MACHINE FOR DRIVING-IN AND PULLING-OUT NAILS

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This invention relates to a machine in which one and the same driving gear may be used for driving in nails for nailing boxes and for pulling out the nails of a nailed box, the wood of the lid being not damaged and the nails being not bent so that they may be used again.

The machine, according to the invention is diagrammatically shown, by way of example, in the accompanying drawing in which Fig. 1 is a side elevation, partly in vertical section and Fig. 2 is a top plan view.

In the drawing 1 designates the lid on the box 2, 3 a nail which has been driven into the box, 4 a nail which is still to be driven in. The frame 5 of the machine is made of wood as shown, it might however be made of thin-walled iron bars.

The frame 5 rests on inwardly inclined feet 6 so that the devices for driving in or pulling out the nails can be brought as close as possible to the point at which the nail has to be driven in or from which the nail has to be pulled out, even if this point is near a corner.

In the top end of the frame a driving wheel 8 is rotatably mounted, the axle of the wheel being adapted to be driven by a crank handle 7. This wheel 8 has teeth 9 over half of its circumference so that the wheel half without teeth is one tooth length shorter than the toothed portion. From the different lengths of these portions it will be seen that, if the driving wheel is rotated one half revolution in the direction of the arrow line the rack 10 having teeth on both sides and slidably mounted in guide 11 is lifted, the teeth on the other side of the rack meshing with a spur wheel 13 rotatably mounted on an axle 12.

If, prior to this half rotation of the driving wheel 8 a nail 3 has been gripped at its head by gripping arms 16 fixed on the end of rack 10 by means of a screw bolt 14 and controlled by an adjusting screw 15, it is evident that at this half rotation of the driving wheel 8 this nail will be pulled out of the box in absolutely straight direction. To make the gripping arms 16 grip the nail head a pressure has to be exerted upon the machine frame or upon the portion of the driving wheel which has no teeth and which may be covered with leather or upon the upper end of the rack which may also be covered with leather.

The device for driving a nail in is, during this operation, in the inoperative position. When nails have to be driven in, the driving wheel 8 is rotated one half revolution in the direction of the arrow, so that the pulling out device becomes inoperative or disengaged, and the push rod 19 having teeth in both sides is lowered through the intermediary of a gear wheel 18 rotatable on an axle 17, the teeth on the other side of the push rod 19 meshing with a pinion 21 rotatably mounted on an axle 22. A ram 23 fixed in the lower end of the push rod 19 engages with a conical sleeve 24, which is preferably slit so that its wall is elastic. This conical sleeve 24 is fixed on the frame 5 by means of a wood block 25. Through an insertion hole 26 of the sleeve 24 a nail 4 has been previously inserted which is driven into the box by the ram 23 accurately at the desired point and in straight direction.

The size of the machine depends on the nail size. Owing to the adjustability of the gripping arms 16 and to the elasticity of sleeve 24 the same machine may be used for nails of different sizes.

The rotation of the driving wheel is preferably limited by stops.

The sleeve 24 might be fitted with a device for continually feeding nails into the same each time the ram 23 has been withdrawn from the sleeve.

I claim:—

A machine for driving in and pulling out nails comprising a frame, a driving wheel rotatably mounted in the top end of said frame and having teeth in only one half of its circumference, a pulling-out device at one side of said driving wheel consisting of a rack meshing with the teeth of said driving wheel, a pair of gripping arms fixed on the lower end of said rack and an adjusting screw for adjusting the position of said gripping arms, a driving in device on said frame at the other...
side of said driving wheel consisting of a rack carrying a ram at its lower end and nail holding means for positioning a nail beneath said ram, and an intermediate spur gear rotatably mounted in said frame and meshing with the teeth of said driving wheel and with the teeth of the rack carrying said ram.

In testimony whereof I affix my signature.

HANS SCHERM, Jr.