No. 649,309. Patented May 8, 1900.

S. J. HUNGERFORD.

COMBINATION METAL WORKING MACHINE.

(Application filed July 1, 1899.)

(No Model.)

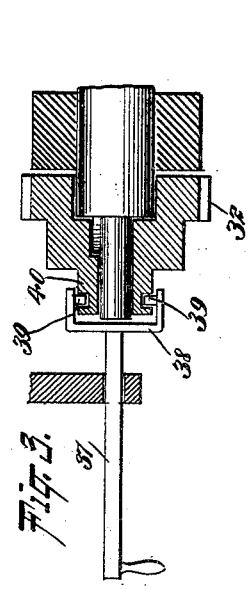

Fig. 3.

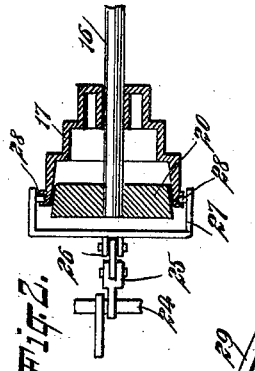

Fig. 2.

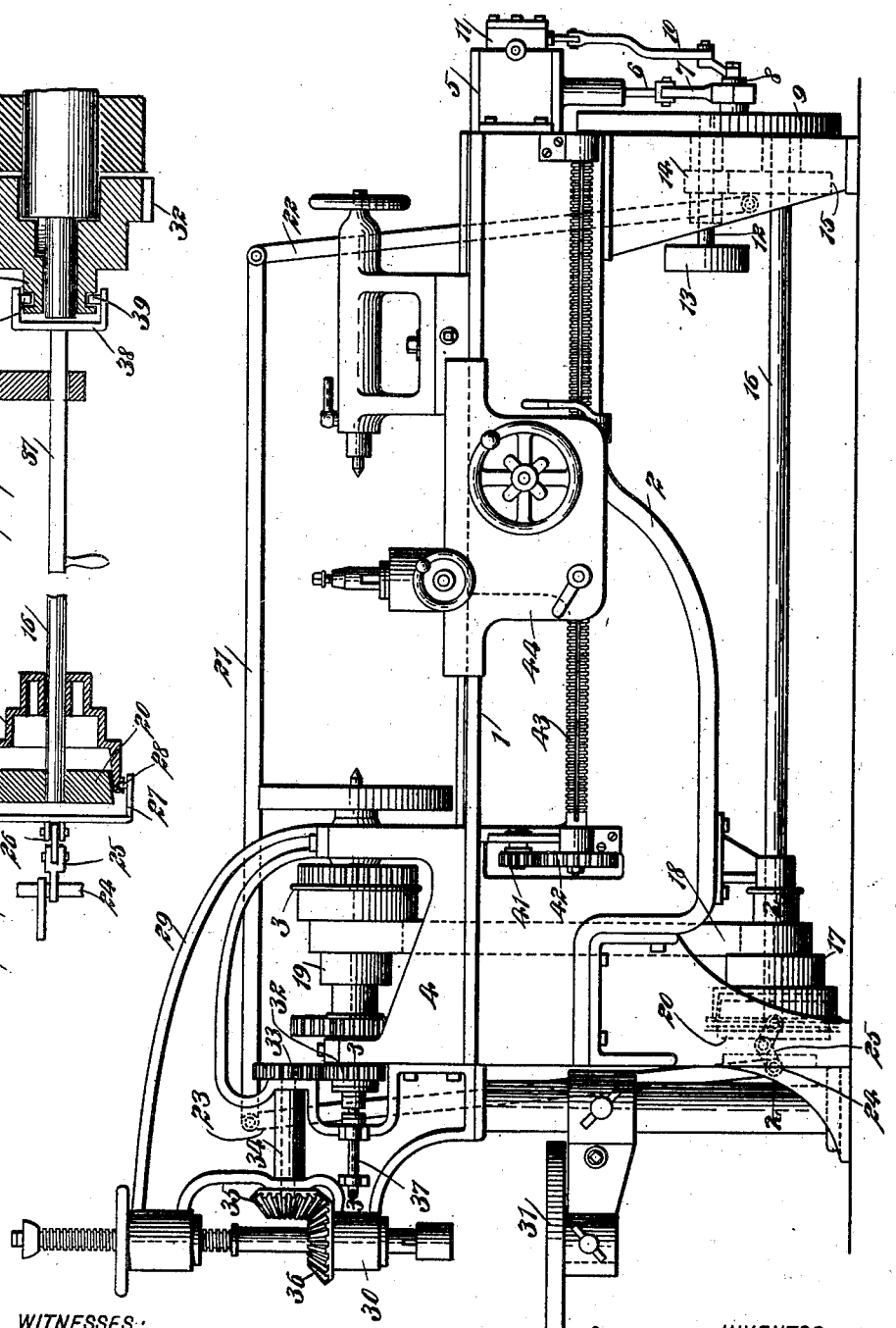

Fig. 1.

WITNESSES:

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SAMUEL J. HUNGERFORD, OF FARNHAM, CANADA.

COMBINATION METAL-WORKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 649,309, dated May 8, 1900.

Application filed July 1, 1899. Serial No. 722,557. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL J. HUNGERFORD, of Farnham, in the Province of Quebec and Dominion of Canada, have invented a new and Improved Combination-Machine, of which the following is a full, clear, and exact description.

This invention relates to a motor or engine, a lathe, and a drill, all supported on one frame, the object being to economize space and make the combined machine easily portable as a whole.

I will describe a combination-machine embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of a combination-machine embodying my invention. Fig. 2 is a section on the line 2 2 of Fig. 1, and Fig. 3 is a section on the line 3 3 of Fig. 1.

Referring to the drawings, 1 designates the bed-plate of a lathe, supported on the frame 2. The head-stock 3 of the lathe has its spindle-bearings in a block 4, supported on the bed. Secured to one end of the frame is an engine 5, which may be operated by any suitable power. The piston-stem 6 of the engine has a link connection 7 with a wrist-pin 8 on a fly-wheel 9, having its shaft-bearings in the frame of the machine. Also connected with the wrist-pin 8 is a link 10 for operating a slide-valve in the steam-chamber 11.

On the inner end of the shaft 12 for the fly-wheel 9 is a pulley 13, from which a band may extend to drive a grindstone, an emery-wheel, an air-blast fan, or the like. A pinion 14 on the shaft 12 meshes with a drive-gear 15 on a counter-shaft 16, on which is a step-pulley 17, from which a band 18 extends to a step-pulley 19 on the spindle of the head-stock.

Rigidly mounted on the end of the counter-shaft 16 is a friction cone or block 20, designed to be engaged by the step-pulley 17 to cause said step-pulley to rotate with the shaft. The step-pulley is moved into and out of engagement with the block 20 by means of a shifting rod 21, connected at one end to a bar 22, which is pivoted at its lower end to the frame of the machine, and at its opposite end said shifting rod is connected to the bar 23, the lower end of which is attached to a rock-shaft 24. Attached to this rock-shaft 24 is a link 25, which has a link connection 26 with a yoke 27, having lugs 28, which engage in an annular channel formed in the step-pulley 17.

Mounted on a bracket 29, secured to the frame of the machine, is a drill-stock 30, below which is the vertically-adjustable table 31. The drill-stock is rotated from the spindle of the head-stock by means of a pinion 32, meshing with a pinion 33 on a shaft 34, which has on its outer end a bevel-gear 35, meshing with a bevel-gear 36 on the drill-stock. The pinion 32 is designed to be moved out of engagement with the pinion 33 when it is not desired to operate the drill. I have therefore shown said pinion 32 as mounted to slide on the spindle to disengage it from the gear-wheel 33. The pinion 32 is moved by means of a shifting rod 37, having a yoke 38, provided with lugs 39, engaging an annular channel formed in a projection 40 on the pinion 32.

The usual screw-cutting or feed-gears 41 42 are mounted in the frame and operated in the usual manner. Connected with the gear 42 is the usual screw-shaft 43 for moving the tool-carrier 44 upon which the usual tool-post is mounted.

Several advantages may be claimed for this machine—that is, it is much more cheaply built than the three machines could be built separately, it is more easily transported, and requires no setting up, as it is ready for instant service in any place where steam or other source of power is available. It occupies less floor-space than three separate or independent machines, and there is an economy in shafting and belting. The machine is especially designed for use in railway-roundhouses, factories, mills, with contractors' plants, or on shipboard, and, in fact, in any place where a limited amount of machine-work of a wide variety is required, such as repairing breakdowns, &c.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with a frame, of a lathe on the frame, a motor on the frame and having driving connection with the lathe, a bracket

secured to the frame, a drill-stock mounted in the bracket, a pinion on the lathe-spindle, a yoke engaging with the said pinion, a shifting rod extended from the yoke, a shaft mounted to rotate in the bracket, a pinion on said shaft for engaging with the pinion on the lathe-spindle, and gear connection between the shaft and the drill-stock, substantially as specified.

2. The combination with a machine-frame of a motor thereon, a lathe having the head-stock spindle driven from the motor, and a drill-stock supported by a bracket from the head-stock and geared to the head-stock spindle, the bracket having a member bridging the head-stock and secured to the inner end of the same, and a member secured to the outer end of the head-stock.

3. The combination with a single frame, of an engine mounted on said frame, a counter-shaft driven by the engine, a pulley loosely mounted on the counter-shaft, a clutch for rotatively engaging the pulley with the shaft, a lathe on the frame, a pulley on the spindle of said lathe and having a band connection with the first-named pulley, and a drill-stock on the frame and adapted to be driven from the lathe-spindle, substantially as specified.

4. The combination with a single frame, of a counter-shaft mounted in the frame, an engine mounted on the frame, a driving-shaft operated by the engine, a gear connection between the driving-shaft and counter-shaft, a band-pulley on the driving-shaft, a lathe on the frame and operated from the counter-shaft, and a drill-stock on the frame adapted to be operated from the lathe-spindle, substantially as specified.

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Witnesses:
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