This invention relates to improvements in vibratory hand screeds.

The main objects of this invention are:

First, to provide a vibratory hand manipulated screed which is highly desirable for the laying of concrete, factory floors, bridge decks, sidewalks, and the like where low slump or concrete having low water content is employed.

Second, to provide a structure of this character which is a complete unit, the prime mover being mounted on the screed and in manipulation constitutes an integral part thereof.

Third, to provide a structure of this character in which an engine such as an internal combustion engine may be used, it being mounted so that objectionable vibrations or shocks are not transmitted thereto and also to provide a structure in which the shocks or vibrations transmitted to the workmen are minimized.

Fourth, to provide a structure embodying these advantages which is quite simple and economical in structure and at the same time is durable and efficient in use.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is defined and pointed out in the claims.

A structure which is a preferred embodiment of the invention is illustrated in the accompanying drawing, in which:

Fig. 1 is a perspective view of a vibrating hand manipulated screed embodying my invention.

Fig. 2 is a vertical transverse section on line 2—2 of Fig. 1 illustrating certain details of the structure and the relation of the parts thereof, a portion of the casing of the vibrating element being broken away and in section.

Fig. 3 is a fragmentary view in transverse vertical section on line 3—3 of Fig. 4 illustrating details of the mounting of the handles.

Fig. 4 is a fragmentary view mainly in section on line 4—4 of Fig. 3.

In the embodiment of my invention the reference numeral 1 designates the elongated screed which is in general of channel section providing a front plate 2 of substantial height and a screed bottom 3. The rear plate 31 is of less height than the front plate 2 but is of sufficient height so that the screed may be moved back and forth without becoming loaded up with concrete. The braces 4 support the face plate.

Adjacent the center of the screed, in the embodiment illustrated, I provide a pair of vibrating element supporting brackets 5. These are bolted both to the bottom of the screed and to the front plate, see Fig. 2.

The vibrating element designated generally by the numeral 6 is provided with a rotor shaft 7 having a counterbalancing weight 8 thereon, the shaft 7 being supported in the casing 8 of the vibrating element.

The flexible driving shaft 10 for the unbalanced rotor is powered from a prime mover, preferably mounted as hereinafter described.

At each end of the screed I mount a pair of brackets 11 in spaced relation and provided with opposed stud-like anchoring elements 12. The flexible support members 13 which may suitably and preferably be lengths of heavy-walled steam hose are telescoped with these stud members 12 and secured thereto by clamps 14. These support members are arranged in spaced pairs and are provided intermediate their ends with cross pieces 16 secured to the flexible support members by the clamps 15.

The reinforcing tubes 21 are arranged within the flexible support members 13 to prevent their collapsing under the stress of the clamps 15.

The handles 19 are bifurcated or provided with spaced arms 18 which are secured to the cross pieces by means of the U-bolts or clamps 17. The handles are provided with handle bars 20 at their outer ends, the arms being arranged in angular relation to the shaft portion of the handles so that the handle bar is at the proper height for grasping. This attachment of the handles provides for stability in manipulation and minimizes the efforts of the operator in keeping the screed in upright position.

The prime mover 22, desirably an internal combustion engine of suitable horse power, is mounted on the cross pieces of one pair of flexible supports between the arms of the handle at that end of the screed. The shaft 10 is directly connected to the engine. A relatively small one-cylinder internal combustion engine has been found to be quite suitable.

In use, the operators grasp the handles and manipulate the screed over the work. Due to the employment of the flexible tubular support members, the vibrations of the screed are largely dampened from the handles and also from the engine. The tubular form of flexible support members provides sufficient rigidity in the connection from the handles to the screed so that the screed may be manipulated in any direction, longitudinally or forward and back, with no objectionable sensation of slackness or lost motion.
on the part of the operators, at the same time the shocks and vibrations are effectively dampened from the motor or prime mover and the handles.

The foregoing machine is used extremely effectively in the laying of factory floors, bridge decks and other applications where low slump concrete is employed. It may be transported readily to any desired location and placed in operation with a minimum of difficulty and little expenditure of time.

An embodiment of the invention which incorporates the principles of the invention in a highly desirable manner has been illustrated and described. It should be understood that the foregoing terminology is used descriptively rather than in a limiting sense, and with full intention to include equivalents of the features shown and described, within the scope of the following claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a structure of the class described, the combination of an elongated screed, a vibrating element mounted thereon in vibration-transmitting relation thereto, brackets disposed on said screed adjacent the ends thereof in opposed spaced pairs and provided with stud-like members, pairs of flexible tubular support members telescopingly engaged with said studs and clamped thereon, cross pieces clamped upon said support members intermediate the ends thereof, said support members being internally reinforced to prevent collapsing thereof by the clamping means, bifurcated handles, the arms of which are secured to said cross pieces, a prime mover mounted on the cross pieces of one pair of supports between the arms of the handle secured thereto, and a flexible driving connection for said prime mover to said vibrating element, said flexible supports acting to dampen the vibrations from said screed to said handles and prime mover.

2. In a structure of the class described, the combination of an elongated screed, a vibrating element mounted thereon in vibration-transmitting relation thereto, brackets disposed on said screed adjacent the ends thereof in opposed spaced pairs and provided with stud-like members, pairs of flexible tubular support members telescopingly engaged with said studs and clamped thereon, cross pieces clamped upon said support members intermediate the ends thereof, said support members being internally reinforced to prevent collapsing thereof by the clamping means, and bifurcated handles, the arms of which are secured to said cross pieces, said flexible supports acting to dampen the vibrations from said screed to said handles.

3. In a structure of the class described, the combination of an elongated screed, a vibrating element mounted thereon in vibration-transmitting relation thereto, brackets disposed on said screed adjacent the ends thereof in spaced pairs, pairs of flexible support members secured at their ends to said brackets, cross pieces mounted on said flexible supports intermediate the ends thereof, bifurcated handles, the arms of which are secured to said cross pieces, said flexible supports acting to dampen the vibrations from said screed to said handles.

4. In a structure of the class described, the combination of an elongated screed, a vibrating element mounted thereon in vibration-transmitting relation thereto, brackets disposed on said screed adjacent the ends thereof in spaced pairs, pairs of flexible support members secured at their ends to said brackets, cross pieces mounted on said flexible supports intermediate the ends thereof, and bifurcated handles, the arms of which are secured to said cross pieces, said flexible supports acting to dampen the vibrations from said screed to said handles.

5. In a structure of the class described, the combination of an elongated screed, a vibrating element mounted thereon in vibration-transmitting relation thereto, brackets disposed on said screed adjacent the ends thereof in opposed spaced pairs and provided with stud-like members, flexible tubular support members telescopingly engaged with said studs and clamped thereon, handles secured to said flexible supports intermediate the ends thereof, a prime mover mounted on one of said flexible supports intermediate the ends thereof, and a flexible driving connection for said prime mover to said vibrating element, said flexible supports acting to dampen the vibrations from said screed to said handles and prime mover.

6. In a structure of the class described, the combination of an elongated screed, a rotor provided with an unbalancing weight mounted on said screed medially thereof, flexible support members disposed in parallel relation to the screed adjacent the ends thereof and each supported thereon from its opposite ends, said supports being arranged in spaced pairs and provided with internally disposed cross members, handles secured to said cross members, and a prime mover for said rotor having flexible drive connection thereto and mounted on and supported substantially in its entirety by one pair of said support members whereby the vibrations from the screed to the handles and prime mover are dampened.

7. In a hand screed, the combination of an elongated screed member having vibrating means mounted thereon, flexible tubular supports each supported from its opposite ends on said screed adjacent the ends thereof and in parallel relation thereto, handle secured to said supports intermediate the ends thereof, and a prime mover for said vibrating element mounted on and supported substantially in its entirety by one of said supports and having flexible drive shaft connections to said vibrating element, said flexible supports acting to dampen the vibratory impulses of said screed in relation to said handles and prime mover.

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