J. W. FREEMAN.

GEARING.

APPLICATION FILED FEB. 24, 1911.

1,011,180.

Patented Dec. 12, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

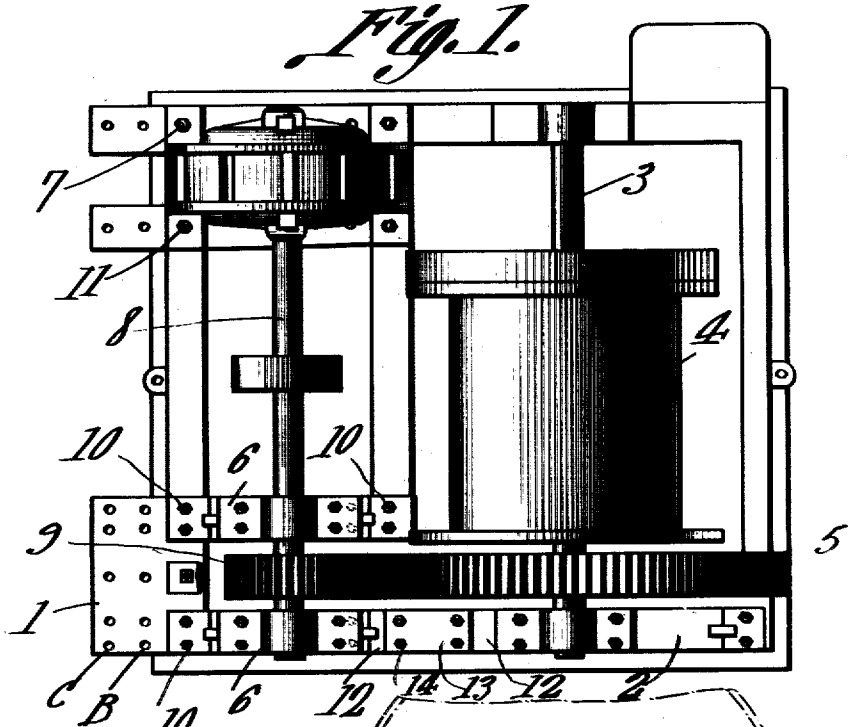

Fig. 2.

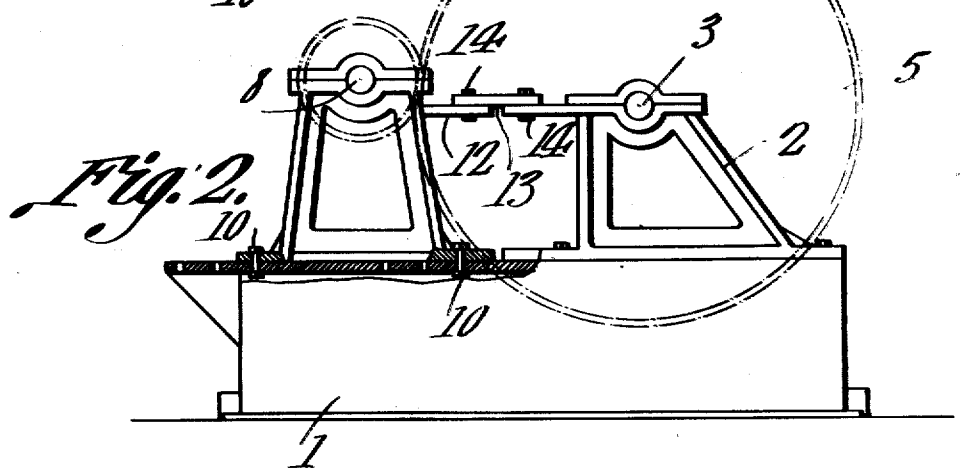

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Fig. 3.

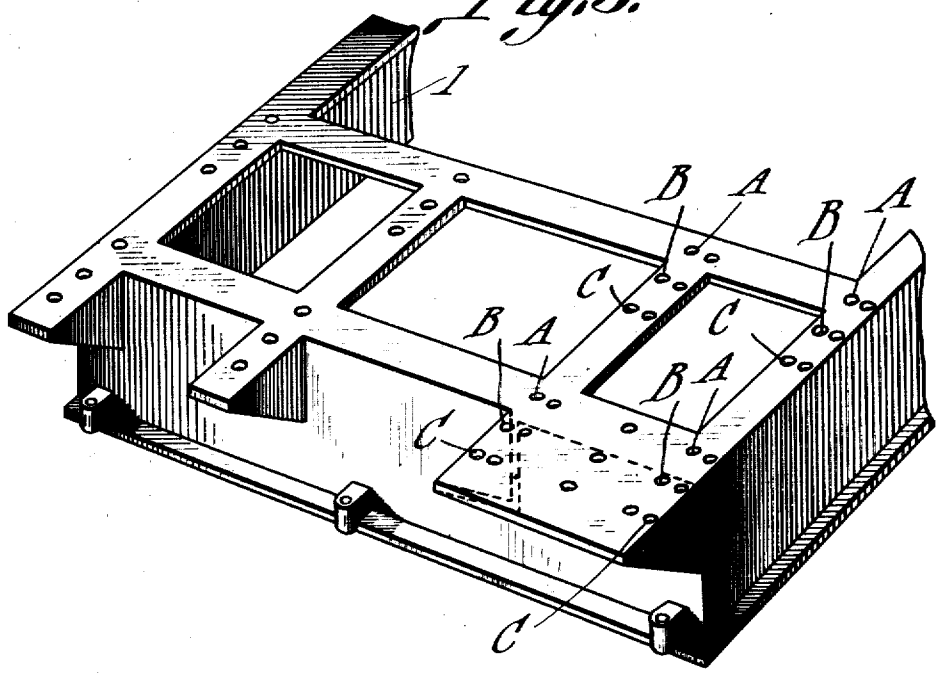
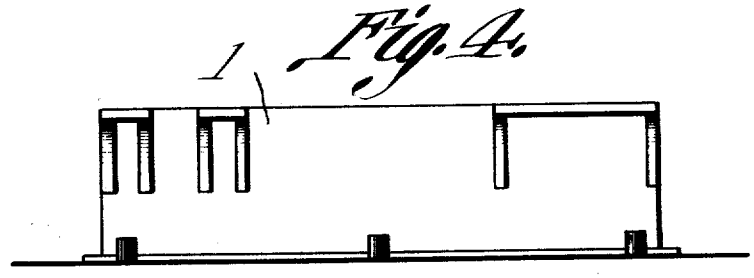


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN WELKER FREEMAN, OF JOPLIN, MISSOURI, ASSIGNOR TO UNITED IRON WORKS COMPANY, OF SPRINGFIELD, MISSOURI.

GEARING.

1,011,180. Specification of Letters Patent. Patented Dec. 12, 1911.

Application filed February 24, 1911. Serial No. 610,482.

To all whom it may concern:

Be it known that I, JOHN W. FREEMAN, a citizen of the United States, residing at Joplin, in the county of Jasper and State of Missouri, have invented a new and useful Gearing, of which the following is a specification.

This invention has relation to hoists of the single reduction type and consists in the novel construction and arrangement of its parts as hereinafter shown and described.

The object of the invention is to provide a gear hoist preferably employing an electric motor as a prime mover and which includes a driving pinion mounted upon the motor shaft and a driven gear wheel meshing with said pinion and mounted upon the winding drum shaft. Means is provided for shifting the motor, its shaft and its supporting brackets together with the pinion upon the bed of the hoist and securing the same in adjusted position whereby a pinion of small size may be removed from the engine shaft and a larger pinion substituted in its stead or conversely a large pinion may be substituted by a small pinion. By providing such an arrangement the hoist may be readily converted from one in which the cable is wound upon the drum at a relatively slow rate of speed or one in which the cable is wound upon the drum at a relatively fast rate of speed and this may be accomplished without changing or altering the original construction of the hoist but by adjusting the parts mentioned upon the bed plate and employing pinions of proper diameter and cable bars of suitable length as will be explained hereinafter.

It is not generally necessary that the change of cable speed be made in the hoist after the hoist has been installed although in some instances this is desired but a manufacturer will receive orders for hoists which specify different rates of cable speed and the primary object of this invention is to provide means whereby the parts may be assembled to produce a desired speed without altering or changing the castings or expensive parts of the machine. Also this manner of assembling the parts of the hoist obviates the necessity of keeping on hand a great variety of castings of different sizes.

In the accompanying drawings:—Figure 1 is a top plan view of the hoist. Fig. 2 is an end elevation of the same with parts broken away. Fig. 3 is a perspective view of a portion of the bed of the hoist. Fig. 4 is a side elevation of the bed of the hoist.

The hoist includes a bed 1 having located upon its top and in the vicinity of one of its side edges bearing brackets 2. The brackets 2 are in fixed positions upon the bed 1 and a drum shaft 3 is journaled in the upper ends of the said brackets. A drum 4 is mounted upon the shaft 3 and a gear wheel 5 is fixed to the said shaft.

The bearing brackets 6 are also located upon the upper side of the bed 1 but may be adjusted and secured in one of several positions upon the said bed. A motor frame 7 is also mounted upon the upper side of the bed 1 and may be adjusted and fixedly secured in one of several positions. The positions at which the motor frame 7 may be secured upon the bed 1 will register transversely of the machine with the positions at which the brackets 6 may be secured upon the bed 1. In the present invention the motor is in the form of an electric motor but it is to be understood that another form of prime mover may be employed. A driving shaft 8 is journaled in the motor frame 7 and also in the upper ends of the brackets 6 and at a point between the said brackets 6—6 a pinion 9 is fixed to the said driving shaft 8 and meshes with the gear wheel 5 fixed to the shaft 3.

The means for adjusting and fixedly securing the brackets 6 and the motor frame 7 upon the bed 1 consists in providing the bed 1 with series of perforations best seen in Fig. 3 and designated as A, B and C respectively. All of the perforations A are in alinement with each other transversely of the bed 1, the same is true of all of the perforations B and the same is true of the perforations C. The perforations A of each series are nearest the shaft 3, the perforations B a little more remote and the perforations C the most remote. The brackets 6 carry securing bolts 10 which are adapted to be passed through the perforations A, B or C in the bed 1 and the bolts 10 are a distance apart from each other along the brackets equal to the distance between the perforations A of one series and the perforations A of the other, the perforations B of one series of perforations and the perforations B of the other and the perforations C of one series and the perforations C of

the other. The motor frame 7 is also provided with securing bolts 11 which are located from each other in a direction transversely across the shaft 8 at a distance equal to the distance between the perforations A of one series and the perforations A of the other series upon the bed 1 and equal to the distance between the perforations B of one series and the perforations B of the other series upon said bed and equal to the distance between the perforations C of one series and the perforations C of the other series upon the bed. Therefore let it be presumed that the brackets 6 and the motor frame 7 are secured upon the bed 1 by passing the bolts 10 and 11 through the perforations A. Thus a pinion 9 of relatively small diameter must be positioned upon the shaft 8 in order to mesh with the driven gear wheel 5 and consequently when the motor which is contained within the frame 7 rotates at a given rate of speed the intermeshing pinion 9 and gear wheel 5 will rotate the shaft 3 and the drum carried thereby at a certain rate of speed so that the hoisting cable will have a certain rate of speed. Then let it be presumed that the brackets 6 and the motor frame 7 are secured upon the bed 1 by passing the bolts 10 and 11 through the perforations B. This will remove the shaft 8 to some extent away from the shaft 3 and consequently a pinion of larger diameter must be substituted for that which is upon the shaft 8 when the bolt passed through the perforations A and thus as the shaft 8 rotates at the said given rate of speed the shaft 3 and drum 4 will be rotated at a slightly faster rate of speed than that at which the parts would rotate if the said bolts 10 and 11 were passed through the perforations A. Finally let it be presumed that the bolts 10 and 11 are passed through the perforations C upon the bed 1 and thus the shaft 8 will be moved to a considerable extent away from the shaft 3 and a still larger pinion 9 must be substituted for the smaller one upon said shaft in order to mesh with the gear wheel 5. Thus as the said shaft 8 rotates at the same constant rate of speed, the shaft 3 and drum 4 will be rotated at a maximum rate of speed and the hoisting cable will have a maximum rate of run. The brackets 2 and 6 at the end of the bed 1 are provided with horizontal lugs 12 and a table bar 13 is positioned upon these lugs and secured to the same by means of bolts 14. It is to be understood that as the bracket 6 is moved away from the bracket 2 and secured in an adjusted position upon the bed 1 a short table bar 3 must be removed and a longer one substituted in its stead. Therefore in order to accomplish the adjustment mentioned to effect the different rates of speed at which the cable will travel it is necessary only to provide pinions 9 of different sizes and table bars 13 of different length. By this arrangement it will be seen that when the parts are secured in their adjusted positions they are firmly held in place upon the bed and there is no possibility for the parts becoming displaced with relation to each other during the operation of the machine.

Having described the invention what I claim as new and desire to secure by Letters Patent is:—

1. A gearing comprising a bed, brackets fixed thereon, a driven shaft journaled in said brackets, a gear wheel mounted upon the said shaft, a motor adjustably mounted upon the bed, brackets also adjustably mounted upon the bed, a driving shaft operatively connected with the said motor, a pinion fixed to the said driving shaft and meshing with the said gear wheel, means for fixedly securing the motor and the last mentioned brackets in adjusted position upon the bed, and means for connecting one of the said adjustable brackets to one of the fixed brackets.

2. Gearing comprising a bed, brackets fixed thereon, a driven shaft journaled in said brackets, a gear wheel mounted upon said shaft, a motor adjustably mounted upon the bed, brackets also adjustably mounted upon the bed, a driving shaft operatively connected with said motor, a pinion fixed to the said driving shaft and meshing with said gear wheel, means for fixedly securing the motor and the last mentioned brackets in adjusted position upon the bed, and a table bar secured at one end to one of the adjustable brackets and at its other end to one of the fixed brackets.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOHN WELKER FREEMAN.

Witnesses:
LEY T. LE BOW,
JAS. V. HENRY.