it not only possible to cover the string at its pressed or flattened points but also to enhance the beauty of the string by reason of the evenness of the covering.

The frame of the machine consists of a series of uprights 10, the end uprights being connected at the top by cross bars 11; and the uprights at each side, as the said uprights are arranged in rows, are adapted to support bed plates 12 and 13, these bed plates and uprights constituting practically the base frame of the machine. The bed plates are parallel, and each of them is provided with a groove 14, extending through from end to end. This groove is practically inverted T-shape in cross section, as shown in Fig. 3, whereby the lower portion of the groove is its wider portion. At one end of the machine an extension 15, is made, the said extension consisting preferably of two uprights 16, connected at the top by a cross bar 17.

Between the center of the machine and the forward bed plate 13 a rack 18, is horizontally supported, the rack extending longitudinally of the machine frame, practically from end to end. This rack may be sustained in its horizontal position in any suitable or approved manner, but usually this is effected through the medium of horizontal brackets 19, these brackets being secured to the rack and to the forward bed plate, as shown in Figs. 2 and 3.

The swaging device A, adapted to be supported by and slid upon the base frame may be described as follows: A body plate B, is

formed, as shown best in Figs. 4, 5 and 6, which body plate is practically rectangular in general contour and of a length sufficient to enable it to extend transversely across the base frame over each of the bed plates 12 and 13. The rear portion 20 of the body plate is flat and somewhat thin, and this portion is provided with longitudinal flanges 21 at the sides, while the forward portion of the body plate of the swaging machine is of peculiar shape. This portion is much thicker than the rear portion, and is shaped somewhat rectangularly; and this enlarged portion 22 of the base, at its inner face, is provided with two recesses, the inner recess being designated as 23, and its contour is best shown in Fig. 6, in which the recess will be observed to be somewhat rectangular, but the base wall, at its side is beveled downward, as indicated at 24, forming thereby what may be termed a center block 25. The other recess is forward of the recess 23, as shown in Figs. 2 and 3, and is designated as 26. The inner portion of this recess is rectangular in general contour, but the forward or outer wall thereof is inclined. The recess 23, is adapted to receive a carrier D, in which one of the swaging jaws or blocks 27, is located; and the other recess is adapted to carry an opposing carrier D', which supports a second swaging block or jaw 28, adapted to act in conjunction with the block or jaw 27. These carriers and their jaws or blocks are shown in detail in Figs. 7 and 8, and will be hereinafter more minutely described.

The base B of the swaging device or machine, as has heretofore been stated, is adapted to have sliding movement upon the base frame of the machine; and to that end bolts 29, ordinarily three in number, are passed through the base plate B at its ends, one bolt being located at the central portion of the rear end, and two bolts at the forward end. The forward bolts pass downward into the slot or groove 14 in the forward bed plate 13 of the frame, while the rear bolt is similarly located in the groove of the rear bed plate of the machine. By loosening the nuts which are placed upon the upper ends of these bolts, the swaging device or machine may be slid toward the center of the base frame, or in direction of its upper end, and when properly located it may be effectually held in the position in which it is placed by screwing up the nuts upon the bolts. After the nuts have been loosened, the lateral adjustment of the swaging device or machine is accomplished through the medium of a hand wheel 30, which hand wheel is located at the front of the machine, and is fast upon a shaft 31, which extends rearward through the bottom part of the thicker portion of the bed plate B, as shown in Fig. 4; and this shaft at its inner end is provided with an attached pinion 32, the said pinion engaging with the teeth of the rack 18.

A drive shaft 33, is journaled in suitable bearings at the ends of the main frame and at the ends of the extension 15 of said frame. This shaft is preferably located back of the rack and beneath the base B of the device or machine.

A sleeve 34, is held to slide upon the shaft 33; and this sleeve carries at or near one end a pinion 35, which may either be attached to the sleeve or constitute an integral portion thereof. The sleeve is connected with the under portion of the base B of the machine or device by means of a strap 36, as shown in Fig. 1, which connection enables the sleeve to revolve freely upon the shaft 33, yet when the base is slid laterally in direction of either end of the base frame the sleeve is carried with it. The pinion 35 of the sleeve meshes with a large gear wheel 37, fast upon the outer end of a short shaft 38, which shaft is journaled in suitable boxes 39, formed in or upon the flanges 21 of the base A, as is likewise best shown in Fig. 1.

Between the flanges and upon the shaft 38, a pitman 40, is eccentrically attached, the pitman where it receives the shaft being provided with a recess, as shown in Fig. 4, which receives the forward face of the shaft, while a strap 41, is made to embrace the rear face of the shaft, the said strap being screwed or otherwise removably attached to the eccentric crank. The pitman is adapted for direct attachment to the carrier D, supporting the jaw or block 27. This carrier is shown in detail in Fig. 7, and consists of a body portion 43 and arms 44, projecting from the rearward or inner end of the body portion, one at each side, and these arms are each provided preferably with an elongated opening 45, the openings being in alignment; and through the larger or circular portions of these openings, and through a suitable opening in the forward end of the pitman 40, a pin 46, is passed, the pin being the connecting medium between the jaw carrier D and the pitman, as shown in Figs. 4 and 5. The elongations of the openings 45 are made to receive wear plates 47, shown in position in Fig. 5; and these wear plates are adjusted toward the pin 46, to compensate for wear upon the latter, by means of screws 48, said screws being passed through the extremities of the arms 44 of the carrier D.

The carrier is adapted, as has heretofore been stated, to slide in the recess 23 located in the forward or thicker portion of the base B; therefore, the under face of the carrier D, is provided with inner beveled side faces, as the carrier in cross section must correspond to the cross sectional shape of the recess 23, the carrier resting upon the center block 25, as shown in Fig. 6.

In order that the carrier block may not leave its recess, binding plates 49, are attached to the upper side faces of the bed section 22, the plates extending therefrom over the carrier, as shown in Figs. 2 and 6. The

jaw or block 27, adapted to engage with the wire is somewhat of dove-tail shape in cross section, and is fitted in a correspondingly shaped recess 50, formed in the inner face of the carrier.

The carrier D', illustrated in detail in Fig. 8, comprises two sections d and d' , the section d being adapted for manipulation to carry the section d' laterally forward or rearward; that is, to or from the inner jaw. It may be here stated that the base wall of the outer recess 26 is on a level with the base wall of the inner recess 23; in fact, the base walls of the two recesses are continuous, and therefore the recesses heretofore described as 23 and 26, constitute practically a single recess, but is divided for convenience in description into two sections 23 and 26, the inner section 23, receiving the carrier D, and the outer or forward section 26 the carrier D'.

The rear section d of the carrier D', comprises a plate 51, having an inner wedge face 52, the wedge face being provided with a longitudinal rib 53, preferably dove-tail shape in cross section. The section d' of the carrier consists of a block essentially rectangular in shape, of less length than the wedge face of the section d ; and this block in one face is provided with a groove or channel 54, receiving the rib 53, the channeled face of the block fitting snugly against the face of the wedge 52. The wedge face 52, is not as long as the body plate 51, as this plate extends some distance beyond one edge of the wedge; and the extended end is provided with an attached or integral bolt 55, carrying a thumb nut 56. The jaw or block 28, adapted to engage with the wire to be swaged is preferably dove-tail shaped in cross section, and fitted in a correspondingly shaped groove 57, formed in the inner face of the block section d' . Both of the blocks or jaws 27 and 28, are held in position in their carriers by screws 58, or like devices, passed through one surface of the carriers and into the blocks, as is likewise shown in Figs. 5 and 8.

The recessed section 26 in which the carrier D', is placed is so shaped that the block section d' may have movement to and from the carrier D; but the section d of the carrier D', has movement transversely of the base, that is, in a direction at right angles to the movement of the block section d' ; and this movement of the wedge section d , is accomplished by passing the bolt 55, through a recess 58^a in the top of the base B, as shown in Fig. 5, and between lugs 59, adjacent to the recess, the thumb nut 56 being located between the lugs 59 and the outer face of that portion of the base in which the recess 58^a, is located, as is likewise best shown in Fig. 5. Thus by turning the thumb nut 56, the wedge section may be made to slide in direction of either side of the base, and the block section d' , connected with the wedge will be carried in direction of either the front or the rear of the base. When the carriers D and D', are

in proper position, their jaws or blocks 27 and 28, are face to face, as shown in both Figs. 4 and 5.

The drive shaft 33, is rotated preferably through the medium of a belt connection with a suitable pulley 60, secured thereon between the end of the extension and the opposing end of the main frame; but the pulley may be otherwise located if in practice it is found desirable.

In the process of swaging the wire two such machines or devices A, as have been heretofore described, are located upon the base frame, one at each side of the center of the frame; and the wire string E to be operated upon is passed between the opposing jaws or blocks of each machine; but it will be understood that each machine is complete in itself, and if but one surface of the wire is to be swaged a single machine only need be employed; but usually wire strings are flattened at several points in their length, more particularly at two points, and therefore two machines are shown in the drawings as mounted upon the base.

In order that a wire string may be expeditiously manipulated in a manner to present it properly to the swaging jaws or blocks, one end of the wire string is twisted to form an eye 61, as shown in Fig. 2; and this eye is made to engage with a hook 62, formed upon a standard 63, the standard being adjustable upon the forward bed plate 13; and the location of the hook 62 is such that it is in alignment with the space between the swaging blocks or jaws of the machine nearest to the standard. The wire after having been passed between the swaging jaws or blocks of one machine, is carried between the jaws or blocks of the next machine. The adjustment of the machines laterally upon the base frame is made either before or after the wire is placed in the proper position. When the wires are placed in position, the swaging blocks or jaws are spaced some distance apart; and one revolution of the shaft 33 is sufficient to carry the jaws or blocks together, that is, the sliding block 27, in practical engagement with the fixed block 28; and this movement will produce a flattened surface upon opposite sides of the wire string, the said surfaces being shown at e in Fig. 9. Ordinarily the wires are pressed but once between the jaws, but the swaging may be repeated if exceedingly thick wire is used until the proper reduction has been obtained. When more than one swaging machine or device is employed, they all operate alternately or simultaneously as may be desired.

The fibers of the wire are not injured when a machine is used constructed as above described, as equal pressure is brought to bear at both sides of the surface operated upon, and the blocks or jaws are smooth; therefore the surface is not only pressed but it may be said to be ironed out. The adjustment to accomplish the pressing or flattening of wire of

different thickness, or to cause a more or less reduced surface in the wire, is made by carrying the wedge section *d* of the essentially fixed carrier *D'* inward or outward.

5 As has heretofore been stated, this machine is not only simple, durable and economic, but it is capable of being manipulated in an expeditious and convenient manner, and the strings flattened thereon are not in the least
10 injured, but the flattened surfaces are so smoothed that they may be covered and present a most sightly appearance.

Having thus described the invention, what is claimed as new, and desired to be secured
15 by Letters Patent, is—

1. In a swaging machine, the combination, with a base, a carrier having sliding movement in the base, and a second carrier facing the sliding one and consisting of two sections,
20 one a wedge section having movement in fixed slide-ways, and the other a block section adjusted by the wedge, of swaging jaws or blocks removably attached to the sliding carrier or block of the adjustable carrier, a drive shaft,
25 and an eccentric crank connecting the drive shaft and the sliding carrier, substantially as described.

2. The combination, with a base frame, and a rack connected with said frame, of a swaging machine having sliding movement upon
30 the base frame, a shaft carried through the base of the machine, provided with a hand wheel at one end and a pinion at the opposite end engaging with the said rack, a drive shaft
35 journaled in the frame, a driven shaft journaled in the machine, a driving connection between the drive and the driven shaft, a fixed swaging jaw, a sliding swaging jaw, and a crank connection between the driven shaft
40 and the sliding swaging jaw, substantially as shown and described.

3. The combination, with a base frame provided with under-cut grooves in its sides, and a rack longitudinally supported by said
45 frame, of a swaging machine provided with locking bolts entering the under-cut grooves of the frame, an adjusting shaft journaled in the base of the machine, provided at one end with a hand wheel and at the other end with

a pinion engaging with the rack, a drive shaft
50 located in the frame, a driven shaft journaled in the machine, a driving gear connected with the driven shaft, a pinion meshing with the driving gear, having sliding movement upon the driveshaft and connected
55 with the base of the machine, a sliding carrier provided with a swaging jaw or block, a second carrier provided also with a swaging jaw or block, the block or jaw of the second carrier being adjustable to and from the jaw
60 or block of the sliding carrier, and a pitman connection between the driven shaft and the sliding carrier, as and for the purpose specified.

4. In a machine for swaging wire, the combination, with a sliding carrier provided with a swaging jaw or block, of a second carrier comprising a wedge section adjustable on a line at a right angle to the movement of the sliding carrier, and a block section adjusted
70 by the wedge section in direction of or away from the sliding carrier, the block being provided with a swaging jaw adapted to face that of the sliding carrier, as and for the purpose specified.

5. In a machine for swaging wire strings for musical instruments, the combination, with a sliding carrier provided with a removable swaging jaw, of an opposing carrier comprising a wedge section adapted to move in slide-
80 ways on the frame of the machine in a direction at right angles to the travel of the sliding carrier, the wedge section being provided with a dove-tail rib upon its wedge face, a screw at one end and an adjusting nut upon
85 said screw, and a block section in which the swaging jaw is removably secured, the said block section being provided with a dove-tail channel way receiving the rib of the wedge section, whereby the block section may be
90 moved to or from the sliding carrier by the manipulation of the wedge section, as and for the purpose set forth.

ALBERT DE M. RAMACCIOTTI,
Executor of the estate of Francis Ramacciotti.

Witnesses:

J. FRED. ACKER,
C. SEDGWICK.