Feb. 17, 1959 J. J. SLOYAN 2,874,006

SUPPORTS

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Fig. 1.

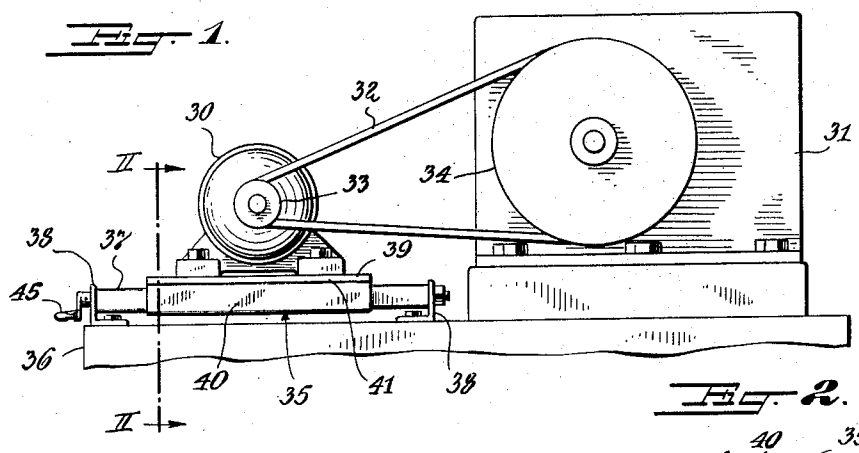


Fig. 2.

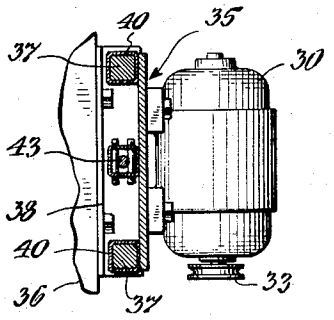
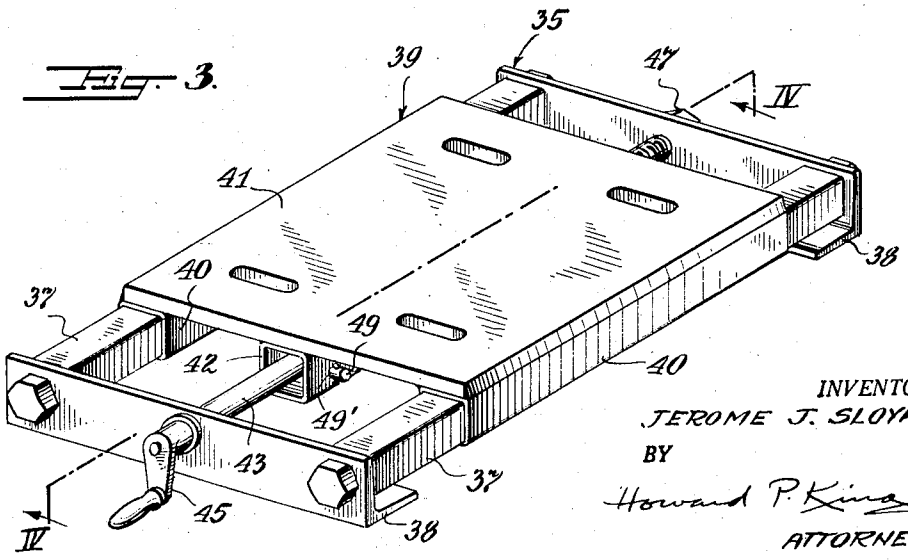


Fig. 3.



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Fig. 4.

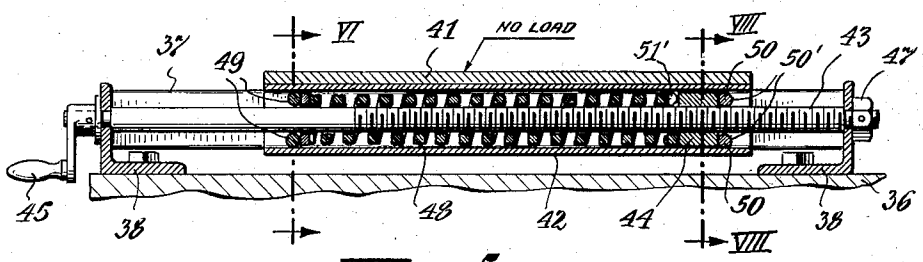


Fig. 5.

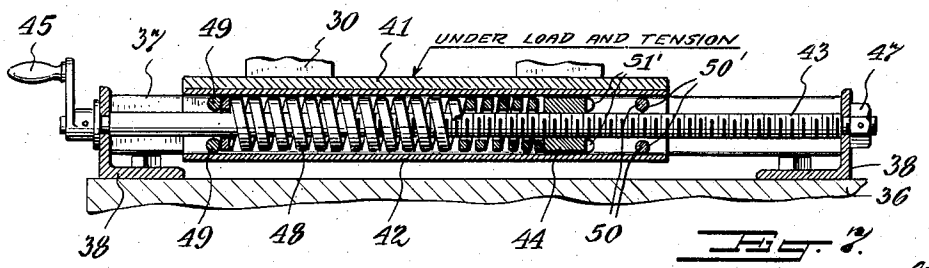


Fig. 7.

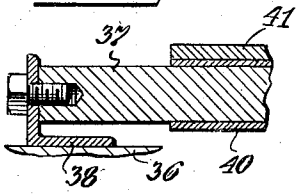


Fig. 6.

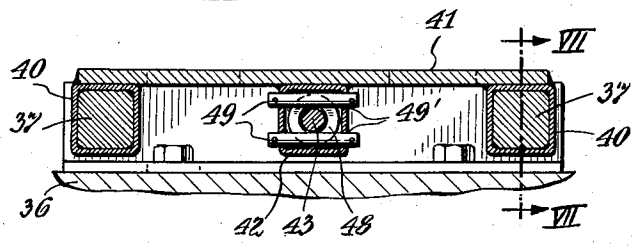


Fig. 8.

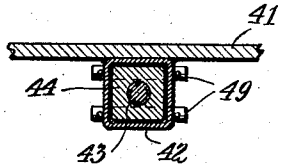
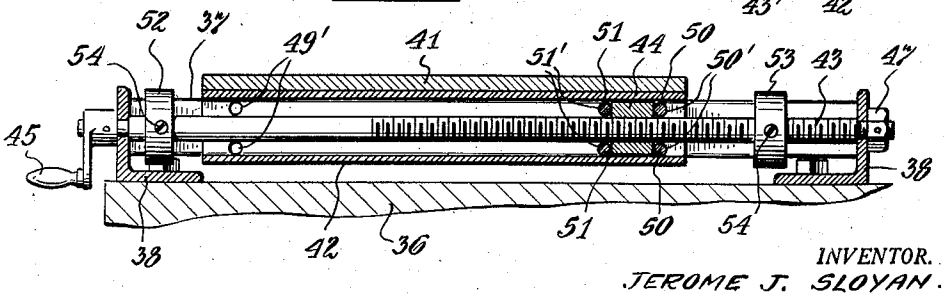


Fig. 9.



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2,874,006

SUPPORTS

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Application December 30, 1954, Serial No. 478,862

5 Claims. (Cl. 308—4)

This invention relates to supports, and more particularly to that type of support for motors or other machinery for providing a movable carriage by which the motor or the like has adjustable relation to some other instrumentality.

Prior art supports of this general character have failed in numerous respects to fulfill requirements posed in the trade, such as low cost, noiselessness, rigidity, universality, limitation to sag, easy sliding under both load and non-load conditions, compactness, and so forth.

The present invention accordingly proposes a construction of support overcoming the criticisms of supports of the prior art.

An esseential objective is to obtain rigidity and minimum sag due either to static load or applied tensioning load in use.

A further object is to provide a structure wherein tendency to chatter is overcome under normal conditions and even more certainly prevented under load conditions.

A detail object is to utilize materials readily obtained in the market and requiring minimum fabrication operations.

Other objects, advantages and novelty of construction will appear to persons skilled in the art to which the invention appertains as the description proceeds, both by direct recitation thereof and by implication from the context.

Referring to the accompanying drawings, in which like numerals of reference indicate similar parts throughout the several views:

Figure 1 is a side elevation of the support of this invention in use;

Figure 2 is a section on line II—II of Fig. 1, and showing side-wall mounting of the support;

Figure 3 is a perspective view of the support;

Figure 4 is a longitudinal section of the support without any applied load;

Figure 5 is a section corresponding to Fig. 4, but indicating both a static and applied tensioning load as included;

Figure 6 is a cross-section on line VI—VI of Fig. 4;

Figure 7 is a cross-section on line VII—VII of Fig. 6;

Figure 8 is a cross-section on line VIII—VII of Fig. 4; and

Figure 9 is a longitudinal section showing the invention used in a positively adjusted non-resilient type of support.

For preliminary clarification to orient the present invention in relation to its use, it may be pointed out that the support constituting my improvement has particular utility in connection with belt driving of one machine by another, and may be utilized either to support the driving unit or the driven unit. Arbitrarily, therefore, Figure 1 shows a motor **30** which drives an instrumentality **31** through the agency of a belt **32** and pulleys **33** and **34** respectively on the shafts of said motor and instrumentality. The support has basic construction enabling it to be readily used with machines wherein one is equipped with a variable pitch pulley or with machines wherein both

are equipped with pulleys having fixed diameters. In the first instance, the operator moves the machine carried by the support, which in this showing is the motor, and in so doing changes the effective pitch diameter where the belt engages the pulley and thereby changes the speed of the driven machine. In the second instance mentioned, the operator adjusts the belt tension initially, and thereafter the tension is maintained by spring loading in the support. The side elevation of Figure 1 is correct for either such use of the support, while Figures 4 and 5 provide for inclusion of spring loading and Figure 9 shows the support as used for speed control. The invention provides a construction by which a user may employ the support for one type of drive, but if he later desires to use the support for the other type of drive, may, without difficulty, make appropriate alteration of the support and thereby avoid the need of discarding one and obtaining another to fulfill the new requirements. Such universality is of importance to many users.

An essential feature of the present invention resides in the construction of a support **35** for the piece of machinery, which is herein exemplified as motor **30**. As shown, a bed **36** is provided to which the instrumentality **31** is secured, and to which a fixed portion of the support of the present invention is secured, it being understood that said bed is representative of any structure, such as floor, table, wall, shelf, ceiling, or the like which will afford relatively fixed mounting for the aforementioned instrumentality and fixed portion of the support.

The fixed portion of the support as herein illustrated, comprises two parallel rails **37** the ends of which are made fast to transverse cleats **38** which may conveniently be formed from appropriate lengths of angle iron one flange of which forms a foot juxtaposed to and adapted to be secured to bed **36** and the other flange of which stands perpendicularly and constitutes an end abutment and rigid mounting for the said rails. The assembly of rails and cleats forms a rectangle of which the cleats will arbitrarily be referred to as at the ends and the rails as at the sides of the rectangular assembly constituting the fixed or basal portion of said support. Each rail is shown as square in cross-section.

The movable portion of the support comprises a carriage **39** having slidable movement longitudinally of the rails, said carriage having gliders **40** at its opposite side margins cooperating with the rails to not only provide for sliding of the carriage on the rails but to also keep the carriage assembled upon the rails no matter in what position the support may be located.

Each glider is conveniently comprised of rectangular tubing, and in the present showing said tubing is square in cross-section agreeable to the cross-sectional size and shape of the rail on which mounted. The cross-sectional dimensions of rail and glider are such that the four interior faces of the tubing all substantially make contact with the juxtaposed four flat bearing surfaces of the rail with a sliding fit, which means very slight clearance of the order of thousandths of an inch. Therefore both longitudinally and laterally of each said surface there is extensive surface contact.

Carriage **39** provides a top plate **41** extending across from glider to glider, said plate being shown flat and resting on one wall of each glider and having a length substantially the same as the length of the gliders. The gliders are welded at their upper side edges to said plate and thereby both kept in exact parallelism, and also kept from rotation. The side walls of said glider, perpendicular to the said top plate, function as reenforcing beams for said top plate and assist in supporting the load which is applied to said plate.

Between said gliders, parallel thereto, and illustrated as approximately as long as said top plate, is a tubular

housing 42, welded to and functioning as a beam reenforcement for said plate, said housing likewise preferably being rectangular and shown as square in cross-section. Coaxially within said housing is a threaded shaft 43 which preferably projects from both ends of the housing and through the cleats 38 for rotational support thereby. There is space within the housing, between it and said shaft, to receive a nut 44 which may be fed along the shaft by rotation of said shaft. The periphery of the nut 44 conforms to and is juxtaposed to the inner circumferential contour of the housing so as to keep the nut from rotating but enabling it to slide within said housing. As herein shown, a crank 45 is located and pinned on one end of the shaft where protruding through one cleat, thereby enabling the shaft to be conveniently rotated. A nut 47 is pinned or otherwise held on the shaft at the outside face of the other cleat, cooperating with said crank to prevent longitudinal movement of said shaft.

Where use of the support requires spring loading for the carriage, a spring 48 is provided with its convolutions encircling the shaft within the space between the shaft and housing. Rotation of the crank in one direction will draw nut 44 in a direction toward two pins 49 and compress the spring for applying tightening tension on belt 32. Rotation in the other direction impresses nut 44 against pins 50 traversing the housing on the far side of the nut from said spring, said pins being located in holes 50' for the purpose in said housing.

Where use of the support requires positive actuation of the carriage, rather than spring loading, the nut 44 may be held from longitudinal displacement in the housing so that rotation of the crank not only moves the nut along the shaft, but necessitates that the carriage be correspondingly moved. Retention of the nut is obtained by other pins 51 in holes 51' at the other face of the nut from and functioning in conjunction with pins 50 to confine the nut therebetween, said pins being located respectively in close proximity to the front and back faces of the nut. For this type of operation, no spring is required and may consequently be omitted in accordance with the showing in Fig. 9.

It will be observed that where spring loading is used, the movable nut operates on the shaft at the portion of the shaft remote from the crank, making it unnecessary to thread the shaft more than approximately two thirds of its length. Where spring loading is not required, the same shaft and nut and approximately the same nut location may be employed merely by the provision of the additional holes 51' for pins 51 to hold the nut in place. In this use of the support, there are four pins, two behind the nut and two in front thereof. Where spring loading is used, the two pins 50 behind the nut may be retained to prevent the nut from leaving the housing and to enable the carriage to be moved in a belt-loosening direction by rotation of the crank, whereas the other two pins 51 may be removed from the holes 51' adjacent to the nut and placed in the holes 49' at the other end of the housing and there identified by numeral 49. Thus a customer may alter the support to meet his particular needs for either positive or spring-loaded actuation of the carriage. While I have, for purpose of identification, referred to the several pins by numerals 49, 50 and 51, it is to be understood that all of the pins may be alike and therefore interchangeably usable in any of the holes 49', 50' or 51'.

Where the carriage is arranged for positive actuation as when used in connection with variable pitch pulleys, and shift from one definite speed to another is repeatedly required, it is a convenience to provide collars 52, 53 on shaft 43, suitably held in adjusted position thereon by set screws 54, or otherwise, said collars being located beyond opposite ends of the housing 42. The shaft is rotated to move the carriage toward one or the other of said collars which limit such movement by engagement of the housing with one or the other of the collars depending on which way the carriage was moved.

I claim:

1. A support comprising fixed rails and a slidable carriage thereon, said carriage having gliders on said rails and a cross plate from one glider to the other, a tubular housing fixed on said cross plate substantially as long as and located between and parallel to said gliders, said housing being polygonal in cross section and thereby having one function of reenforcing said plate, a nut in said housing, said nut having a polygonal circumference conforming to and in sliding engagement with the interior of said housing, said housing thereby having a second function of mounting said nut and restraining it from rotation, and a rotatable shaft within said housing and in threaded engagement with said nut whereby said housing has a third function of protecting said shaft where passing beneath said plate.

2. A support in accordance with claim 1 wherein holes are provided through two opposed walls of the tubular housing in proximity to at least one of the other of the walls of said housing for admitting pins transversely of the housing between a wall thereof and the shaft.

3. A support in accordance with claim 2 wherein holes are provided in proximity to both ends of said housing.

4. A support in accordance with claim 2 wherein holes are provided in proximity to both ends of said nut.

5. A support in accordance with claim 2 wherein pins are provided for and in said holes said pins traversing the interior of said housing, and wherein a spring is included between said pins and said nut.

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