Nov. 13, 1928.

1,691,037

G. W. ALLEN

FOUNDATION METHOD

Filed Sept. 18, 1923

Fig. 1

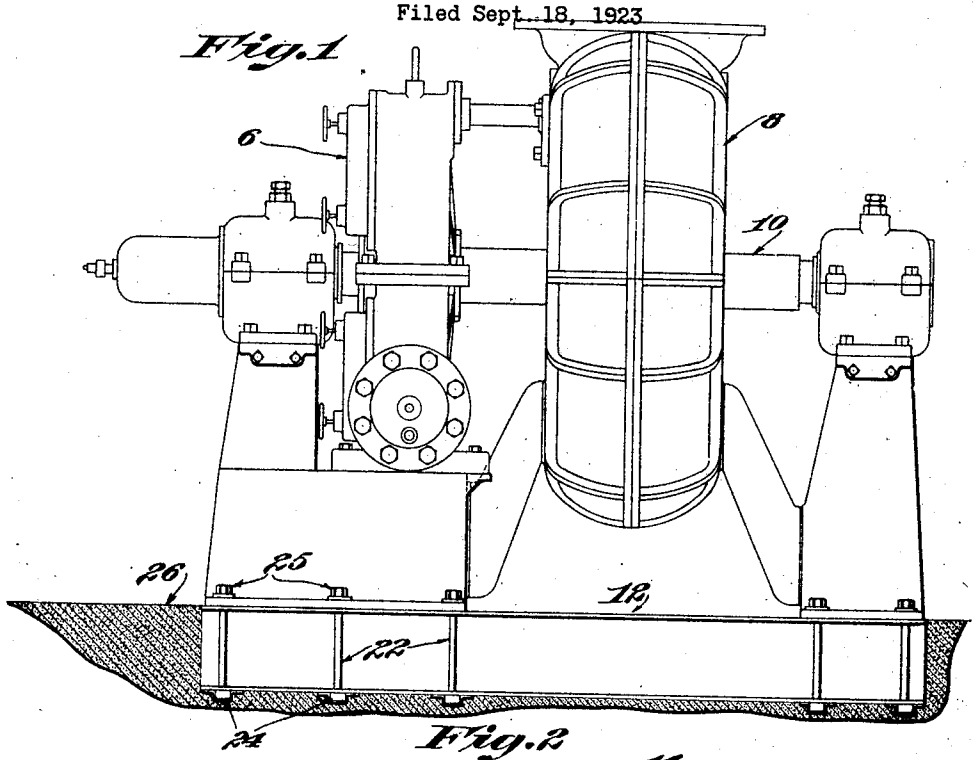


Fig. 2

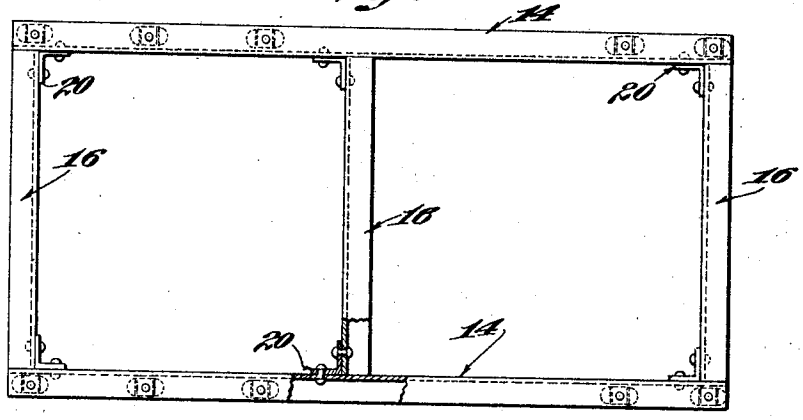
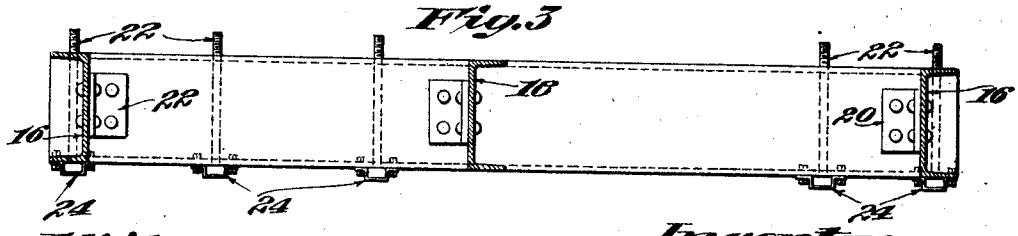


Fig. 3



Witness

Inventor

George W. Allen

by his attorneys

Van Emon, Fish, Hildreth, & Carr

Patented Nov. 13, 1928. 1,691,037

UNITED STATES PATENT OFFICE.

GEORGE W. ALLEN, OF HYDE PARK, MASSACHUSETTS, ASSIGNOR TO B. F. STURTEVANT COMPANY, OF HYDE PARK, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

FOUNDATION METHOD.

Application filed September 18, 1923. Serial No. 663,388.

The present invention relates to foundation bases and methods of making the same and is more particularly concerned with foundations especially adapted for multiple power unit installations embodying turbines, electric motors, blowers, and similar apparatus.

The usual method of assembling a multiple power unit installation is to mount the several units upon a suitable iron base which is then secured upon a previously prepared bed of brick or concrete or other material, usually by means of bolts embedded in the bed and extended upwardly through the iron base. Notwithstanding the apparent rigidity of the iron base and the care observed in preparing the foundation or bed, the act of bolting or securing the base to the bed almost invariably causes a warping or distortion of the base, thus throwing the bearings and the units out of proper alignment. Any deviation from perfect alignment must be taken up by the units, and ordinarily by the couplings when a separate shaft is provided for each unit, thereby throwing undue stresses on the bearings and couplings, and also causing excessive vibrations in the entire apparatus.

The object of the present invention is to provide a rigid and secure foundation for power units, and particularly for those of the multiple type, which will ensure proper alignment of the bearings and the units at all times and which will permit removal and replacement of the units without disturbance to the alignment.

To this end the invention contemplates the formation of a metal base of more or less open or skeleton construction for bonding with the concrete, upon which base the units are preferably first mounted and which is then set in position, being held upon temporary supports or in any other suitable manner while the concrete or other material is poured or laid about and around the base and permitted to harden, leaving the metal base embedded in the concrete except the top which is substantially flush with the surface of the concrete bed. By mounting the unit or units on the metal base prior to the setting of the base, these may be aligned and adjusted at the place of manufacture where such adjustments are most properly and conveniently made, and the entire apparatus thereafter shipped to the place of installation without disturbing the alignment. The subsequent pouring of the concrete around the base and the bonding of the two together forms a foundation of exceedingly rigid and secure construction, the concrete completely surrounding and filling the interstices of the metal without in any way tending to distort the base, and the metal base itself serving to strengthen the concrete bed after the manner of concrete and iron girder constructions. Moreover, since the iron base is firmly and permanently retained in the bed, the units may be removed therefrom for purposes of repair, and may be replaced thereon with the assurance that the proper alignment will be secured.

In the accompanying drawings Fig. 1 is an elevation, partly in section, of the improved foundation base upon which is mounted a two-unit installation consisting of a steam turbine and a blower; Fig. 2 is a plan view of the iron foundation base; and Fig. 3 is a sectional elevation of the base shown in Fig. 2.

The illustrated embodiment of the invention comprises a multiple unit installation of the type disclosed in the copending application of Allen & Bentley, Serial No. 658,116, filed August 18, 1923, consisting of a steam turbine 6 and a blower 8 connected by a single shaft 10 and mounted upon the iron base which is indicated generally at 12.

The base 12 comprises a pair of channel irons 14 forming the sides, a second pair of channel irons 16 forming the ends, and a channel iron 18 placed intermediate the ends for bracing, the parts being rigidly secured together by angle pieces 20 riveted to the channel irons at the corners. A series of bolts 22 extends upwardly through the channel irons, the bolts being retained in position by U-shaped clips 24 secured to the inside of the base directly beneath the heads of the bolts. The threaded portions of the bolts extend upwardly above the top surface of the base sufficiently to provide for securing the units by means of the nuts 25, as illustrated in Fig. 1. The assembled base is adapted to be firmly set in a foundation bed of concrete. To this end the base 12 is

placed in its proper position as illustrated in Fig. 1, after which the concrete in a plastic condition is poured around the channel irons to form the bed 26, the top of which is flush with the upper flanged portions of the channel irons, so that only the upper surface of the metal base 12 is exposed. The concrete flows freely into the channels and around the bolts 22, thus giving a rigid and permanent bond between the iron and concrete.

In practice it is desirable to mount the units upon the base and adjust them for proper alignment before shipment to the place of installation. Upon arrival at the place of installation the entire assembly is placed in its desired position upon temporary supports and such further adjustments as may be necessary are made to compensate for any slight distortions which may have occurred during shipment. This is ordinarily carried out by shimming portions of the base in the usual manner, after which the concrete may be poured, as above described, without disturbing the units. The base is now permanently set, and in view of the exceedingly strong connections between the concrete and iron, the foundation is permanently and securely held against any warps or distortions which might produce an objectionable mis-alignment in the mounted units. By merely removing the nuts 25 from the bolts the units may be removed at any time for necessary repairs with the assurance that when the units are replaced and the nuts turned down sufficiently to hold the parts securely upon the bases, the units will return to their original positions without having disturbed the alignment in any way.

Although a specific embodiment of the invention has been illustrated and described, it will be understood that the combinations and arrangements of parts may be changed without departing from the broader features of the invention. For example, the invention is not to be considered as limited to the use of a base for supporting merely power units, such as driving and driven units, but may be employed to support structures of any kind where permanency, rigidity and accuracy of setting are the primary requisites.

Having thus described the invention, what is claimed is:

1. A method of making a foundation which consists in removably mounting a power unit on a metal base, aligning and adjusting the unit, and thereafter and while the unit is mounted on the base pouring concrete about the base, whereby the unit may be removed and subsequently replaced without disturbing the alignment.

2. A method of setting up a power installation which consists in mounting a plurality of power units upon a metal base, aligning and adjusting the units, and thereafter setting the base in position and pouring concrete around the base while the power units are mounted thereon in proper alignment.

GEORGE W. ALLEN.