Jan. 30, 1923. 1,443,927.

F. PRUAÑO.

APPARATUS FOR TRANSPORTING AND WEIGHING LOADS.

FILED JULY 27, 1920. 3 SHEETS—SHEET 1.

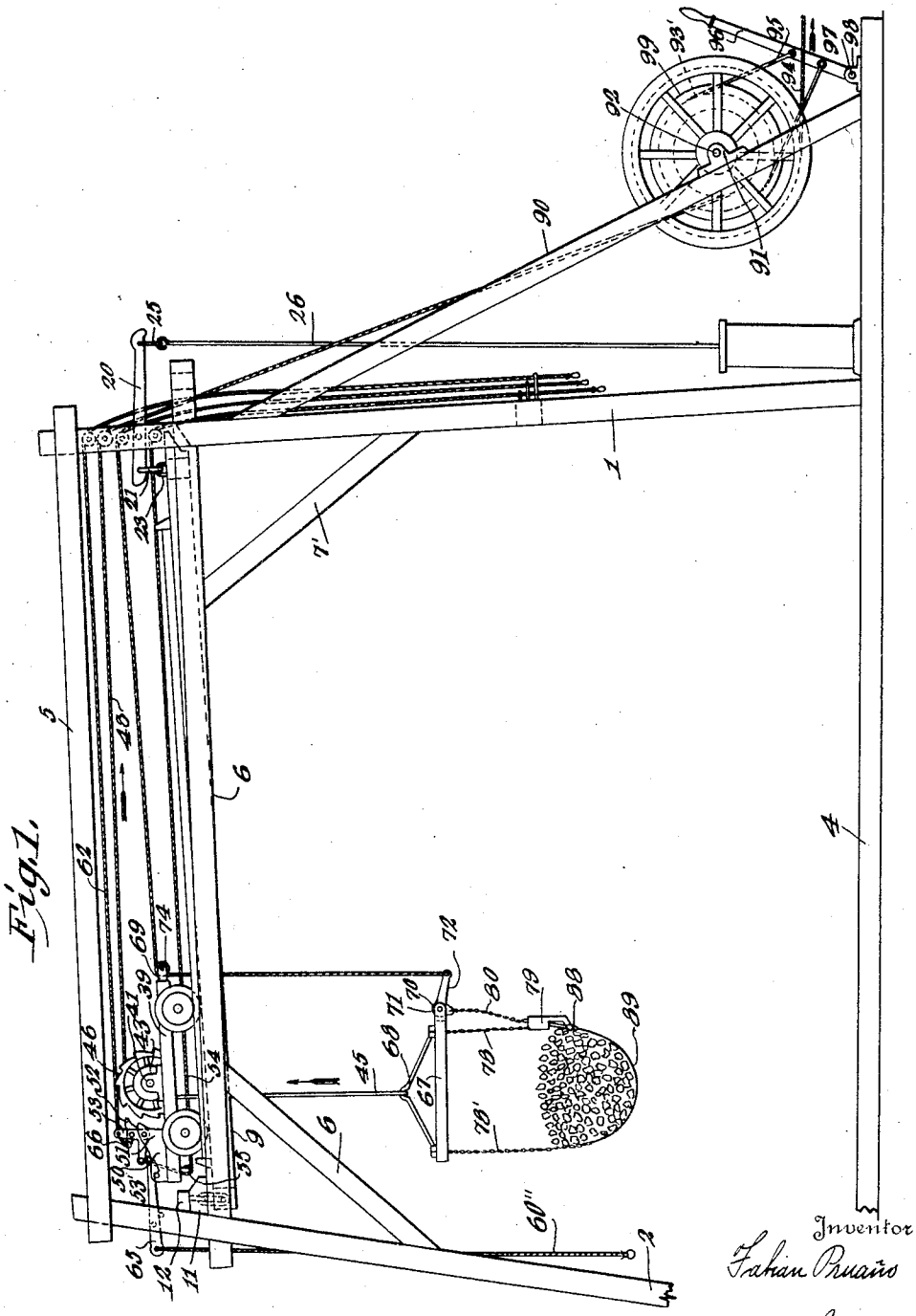


Fig. 1.

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Fig. 3.

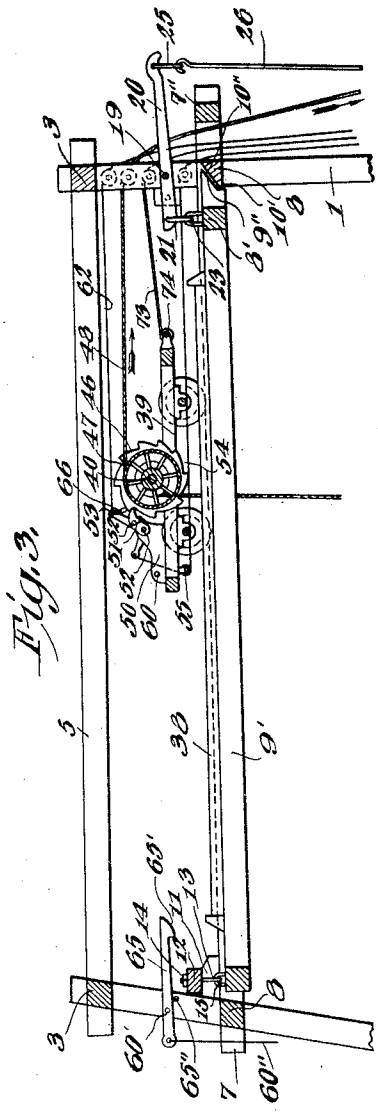
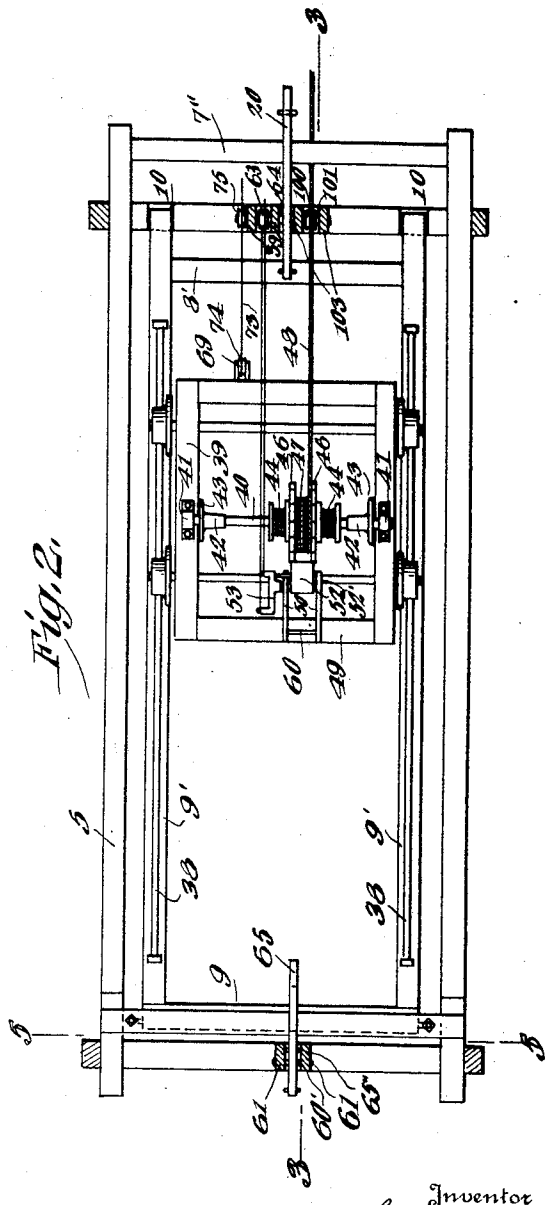


Fig. 2.



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FILED JULY 27, 1920. 3 SHEETS—SHEET 3.

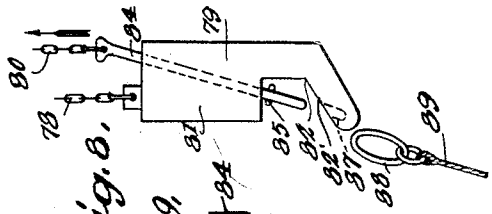


Fig. 8.



Fig. 9.

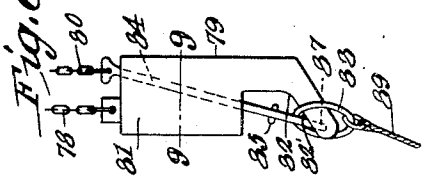


Fig. 6.

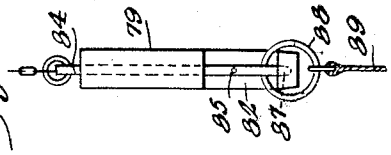


Fig. 7.

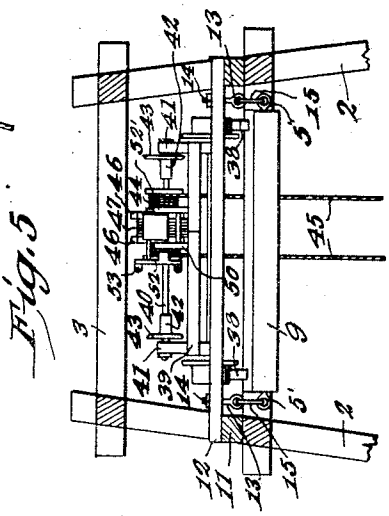


Fig. 5.

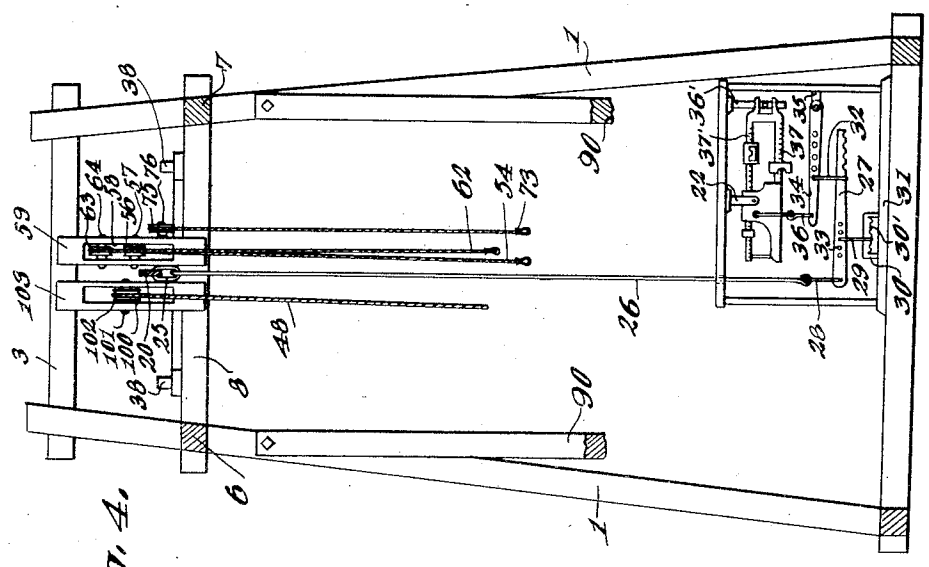


Fig. 4.

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Patented Jan. 30, 1923. 1,443,927

UNITED STATES PATENT OFFICE.

FABIÁN PRUAÑO, OF FALLA, CUBA.

APPARATUS FOR TRANSPORTING AND WEIGHING LOADS.

Application filed July 27, 1920. Serial No. 399,425.

To all whom it may concern:

Be it known that I, FABIÁN PRUAÑO, a subject of the King of Spain, and a resident of Falla, municipal district of Moron, Province of Camaguey, Cuba, have invented certain new and useful Improvements in Apparatus for Transporting and Weighing Loads, of which the following is a specification.

This invention relates to apparatus for transporting and weighing loads, and is particularly adapted to transport sugar cane from the horse-drawn carts to railroad cars, and its object is to provide certain improvements in the construction of such apparatus, particularly in the platform scale forming part of the supporting frame and in the weighing scale connected thereto, whereby the exact weight of the load may be obtained. The improvements comprise also a new construction of sling releasing hook, which besides being securely held can be readily released when so desired.

It also comprises a modification in the apparatus which prevents the load from falling down with the hoisting apparatus and whereby the movement of the hoisting means may be used to move the load from the carts to the railway cars and further provides a safe holding means for the load carrier once the same reaches the place where it should stop for receiving the load.

The invention is described with reference to the figures of the annexed drawings, in which:

Fig. 1 is a side elevation of an apparatus provided with the improvements forming the subject matter of this invention.

Fig. 2 is an upper plan view thereof.

Fig. 3 is a longitudinal vertical section on line 3—3 of Fig. 2, showing only the upper portion of the supporting frame.

Fig. 4 is an end elevation of said apparatus with parts omitted.

Fig. 5 is a vertical section on line 5—5 of Fig. 2 showing only the upper portion of the supporting frame.

Fig. 6 is an enlarged detail showing in side elevation and in secured position, the releasing hook forming part of this invention.

Fig. 7 is a detail of the same releasing hook in front elevation.

Fig. 8 is a side elevation view of said releasing hook in its released position.

Fig. 9 is a horizontal section thereof on line 9—9 of Fig. 6.

This apparatus comprises a stationary frame formed of a base 4 having a pair of corner posts 1 and 2 at each end. The pair indicated by the numeral 2 are slightly the shorter and all are inclined upwardly. These posts are connected at their upper ends by cross bars 3 and longitudinal beams 5. A little below the beams 5 are fitted cross bars 8 and longitudinal beams 6 and 7. It will be noted that all of the longitudinal beams 5, 6 and 7 slope downwardly toward their ends connected to the corner posts 2. The higher ends of the beams 7 extend out beyond the posts 1 and are connected at their outermost portion by a cross-bar 7″ and are further reinforced by the braces 6′ and 7′ fixed to the oblique posts 1 and 2. The beams 6 and 7 are also connected by bolsters 8 in front of the posts 1 and 2.

Within the supporting frame formed by the beams 6 and 7 and cross-bars 3 is pivotally mounted a scale frame 9 whose side beams 9′ extend beyond a cross-bar 8′ at the higher end of the scale frame. The tips of these ends of the beams 9′ are beveled as indicated at 9″ and present a surface 10′ for lodging in recesses 10 formed near the ends of the cross-bar 8 connecting the corner posts 1. The bottom of these recesses 10 are beveled as indicated at 10″.

At the lowermost end of the supporting frame of the apparatus are blocks 11 fixed on the beams 6 and 7 and on these blocks 11 rest the ends of the cross-bar 12. Eye-bolts 13 extend downwardly from this cross-bar 12 and fixed thereto by nuts 14. Through the eyes of the bolts 13 are inserted the links 15 which engage the horizontal eye-bolts 5′ fixed to the corresponding end of frame 9.

Between the cross-bars 8 and 3 in front of the opposite end of the scale frame are fixed two standards 59 and 103 provided with longitudinal slots, there being arranged between said standards 59 and 103 a lever 20 pivotally mounted on the short horizontal shaft 19 fixed between said standards and which lever is connected through its shorter arm to the scale frame 9 by means of staples 21 and 23 the latter being fixed to the top of the end cross-bar 8′ of the scale frame 9. At the end of its longer arm projecting out beyond the supporting frame, said lever 20 is connected by means of a

staple 25 with a long vertical rod 26 carrying a link 28 which connects it with an end of a scale lever 27 and said scale-lever is movably connected through a brace 29 to the support 30 fixed on the lower part of scale box, the lower edge of said lever 27 and that of the upper portion of said support 30 being indented as indicated in 30′ and in which rest the links 29 and 32. The links can be moved along the teeth to the front or to the rear for constituting a set of differential levers upon being connected in one of the longitudinally spaced holes 33 in the scale lever 27 and on the other scale lever 34 which is pivoted at one end to the supporting arm 35 fixed to one side of the scale box. Lever 34 is also connected to the link 36 and so exerts its action directly on the system of double beams 37 and 37′ of the scale which double beam system hangs from support 22 fixed to the upper part of the box and with an end slidably mounted along the guiding bar 36′ normally fixed to the upper part of the scale frame.

On beams 9′ of the scale frame are arranged the rails 38 on which runs the load carrier or carriage 39 on proper wheels and this carriage has mounted on the upper middle portion of its frame a horizontal shaft 40 rotating in bearings 41 fixed to said frame and which shaft carries on its end the sleeves 42 terminated in integral flanges 43 intermediately of which are securely mounted the drums 44 for winding the suspension cables 45 of the hoisting apparatus. On the middle portion of shaft 40 is securely mounted the drum 47 having a ratchet wheel 46 at each end and being rigidly connected to the adjacent drums 44, this drum 47 being designed for rolling the carriage operating cable 48. On the end 49 of the carriage corresponding to the lowermost part of the apparatus is fixed a support 50 from which project into the frame of the carrier two side plates 51 between which is pivotally mounted the pawl 52 on a short shaft 52′ pawl 52 engages the teeth of the ratchet wheel 46 and 52 is operated by a bell crank 53 fixed to shaft 52′ at the side of the support 50. At the end of one of the arms of bell-crank 53, in 53′, is tied the end of a cable 54 passing beneath the guiding pulley 55 on the lower part of the carrier and thence to the pulley 56 loosely mounted on the short horizontal shaft 57 fixed in the slot 58 formed in the standard 59. To the end of the other arm of the bell-crank 53 is tied another cable 62 which passes above another guide pulley 63 loosely mounted on a short shaft 64 above the pulley 58 and fixed on the same standard 59, the cable 54 as well as cable 62 hanging down to the reach of the operator. From the end of the bell crank 53 where the cable 62 is secured hangs a counterweight 66 for a purpose that will be hereinafter explained.

Between the side plates 51 of support 50 and towards the rear part thereof is fixed the horizontal bar 60. Fixed on the cross-bars 8 and 3 of that end of the frame are the uprights 61 between which is pivotally mounted on shaft 60′ the lever 65 terminating at its lower end in a pawl 65′ held in horizontal position by the stop pin 65″ horizontally fixed on the same uprights 61. The end of lever 65 projecting out of the supporting frame of the apparatus has attached thereto the releasing cable 60″ within the reach of the operator.

On the drums 44 are wound in the manner explained the cables 45 for suspending the frame of the hoisting apparatus. This hoist is simply formed by a frame 67 on whose upper part is fixed the inverted V-shaped supports 68 to which are secured the ends of the cables. In front of the frame swings the sling releasing lever 71 actuated by the arm 72 fixed to its middle portion and to the ends of which is connected the line 73 passing over the guide pulley 74 loosely mounted in the horizontal supporting bracket 69 fixed to one end of the carrier. Said line 73 passes thereafter through the guide pulley 75 loosely mounted on a horizontal shaft 76 fixed to the side of the standard 59.

From the sides of the frame of the hoisting apparatus 67 are suspended two chains 78 and 78′, one of which 78, carries the releasing hook 79. A releasing chain 80 for the hook 79 is tied at its upper end to the releasing lever 71. The releasing hook 79 is formed of an integral piece whose body portion 81 is of rectangular parallelopiped form, having a recess 82 in its lower portion whose lower surface 82′ is sloped downwardly and outwardly. The body 81 has a bore 83 running in diagonal direction from the upper face thereof to the upper surface of the recess 82 and in said bore is slidably arranged the latch 84, the upper and headed end of which projects out of the body 81 and to which is connected the lower end of releasing chain 80. Through the lower end of latch 84 is fitted a stop pin 85. The lower surface 82′ of the recess 82 has an inclined recess 87 therein which receives the lower end of latch 84 when in position to secure link 88 connected to the sling 89 tied on the end of the chain 78′.

To the main frame described there is fixed a supplemental frame formed by posts 90 which are secured to the base 4 and are inclined upwardly to rest against the posts 1. On the lower part of said posts 90 are fixed bearings 91 in which is mounted the shaft 92 of a driving system formed by a drum 93′ on which is reeled the driving cable 94 and another brake wheel surrounded by the friction strap 95 actuated by the lever 96 pivoted at 97 to the support 98. Fixed between said wheels and on the same shaft 92 there is the

drum 99 for rolling the cable 48 and which cable is directed upwards passing above the loose pulley 100 mounted on the horizontal shaft 101 fixed through the pulley slot 102 of standard 103 whose upper and lower part are recessed for being fixed to the cross-bars 3 and 8 of the supporting frame. This cable is reeled on the drum 47 arranged between the two ratchet wheels 46.

The operation of the apparatus is as follows: At the outset it will be observed that the bundle of cane is lifted in the hoisting apparatus 67 from a cart and the carriage 39 passes to the other end of the scale frame 9. This scale frame oscillates on the eye-bolts 5′ which are fixed to the sides of one end thereof, and which are suspended from the staples 15 and eye-bolts 13. This transmits the force of the weight of the suspended cane to the lever 20 mounted on the standard on the cross-bar 8 of the frame and said lever 20 transmits the weight to the double lever scale 37. The raising of the hoisting apparatus 67 is effected when the carriage 39 is at the lowermost part of the supporting frame by rolling the suspension cables 45 on drum 93′ by the action of an animal pulling on the driving cable 94. The cable 48 will then unwind from drum 47 and the cables 45 will be coiled on the drums 44, and in that position the carriage 39 is held by lever 65 whose pawl 65′ catches the bar 60 of the carriage, and is adapted to be released by the line 60″. The hoist is kept in its raised position by the pawl 52 which catches the teeth of the ratchet wheel 46. In order to lower the hoisting apparatus 67, the lever 96 which actuates the band 95 is operated and pawls 65′ and 52 are released so that by gravity the hoist 67 will drop and will unwind cable 45 and will thus coil cable 48 on drum 47, and from drum 93′ to draw the carriage up the incline. In order to release the bundle of cane to load it on a car, it will only be necessary to pull the line 73 which swings the sling releasing lever 71 which in turn pulls chain 80 and raises latch 84, thereby freeing the links 88 connected to the sling 89. It will be noted that throughout all the movement of the carriage, the pawl 52 is held against the ratchet wheel 46 by the counterweight 66, and so will prevent the fall of the hoisting apparatus.

It is obvious that the details of construction can be varied without altering the spirit of the invention which is as pointed out in the appended claims.

What I claim is:

1. In a weighing and transporting apparatus, the combination of a stationary frame, a scale frame mounted in said stationary frame, a carriage adapted to move upon said scale frame, means to move said carriage, load hoisting means carried by said carriage, and means whereby said carriage will be moved by the movement of said load hoisting means.

2. In a weighing and transporting apparatus, the combination of a support, a scale frame carried by said support, a carriage adapted to be moved upon said scale frame, a winding drum carried by said carriage, an operating cable having one end thereof wound upon said drum, a second cable wound upon said drum, load receiving means on said second cable the downward movement of which will cause the drum to rotate to wind said first named cable thereon to move the carriage along the scale frame.

3. In a weighing and transporting apparatus, the combination of an inclined supporting frame, a carriage adapted to be moved thereon, a winding drum upon said carriage, an operating cable, one end of which is attached to said drum, a second cable wound upon said drum, load receiving means carried by said second cable, the downward movement of which will cause the drum to rotate to wind said first named cable thereon to move the carriage up the inclined support, and means whereby said drum will be held against rotating to lower said load receiving means should said first named cable part.

4. In a weighing and transporting apparatus, the combination of a stationary frame, a scale frame carried by said stationary frame, a carriage adapted to be moved upon said scale frame, a winding drum carried by said carriage, a winding drum carried by said stationary frame, a cable wound upon said drums, means to rotate said second named drum, and means to hold it against rotation, a second cable wound upon the drum on said carriage, load receiving means on said second cable the downward movement of which will cause the drum on said carriage to rotate to wind said first named cable thereon to move the carriage on said scale frame when the drum carried by said stationary frame is held against rotation, and means to hold said carriage stationary whereby the rotation of the drum on said stationary frame winding said first named cable thereon will cause the drum on said carriage to rotate to raise said load receiving means.

In witness whereof I affix my signature.

FABIÁN PRUAÑO.