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REELING FURNACE FOR HOT BAND ROLLING

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*Fig. 1*

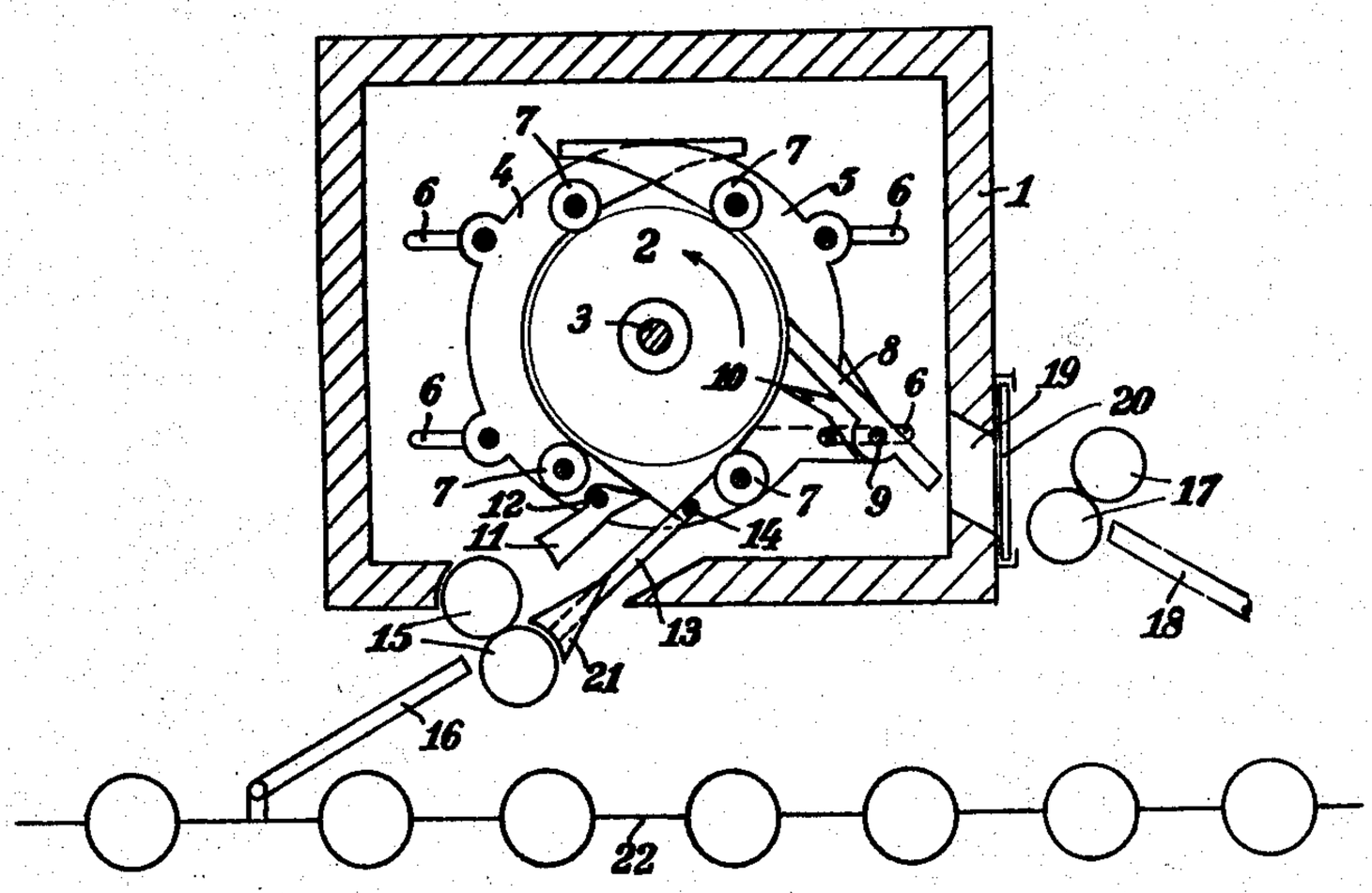
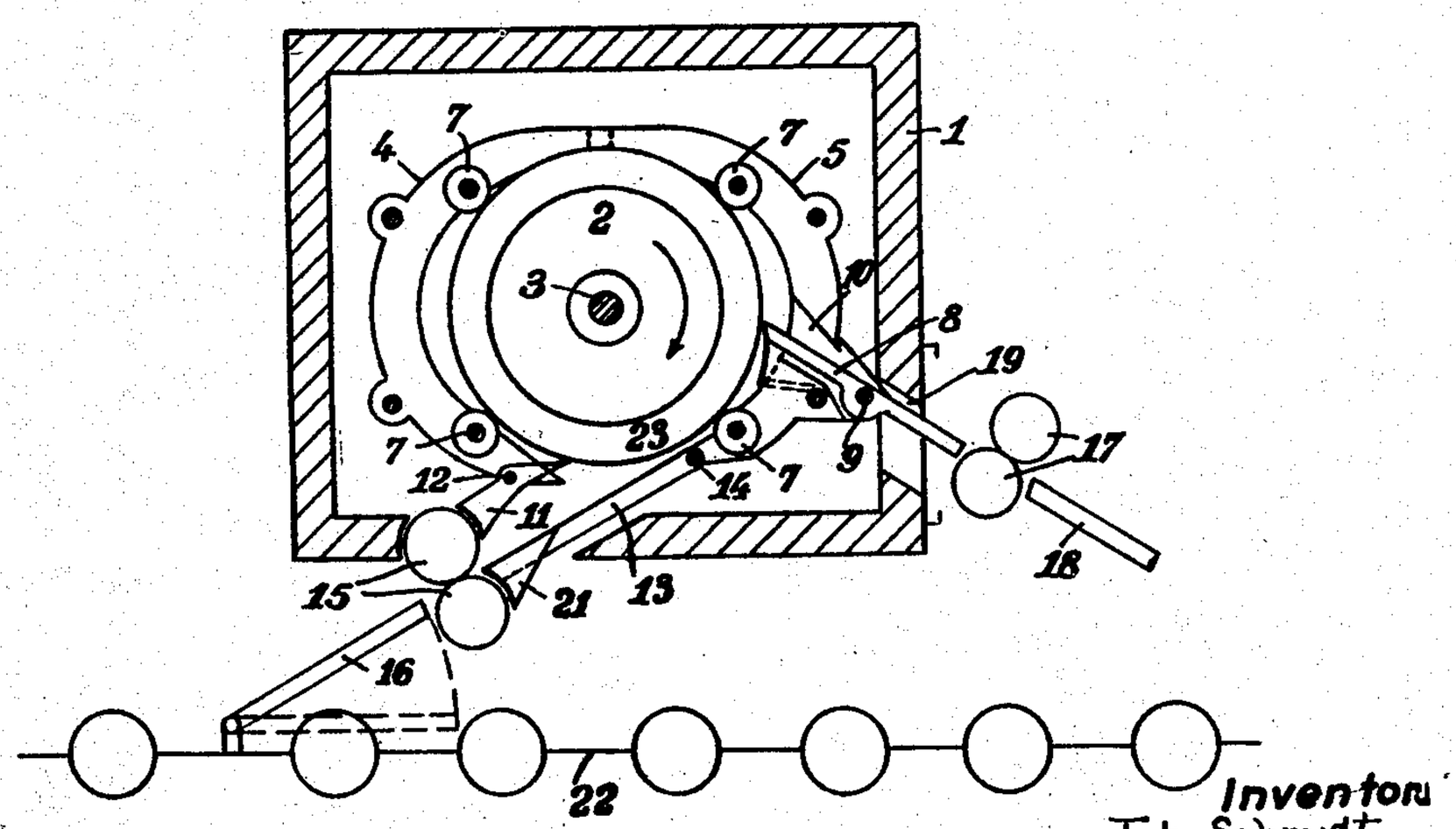



*Fig. 2*

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## REELING FURNACE FOR HOT BAND ROLLING

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3 Claims. (Cl. 242—78)

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This invention relates to reeling furnaces for hot band rolling.

In connection with rolling mills which treat the material to be rolled in backward and forward passes, it is known to provide in front and behind the reversing mill stand heated furnaces in which the rolled-out band ready for reeling is wound up and unwound. Generally, these furnaces are so constructed that the rolled material runs out of the furnace at the same point at which it had entered it only the direction of rotation of the drum of the reel having to be reversed for this purpose. Certain rolling processes of this nature however, make it necessary to provide furnaces out of which the rolled material can also run out at a point which is located oppositely to that at which it has entered.

The invention has for its object such a reeling furnace and it is the purpose of the invention so to contrive the furnace that the band can be reeled or wound out at a point opposite to the point of entry as well as the point of entry. To attain this, there are provided or arranged in a reeling furnace having a driven rotating reeling drum, band guides or deflectors which embrace the band being reeled up, at the commencement of reeling. These band guides are provided with driving rollers and each one with a band stripper.

A further feature of the invention is that the band guide located oppositely to the inlet point is provided with a band discharge conduit, the stripper allocated to the band discharge conduit in the guide closes the conduit to the drum at the commencement of reeling. In the stripping position, on the contrary, it serves also as a band running-on device.

In the reeling furnaces according to the invention, the band is completely reeled in and thus the drawback is avoided which exists with some known furnaces of this nature that a certain length of a band must remain outside the furnace, in particular when, in order to effect the un-reeling, the reversing mill stand carries out a further pass. Furthermore such a furnace allows optionally unreeling at the same point at which the running-in took place, so that the rolled material can be again carried to the same mill stand. It is furthermore also possible that running-out of the band from the furnace takes place at the side opposite to the point of entry, so that a further train of rolls, or the like, can be fed from this furnace without it being necessary for this purpose to disturb the rolling procedure in the mill stand located in front of the furnace or the train located in front of the furnace.

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In order to attain a reliable reeling-off and reeling up, a pair of strip draw rollers is provided in the direct vicinity of the entry or exit opening of each of the furnaces.

In Figs. 1 and 2 there is represented diagrammatically in vertical section a preferred embodiment of the reeling furnaces according to the invention, by way of example, and this in two different working positions.

In the reeling furnace 1, the cylindrical reeling drum 2 is carried on the driving shaft 3 secured against rotation and axial displacement. The reeling drum 2 is embraced by two segment-shaped band guides or deflectors 4 and 5, the arrangement being preferably so contrived that at least in their upper part the two band guides engage one another comb-like. The band guides are displaceable radially of the drum 2 in slots 6. Driving rollers 7 are arranged in the band guide which rollers are arranged in the segment-shaped band guides and are driven in known manner from the outside of the furnace. At the commencement of reeling, these driving rollers are actuated and they can yield as they are under an elastic and radially directed pressure. On the retraction of the band guides the driving rollers also come out of operation.

The band guide 5 is provided with a band discharge conduit 10. The band stripper 8 is oscillatably carried at 9 in this discharge conduit. In Fig. 1 this stripper 8 is shown in the position of rest in which it closes the conduit 10 with respect to the drum or the wound-up band.

The oppositely located band guide 4 is also provided with a stripper 11 supported at 12, so that an entry gap for the band between the stripper and the other band guide 5 results.

At the free end of the band guide 5 which is adjacent to this inlet conduit, there is a band bridge 13 oscillatable about the pivot 14 and which forms an uninterrupted band-supporting path from the strip-drawing pair of rollers 15 to the band guide 5. The free end of the band bridge 13 meshes in the connecting piece 21 which is arranged adjacent the pair of strip-draw rollers 17 is provided at the exit end of the furnace 19 and co-operates with the oscillatable stripper 8 which at the same time serves as band discharge when in the working position of Fig. 2. The furnace opening 19 may as shown at 20, be closed by a flap or slide if the opening is not required.

Tilting tables 16 or 18 serving for the running

up and down of the band on the rollway 22 co-operate with the pairs of strip-drawing rollers. When, according to Fig. 1, a band tip runs over the rocker 16 through the pair of draw rollers 15 and over the connecting piece 13 into the path between band guide 5 and drum 2, it is forced by the first driving roller 7 against the driven drum 2 and run on without friction. The band discharge conduit 10 is closed by the stripper 8 so that the band cannot hit against this part. On its further movement it is seized by the upper driving roller 7 and being further pressed against the circumference of the drum it is conveyed to the driving roller 7 of the band guide 4 and, finally, so carried forward that, safely carried over the inlet point, it is pressed under the band running in. After one or two turns of the band have been reeled on, the band guides 4 and 5 are withdrawn and brought into the outer position which is shown in Fig. 2. The reeling-up of the band is then continued automatically by the driven drum until the whole band is reeled into the furnace. Now the two band guides or the driving rollers 7 are applied to the band 23 so that the elastically yielding rollers 7 press in particular the end of the band to the circumference of the collar.

If the band is to be reeled off, then the stripper 11 is brought into the position shown in Fig. 2 if the band is to be run out again through the inlet opening. Should, on the contrary, it be run out through the rear opening, then the stripper 8 is brought into the position shown in Fig. 2 and in this way effects the running-out.

The driving rollers 7 hereby rotate in the sense of assisting the extruding movement. By this means, the formation of loops or stoppages on the strippers is prevented. The stock is safely conveyed to the strip drawing rollers 15 or 17 until these seize the tip of the band and can take over the further transport.

Rolling mills provided with furnaces according to the invention are adapted for a great number of rolling methods, for instance reeling passes in combination with passes in further reversing mill stands or even in following continuous trains. It is further possible to use the furnace as a buffer should interruptions of any kind take place as the whole band may be run into the furnace and there kept at temperature for example by slow rotation of the drum without any ends projecting from the furnace and cooling down as in known furnaces. Furnaces according to the invention are preferably used for reeling passes of usual thickness.



Naturally, furnaces according to the invention may as to their shape arrangement, conditions of size, and the like differ more or less from the construction shown in the drawings said construction being only diagrammatic and by way of example, without departing the fundamental idea of the invention, by such changes, which allows reeling-out without friction in a direction opposite to the running-in direction. For example, the conduit 10 can be shaped that the band can also be wound from the rear into the furnace if desired whereby the reeling-out can be carried out in the same or in the opposite direction.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:

1. In a reeling furnace, a reversible reeling drum onto which a continuous band is reeled, a pair of arcuate roller-carrying band guides each partially embracing the drum, one serving as a guide for the entering portion of the band and the other for guiding the outgoing portion of the band, and comb-like extensions on adjacent ends of said band guides, the extension of one guide interfitting with the extension of the other guide, thereby to insure guiding of the band throughout the entire circumference of the drum.

2. A reeling furnace as claimed in claim 1, comprising a sliding mounting for each band guide for affording translatory rectilinear shifting movement thereof toward and away from the reeling drum.

3. A reeling furnace as claimed in claim 2, comprising a stripper arm carried by and movable with one of said band guides, said band guide having a conduit extending therethrough and the stripper arm being disposed in such conduit.

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