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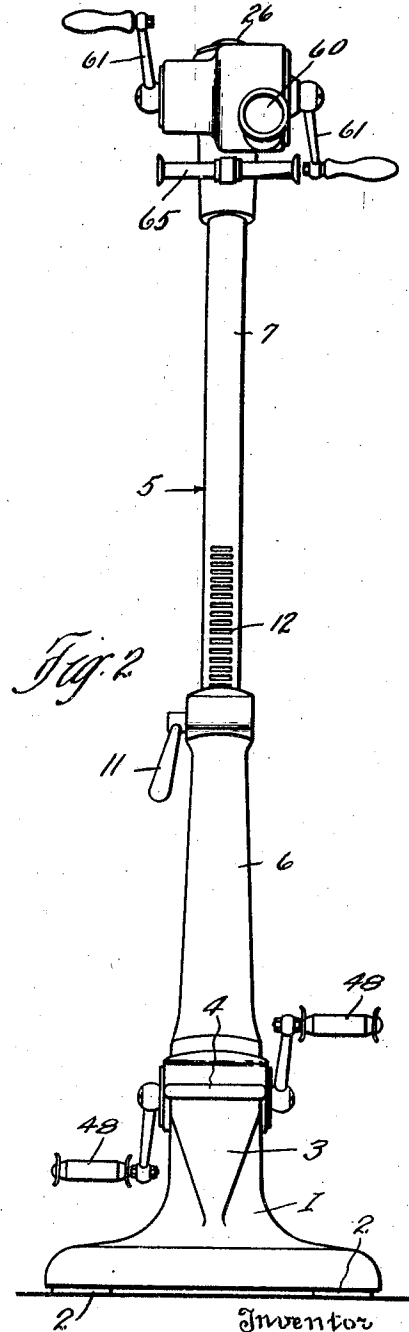
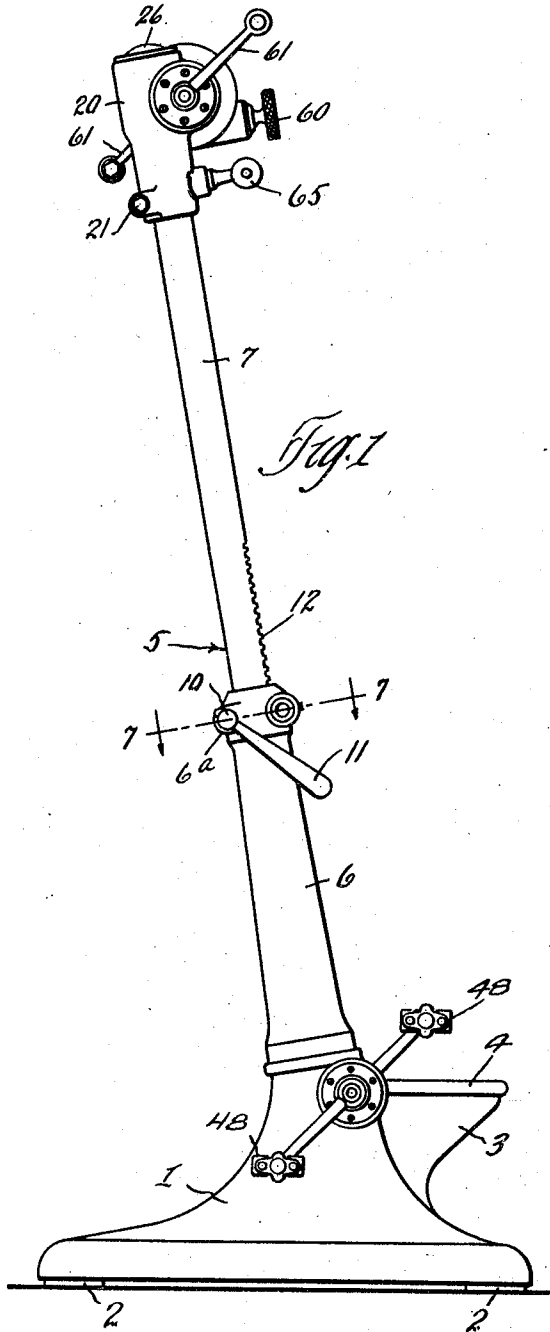
A. E. R. BLOMQUIST

1,820,372

EXERCISING MACHINE

Filed Feb. 8, 1928

3 Sheets-Sheet 1



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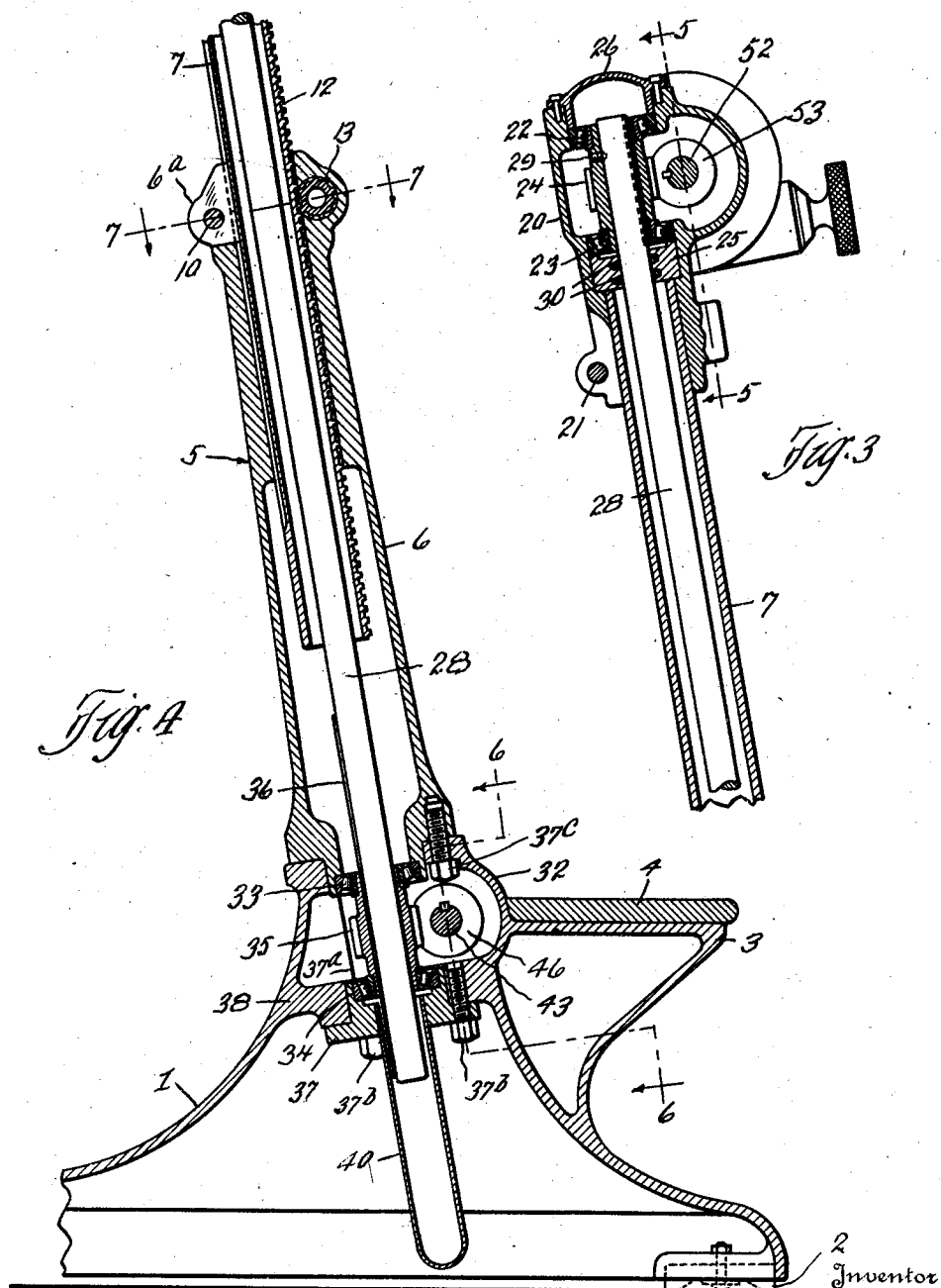
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3 Sheets-Sheet 2



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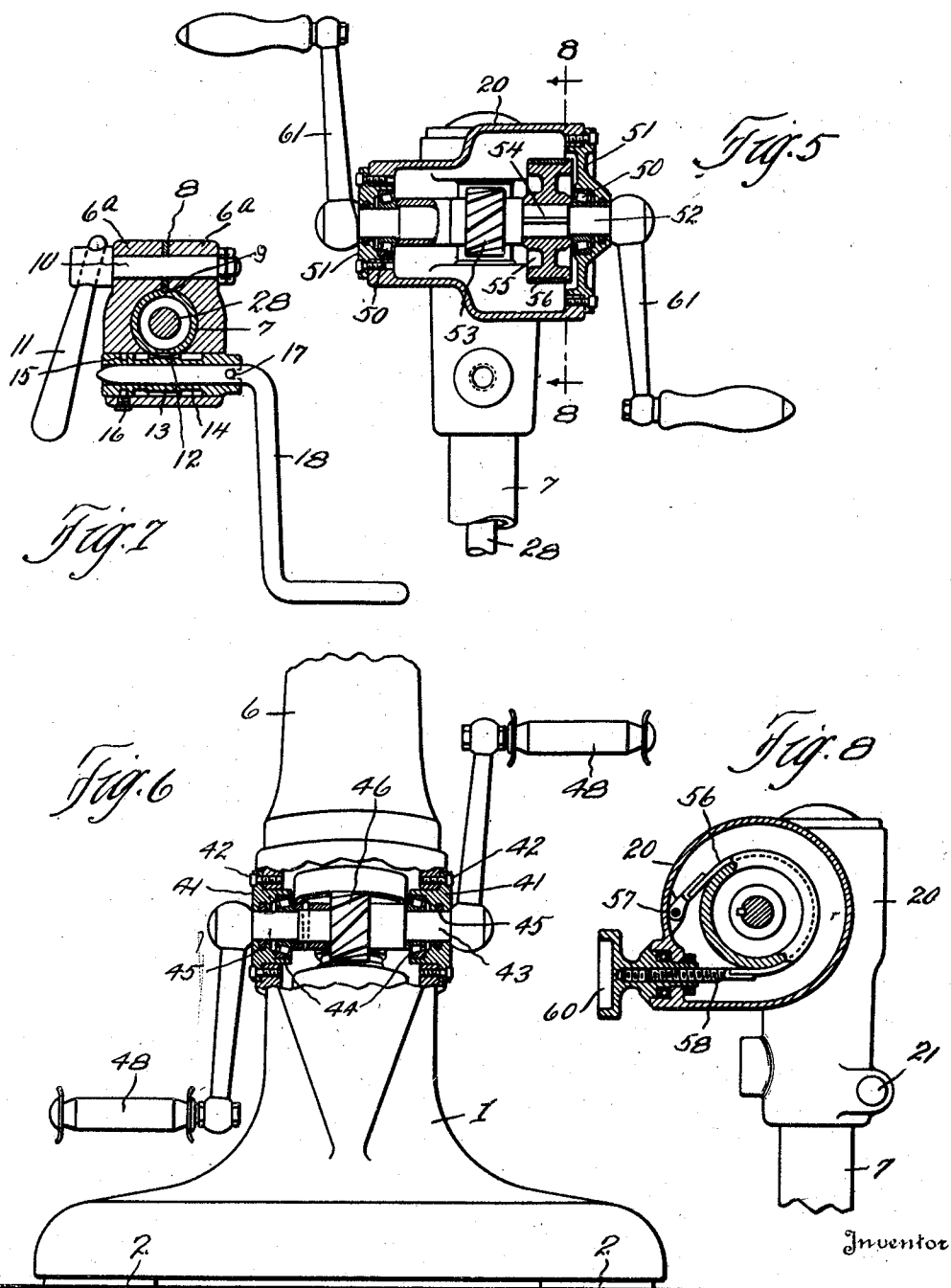
A. E. R. BLOMQUIST

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EXERCISING MACHINE

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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EXERCISING MACHINE

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The primary purpose of my present invention is to provide an exercising machine or apparatus that is especially convenient of use and, in its use, brings into play practically all muscles of the body.

Another object is to provide in such a machine or apparatus an adjustable means for resisting to a greater or less degree the action of the members of the body incident to the operation of the machine so that the machine may be adapted to the needs of individuals of varying strength, or to the gradually increasing strength of a given individual as his muscles become developed through the continued use of the apparatus.

According to the present preferred embodiment of the invention, it involves a crank action for the hands and a pedal action for the feet that are geared together; and a further object is to make such a machine readily adjustable to the heights of individuals of different sizes.

A still further object is to provide a relatively simple and very substantial and compact construction for a machine of the kind in question.

The foregoing objects, with others hereinafter appearing, are attained in the embodiment of the invention illustrated in the accompanying drawings wherein Fig. 1 represents a side elevation of a machine constructed in accordance with my invention; Fig. 2 shows the machine as viewed from the right of Fig. 1; Figs. 3 and 4 are central vertical sections, in a plane parallel to that of Fig. 1, through the upper and lower portions of the machine, respectively; Figs. 5 and 6 are sectional elevations substantially on the respective lines 5—5 of Fig. 3 and 6—6 of Fig. 4; Fig. 7 is a section on the lines 7—7 of Figs. 1 and 4, the adjusting crank being omitted in the latter views; and Fig. 8 is a sectional detail of the brake mechanism on the line 8—8 of Fig. 5.

The base of the machine, in the form of a

heavy and substantial casting, is designated 1, and the same is preferably supported from the floor by pads 2 of suitable material, such as rubber. The front side of the base is formed with a ledge 3 that supports a platform 4.

Rising from the base is a hollow telescopic column designated generally by the reference numeral 5 and comprising a lower section 6 and an upper section 7, the latter being vertically adjustable within the former section. As shown best in Figs. 4 and 7, the top of the section 6 is split on its rear side to provide separated ears 6^a between which is fitted a key 8 that engages within a keyway 9 on the rear side of the column section 7, to prevent said section 7 from rotating with respect to section 6. The key 8 is held in place, and the lugs 6^a are adapted to be drawn toward each other, by means of a bolt 10 that extends through aligned holes in said lugs and key and is adapted to be rotated by means of an operating handle 11. By tightening up this bolt and thus drawing the lugs toward each other, the split upper end of the section 6 is contracted about the section 7 to clamp the latter section securely against vertical displacement.

Teeth are cut in the front side of the section 7 from its lower end upwardly a suitable distance to form a rack 12 with which a pinion 13 meshes that is contained within a transverse bore 14 in the front, transversely enlarged portion of the upper end of column section 6. The pinion has hub extensions that are enlarged at their ends to effect a working fit within the bore 14 and one of said enlargements has a groove 15 for the reception of the reduced inner end of a screw 16 which serves to hold the pinion against longitudinal movement. The pinion has a central bore extending throughout its length and the enlargement of the pinion opposite that having the groove 15 projects beyond the adjacent side of the column section 6 and has diametri-

cally opposed notches within which are adapted to be engaged the ends of a pin 17 that is extended transversely through the shank of a crank 18 that is designed to be received by the bore of the pinion when it is desired to turn the same for the purpose of adjusting the column section 7 with respect to the section 6.

A housing 20 surmounts the column 5 and it is shown as secured to the upper end of the column section 7 by having its split lower end, that is of sleeve formation, contracted about and thus clamped to said section by means of a bolt 21. Supported in vertically spaced relation to each other by the housing 20 are anti-friction bearings 22 and 23 within which the ends of the elongated hub section of a pinion 24 are mounted. The bearings are spaced from each other by their engagement with shoulders on the hub of the pinion, and are maintained against longitudinal separation by the lower one, designated 23, resting upon a member 25 that is fitted within a counter-bored portion of the lower end of the housing 20 and by a cap 26 that closes an opening in the upper end of the housing through which the before-mentioned parts are inserted. The pinion 24 is shown as keyed to the upper end of a shaft 28, and is held against withdrawal from the shaft by means of a set screw 29. The shaft 28 extends downwardly through the column 5 and into the base 1, and where it passes through the bore of the member 25 it is engaged by packing rings 30 that prevent lubricant that is introduced into the housing 20 for the lubrication of the gearing contained therein from flowing down the shaft 28.

The top portion of the base 1 is formed to provide a casing 32 downwardly through which the lower end of the shaft 28 projects and supported within this casing in vertically spaced relation to each other are anti-friction bearings 33 and 34 that sustain the elongated hub of a pinion 35 that is slidably but non-rotatably mounted upon the shaft 28. A connection of this nature between the shaft and pinion is effected by an elongated key 36 that is carried by the shaft and that operates within a key-way in the hub of the pinion. The bearing 33 is fitted within the lower reduced end of the column section 6, where the latter is fitted within an aperture in the top of the base 1, while the bearing 34 is supported by a member 37 that fits within an opening of a transverse wall 38 that defines the bottom of the casing 32. The member is secured in place by bolts (one of which is shown at 37^a) that are extended upwardly through a flange of the member 37, through the wall 38, and are screwed into the lower end of the column section 6, and (where the gearing interferes with the use of through bolts) by a cap screw 37^b. A similar screw, designated 37^c and located

directly over the screw 37^b, secures the parts of the base and column together at this point. There are preferably two bolts 37^a and they and the screw 37^b may be spaced equal distances apart about the member 37. The shaft 28 is adapted to move vertically through the pinion 35 as the column sections 6 and 7 are adjusted with respect to each other, and fitted into the bore of the member 37 through which the shaft 28 projects is the upper end of a relatively deep cylindrical cup 40. This cup prevents lubricant, that is introduced into the casing 32 for the lubrication of the gearing contained therein, from dripping upon the floor.

Fitted into openings in the opposed side walls of the front portion of the casing 32 are caps 41 (Fig. 6) that are shown as held to said walls by screws 42. These caps have openings through which a shaft 43 extends, and said openings are counter-bored from their inner end to receive anti-friction bearings 44 for said shaft. Surrounding the reduced portions of said openings are packing rings 45 to prevent the egress of lubricant from the casing 32. Pinned or otherwise secured to the central portion of the shaft 43 is a pinion 46 that meshes with the previously mentioned pinion 35. These pinions are of the angle gear type. Suitably secured to the projecting ends of the shaft 43 are pedals 48.

A similar assembly to that just described is contained within the enlarged front portion of the housing 20 (Fig. 5). Supported, through suitable anti-friction bearings 50, by caps 51 that are fitted within apertures in the opposed side walls of the housing 20 are the reduced ends of a shaft 52. An angle pinion 53 is secured to the shaft 52 at about its longitudinal center, and the same meshes with the previously mentioned pinion 24. Secured to the shaft 52, as by means of a key 54, adjacent one side of the pinion 53 is a drum 55 whose grooved periphery is encircled by a brake band 56, one end of which is fastened at a point designated 57 (Fig. 8) to the housing 20 and to the other end of which is secured a screw 58 that operates within the threaded bore of a hand wheel 60 having a shank extension that is journaled within the wall of the housing. By turning the hand wheel, the screw 58 may be fed inwardly or outwardly to effect a tightening or loosening of the brake band 56 thereby to permit rotation of the shaft 52 with greater or less ease. Cranks 61 are suitably secured to the opposite ends of the shaft 52.

In the use of the machine it is first adjusted to suit the height of the user if such an adjustment is found necessary. This is accomplished by relaxing the screw 10 by means of the operating handle 11 and then inserting the shank of the crank 18 into the bore of the pinion 13 until the ends of the

pin 17 occupy the notches in the extended end of the pinion hub. The crank may then be turned to rotate the pinion 13 and, through its cooperation with the rack 12, adjust the column section 7 vertically with respect to the section 6. When the desired adjustment has been effected, the screw 10 is again tightened and the crank 18 removed so as not to interfere in any way with the movements of the user. The user then steps onto the platform 4 and, grasping the cranks 61, he steps onto the pedals 48 and rotates the cranks and pedals. This not only results in exercise to the arms and legs, but inasmuch as the pedals and cranks are synchronized in their action through the gearing above described, a sort of twisting and turning or weaving of the entire body results which brings into play practically all muscles of the body; and by adjusting the brake comprised of the drum 55 and the band 56 through the manipulation of the hand wheel 60, the machine may be caused to resist to any extent the desired arm and leg action of the user.

If it is desired to exercise only the arms, the user may stand on the platform 4 and manipulate the cranks 61; and in case it is only the leg exercise that is wanted, he may grasp the grip portions of a handle bar 65 that is supported by and is spaced rearwardly from the head 20 and step from the platform onto the pedals 48 and operate them. The handle bar 65 is sufficiently short to avoid interference between the operator's arms and the idling cranks 61.

Having thus described my invention, what I claim is:—

1. In a machine of the class set forth, the combination of a relatively heavy base incorporating a casing and a platform, a hollow column rising from the base, a housing surmounting said column, a shaft within the column and having its ends disposed within the housing and casing, a crank action carried by the housing, a pedal action carried by the casing, and driving connections between each of said actions and the shaft.

2. In a machine of the class set forth, the combination of a base, a hollow column rising therefrom and comprising telescoping sections whereby the height of the column may be adjusted, means for adjusting said sections with respect to each other, a housing surmounting the column, a crank action carried by the housing, a pedal action carried by the base, a shaft within the column and extending into the housing and base, and driving connections between said shaft and said crank and pedal actions.

3. In a machine of the class set forth, the combination of a base, a hollow column rising therefrom and comprising telescoping sections whereby the height of the column may be adjusted, means for adjusting said sections with respect to each other and for

locking the sections against relative movement, a housing surmounting all of the column, a crank action carried by the housing, a pedal action carried by the base, a shaft within the column and extending into the housing and base, and driving connections between said shaft and said crank and pedal actions.

4. In a machine of the class set forth, the combination of a base, a hollow telescopic column rising therefrom, a housing surmounting the column, a crank action carried by the housing, a pedal action carried by the base, a shaft within the column having its opposite ends disposed in the housing and in the base, and gearing effecting driving connections between said shaft and each of the aforesaid actions, one end of the shaft being vertically adjustable with respect to the said gearing.

5. In an exercising machine, the combination with a base, of a hollow column section rising from the base, a second hollow column section telescoping within the former section, the second section having a rack, a pinion rotatably supported by the first mentioned section for cooperation with said rack means for rotating said pinion, a housing surmounting the second column section, and a crank action carried by said housing, a pedal action carried by the base, and driving connections between said sections that are enclosed within the column sections and yield to the relative adjustment between said sections.

6. In an exercising machine, the combination with a base, of a hollow column section rising from the base, a second hollow column section telescoping within the former section, the second section having a rack, a pinion rotatably supported by the first mentioned section for cooperation with said rack, means for rotating said pinion, means for contracting the first mentioned section about the second section thereby to clamp the sections together against relative movement, a housing surmounting the second column section, and a crank action carried by said housing, a pedal action carried by the base, and driving connections between said sections that are enclosed within the column sections and yield to the relative adjustment between said sections.

7. In a portable exercising machine, the combination of a relatively heavy base having a platform, a column rising from the base and inclined to the vertical axis of the base in a direction away from said platform, a crank action carried by the upper end of the column, a pedal action carried by the base, and driving connections between said crank and pedal actions.

8. In a portable exercising machine, the combination of a relatively heavy base having a platform, a longitudinally extensible and contractible column rising from the base

and inclined to the vertical axis of the base
in a direction away from said platform, a
crank action carried by the upper end of the
column, a pedal action carried by the base,
5 and extensible and contractible driving con-
nections between said crank and pedal ac-
tions.

In testimony whereof, I hereunto affix my
signature.

10 AUGUST E. R. BLOMQUIST.

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