Nov. 28, 1950 A. E. BRICKMAN 2,531,552

TRANSLOAD DEVICE

Filed Dec. 12, 1946 2 Sheets-Sheet 1

Fig. 1.

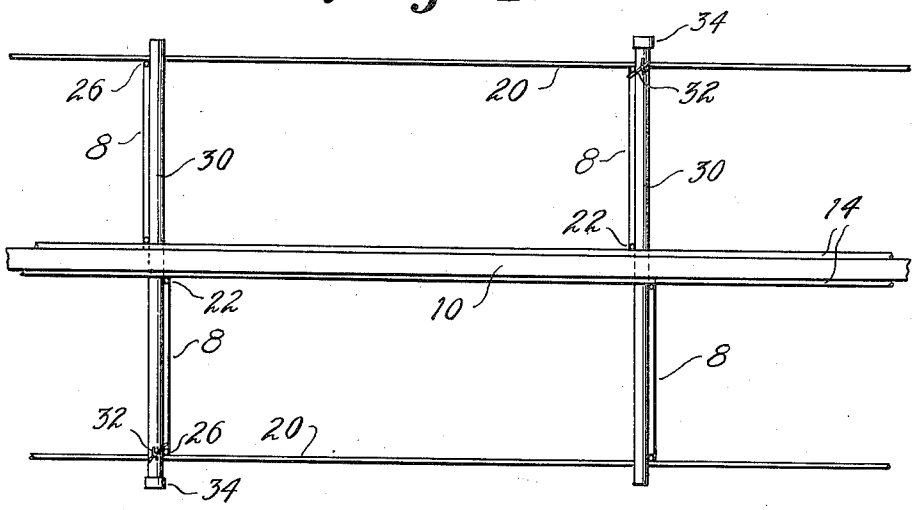
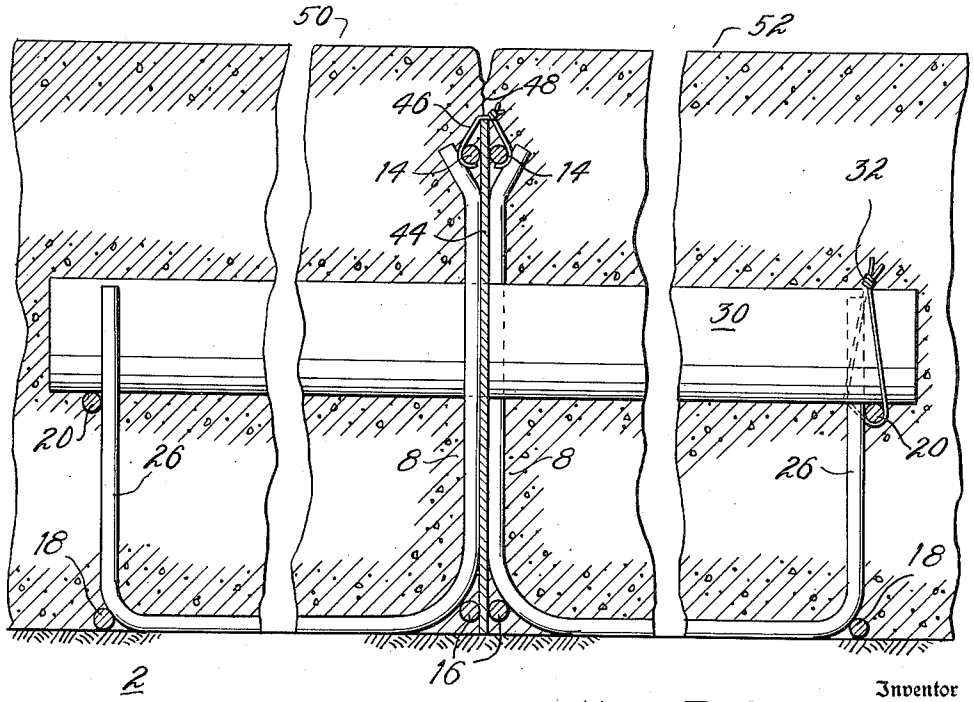


Fig. 3.



Inventor

Alan E. Brickman

By Donald G. Dalton

His Attorney

Nov. 28, 1950 A. E. BRICKMAN 2,531,552

TRANSLOAD DEVICE

Filed Dec. 12, 1946 2 Sheets-Sheet 2

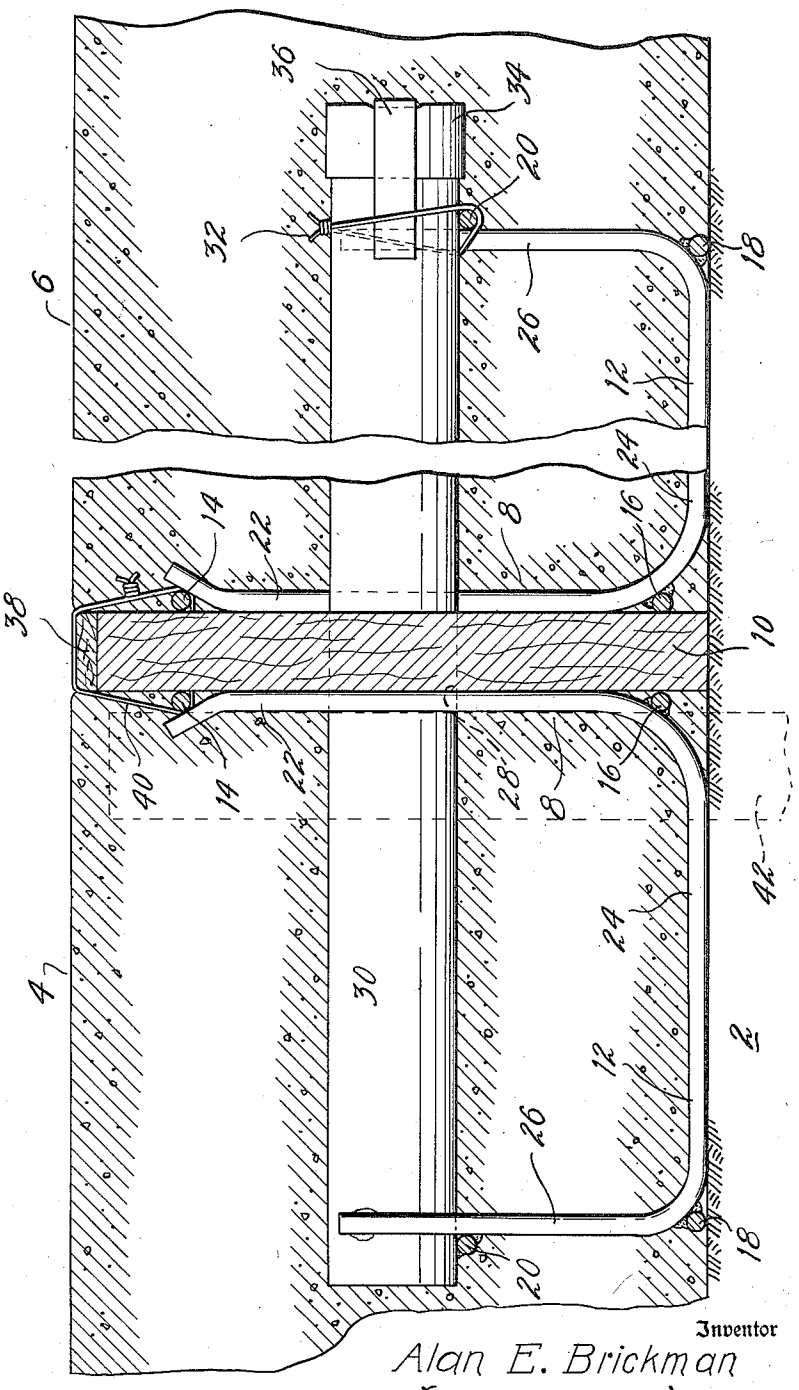


Fig. 2.

Inventor
Alan E. Brickman
By Donald G. Dalton
His Attorney

Patented Nov. 28, 1950

2,531,552

UNITED STATES PATENT OFFICE

2,531,552

TRANSLOAD DEVICE

Alan E. Brickman, Worcester, Mass., assignor to The American Steel and Wire Company of New Jersey, a corporation of New Jersey

Application December 12, 1946, Serial No. 715,714

2 Claims. (Cl. 94—8)

1

This invention relates to a transload device for pavement joints in concrete highways, airport runways and the like.

In the construction of such pavements, it is necessary to provide planes of division which sub-divide the pavement into individual slabs. The joints between the slabs may run longitudinally or transversely of the pavement. This invention is directed to transverse joints particularly fitted to the requirements of construction of lanes 8 to 25 feet in width. The purpose of the joints is to provide prescribed control of the reactions in the pavement caused by the expansion, contraction and warping due to changes in temperature. The spacing of joints is a matter of design based upon a thermal coefficient of expansion of approximately .000005" per degree change in temperature. Either expansion joints which provide for a rise in temperature or contraction joints which provide for a drop in temperature may be used between the slabs. A transfer device is generally used between adjacent slabs to maintain the surface of the slabs in alignment and to transfer the load stresses caused by vehicles on the surface of the pavement. The most common type of transfer devices are dowels which are generally located midway between the top and bottom of the pavement and are spaced at one foot centers longitudinally of the joint. The bond between the dowels and the concrete is broken in either or both slabs and the slab ends telescope on the dowels during the expansion-contraction cycle.

In an expansion joint a compressible joint filler is required while a contraction joint is provided with a vertical light gauge plate to form a plane of division. These fillers and plates lack rigidity and must be supported by bulkhead plates to retain them in vertical and lengthwise alignment under the forces resulting from the flow of wet concrete. After the surface of a concrete pavement has been finished, the bulkhead plates are withdrawn, cleaned and oiled preparatory to reuse at another section of the pavement under construction. This withdrawal causes serious damage by disturbing the initial setting of the cement at the slab edges which are the weakest points in the pavement and which are subjected to the severest stresses. The weakened area extends over the concrete which slumps to fill in the void caused by the withdrawal of the bulkhead plate. Since concrete, disturbed after initial set has started, has only a portion of its original strength values, the strength of the slab edges is greatly weakened.

2

It is an object of my invention to provide a transverse joint assembly in which the filler or division plate is supported by members which make the use of bulkheads unnecessary.

Another object is to provide a joint assembly having supporting means which may be used with fillers of different thicknesses.

Still another object is to provide a joint assembly in which the dowel and filler supporting member is made from welded reinforcing fabric.

These and other objects will be more apparent after referring to the following specification and attached drawings, in which:

Figure 1 is a plan view of the transload device in assembled position and functioning as an expansion joint;

Figure 2 is a side elevation, partly in section, of the assembly of Figure 1; and

Figure 3 is a view similar to Figure 2 but showing the transload device in use in a contraction joint.

Referring more particularly to the drawings, the reference numeral 2 indicates the sub-grade underlying the concrete slabs 4 and 6. The joint assembly is made up of two units 8, 8 of essentially the same construction, one unit being located on each side of a compressible filler 10, which extends to within a short distance (for example, three-eighths of an inch) of the top of the slabs 4 and 6. Each unit is made up of a plurality of wires 12 bent into a U-shape and connected by means of a plurality of longitudinal wires 14, 16, 18 and 20. One leg 22 of each unit bears against the compressible filler 10 to hold it in place and extends to within a short distance of the top of the filler, the top of the leg being bent slightly away from the filler 10 so that the filler is supported throughout its length by means of the wire 14. The bottom of the leg 22 is curved where it merges into the base 24 so that the filler 10 bears against the wire 16 throughout its length. The outboard or second leg 26 of each U-shaped member 12 does not extend upwardly as far as leg 22. The filler 10 has a plurality of holes 28 therein spaced apart longitudinally thereof with a dowel member 30 extending through each of said holes, the bottom of the dowel members being in the same horizontal plane as the top of the longitudinal members 20. Alternate dowel members 30 are welded to the longitudinal member 20 and legs 26 of one unit, while the remaining dowel members are welded to the legs 26 or longitudinal member 20 of the other unit. Each unit is preferably fabricated from welded wire reinforcement by bend-

ing the reinforcement into the U-shape shown. The free end of each dowel, that is, the part of the dowel on the side of the filler 10 opposite its supporting unit, is covered with an approved coating to prevent it from bonding with the concrete. The free end of each dowel member 30 rests on the longitudinal member 20 of the opposite unit and is fastened thereto by means of tie wires 32. A compressible filler 34 is attached to the free end of each dowel member 30 by means of a strap 36 welded to the dowel. A joint seal 38, which may be a wood strip equal to the thickness of the joint filler 10, extends the length of the joint filler and is secured to the joint assembly by means of the wires 40.

Before pouring concrete, the two units 8, 8 are telescoped together with a compressible filler 10 therebetween, as shown in Figure 2. It will be seen that the units may be used with fillers of different thicknesses, it only being necessary to move the units together until they both contact the filler. The tie wires 32 are then applied and the joint seal 38 is fastened in place. Installing stakes 42 are then driven into the sub-grade 2 against the rods 14 and 16. The concrete is then poured, after which the wires 40 are cut and the joint finished.

In the contraction joint shown in Figure 3 the compressible filler 10 is replaced by a joint filler 44 which is made from a light gauge sheet. This joint filler is fastened to the longitudinal rods 14 by means of tie wires 46. In this construction the compressible fillers 34 and straps 36 are also omitted, but the joint and transload device is otherwise the same as that described in Figures 1 and 2. Upon contraction of the concrete, a crack 48 will form, thus creating separate slabs 50 and 52.

While two embodiments of my invention have been shown and described, it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claims.

I claim:

1. In a transload device for transferring loads between adjacent slabs having a filler therebetween, the combination including a pair of supporting units, one on each side of the filler, each of said units having a plurality of aligned longitudinally spaced substantially U-shaped members extending transversely of the filler, the inboard leg of the U-shaped members of each unit being connected by top and bottom longitudinal members, the longitudinal members bearing against the filler to hold it in place, said inboard legs being bent away from said filler at the longitudinal members, said filler having a plurality of holes therein spaced apart longitudinally thereof, a dowel member extending through each of said holes, alternate dowel members being securely fastened to the outboard legs of the U-shaped members of one of said units, the remaining dowel members being securely fastened to the outboard legs of the U-shaped members of the second of said units, the said inboard legs extending a substantial distance above said dowel members, the top longitudinal member being a substantial distance above said dowel members, and a longitudinal member connecting said outboard legs.

2. In a transload device for transferring loads between adjacent slabs having a filler therebetween, the combination including a pair of supporting units, one on each side of the filler, each of said units having a plurality of aligned spaced apart vertical legs bearing against the filler to hold it in position, a plurality of dowel members extending between the slabs, said vertical legs extending a substantial distance above said dowel members, a base member fastened to each vertical member extending outwardly from said filler, an upwardly extending outboard supporting member connected to each base member, a longitudinal member connecting said outboard supporting members, one end of at least part of said dowel members being secured to the outboard supports of one unit, the other end of said dowel members being supported by the outboard supports of the other of said units, a pair of spaced apart longitudinal members extending between and welded to said vertical legs, said last named legs being bent away from said filler at the longitudinal members so that the legs and longitudinal members bear against the filler, the top longitudinal member being a substantial distance above said dowel members.

ALAN E. BRICKMAN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,079,123	Lind	May 4, 1937
2,245,972	Friberg	June 17, 1941
2,309,767	Heltzel	Feb. 2, 1943
2,319,050	Fischer et al.	May 11, 1943
2,365,550	Heltzel	Dec. 19, 1944