June 7, 1932. R. BROSIG 1,861,655

MACHINE FOR AUTOMATICALLY TAMPING UNDERNEATH RAILWAY SLEEPERS DURING THE FINISHING OF THE PERMANENT WAY

Filed Oct. 2, 1930

Fig.1

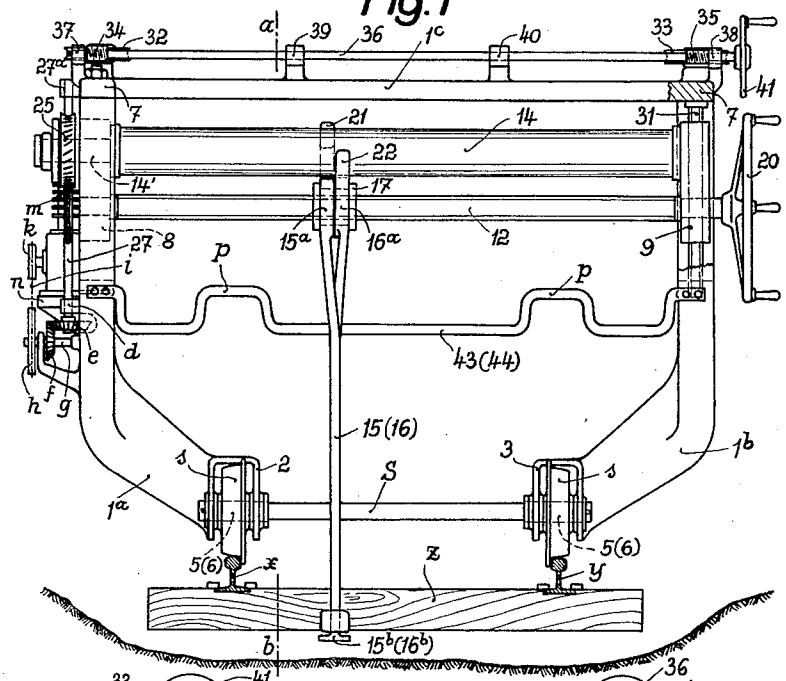


Fig.3

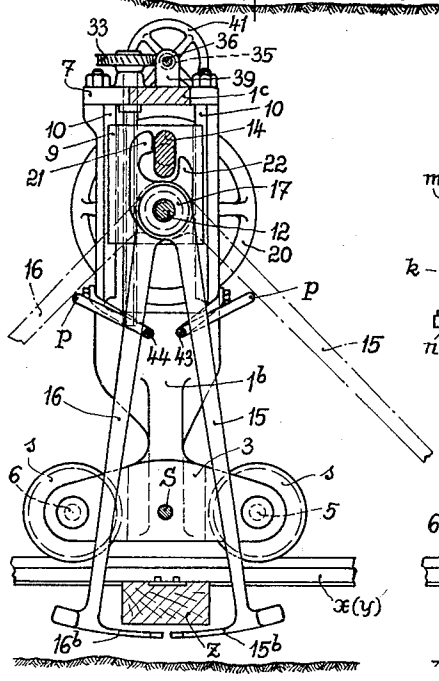
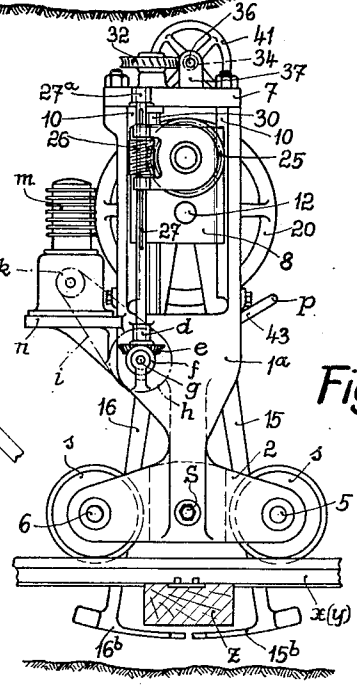


Fig.2



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UNITED STATES PATENT OFFICE

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MACHINE FOR AUTOMATICALLY TAMPING UNDERNEATH RAILWAY-SLEEPERS DURING THE FINISHING OF THE PERMANENT WAY

Application filed October 2, 1930, Serial No. 485,898, and in Austria October 23, 1929.

I have filed applications in Austria October 23rd, 1929, and in Germany September 11th, 1930.

This invention relates to a machine for automatically tamping underneath railway-sleepers during the finishing of the permanent way and its essential feature consists in automatically or manually adjusting the height and width of the tampers over the entire length of the sleeper, these tampers being lifted by separate force and dropping by their weight.

One mode of carrying out the present invention is illustrated by way of example on the accompanying sheet of drawing in which—

Figs. 1 and 2 show the machine in elevation and side view respectively.

Fig. 3 is a sectional side view, the section being taken on line *a*—*b* of Fig. 1.

As shown in Fig. 1, the machine for tamping underneath railway-sleepers consists of a frame with two laterial members 1^a and 1^b, which are connected at the top by a longitudinally extending bar 1^c and at the bottom by a rod S, the bottom end of said lateral members 1^a and 1^b being inclined toward each other and provided with bearings 2 and 3 for the reception of shafts 5 and 6, which carry wheels *s*. These shafts are arranged apart sufficiently far, to provide for a perfect passage of the machine on the rails without unduly increasing the weight of the machine. The connecting bar 1^c is provided at each end with an enlarged head 7, 7, forming the end of the fork-shaped parts of the lateral member 1^a and 1^b. Slides 8 and 9 are guided in rails 10 and carry a supporting and adjusting shaft 12, provided with a square thread, and an operating bar 14 for lifting two tampers 15 and 16. At the top end the latter are provided with enlargements or heads 15^a, 16^a, which rest and are guided on a sleeve 17, provided with a square thread which is engaged by the square thread of the shaft 12. This shaft can be rotated by a hand wheel 20. The heads 15^a, 16^a are furnished with extensions 21, 22, which extends in the range of operation of the flat operating bar 14. The shanks of the tampers 15, 16 are of such shape, that they lie in a single plane. The end of the operating bar 14 at the left hand side in Fig. 1 terminates in a pin 14′, which passes through the bearing of the slide 8 and carries a worm wheel 25, engaging a worm 26 sliding on a shaft 27, the connection between the latter and the worm 26 being effected by slot and key. The shaft 27 rests in an extension 27^a of the connecting bar 1^c and in a bearing *d* of the lateral member 1^a and carries a bevel wheel *e*, which meshes with a bevel wheel *f*, mounted on a shaft *g*. The latter carries a chain-wheel *h* or the like, which by means of an endless chain *i* is driven by the chain-wheel *k* of an internal combustion engine *m*. The latter is arranged on a bracket *n* provided on the lateral member 1^a as shown in Fig. 2.

Shafts 30 and 31, provided with square threads and resting in the lateral members 1^a and 1^b, serve for the vertical adjustment of the two slides 8 and 9. Each shaft 30 and 31 is provided with a worm wheel 32 and 33 respectively, which mesh with worms 34 and 35 of a shaft 36, resting in bearings 37, 38, 39, 40 and rotated by a hand wheel 41.

Provision has to be made which prevent the heads 15^b and 16^b of the tampers 15 and 16 from striking the rails *x* and *y*, if the tampers move over the whole length of the sleeper *z*. The arrangement for attaining this object comprises two bars 43, 44 fixed to the lateral members 1^a, 1^b and offset at *p* for the portion of their length vertically above the rails *x* and *y*. These offset portions *p* are of such depth, that the extensions 21, 22 of the tamper heads 15^b, 16^b are placed out of the range of the rails if the shanks of the tampers rest on the cranked parts *p* of the bars 43, 44.

When using the machine for tamping underneath a sleeper during the finishing of the permanent way for instance of standard-gauge railways, the machine is placed over the sleeper to be treated in such a manner, that the middle plane of the sleeper coincides with the middle plane of the machine. Now the tampers are adjusted by the screw-shaft 12 into the extreme left or right hand position and the engine is started which, by means

of the countershaft, rotates the operating bar 14 (in the illustrated embodiment anticlockwise). The rotating flat bar 14 forces apart the extensions 21 and 22, the tampers are lifted and drop down by their own weight at the moment at which the bar 14 moves out of the range of the extensions 21, 22. Thus every time the tampers drop down, their heads 15^b and 16^b will firmly drive the broken stones underneath the sleeper *z*. By means of the hand wheel 20, the operating points of the tampers are gradually and continuously longitudinally shifted from one end to the other end of the sleeper, so that the layer of broken stones is treated throughout the whole length underneath the sleeper *z*. As already stated, the tampers 15 and 16 remain inoperative only at the places above the rails, which are bridged by the offset parts *p* of the bars 43, 44.

The range of action of the tamper-heads 15^b and 16^b can be adjusted vertically within limits by means of the shaft 36. Compared with the known modes of tamping underneath railway-sleepers, the advantage of the new machine particularly consists in carrying out the work of tamping in a considerably shorter space of time and with much greater accuracy.

I claim—

1. Machine for automatically tamping underneath railway-sleepers during the finishing of the permanent way, comprising in combination a frame, slides vertically movable in said frame, a screw-threaded adjusting shaft and a flat operating bar mounted in said slides, a screw-threaded sleeve on said shaft, and tampers engaging said sleeve, for the purpose specified.

2. Machine for automatically tamping underneath railway-sleepers during the finishing of the permanent way, comprising in combination a frame, vertical shafts in the frame, a worm gear operating said shafts, slides vertically movable in said frame by said shafts, a screw-threaded adjusting shaft and a flat operating bar mounted in said slides, a screw-threaded sleeve on said adjusting shaft, and tampers engaging said sleeve, for the purpose specified.

3. Machine for automatically tamping underneath railway-sleepers during the finishing of the permanent way, comprising in combination a frame, slides vertically movable in said frame, a screw-threaded adjusting shaft and a flat operating bar mounted in said slides, extensions on one slide, a worm wheel on said flat bar, a shaft in said frame, a worm slidable on the shaft last mentioned and engaging said worm wheel, a screw-threaded sleeve on said screw-threaded shaft, and tampers engaging said sleeve, for the purpose specified.

4. Machine for automatically tamping underneath railway-sleepers during the finishing of the permanent way, comprising in combination a frame, tampers in said frame, means for lifting the tampers, and adjusting means arranged in the frame for adjusting the vertical and horizontal operating range of the tampers over the entire length of a sleeper.

5. Machine for automatically tamping underneath railway-sleepers during the finishing of the permanent way, comprising in combination a frame, a screw-threaded adjusting shaft mounted in said frame, a screw-threaded sleeve on said shaft, tampers engaging said sleeve, and means for adjusting the vertical and horizontal operating range of the tampers over the entire length of a sleeper.

6. Machine for automatically tamping underneath railway-sleepers during the finishing of the permanent way, comprising in combination a frame, tampers in said frame, means for lifting the tampers, adjusting means arranged in the frame for adjusting the vertical and horizontal operating range of the tampers over the entire length of a sleeper, and means for rendering said tampers inoperative within the range of the rails.

7. Machine for automatically tamping underneath railway-sleepers during the finishing of the permanent way, comprising in combination a frame, tampers in said frame, means for lifting the tampers, adjusting means arranged in the frame for adjusting the vertical and horizontal operating range of the tampers over the entire length of a sleeper, and a guide bar for said tampers, extending throughout the entire length of the sleeper and having offset portions within the range of the rails, for maintaining said tampers in inoperative position when they are moved within the range of the rails.

In testimony whereof I affix my signature.

ROBERT BROSIG.