Feb. 5, 1929. 1,700,797

R. H. HEBDEN

APPARATUS FOR COMPACTING PAVEMENT

Filed Dec. 9, 1926 3 Sheets-Sheet 1

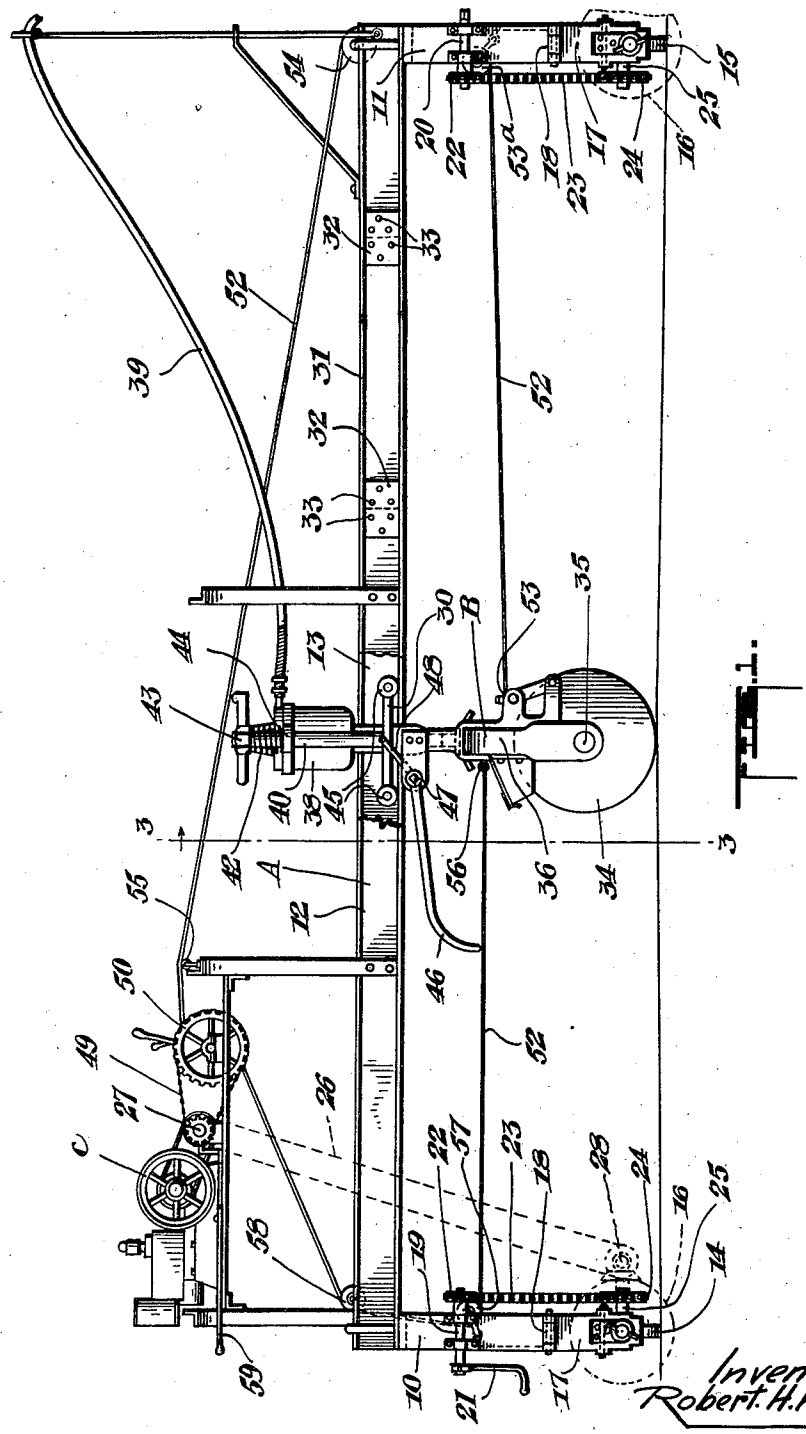


Fig. 1.

Inventor
Robert H. Hebden
BY Dickerson Kaufman & Co.
Attys

Feb. 5, 1929. 1,700,797

R. H. HEBDEN

APPARATUS FOR COMPACTING PAVEMENT

Filed Dec. 9, 1926 3 Sheets-Sheet 2

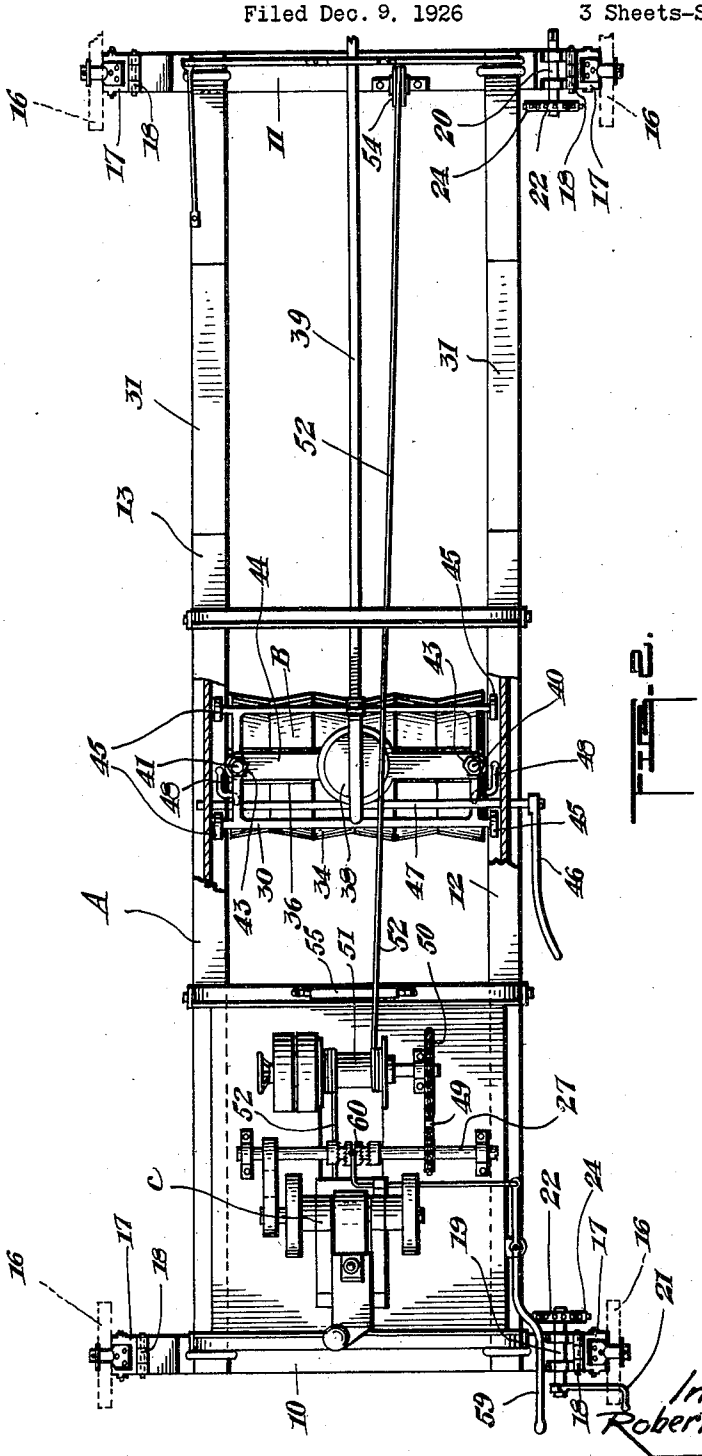


Fig. 2.

Inventor
Robert H. Hebden

BY Dethenstrauch & Co
Attys

Feb. 5, 1929. 1,700,797

R. H. HEBDEN

APPARATUS FOR COMPACTING PAVEMENT

Filed Dec. 9, 1926 3 Sheets-Sheet 3

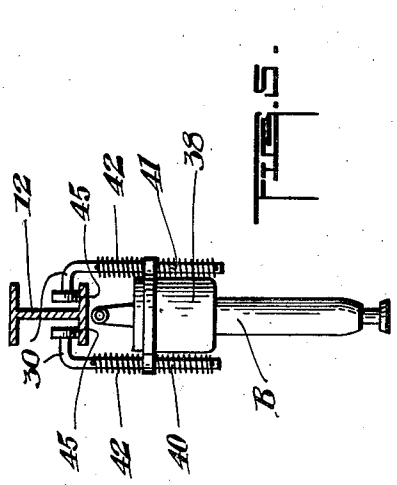


FIG. 5.

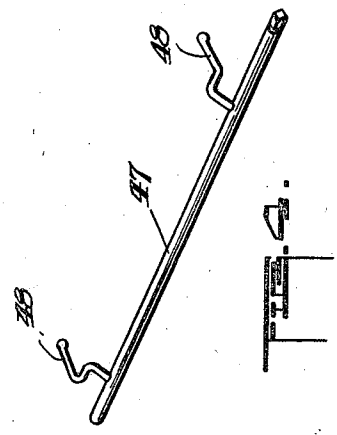


FIG. 4.

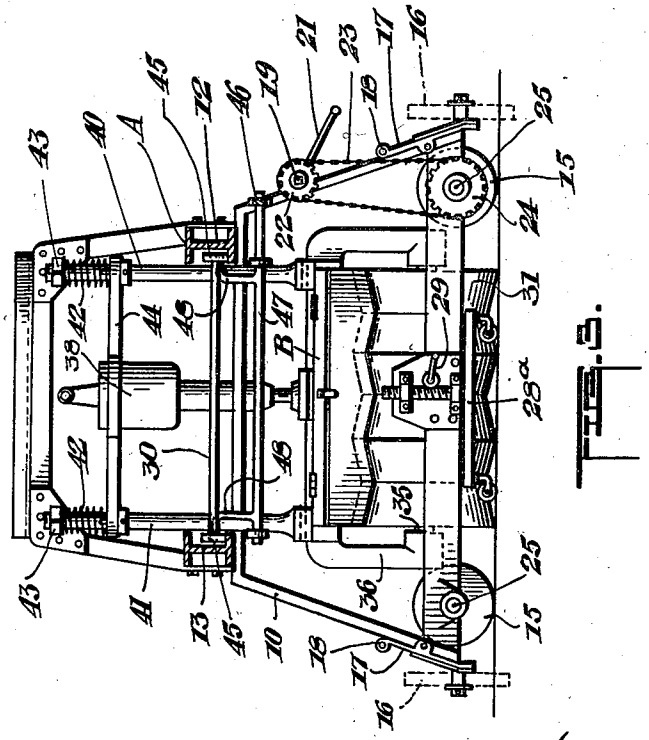


FIG. 3.

Inventor
Robert H. Hebden

BY Eckenstein Landon & Eby
Attys.

Patented Feb. 5, 1929. 1,700,797

UNITED STATES PATENT OFFICE.

ROBERT HENRY HEBDEN, OF TORONTO, ONTARIO, CANADA, ASSIGNOR TO GODSON CONTRACTING COMPANY, LIMITED, OF TORONTO, CANADA, A CORPORATION.

APPARATUS FOR COMPACTING PAVEMENT.

Application filed December 9, 1926. Serial No. 153,677.

This invention relates to improvements in apparatus for compacting pavements and relates generally to apparatus for compacting concrete pavements of both bituminous and hydraulic cement concrete, but particularly the former, which consists of mixtures of mineral or other fragments that are spread and compressed into place while they are sufficiently plastic, and the invention is designed to accomplish this operation of compacting more expeditiously, more economically and more efficiently than has heretofore been done.

In particular my improved device comprises a carriage designed for forward movement as along a roadway, and in which a travelling compacting device is designed to be guided in a cross movement as from edge to edge of a roadway by suitable mechanism mounted on the carriage and by the provision of suitable mechanism, a succession of power tamping blows are delivered through the compacting device to the material therebeneath during its travel from edge to edge of the roadway.

Referring now to the accompanying drawings in which like characters of reference indicate corresponding parts throughout the several views.

Figure 1 is a side elevation of my improved compacting apparatus.

Figure 2 is a plan view of the same.

Figure 3 is a section on the line 3—3, Fig. 1.

Figure 4 is a perspective view of the member used for elevating the compacting member and

Figure 5 is a view illustrating means by which the compacting member is designed to travel on a single rail.

In the drawings in which the preferred embodiment of my invention is disclosed, A represents the improved device as a whole while B and C indicate the tamping device and operating mechanism respectively.

The carriage comprises a pair of supporting end members 10 and 11 connected by the longitudinal extending members 12 and 13 preferably in the form of I beams which constitute the bridge.

When in operation the carriage is designed to move forward in a direction at right angles to the bridge and for this purpose is provided with pairs of rollers 14 and 15, although roller means have proved satisfactory as a means for moving the carriage, skids or caterpillar device may be used with equal efficiency.

For transportation purposes such as for instance moving the apparatus from one operating location to another the carriage is more conveniently handled longitudinally. This is provided for in the form of demountable wheels 16 mounted at right angles to the wheels 14 and 15 and supported by bracket members 17 which are hingedly connected as at 18 to the outside of the end members 10 and 11.

The carriage during operation is designed in a road straddling position to move forward, either by manual or mechanical power, the manual power includes shafts 19 and 20 mounted in suitable bearings on the end members provided with operating cranks 21 and connected through sprockets 22 and drive chains 23 with sprockets 24 which in turn are mounted on the axles 25 of one of the pairs of wheels 14 and 15 supporting the carriage during operation.

The mechanical power may be applied in any convenient form and as here shown comprises a drive chain 26 connected to the main drive shaft 27 of the operating mechanism or prime mover C, and to suitable gearing 28 connected to the shaft 25. Similar means as described may be employed to move the carriage from place to place, the mechanical power in this case would be connected to the demountable or secondary wheels.

Under certain conditions alignment of the carriage is necessary for turning for the purpose of transportation, this is accomplished by providing one end of the carriage with a suitable device to act as a fifth wheel, illustrated here in the form of a castor wheeled member 28^a raised or lowered through the operation of the crank arm 29, as shown in Figure 3.

The bridge previously referred to and designed to straddle the roadway may be as particularly illustrated in Figure 5 of a single I beam, although the double beams illustrated in the several views lends itself more readily to guiding of the compacting device B which is designed to travel therebetween on a carriage member 30, the double beam also offers a more rigid support for the power plant and equipment necessary for the operation of the device.

Various widths of roadways require vari-

ous lengths of bridge to straddle the roadways. This condition is met by providing a set of sections of varying lengths, as particularly illustrated in Figure 1. The sections indicated by the numeral 31 are detachably connected through plates 32 and bolts 33 to the I beams 12 and 13. Other well known means, however, such as telescoping section of I beams, may be used.

The compactor or tamping device B comprises a tamping member in the form of a roller 34 designed to be moved over the material to be tamped and while being moved is subjected to a succession of rapid power blows. The roller 34 illustrated may be formed plain or with corrugations designed to impress a predetermined pattern on the surface being tamped. The roller carries a shaft 35 upon which is mounted the frame 36 carrying the tamping means 38. The center of the frame 36 is provided with suitable means to receive and distribute power blows from the power tamping device 38 which may be in the form of an air gun or the like connected through the flexible connection 39 to a suitable source of supply.

As previously mentioned the power tamping member is provided with a carriage 30 by which it is guided in its travel from edge to edge of the roadway. Means are provided for absorbing the shock of the power blows comprising the supporting arms 40 and 41 extending from the frame 36 through the carriage 30 to support the member 38 the upper end of the arms being provided with springs 42 extending from the nuts 43 to the transverse support 44 whereby the upward movement of the power delivering mechanism is resisted.

The carriage 30, as previously stated, is designed to guide the tamping device in its travel and is provided with rollers 45 which are adapted to travel on the inner sides of the beams 12 and 13. It might be well to here mention that the tamping device is so mounted on the carriage 30 as to permit it free vertical movement to accommodate the contour of the roadway.

Means for lifting the compacting device from the roadway after its travel thereacross or whenever necessary comprises a lever operating arm 46 connected to the shaft 47 and provided with fingers 48 adapted when operated to engage the members 12 and 13 and thereby raise the tamping device from the roadway.

The power means C by which the tamping apparatus B is moved in a reciprocative manner comprises a prime mover of any well known type such as a gas engine or the like which transmits power to the shaft 27 and through the drive chain 49 and gear 50 to a friction drum 51 on which is wound the cable 52. One end of the cable is connected as at 53 to the frame 36 extending over the pulleys 53a, 54 and roller 55 while the other end of the cable is connected to the frame 36 as at 56 extending over the pulleys 57 and 58.

Means for operating the friction drum comprise a lever 9 operatively connected to a clutch 60 mounted on the shaft 27 whereby a forward and reverse operation of the drum is accomplished which will through the cable 52 cause the tamping member to move in a reciprocative manner over the roadway or material to be tamped.

In operation and after the apparatus has been placed in position straddling the roadway with the tamping member B at one side thereof. The power apparatus C is put into operation, air or the like is then applied to the member 38, the device is then ready for operation and with the operation of the lever 59 and the mechanism previously described the member B is moved from edge to edge of the roadway and a succession of power blows are delivered thereto and to the material to be tamped during its travels. Upon reaching the opposite edge of the roadway the lever 46 is operated to raise the member B from the tamped material when the carriage as a whole is moved forward either through the operation of the cranks 21 or the mechanical means. The lever 59 is then operated to reverse the direction of travel of the member B and so the operation of the apparatus is continued until the tamping is completed.

The tamping action provided by the means thus described is economical and efficient due to the fact that a rapid succession of power tamping blows are transmitted through the tamping member to a very small area of the plastic mixture being compacted, such a restricted area as for instance is represented by the bearing surface of a narrow roller member of relatively small circumference. The tamping action as is obvious is regular to the extent that the travel of the tamping device can be uniformly controlled.

As many changes could be made in the above construction and many apparently widely different embodiments of my invention, within the scope of the claims, constructed without departing from the spirit or scope thereof, it is intended that all matter contained in the accompanying specification and drawings shall be interpreted as illustrative and not in a limiting sense.

What I claim as my invention is:

1. In a device of the character described, in combination a track, movable supporting means for the track, a carriage mounted on the track, a roller associated with the carriage, means for moving the carriage on the track, means on the carriage adapted to deliver a succession of power tamping blows through the roller to the material beneath the track.

2. A device of the character described, comprising a track, trucks at opposite ends of the same supporting the track, a carriage mounted on the track, a roller associated with the carriage, a pneumatic device for delivering a plurality of power tamping blows to the roller, and means for moving the carriage backwardly and forwardly on the track.

3. A device of the character described for compacting bituminous pavement mixture, comprising a track, movable supporting means for the track, a carriage mounted on the track, a roller associated with the carriage, means for simultaneously moving the roller backwardly and forwardly on the track, and delivering a succession of power blows thereto.

4. In a device of the character described, in combination, a movably supported track, carriage means carried by the track adapted to move backwardly and forwardly, a roller associated with the carriage forming a pattern for depressions, and means carried by the carriage adapted to deliver a succession of power tamping blows through the roller to the material beneath the track.

5. In a device of the character described and in combination, a track, movable supporting means for the track, a carriage operatively mounted on the track adapted to guide a roller, means on the carriage adapted to deliver a succession of power tamping blows, and means whereby the device as a whole is selectively movable.

6. A device for the compacting of two or more bituminous paving mixtures into a pavement, comprising a track, movable supporting means for the track, a carriage mounted on the track, roller means for the carriage, means for delivering a plurality of power tamping blows to the roller to simultaneously roll and tamp material beneath the track, and means for selectively regulating the movement of the carriage in its direction of operation.

7. A machine of the character described, for the compacting of bituminous paving mixtures comprising a longitudinally movable track, a laterally movable carriage mounted on the track, a roller on the carriage, means for moving the track longitudinally, selective means adapted to operate the carriage laterally, and means on the carriage adapted to combining the tamping and rolling operation.

8. A combined rolling and tamping device comprising framework, a carriage operatively supported thereon, a roller associated with the carriage, power means associated with the roller adapted to deliver a succession of power blows thereto during its operative movement.

9. A combined rolling and tamping device as set forth in claim 8 in which the supporting means for the roller is adapted to permit the roller to follow the structural contour of a pavement.

10. The device as set forth in claim 8 in which the framework supporting the operative mechanism is formed in sections capable of adjustment as to length.

In witness whereof I have hereunto set my hand.

ROBERT HENRY HEBDEN.