L. C. SCHNEIDER.

PIPE COILING MACHINE.

APPLICATION FILED JUNE 4, 1910.

996,802.

Patented July 4, 1911.

FIG. 1.

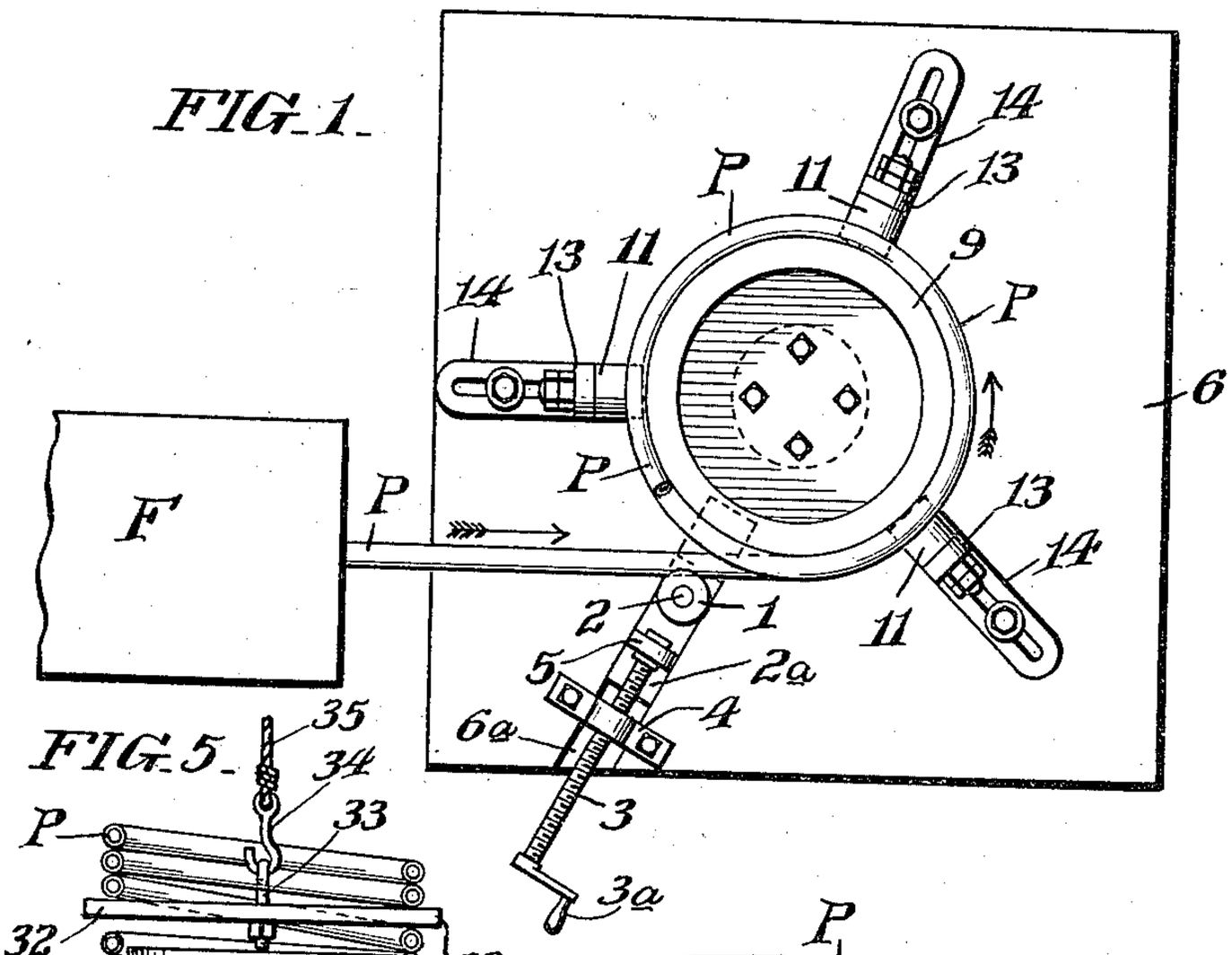


FIG. 4.

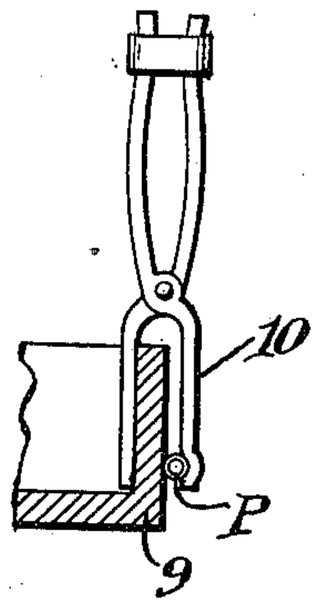


FIG. 3.

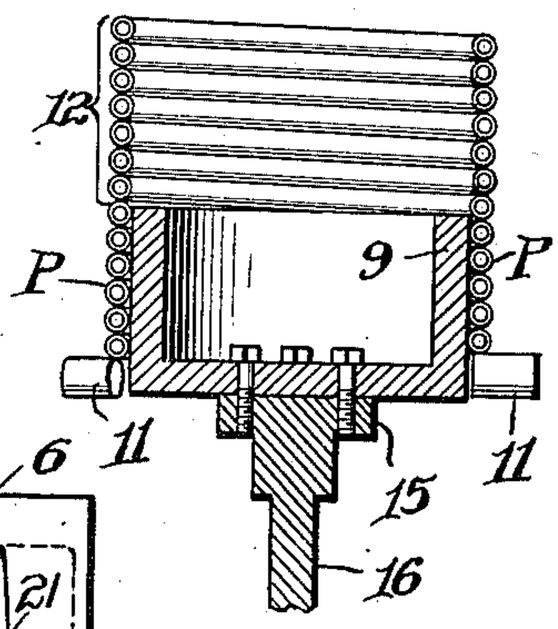
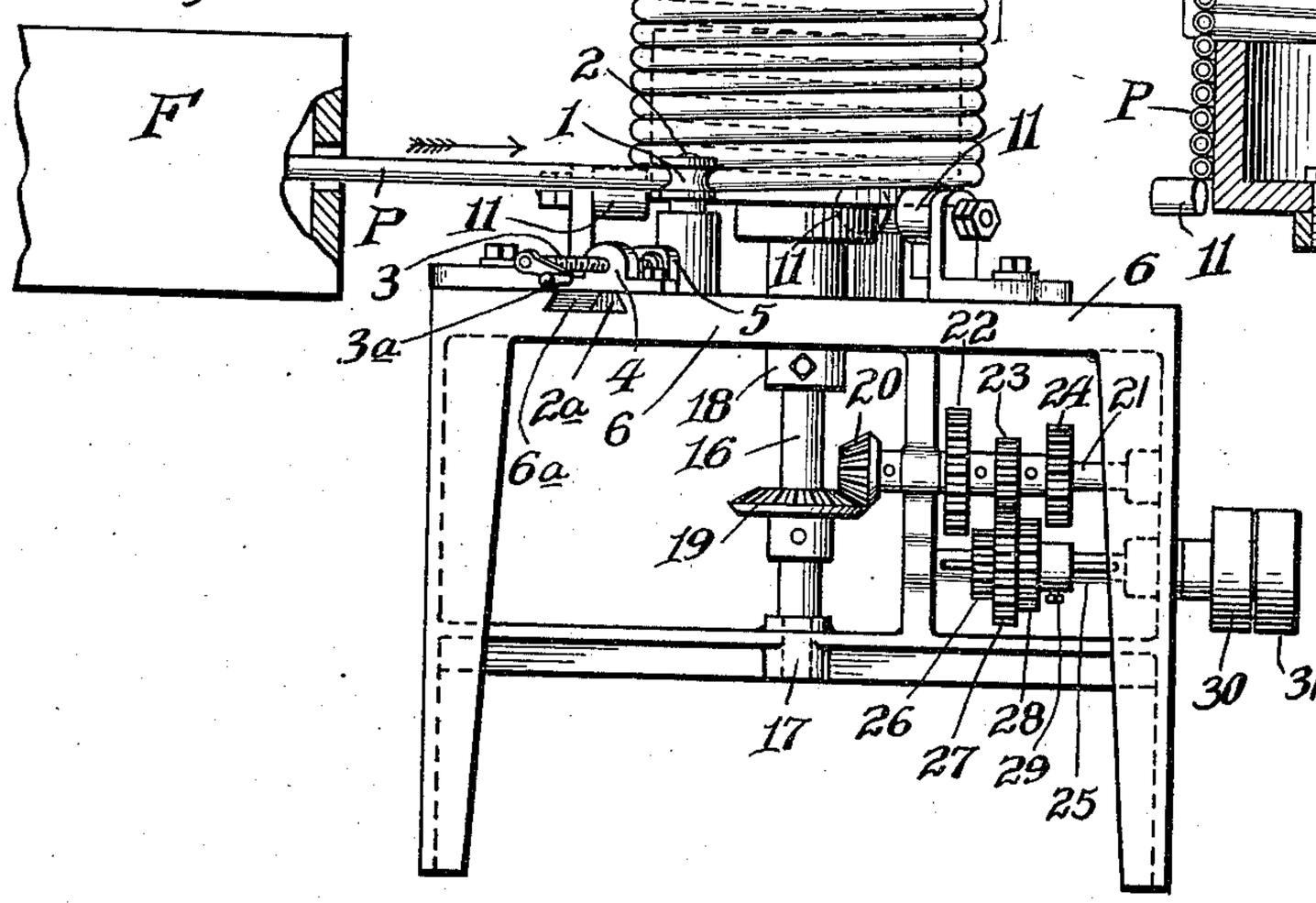


FIG. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

LEOPOLD C. SCHNEIDER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE PHILADELPHIA PIPE BENDING COMPANY, A CORPORATION OF NEW JERSEY.

PIPE-COILING MACHINE.

996,802. Specification of Letters Patent. Patented July 4, 1911.

Application filed June 4, 1910. Serial No. 564,963.

To all whom it may concern:

Be it known that I, LEOPOLD C. SCHNEIDER, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Pipe-Coiling Machines, of which the following is a specification.

My invention relates to a machine for coiling pipe, rod or similar stock.

My invention resides in such machine which comprises a former, such as a cylinder or drum, which is rotated by any suitable means, the pipe being passed over guides or rollers, suitably positioned, whereby the pipe or rod is wound around the drum or former, together with means for automatically and continuously pushing off of the drum or former the coil as the coiling proceeds.

The pipe or rod may be heated previously to the coiling process in a suitable furnace or otherwise, the material then bending easily around the former into the form of a coil, the coil formation or bending occurring at substantially the same place longitudinally of the former, and as the successive convolutions are formed, the previously formed convolutions are pushed off the former by the engagement of the preferably last formed convolution by suitable rolls or other members.

My invention resides in other matters hereinafter described and claimed.

For an illustration of one of the forms my invention may take, reference is to be had to the accompanying drawings, in which:

Figure 1 is a top plan view of the coiling machine. Fig. 2 is an elevational view of the same. Fig. 3 is a fragmentary vertical sectional view. Fig. 4 is a fragmentary view showing means for starting the coil. Fig. 5 is a fragmentary vertical sectional view, some parts in elevation, showing means for exerting a longitudinal tension upon the coil.

The pipe P is provided in suitable length to form the entire coil, or ordinary lengths may be welded end to end during the coiling process. The pipe P is led through a furnace F approximate to the coiling machine to heat the pipe to make it coil or bend with suitable facility. The end of the pipe is then led to the former or drum 9 and suitably clamped thereto, temporarily, as by tongs 10, as shown in Fig. 4.

The roller 1 is mounted for rotation upon the vertical pin 2 carried by the block 2^a and slidable in the dove-tail slot 6^a in the base or table 6. A bracket 4 is secured upon the table 6 and is tapped to receive the screw 3, having handle 3^a, the inner end of the screw 3 being rotatably secured to the lug 5 on the member 2^a. By turning the screw 3 by the handle 3^a, the roller 1 may be fed inwardly or outwardly and adjusted to any desired position. After the pipe has been temporarily clamped to the drum 9, as by tongs 10, the roller 1 is adjusted to engagement with the pipe as shown in Figs. 1 and 2. Then the former or drum 9 is rotated until a few turns or convolutions of the coil have been formed, and then the tongs may be removed and the frictional engagement of the pipe P with the cylinder or drum is sufficient to draw the pipe P and to wind it about the drum 9. Any suitable number of rollers 11, having their axes preferably substantially horizontal and preferably radial to the drum 9, may be provided and engage the pipe on the under side of the convolution last formed, thus sliding the entire coil longitudinally and upwardly on the drum or former 9, pushing the same beyond the former 9, convolution by convolution, as the coil is formed. The coil as so pushed off of and extending beyond the former 9 is shown at 12 in Figs. 2 and 3. The rollers 11 are disposed at different heights according to the diameter of the pipe being coiled, so that all the rollers assist in producing the sliding or longitudinal movement of the coil upon the former 9. As here shown, three rollers 11 are shown and disposed at 120 degrees with respect to each other. It is to be understood, however, that any suitable number of rollers suitably spaced may be employed. The rollers 11 have their pivotal pins supported in suitable uprights 13 upon members 14 which may be slotted and bolted to the table 6 and held in fixed position. The rollers 11 are preferably, as here shown,

idlers, that is, they are not driven, either in definite relation with respect to the drum, or otherwise.

The cylinder or former 9 may be made hollow, as shown, and may consist of any suitable material, such as cast iron, and may be bolted, as shown in Fig. 3, to a head 15 upon the vertical driving shaft 16 having a step bearing at 17 and provided with a collar 18 beneath the table 6. Secured upon the shaft 16 is a bevel gear 19 with which meshes the bevel gear 20 secured upon the shaft 21, to which are secured a plurality of gears 22, 23, 24 of different diameters. On a shaft 25 are mounted gears 26, 27, 28 adapted to mesh, respectively, with the gears 22, 23, 24. The gears 26, 27, 28 may be moved to suitable meshing positions longitudinally of the shaft 25, and secured in the desired meshing position by set screw 29. Upon the shaft 25 are disposed suitable tight and loose pulleys 30 and 31 which may be driven by belt. Or an electric motor or any other suitable device may be coupled to the shaft 25.

As illustrated and described, a coil with neighboring convolutions close together is formed, and as the coiling proceeds the convolutions previously coiled are pushed off of and beyond the former 9. The process described is a continuous one, in that the machine need not be stopped at intervals to remove parts of the coil from the former or drum. As the coil is formed and is progressively pushed off of and beyond the drum or former 9, a bar 32 may be passed through the coil between neighboring convolutions. The bar 32 may carry an eye bolt 33 in which may engage a hook 34 upon a cable or chain 35 attached to a crane, windlass, or other hoisting apparatus. By this means a longitudinal tension may be placed upon the coil as formed, thus assisting or adding to the longitudinally applied force which gradually and continuously moves the coil from the former or drum 9, as the coil is formed. This longitudinal tension may be applied in any desired degree, so as to minimize to a greater or less degree the amount of work required to be done by the machine in pushing or sliding the coil off the former longitudinally as the coil is formed. The force applied may be so small as to relieve the under portions of the coil of the weight of the portions above the bar 32, or the force may be so great as to be more than sufficient to relieve the under portion of the coil of this weight. Obviously, the longitudinal force may be applied in a horizontal direction if the former or drum revolves about a horizontal axis.

While I have shown in the drawings a coil formed of a single pipe or rod, it is to be understood that a coil may be made of two or more pipes or rods simultaneously coiled side by side. In such case, the two or more pipes or rods are simultaneously wound by the former side by side. For this purpose the roller 1 may be made of greater height.

The drum or former 9 is not grooved on its periphery or circumference, but is smooth, allowing ready shifting or sliding of the coil as formed longitudinally of the circumference of the drum.

What I claim is:

1. In a machine for coiling pipe, rod, or similar material, a rotatable former, and a roller idler independent of said former engaging the coil as formed to move the same longitudinally on said former.

2. In a machine for coiling pipe, rod, or similar material, a rotatable former, and a plurality of rollers disposed at different positions longitudinally of said former to engage the coil to move the same longitudinally of the former.

3. In a machine for coiling pipe, rod, or similar material, a rotatable former, a roller engaged by the pipe or rod for causing the same to wind upon said former, and means independent of said former for continuously shifting the coil as formed longitudinally on said former.

4. In a pipe coiling machine, a rotatable former, means for rotating said former, said former when rotated drawing the pipe and winding the same upon itself, and means independent of said former engaging the coil as formed to move the same longitudinally on said former.

5. In a pipe coiling machine, a former, means for rotating the same, said former when rotated drawing the pipe and winding the same upon itself, and means independent of said former engaging the last convolution of the coil as formed to move the coil longitudinally on said former.

6. In a pipe coiling machine, a rotatable smooth drum adapted to wind on to itself a plurality of convolutions of pipe frictionally held by said drum, and means independent of said drum for engaging the pipe coil as formed to move the coil longitudinally on said drum.

7. In a pipe coiling machine, a rotatable smooth drum, means for rotating said drum, said drum when rotated drawing the pipe and winding the same upon itself in a plurality of convolutions all in engagement with said drum, and means independent of said drum for shifting the coil as formed longitudinally on said drum.

8. In a pipe coiling machine, a rotatable smooth drum adapted to wind on to itself a plurality of convolutions of pipe, and a roller idler for engaging the pipe coil as formed to move the coil longitudinally on said drum.

9. In a pipe coiling machine, a rotatable smooth drum, means for rotating said drum, said drum when rotated drawing the pipe

and winding the same upon itself in a plurality of convolutions all in engagement with said drum, and a roller idler for shifting the coil as formed longitudinally on said drum.

10. In a pipe coiling machine, a rotatable smooth drum, means for rotating said drum, said drum when rotated drawing the pipe and winding the same upon itself in a plurality of convolutions all in engagement with said drum, said drum being of substantially the same diameter for a length corresponding with the width of a plurality of said pipe convolutions, and means independent of said drum engaging the side of the last convolution wound on said drum for moving the coil longitudinally on said drum.

11. In a pipe coiling machine, a rotatable smooth drum, means for rotating said drum, a roller for guiding pipe on to said drum, said drum when rotated frictionally engaging the pipe and drawing and winding the same upon itself in a plurality of convolutions in engagement with said drum, and means independent of said roller and said drum for shifting the coil as formed longitudinally on said drum.

12. In a pipe coiling machine, a rotatable smooth drum, means for rotating said drum, a roller for guiding pipe on to said drum, said drum when rotated frictionally engaging the pipe and drawing and winding the same upon itself in a plurality of convolutions in engagement with said drum, and a plurality of means independent of said roller and said drum and disposed at different positions longitudinally and circumferentially of said drum for shifting the coil as formed longitudinally on said drum.

In testimony whereof I have hereunto affixed my signature in the presence of the two subscribing witnesses.

LEOPOLD C. SCHNEIDER.

Witnesses:
ELEANOR T. MCCALL,
ANNA E. STEINBOCK.