Oct. 18, 1932. E. L. ROLFS ET AL 1,883,401

PIPE WRAPPING APPARATUS

Filed Feb. 8, 1930

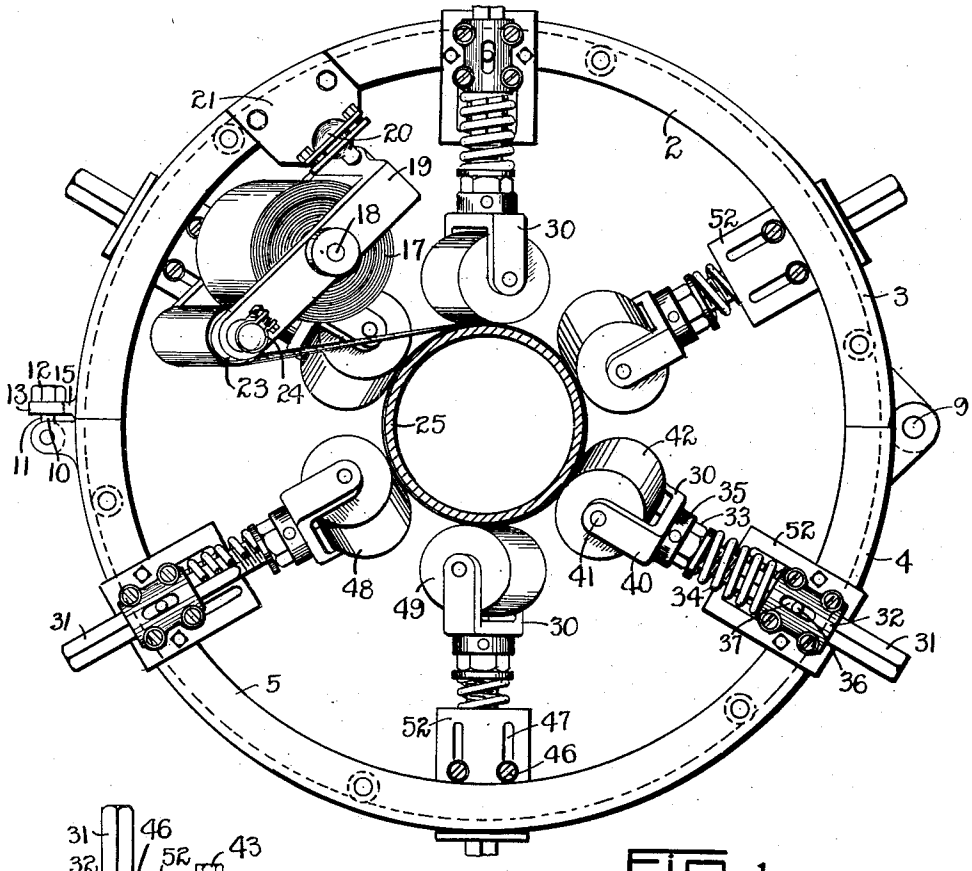


FIG 1

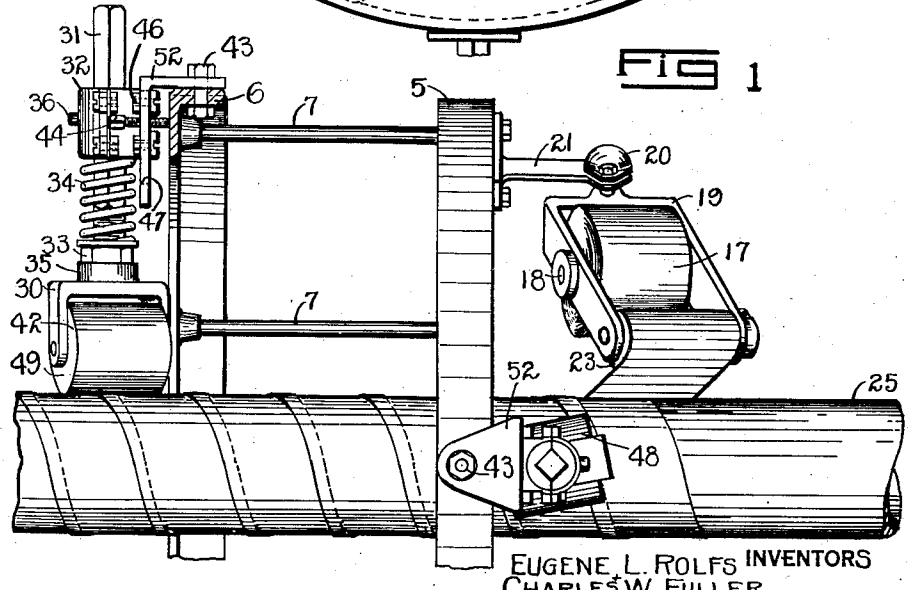


FIG 2

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Patented Oct. 18, 1932 1,883,401

UNITED STATES PATENT OFFICE

EUGENE L. ROLFS, OF DALLAS, AND CHARLES W. FULLER, OF HOUSTON, TEXAS, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO JOHNS-MANVILLE CORPORATION OF NEW YORK, A CORPORATION OF NEW YORK

PIPE WRAPPING APPARATUS

Application filed February 8, 1930. Serial No. 426,820.

Our invention relates to devices for wrapping pipe with a web of protective material such as felt, paper or the like. It is adapted particularly for wrapping pipe preparatory for laying said pipe in ditches, as in pipe line work in oil fields; water or gas mains in cities and similar situations.

To properly protect the pipe from rust and electrolytic action it is customary to coat the pipe with some corrosion-resisting compound such as asphalt and to then wrap the felt or paper spirally about the pipe and finally paint the pipe thus wrapped with another coating. Machines have previously been devised for this purpose but such machines are costly and are not conveniently transported over rough ground.

It is an object of our invention to provide a light and easily portable device for wrapping a web of protective material about the pipe.

It is also desired to provide a device which is supported upon the pipe itself and is easily rotated on the pipe to accomplish the wrapping operation.

It is another object of the invention to provide a device with means thereon to support and center the device upon the pipe and in which the supporting means also acts to iron or smooth out the wrapping material in position upon the pipe.

We also aim to provide a wrapping device which can be operated by hand by a single operator without difficulty.

The construction of our device and the manner in which it is operated will be understood from the drawing herewith, in which:

Fig. 1 is an end elevation of our improved apparatus shown in operative position upon a section of pipe.

Fig. 2 is a side elevation of the apparatus with the parts in their operative position.

In the operation of protecting pipe by painting and wrapping it is a very difficult matter in the field to apply the wrapping material uniformly upon pipe sections and particularly upon pipe lines which have already been placed. Various types of machines and mechanisms have been devised to accomplish the painting and wrapping simultaneously or to perform the operations separately. These mechanisms, however, are more or less complicated and we have therefore devised the present invention, which is very simple and economical in its construction and may be readily transported from place to place and operated by one employe.

The device is best seen in side elevation in Fig. 1 and comprises a frame or support 2, which is made up of two or more circular sections 3 and 4. Each section comprises two spaced members 5 and 6, which are suitably connected by rods or spacing member 7. The sections 3 and 4 are hinged at 9 in any desired manner and on the opposite side are arranged for connection by a latch 10 which includes a bolt 11 and nut 12, which may be adjusted on the bolt to clamp the sections 3 and 4 firmly in position. The bolt 11 is adapted for insertion in a slot 13 formed in a lug 15 which extends from the periphery of one of the sections. It should be noted that the frame is of considerably larger diameter than the pipe which is to be wrapped and is arranged to encircle the pipe. By loosening the nut 12 and unlatching the bolt 11 the frame may be passed about the pipe and the latch again secured.

The frame 2 is adapted to support a roll 17 of wrapping material. This roll is mounted upon a shaft 18, which is carried by a frame 19, which is in turn supported by an adjustable connection 20, such as a ball and socket joint. The joint 20 is carried upon an arm 21 connected with one of the sections of the frame 2. In this manner, by adjustment of the connection 20, the roll 17 may be disposed at any desired angle as regards the pipe which is to be wrapped. One end of the frame 19 carries a guide roll 23 over which the wrapping material is adapted to pass. In devices of this type it is usual to wrap the material spirally about the pipe and in Fig. 2 of the drawing the roll of material is shown arranged at a proper angle so that the material will overlap the desired amount in order to form a seal upon the pipe. As the frame 2 is rotated about

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the pipe 25, the wrapping material will be wound on to the pipe as shown in Fig. 2.

The coating operation is preferably performed by swabbing or ragging the paint or coating material upon the pipe ahead of the wrapping machine. This is usually performed by extending a canvas or similar wiper beneath the pipe and the coating material is poured upon the pipe and evenly distributed on the pipe with the wiper. Employes draw this rag about the pipe in a manner to coat the tar over its entire surface. Immediately after this ragging has been accomplished the pipe wrapping machine is rotated so that the web of wrapping material is applied to the pipe.

It is desired to have the apparatus travel along the pipe at such a speed that the proper overlap of the spirals will occur. To accomplish this we have provided a plurality of supporting members 30. These members may take any desired form but we have here illustrated them as comprising a plurality of stems 31, which are non-circular and adapted for sliding movement through bearings 32. An adjustable nut 33 is threaded onto the lower end of each stem and arranged to confine a coil spring 34 between the bearing and the collar 35. This spring normally tends to move the stem 31 inwardly with respect to the frame.

A stop pin 36 is arranged for movement within the slot 37 in the bearing so that the supporting member will not drop inwardly or outwardly when the apparatus is being transported or is not in use. Above the collar 35 the stem is formed with a yoke 40 which carries a pin 41 and a roller 42. This roller may be of any desired width but we have herein illustrated it as of substantially the same width as the web of wrapping material. These rollers 42 may be made of any suitable material but it is intended that they may be made of rubber or some resilient substance which will smooth the wrapping material. It will be seen from Fig. 1 that the spring 34 tends to force the roller 42 against the periphery of the pipe or the wrapping material which has been placed thereon. In order to suitably support the apparatus and to prevent vibration thereof, as well as to cause it to travel uniformly along the pipe, we have provided two sets of these rollers, the forward set 48, which are carried on the frame section 5, and a rear set 49, which are carried on the frame section 6. The bearing 32 is supported upon a suitable bracket 52, which is connected to the frame members by a bolt 43. It is to be understood that this bracket 52 may be moved about on the bolt 43 in order to adjust the angularity of the roller with respect to the axis of the pipe. By adjustment of the angularity of this roll the pitch or rate of travel of the apparatus with respect to the pipe will be controlled. A set screw 44 is shown as carried by the bracket 52 and adapted to engage against the frame section. Thus if the bracket is once adjusted the set screw may be arranged to retain it in the proper position. The bearing 32 is connected with the bracket 52 by means of bolts 46 which are arranged to pass through the slots 47 in the bracket. With this construction the rollers may be adjusted radially of the frame in order to accommodate different sizes of pipe or to allow for excessive movement of the rollers in passing dresser coupling or other obstructions upon the pipe. Where ordinary couplings are encountered the resiliency of the stem 31, due to its mounting with the spring 34, will allow sufficient movement of the rollers to pass the coupling.

With the rollers mounted as just described it seems apparent that the wrapping material will be pressed firmly and smoothly against the pipe as it is applied. A restraining band or clamp 24 may be provided so that suitable tension may be placed upon the roll 17 or the guide roll 23 in order to prevent the material from unrolling too freely. The forward set of guide rollers 48 tend to iron out or smooth the wrapping material immediately after it has been applied so that any wrinkles or bulges in the material will be removed and the material will slide about the pipe in order to remove them, due to the tension upon the web of the material. The rear rollers 49 are adapted to travel upon the material after several spirals have been applied to the pipe. These rollers are so spaced from the forward rollers 48 that they will travel substantially upon the lap of the wrapping material and cause a sealing of the joint along the spiral.

After the wrapping material has been applied with our improved mechanism an outer coating of protective material or paint may be applied, if desired, either by a suitable painting mechanism or by ragging, as the first coating was applied ahead of the wrapping apparatus.

The wrapping apparatus we have shown and described is primarily adapted for manual operation. The frame is passed about the pipe to be wrapped and it is thereafter rotated by the operator grasping the rods 7 and rotating the entire frame. The forward rollers 48 and rear rollers 49 will be adjusted with an angularity so that the apparatus will travel along the pipe at the proper rate and the overlap of the wrapping material when once adjusted will thereafter be uniform.

There will be no inconvenience in passing the roll of material about the pipe as is now encountered in hand operations. There will be no wrinkles or bulges in the material as it will be ironed about the pipe by the rollers.

Our invention has the advantage of being economical to construct and easy to operate.

One man can wrap the material upon the pipe where it takes four men to apply the liquid coating thereto. The web of wrapping material is not only smoothly and evenly wound about the pipe but it is forced firmly against the pipe so that the coating previously applied makes a firm bond between the wrapping and the pipe.

While the device is particularly adapted for hand operation, it is to be understood that it is capable of power operation if so desired where mechanical devices are easily available.

What we claim as new is:

1. In a pipe wrapping machine, a tubular frame surrounding the pipe, angularly disposed means on said frame bearing on said pipe to support said frame rotatably on said pipe and cause it to advance thereon upon rotation of said frame, and a roll of wrapping material on said frame, said means acting also to smooth out said wrapping material after it is wrapped upon said pipe.

2. In a pipe wrapping device, a frame rotatable on said pipe as an axis, rollers mounted on said frame to support said frame on said pipe, and a roll of wrapping material on said frame, said rollers being of resilient material to smooth said wrapping material upon the pipe.

3. In a pipe wrapping device, a frame rotatable on said pipe as an axis, rollers mounted on said frame and springs for pressing said rollers against said pipe to support said frame, and a roll of wrapping material on said frame, said rollers being of resilient material to smooth the wrapping upon the pipe.

4. In a pipe wrapping device a cylindrical frame rotatable about said pipe as an axis, said pipe acting to guide said frame, and a roll of wrapping material on said frame, said wrapping material being wound on said pipe as said frame is rotated, and means on said frame disposed at an angle to the axis of the frame to force said wrapping material into firm contact with said pipe.

5. In a pipe wrapping device a frame surrounding said pipe and rotatable thereon, legs on said frame, rollers on said legs bearing on said pipe, wrapping material on said frame, said rollers acting to smooth said wrapping material on said pipe as said frame is rotated.

6. A pipe wrapping apparatus adapted to be mounted on the pipe to be wrapped and of such size as to be manually operated, said apparatus including a frame, a supply of wrapping material, and a plurality of pipe engaging members to support said frame on the pipe and cause it to travel therealong and iron the wrapping material after it is applied.

7. In a pipe-wrapping machine, a frame rotatable on a pipe as an axis, rollers on said frame bearing on said pipe, said rollers being set at an angle to the axis of the frame for advancing the frame along on the pipe upon rotation of said frame, and a roll of wrapping material on said frame, said rollers acting to smooth said wrapping material on said pipe as the frame is advanced.

8. In a device for wrapping pipe, a frame shaped to surround the pipe and rotate thereabout, inwardly projecting legs on said frame, idle rollers on said legs formed to contact with said pipe and support said frame upon said pipe, and wrapping material on said frame, said rollers being angularly disposed and held resiliently against the pipe to cause said frame to advance along the pipe and smooth the material thereon as said frame is rotated.

9. In a device for wrapping pipe, a frame shaped to surround the pipe and rotate thereabout, inwardly projecting legs on said frame, idle rollers on said legs formed to contact with said pipe and support said frame upon said pipe, and wrapping material on said frame, said rollers being set at an angle to the longitudinal axis of the pipe to cause said frame to traverse along the pipe and act to smooth the material as said frame is rotated.

10. A pipe-wrapping device including a frame adapted to be mounted upon a pipe, said frame and pipe being relatively rotatable, supporting members projecting inwardly from said frame towards said pipe, rollers on said members positioned to engage and ride upon said pipe and cause relative movement of pipe and frame longitudinally of the pipe during relative rotation thereof, and a roll of wrapping material mounted on said frame positioned to allow said material to be unreeled therefrom onto said pipe, said rollers riding upon the wrapped pipe and smoothing the wrapping during the longitudinal movement of the frame.

In testimony whereof we hereunto affix our signatures this 31st day of January, A. D. 1930.

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CHARLES W. FULLER.

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