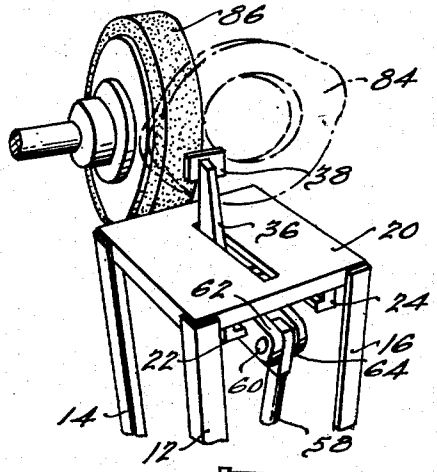
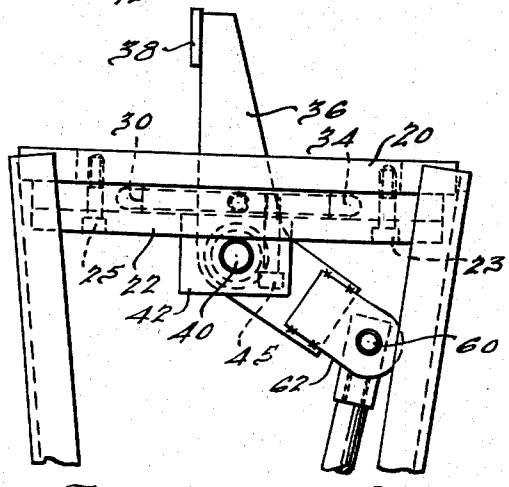
Aug. 24, 1954 A. S. WYBORSKI 2,686,994

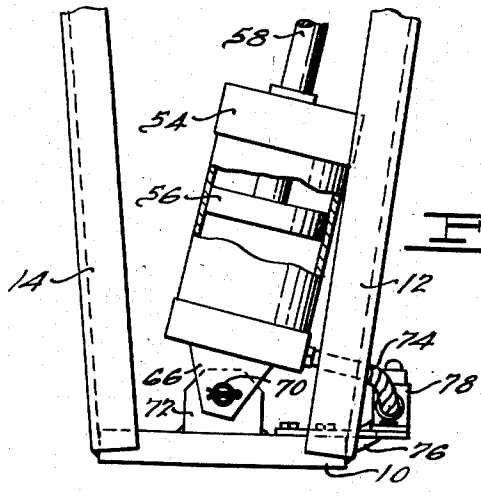
WORK FEED DEVICE FOR GRINDING MACHINES

Filed Oct. 10, 1952

FIG. 3.







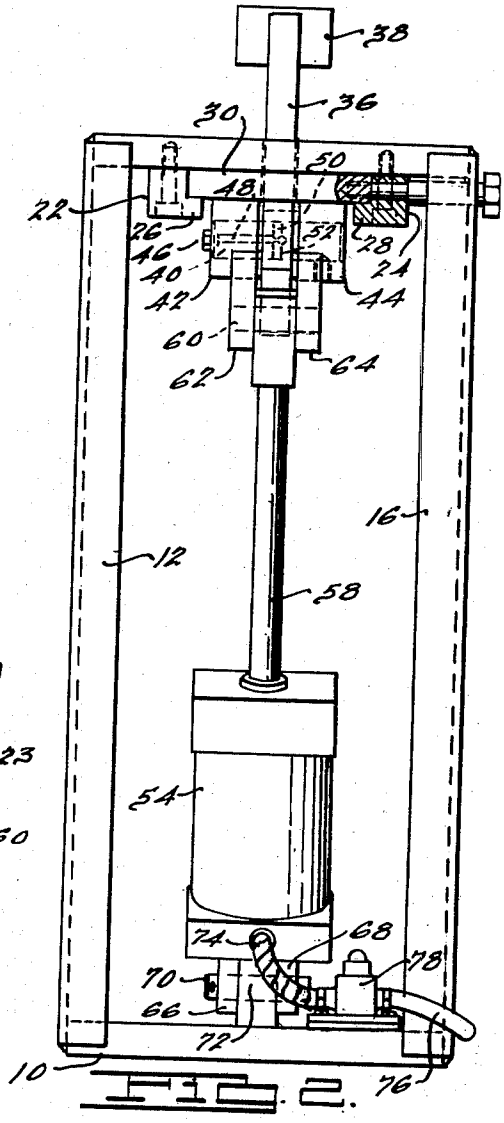


FIG. 2.

FIG. 1.

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WORK FEED DEVICE FOR GRINDING MACHINES

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6 Claims. (Cl. 51—165)

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This invention relates to a work-feed device and more particularly to a work-feed device for use with floor stand grinding machines and the like.

The usual practice in the foundry industry is to remove sprues, fins or other projections on castings by the use of floor stand grinding machines, commonly known as snagging machines. In the grinding or snagging operation, the casting workpiece is manually presented to the grinding wheel by the operator and is supported on a rest or stand adjacent the wheel while being ground. In order to increase the grinding pressure, some operators use manual devices of various types to obtain leverage but such practices are fatiguing since the required force must be provided by the operator.

Prior devices have also been used which permit the operator to multiply the leverage by stepping on a foot pedal. While such devices make the work somewhat easier and reduce operator fatigue, they are subject to the defect that the operator must spend most of his production time on one foot and he is still required to provide the force.

Accordingly, an object of the present invention is to overcome the disadvantages present with devices of the type above referred to and to provide a work-feed device for use with grinding machines having means which obviates the necessity of the operator to provide the required grinding pressure.

Another object of the invention is to increase the production rate of snagging operations by increasing the grinding pressure and reducing operator fatigue.

Another object of the invention is to obtain greater grinding wheel economy by permitting the use of harder grades of grinding wheels.

Yet another object of the invention is to provide a work-feed device which may be readily adapted to accommodate workpieces of various sizes and shapes.

Still another object of the invention is to provide a work-feed device which is simple in construction, economical of manufacture, durable and reliable in operation and which enables rapid quantity snagging of castings at a minimum of expense.

The above, as well as other and in certain cases more detailed objects will become apparent from the following description and the appended claims. A preferred, but illustrative, embodiment of the invention is illustrated in the accompanying drawing throughout the several views of which corresponding reference characters designate corresponding parts and wherein:

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Figure 1 is a side elevational view of the invention with portions in section and other portions broken away;

Figure 2 is a front elevational view with portions in section; and,

Figure 3 is a perspective view showing a workpiece applied to a conventional grinding wheel.

Referring to the drawing, there is illustrated a device of the above-described type having a horizontally disposed base plate 10 which may be bolted or otherwise secured to the floor adjacent a grinding machine, and having upwardly extending outwardly inclined legs in the form of angle pieces such as 12, 14, and 16. The lower end portions of the legs are welded or otherwise rigidly secured to the corner portions of the base plate 10 and the upper end portions abut and are rigidly secured to the corner portions of a support plate 20 by suitable attachment means, such as welding or the like, the support plate 20 being adapted to support a casting workpiece.

A pair of spaced parallel forwardly extending angle pieces 22 and 24 are secured by bolts, such as 23 and 25, to the lower side of plate 20, with the flange portions 26 and 28 projecting inwardly so as to define horizontal ways on which are slidably mounted a carrier plate 30. Carrier plate 30 may be releasably secured in a selected adjusted position by means of a bolt 32 which passes through a slot 34 provided in the angle piece 24 and is threadably fitted in a suitable opening provided in the side of the carrier plate.

For the purpose of applying grinding pressure to a casting workpiece, a bell crank 36 is provided, the upper end portion of which extends upwardly through suitable centrally disposed aligned slots provided in the carrier plate 30 and support plate 20. A horizontally extending pressure bar 38 is welded or otherwise secured to the forward edge of the upper end portion of bell crank 36. Bell crank 36 is pivotally mounted on pivot pin 40 which is supported in suitable bearing blocks 42 and 44 secured to the lower side of carrier plate 30 by bolts such as 45.

Most foundries make castings of various sizes and shapes and it will be appreciated from the above description that rapid adjustments may be made to accommodate the various castings

by moving the carrier plate 30 forwardly or backwardly in the ways defined by the angle pieces 22 and 24 so that the pressure bar 38 may be positioned near the rear surface of a casting workpiece with sufficient clearance being provided to facilitate insertion and removal of the workpiece.

As best seen in Figure 2, lubricating grease may be applied to lubricate the bell crank through a conventional grease fitting 46 threadably fitted in the outer end of an axial duct 48 which extends partially through the pivot pin 40. The grease flows through duct 48 and communicating, radially extending ducts 50 and 52, to the surface of the pivot pin.

A cylinder 54 of conventional design is provided having an internally reciprocative piston 56 integrally attached to the lower end portion of a rod 58. The upper end portion of the rod 58 is pivotally connected to the lower end portion of bell crank 36 by pin 60 which is rotatably mounted in extension members 62 and 64 integrally attached to the bell crank, as by welding or the like, and extending rearwardly therefrom.

For the purpose of pivotally connecting the cylinder 54 to the base plate 10, the lower end portion of cylinder 54 is provided with downwardly projecting flanges 66 and 68 adapted to accommodate a pivot pin 70 which passes through an upwardly extending block 72 attached to base plate 10. It will be appreciated that such a construction permits the cylinder to pivot forwardly or backwardly about the pin 70 as the carrier plate is moved forwardly or backwardly in the previously-mentioned horizontal ways.

The piston 56 is actuated by air or fluid supplied under pressure to the lower end portion of the cylinder 54 through flexible tube 74 and a supply line 76 connected to a suitable source (not shown). The pressure is controlled by a conventional foot actuated valve 78 which is interposed between flexible tube 74 and the supply line 76 and is secured to the rear edge of the base 10 by screws 80 and 82.

It will be appreciated that the above arrangement obviates the necessity of the operator to supply the force necessary to obtain adequate grinding pressure, thereby substantially reducing operator fatigue. The above arrangement also permits the use of harder grades of grinding wheels to effect greater wheel economy and permits the production rate of snagging operations to be increased by providing a higher grinding pressure than is obtainable when it is necessary for the operator to supply the force.

In the operation of the device to grind castings, the workpiece 84 is interposed between the conventional grinding wheel 86 and the pressure bar 38, as illustrated in Figure 3, and supported on plate 20. As previously mentioned the carrier plate 30 may be moved forwardly or backwardly so that castings of various sizes may be accommodated. The operator then actuates the valve 78 so that air or fluid is admitted under pressure through the supply line 76 and flexible tube 74 to the lower portion of the cylinder 54. The piston 56 and the attached rod 58 are then moved upwardly causing the bell crank 36 to rock forwardly so that the pressure is transmitted through the pressure bar 38 to the casting and forces the casting against the grinding wheel.

While a preferred embodiment of the invention has been shown and described it will, of course, be understood that various changes and modifications may be made without departing from the scope and spirit of the invention.

What is claimed is:

1. A work-feed device for use with grinding machines comprising a support plate, elongate guides carried by said support plate, a carrier member slidably mounted in said guides, means for releasably locking said carrier member in a selected adjusted position, a bell crank extending through aligned slots in said carrier member and said support plate and pivotally attached to said carrier member, a pressure bar fixed to one end portion of said bell crank, a rod pivotally attached to the other end portion of said bell crank, a cylinder, and a piston reciprocatively mounted in said cylinder and integrally attached to said rod.

2. A work-feed device for use with grinding machines comprising a flat plate, elongate guides fixed to said plate, means for supporting said plate, a carrier member slidably mounted in said guides adjacent the lower side of said flat plate, means for releasably locking said carrier member in a selected adjusted position, a bell crank pivotally attached to said carrier member, one end portion of said crank extending through aligned slots in said carrier member and said plate, a pressure bar fixed to said one end portion of said bell crank, a rod pivotally attached to the other end portion of said bell crank, a cylinder pivotally attached to said plate supporting means and a piston reciprocatively mounted in said cylinder and integrally attached to said rod.

3. A work-feed device for use with snagging machines comprising a horizontal plate adapted to support a workpiece thereon, a pair of horizontal ways secured to the lower side of said plate, a carrier member slidably mounted on said ways, a bell crank pivotally attached to the lower side of said carrier member, one end portion of said bell crank extending upwardly through centrally disposed, aligned slots in said carrier member and said plate, said upwardly extending portion having a pressure bar integrally attached to the forward edge thereof, a rod pivotally connected to the other end portion of said bell crank, a cylinder, and a piston in said cylinder integrally attached to said rod.

4. A work-feed device for use with snagging machines comprising a substantially rectangular base having upwardly extending legs integrally attached to the corner portions thereof, a horizontal plate integrally attached to the upper end portions of said legs, a pair of horizontal angle pieces secured to the lower side of said plate, a carrier member slidably mounted on said angle pieces, means for releasably securing said carrier member in a selected adjusted position, a bell crank pivotally attached to said carrier member, said plate and said carrier member provided with centrally disposed aligned slots adapted to accommodate the forward portion of said bell crank, a pressure bar secured to the forward edge of said forward portion, a rod pivotally connected to the rearward portion of said bell crank, a cylinder, a piston in said cylinder connected to said rod, and means for selectively admitting a fluid to said cylinder under pressure.

5. A work-feed device for use with snagging machines comprising a substantially rectangular base having upwardly extending outwardly inclined legs secured to the corner portions thereof, a horizontal plate secured to the upper portions of said legs, a pair of horizontal angle

pieces secured to the lower side of said plate so as to define horizontal ways, a carrier member slidably mounted on said ways, means for releasably securing said carrier member in a selected adjusted position, a bell crank pivotally attached to said carrier member, said plate and said carrier member provided with centrally disposed aligned slots adapted to accommodate the forward portion of said bell crank, a pressure bar secured to the forward edge of said forward portion, a rod pivotally connected to the rearward portion of said bell crank, a cylinder pivotally attached to said base, a piston slidably mounted in said cylinder and connected to said rod, and means for selectively admitting a fluid to said cylinder under pressure.

6. A work-feed device for use with snagging machines comprising a base having upwardly extending outwardly inclined legs secured to the corner portions thereof, a horizontal plate secured to the upper portions of said legs, a pair of angle pieces secured to the lower side of said

plate, a carrier member slidably mounted on said angle pieces, means for releasably securing said carrier member in a selected adjusted position, a bell crank pivotally attached to said carrier member, a pressure bar secured to the forward edge of said bell crank, a pair of extension members integrally attached to the rear portion of said bell crank on opposite sides thereof, a rod pivotally connected to said extension members, a cylinder pivotally connected to said base, and a reciprocative piston in said cylinder secured to said rod, and valve means for selectively admitting a fluid to said cylinder under pressure.

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