A. DAMERON.

WORK HOLDER.

APPLICATION FILED DEC. 30, 1920.

1,422,749.

Patented July 11, 1922.

2 SHEETS—SHEET 1.

Fig. 1.

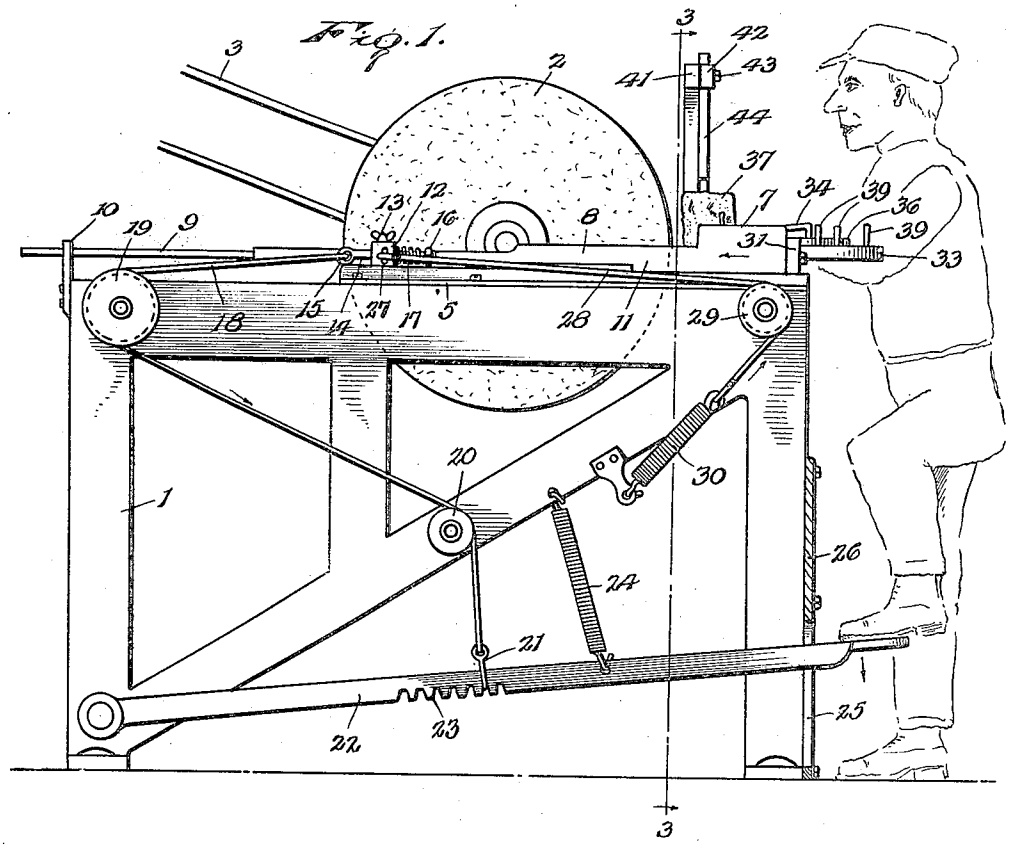


Fig. 4.

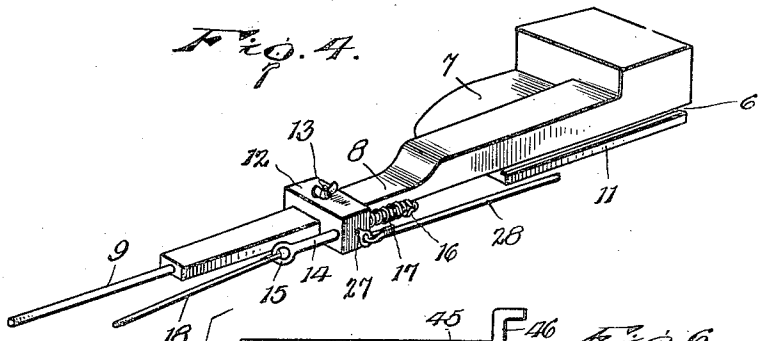
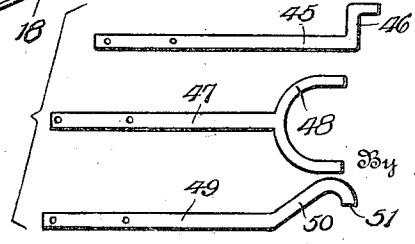


Fig. 6.



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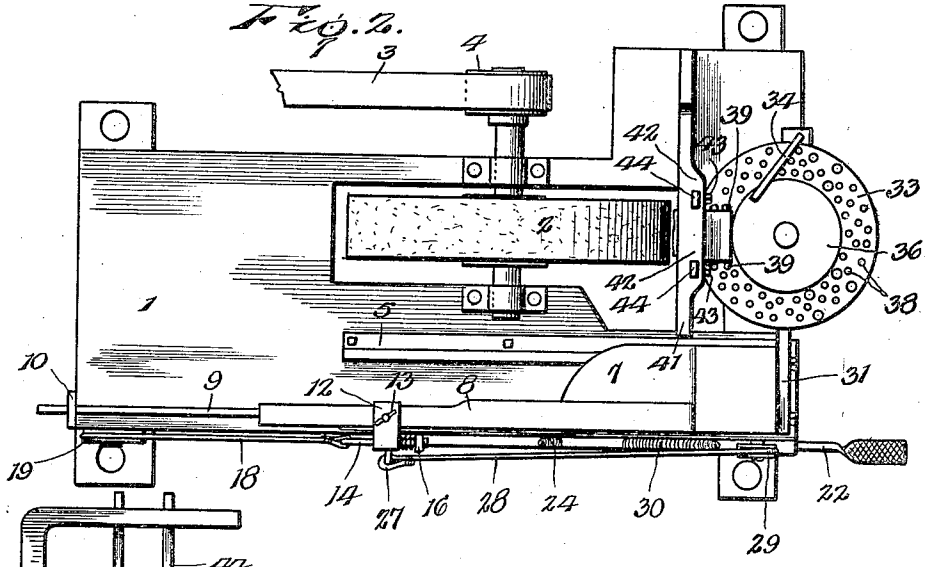
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2 SHEETS—SHEET 2.

Fig. 2.



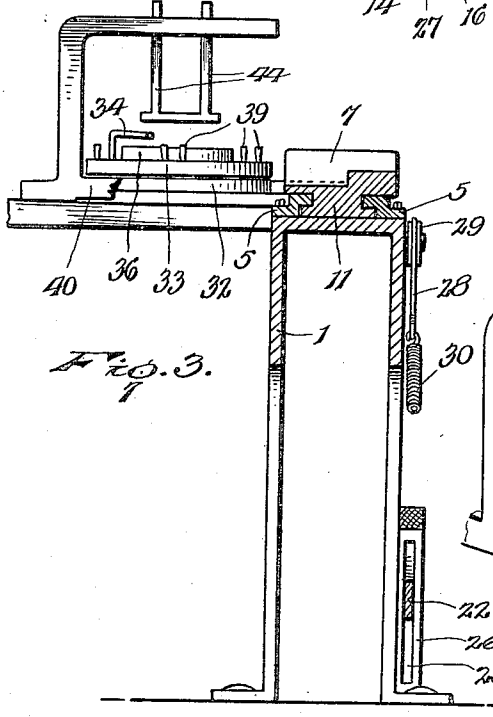


Fig. 3.

Fig. 5.

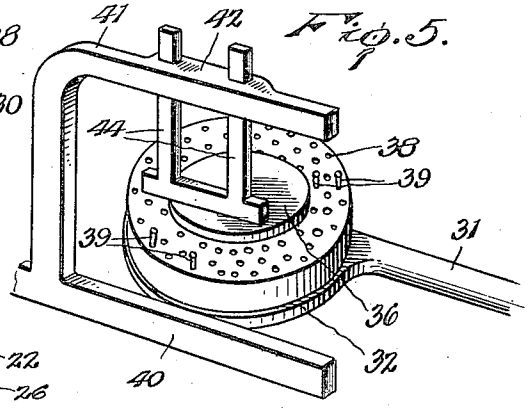
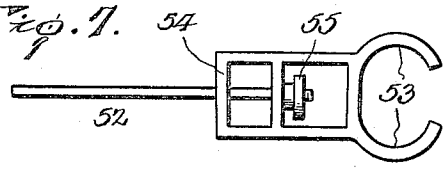


Fig. 7.



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UNITED STATES PATENT OFFICE.

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WORK HOLDER.

1,422,749. Specification of Letters Patent. Patented July 11, 1922.

Application filed December 30, 1920. Serial No. 434,165.

To all whom it may concern:

Be it known that I, ADOLPHUS DAMERON, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Work Holders, of which the following is a specification.

This invention relates to means for supporting castings while they are being ground, and the object of the invention is to provide means whereby the workman will be relieved of the necessity of supporting a heavy casting and holding it manually against the grindstone. The invention also has for its object the provision of means whereby, after the casting has been placed in the work holder, it may be easily carried against the grindstone without requiring severe effort on the part of the workman. Another object of the invention is to provide means whereby the work holder may be adjusted so that castings of various dimensions may be brought into engagement with the grindstone without material change in the proportions or construction of the parts and without materially varying the stroke of the carrier upon which the work-holder is mounted. Other objects of the invention will appear as the description of the same proceeds.

In the accompanying drawings—

Figure 1 is a side elevation of a grinding machine having my improvements applied thereto;

Fig. 2 is a plan view of the same;

Fig. 3 is a transverse section on the line 3—3 of Fig. 1;

Fig. 4 is a detail perspective view of the carrier;

Fig. 5 is a detail perspective view of the work-holder;

Fig. 6 is a group view of work-holders or rests which may be employed when the form of the casting renders the use of the means shown in Fig. 5 undesirable;

Fig. 7 is a detail of another form of holder.

In carrying out my invention, I employ a supporting frame or bench 1 which may be of any convenient construction and may be utilized as the support for the grindstone or may be any other convenient form of frame arranged adjacent the present grindstone mounting. In the accompanying drawings, the grindstone 2 is shown mounted upon the supporting frame 1 and is driven by a belt 3 passing around a pulley 4 on one end of the grindstone shaft but the particular mounting of the grindstone and the means for driving it are unimportant.

Disposed longitudinally of the supporting frame 1 at one side edge of the same and adjacent and parallel with said edge are tracks 5 consisting of bars having overhanging flanges on their opposed sides whereby they are adapted to engage longitudinal grooves 6 formed in the sides of a carrier 7 whereby the said carrier will be held to the supporting frame and will be prevented from moving except longitudinally of the supporting frame in a horizontal plane. The said carrier comprises a head to which the work-holder is secured, as will be presently particularly set forth, and a shank 8 extending rearwardly from the head and relatively narrower than the head. From the rear end of the shank, a guide rod 9 extends longitudinally of the supporting frame and this rod plays in a guide or keeper 10 at the rear end of the frame and aids in maintaining the carrier in a rectilinear path while permitting the grooved base 11 of the carrier to be relatively short. A space is thus provided below the shank 8 and above the supporting frame to accommodate a collar 12 which is secured to the shank by a set screw 13 whereby it may be adjusted longitudinally of the shank for a purpose which will presently appear. The said collar 12 is extended beyond the outer side of the shank 8 and through the said extended end is slidably fitted a bolt 14 having an eye 15 at its rear end and equipped with a nut 16 at its front end, a spring 17 being coiled around the bolt between the said nut and the projecting end of the collar, as clearly shown. A cable 18 or other flexible connection is secured at one end in the eye 15 of the bolt 14 and passes rearwardly therefrom to a guide pulley 19 mounted in any convenient manner upon the frame and thence passes downwardly and forwardly to extend over a guide pulley 20 on the side of the frame at about the center thereof, the end of the cable being attached to a clip or hook 21 which is engaged with a treadle or operating lever 22. If the treadle be depressed, the bolt 14 will be drawn rearwardly and its movement will be transmitted through the spring 17 to the collar 12 and through

said collar to the carrier 7 whereby the carrier and the work-holder will be drawn toward the grindstone. As shown clearly in Fig. 1, the hook 21 is engaged in one of a series of notches 23 formed in the under side of the foot lever or treadle so that the effective throw of the treadle may be varied. A spring 24 is secured at one end to the treadle and at its opposite end to the supporting frame at a point above the treadle so that if the pressure upon the treadle be released, it will be automatically returned to its upper initial position, and to prevent excessive upward movement of the treadle as well as to confine it to a rectilinear path the free end of the treadle is engaged through a vertical slot 25 in a guide and stop plate 26 secured to the frame in any convenient manner. Upon the outer extended end of the collar 12, I also provide an eye 27 and to the said eye I attach one end of a cable or other flexible connection 28 which extends forwardly to and around a guide pulley 29 on the side of the frame and has its free end attached to a spring 30 which is secured to the supporting frame at a point below the pulley 29, as clearly shown in Fig. 1. When the pressure upon the treadle or foot lever 22 is released, the spring 30 will contract and thereby exert a forward pull upon the collar 12 and the carrier through the cable 28 so that the carrier will be moved forwardly from the grindstone and it will not be necessary to provide a direct connection between the treadle and the carrier for the purpose of returning the carrier to its initial position. It will also be readily appreciated that the bolt 14 and the spring 17 constitute a yieldable coupling between the cable 18 and the carrier so that the strain exerted upon the carrier through the cable 18 will be applied somewhat gradually and breakage of the parts or dislodgment of the casting to be ground will be thereby avoided. It will also be readily understood that if the collar 12 be set closer to the rear end of the carrier, the work-holder and the casting thereon supported by the front end of the carrier will not be brought so close to the grindstone as when the collar is secured at a point nearer the head or front end of the carrier, the stroke of the lever 22 being the same. I am thus enabled to adjust the apparatus to support castings of different sizes in proper contact with the grindstone without any material change in the construction or size of the working parts or any variation in the stroke of the operating lever.

To the front end of the carrier 7, I rigidly secure a support which, in Figs. 1, 2 and 3, is shown as a bar comprising a straight shank 31 bolted rigidly to the front end edge of the carrier and extending horizontally therefrom to a point in front of the grindstone, being provided at its free end with a horizontally disposed plate or semi-circular enlargement 32 upon which is mounted a work-holding disk or wheel 33. This wheel or disk 33 is provided with an annular concentric shoulder 36 against which the casting, indicated at 37 in Figs. 1 and 2, may abut and against which the thrust from the grindstone is received. The disk or wheel is also provided with a plurality of openings or sockets 38 in which pegs or pins 39 may be fitted so as to engage against the sides of a casting and thereby prevent lateral displacement thereof while it is being fed to the grindstone or being held thereagainst. To the bench, adjacent the disk 33, I secure a discharging member consisting of a deflector arm 34 projecting obliquely over the disk so that as the latter is turned to carry a casting from the grindstone, the casting will be brought against said arm and caused to slide off the disk in an obvious manner.

I also secure upon the bench, or other convenient support, a bracket disposed transversely of the grindstone and having a lower branch 40 extending between the grindstone and the plate 32. In some instances, this branch 40 may support the projecting edge of the disk 33. The bracket has an upper branch 41 disposed vertically above the branch 40 and equipped with sockets 42 to receive the side members 44 of a bail which is adapted to bear upon the upper side of the casting and hold the same to the supporting disk or wheel 33 so that displacement of the casting in all directions, while the same is being ground, will be positively prevented. Set screws 43 secure the bail in the socket and permit it to be adjusted to the height of the casting. It will be understood that the casting is placed in position upon the wheel by a workman standing in front of the apparatus and, after the casting has been placed against the shoulder 36 of the wheel and between pegs 39 thereon, the wheel is rotated so as to bring the casting under the bail. The workman then depresses the lever 22 and thereby causes the carrier 7 to move toward the grindstone and bring the casting into contact therewith. When the casting has been properly ground, the pressure upon the lever 22 may be released and the springs 24 and 30 permitted to return the parts to their initial positions, after which the wheel 33 is again partly rotated so as to carry the ground casting against the deflector 34 so that it will be ejected from the wheel. While one casting is being ground, the workman may place another casting in position upon the wheel so that when the wheel is rotated to carry the ground casting beyond the grindstone, a second casting will be simultaneously brought into position in front of the grindstone.

The work-holding disk or wheel 33 with the cooperating parts shown in Figs. 1, 2, 3 and 5 and above described is not suited to all forms of castings and I, therefore, provide a plurality of interchangeable supports, rests or work-holders any one of which may be used as circumstances may demand. In Fig. 6, I have shown three different forms of work-holders or rests, the rest 45 being a straight bar of suitable dimensions having an L-shaped lateral projection 46 at its free end while the rest 47 consists of a similar bar having a U-shaped fork 48 at its free end and the rest 49 is a similar bar having its free end formed into a hook comprising an inclined shank 50 and a bill 51 disposed at a right angle to the plane of the bar. In Fig. 7, I have shown a support comprising a straight bar 52 which may be bolted or otherwise secured to the head of the carrier 7 and upon the free end of the said bar is rotatably fitted a frame having curved work-engaging arms 53 at one end and provided with bearing members 54 rotatably fitting upon the bar 52, a thumb nut 55 being mounted upon the outer end of the bar 52 to prevent the frame from slipping over the end of the bar while work is engaged between the arms 53.

It will be readily seen that I have provided an inexpensive apparatus by which castings to be ground may be effectually supported and the workman will be entirely relieved of the manual labor involved in holding the casting against the grindstone in accordance with the practice now generally followed.

Having thus described the invention, what is claimed as new is:

1. The combination with a supporting frame, and a grinding member mounted thereon, of a carrier movable longitudinally of the frame in a plane parallel with the grinding member, a work-holder secured to said carrier, a foot lever, a yielding coupling fitted to the carrier, a flexible connection between the said coupling and the foot lever, means for holding the lever normally raised, and means acting upon the carrier in opposition to the foot lever.

2. The combination with a grinding machine comprising a supporting frame, and an abrading member mounted thereon, of a carrier mounted upon the frame for movement parallel with the plane of the abrading member, a work-holder supported by said carrier, a collar adjustable longitudinally of the carrier, an operating lever, and operative connections between the said lever and the said collar.

3. The combination with a grinding machine comprising a supporting frame, and an abrading member mounted thereon, of a carrier slidably mounted upon the frame, a work-holder supported by the carrier, a collar adjustably secured to the carrier, a coupling bolt inserted through one end of the carrier, means yieldably holding the coupling bolt in a forward position, an operating lever, a flexible connection between the said lever and the rear end of the coupling bolt, a cable attached to the collar and extending forwardly therefrom, and a yieldable connection between the said cable and the supporting frame.

4. The combination with a grinding machine comprising a supporting frame, and an abrading member mounted thereon, of a carrier mounted upon the frame at one side of the abrading member, means for shifting the carrier longitudinally of the frame, a bar secured rigidly to the front end of the carrier and extending laterally therefrom across the supporting frame to a point in front of the abrading member, and work-supporting means on the free end of said bar.

5. The combination with a grinding machine comprising a supporting frame, and an abrading member mounted thereon, of a carrier slidably mounted upon the supporting frame, means for operating said carrier, a work-supporting wheel carried by the front end of the carrier, said wheel having an annular shoulder on its upper side against which work may abut and provided with a plurality of sockets between said shoulder and its periphery, work-retaining pins engaged in said sockets, and a presser device mounted on the frame at one side of the abrading member and the work-supporting wheel and extending over the wheel to bear upon work disposed between said retaining pins and against said shoulder.

6. The combination with an abrading member, of a work-holder mounted adjacent the abrading member and rotatable to carry work across the plane of said member, stops on the work-holder between which work may be received, and a work-ejecting member secured at one side of the work-holder and projecting over the same at an angle to the radius thereof.

In testimony whereof I affix my signature.

ADOLPHUS DAMERON. [L. S.]