Dec. 18, 1934. C. F. HOOD 1,984,744

ROD HANDLING MACHINE

Original Filed Oct. 17, 1932 2 Sheets-Sheet 1

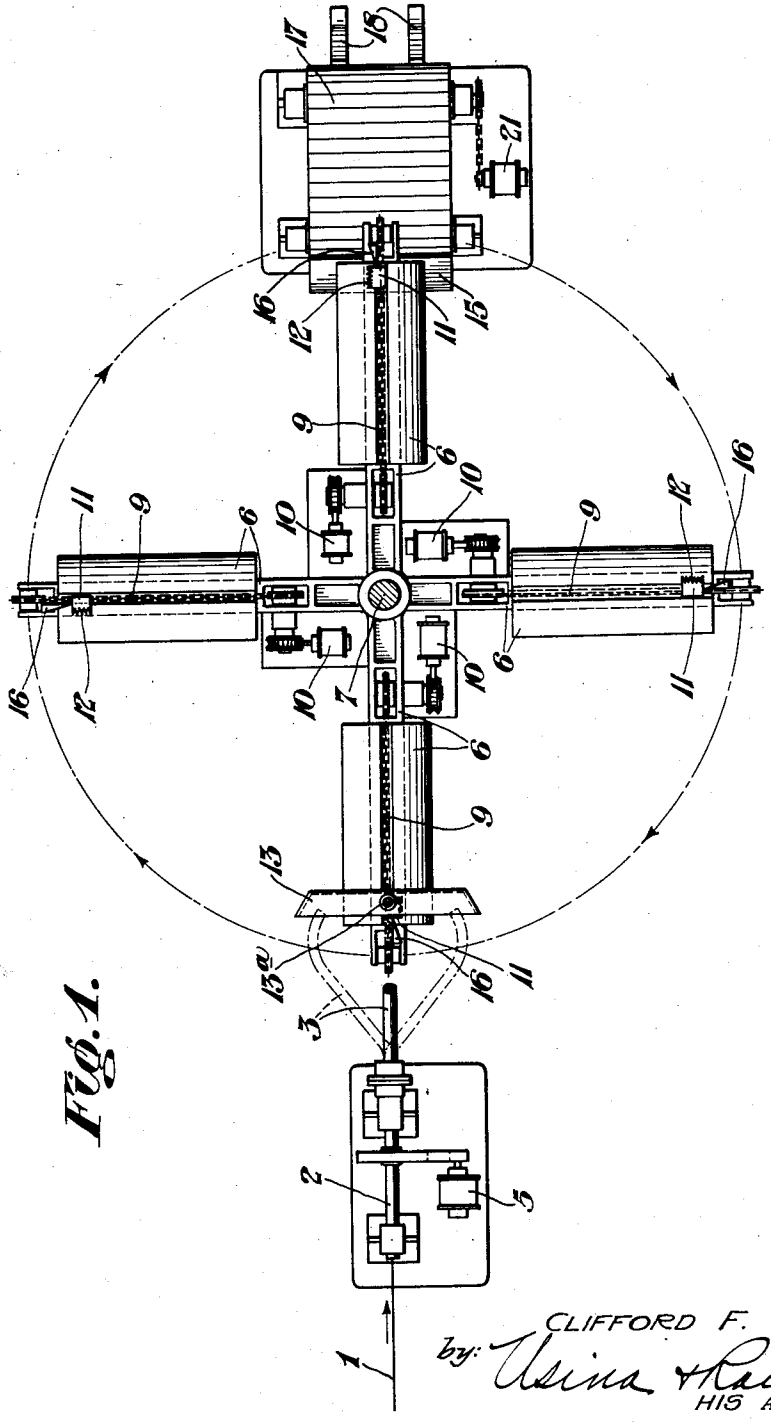


Fig. 1.

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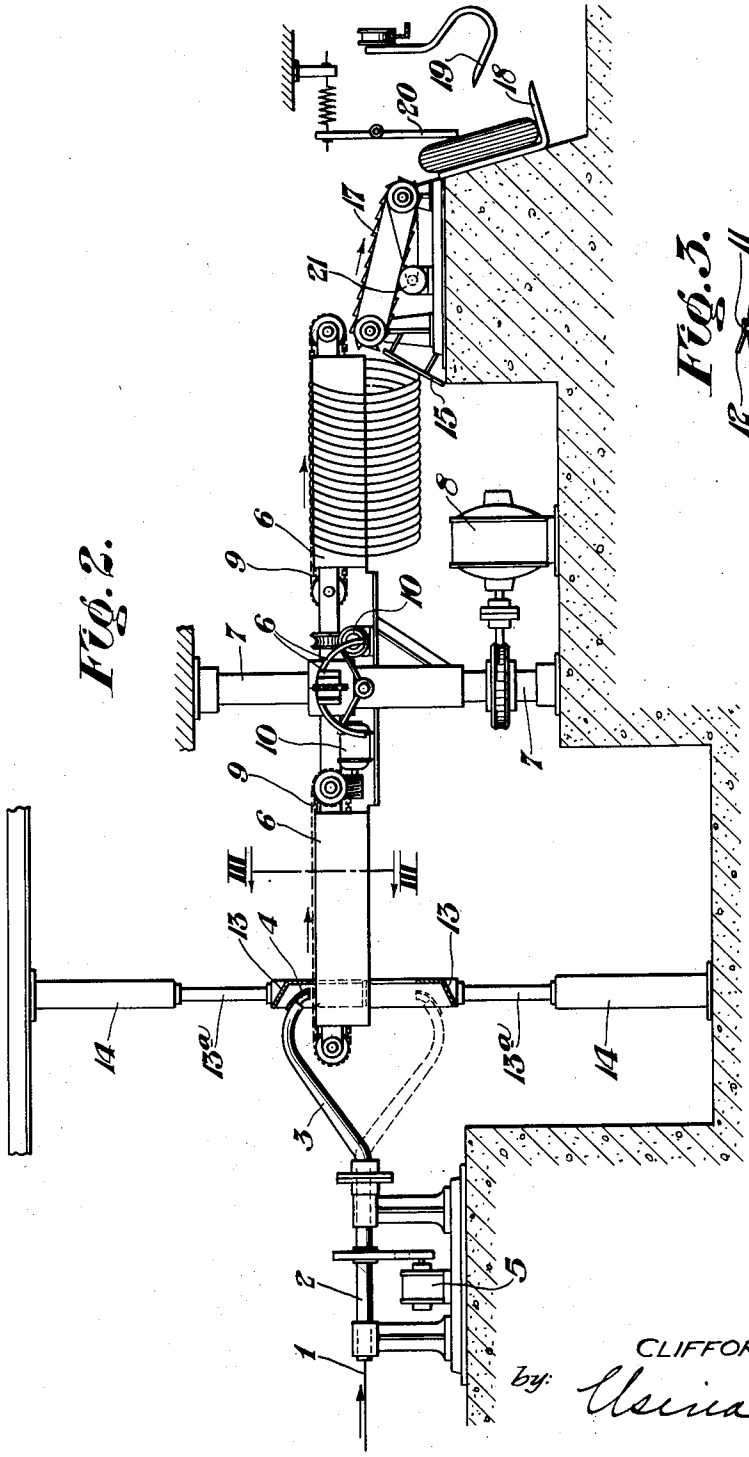


Fig. 2.

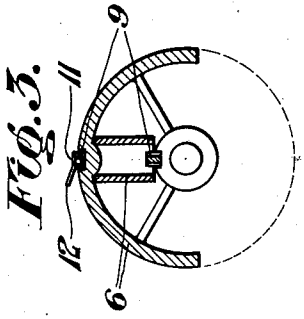


Fig. 3.

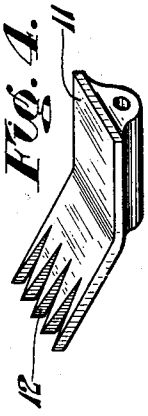


Fig. 4.

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Patented Dec. 18, 1934 1,984,744

UNITED STATES PATENT OFFICE

1,984,744

ROD HANDLING MACHINE

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Original application October 17, 1932, Serial No. 638,263. Patent No. 1,945,898, dated February 6, 1934. Divided and this application October 9, 1933, Serial No. 692,873

4 Claims. (Cl. 242—79)

This invention relates to the handling of hot metal rod and is a division of my co-pending application entitled "Rod handling", filed October 17, 1932 and bearing Serial Number 638,263. This application issued on February 6, 1934, as Letters Patent Number 1,945,898. It is intended to provide a means to first coil the same so that a maximum heat dissipating area results, to hold it so coiled for a cooling time interval and to finally form it to the relatively compact usual rod bundles. It is also intended to attain other objects which may be inferred from the following disclosure.

Referring to the drawings:

Figure 1 is a top plan.

Figure 2 is a side elevation.

Figure 3 is a cross-section from the line III—III in Figure 2.

Figure 4 is a detail.

The rod 1 comes from a hot mill and is fed through the hollow drive shaft 2 of a curved guide 3. This guide has a deflector 4 fastened to its tip and shaped to deliver the rod in concentric coils. Its drive shaft may be driven by a motor 5 at a suitable rotative speed with respect to the linear speed of the rod to accomplish this.

Arms 6 radiate from a rotative shaft 7 and are arranged to move by a point adjacent the tip of the guide 3. This shaft 7 is powered by a motor 8 for this movement, and the arms 6 are suitably constructed to receive the coils of rod progressively delivered by the guide 3.

The arms 6 carry chains 9 individually driven by reversing motors 10 and carrying jaw members 11 having sharpened fish-tail ends 12 adapted to laterally engage rod-ends. These fish-tail ends are at right angles to the arms and are intended to automatically engage the end of the first coil delivered by the guide 3, when they are at the end of an arm stopped at the aforementioned point adjacent the tip of this guide.

To prevent accidents, restraining hoods 13 are provided. There are two of these and each is carried by the piston rod 13ª of a hydraulic cylinder motor 14 so that it may be quickly removed when the rod-end is safely engaged by one of the jaw members. They should preferably encompass the arms and present an open guiding face to the oncoming rod coil so that its end will be surely guided into the fish-tail end of one of the engaging members and not fly off into space.

During the time one of the arms is stopped and is receiving the coils, the motor 10 which powers its rod-end engaging member is operated at a speed which draws the coils along at the same rate they are progressively fed, so that each rod length is carried by each arm in a single layer. When one of the arms is loaded the motor 8 is operated so that an empty arm is brought to the coil receiving point.

A declined platform 15 is arranged at a point adjacent the passage of the ends of the arms 6 and diametrically opposite the coil delivering means. When a loaded arm reaches this platform its chain motor is reversely operated so that the rod coils are shoved off. During this, the platform holds the bottom portions of the coils so that the rod is formed into a bundle.

The arms 6 are provided with wedges 16 suitably arranged to outwardly force the engaged ends of the innermost coils, when the jaw members are moved thereby. This will not be accomplished until the coils have completely assumed a bundled form.

An endless carrying chain 17 is arranged over the platform and below the arm ends 15 so that the top portion of the formed bundle falls thereon. When the rod is completely removed from one of the arms this chain is operated so that the resulting bundle is deposited on a shaft 18 from whence it may be removed by the usual hook conveyer 19. Preferably, the bundle is prevented from accidentally falling from this rack by a spring urged retainer 20. A motor 21 may be arranged to power this conveyer chain.

I claim:

1. A machine including the combination of means to progressively deliver rod in concentric coils, arms arranged to move by a point adjacent said means and constructed to receive said coils when stopped thereat, reversing means operable to progressively move said coils along said arms while being received thereby, and means for bundling and removing said coils when said reversing means is oppositely operated, said bundling means being remotely arranged from the first named means and said arms being arranged for movement by a point adjacent thereto.

2. A machine including the combination of means to progressively deliver rod in concentric coils, arms arranged to move by a point adjacent said means and constructed to receive said coils when stopped thereat, rod-end engaging means arranged to reversely move along said arms, means remotely arranged from said first named means for preventing movement of the end convolutions of coils carried by said arms when said engaging means is moved theretowards, said arms being arranged for movement by a point adjacent

the third named means, and means on the ends of said arms for disengaging rod-ends from said engaging means.

3. A machine including the combination of means to progressively deliver rod in concentric coils, arms arranged to move by a point adjacent said means and constructed to receive said coils when stopped thereat, rod-end engaging means arranged to reversely move along said arms, removable means for restraining the end of the first coil from said delivering means prior to its engagement by said engaging means, means for moving said engaging means in either direction, a declined platform arranged adjacent the path of the ends of said arms and remote from said first named means, means on the receiving ends of said arms to disengage rod-ends from said engaging means when moved theretowards, and means for removing coils bundled on said declined platform by discharging movement of said engaging means.

4. A machine including the combination of means to progressively deliver rod in concentric coils, radiating arms arranged to revolve by a point adjacent said delivering means and constructed to receive said coils when stopped thereat, longitudinally running endless chains on each of said arms, means on each of said chains to laterally engage rod-ends, removable means to restrain the end of the first coil from said delivering means until engagement by one of said engaging means, means for individually reversely driving said chains, means for revolving said arms, a declined platform arranged adjacent the path of the ends of said arms and remote from said delivering means, means on each of said arms for disengaging rod-ends from said engaging means carried by said chains, and an endless conveyer interposed between the top of said declined platform and said arms for removing coils bundled on said platform.

CLIFFORD F. HOOD.