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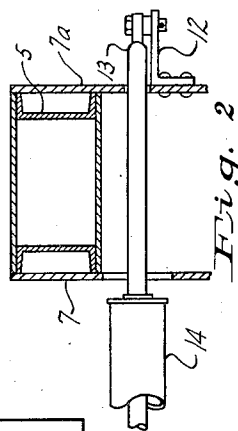
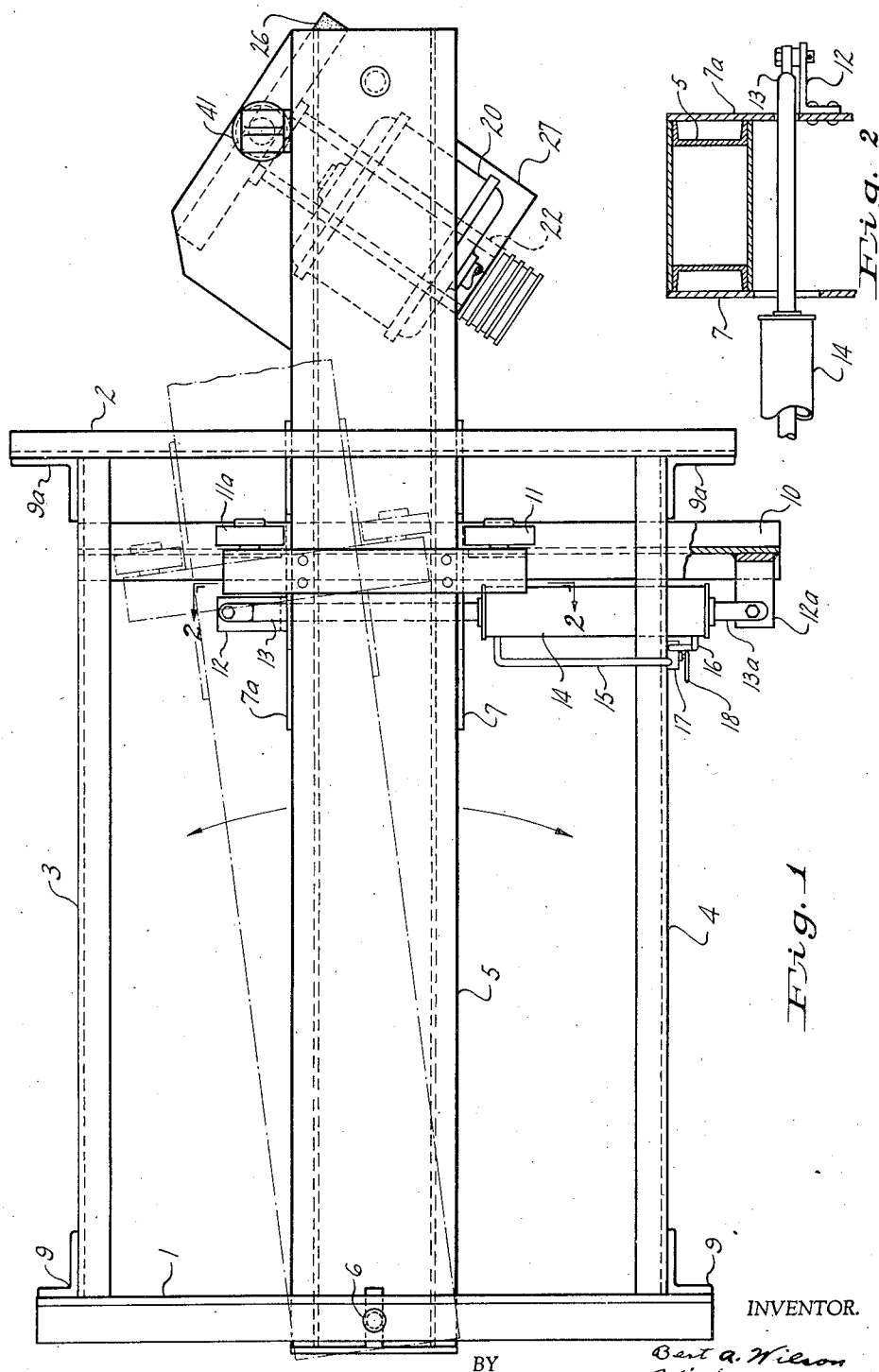
B. A. WILSON

2,308,843

GRINDING WHEEL MOUNT

Filed Sept. 20, 1941

3 Sheets-Sheet 1



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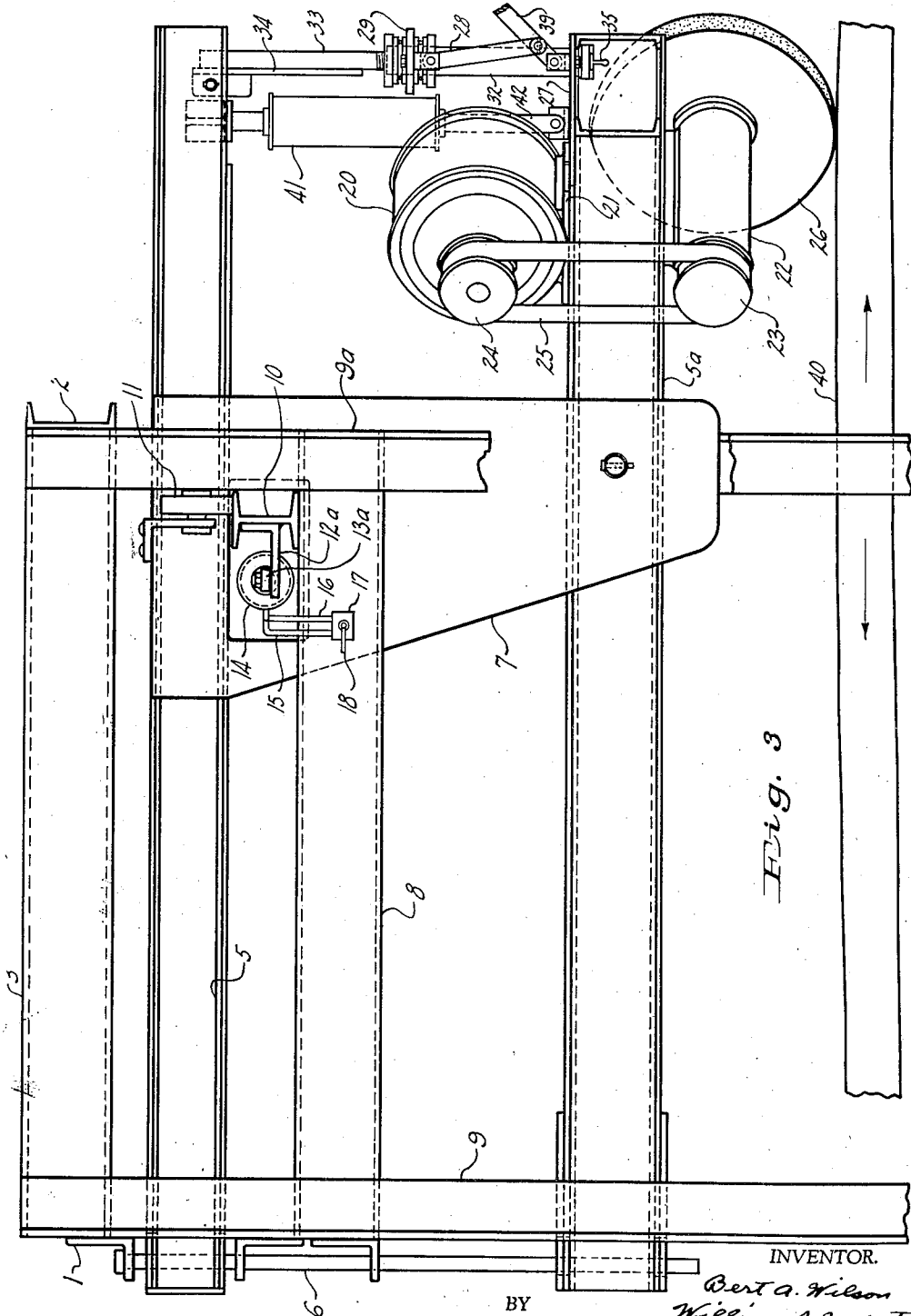
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3 Sheets-Sheet 2



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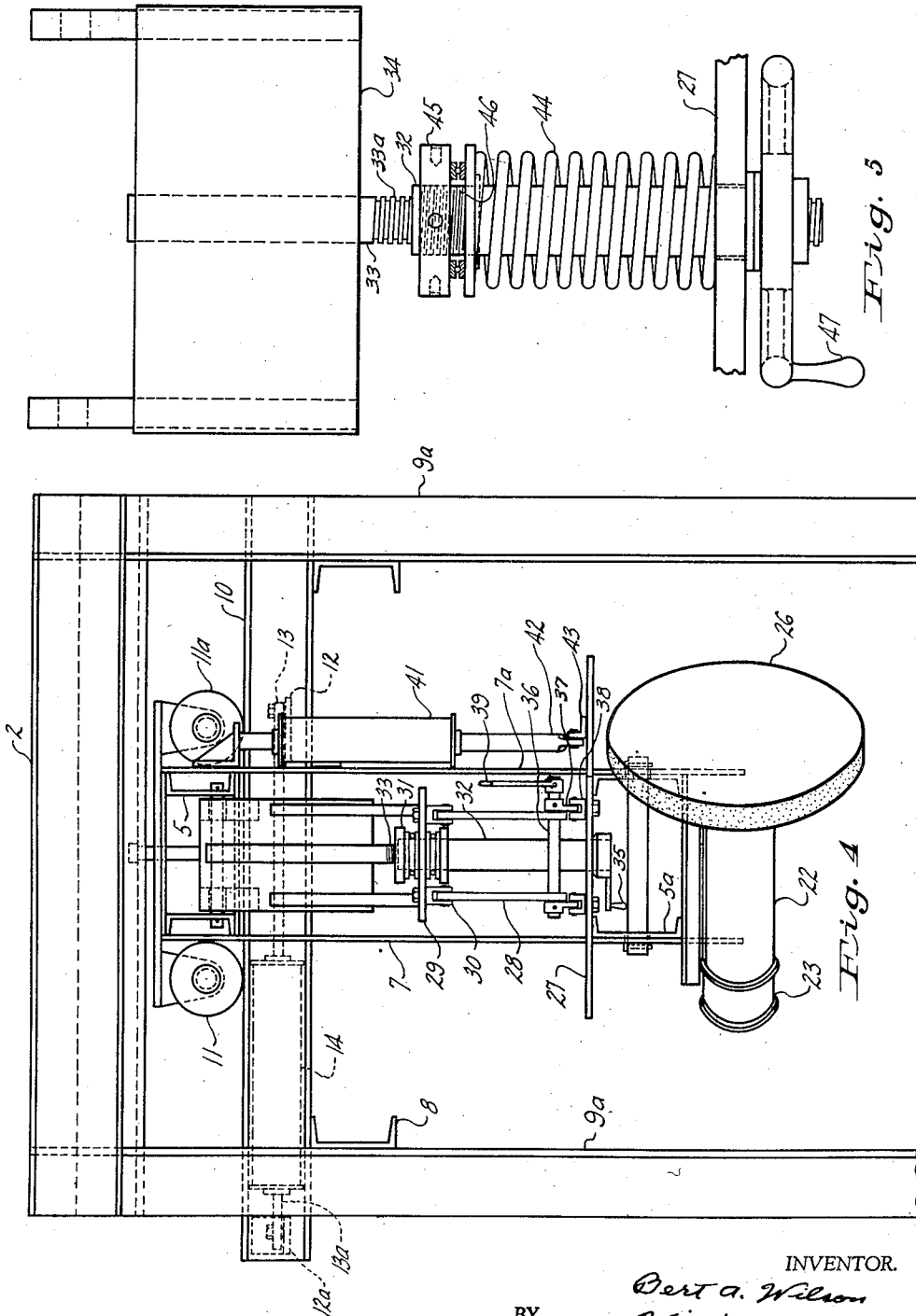
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GRINDING WHEEL MOUNT

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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GRINDING WHEEL MOUNT

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Application September 20, 1941, Serial No. 411,704

3 Claims. (Cl. 51—92)

This invention relates to new and useful improvements in apparatus for grinding billets or slabs, and it is among the objects thereof to provide a compact, mobile grinding head which is power operated to adjust the position of the grinding wheel relative to the work.

In a co-pending application, Serial Number 375,187, filed January 21, 1941, I have disclosed special apparatus for mounting billets or slabs with a grinding wheel mount that is movable along the longitudinal axis of the work.

In accordance with the present invention, the grinding wheel mount is constructed to be movable transversely of the work while the work is movable by its support as disclosed in the hereinafore-mentioned application.

The invention will become more apparent from a consideration of the accompanying drawings constituting a part hereof in which like reference characters designate like parts and in which:

Fig. 1 is a top plan view of a grinder wheel support, including a movable jib and a wheel mounting frame;

Fig. 2 a cross-sectional view partially in elevation of a detail taken along the line 2—2, Fig. 1;

Fig. 3 a side elevational view of the grinder frame, jib and wheel support;

Fig. 4 a front elevational view thereof;

Fig. 5 a front elevational view of a portion of the grinder wheel frame support embodying a modified form of grinder wheel pressure adjustment.

With reference to the several figures of the drawings, the structure therein illustrated comprises end frames 1 and 2 and side frames 3 and 4 joined to constitute a rigid support for a jib 5 which is pivoted to the frame by a pin 6 that extends through an opening in the end frame 1, as shown in Fig. 3. The jib is constructed of channels 5 and is provided with parallel bottom beams 5a which are joined by side plates 7 and 7a.

A stationary frame 8 extends between vertical uprights 9 and 9a and is provided with an I-beam 10 that constitutes a track for rollers 11 and 11a. Attached to the I-beam 10 is an angle bracket 12a on which is mounted a pivot rod 13a attached to cylinder 14. Attached to the jib is an angle bracket 12 on which is mounted piston rod 13, movable in cylinder 14. The ends of the cylinder are connected by conduits 15 and 16 to a valve 17 having a mechanically operable handle 18.

By applying fluid pressure to either side of cylinder 14, the jib is caused to move on the supporting I-beam 10 in an arcuate path, as shown

in dotted lines in Fig. 1. A motor 20 is mounted on the end of the jib frame 5a, the motor support 21 being attached to the jib channel 5a at an angle as shown in Fig. 1.

This angle is permanently maintained. A journal bracket 22 is attached in alignment with the motor 20 beneath the jib frame 5a having a pulley shaft 23 in alignment with the motor pulley 24 to which it is connected by a belt 25.

The other end of the pulley shaft 23 receives the grinding wheel 26. The bottom jib frames 5a are joined by a plate 27 which is suspended by links 28 from a plate 29 to which they are pivotally connected by brackets 30. The plate 29 is supported on a swivel 31 which supports a threaded sleeve 32 which interacts with a threaded stud 33 that is welded to a plate 34 suspended from the jib channel 5. Sleeve 32 is provided with a hand wheel 35, rotation of which results in vertical adjustment of the wheel support relative to the upper jib channels. Links 28 are pivotally connected to brackets 30 of plate 27. Shaft 36 is angularly movable by a lever 39 to obtain quick release of wheel 26 from contact with the billet or slab which is designated by the numeral 40, Fig. 3.

The wheel 26 is maintained under grinding pressure by air cylinder 41 having a piston rod 42 connected to an angle bracket 43 of plate 27. A predetermined fluid pressure is maintained in cylinder 41 to maintain a desirable grinding pressure on the billet 40. In Fig. 5 is shown a loading spring 44 which, through the coaction of the threaded sleeve 32 and supporting stud shaft 33, maintains pressure on plate 27 to thereby effect a pressure contact of the grinding wheel 26 with the work.

Tension on spring 44 is adjusted by nut 45 which interacts with thread 46 on sleeve 32. Hand wheel 47 rotates sleeve 32 on thread 33a to adjust the wheel support vertically. The operation of the above-described slab grinding unit is briefly as follows:

The billet or slab designated by the numeral 40, Fig. 3, is adjustable vertically relative to the grinder head by raising or lowering the support as disclosed in the hereinbefore mentioned co-pending application. Once such adjustment has been made, the wheel 26 contacts the work 40 against the fluid pressure in cylinder 41 or against the compression of spring 44, Fig. 5. The slab support is then subjected to reciprocatory movement to cause the slab or billet to traverse the face of the wheel 26 in a longitudinal direction.

The operator, by manipulating the valve lever 18, can mechanically move the jib transversely of the moving path of the slab or billets within the limits of movement of the piston 13. The grinding wheel may be released from the work instantaneously by pulling lever 39 downward, thereby lifting the wheel supporting plate.

As shown in Fig. 1 the jib frame 5 is slotted to allow freedom of movement through the arcuate path without binding on the pivot pin 6. By thus controlling movement of the work support and movement of the grinder head separately and mechanically, larger grinding wheels and motor may be employed since the head moving operations are mechanically performed.

The purpose of lifting the wheel from the work through manipulation of lever 39 is more particularly to permit moving of the wheel from one position over the slab or billet by inspection after grinding.

A pressure regulator may be employed when air is used in place of the spring to maintain pressure contact of the grinding wheel on the work. By means of the spring or fluid pressure on the grinding wheel support, uniform pressure is maintained on the slab regardless of any unevenness of the slab surface.

By means of the apparatus herein described, slabs or billets of great mass can be speedily and effectively ground to remove surface defects. The apparatus is substantial and of durable design. Because of its mechanically actuated movements it can be of substantial weight, permitting the use of powerful motors to speed up the grinding operations.

Although one embodiment of the invention has been herein illustrated and described, it will be evident to those skilled in the art that various modifications may be made in the details of construction without departing from the principles herein set forth.

I claim:

1. A grinding head comprising a movable jib pivoted to a supporting frame at one end and having rollers at the other end movable on a supporting track, fluid pressure actuating means for sub-

jecting the jib to angular movement on its support in opposite directions, a motor support carried by said jib and a grinding wheel support in alignment with said motor support, said motor and grinding wheel having driving connections, adjustable means for raising and lowering the grinding wheel support and a lever for raising said wheel out of contact with the work.

2. A grinding head comprising a movable jib pivoted to a supporting frame at one end and having rollers at the other end movable on a supporting track, a cylinder mounted in the jib supporting frame, a piston operable in said cylinder connected to the jib, manually operable valve means for directing fluid pressure to the respective ends of said cylinder to subject the jib to angular movement within the limits of the piston travel, a motor support on said jib, a motor mounted on said support, a grinding wheel support mounted beneath the motor, a grinding wheel shaft journaled in said support having driving connections with said motor, the grinding wheel support having a screw sleeve interacting with a suspension stud for raising and lowering the wheel support, and a lever connecting said wheel support for raising said support independently of said screw adjusting means.

3. A grinding head comprising a supporting frame, a movable jib comprising upper and lower channel members joined by side plates pivoted to a supporting frame at one end, rollers mounted on the other end of said jib, a track constituting the roller support connected to the supporting frame structure, a piston connected to the roller support and a cylinder mounted on the jib frame to be movable therewith, valve means for directing fluid pressure to and from the respective ends of the cylinder, manually operable means for actuating said valve, a motor support carried by said jib and a wheel support suspended from said jib in alignment with said motor support, manually adjustable means for varying the height of the wheel relative to the jib support, and means independently of said adjusting means for raising and lowering the wheel.

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