Dec. 10, 1935. W. J. COPPOCK 2,024,127

MOTOR SUPPORT

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FIG. V.

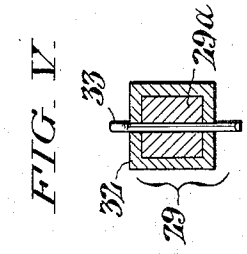


FIG. I.

WITNESSES:
John C. Bergner
Woodrow Stevenson

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MOTOR SUPPORT

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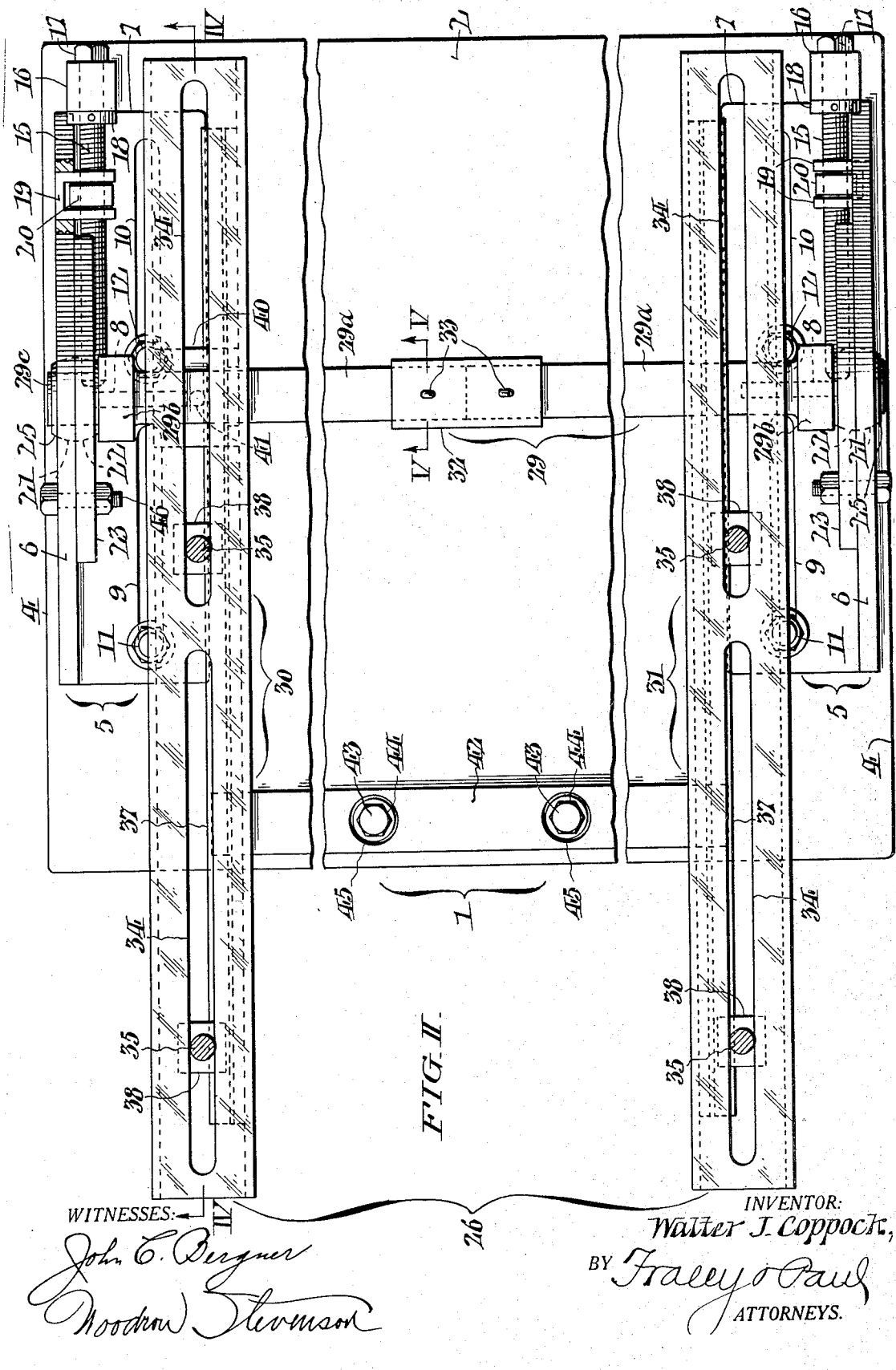


FIG. II.

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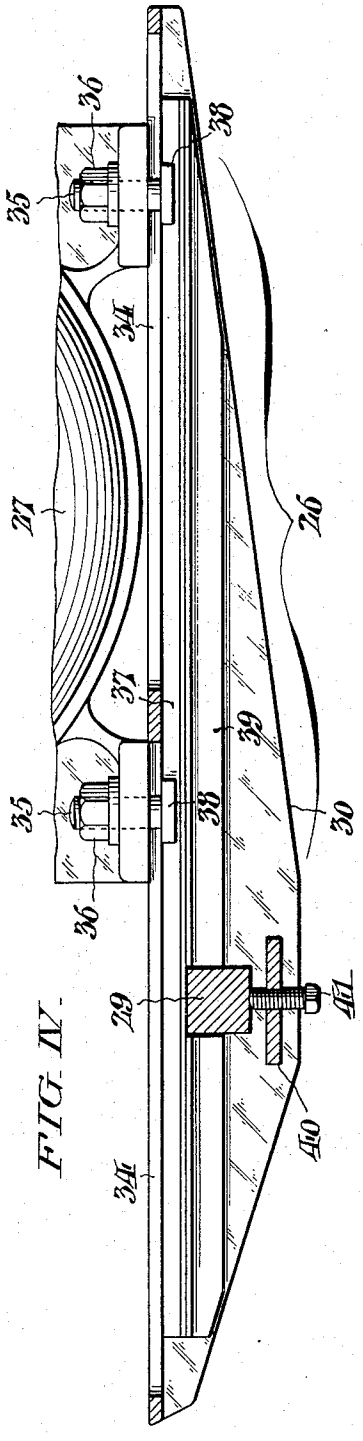


FIG. IV.

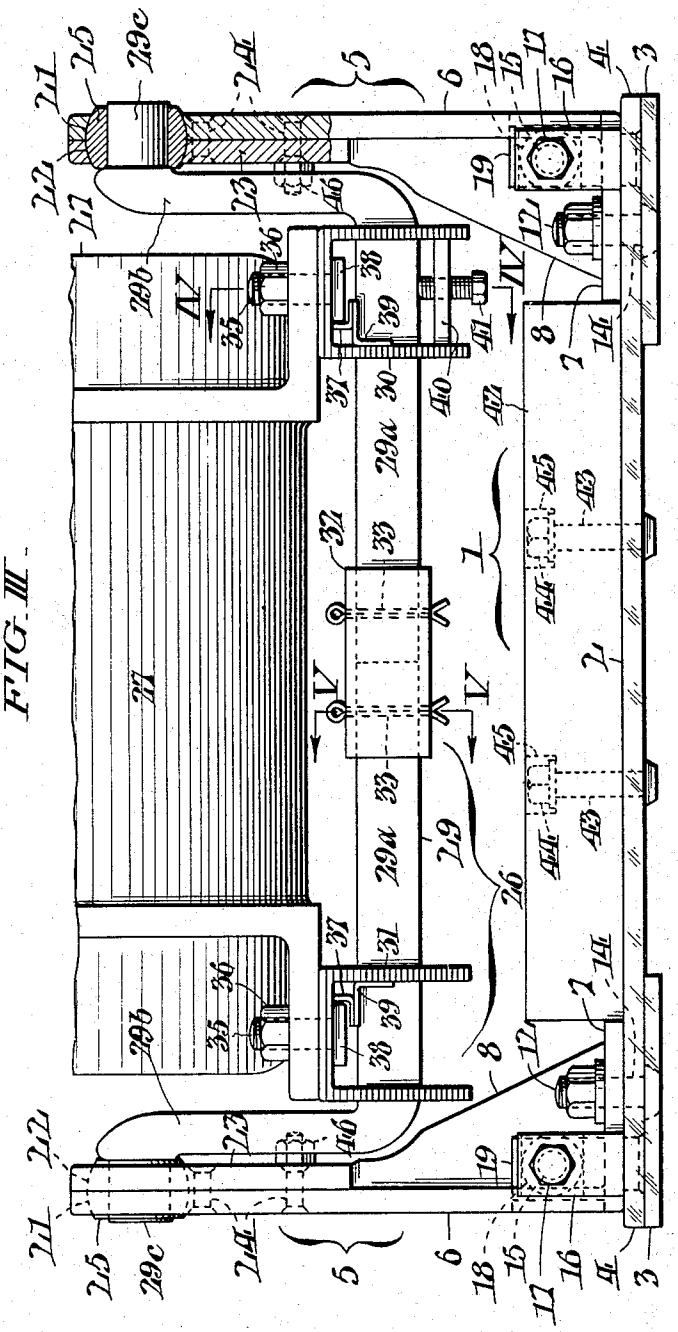


FIG. III.

WITNESSES:

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Dec. 10, 1935. W. J. COPPOCK 2,024,127

MOTOR SUPPORT

Filed Feb. 21, 1934 4 Sheets-Sheet 4

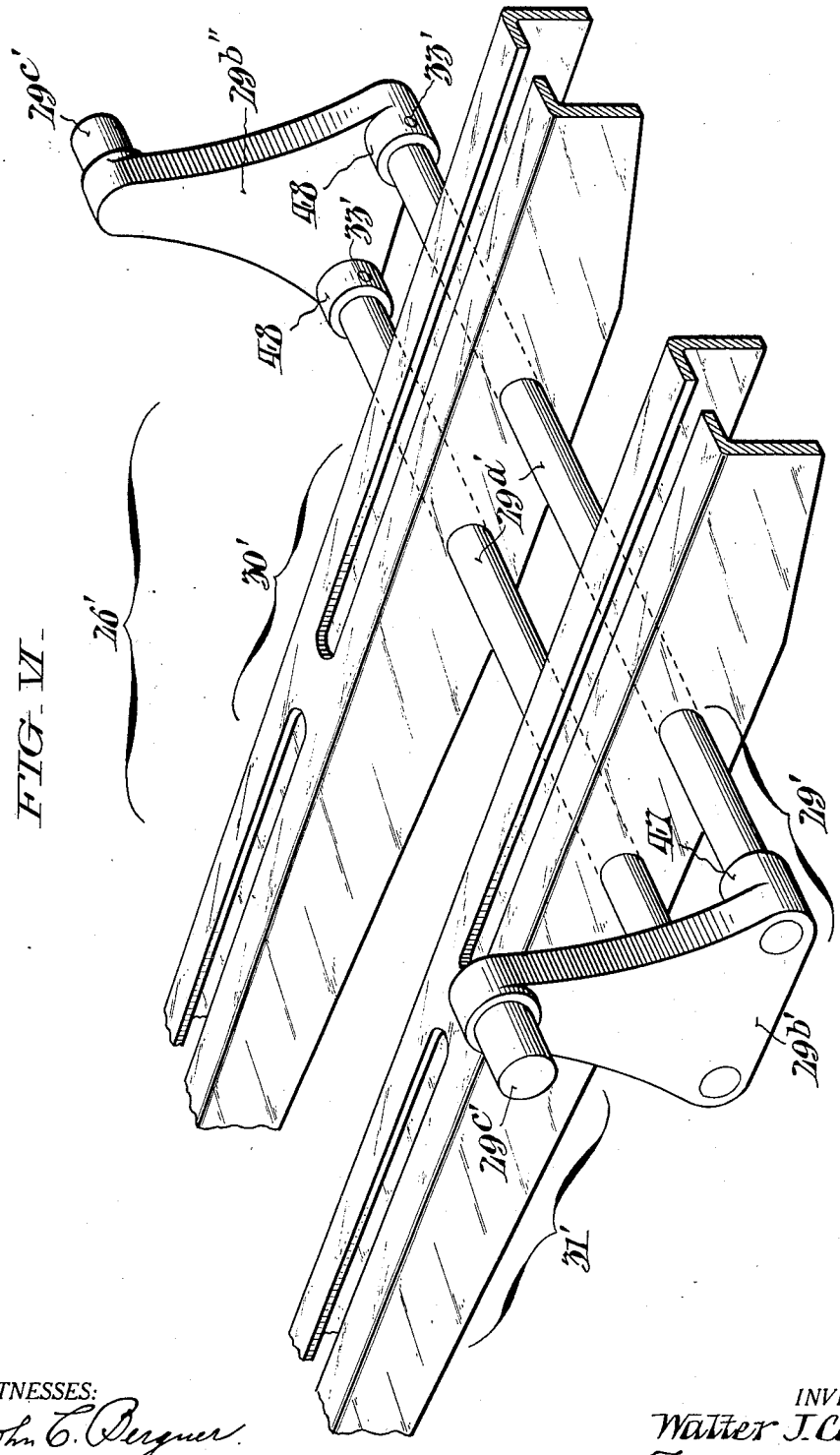


FIG. VI.

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Patented Dec. 10, 1935 2,024,127

UNITED STATES PATENT OFFICE

2,024,127

MOTOR SUPPORT

Walter J. Coppock, Moylan, Pa., assignor to The American Pulley Company, Philadelphia, Pa., a corporation of Pennsylvania

Application February 21, 1934, Serial No. 712,437

9 Claims. (Cl. 248—23)

This invention relates to motor supports of the type wherein the motor is pivotally mounted in such a manner that its weight may be utilized to yieldingly maintain the drive belt taut against slippage under load.

The chief aim of my invention is to obviate unnecessary weight and bulkiness in motor supports of the kind referred to, by making possible their economical construction from sheet and wrought metal parts without sacrifice of the necessary strength or operative efficiency. It is a further object of my invention to provide for easy relative adjustment of the parts such that any desired degree of tension may be yieldingly maintained on the driving belt under the weight of the motor.

Another object of my invention is to insure against binding of the pivot bearings on which the motor swings, under torsional strains and heavy loads.

Still other objects and attendant advantages will be manifest from the detailed description following of the attached drawings, wherein Fig. I is a view in side elevation of a motor support conveniently embodying my invention.

Fig. II shows the support in top plan with the motor removed.

Fig. III is an end elevation of the support with portions thereof broken away and sectioned for better disclosure of important details.

Fig. IV is a fragmentary longitudinal detail section taken as indicated by the arrows IV—IV in Figs. II and III.

Fig. V is a detail section taken as indicated by the arrows V—V in Figs. II and III; and

Fig. VI is a perspective view showing a modified detail of my invention.

As herein shown, my improved motor support comprises a base member 1 with a rectangular bottom plate 2 of heavy gauge sheet metal, having sustaining pads 3 of like material separately attached to its underside at the corners as by welding. Upstanding from the base 1 immediately inward of its opposite side edges 4 are standards 5, each of which is also fashioned from stout sheet metal with side web portions 6, foot portions 7 and lateral bracing webs 8 likewise permanently united preferably by welding. From Fig. II it will be observed that the foot portions 7 of the standards 5 are longitudinally slotted as at 9 and 10 for passage of headed screw clamp bolts 11 and 12 which engage in apertures 13 and 14 in the plate 2 of the base 1. By reason of the provisions just described, the standards are shiftable in the direction of the side edges 4 of the base 1; and in order to facilitate such shifting, I have provided adjusting screws 15. As shown, each of these adjusting screws 15 is rotatively supported in a post 16 upstanding from the base 1, but prevented from shifting axially through engagement of its head 17 with one side of the post, and through engagement of a pinned collar 18 on its threaded shank with the opposite side of said post. Recessed into the side web 6 of each standard 5 is a clevis piece 19 whereof the ears are pierced for free passage of the shank of the adjusting screw bolt 15; and held against rotation between the ears of the clevis piece is a nut 20 which is engaged by the threads of the bolt. Near the top, the side web 6 of each standard 5 has a spherically ground aperture 21, which, in conjunction with a complemental aperture 22 in a plate 23 attached to the web 6 at the inner side thereof by rivets 24, forms a socket for a spherical bearing member 25.

Pivotally suspended from the standards 5 is an underslung frame which is comprehensively designated by the numeral 26, and which serves to support the motor 27 in such manner that the weight of the latter may be utilized in maintaining the belt 28 taut and under tension to prevent slippage thereof relative to the driving pulley. As shown, the motor supporting frame 26 is a generally U-shaped structure, consisting of a platform with upstanding side or end pieces that are separately pivoted to the standards 5, 5, leaving the space between the side pieces substantially free and clear. Constructionally, the motor mounting or support 26 includes a U-shaped hanger element 29, and a pair of arms 30 and 31 which are mounted in laterally spaced relation on said hanger element and serve as the motor platform. From Figs. II and III it will be observed that the hanger element 29 is made in two parts which are fashioned to right angle configuration from square section bar metal, with horizontal shanks 29a constituting cross means for interconnecting the vertical extremities 29b, which latter constitute the end or side pieces of the hanger 29 and of the frame structure 26, and are formed with pivot trunnions 29c for engaging the axial apertures of the spherical bearing members 25. The arms 30 and 31 on the other hand are formed to channel or angle section from stout sheet metal and provided in their side flanges with square apertures for penetration by the horizontal shanks 29a of the two components of the hanger element 29. In assembling, after the arms 30 and 31 have been slipped into place over the shanks 29a of the hanger components, the contiguous

ends of the latter are aligned by a square section sleeve 32 and secured against separation by transverse cotter pins 33 as in Figs. II, III and V. The horizontal webs of the arms 30 and 31, it will be noted from Fig. II, are respectively slotted longitudinally as at 34 for passage of the bolts 35 used in securing the motor 27. As a consequence of this arrangement, the motor 27 may be shifted along the arms 30 and 31 for change of leverage relative to the pivot of the underslung supporting frame 26. As here shown, the motor 27 can be adjusted through a range including positions more or less between the side pieces 29a, 29a and the trunnions 29b, 29b. In order to prevent rotation of the securing bolts 35 incident to tightening or loosening the nuts 36 associated with them, longitudinally-extending angle pieces 37 are arranged within the hollows of the arms 30 and 31 to engage the sides of the square heads 38 of the said bolts. The angle pieces 37 just referred to are permanently secured to angle strips 39 which are in turn permanently secured to the inner vertical flanges of the arms by welding or otherwise.

Beneath and in line with the horizontal portion of the hanger element 29, the side flanges of the arm 30 are connected by a plate 40 which is centrally pierced and tapped for a set screw 41, see Figs. III and IV. The hanger is thus adaptable to motors of different widths. The motor is first secured to the arms 30 and 31 by the bolts 35, and, after location of said arms laterally of the hanger frame 26, the set screw 41 is tightened up to firmly engage the hanger element 29.

Downward swinging movement of the motor 27 is limited by a stop bar 42 along the left hand edge (Figs. I and II) of the base plate 20, said stop bar being secured to the plate by screw bolts 43 whereof the nuts 44 are recessed in countersunk holes 45 in the top face of the bar. Upward swing of the motor 27 is on the other hand limited by screw bolts 46 which are secured to the standard 5 and adapted to intercept the vertical extremities 29b of the hanger element 29.

Fig. VI shows a slight modification of my invention wherein the vertical extremities 29b', 29b'' of the hanger 29' are made separate and connected by a pair of laterally spaced rods 29a'. At one end, the rods 29a' are permanently anchored in the bosses 47 of the hanger piece 29b' which, at the other end, said rods are detachably secured by cross pins 33' in the bosses 48 of the other hanger piece 29b''. In this case the arms 30' and 31' of the motor mounting frame 26' have their vertical flanges pierced for passage of the rods 29a'. The motor mounting frame 26' is assembled by sliding the arms 30' and 31' onto the rods 29a', whereupon the hanger piece 29b'' is applied to the free ends of said rods and made fast by the cross pins 33' in a manner which is readily understandable from Fig. VI.

From the foregoing it is evident that I have provided a motor support which can be very economically fabricated from stock materials, which is easily assembled, and which, notwithstanding construction for the most part from comparatively light sheet metal, is strong and sturdy for capacity to withstand hard usage. The underslung design of the motor mounting frame 26 not only favors compactness in the organization as a whole, but makes possible the more delicate balancing of the motor incident to its positional adjustment toward the pivot axis. By shifting the standards 5 on the base 1, the slack of the drive belt 28 may obviously be taken up without in any way affecting the positional adjustment of the motor for balance. It will furthermore be evident that through provision of self-aligning spherical bearings for the hanger element 29, the support is rendered immune against the possibility of binding under strains induced by torsion under load, or through slight disalignment of the pivots due to inexact relative adjustment of the bearing standards on the base 1.

Having thus described my invention, I claim:

1. In a motor support of the character described, the combination of a base plate with laterally spaced standards upstanding therefrom; an underslung swinging motor mounting between said standards comprising a U-shaped structure including a motor platform and upstanding side pieces at its sides separately pivoted to the standards, leaving the space between said side pieces substantially free and clear; and means for securing the motor to said platform with capacity for adjustment relative to the swinging axis, through a range including positions between the side piece pivot axes.

2. In a motor support of the character described, the combination of a base plate with laterally spaced standards adjustable along said base plate; an underslung swinging motor mounting between said standards comprising a U-shaped hanger with end or side pieces separately pivoted to the standards, cross means below the pivot axes interconnecting said side pieces, and a motor platform attached to said cross means; and means for securing the motor to said platform with capacity for adjustment relative to the swinging axis, through a range including positions between the side piece pivot axes.

3. In a motor support of the character described, a base plate; laterally spaced standards independently adjustable along said base plate; an underslung swinging motor mounting composed of a pair of side pieces with trunnions engaged in self-aligning bearings sustained by the standards, cross means below said trunnions detachably interconnecting said side pieces, a number of laterally-spaced arms apertured for passage of said cross means; and means for securing the motor to said arms with capacity for adjustment relative to the swinging axis, through a range including positions between said trunnions.

4. In a motor support of the character described, a base plate; spaced standards upstanding from said base plate; and a swinging underslung motor mounting having a transverse U-shaped axis member with trunnion ends journalled in self-aligning bearings sustained by said standards, a number of arms laterally spaced on the cross bar of said U-shaped axis member, and means for securing the motor to the arms with capacity for positional adjustment relative to the swinging axis through a range including positions between said trunnion ends.

5. In a motor support of the character described, a base plate; laterally spaced standards independently adjustable along said base plate; and a swinging motor mounting including a transverse square section axis member with end trunnions engaged in self-aligning bearings sustained by the standards, a number of channel section sheet metal arms with square apertures in their side flanges for passage of the axis member, and means for securing the motor to the arms with capacity for positional adjustment relative to the swinging axis.

6. In a motor support of the character described, a base plate; laterally spaced standards

independently adjustable along said base plate; and an underslung motor mounting including a hanger element composed of two parts with vertical extremities terminating in trunnions to engage self-aligning bearings carried by the standards and with square section shanks, an aligning sleeve connecting the contiguous ends of said shanks, a number of arms with square transverse apertures for passage of the shanks of the hanger element components, and means for securing the motor to said arms with capacity for adjustment relative to the swinging axis.

7. In a motor support of the character described, a base plate; laterally spaced standards independently adjustable along said base plate; and a swinging motor mounting including a transverse square section axis member with trunnions engaged in self-aligning bearings sustained by the standards, a number of channel section sheet metal arms with square apertures in their side flanges for pasage of the axis member and longitudinal slots in their cross webs; and square headed securing bolts for the motor engaging through the slots in the arms and held from rotation by contact of their square heads with angle section pieces longitudinally within the hollows of said arms.

8. In a motor support of the character described, a base plate; laterally spaced standards independently adjustable along said base plate; an underslung swinging motor mounting composed of a pair of end pieces with trunnions engaged in self-aligning bearings sustained by the standards, a pair of spaced parallel cross rods detachably connecting said end pieces, a number of laterally-spaced arms with transverse apertures for passage of the rods; and means for securing the motor to said arms with capacity for adjustment relative to the swinging axis.

9. In a motor support of the character described, a base plate; laterally spaced standards independently adjustable along said base plate; and an underslung swinging motor mounting including a pair of side pieces with trunnions in engagement with self-aligning bearings carried by the standards, a pair of laterally spaced cross rods detachably connecting said end pieces, a number of laterally spaced angle section arms of sheet metal with apertures in their side flanges for passage of the cross rods, and means for securing the motor to said arms with capacity for adjustment relative to the swinging axis.

WALTER J. COPPOCK.