DEVELOPMENT FOR INTRODUCING SUPERPOSED PLATES OF DIFFERENT METALS

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Franz Jordan, Berlin-Charlottenburg, Germany
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1 Claim. (Cl. 80-43)

This invention relates to a method and apparatus for introducing superposed plates of soft and harder material into a rolling mill prior to uniting them by rolling.

When plates made of a soft material, such as aluminum, are to be united by rolling with plates made of harder metals, considerable difficulties arise owing to the fact that the different metals, on account of their unequal extensibility, tend to be vertically or laterally displaced when introduced between the rollers. Therefore, plated rolled material of this class hitherto contained defective portions, i.e., parts not covered by soft metal, which involved considerable waste, since only the perfect parts could be cut out and used.

The invention proposes to eliminate these drawbacks by providing yieldingly disposed guide rollers having lateral collars or flanges to prevent lateral displacement of the pile of hard and soft metal plates on the roller table and by rendering the rollers yielding so as to avoid vertical displacement of the sheets relative to one another. The resilient pressure of the rollers keeps the plates passing through the mill smoothly superposed, notwithstanding the difference in extension, and the process of overlapping the harder metal by the softer one will go on steadily. Roller pressure in the mill will act uniformly, and the surfaces will be rolled together without any detrimental displacement and therefore without causing waste.

In view of the different extensibility of soft and hard metals the plates cut in different lengths, the harder plates being longer than the soft plates so as to produce a plate uniformly closed on all sides.

The plates are placed loosely upon each other so as to be flush on the feeding side, with their edges forming a uniform surface while the rear edges of the harder plates extend beyond those of the softer plates. To insure uniform feeding of the plates a special slide corresponding in shape to the differences in length of the plates and fitting with its clearances exactly into the profile formed by the rear ends of the plates is employed, so that the layers of plates will not vary in a longitudinal direction, and the plates are introduced between the rollers of the mill in its original position, the slide being designed for either manual or mechanical operations.

To keep the plates flush in front, the invention provides a stop against which the pile of plates is pushed by the slide, the stop being preferably movable so as to be out of the way when not in use.

In mills for the simultaneous rolling of several plates it is known already to employ a wedge for exerting pressure upon the plates vertically to their surface prior to feeding them into the rollers, but this device is unsuited for plating mills. Even if the wedge should be temporarily adjustable to slight pressure, the latter is not resilient, which, however, is absolutely necessary if sheets of different degrees of hardness and extensibility are to be rolled together, for otherwise the softer plates will be torn or at least deformed.

It is further known to arrange yieldingly disposed rollers in front of the main rollers, but these rollers were hitherto intended for shaping and, for this purpose, pressed against the work at regular intervals, while the yieldingly disposed rollers according to the invention merely exert permanent slight pressure upon the plates to be rolled in a direction perpendicular to their surfaces.

By way of example, the invention is illustrated in the accompanying drawing, in which Figures 1 to 3 disclose one embodiment thereof.

Referring to the drawing, 1 and 2 are the press rolls of the mill, 3 is the feeding table and 4 is a movable stop having the form of a slide attached to the edge of the table 3. Above the table 3, a frame 5 carries two freely rolling guide rollers 6 for depressing the set of plates 11 and preventing the ends thereof to bend up when the front part of the plates has entered the mill, the rollers 6 having edges or collars 7 like flanged wheels, which serve as lateral guides for the plates and, simultaneously, turn down the projecting edge of the top plate towards the edges of the lower plates. The rollers 6 are subject to the action of the springs 8 which cause the plates 11 to be held together by slight pressure.

The entire device can be readily lifted off from the table 3 by means of the spindle 9 and held high enough to continue the rolling of the plated sheets or bands in the same mill and heat without interference from the feeding device.

10 Indicates a slider for pushing the set of different plates on the table 3 with its front edge against the stop 4 and then into the mill after the stop 4 has dropped down. Since the plates differ in length at their rear ends, owing to their difference in extensibility, the slider 10 is profiled at its driving edge so as to insure the feeding of the plates to the rollers 1 and 2 without displacing them in longitudinal direction.

The number of guide rollers 6 depends on the length of the plates or block, so that one, two or three of these rollers may be used as required to prevent the rear portion of the plates from being...
In a plating mill, a pair of press rolls in said mill, a device for feeding superposed plates of material of different hardness and lengths to said rolls comprising a fixed, plane and rigid feed table in advance of said rolls, means for moving the plates on said table towards said rolls comprising a slide having a profile conforming to the unequal plate lengths, a vertically movable stop for aligning the plates at their front edge before the feeding thereof to said press rolls, and a plurality of flanged pressure rollers disposed above said feed table for pressing said plates into the conformation of the finished plate and for preventing vertical displacement of the plates while permitting longitudinal motion of the softer plates.

FRANZ JORDAN.