Oct. 28, 1941. E. W. MORLEY 2,260,783

WIRE-CLEANING MACHINE

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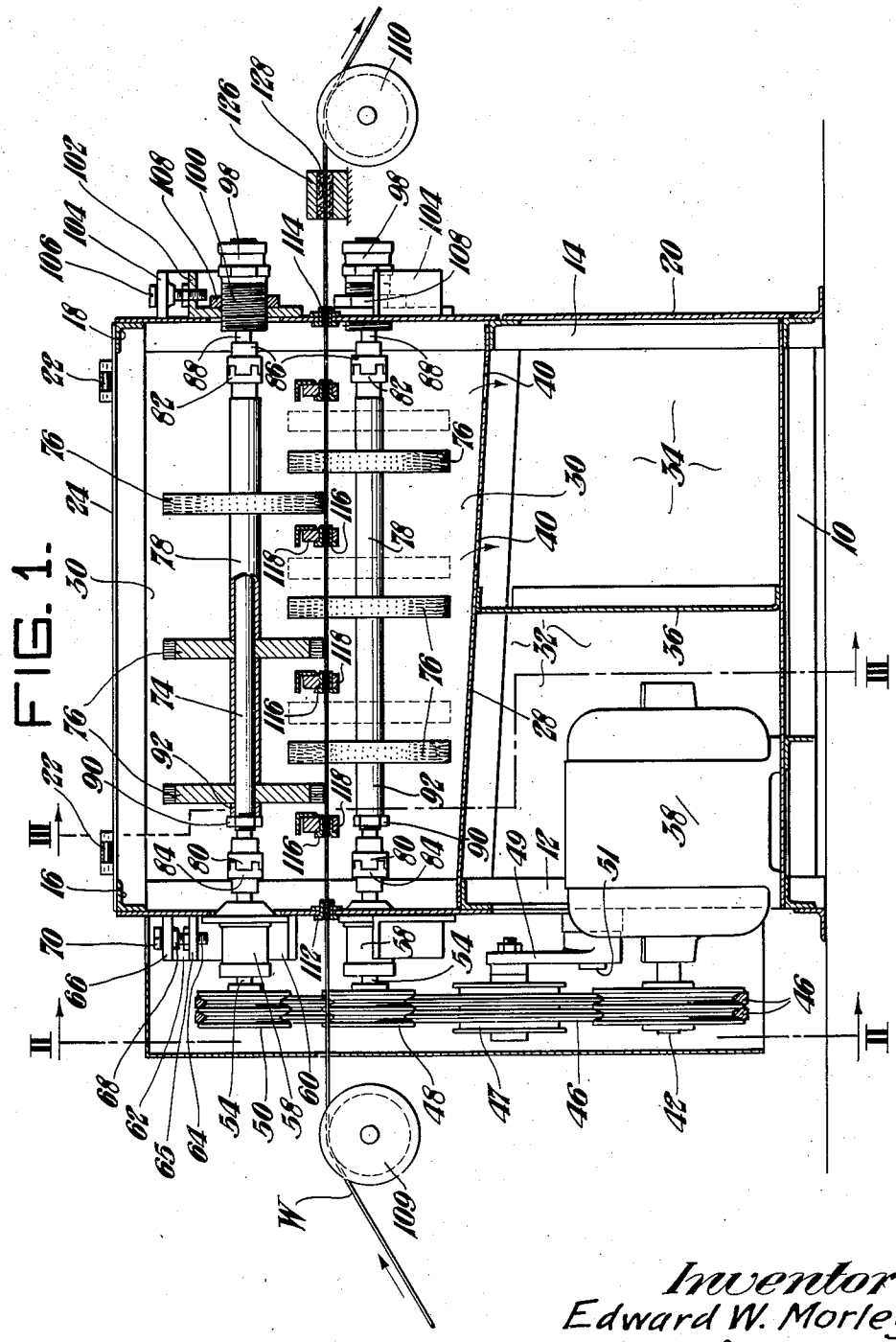


FIG. 1.

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FIG. 3.

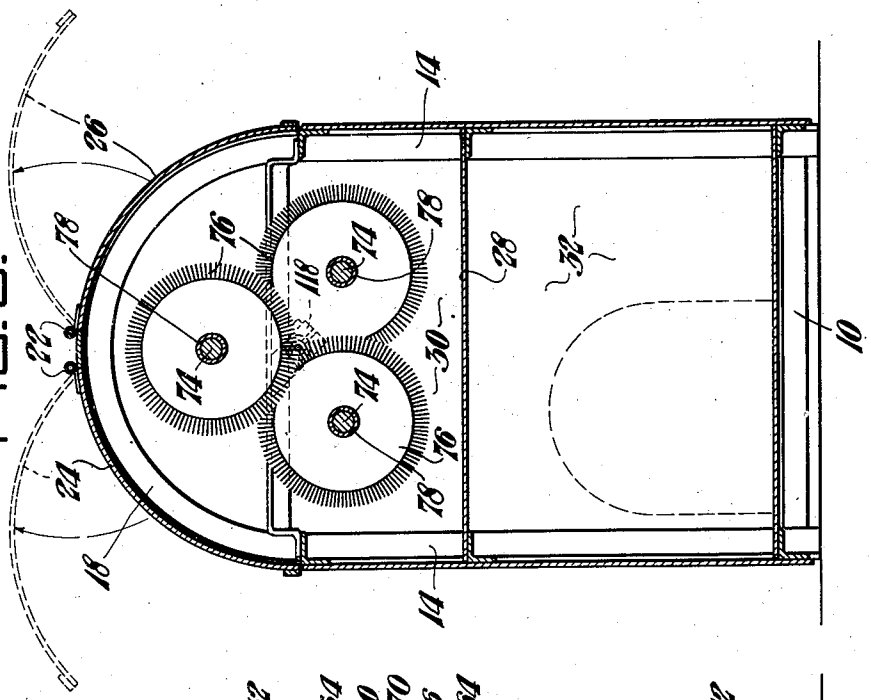
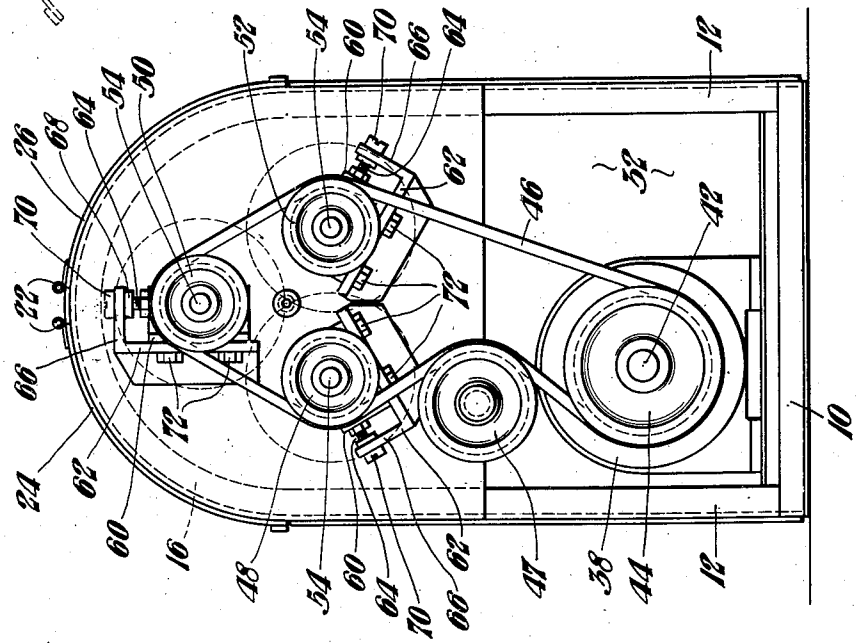


FIG. 2.



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FIG. 4.

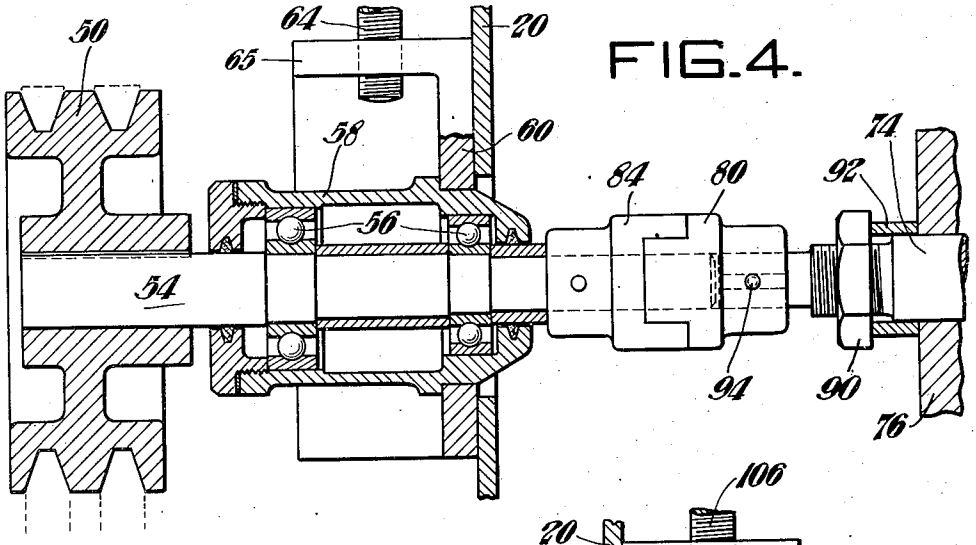


FIG. 5.

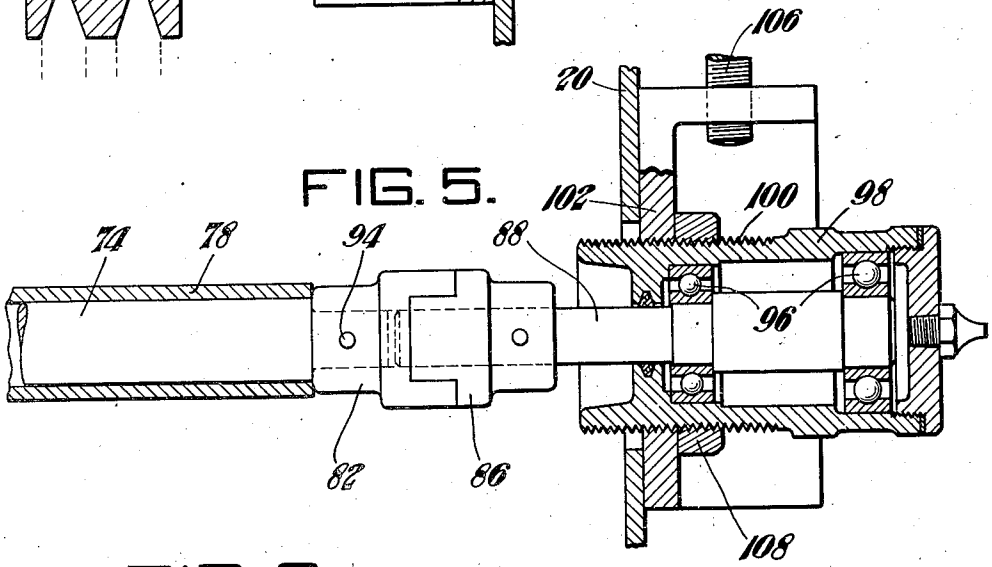


FIG. 6.

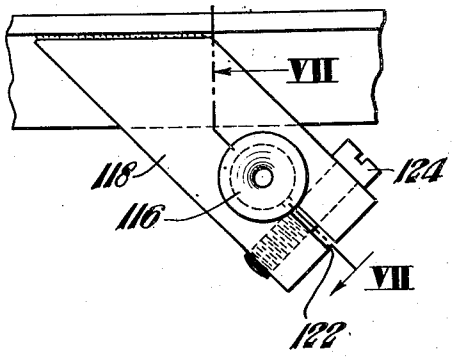
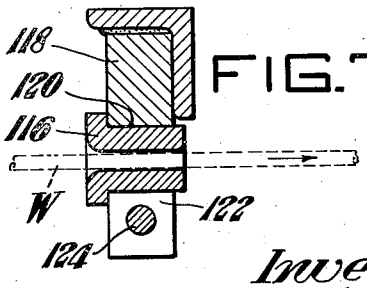


FIG. 7.



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UNITED STATES PATENT OFFICE

2,260,783

WIRE-CLEANING MACHINE

Edward W. Morley, Huntington Park, Calif.

Application September 26, 1939, Serial No. 296,671

2 Claims. (Cl. 15—88)

The present invention relates to improvements in machines for removing foreign matter, such as rust or the like, from the surface of a longitudinally advancing wire. One object of the invention is to provide improved means for mounting the cleaning brushes. Another object is to provide an arbor for a gang of wire cleaning brushes which is so mounted that a given gang of brushes can be easily and quickly removed for renewal or repair. A further object is to provide, in combination with an arbor for holding a gang of brushes, a pair of axially aligned spindles removably coupled with the arbor. A further object is to provide supporting means for such spindles which can be adjusted toward or from the axis of the advancing wire. A further object is to construct, arrange, and combine the several instrumentalities hereinafter specifically set forth so that they singly and jointly perform the functions disclosed. For a complete understanding of the invention, reference is to be made to the following specification, the accompanying drawings, and the appended claims.

In the drawings,

Figure 1 is a longitudinal section through a wire-cleaning machine embodying the invention;

Figure 2 is a cross-section on line II—II of Figure 1;

Figure 3 is a similar section on line III—III of Figure 1;

Figure 4 is an enlarged detail view illustrating the mounting of one of the arbor-driving spindles and showing also the detachable connection between the spindle and the arbor;

Figure 5 is a similar detail view illustrating the idle spindle mounting at the opposite end of the arbor;

Figure 6 is a detail view of a wire guide; and

Figure 7 is a section on line VII—VII of Figure 6.

Referring in detail to the drawings, the machine includes a base 10, frames 12 and 14, and top frames 16 and 18. The frames 12 and 14 support a suitable casing 20, and the top frames 16 and 18 carry hinges 22 which support swingable covers 24 and 26. The chamber enclosed by the casing 20 and the hinge covers 24 and 26 is divided by a partition 28 into an upper compartment 30 and lower compartments 32 and 34, the latter being separated by an upright wall 36. The upper compartment 30 contains a plurality of gangs of brushes hereinafter more fully described, the lower compartment 32 houses the drive motor 38 for the apparatus, and the compartment 34 provides a dust-collecting chamber, the same communicating by way of openings 40 with the cleaning compartment 30. As thus arranged, it is apparent that the motor is protected against the infiltration of dust. On the armature shaft 42 of the motor there is a main drive pulley 44 over which is trained a belt 46 which drives a plurality of pulleys 48, 50, and 52. An idler pulley 47 is carried on an adjustable arm 49 which is adapted to be swung about its pivotal support 51 so as to properly adjust the tension of the belt. The three pulleys 48, 50 and 52 are secured to driving spindles which transmit rotary motion to the respective gangs of brushes carried by the arbors. Inasmuch as all of these gangs of brushes and their supporting means are of identical construction, a description of one will suffice for all. Each pulley is keyed or otherwise secured to a drive spindle 54 which is supported on roller bearings 56 carried by a bearing-supporting hub 58 secured to a support 60 which is mounted for adjustment relatively to a fixed bracket 62 secured to the end wall of the casing supported by the end frame 12. An adjusting screw 64 is threaded into a flange 65 of the support 60 and passes freely through the flange 66 in the fixed bracket 62. The screw has a collar 68 secured thereto so arranged that when the head 70 of the screw is turned the bearing support 60 will be adjusted toward or from the axis of the wire W which is guided, as later described, to be advanced longitudinally through the machine. Once adjustment of the support 60 is obtained, the same is locked in its adjusted position by suitable bolts 72, it being understood that during the adjusting operation the bolts will be loosened.

Each arbor 74 carries a plurality of wire brushes 76, the same being separated by spacing sleeves 78. At its ends the arbor carries coupling elements 80 and 82. These elements have jaws which provide a detachable driving connection with mating coupling elements 84 and 86 secured respectively to the drive spindle 54 and idle spindle 88 axially aligned therewith. The arbor, near one end thereof, carries a nut 90 which bears against a collar 92 which in turn engages a brush 76 at that end of the arbor. Thus the brushes are removably positioned thereon. In this manner the brushes may be easily and quickly initially assembled or removed after they become worn. For effecting such removal it is of course necessary to remove the

coupling element 80 from the arbor to which it is removably secured by a pin 94.

The idle spindle 88 is supported in ball bearings 96—96 carried by a bearing retainer 98 the exterior of which is threaded, as indicated at 100, so as to be longitudinally adjustable with respect to the support 102 which is adjustably secured to a fixed bracket 104 carrying an adjusting screw 106 which is threaded through a flange of the support in much the same manner as described in connection with the support 60. A lock nut 108 serves to securely hold the bearing retainer in its adjusted position.

When it is desired to remove any given gang of brushes as a unit, it is apparent that this can be accomplished merely by loosening the lock nut 108 and unscrewing the bearing retainer 98 a sufficient distance to permit disengagement of the jaws of the coupling elements 80 and 82 in the respective ends of the arbor. Once a given gang of brushes is removed as a unit, another similar unit can be quickly and easily assembled in operative position. Thus the period of idleness of the machine due to changing brushes is materially cut down. The removed unit can be disassembled and new brushes assembled on the arbor to be in readiness for instant installation again when the necessity arises.

The wire to be cleaned passes over guide sheaves 109 and 110 located respectively adjacent the entrance and exit ends of the machine. In its passage through the machine, the wire is positioned by end guide bushings 112 and 114 and a series of intermediate bushings 116. Each bushing 116 is removably secured near the end of a respective bracket 118 which is provided with a bushing aperture 120 and which is split as indicated at 122, so as to permit the guide bushing to be removably clamped to the bracket by a suitable clamp screw 124.

Adjacent the exit end of the machine there is provided a wiper 126 including a body of felt 128 which is effective to impart a final polish to the wire as it is led to a suitable take-up reel.

In operation, it will be understood that as the wire is advanced longitudinally of the machine it is acted upon by the three gangs of brushes which in the machine illustrated are set at an angle of 120 degrees about the axis of the wire. These brushes, which are usually of fine wire, rotate at a high rate of speed and are effective to remove rust or other undesired deposits or incrustations on the surface of the wire as the same is advanced in a taut condition through the guide bushings. As the brushes wear in time, their positions with respect to the axis of the advancing wire can be adjusted with precision by a manipulation of the adjusting screws 64 and 106. When the desired adjustment is secured, the supports 60 and 102 can be fixedly clamped by tightening up the bolts 72 which secure them to the fixed brackets. It is also apparent that after the brushes have been worn down to a point where renewal is necessary, each gang thereof can be readily removed as a unit by unscrewing the bearing retainer 98 to permit the disengagement of the arbor couplings. The disengaged unit can be lifted out of the opening normally closed by the hinged covers 24 and 26. The described construction and arrangement of the parts provides a simple yet effective mechanism for accomplishing the desired result. No great amount of skill is necessary for adjusting the parts, and the machine can therefore be operated by relatively unskilled operators.

What I claim as new and desire to secure by Letters Patent is the improved machine constructed and arranged as defined with particularity in the appended claims.

What I claim is:

1. A wire-cleaning machine of the class described comprising a housing divided into a plurality of separate compartments, one of the compartments having located therein a plurality of gangs of brushes for cleaning the wire, a supporting arbor for each gang of brushes, respective bearings mounted in alignment at opposite ends of the housing rotatably supporting each arbor, respective supports for said bearings adjustable toward and from said guiding means, each of said supports being inclined with respect to the other, said bearings being slidable on said supports so that the said gangs of brushes can be converged toward the axis of said wire, respective drive pulleys for said arbors mounted in a compartment isolated from the compartment in which the brushes are located, and a motor common to all of the drive pulleys also located in a compartment isolated from the brush compartment, said brush compartment having an inclined bottom with at least one opening adjacent the lower end thereof, and a collecting chamber below said opening for receiving the foreign matter removed from the wire by said brushes.

2. A wire-cleaning machine of the character described comprising a housing divided into a plurality of separate compartments, bushings supported from the housing for guiding a longitudinally moving wire, a plurality of arbors each carrying a respective gang of brushes for cleaning the wire, supporting and driving means for the arbors including spindles axially aligned therewith, respective bearings for said spindles, respective supports for the bearings secured to said housing, respective means for adjusting said bearings with relation to said supports, detachable jaw couplings between each arbor and the spindles associated therewith, and a respective longitudinally adjustable mounting carrying an anti-friction bearing rotatably supporting each respective spindle at one end thereof, each said mounting being adapted to be retracted so as to disconnect a respective coupling to facilitate changing the brush arbor associated therewith.

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