Nov. 1, 1932. J. MANN 1,886,035

BED PLATE

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FIG- 1.

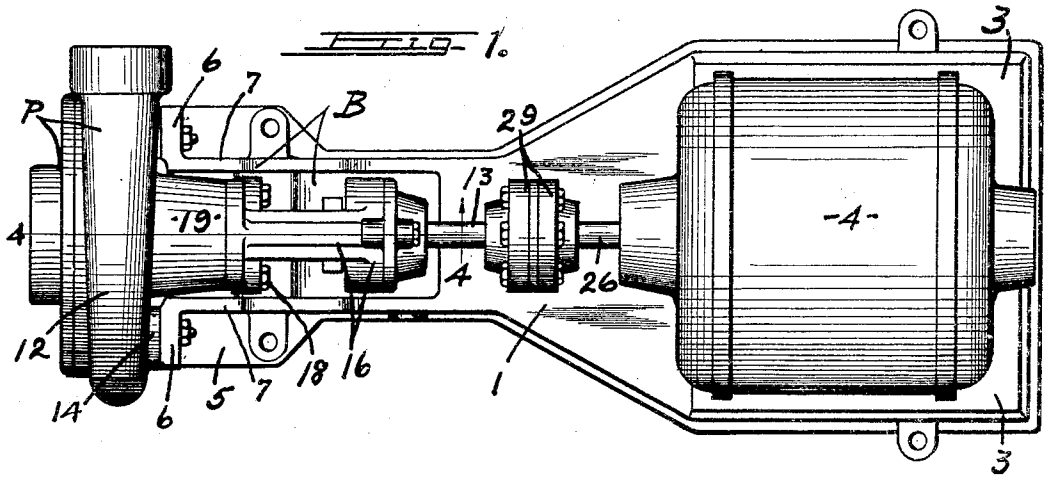


FIG- 2.

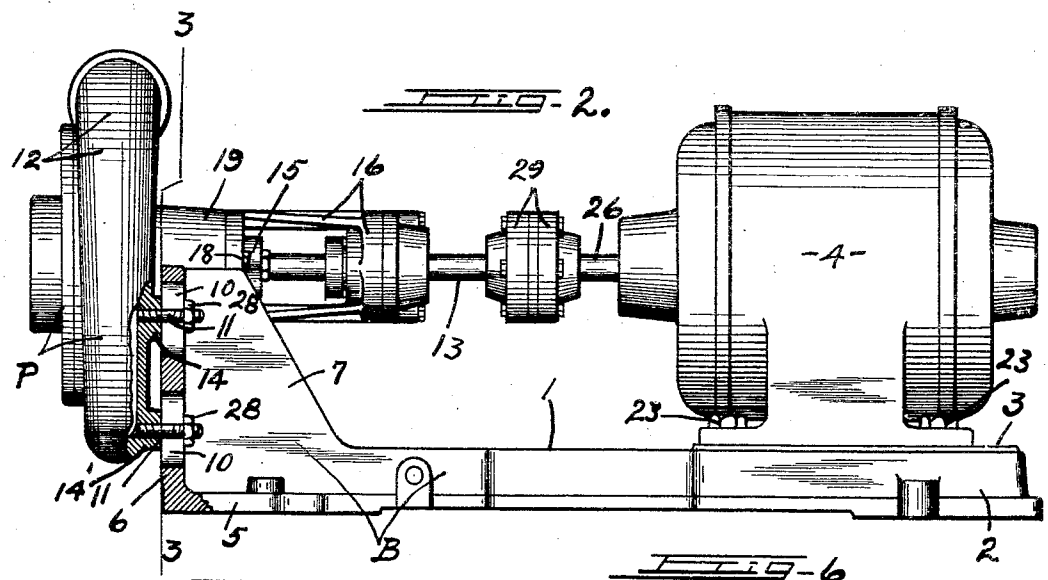


FIG- 3.

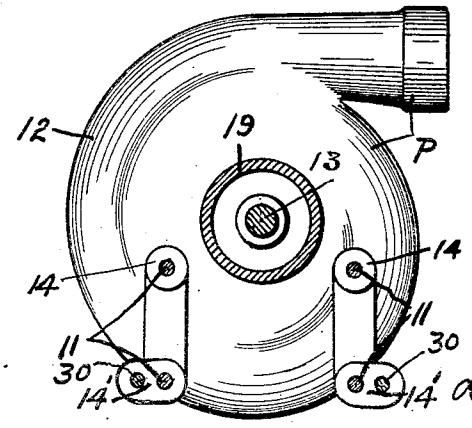
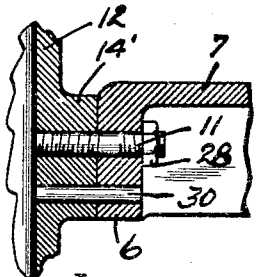


FIG- 6



WITNESS

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BED PLATE

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FIG-4.

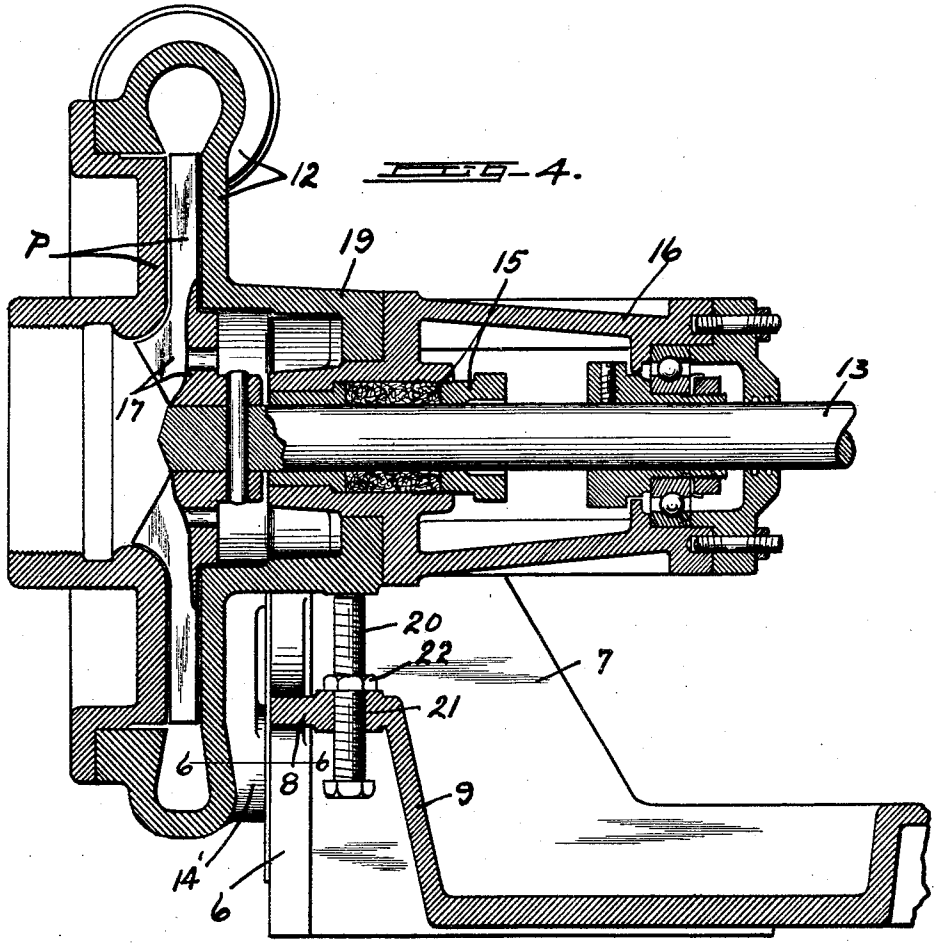
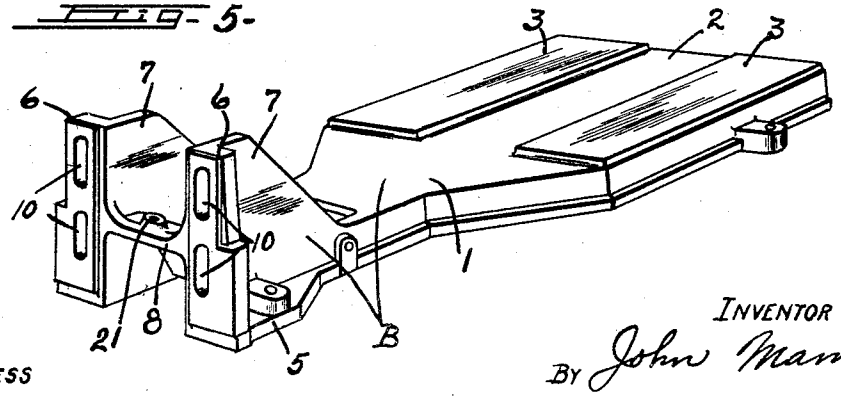


FIG-5-



WITNESS

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Patented Nov. 1, 1932 1,886,035

UNITED STATES PATENT OFFICE

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BED PLATE

Application filed May 22, 1930. Serial No. 454,686.

This invention relates to certain new and useful improvements in bed plates, and pertains more particularly to foundation framing or bed for pumping units composed of a centrifugal pump or the like, and the driving means therefor.

In the mounting of centrifugal pumps which are directly connected with an electric motor, steam turbine or other driving means upon a unitary bed plate or base, it has heretofore been an expensive and laborious proposition to bring the shafts of the pump and driving member into coaxial alignment as the distance from the base or mounting feet of either the pump or driving member varies throughout a wide range, depending upon the size and type of pump used, and the make, type, size and horsepower of the driving member, and therefore, it is seldom that the distances from the base to the axes of the shafts of the pump and driving member comprising a pumping unit are equal. This, heretofore, has necessitated the making of a special bed plate for each pumping unit having carefully machined raised portions of proper heights to bring the shafts of the pump and power plant into coaxial alignment, or else the use of a bed plate having a substantially flat top in connection with auxiliary shims, subbases, raising blocks or other such devices to properly adjust the relative positions of the members of the pumping unit to bring them into coaxial alignment. This construction has not only been costly in material and time required to produce these parts, but also in the time required for assembling and shipping the units.

The main object of this invention, therefore, is to produce a simply constructed and efficient bed plate upon which the pumping and driving members comprising a pumping unit may be quickly and easily mounted and directly connected with each other in coaxial relation, without requiring the use of auxiliary shims or raising blocks.

A further object is to construct a bed plate adapted to have quickly and easily mounted thereon pumping units of different sizes and capacities without the use of auxiliary positioning means.

Still another object is to facilitate the mounting of the pump and driving members upon a unitary bed plate so that this may be quickly and easily accomplished by the factory branch agency or the purchaser.

Other objects and advantages of the invention will appear in the following detailed description, taken in connection with the accompanying drawings in which:—

Figure 1 is a top plan of a bed plate, embodying the various features of this invention, with a pumping unit assembled thereon.

Figure 2 is a side elevation, partly in section, of the device as illustrated in Figure 1.

Figure 3 is a vertical transverse sectional view taken on line 3—3, Figure 2.

Figure 4 is an enlarged detail vertical section taken on line 4—4, Figure 1.

Figure 5 is a perspective view of my improved bed plate.

Figure 6 is a detail section taken in the plane of the line 6—6, Figure 4.

The bed plate —B— disclosed in the drawings, consists of a substantially flat body or base portion —1— having one end —2— thereof provided with a pair of longitudinally extending transversely spaced parallel raised portions or bosses —3— which have the upper surfaces thereof flat and smooth for supporting thereon any suitable pump driving means, as the electric motor —4—. The other end portion —5— of the base —1— is, in this instance, somewhat narrower in plan view than the end portion —2— and is provided with a pair of upwardly extending substantially rectangular posts or brackets —6— positioned in parallel spaced relation, with their outer faces extending slightly beyond the end —5— of the base —1— and at right angles to the plane of the top of the bosses —3—.

The inner vertical edges of the posts —6— are connected with respective relatively thin webs —7— which extend rearwardly and downwardly in parallel relation from the upper ends of the posts to the base —1—, for maintaining the posts rigidly in vertical relation to the base, while the posts are tied together and supported against relative lateral movement by a substantially horizontally

disposed rib member —8— which extends transversely between the two vertical posts intermediate the ends thereof, and which is connected to the base —1— by a rearwardly and downwardly extending wall —9— made integral with the inner edge of the rib.

In each post —6— is provided a pair of vertically extending elongated slots —10— arranged in spaced relation one above the other for receiving therethrough respective studs —11— secured to the pump case —12—. In this instance there are four of these studs —11— arranged in two pairs spaced apart a distance substantially equal to the distance between the pairs of slots —10— and at equal distances either side of a vertical plane passing through the axis of the pump shaft as —13—.

The studs —11— of each pair are secured in vertical spaced relation in respective bosses —14— and 14' provided on the stuffing box side of the pump case —12— below the horizontal plane of the pump shaft —13—, as more clearly shown in Figures 2 and 3.

The stuffing box as —15— may be of any suitable construction and, in this instance, is mounted in a suitable bearing suporting arm —16— adapted to rotatably support the pump shaft —13— and the pump impeller —17— which is secured to the inner end of said shaft to rotate therewith.

The supporting bearing arm —16— is secured by screws —18— or their equivalent to the outer end of a substantially circular chambered projection or housing —19— secured to or made integral with one side of the pump case —12— and slightly eccentric therewith as shown in Fig. 3.

In the transverse rib —8— provided between the posts —6— is adjustably mounted a pump positioning screw —20— which extends upwardly and is screw-threaded in a suitable threaded opening —21— provided in the rib —8— intermediate the ends thereof, said screw —20— being locked in the adjusted position by means of a lock nut —22— screw-threaded on the upper end of said screw.

In assembling the pump and driving member, as the motor —4— upon the bed plate —B—, it is only necessary to secure the motor —4— in any suitable manner as by the screws —23— to the end —2— of the bed plate —1— upon the bosses —3— with the vertical plane passing through the axis of the motor substantially midway between the sides of the base —1—.

The pump as —P— having the studs —11— secured thereto may then be positioned adjacent the outer face of the post —6— with the studs —11— projecting through respective slots —10— of said posts and with the housing —19— of the pump case —12— resting upon the top of the screw —20—. Then by the proper manipulation of the screw —20—, the pump —P— may be adjusted to bring the shaft —13— thereof into coaxial alignment with the motor shaft —26— of the motor —4—, after which the pump may be secured in this position to the posts —6— and therefore, to the bed plate —B— by suitable nuts —28— screw-threaded on the outer end of the studs —11—, after which the adjusting screw —20— may be locked with the upper end thereof supporting the pump case —12— by resting against the lower surface of the housing —19— and then the pump shaft —13— may be connected with the motor shaft by any suitable means as by the coupling —29—.

After the pump P has been secured to the bed plate in coaxial alignment with the driving member, as the motor —4—, registering holes may be drilled or otherwise formed in the posts —6— of the bed plate and adjacent bosses —14'— of the pump case —12— for receiving respective dowel pins —30— therein so that after the pump and motor have been once mounted in coaxial alignment on the bed plate, the pump may at any time after having been removed from the bed plate for shipment or repairs, be quickly and easily again mounted on the bed plate in proper relation with the motor without the aid of the positioning screw —20—.

It is now evident that with this improved bed plate, that motors of various sizes may be secured thereto and that pumps varying in sizes and capacities may be readily secured in coaxial alignment with any one of a suitable motor for driving said pump without the use of auxiliary positioning means, as shims or spacing blocks, due to the length of the slots —10—, or without in any way changing the form or construction of the bed plate —1—.

Although I have shown and described the preferred embodiment of this invention, it is evident that various changes in the form and relation of the parts thereof may readily be made without departing from the spirit thereof, as set forth in the appended claims.

I claim:

1. A device of the class described comprising a one-piece base for driving and driven members and having a pair of supporting surfaces arranged at right angles to each other, one of said surfaces comprising a pair of spaced supports provided with elongated slots adapted to receive securing screws therethrough whereby one of said members may be adjustably mounted directly on the bed plate to extend between said supports and in fixed coaxial relation with the member mounted on the other surface, a rib connecting the supports, and an adjusting screw associated with said rib adapted to move the adjustably mounted member into coaxial relation with the other member.

2. A device of the class described comprising a one-piece base for driving and driven members and having a pair of supporting

surfaces arranged at right angles to each other, one of said surfaces comprising a pair of spaced supports providing a recess for the reception of a part of one of said members and provided with elongated slots adapted to receive securing screws therethrough whereby one of said members may be adjustably mounted directly on the bed plate to extend between said supports and in fixed coaxial relation with the member mounted on the other surface.

In witness whereof I have hereunto set my hand this 13th day of May, 1930.

JOHN MANN.