J. W. POGUE.

CRANE.

APPLICATION FILED NOV. 28, 1910.

997,934.

Patented July 11, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

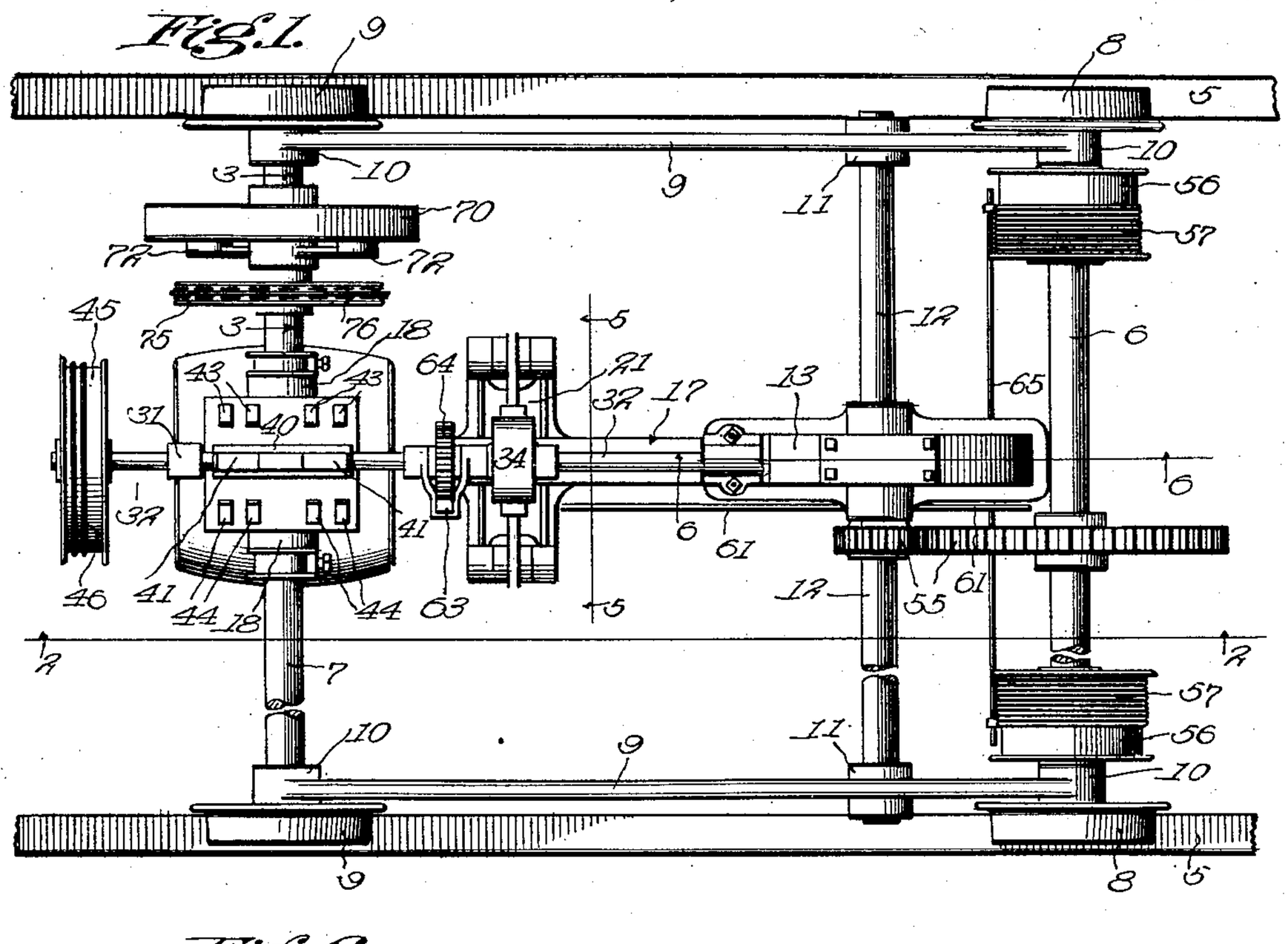
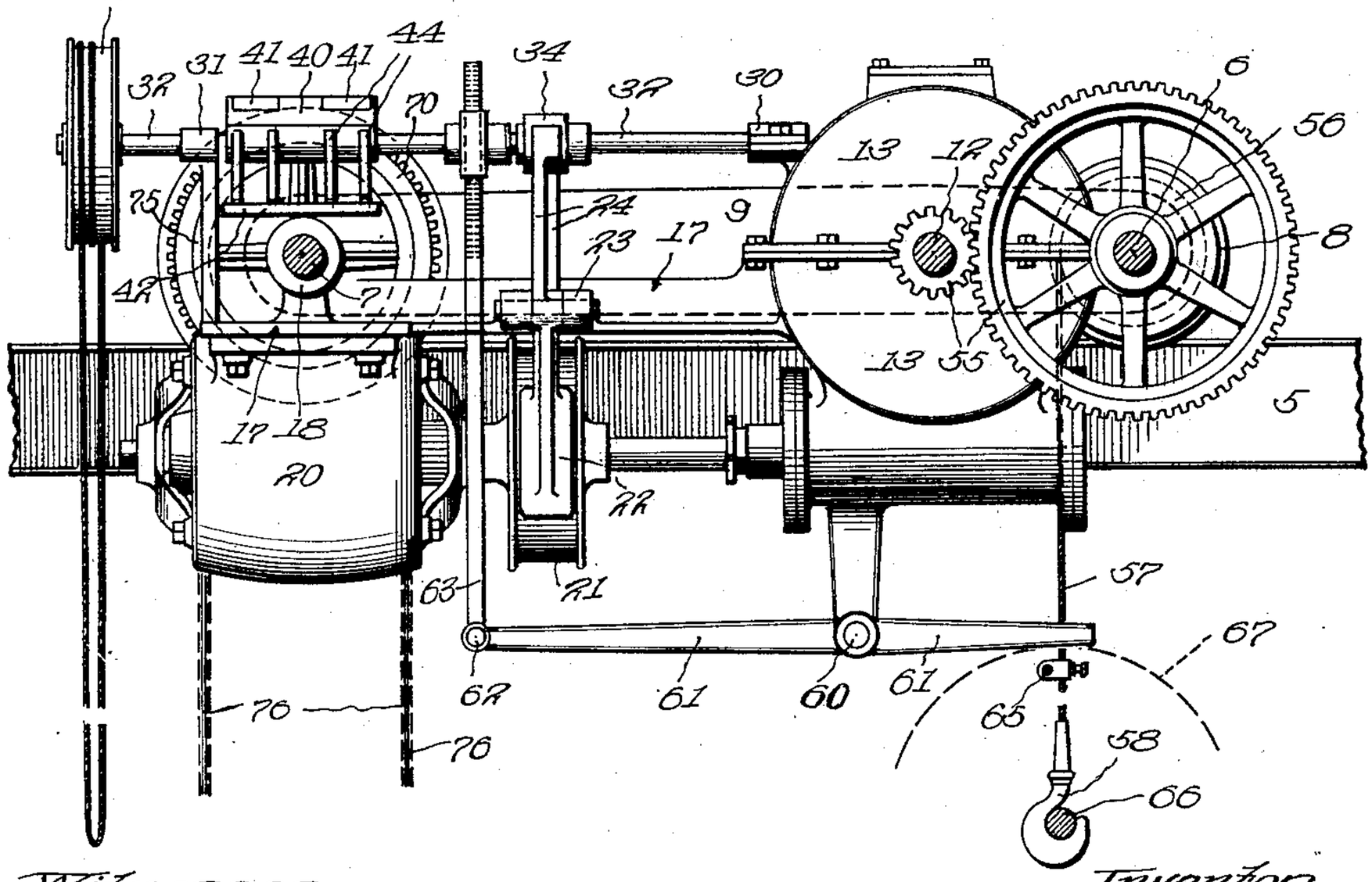


Fig. 2.



Witnesses
Elwood H. Barbelew
Fred W. Brown

Inventor
Joseph W. Pogue
by James T. Barbelew
his Attorney.

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2 SHEETS—SHEET 2.

Fig. 3

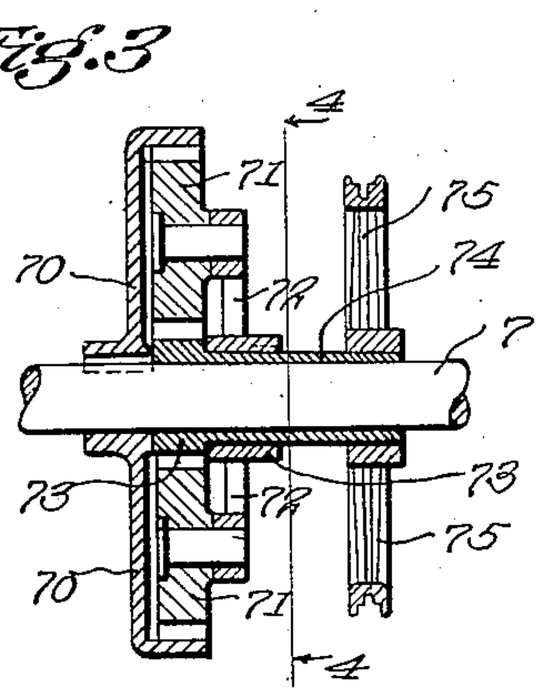


Fig. 4.

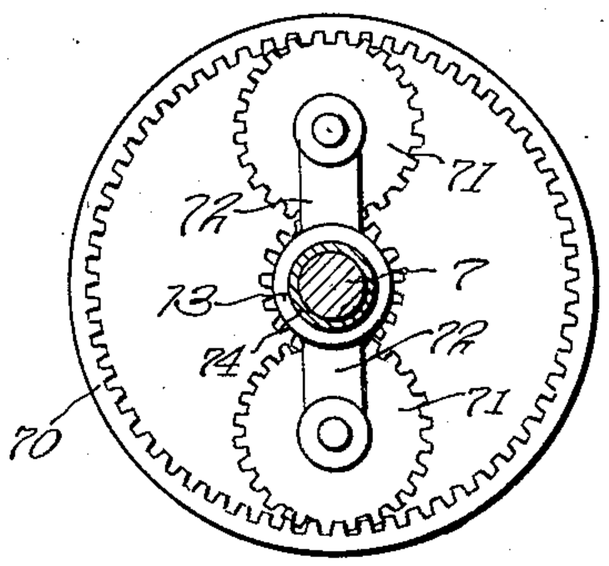


Fig. 5.

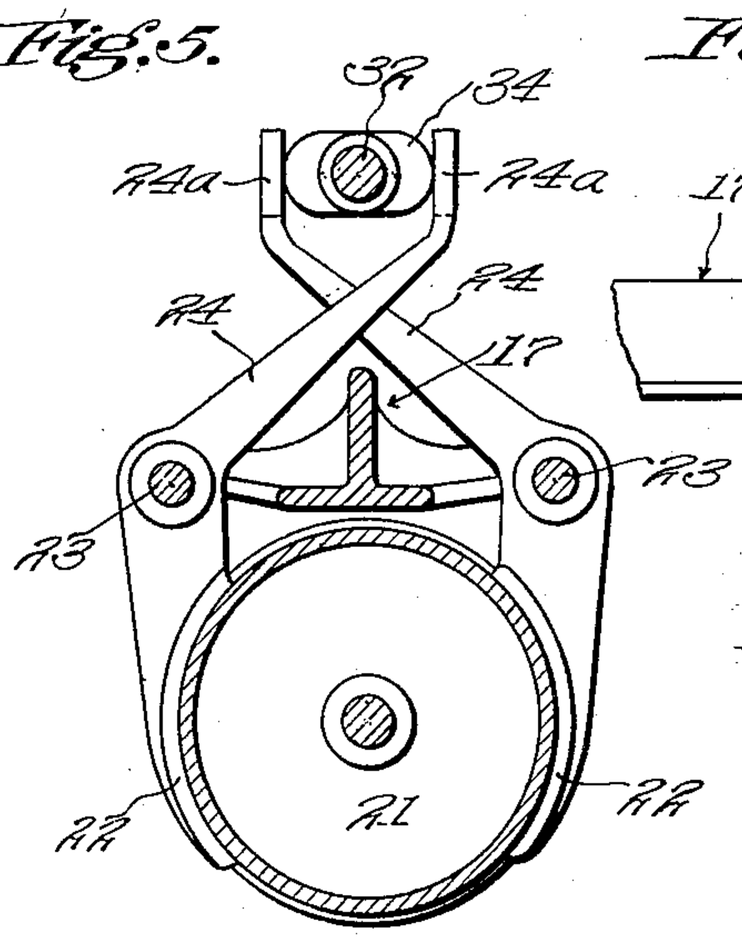


Fig. 6.

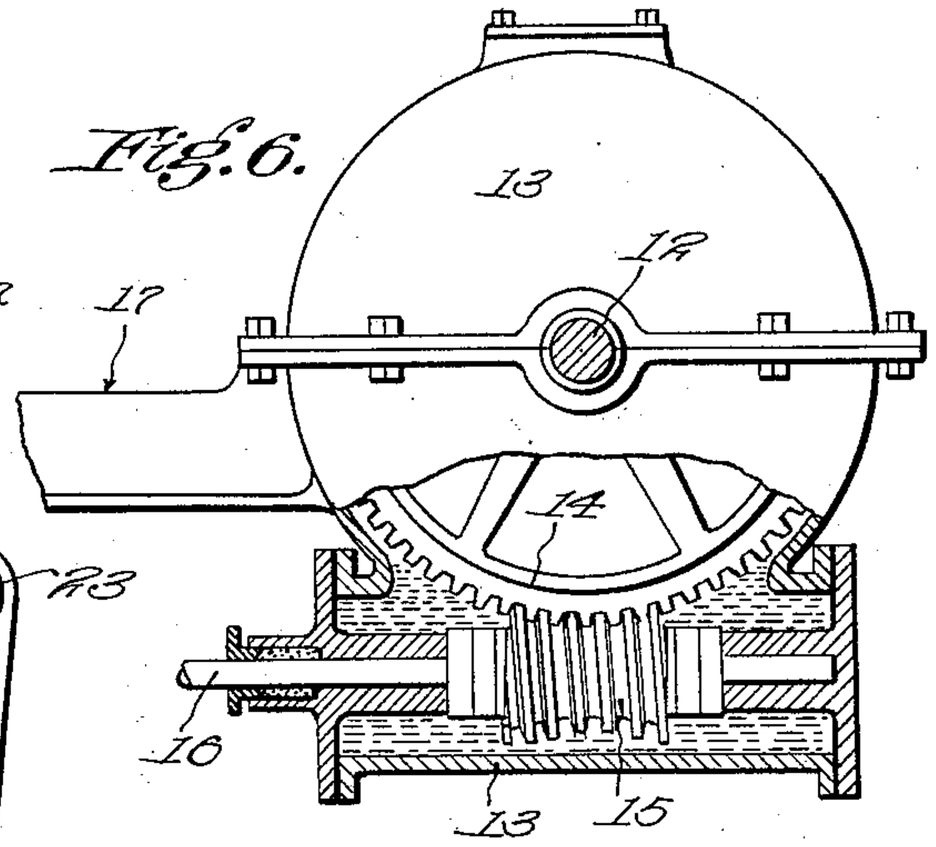
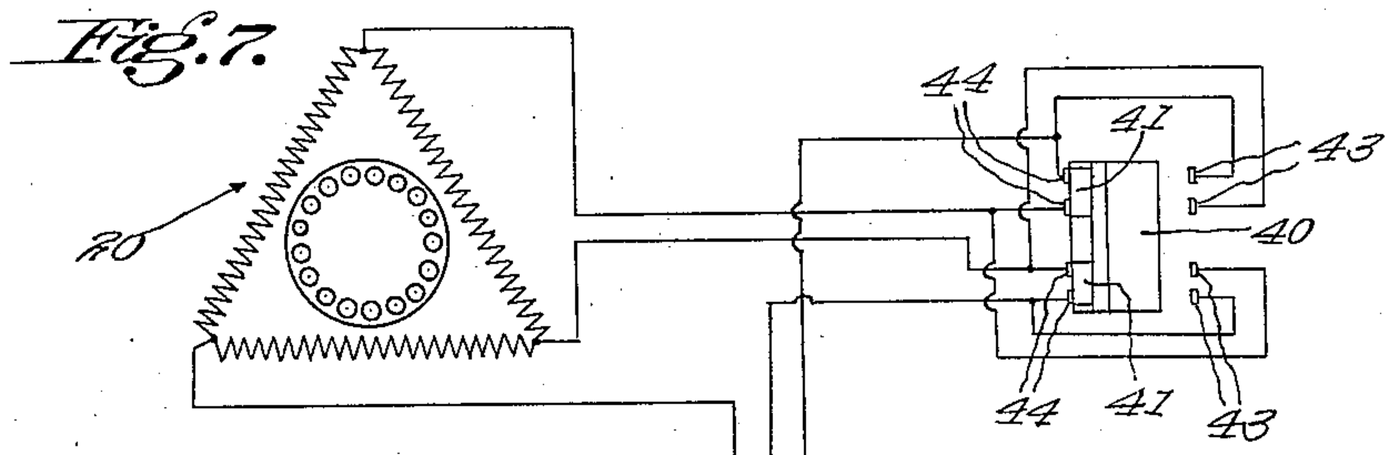


Fig. 7.



Witnesses
Elwood H. Barkelew.
Fred W. Brown.

Inventor
Joseph W. Pogue
by James T. Barkelew
his attorney.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH W. POGUE, OF SIERRA MADRE, CALIFORNIA, ASSIGNOR TO SEABOARD METAL WORKS, OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

CRANE.

997,934. Specification of Letters Patent. **Patented July 11, 1911.**

Application filed November 28, 1910. Serial No. 594,479.

To all whom it may concern:

Be it known that I, JOSEPH W. POGUE, a citizen of the United States, residing at Sierra Madre, in the county of Los Angeles and State of California, have invented new and useful Improvements in Cranes, of which the following is a specification.

This invention relates to a trolley crane, and particularly to such a crane having horizontal movement in one direction only.

The mechanism shown in the drawings has been designed for the special purpose of handling rolls of paper to and from a rotary printing press, and for this purpose it is only necessary that the crane have a movement in one direction, directly toward and away from the press. Although the crane has been made with this especial usage in view, it may be used for other purposes, those to which its mechanism readily lends itself; I have mentioned the use in connection with a printing press merely for showing the particular utilities of the crane and for explaining some points of its operation.

My invention consists particularly in the elements and combinations hereinafter set forth for the production of a simple and efficient machine for the purposes stated. There are several features contained in the general combination, among which is the general arrangement of frames and mechanism to constitute a simple and efficient machine, the controlling mechanism of the motor, and various other minor points which will better appear from the following specification and the accompanying drawings, in which:

Figure 1 is a plan view of my improved crane. Fig. 2 is a vertical longitudinal section taken on line 2—2 of Fig. 1. Fig. 3 is a detail section taken on line 3—3 of Fig. 1. Fig. 4 is a cross section taken on line 4—4 of Fig. 3. Fig. 5 is a cross section taken on line 5—5 of Fig. 1, and showing the braking mechanism. Fig. 6 is a partial longitudinal section of the gearing arrangement taken on line 6—6 of Fig. 1. Fig. 7 is a diagrammatic view showing the electrical connections of the motor and controller.

In the drawings 5 designates a pair of rails upon which my crane is adapted to be supported and moved. These rails may be of any length and, in the particular use of my invention in connection with a printing press, the rails extend to a point over the roll supporting portions of the press so that a roll of paper may be deposited directly in its correct position. Axles 6 and 7 extend across the space between the rails and carry wheels 8 and 9 on their ends. Wheels 8 are loose on axle 6, but wheels 9 are tightly affixed to axle 7. Side frames 9 are journaled at 10 on the axles, connecting them together. The side frames form the main frame of the crane. Midway between journals 10 frames 9 carry journals 11 in which a counter-shaft 12 is supported, shaft 12 being closer to axle 6 than to axle 7. Mounted on shaft 12 is a gear casing 13 inclosing a worm wheel 14 mounted on counter-shaft 12 and a worm 15 mounted on motor shaft 16. Gear casing 13 forms a part of sub-frame 17, the frame extending to axle 7 where a journal 18 surrounds the axle. Thus the sub-frame is supported from axle 7 and counter-shaft 12.

Below axle 7 an electric motor or other motive power device 20 is mounted on sub-frame 17. Motor shaft 16 is prolonged, entering gear casing 13 and carrying worm 15 as before described. Between the motor and the gear casing a brake drum 21 is mounted on motor shaft 16 and a pair of brake shoes 22 are pivoted at 23 to sub-frame 17 and adapted to engage with the brake drum. Extending arms 24 project upwardly from the brake shoes and are crossed as shown in Fig. 5.

Mounted in a bearing 30 on gear casing 13 and in a bearing 31 supported from sub-frame 17, a controller shaft 32 is provided. A cam 34 is mounted on controller shaft 32 and is situated midway between ends 24ª of arms 24. The cam is of such a configuration that a quarter turn of shaft 32 will cause the arms 24 to be forced apart or allowed to approach each other, applying shoe 22 to drum 21 or allowing the shoes to release from the drum. A contact carrying member 40 is mounted on shaft 32 above motor 20 and carries two connecting bars

41. A controller base 42 is supported on journal 18 and carries two sets of contact fingers 43 and 44. When the mechanism is in the position shown, there is no connection between the different contact fingers; upon a rotation of shaft 32 through a quarter revolution in either direction, contact bars 41 are thrown into engagement with fingers 43 or fingers 44. To effect this revolution a tiller wheel 45 is mounted on the end of shaft 32, a tiller rope 46 affording means for manually rotating the wheel. In Fig. 7 connections are shown between the contact fingers and motor 20 so that, when the bars 41 engage with fingers 43 the motor will run in one direction, while on engagement with fingers 44 the motor will run in the opposite direction. A simple three phase induction motor is shown, wires 50, 51 and 52 leading from the mains and connecting to the controller in any desired manner. Member 40 and cam 34 are relatively arranged on shaft 32 so that whenever the current to the motor is cut off the brake shoes will be applied to the brake drum, thus bringing the motor to a quick stop. This is an essential and advantageous feature, as the mechanism may be readily stopped accurately in position.

Counter-shaft 12 is rotated from the motor through the medium of gears 14 and 15 and the counter-shaft is in turn connected by gears 55 to axle 6. Mounted on axle 6 a pair of hoisting drums 56 carry hoisting cables 57. These cables depend from the drum and preferably are provided with end hooks 58. Wheels 8 being loose on axle 6, the axle is rotated and the hoisting cables moved up and down without moving the crane along the rails. The provision of the worm gearing prevents any downward pull on the cables from running the mechanism backward and assists the brake in quickly stopping the hoisting mechanism while a weight is being lowered.

Pivotally mounted at 60 on the underside of gear casing 13 is a controller lever 61. One end of this lever is connected at 62 to a rack 63 engaging with gear 64 mounted on controller shaft 32. The other end of lever 61 projects into the space between depending cables 57 and is adapted to be moved upwardly by the upward movement of a bar or equivalent member extending between the cables. For some purposes a bar 65 is secured to and between the cables so that it will move the end of lever 61 upwardly and rotate controller shaft 32 before the roll of paper supported on hooks 58 is forced into the mechanism above and causes damage. From other purposes the shaft 66 on which paper roll 67 is carried, or the paper roll itself, may engage with the end of lever 61. The whole arrangement is such that, when a paper roll is being moved upwardly by the crane, the controller shaft will be rotated through a quarter revolution by the mechanism just described, and thereby cut off the current to the motor, before any damage has been done to the crane by the paper roll being hoisted too high.

The above described mechanism is solely for the purpose of hoisting and lowering a paper roll or other article. For moving the crane along the rails a simple manually operated mechanism is supplied. As before mentioned, wheels 9 are tightly mounted on shafts 7. An internal gear 70 is also tightly mounted on axle 7, its teeth meshing with the teeth of planetary gears 71 carried on rotating frame 72. A central pinion 73 is carried on a sleeve 74 and meshes with gears 71. A chain wheel 75 is rigidly mounted on sleeve 74 and a chain 76 passes over the wheel and depends to a point convenient for manual operation. Through the planetary gears a suitable leverage is provided by means of which the crane can be moved along the rails with a small effort on the part of the operator.

Having described my invention, I claim:

1. A crane mechanism, comprising a main frame, axles journaled in the frame, supporting wheels mounted on the axles, a hoisting drum mounted on one of the axles, a counter-shaft mounted in the frame, a sub-frame carried on the other of the axles and on the counter-shaft, a motor mounted on the sub-frame, rotative connective means between the motor and the counter-shaft, and rotative connective means between the counter-shaft and the hoisting drum.

2. A crane mechanism, comprising a main frame, axles journaled in the frame, supporting wheels loosely mounted on one of the axles and rigidly mounted on the other, a counter-shaft journaled in the main frame, a sub-frame carried on the counter-shaft and one of the axles, gearing connective means between the counter-shaft and the axle carrying the loosely mounted wheels, a motor mounted on the sub-frame, rotative connective means between the motor and the counter-shaft, and hoisting drums tightly mounted on the axle carrying the loosely mounted wheels.

3. A crane mechanism, comprising a main frame, axles journaled in the frame, supporting wheels loosely mounted on one of the axles and rigidly mounted on the other, a counter-shaft journaled in the main frame, a sub-frame carried on the counter-shaft and one of the axles, gearing connective means between the counter-shaft and the axle carrying the loosely mounted wheels, a motor mounted on the sub-frame, rotative connective means between the motor and the counter-shaft, hoisting drums tightly mounted on the axle carrying the loosely mounted

wheels, and a braking mechanism for the motor.

4. A crane mechanism, comprising a main frame, axles journaled in the frame, supporting wheels loosely mounted on one of the axles and rigidly mounted on the other, a counter-shaft journaled in the main frame, a sub-frame carried on the counter-shaft and on one of the axles, gearing connective means between the counter-shaft and the axle carrying the loosely mounted wheels, a motor mounted on the sub-frame, rotative connective means between the motor and the counter-shaft, hoisting drums tightly mounted on the axle carrying the loosely mounted wheels, a braking mechanism for the motor, a controller for the motor, and connective mechanism whereby the controller and braking mechanism are operated together.

5. A crane mechanism, comprising a main frame, a pair of horizontal axles journaled in the frame, supporting wheels mounted on the axles outside the frame, the wheels being loosely mounted on one axle and tightly on the other, manual means for rotating the tight wheel axle, a counter-shaft journaled in the main frame, a sub-frame mounted on the tight wheel axle and the counter-shaft, a motor mounted on the sub-frame and having its axle extending at right angles to the counter-shaft, gearing connection between the motor and the loose wheel shaft, and a hoisting drum tightly mounted on the loose wheel shaft.

6. A crane mechanism, comprising a main frame, a pair of horizontal axles journaled in the frame, supporting wheels mounted on the axles outside the frame, the wheels being loosely mounted on one axle and tightly on the other, manual means for rotating the tight wheel axle, a counter-shaft journaled in the main frame, a sub-frame mounted on the tight wheel axle and the counter-shaft, a motor mounted on the sub-frame and having its axle extending at right angles to the counter-shaft, gearing connection between the motor and the counter-shaft, gearing connection between the counter-shaft and the loose wheel axle, a hoisting drum tightly mounted on the loose wheel axle, a controller shaft mounted on the sub-frame above the motor shaft, a controller mechanism mounted on the sub-frame and on the controller shaft, a brake drum mounted on the motor shaft, a brake shoe movably mounted on the sub-frame, means whereby the brake shoe is applied to the brake drum upon rotation of the controller shaft, and manual means for rotating the controller shaft.

7. A crane mechanism, comprising a frame, a pair of axles journaled in the frame, supporting wheels loosely mounted on one axle and tightly mounted on the other, a motor mounted on the frame, a controlling mechanism for the motor and mounted on the frame, rotative connective means between the motor and the loose wheel axle, a pair of hoisting drums on the said axle, a cable depending from each of the drums, a rod attached to each cable and extending between them, a lever arm pivoted on the frame and adapted to be engaged by the rod, and connective means between the lever arm and the controlling mechanism.

8. A crane mechanism, comprising a main frame, a pair of horizontal axles journaled in the frame, supporting wheels mounted on the axles outside the frame, the wheels being loosely mounted on one axle and tightly on the other, manual means for rotating the tight wheel axle, a counter-shaft journaled in the main frame, a sub-frame mounted on the tight wheel axle and the counter-shaft, a motor mounted on the sub-frame and having its axle extending at right angles to the counter-shaft, gearing connection between the motor and the counter-shaft, gearing connection between the counter-shaft and the loose wheel axle, a pair of hoisting drums on the loose wheel axle, a controller shaft mounted on the sub-frame above the motor shaft, a controller mechanism mounted on the sub-frame and on the controller shaft, a lever pivotally mounted on the sub-frame, a gear and rack connection between the lever and the controller shaft, a hoisting cable depending from each of the hoisting drums, a rod connected to both cables and extending horizontally between them and adapted to engage with the lever on the upward movement of the cables.

9. A crane mechanism, comprising a main frame, a pair of horizontal axles journaled in the frame, supporting wheels mounted on the axles outside the frame, the wheels being loosely mounted on one axle and tightly on the other, manual means for rotating the tight wheel axle, a counter-shaft journaled in the main frame, a sub-frame mounted on the tight wheel axle and the counter-shaft, a motor mounted on the sub-frame and having its axle extending at right angles to the counter-shaft, gearing connection between the motor and the counter-shaft, gearing connection between the counter-shaft and the loose wheel axle, a pair of hoisting drums on the loose wheel axle, a controller shaft mounted on the sub-frame above the motor shaft, a controller mechanism mounted on the sub-frame and on the controller shaft, a brake drum mounted on the motor shaft, brake shoes pivotally mounted on the sub-frame and having extensions to points on opposite sides of the controller shaft, a cam on the controller shaft and adapted to engage with the extensions of the brake shoes, a lever pivotally mounted on the sub-frame, a gear and rack connection between

the lever and the controller shaft, a hoisting cable depending from each of the hoisting drums, and a rod connected to both cables and extending horizontally between them and adapted to engage with the lever on the upward movement of the cables.

In witness that I claim the foregoing I have hereunto subscribed my name this 9th day of November 1910.

JOE. W. POGUE.

Witnesses:
JAMES T. BARKELEW,
ELWOOD H. BARKELEW.