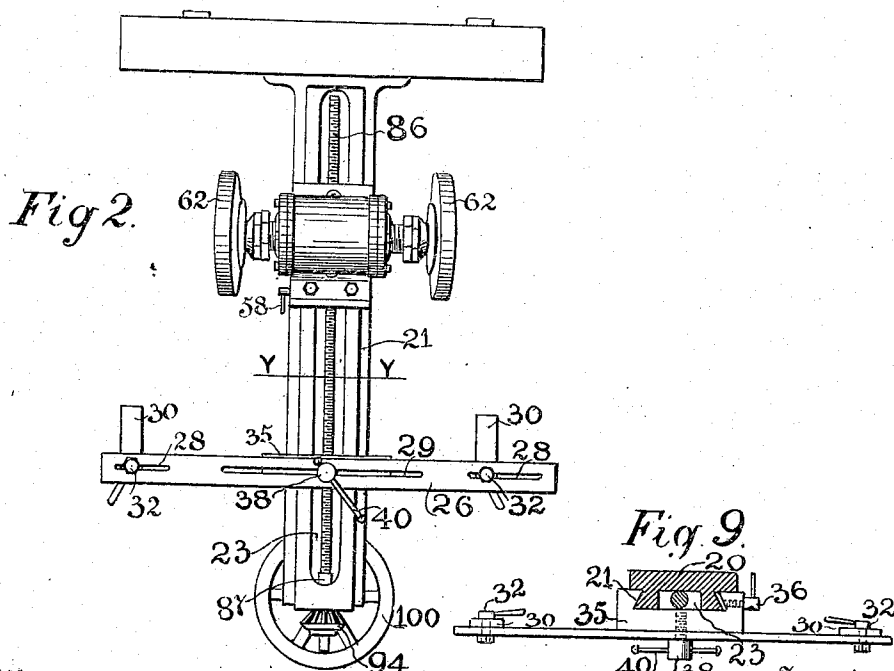
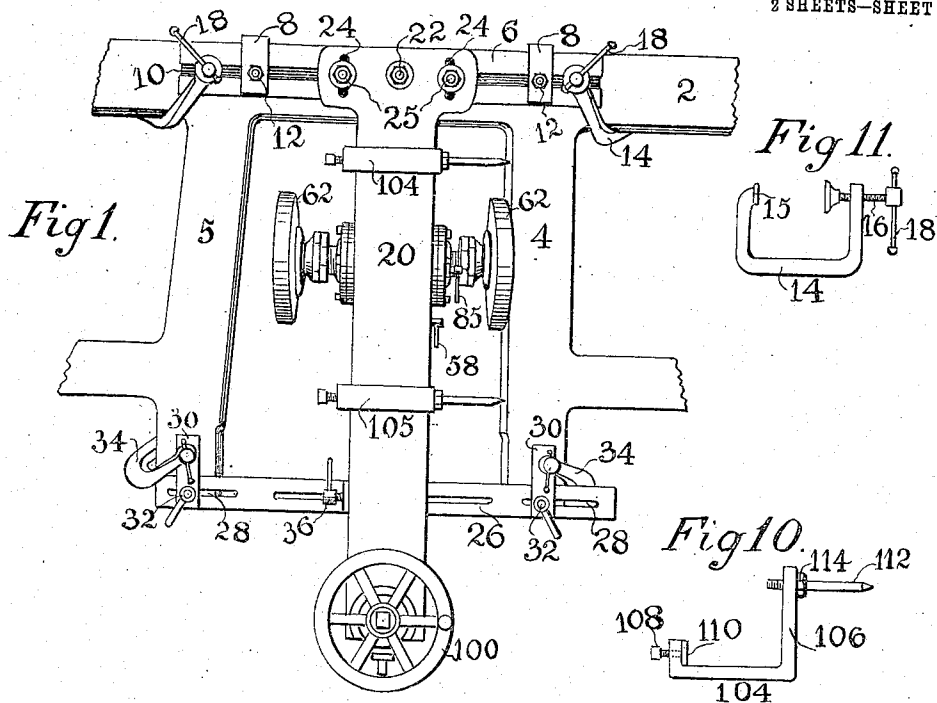


C. W. DANGLEMEYER & J. J. CONNORS.
 PORTABLE GRINDING MACHINE.
 APPLICATION FILED FEB. 6, 1909.

942,311.

Patented Dec. 7, 1909.

2 SHEETS—SHEET 1.



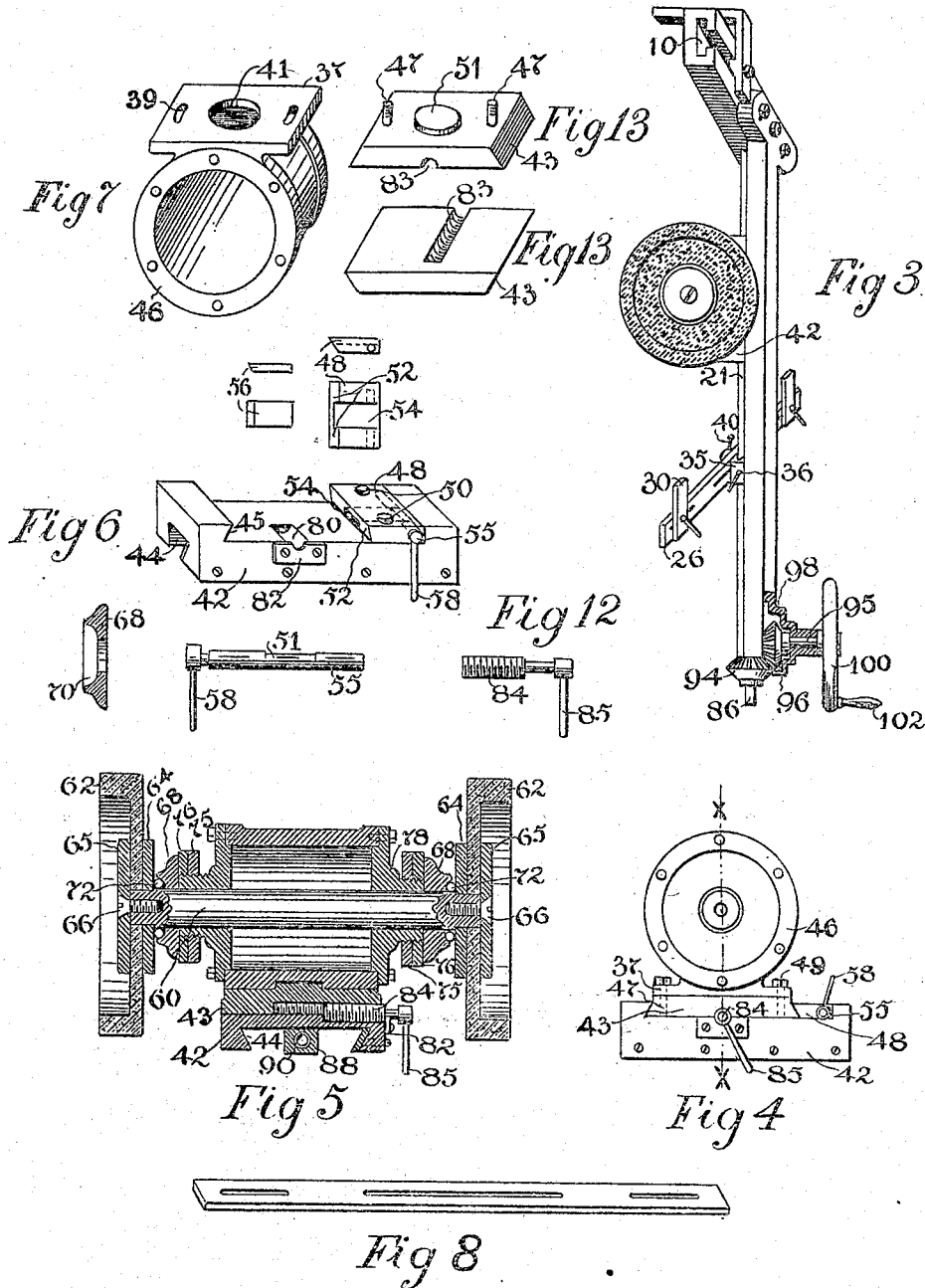
Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES W. DANGLEMEYER AND JAMES J. CONNORS, OF DUBUQUE, IOWA.

PORTABLE GRINDING-MACHINE.

942,311.

Specification of Letters Patent.

Patented Dec. 7, 1909.

Application filed February 6, 1909. Serial No. 476,559.

To all whom it may concern:

Be it known that we, CHARLES W. DANGLEMEYER and JAMES J. CONNORS, citizens of the United States, and residing in the city and county of Dubuque and State of Iowa, have invented new and useful Improvements in Portable Grinding-Machines, of which the following is a specification.

Our invention is an improvement on Letters Patent for portable milling machines granted to one of the applicants herein on the 6th day of October 1908 and numbered 900,149 whereby the machine has been simplified in its construction and adapted to grind the jaws of an engine frame.

Wherein our present device is differentiated from the above named patent will be fully made to appear in the following specification when taken in connection with the drawings accompanying the same and forming a part hereof.

Figure 1 is a front elevation of our device when attached to the frame of an engine and jaws. Fig. 2 is a back elevation of our device removed from the engine frame. Fig. 3 is a side elevation. Fig. 4 is an end view of the power-box attached to the slide head with locking device and side feed screw with grinders removed. Fig. 5 is a vertical section through line X—X of Fig. 4 with grinders attached. Fig. 6 is a perspective view of the slide head and locking device and attachments. Fig. 7 is a bottom view of the power box. Fig. 8 is a perspective view of the lower frame stay. Fig. 9 is a cross section through line Y—Y of Fig. 2. Fig. 10 is a side view of the gage for setting the grinder parallel with the jaws to be ground. Fig. 11 is a side view of a clamp that holds the machine on the engine frame. Fig. 12 is a side elevation of the adjusting screw. Fig. 13 is a perspective view of a detail.

Like characters of reference denote corresponding parts in each of the drawings.

In the drawings 2 indicates the frame of an engine having a jaw 4 set at right angles to the frame and another jaw 5 set at a different angle. Against the face of the frame 2 is suspended a plate 6 by the hangers 8. The plate 6 is provided with a T shaped groove 10, shown more fully in Fig. 3. The hangers 8 are adjustably held in engagement with the plate 6 by bolts 12 provided with enlarged heads that are adapted to engage and slide in the groove 10. The

plate 6 is further held against the face of the frame by clamps 14 shown in Fig. 11. The clamps are preferably of rectangular shape having a grasping arm 15 and also provided with a screw 16 having an operating handle 18.

The frame 20 of the machine upon which the motor power travels, is of substantially rectangular shape having a dovetail back at 21 and provided with a rectangular groove 23 also with a T shaped head and is firmly and adjustably held to the plate 6 by a central bolt 22 provided with an enlarged head which engages the groove and slides therein. On each side of the central bolt 22 in the head is a curved slot 24 in each of which is inserted a bolt 25 with the heads of the bolts in engagement with said slot 10.

Against the lower end of the jaws 4 and 5 is a stay 26, which is provided with a short slot 28 near each end and a longer slot 29 in the center. This stay is clamped to the jaws by a plate 30 which is secured to the stay by a bolt 32 that passes through the plate and through the slot 28 in the stay and the plate is removably secured to the jaws by clamps 34 substantially like the clamps 14 by which the plate 6 is secured to the frame 2 of the engine.

Against the back 20 in engagement with the dovetail 21 is a block 35 which is rigidly and adjustably held in engagement with the dovetail 21 by a set screw 36 as shown in Fig. 9. The lower end of the frame is secured to the stay 26 by a screw bolt 38 provided with a handle 40 and passing through the central slot 29 in the stay and engaging the block 35. By this manner of construction the frame 20 may be set parallel to either jaw of the engine frame by loosening the bolts 22, 25, and 38 and set screw 36 and swinging the frame on the bolt 22 without in any manner disturbing the engagement of the stay 26 with the jaws 4 and 5 of the engine frame.

In Fig. 6 is shown a head 42 dovetailed at 44 and adapted to engage the dovetail 21 on the back of the frame 20 and slide up and down on the frame. The head is also dovetailed at 45 in which is set the power-box 46. For the purpose of adjustably securing the power-box on the head 42 there is provided a plate 48 which is rigidly secured to the head in the dovetail 45 by two tap bolts 50. The plate is beveled at 52 and

forms part of the dovetail 45 and this plate is provided with a groove 54 on its under side in which is inserted a key 56. The power-box 46 is circular in form and there is provided at its base a plate 37 cast integral with the box in each side of which is a slotted hole 39 and in the center a slight bore 41. For the purpose of adjusting the power box so that the grinders shall be brought into alinement with the jaw to be ground whereby the grinders may attack the jaw at the best possible advantage there is provided a plate 43 having thereon studs 47 adapted to engage the holes 39 in the base of the power box. The studs are screw threaded at their outer end and each is provided with a nut 49. The central part of the plate has a circular raised portion 51 adapted to engage the bore 41 in the base of the power-box. The plate 43 is beveled at its ends and adapted to engage and fit into the dovetail 45 in the head 42.

When the parts are assembled as shown in Fig. 4 the studs 47 will be in engagement with the holes 39 in the plate 37 and the raised portion 51 in the bore 41. The nuts 49 will be upon the upper end of the studs 47 and on the upper side of the plate 37. Then if it is desired to adjust the power-box with the grinders therein all that is necessary is to loosen the nuts 49 and turn the power-box, with the pins 47 in the slotted holes 39, to the adjustment desired, then tighten the nuts 49. Through the plate 48 is a hole near its rear end in which is inserted a locking device consisting of a pin or rod 55 cut away at 51 and provided with an operating handle 58. It will be seen by this mode of fastening the power-box 46 on the head that it may be removably held by turning the handle 58 partly around, the rod will then engage the key 56 and force the key 56 against the plate 43 and securely hold it in the dovetail 45 in the head 42.

The power-box 46 surrounds and drives the shaft 60 and by it the grinders 62. Near the ends of the shaft 60 is a shoulder against which and around the shaft are placed collars 64 and against the collars the grinders 62 and to rigidly fix the grinders on the shaft there is provided collars 65 that are held on the shaft 60 and against the grinders 62 by counter-sink screws 66. In order to rotate these grinders with great rapidity and still with the least possible friction are provided collars 68 each having therein a groove 70 in which are steel balls 72, which contact with the collars and relieve the friction. For the purpose of adjusting these balls and keeping them in operative contact with the collars 64, there is provided two lock nuts 75 and 76 that are screwed into the neck 78 of the power-box frame at each end. By this means of adjustment all lateral motion is taken up.

To adjust the grinders for grinding the jaws the desired amount there is provided a screw 84 which rests in a half round groove 80 in the head 42 and is held from any endwise movement by plate 82. The plate 43 of the power-box has a similar longer groove 83 that has screw threads adapted to be engaged by the screw 84. By turning the screw 84 the power box with the grinders are brought into and out of engagement with the jaws to be ground.

For the purpose of raising or lowering the head with the power-box there is provided a screw 86, held in position and prevented from endwise movement by a collar 87 which screw is rotated in a groove 23, in the frame, and in the dovetail 44 of the head 42 is secured a nut 88 provided with a screw threaded hole 90 in which the screw 86 engages. The screw 86 passes through lower end of the frame and held in position by a collar 87. At the lower end of the screw 86 is keyed a bevel gear 94 which engages bevel gear 96 mounted on a shaft 95 and runs in the box 98 attached to the frame. On the shaft 95 is a hand wheel 100 provided with a handle 102 by which the shaft 95 is rotated and with it the screw 86. By rotating the wheel 100 the head carrying the power and grinders will be carried up and down on the screw 86 while the grinders are in engagement with either one of the jaws.

To the front face of the frame is removably secured two gages 104 and 105 shown in Fig. 10 which consist of a rectangular frame 106. In one end is a set screw 108 adapted to engage a plate 110. In the opposite end is an adjustment pin 112 which is locked by a nut 114.

The manner in which our device is operated is substantially as follows: The bolts 22, 25, 38 and set screw 36 are loosened, then the gages 104 and 105 are adjusted to aline the frame 20 with the jaw to be attacked, then the frame 20 is locked in that position, power is then applied through the power-box which rotates the grinders; and the operator then grasps the handle 102 of the wheel 100 and rotates it which in turn rotates the screw 86 and this being in engagement with the nut 88 in the opening 90 will raise and lower the head. When it is desired to deepen the cut then the operator grasps the handle 85 of the screw 84 and forces the power-box and grinders toward the jaw to be ground.

If at any time the ball bearings are out of operative contact with the collar 64 then the nuts 75 and 76 may be tightened and they will force the collar 68 toward the collar 64 and bring the balls into bearing. When one of the jaws has been ground sufficiently the operator reverses the position of the gages 104 and 105 and makes the pin

project toward the opposite jaw and then the bolts 22, 25, 38 and set screw 36 are released and the frame is adjusted to bring the grinder in contact with the opposite jaw.

5 Having now described our invention what we claim is:

1. In a device of the character described, a plate adjustably secured to the face of an engine frame, a frame provided with a dovetail adjustably secured to said plate, a head 10 carrying a movable and adjustable power box, a shaft in the power box with grinders attached, a dovetail in the head adapted to engage the dovetail in the frame and slide thereon, a screw secured in the frame and 15 adapted to engage the head, and carry the head up and down thereon, a stay provided with a slot in its center and removably secured to the lower end of the jaws of the 20 engine frame, and means engaging the frame and the slot in the stay to adjust the frame parallel to the jaw to be ground, and secure the frame in such adjusted position without removing the stay from the jaws of the 25 engine frame.

2. In a device of the character described, a frame provided with a longitudinal groove and a dovetail, a head having a dovetail in its base adapted to engage the dovetail in 30 the frame and also provided with a dovetail in its face, a plate forming part of the dovetail in the face of the head and said plate grooved on its under side, a power box engaging the dovetail and plate in the face 35 of the head, and means for locking the power box on the head consisting of a key in the groove of the plates, a pin provided with a cam or cut away portion, and an operating handle to force the key against the base of 40 the power box and lock it therein.

3. In a device of the character described, a frame provided with a dovetail, means for adjustably attaching the frame to the frame of an engine, a screw secured in the back of 45 the grinding frame, a stay secured to the jaws of an engine frame and provided with a centrally longitudinal slot, a movable and adjustable dovetail block adapted to engage the dovetail in the back of the frame, means 50 for engaging the block and the slot in the stay to adjustably hold the frame to the

stay, a head carrying a power box provided with a dovetail adapted to engage the dovetail in the frame and slide thereon, a shaft in said head, grinders secured to the shaft, 55 and collars on the shaft provided with balls which form ball bearings for the grinders.

4. In a device of the character described, a frame provided with a dovetail and longitudinal groove, means for adjustably securing 60 the frame to the face of an engine frame, a head provided with a dovetail in its base and adapted to engage the dovetail in the frame and the dovetail in the face, a power box secured to the plate and carrying grind- 65 ers, means for removably locking the plate on the head, a screw secured to the frame in the groove and adapted to engage the head and cause the head with the grinders thereon to travel up and down on the frame, and 70 means for adjusting the grinders to attack either jaw of the engine frame.

5. In a device of the character described, a frame, a head attached to the frame, a power box carrying a shaft with grinders 75 attached, a plate adjustably secured to the head and means for adjusting the grinders to attack the jaw to be ground consisting of a screw removably secured in the head and engaging a threaded groove in the face of 80 the plate to the other face of which the power box is adjustably attached.

6. In a device of the character described, a frame, a head secured to the frame and adapted to travel up and down on the frame, 85 said head provided with an adjustable dovetail in its outer face, a plate adapted to engage the dovetail in the head and be adjustably secured therein, threaded studs projecting from said plate and said plate provided 90 with a raised center, a power box having a base provided with slotted openings there-through, and depression in the center and said openings and center adapted to be engaged by the studs and raised center of the 95 plate, and nuts engaging said studs and lock locking the power box on the head.

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