Jan. 28, 1930. G. L. SHERWOOD 1,745,276

TOY ELECTRIC CRANE

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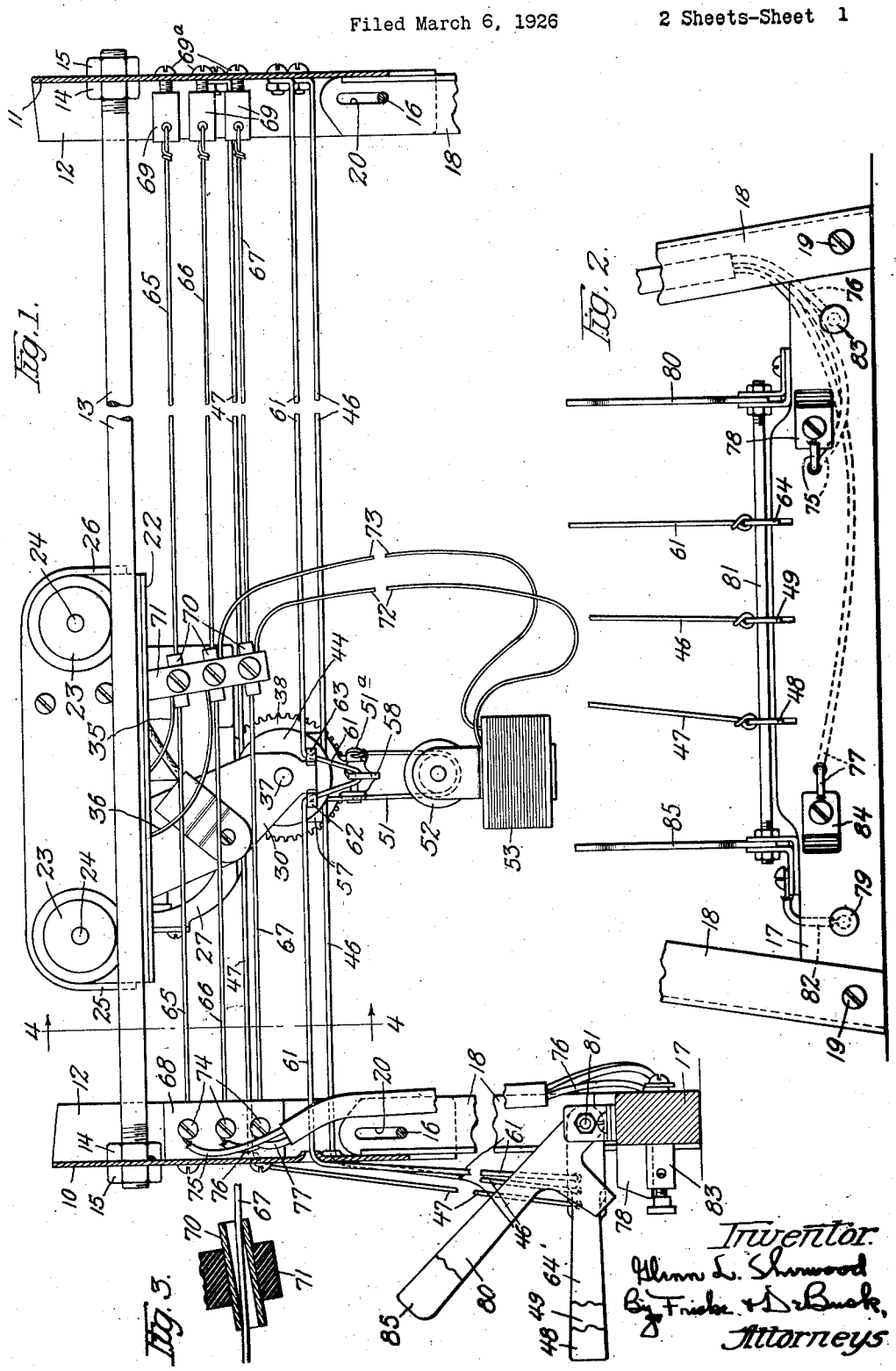


Fig. 1.

Fig. 2.

Fig. 3.

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Fig. 4.

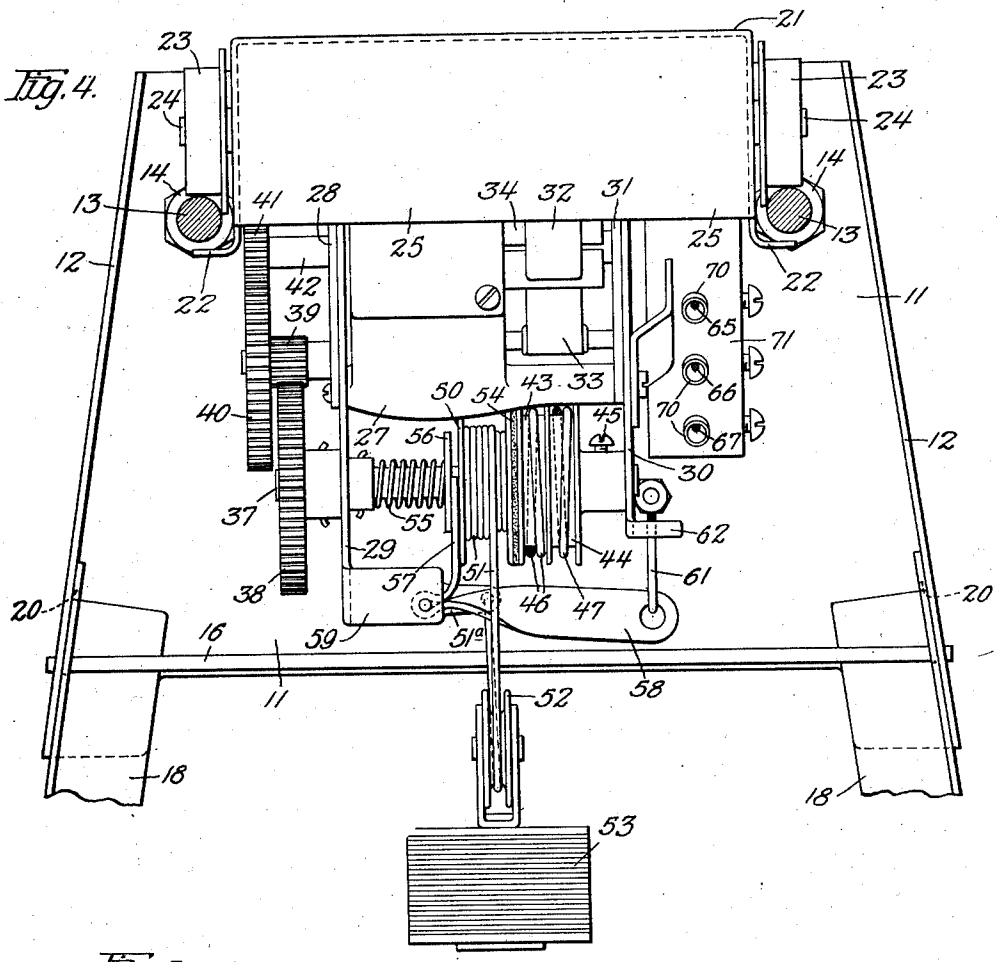


Fig. 5.

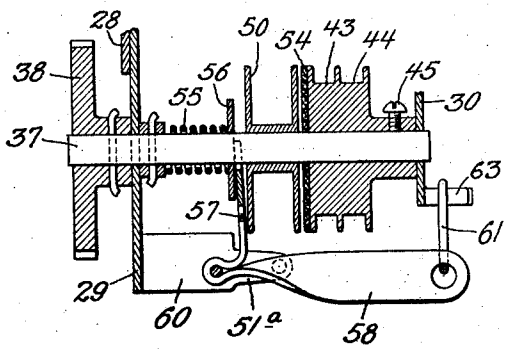
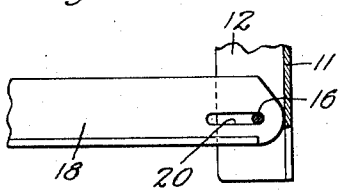


Fig. 6.



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UNITED STATES PATENT OFFICE

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TOY ELECTRIC CRANE

Application filed March 6, 1926. Serial No. 92,677.

My invention relates to toy electric cranes and particularly to devices of this type involving the use of electromagnets for the lifting and carrying elements of the cranes. It is the object of my invention to provide an improved form and arrangement of framework capable of being very readily and quickly folded for purposes of storage or transportation; to provide an improved arrangement of tackle for raising and lowering the magnet with respect to the carriage of the crane, and particularly with reference to the control and operation of the tackle as the carriage changes position along its track; to provide an improved and simplified arrangement of means for effecting the movements of the carriage in one direction or the other along the track; to provide an improved arrangement of electric connections between the movable carriage and the source of electric energy for the energizing of the lifting magnet and the operation of the motor by which the carriage is moved back and forth and by which the magnet is raised and lowered as desired; to improve in particular the means by which the electric current is transferred from the trolley wires for the use of the magnet and the motor; to provide improved means for mounting the trolley wires in operative position; and to improve devices of this type in sundry details hereinafter pointed out.

The preferred means by which I have accomplished my several objects are illustrated in the accompanying drawings and are hereinafter specifically described. That which I believe to be new and desire to cover by Letters Patent is set forth in the claims.

In the drawings

Fig. 1 is a side view of my improved crane, partly in section, and partly broken away.

Fig. 2 is an end view of a fragmentary portion of the device as seen from the left in Fig. 1.

Fig. 3 is an enlarged detail view in vertical section, showing the form of connections between the carriage and the trolley wires.

Fig. 4 is an enlarged detail view, being substantially a vertical section taken at line 4—4 of Fig. 1.

Fig. 5 is a vertical sectional view through the drum assembly of the carriage; and

Fig. 6 is a fragmentary view, partly in section, showing a changed position of certain of the frame parts.

Referring to the several figures of the drawings, in which corresponding parts are indicated by the same reference characters,—10 and 11 indicate end plates in spaced relation, being formed of sheet metal and being provided with inwardly projecting flanges 12 at both side edges thereof. The two plates 10 and 11 are held in spaced relation with respect to each other by means of bars 13 at opposite sides of the plates, said bars being provided with nuts 14 secured by means of screw threads on opposite ends of the bars on the inner faces of the plates and provided with nuts 15 secured by means of screw threads upon the outer faces of the plates, the arrangement being such that the bars and nuts serve to hold the plates very strongly in fixed position with respect to each other. At their lower ends, the plates 10 and 11 are provided with pivot pins 16 extending across their inner faces, being mounted in suitable openings in the flanges 12. Upon the pivot pins 16, there are mounted standards for supporting the framework comprising the plates 10 and 11 and the bars 13 in elevated position, each of the standards comprising a cross bar 17 and two upright angle bars 18, the bars 18 being preferably secured to the cross bars 17 by means of screws 19, as is best shown in Fig. 2. The pivotal connections between the standards and the pins 16 comprise slots 20 in the bars 18, the arrangement being such that the standards can be moved downwardly to bring the upper ends of the slots into engagement with the pins 16, as illustrated in Fig. 6, so that the standards can be swung inwardly toward each other, or the lower ends of the slots can be in engagement with the pins 16, as shown in Fig. 1, in which position the bars 18 are locked against swinging movement by their engagement with the end plates 10 and 11. The arrangement is preferably such that the standards are held by friction in their locked position as shown in Fig. 1, while at the same time being ca-

pable of ready adjustment to the position illustrated in Fig. 6.

The bars 13 are designed to be in parallel relation so as to enable them to serve as the rails of a track for movably supporting the carriage upon which the load carrying device is mounted. This carriage, in the construction shown, comprises a frame in the form of a sheet of metal 21 bent into channel formation, as is clearly indicated in Fig. 4, the leg portions of the channel being provided at their lower edges with outwardly extending flanges 22 underlying the rails 13. The carriage is supported in position upon the frame by means of carrying wheels 23 of any approved type mounted upon axles 24 journalled in the legs of the channel 21. In the construction shown, the end portions of the plate 21 are also bent downwardly for closing the ends of the frame, such downwardly bent portions being indicated by the numerals 25 and 26.

The means for moving the carriage along the rails 13 comprises an electric motor 27 of any approved type rigidly mounted upon the frame of the carriage on the bottom face thereof. Inasmuch as the particular form of connections between the motor and the carriage frame forms no part of my present invention, it is not believed to be necessary to illustrate it in detail, inasmuch as any suitable means may be employed for this purpose. In the construction shown, the framework comprises plates 28, 29, 30 and 31 which are secured in any suitable manner to the carriage. The form of the motor also is of no particular importance, except that the motor may be a non-reversible motor of any approved type. In the construction shown, brushes 32 and 33 are shown in contact with opposite faces of a commutator 34, the circuit wires leading to the motor being indicated by numerals 35 and 36, as shown in Fig. 1.

Rotatably mounted between the frame plates 29 and 30 there is a shaft 37, best shown in Fig. 5, such shaft being provided with a gear 38 which is driven by a pinion 39 formed with a gear 40 revolubly mounted upon the framework, the gear 40 in turn being driven by a pinion 41 carried by the drive shaft 42 of the motor.

As is clearly shown in Fig. 5, the shaft 37 is provided at one end with two drums 43 and 44, in the construction shown said two drums being formed integrally with each other, and being held in fixed position with respect to the shaft 37 by means of a set screw 45. For effecting movement of the carriage in either direction upon the rails 13, flexible lines 46 and 47 are stretched across the framework of the carriage, such lines being wrapped in opposite directions about the drums 43 and 44 respectively.

The lines 46 and 47 are secured in fixed position upon the plate 11 at one end of the frame, and at the opposite end of the frame extend through suitable openings in the plate 10, from which they extend downwardly on the outer face of the standard into close proximity to the cross bar 17 where they are connected to levers 48 and 49 pivotally mounted upon such cross bar 17. The lines 46 and 47 are normally loose enough to permit the drums 43 and 44 to slip with respect thereto, but when one of the levers 48 or 49 is moved downwardly so as to tighten the corresponding cord the carriage is caused to move along the rails 13 in one direction or the other depending upon which of the cords is tightened. As will be readily understood, when the drums 43 and 44 are rotated in clockwise direction in Fig. 1, when the arm or lever 48 is moved downwardly for tightening the cord 47 the carriage will be moved toward the left in said Fig. 1. When, however, the arm or lever 49 is moved downwardly for tightening the cord 46, the carriage will be moved toward the right in Fig. 1,—with the motor and the drums 43 and 44 still running in clockwise direction in said figure.

For connecting a load carrying device with the carriage so as to be movable upwardly and downwardly with respect to the carriage, I have provided a drum 50 loosely mounted upon the shaft 37, such drum being provided with a flexible line 51 wound thereon, the line 51 extending from the drum about a pulley 52 revolubly mounted upon the upper face of the load carrying device 53, in the construction shown, the load carrying device 53 being in the form of an electromagnet. As is best shown in Fig. 4, the end of the flexible line after passing about the pulley 52 extends upwardly for connection with a bracket 51ª supported from the frame plate 29. The means for driving the drum 50 comprises a friction clutch disk 54 mounted loosely upon the shaft between the drum 50 and the drum 43, such disk being adapted to cause the drum 50 to rotate with the drum 43 when the drum 50 is pressed toward the right into contact with the friction disk 54. For holding the drum 50 in operative contact with the disk 54, I have provided a spring 55 about the shaft 37, such spring bearing at one end against a plate 56 through which pressure is adapted to be applied to the drum 50. The flexible line 51 is to be wound about the drum 50 in such direction that when the drum 50 is rotated in clockwise direction in Fig. 1 with the drum 43, the cord 51 will be wound about the drum for raising the load carrying device 53. The arrangement is such that when the load carrying device reaches the upper limit of its movement the drum 50 slips with respect to the drum 43 so that the load carrying device is maintained in its uppermost position without putting any undue strain upon the mechanism, the pressure of the

spring 55 being very light for effecting this result.

For permitting downward movement of the load carrying device 53, I have provided a trigger comprising an upwardly extending arm 57 and a horizontally extending arm 58, the trigger being pivotally mounted upon a horizontal axis upon arms 59 and 60 formed integrally with the plate 29. The upwardly extending arm 57 of the trigger is interposed between the plate 56 and the drum 50 in such position that upon an upward movement of the arm 58 the plate 56 is moved toward the left in Figs. 4 and 5 for taking the pressure of the spring 55 away from the drum 50, whereupon the drum 50 is permitted to rotate in counter-clockwise direction in Fig. 1 for permitting the magnet 53 to descend by gravity.

The means for giving the arm 58 of the trigger an upward movement when desired for releasing the drum 50 so as to permit the magnet 53 to descend by gravity comprises a flexible line 61 connected at one end to the plate 11 and extending therefrom across the frame toward the plate 10 along the path of movement of the carriage and the parts mounted thereon. As is indicated in Figs. 1 and 4, the cord 61 is threaded through an opening in the end of the arm 58 of the trigger, extending upwardly from the trigger at each face thereof and over arms 62 and 63 extending toward the right in Fig. 4 from the lower end of the plate 30. From the arm 62, the cord 61 extends through an opening in the plate 10 and extends thence downwardly to an arm or lever 64 pivotally mounted upon the cross bar 17 of the standard. The arrangement is such that the cord 61 is normally quite loose so as to permit the carriage to move in either direction along the rails 13 without affecting to any appreciable extent the position of the arm 58 of the trigger. When the cord 61 is tightened by a downward movement of the arm or lever 64, the trigger arm 58 is moved upwardly as above described for releasing the friction clutch so as to permit the magnet 53 to descend.

The means for conducting electric current to the motor 27 and to the magnet 53 comprises three trolley wires 65, 66 and 67 stretched across the framework adjacent to the path of the carriage. These trolley wires are connected at one end to an insulating block 68 mounted upon the plate 10 so as to be held rigidly in position. At their other ends, the wires are connected adjustably in position by means of insulation blocks 69 to which the wires are rigidly connected, the blocks being held adjustably in position with respect to the plate 11 by means of screws 69^a, the arrangement being such that the wires can be given the desired tension upon the framework. The means for taking the current from each of the trolley wires comprises a contact device adapted to displace a small portion of the wire from alignment with respect to the adjacent portions of the wire, serving thus to apply a light pressure upon opposite faces of the wire so as to secure good electrical contact. Each of the devices in the construction shown is in the form of a small metal tube 70 set at a slight angle with respect to the principal portions of the trolley wire, as is best shown in Fig. 3, the three tubes 70 being mounted upon an insulation arm 71 depending from the carriage. The wires 35 and 36 which lead to the motor 27 are connected, in the construction shown, with the tubes 70 engaging the wires 65 and 66, while the wires 66 and 67 are connected with the magnet 53 by means of wires 72 and 73 connected with the tubes 70 engaging such trolley wires.

As is best shown in Fig. 1, the trolley wires 65, 66 and 67 are held in position in the insulation block 68 by means of screws 74, such screws serving also as binding posts for circuit wires 75, 76 and 77. The wire 75 from the top trolley 65 is connected at its lower end with the sheath portion 78 of a knife switch mounted upon the cross bar 17, which is adapted to be connected with a binding post 79 at the opposite end portion of the cross bar 17 by means of the knife portion 80 of the switch and a conductor bar 81 which is connected at one end with the switch member 80 and at its other end with the binding post 79 through the medium of a wire 82. The wire 76 from the trolley 66 is connected at its lower end with a binding post 83 mounted upon the cross bar 17. The wire 77 from the bottom trolley 67 is connected at its lower end with the sheath portion 84 of a knife switch also mounted upon the cross bar 17 in position to be connected with the bar 81 by means of the knife portion 85 of the switch which is pivotally mounted upon the bar 81.

Through the use of the connections above described, when the binding posts 79 and 83 are connected with a suitable source of electrical energy, when the switch member 80 is moved downwardly into operative contact with the sheath 78 a current is adapted to flow through the wire 76 to the trolley 66, thence through the wire 36 to the motor and through the wire 35, the trolley 65 and the wire 75, the switch members 78 and 80, the bar 81, and the wire 82 to the binding post 79. When the switch member 85 is moved downwardly into operative engagement with the sheath 84, a current is adapted to flow from the binding post 83 through the wire 76, the trolley 66, the wire 73, the magnet 53, the wire 72, the trolley 67, the wire 77, the switch members 84 and 85, and the wire 82 to the binding post 79. As will be readily understood, either of the switches may be closed independently of the other or both

switches may be closed at the same time for causing the rotation of the motor and energizing the magnet 53.

It is believed to be unnecessary to describe the operation of the device in detail further than is done above. With the binding posts 79 and 83 connected with a suitable source of electrical energy, the switch member 80 is to be moved downwardly into operative position for driving the motor 27. Upon the starting of the motor, the cord 51 is wound upon the drum 50 for raising the magnet 53, if the magnet is not already in its uppermost position. As soon as the magnet 53 is in sufficiently raised position for the desired clearance above the floor, the lever 48, for example, may be depressed for causing the carriage to move toward the left in Fig. 1. When the carriage has reached the desired point, the lever 64 is depressed for releasing the drum 50 so as to permit the magnet to descend by gravity to the floor or into contact with a pile of steel or iron which it is desired to move through the use of the crane. The switch member 85 is then to be moved downwardly into operative engagement with the sheath 84, serving to energize the magnet 53 for causing one or more pieces of steel to cling to the magnet and to be raised therewith. When the magnet reaches an elevated position such as to permit the load carried thereby to have the required clearance, the lever 49 may be depressed for causing the carriage to move toward the right. When the carriage has reached the end of its movement toward the right, the lever 64 is to be depressed for releasing the drum 50 for permitting the magnet to descend, whereupon the switch member 85 is to be moved upwardly for deenergizing the magnet 53 so as to release the load carried thereby.

In the use of the crane as above described, an element of interest can be added by placing between the standards some type of object simulating a building or building parts such as might be present in the neighborhood of a crane in actual use in a factory so as to require some little skill in the manipulation of the mechanism for moving the material from one end of the frame to the other. In the use of the toy, the operator will very soon acquire considerable skill in manipulating the controls so as to perform the several functions so near as possible in unison for obtaining the greatest possible efficiency in the operation of the crane.

While I prefer to employ the construction and arrangement as shown in the drawings and as above described, it will be understood that I do not desire to limit my invention to the form shown except to the extent that the same is specifically claimed, inasmuch as it is evident that changes might well be made without departing from the spirit of my invention.

I claim:

1. A toy crane, comprising in combination a frame, a carriage movable horizontally on said frame, a shaft revolubly mounted on said carriage, a motor on said carriage for driving said shaft, a rotatable member normally driven by said shaft, a trigger adapted by an operative stroke to break the driving engagement between said rotatable member and said shaft, and means extending across said frame adjacent to the path of movement of the carriage and movable into tightened engagement with said trigger adapted by such tightened engagement with the trigger to give it an opeartive stroke for releasing said rotatable member from said shaft.

2. A toy crane, comprising in combination a frame, a carriage movable horizontally on said frame, a shaft revolubly mounted on said carriage, a motor on said carriage for driving said shaft, a rotatable member normally driven by friction from said shaft, a trigger adapted by an operative stroke to break the frictional engagement between said rotatable member and said shaft, and a flexible line extending across said frame adjacent to the path of movement of the carriage having continuous engagement with said trigger as the carriage moves and adapted when tightened across the frame to move the trigger for releasing said rotatable member from said shaft.

3. A toy crane, comprising in combination a frame, a carriage movable horizontally on said frame, a load carrying device, means for moving said device upwardly with respect to said carriage, a trigger movably mounted on said carriage adapted by an operative movement to release said device for permitting it to move downwardly by gravity, and a flexible line extending across said frame adjacent to the path of movement of said carriage adapted when loose to permit free movement of the carriage and the trigger with respect thereto but adapted when tightened at any position of the carriage to give said trigger an operative movement for releasing said load carrying device for permitting it to descend by gravity.

4. A toy crane, comprising in combination a frame, a carriage movable horizontally on said frame, a load carrying device, means for moving said device upwardly with respect to said carriage, a trigger movably mounted on said carriage adapted by an operative movement to release said device for permitting it to move downwardly by gravity, and a flexible line extending across said frame adjacent to the path of movement of said carriage and threaded about said trigger adapted when loose to permit free movement of the carriage but adapted when tightened at any position of the carriage to give said trigger an operative movement for releasing said device.

5. A toy crane, comprising in combination

a frame, a carriage movable horizontally on said frame, a load carrying device, means for moving said device upwardly with respect to said carriage, a trigger movably mounted on said carriage adapted by an operative movement to release said device for permitting it to move downwardly by gravity, bearings on said carriage toward which said trigger moves for releasing said load carrying device, and a flexible line extending across said frame adjacent to the path of movement of the carriage and threaded about said trigger and said bearings adapted when loose to permit free movement of the carriage but adapted when tightened in any position of the carriage to give said trigger an operative movement for releasing said load carrying device.

6. A toy crane, comprising in combination a frame, a carriage movable horizontally on said frame, a load carrying device, means for moving said device upwardly with respect to said carriage, a trigger movably mounted on said carriage adapted by an operative movement to release said device for permitting it to move downwardly by gravity, bearings on said carriage toward which said trigger moves for releasing said load carrying device, a spring adapted normally to move said trigger in the direction away from said bearings, and a flexible line extending across said frame adjacent to the path of movement of the carriage and threaded about said trigger and said bearings adapted when loose to permit free movement of the carriage on the frame but adapted when tightened at any position of the carriage to give said trigger an operative movement toward said bearings against the action of the spring for releasing said load carrying device.

7. A toy crane, comprising in combination a frame, a carriage movable horizontally on said frame, a load carrying device, means comprising a clutch for moving said device upwardly with respect to said carriage, a trigger movably mounted on said carriage adapted by an operative movement to release said clutch for permitting the carrying device to move downwardly by gravity, and means mounted on the frame and adapted to have operative engagement with said trigger at any position of said carriage for moving the trigger and releasing said clutch for permitting downward movement of the load carrying device.

8. A toy crane, comprising in combination a frame, a carriage movable horizontally on said frame, a load carrying device, means comprising a clutch for moving said device upwardly with respect to said carriage, a trigger movably mounted on said carriage adapted by an operative movement to release said clutch for permitting the carrying device to move downwardly by gravity, and a flexible line extending across said frame adjacent to the path of movement of said carriage adapted when loose to permit free movement of the carriage and the trigger with respect thereto but adapted when tightened in any position of the carriage to give said trigger an operative movement for releasing said clutch for permitting downward movement of the load carrying device.

9. A toy crane, comprising in combination a frame, a carriage movable horizontally on said frame, a load carrying device, a member adapted by rotary movement to move said load carrying device upwardly with respect to said carriage, a motor on said carriage, a friction clutch connecting said motor with said rotary member adapted normally to drive said rotary member but adapted to slip for permitting the motor to rotate independently of the rotary member when the load carrying device reaches the limit of its upward movement, a trigger movably mounted on said carriage adapted by an operative movement to release said clutch for permitting the carrying device to move downwardly by gravity, and means mounted on the frame and adapted to have operative engagement with said trigger at any position of said carriage for moving the trigger and releasing said clutch for permitting downward movement of the load carrying device.

10. A toy crane, comprising in combination a frame, a carriage movable horizontally on said frame, a load carrying device, a drum rotatably mounted on said carriage, a flexible member extending about the drum and adapted upon rotation of the drum in one direction to raise said load carrying device, means comprising a friction clutch for rotating said drum in the direction for raising said load carrying device, a trigger movably mounted on said carriage adapted by an operative movement to release said clutch for permitting the load carrying device to move downwardly by gravity, and means mounted on the frame and adapted to have operative engagement with said trigger at any position of said carriage for moving the trigger for releasing said clutch.

11. A toy crane, comprising in combination a frame, a carriage movable horizontally on said frame, a load carrying device, a drum rotatably mounted on said carriage, a flexible member extending about the drum and adapted upon rotation of the drum in one direction to raise said load carrying device, means comprising a friction clutch for rotating said drum in the direction for raising said load carrying device, a flexible line extending across said frame adjacent to the path of movement of the carriage, and means mounted on the carriage adapted when the line is tightened to release said clutch for permitting the drum to rotate for lowering the load carrying device.

12. A toy crane, comprising in combination a frame, a carriage movable horizontally

on said frame, a load carrying device, a drum rotatably mounted on said carriage, a flexible member extending about the drum and adapted upon rotation of the drum in one direction to raise said load carrying device, means comprising a friction clutch for rotating said drum in the direction for raising said load carrying device, a trigger movably mounted on said carriage adapted by an operative movement to release said clutch for permitting the load carrying device to move downwardly by gravity, bearings on said carriage toward which said trigger moves for releasing said clutch, and a flexible line extending across said frame adjacent to the path of movement of the carriage and threaded about said trigger and said bearings adapted when loose to permit free movement of the carriage but adapted when tightened at any position of the carriage to give said trigger an operative movement for releasing said clutch and thereby permitting the drum to rotate for lowering the load carrying device.

13. A toy crane, comprising in combination a frame, a carriage movable horizontally on said frame, a load carrying device, a shaft rotatably mounted on said carriage, means for driving said shaft continuously, a member loosely mounted on said shaft adapted by rotary movement to move said load carrying device upwardly with respect to said carriage, a friction clutch disk on said shaft adjacent to said rotary member, means fixedly mounted on said shaft against which said disk is adapted to bear, spring means for pressing said rotary member yieldingly into contact with said disk for causing the rotary member to rotate with the shaft, a flexible line extending across said frame adjacent to the path of movement of the carriage, and means mounted on the carriage adapted when the line is tightened to move said rotary member out of operative engagement with said friction clutch disk for permitting the rotary member to rotate in the direction for lowering the load carrying device.

14. A toy crane, comprising in combination a frame, a carriage movable horizontally on said frame, a drum rotatably mounted on said carriage, means for driving said drum, and a flexible line extending about said drum and extending across said frame adjacent to the path of movement of the carriage adapted when loose to slip with respect to the drum but adapted when tightened to grip the drum for causing the carriage to move on the frame.

15. A toy crane, comprising in combination a frame, a carriage movable horizontally on said frame, drum means rotatably mounted on said carriage, means for driving said drum means, and flexible lines extending about said drum means in reverse directions and extending across said frame adjacent to the path of movement of the carriage adapted when loose to slip with respect to the drum means, one of said lines when tightened being adapted to grip the drum means for causing the carriage to move on the frame in one direction and the other line when tightened being adapted to grip the drum means for causing the carriage to move on the frame in the other direction.

16. A toy crane, comprising in combination a frame, a carriage movable horizontally on said frame, drums rotatably mounted on said carriage, means for driving said drums continuously in one direction, and flexible lines extending about said drums in reverse directions and extending across said frame adjacent to the path of movement of the carriage and both sufficiently loose normally to slip with respect to the drums, and means for tightening said lines alternatively adapted thereby to move the carriage in either direction as desired.

17. A toy crane, comprising in combination a frame, a carriage movable horizontally on said frame, drum means rotatably mounted on said carriage, means for driving said drum means, and flexible lines extending about said drum means in reverse directions and extending across said frame adjacent to the path of movement of the carriage adapted when loose to slip with respect to the drum means, and levers pivotally mounted on said frame and connected with said lines respectively for tightening the lines about said drum means, either lever being adapted by a downward stroke to tighten the line connected therewith about its drum for causing a corresponding movement of the carriage on the frame.

18. A toy crane, comprising in combination a track, a carriage movably mounted on said track, load carrying means depending from the carriage and movable vertically with respect thereto, standards pivotally connected at their upper ends with said track structure, said connections comprising slots in the standards for permitting a sliding movement of the standards vertically with respect to the track, and interengaging means adapted to hold said standards against pivotal movement with respect to the track when the standards are moved vertically to the limit of the motion permitted by the slots.

19. A toy crane, comprising in combination two sheet metal plates, two bars serving to space said plates apart and to connect them rigidly together and serving also as rails between the plates, flanges on the side edges of said plates, pivot rods mounted in said flanges near the bottom edges of the plates, standards pivotally mounted on said rods by means of slots so arranged that the standards can be swung inwardly toward each other with the rods in the upper end portions of the slots or may be secured rigidly in operative positon with the rods in the lower ends of the slots and with the stand-

ards in sliding engagement with the inner faces of the plates, a carriage movably mounted on said rails, and load carrying means depending from the carriage and movable vertically with respect thereto.

20. A toy crane, comprising in combination two rails in spaced relation to each other, a carriage frame in the form of a piece of sheet metal bent into channel formation with laterally extending flanges, wheels mounted on said frame for holding it on said rails with the flanges underlying the rails, a motor carried by said carriage, means actuated by the motor for moving the carriage along said rails, a load carrying device, and means actuated by the motor for moving said load carrying device vertically with respect to said carriage.

21. A toy crane, comprising in combination a frame, a carriage movable horizontally on said frame, a trolley wire extending across said frame adjacent to the path of movement of the carriage, means for insulating the trolley wire from the frame, and contacts on the carriage constituting a trolley engaging opposite faces of said wire at points spaced a short distance apart longitudinally of the wire serving to produce reverse bends in the wire at the points of contact for insuring effective engagement between the trolley and the wire.

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