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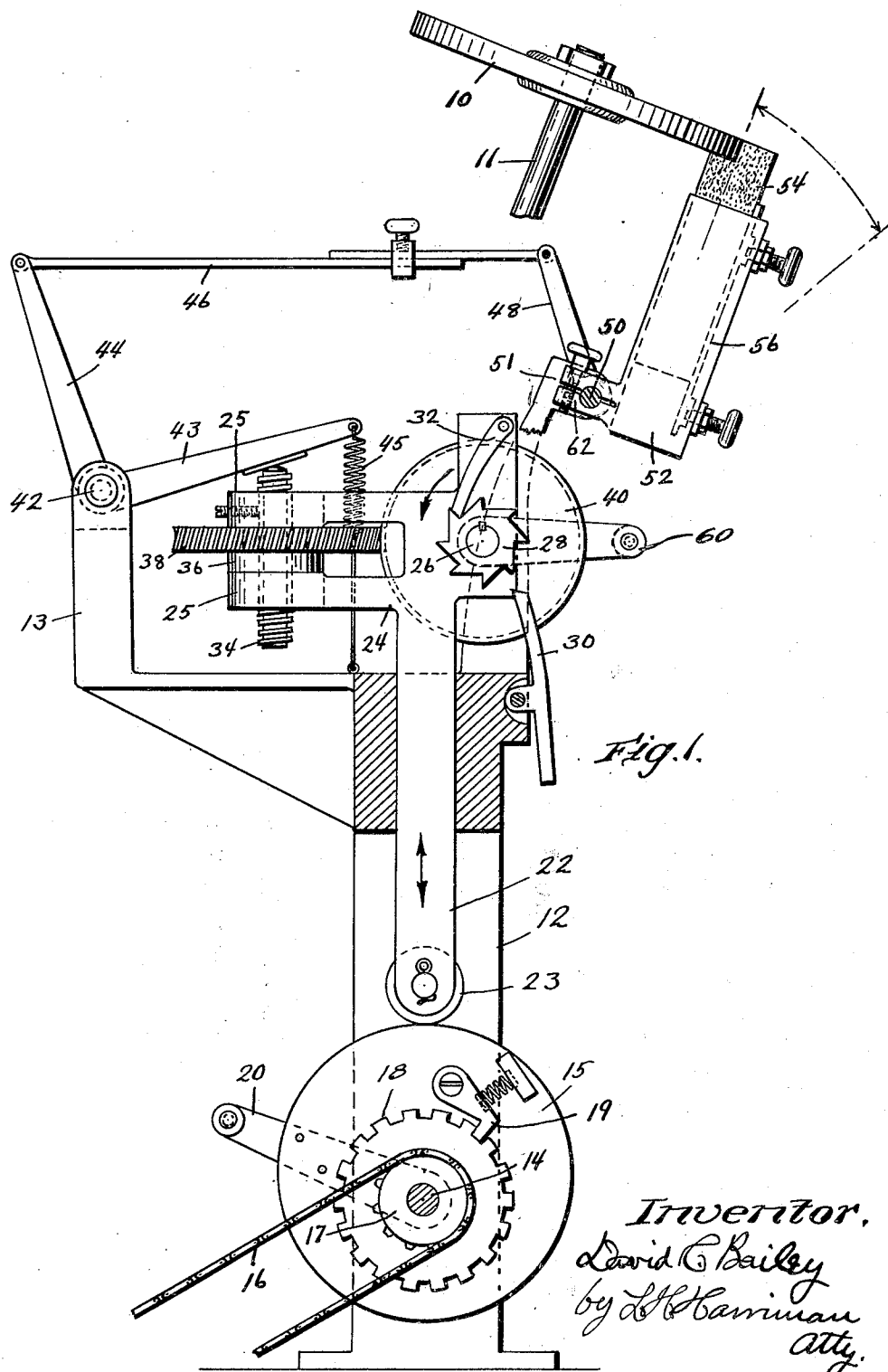
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APPARATUS FOR APPLYING MATERIAL TO ROTARY OPERATING DEVICES

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APPARATUS FOR APPLYING MATERIAL TO ROTARY OPERATING DEVICES

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This invention relates to automatic means for applying abrading, polishing, or like material to rag wheels, rotary brushes and like devices used in polishing, burnishing and similar operations.

Prior to my invention it has been customary to supply material of this nature to these devices in various ways, but when the material is furnished in solid form, as in sticks or blocks, it has usually been applied by hand, the practice being to hold a block of the material against the working face of the rotating device for a short time, at suitable intervals. This method is objectionable for several reasons, principally because it takes the time of the operator from other work, and the material is unlikely to be applied with the desired uniformity, or in the quantity likely to produce the best results. That is, when the material is applied by hand, the tendency is to apply too much at too infrequent intervals, and when too much is applied the surplus material is usually thrown off, causing it to be wasted, and, when insufficient material is applied, the work is likely to be reduced in quality, or retarded.

The objects of my invention are to provide a means for holding and applying material in solid block form to rotary devices of the character referred to at suitable intervals, so that a sufficient quantity may be supplied at all times, the quantity supplied may be accurately controlled and the whole operation may be automatically performed.

I accomplish these objects by means of the apparatus hereinafter described and illustrated on the accompanying drawings in which:—

Fig. 1 is a side elevation of an apparatus embodying a preferred form of my invention.

Fig. 2 is a plan view thereof.

Fig. 3 is a vertical sectional view at line 3—3 of Fig. 2.

Figs. 4 and 5 are detail side and end views of the material holder.

It will be understood that the hereinafter described apparatus may be applied to various existing machines in various ways, either by being mounted directly thereon or supported adjacent thereto, and for the purposes

of description it is considered sufficient to indicate a rag wheel 10 mounted on a rotary shaft 11, in connection with which the apparatus may be employed.

According to my invention I provide a main frame 12, in the base of which a driving shaft 14 is mounted, said shaft having a cam 15 mounted thereon and being driven at any suitable speed by any suitable means, as chain and sprocket 16, 17. For reasons to be explained, means for temporarily connecting and disconnecting said sprocket and cam are provided, which comprise a ratchet 18, which is secured to the sprocket 17, both being normally freely rotatable on shaft 14, and a pawl 19 which is mounted on the cam 15 in position to engage ratchet 18, so that, when the pawl is in engaged position the cam will be rotated, and when it is desired to disconnect these parts the pawl will be disengaged, permitting the cam to be independently adjusted by a crank handle 20 connected thereto. The cam 15 is a simple form of eccentric, and a rod or plunger 22 is mounted for vertical reciprocation in the frame and has a friction roll 23 at its lower end which rides on cam 15, so that, as the latter is rotated, the rod 22 will be reciprocated.

A supporting head 24 is mounted on the upper end of rod 22 and a horizontal shaft 26 is mounted therein, said shaft having a ratchet 28 secured thereon, and a pawl 30 is mounted on the frame 12 in position to engage said ratchet 28, so that each time the head 24 descends, the pawl will engage the ratchet and cause the shaft 26 to be advanced by part of a revolution corresponding to the number of teeth on the ratchet. A holding pawl 32 is mounted on the head 24 in engagement with the ratchet 28, so that as the latter is advanced retraction is prevented.

A screw 34 is mounted to slide vertically in a pair of arms 25 on the head 24, and is splined therein, so that it is held against rotation, and a nut 36 is threaded on said screw and held between said arms, so that, as the nut is rotated, the screw is raised, or lowered. A spiral gear 38 is secured on the nut 36, and is arranged in mesh with a similar gear 40, on the shaft 26, so that, as the latter

is driven, the position of the screw 34 will be vertically adjusted. A bell crank lever is mounted on a pivot 42 in an arm 13 on the main frame 12, and one arm 43 of said lever is held in engagement with the upper end of screw 34 by a spring 45 attached thereto and to the frame. The other arm 44 of the bell crank lever is connected by an extensible rod 46 to an arm 48, which is adapted to be clamped on a shaft 50 mounted for oscillation in an arm 51 on the frame 12.

A holder 52 is rigidly mounted on the shaft 50 and is provided with an elongated socket portion, which extends in a plane perpendicular to said shaft and in a direction slightly to one side thereof and is adapted to receive a solid stick or block 54 of abrasive, or like material, a suitable clamp 56 being provided for securely holding the block in any desired position in the socket, so that it may be held in any position therein, to which it may be adjusted longitudinally.

The above described apparatus is so adjusted and arranged with relation to the rag wheel 10 that an oscillatory movement of the holder 52 will swing the material 54 therein into position to engage the working face, which is usually the periphery of the wheel.

The operation of the above described apparatus is as follows: As the cam 15 is rotated, the rod or plunger 22 will be reciprocated, causing the screw 34 to engage the arm 43 and swing it upwardly, so that the connected arms 44 and 48 are swung in a direction to swing the holder 52 towards the wheel 10, and when the plunger 22 is lowered, the holder will be swung in the opposite direction, or away from the wheel.

In setting the apparatus with relation to a wheel of a certain diameter, the cam 15 will be set at the high point indicated in Fig. 1, and the connecting rod 46 will be adjusted in length so that the side of the block of material, at its top end, in the holder 52, will just touch the periphery of the wheel 10. As thus arranged the material will be swung into and out of contact with the wheel on each revolution of cam 15. As a portion of the material will be removed each time it is brought into contact with the wheel, continued movement within the same limits of oscillation would soon result in a failure to apply any of the material to the wheel, but, each time the plunger 22 is lowered the shaft 26 will be driven forwardly by pawl 30, and cause a slight partial rotation of the nut 36 in a direction to raise the screw 34. As a result, on the next up movement of the plunger, the arm 43 will be swung upward to a slightly higher position, and consequently the holder 52 will be swung correspondingly nearer to the wheel, and the material carried thereby will be advanced more closely to the periphery of the wheel.

By continued operation in this manner,

the entire top end of the material will be finally worn away, so that there will be nothing left to engage the periphery of the wheel, and when this occurs the whole apparatus must be reset. To do this the pawl 32 will be lifted and the shaft 26 will be turned backward until screw 34 is lowered to the previous starting point, a crank 60 being provided on shaft 26 for this purpose, and then the material will be moved outward in the holder a distance approximately equal the width of the periphery of the wheel 10, and then it is clamped in adjusted position. In case the diameter of the wheel has become reduced by wear, slight readjustment may be necessary, and this may be accomplished by adjustment of the abutting screw 34, or adjustment of the length of the connecting rod 46, the adjustment usually being made while the high point of the cam 15 is engaged with the plunger 22. The stick of material may thus be readjusted so long as there is a sufficient portion left to permit it to be clamped in the holder.

While the apparatus has thus far been described as used only in connection with a single operating wheel, it is particularly advantageous when used in connection with a series of operating wheels, as for example, when arranged in line to operate on strips of material at different angles, or on the same portions successively.

For the purpose of adapting the apparatus for use in connection with a considerable number of operating wheels, the shaft 50 may be extended to any length necessary, as indicated in Fig. 2, and a plurality of the material holders, as 52, 52a may be adjustably mounted thereon to permit them to be adapted to different positions and diameters of wheels. For this purpose the base of each holder is preferably connected to the shaft 50 by a clamp 62, which permits swinging and longitudinal adjustment of each holder on said shaft without disturbing any of the other adjustments previously described, and it will be obvious that several shafts, as 50a, similar to shaft 50, may be provided, which may be suitably connected, as by an arm 64, link 65, and arm 66 to the shaft 50, so that they, or it will be rocked in unison. In this way an indefinite number of operating wheels may be automatically supplied with the material and the supply thereto may all be controlled from the single actuating means shown.

The speed at which the material is fed to the wheels may obviously be varied by varying the mechanism which controls the extent to which the abutting screw 34 is raised with relation to the plunger 22 on each movement of the latter, or by varying the speed of the main driving cam 15.

I claim:

1. In combination with an operating device

of the character described, having a working face, a holder having an elongated socket adapted to receive an elongated block of material and having means for clamping the same in positions of longitudinal adjustment therein, a pivotal support for said holder adjacent the bottom of its socket arranged to permit swinging movement thereof to carry one side of the block of material at the outer end of the socket into contact with said face, means to oscillate said holder continuously arranged for adjustment to permit the material to be engaged with said face at the end of the oscillatory movement in one direction and automatic means to increase the extent of said movement in said direction.

2. In combination with an operating device of the character described, having a working face, a holder having an elongated socket adapted to receive an elongated block of material and having means for clamping the same in positions of longitudinal adjustment therein, a pivotal support for said holder adjacent the bottom of its socket arranged to permit swinging movement thereof to carry one side of the block of material at the outer end of the socket into contact with said face, means to oscillate said holder continuously arranged for adjustment to permit the material to be engaged with said face at the end of the oscillatory movement in one direction and means arranged to operate automatically on each oscillation of the holder to increase the extent of the swinging movement thereof in said direction.

3. In combination with an operating device of the character described, having a working face, a holder pivotally mounted adjacent said device and having a means for securing a block of material thereto, means for oscillating said holder to carry the material into contact with said face at the end of the movement thereof in one direction, comprising an actuator, movable in a fixed path, an abutting device reciprocally movable thereby and arranged for engagement with said holder to move it into operative relation with said face, means to move the holder away from said face when said abutting device is retracted, and means for moving said abutting device with relation to said actuator to increase the extent to which said holder is moved towards said face on each operative movement thereof.

In testimony whereof I have signed my name to this specification.

DAVID C. BAILEY.