(No Model.) 2 Sheets—Sheet 1.

# J. W. EISENHUTH.

## DEVICE FOR TRANSMITTING MOTION.

No. 420,678. Patented Feb. 4, 1890.

Fig. 1.

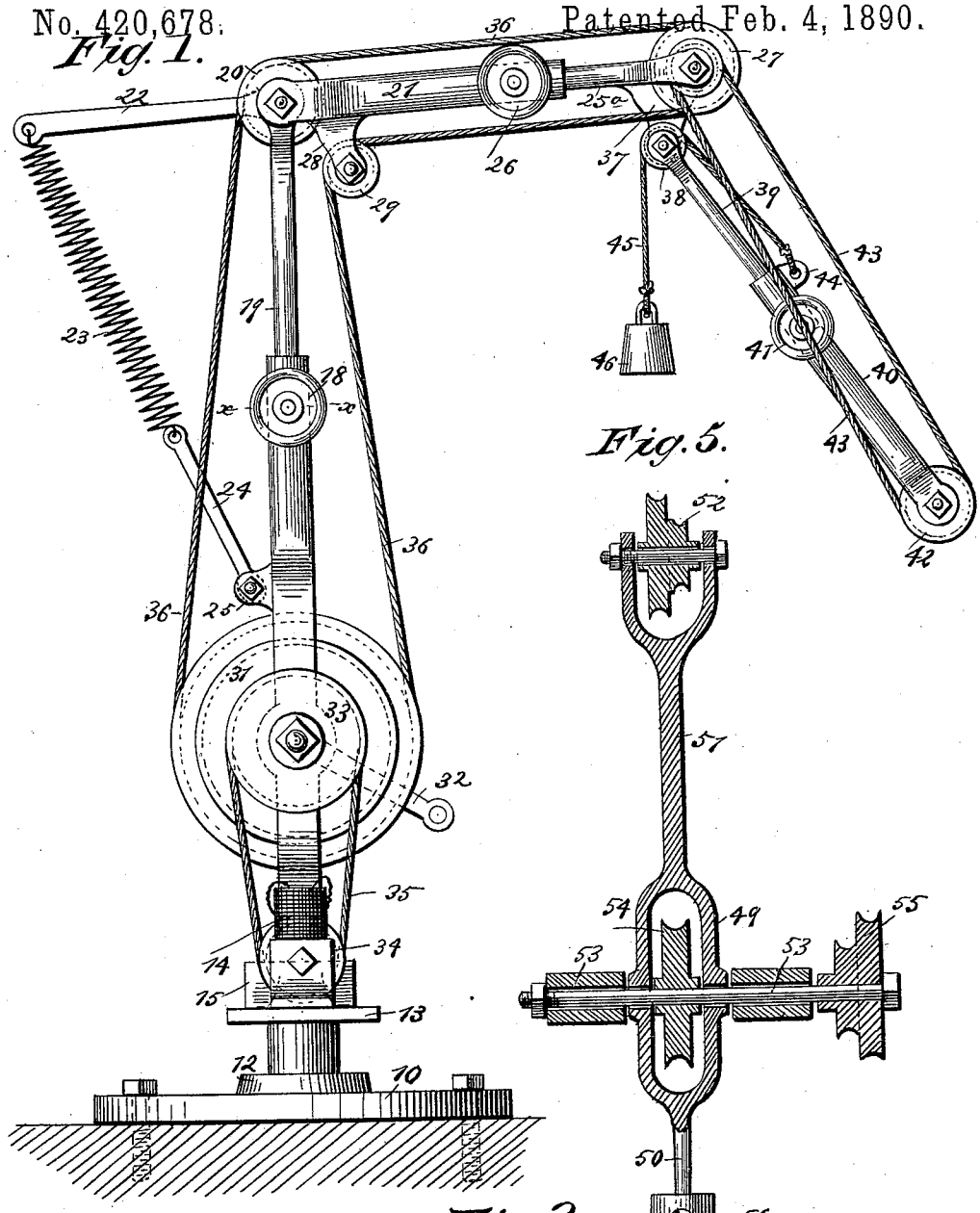
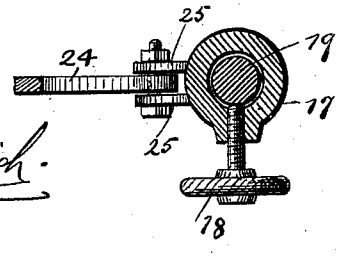



Fig. 5.




Fig. 3.




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(No Model.) 2 Sheets—Sheet 2.

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## DEVICE FOR TRANSMITTING MOTION.

No. 420,678. Patented Feb. 4, 1890.

Fig. 2.

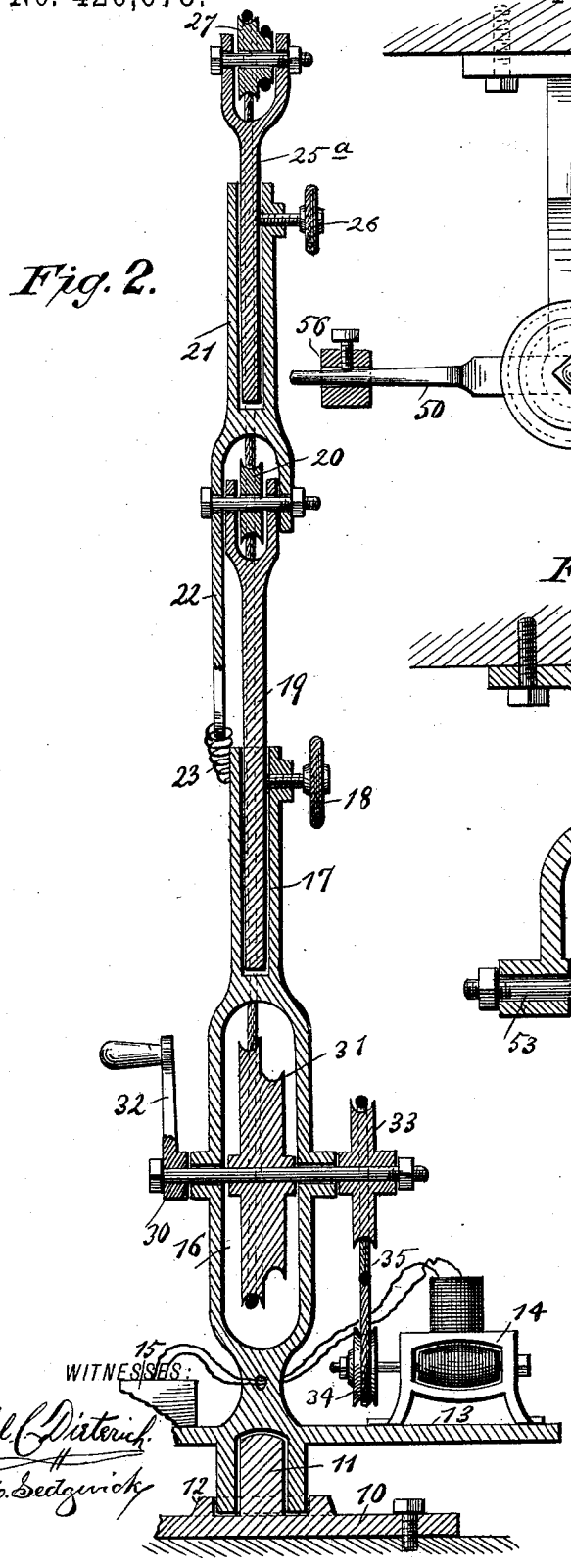



Fig. 4.

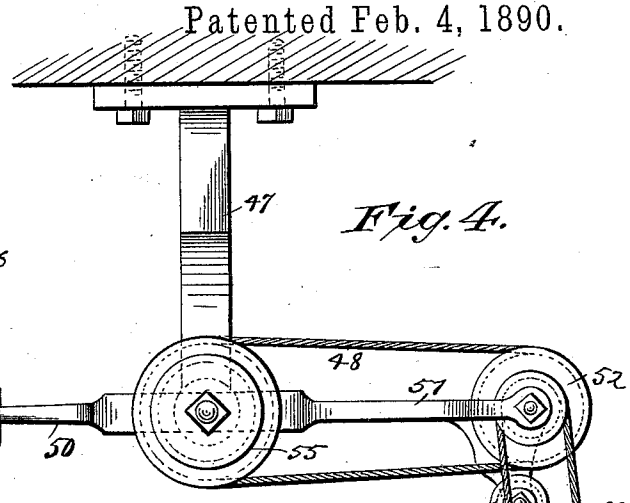
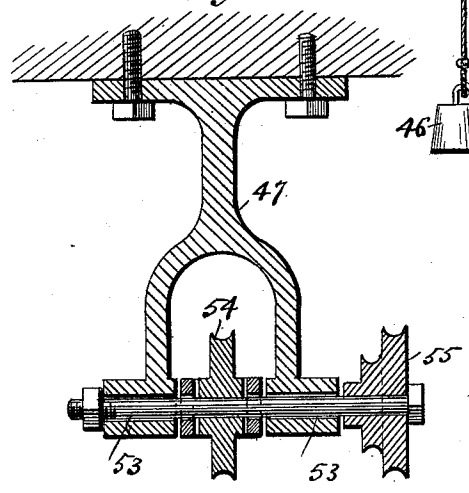
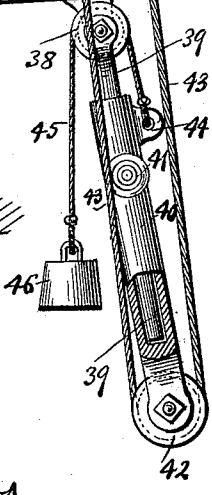



Fig. 6.




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# UNITED STATES PATENT OFFICE.

JOHN WASHINGTON EISENHUTH, OF SAN FRANCISCO, CALIFORNIA.

## DEVICE FOR TRANSMITTING MOTION.

SPECIFICATION forming part of Letters Patent No. 420,678, dated February 4, 1890.

Application filed April 16, 1889. Serial No. 307,444. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN WASHINGTON EISENHUTH, of San Francisco, in the county of San Francisco and State of California, have invented a new and useful Improvement in Devices for Transmitting Motion, of which the following is a full, clear, and exact description.

My invention relates to an improved device for transmitting motion, especially to that class of machines which are not attached permanently to a support—as, for instance, a clipping-machine; and the invention has for its object to provide a portable device or crane automatically adjustable to the many positions that a movable machine undergoes when following various angles or assuming numerous different positions.

A further object of the invention is to provide a perfectly-balanced crane of light and durable construction, and which may be conveniently adjusted.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of a perpendicular crane. Fig. 2 is a central vertical section of the same, illustrating the intermediate section as in vertical alignment with the main section. Fig. 3 is a transverse section, partially on line *x x* of Fig. 1. Fig. 4 is a side elevation of the crane when attached to the ceiling. Fig. 5 is a central longitudinal section through the body of the device as illustrated in Fig. 4, and Fig. 6 is a vertical section through the hanger and the bearings of the device when in the position illustrated in Figs. 4 and 5.

In carrying out the invention, when the crane is to be placed in a perpendicular position a base-plate 10 is provided, adapted for attachment to any suitable and convenient support, which plate is provided with a central post 11, projecting upward therefrom, and an annular rib 12, surrounding the post a distance therefrom, as best illustrated in Fig. 2.

The main frame of the crane consists of a central standard provided at the bottom with a recess adapted to receive the post 11 of the base, and the lower end of the said main frame, which is circular, is of a diameter to loosely fit into the space intervening the said post 11 and the annular rib 12.

Immediately above the base or lower end of the main frame a shelf or horizontal platform 13 is made to project from opposite sides at a right angle to the frame, the shelf upon one side being adapted to support the motor 14 employed—for instance, an electric motor—in which event the battery 15 is located upon the opposite side of the shelf, and the wires connecting the battery and the motor are passed through a suitable aperture in the frame.

Slightly above the base or lower end of the main frame the said frame is carried outward at each side to form a longitudinal loop or opening 16, and above the said loop 16 the frame is provided with a longitudinal bore 17 and a set-screw 18, extending into the said bore. One end of an extension-rod 19 is inserted in the bore of the main frame, being held at any desired elevation by the said set-screw 18. The upper extremity of the extension-rod 19 is forked, and a sheave or pulley 20 is journaled in said forked end, as best illustrated in Fig. 2. A sleeve 21, forked at the inner end, is pivoted upon the corresponding forked end of the extension-rod 19 by the same bolt pivoting the sheave or pulley 20, whereby a swing-joint is provided. From the forked extremity of the sleeve 21 a rearwardly-extending balance-arm 22 is projected, and to the outer extremity of the said balance-arm 22 one end of a coil or spiral spring 23 is secured, the other end of the said spring being attached to a link 24, pivoted in a lug 25 integral with the rear side of the main frame, as best illustrated in Fig. 1.

Instead of the spring 23 and the link 24, a weight may be substituted, the said weight or spring being adapted to counterbalance the weight of the intermediate section of the device, of which the sleeve 21 is a portion.

In the sleeve 21 one extremity of the second extension-rod $25^a$ is inserted, and the said rod is held within the sleeve in any desired vertical position through the medium of a set-screw 26. The upper extremity of the second extension-rod $25^a$ is forked, and in the said forked end a cone-pulley 27 is pivoted. Near the swing-joint of the sleeve 21, with the first extension-rod 19, ears 28 are projected from the sleeve at a right angle in the direction of the front, as best shown in Fig. 1, between which ears a friction-pulley 29 is journaled.

Through the loop or opening 16 of the main frame a shaft 30 is horizontally projected, having keyed thereto within the loop a cone-pulley 31 of greater diameter than the upper cone-pulley 27. Upon one outer end of the said shaft 30 a crank 32 is secured, and upon the opposite end or extremity outside the loop 16 a drive-pulley 33 is connected with a pulley 34, attached to the motor 14 by means of a suitable belt 35, and the lower cone-pulley 31 is connected with the upper cone-pulley 27 by a belt 36, which belt, upon the rear of the machine, passes over the sheave or pulley 20, which pulley prevents the belt from coming in contact with the extension-rod 19 in its passage upward. At the front of the machine the belt passes upward over the friction-pulley 29, as best illustrated in Fig. 1. Thus the belt is kept from contact with the lower extension-rod 19 upon all sides.

Near the forked extremity of the second extension-rod $25^a$ ears 37 are forwardly projected at a right angle to the rod, between which ears a pulley 38 is journaled, and a guide-rod 39, provided with one forked end, is also pivoted to the ears 37, the members of the fork being made to engage with the outer surface of the ears. The smooth end of the guide-rod 39, which rod constitutes a third extension-rod, is inserted in a sleeve 40, provided with a forked outer extremity, and a set-screw 41 controls the movement of the guide-rod. In the forked end of the sleeve 40 a grooved pulley 42 is journaled, which pulley is connected by a belt 43, which is preferably elastic, with the cone-pulley 27, as best illustrated in Fig. 1. The belts 35 and 36 may also be elastic, if desired. When elastic belts are used, I prefer to form them of solid or hollow rubber core and a fibrous covering.

From the upper surface of the outer sleeve 40, at or near its inner end, a lug 44 is projected, to which lug a rope or chain is secured, the said rope or chain being made to pass over the pulley 38, and has secured at its free end a weight 46, sufficient to counterbalance the outer section of the frame and likewise the machine to which said section is attached. In practice it is desirable that the pulley 42 be attached to the machine to be driven, and the sleeve 40 may also be attached to the said machine, if in practice it is found advantageous. The main pulley 31 is made in the form of a cone, so as to provide one pulley for a crank when the motor is not employed and one for use with a motor. The pulley used in connection with the motor is preferably smaller than the one employed when the pulley is revolved by a crank 32.

In Figs. 4, 5, and 6 I have illustrated the application of my device to the ceiling of a building for the purpose of driving or communicating motion to a machine upon the floor or at an elevation above the device. In this latter construction an essentially U-shaped bracket 47 is secured to the wall or ceiling in any suitable or approved manner, and between the members of the said bracket which constitute the lower end thereof the main frame 48 of the device is passed, the said frame consisting of the central body or loop-section 49, located between the said members of the hangers, an integral rearwardly-extending arm 50, and a forwardly-extending arm 51, provided with a forked outer end, as best illustrated in Fig. 4, in which forked outer end a cone-pulley 52 is journaled.

The main frame 48 is pivoted in the hanger 47 by passing a shaft 53 through the said hanger and through the loop-section of the frame, as best illustrated in Figs. 5 and 6, the members of the hanger being provided with suitable bearing-boxes to receive the shaft.

Upon the shaft 53, within the loop 49 of the main frame, a grooved pulley 54 is rigidly secured, and upon one outer end of the said shaft a drive-pulley 55 is rigidly attached adapted for connection with the motor or engine purposed to communicate power to the device.

The outer section of the hanging device illustrated in Figs. 4 and 5 is preferably identical in construction with the outer section heretofore described in the perpendicular form of the device illustrated in Figs. 1 and 2.

Upon the rear arm 50 of the main frame 48 the weight 56 is adjustably secured, which weight is adapted to counterbalance the forward section of the main frame, the weight 46 of the outer section being adapted, as heretofore described, to counterbalance the weight of the outer section of the machine to which such section may be attached.

It is evident that the device illustrated in Figs. 4 and 5 is capable of vertical movement, and if a rotary movement is also required the shank of the hanger 47 may be made in two sections provided with a swivel-connection.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a support carrying a pulley, of a counterpoised frame pivoted to the support and carrying a cone-pulley at its outer end, a telescopic and counterpoised outer section pivoted to the said frame and carrying a pulley at its free end, and belts connecting the several pulleys, substantially as described.

2. The combination, with a support carrying a pulley, of a counterpoised frame pivoted to the support and carrying a cone-pulley at its outer end, a second counterpoised frame pivoted to the first-named counterpoised frame and carrying a pulley on its free end, a belt connecting the pulley of the support with the cone-pulley, and an elastic belt connecting the cone-pulley with the pulley on the counterpoised outer frame, substantially as herein shown and described.

3. The combination, with a base and a frame mounted to turn on the base and provided with a pulley in its lower part and at its extreme upper end, of a counterpoised frame pivoted to the first-named frame and carrying a cone-pulley on its outer end, a second counterpoised frame pivoted to the first-named counterpoised frame and carrying a pulley on its free end, and belts connecting said pulleys, substantially as described.

4. The combination, with a base and a telescopic frame mounted to turn on the base and provided with pulleys, of a counterpoised frame pivoted to the first-named frame and provided with a cone-pulley on its outer end, a telescopic and counterpoised frame pivoted to the first-named counterpoised frame and carrying a pulley on its free end, and belts connecting said pulleys, substantially as described.

5. The combination, with a base, a telescopic frame mounted to turn on the base and provided with a longitudinal opening in its lower part, a pulley within the opening and a pulley on the upper end of the frame, of a telescopic and counterpoised frame pivoted to the first-named frame and provided with a cone-pulley on its outer end and a guide-pulley on its inner end, a second telescopic and counterpoised frame pivoted to the first-named telescopic and counterpoised frame, and provided with a pulley on its free end, and belts connecting the said pulleys, substantially as herein shown and described.

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Witnesses:
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J. C. MACY.