Feb. 21, 1928. 1,659,973

J. A. GOODNER

CONVEYER

Filed Jan. 3, 1927 3 Sheets-Sheet 1

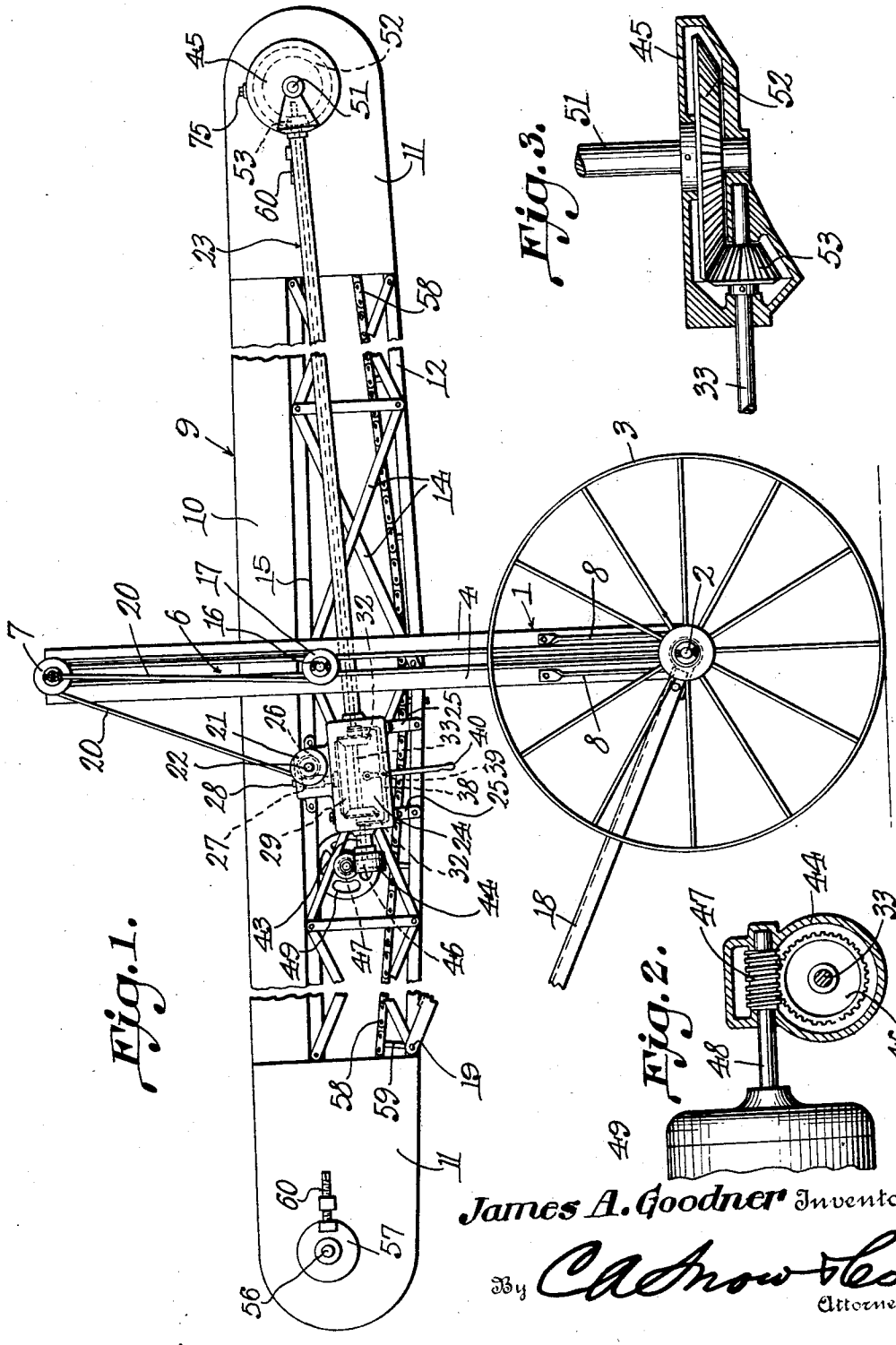


Fig. 1.

Fig. 3.

Fig. 2.

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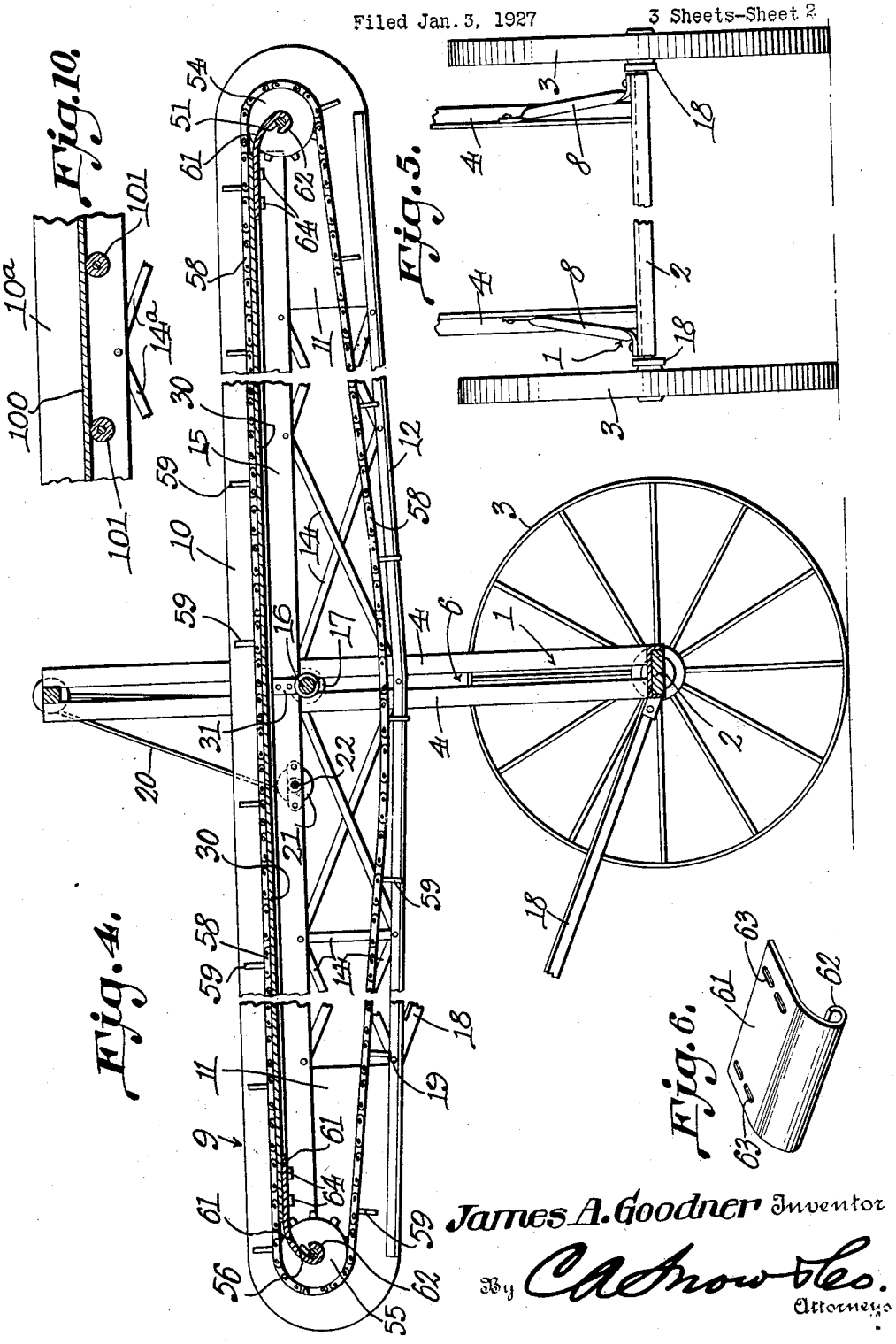


Fig. 10.

Fig. 5.

Fig. 4.

Fig. 6.

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CONVEYER

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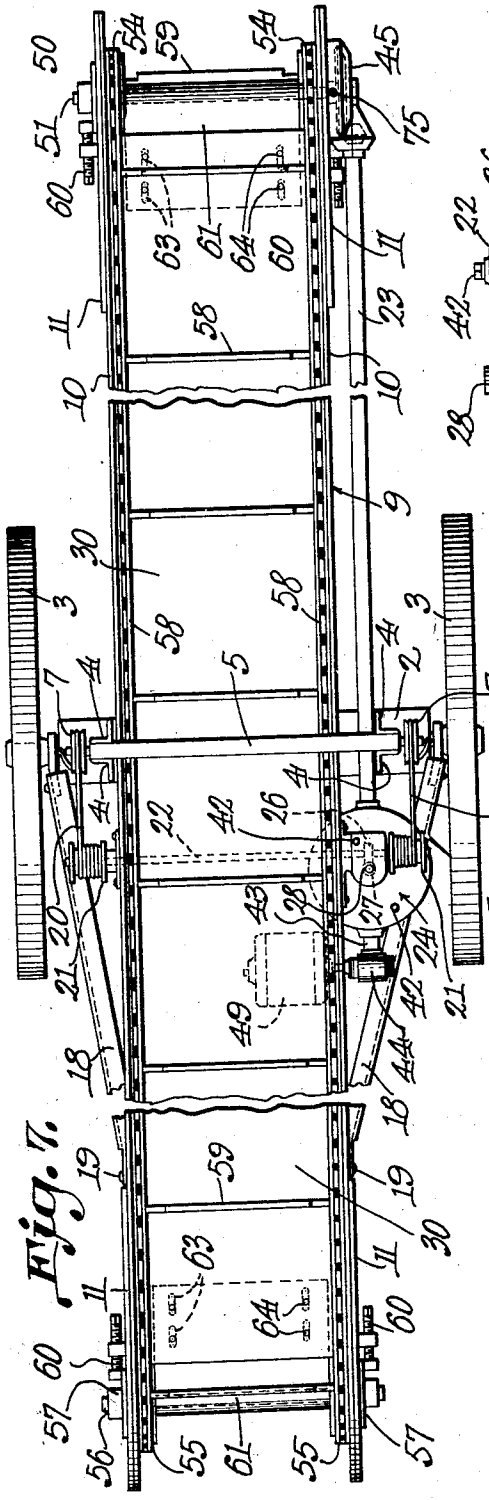


Fig. 7.

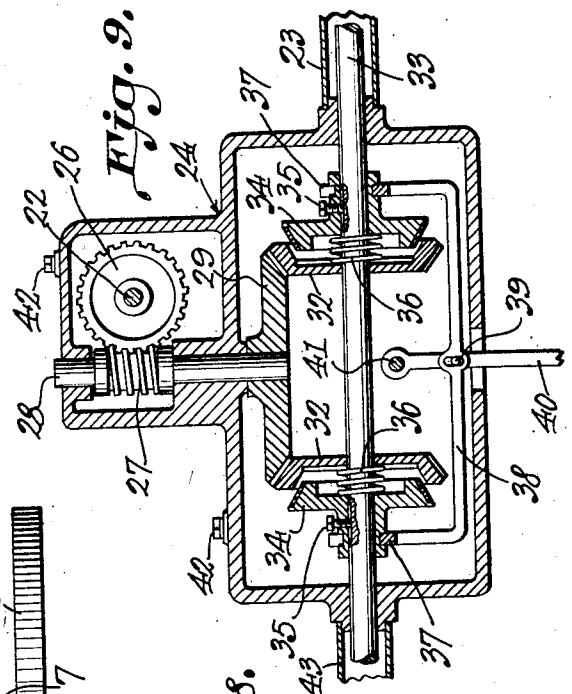


Fig. 9.

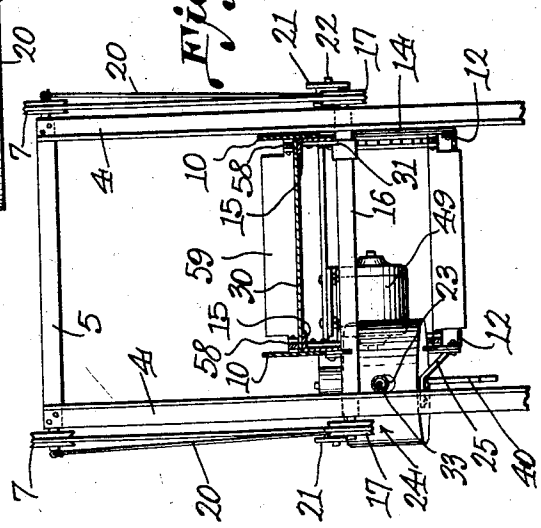


Fig. 8.

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Patented Feb. 21, 1928. 1,659,973

UNITED STATES PATENT OFFICE.

JAMES ANDREW GOODNER, OF ROCKY FORD, COLORADO.

CONVEYER.

Application filed January 3, 1927. Serial No. 158,641.

This invention aims to provide a portable conveyer and novel means for raising and lowering the conveyer, novel means being supplied for actuating the conveyer.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the invention appertains.

With the above and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

In the drawings:—

Figure 1 shows in side elevation, a device constructed in accordance with the invention, parts being broken away;

Figure 2 is a sectional detail of the motor drive;

Figure 3 is a sectional view showing one of the gear drives;

Figure 4 is a longitudinal section of the machine, parts being in section;

Figure 5 is a fragmental elevation disclosing a part of the truck;

Figure 6 is a perspective view illustrating one of the extensions of the platform;

Figure 7 is a top plan;

Figure 8 is a transverse section wherein parts are broken away;

Figure 9 is a sectional view of the gear housing and parts therein.

Figure 10 is a sectional view showing a slight modification.

The machine includes a truck 1 comprising an axle 2 on which ground wheels 3 are journaled. Standards 4 are disposed adjacent to the ground wheels 3 (Figure 5) and are secured to the axle 2, the standards each comprising a pair of angle members or the like which are spaced apart (Figure 1) to form guide slots 6, the constituent members of the standards 4 being sustained by braces 8 from the axle 2. A top bar 5 connects the standards 4 at the opposite sides of the machine, and spaces apart the constituent members of each standard, to form the guide slots 6. Sheaves 7 are journaled on the ends of the top bar 5.

A conveyer frame 9 is located between the standards 4 and includes side plates 10 connected to end members 11, bottom bars 12 connecting the end members 11, angle bars 15 secured to the side plates 10 and extended below the side plates, and truss work 14 at each side of the machine and joining the end members 11, the bottom bars 12 and the angle bars 15 that are joined to the side plates 10. The angle bars 15 support a fixed platform 30, that is located between the side plates 10, as seen in Figure 8. A supporting member 16 is connected at 31 to the vertical flanges of the angle bars 15 of the conveyer frame 9 and moves in the guide slots 6 of the standards 4 which form part of the truck 1. Pulleys 17 are journaled on the ends of the supporting members 16 for the conveyer frame 9. Braces 18 are pivotally mounted at their inner ends on the axle 2, and are pivoted at their outer ends, as shown at 19, to the bottom bars 12 of the conveyer frame 9.

Flexible elements 20 are secured to the ends of the top bar 5 of the truck frame, and are looped about the pulleys 17 on the supporting member 16 of the conveyer frame 9, the flexible elements being passed over the sheaves 7 and being extended, thence, downwardly, to and around drums 21 (Figure 7) mounted on a shaft 22 which is journaled (Figure 4) in the angle bars 15 of the conveyer frame, the shaft 22 extending into a box-like housing 24 (Figure 9) connected by angle brackets 25 (Figure 1) to one of the bottom bars 12 of the conveyer frame 9.

A worm wheel 26 is secured to the shaft 22 and is located within the housing 24, the worm wheel meshing with a worm 27, on a shaft 28 disposed at right angles to the shaft 22 and journaled in the housing 24. The shaft 28 carries a beveled gear 29 that meshes with a pair of beveled pinions 32 rotatable on a shaft 33 journaled in the lower part of the housing 24. Clutch members 34 are splined at 35 to the shaft 33 to rotate therewith and to slide therealong, compression springs 36 being interposed between the pinions 32 and the clutch members 34, to hold the pinions 32 in mesh with a beveled gear 29. The hubs of the clutch members 34 turn in the forks 37 of a U-shaped yoke 38 pivoted at 39 to a lever 40 fulcrumed at 41 on the housing 24. At this point it is to be observed that the housing 24 is provided with filling plugs 42 or the like, so that oil can be introduced into the housing, the various driving elements shown in Figure 9

working in oil, and being housed in, so that they cannot catch the garments of an operator. Safety thus is promoted, and is promoted, further, because the shaft 33 is located in a tubular casing 23 and in a tubular casing 43, the casing 43 being connected to a gear housing 44 (Figure 2) and the casing 23 being connected to a gear housing 45 mounted on one of the end members 11 near to one extremity of the conveyer frame 9.

On the shaft 33 (Figure 2) there is a worm wheel 46 located in the housing 44 and engaged with a worm 47 that is likewise located in the housing, the worm 47 being carried by a shaft 48 which constitutes part of an electric motor 49 or other prime mover, supported upon the conveyer frame 9. Although the shafts 48 and 33 are shown as connected (Figure 2) by a worm and pinion drive, any other suitable connection may be used at this point.

The forward end of the shaft 33 is journaled in the housing 45, as shown in Figure 3. In the housing 45 and in a bearing 50 on the opposite side of the conveyer frame, is journaled a shaft 51. The shaft 51 is connected to the shaft 33 by a beveled pinion 52 on the shaft 51, and a beveled pinion 53 on the shaft 33, as shown in Figure 3. There is a pair of sprocket wheels 54 on the shaft 51, a pair of sprocket wheels 55 being journaled on a shaft 56 carried by bearings 57 on the conveyer frame 9, the bearings 57, and the bearing 50, with the housing 45, being adjustable lengthwise of the machine, to tighten up a conveyer embodying chains 58 engaged about the sprocket wheels 54 and 55, the chains 58 being connected by blades 59 adapted to move along the platform 30, any suitable means, indicated at 60, being provided for shifting the shafts 51 and 56. It is to be observed that the conveyer frame 9 is open at the bottom and consequently, the blades 59 on the lower run of the chains 58 do not drag upon anything, friction being reduced. The numeral 61 marks plate-like extensions prolonged beneath the ends of the platform 30 and having curved flanges 62 engaged around the shafts 56 and 51. The extensions 61 are supplied with elongated slots 63 movable on securing elements 64 mounted on the end portions of the platform 30. The construction is such that when either of the shafts 51 or 56 is moved by the means indicated at 60, to tighten the belt conveyer, the extensions 61 will participate in this movement and will slide with respect to the platform 30. The purpose of the platform 30 and its extensions 31 is, of course, to prevent the material from dropping downwardly whilst the material is being advanced by the blades 59 of the conveyer chain.

Ordinarily, the clutches 34 are out of engagement with the beveled gears 32, as shown in Figure 9. Then, the motor 49 drives the shaft 48, and the shaft 33 is driven from the shaft 48 by any suitable means which may have been provided for that purpose, the preferred but not mandatory construction being the worm 47 and the worm wheel 46 of Figure 2. The beveled pinion 53 and the gear 52 of Figure 3 transmit motion from the shaft 33 to the shaft 51, and the sprocket wheel 54 on the shaft 51 operates the conveyer 58—59, to advance the material along the platform 30, it being possible to disclose the conveyer frame 9 and the conveyer at different angles with respect to the horizontal, so that the material will not only be moved horizonally, but vertically as well.

By means of the lever 40 and the yoke 38 either of the clutch members 34 may be engaged with the corresponding pinion 32, thereby to impart direct or reverse rotation to the shaft 28 and parts driven thereby. When the shaft 28 is rotated, the worm 27 and the worm wheel 26 rotate the shaft 22 and the drums 21, the flexible elements 20 being reeled on the drums, or being paid off from the drums, depending upon whether direct or reverse rotation is imparted to the beveled gear 29 from the shaft 33. Noting the disposition of the flexible element 20 (Figure 1) with respect to the sheaves 7 and the pulleys 17, it will be clear that the flexible elements constitute means for raising and lowering the conveyer frame 9, the supporting member 16 moving in the guide slots 6 of the standards 4.

The gears 53 and 52 of Figure 3 run in oil in the housing 45, adequate lubrication being provided and it being impossible for the gear members 53 and 52 to become jammed with foreign material, or be caught in the clothing of an operator. A filling plug 75, indicated in Figure 7, affords means whereby a lubricant can be introduced into the gear housing 45.

In Figure 10 parts hereinbefore described are designated by numerals previously used with the suffix "a". The conveyer chains 58 are done away with, the conveyer being in the form of a belt 100 supported upon spaced rollers 101 journaled on the side plates 10^a, the platform 30 being omitted.

As soon as the lever 40 is released, the springs 36 operate to move the clutches 34 out of engagement with the gears 32. The result is, that when the lever 40 is released, there is no danger that the machine will continue to operate to its destruction. In view of the foregoing, the reversing device may be alluded to as being automatically shiftable to a neutral position.

What is claimed is:—

1. In a device of the class described, a truck, a guide on the truck, a conveyer frame, means for mounting the conveyer

frame intermediate its ends on the guide for tilting movement and for raising and lowering, a conveyer movable on the conveyer frame, a motor on the conveyer frame, mechanism for connecting the motor with the conveyer, and mechanism for connecting the motor with the conveyer frame to raise and lower the conveyer frame.

2. In a device of the class described, a truck, a guide on the truck, a conveyer frame provided with a platform, means for mounting the conveyer frame intermediate its ends on the guide for raising and lowering and for tilting movement, a conveyer movable along the platform, means for supporting the conveyer and including a shaft adjustable on the frame to tighten the conveyer, means for shifting the shaft to tighten the conveyer, an extension slidable on the platform and connected to the shaft, a motor on the conveyer frame, mechanism for connecting the motor with the conveyer, and mechanism for connecting the motor with the conveyer frame to raise and lower the conveyer frame.

3. A device of the class described, constructed as set forth in claim 1, and further characterized by a reversing device connecting said mechanisms and automatically shiftable to a neutral position thereby to render the mechanism for connecting the motor with the conveyer frame inactive.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

JAMES ANDREW GOODNER.