June 6, 1967 S. E. M. NORLINDH 3,323,343

EDGING ROLL PAIRS

Filed March 11, 1963 4 Sheets-Sheet 1

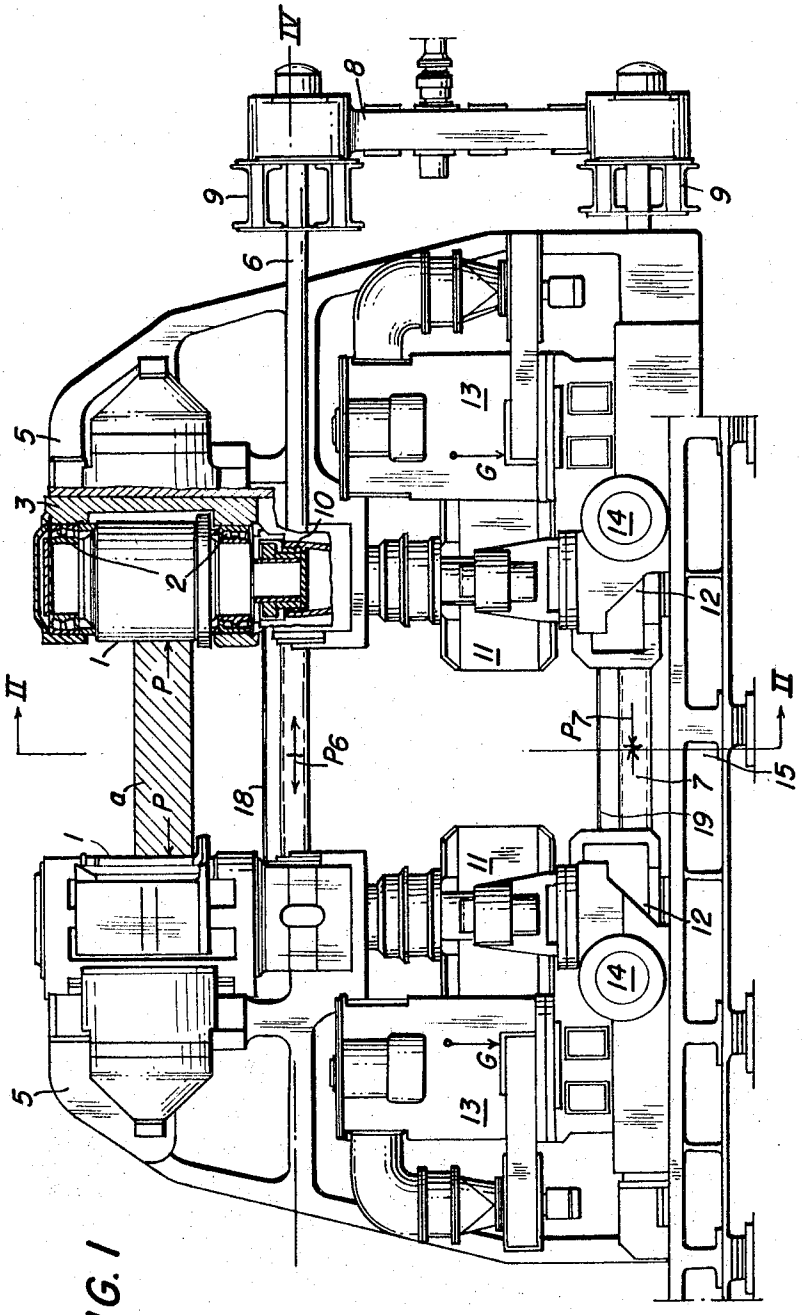

FIG. 1

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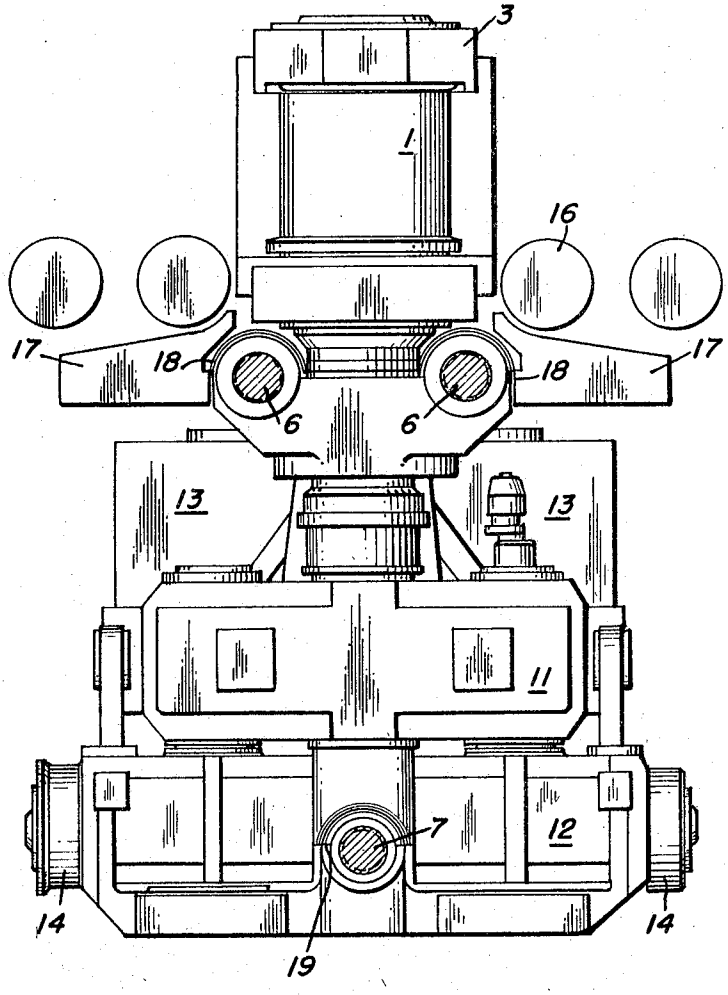
FIG. 2



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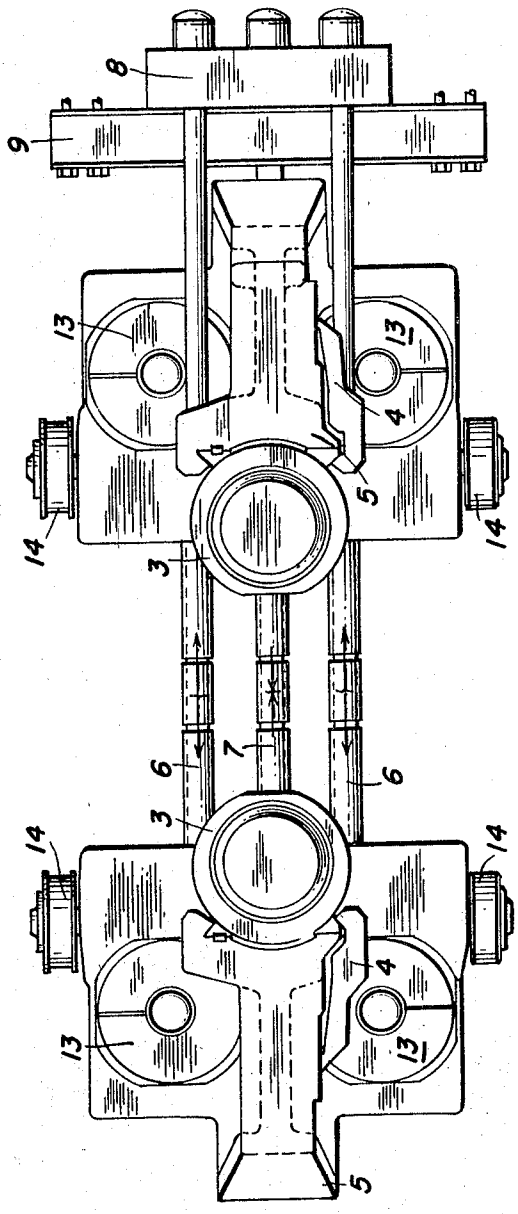

FIG. 3

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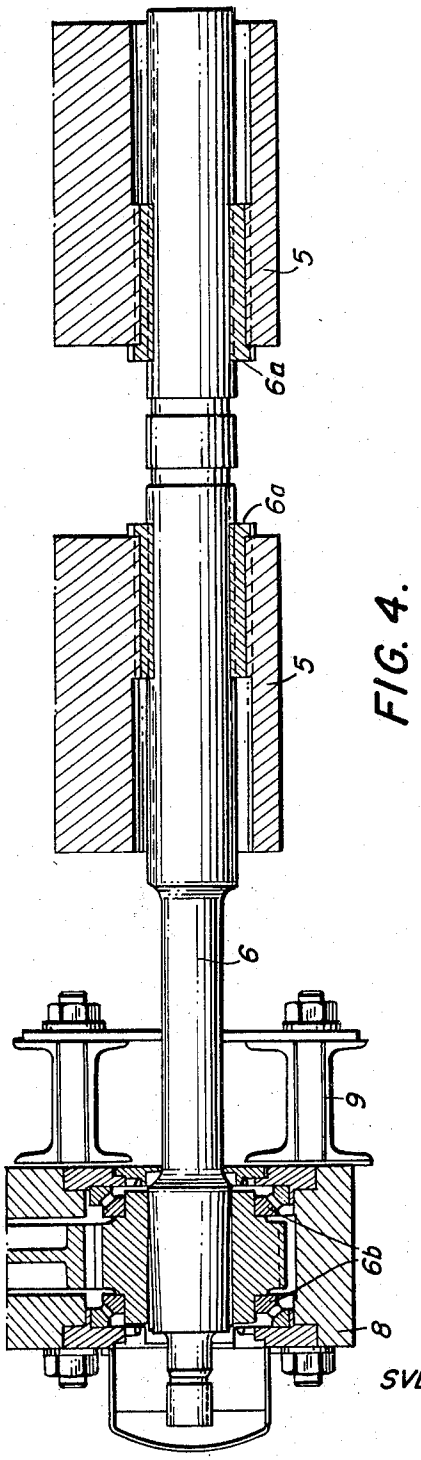

FIG. 4.

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3,323,343
EDGING ROLL PAIRS

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Claims priority, application Sweden, Mar. 14, 1962, 2,846/62
2 Claims. (Cl. 72—237)

This invention relates to roll pairs in two-high rolling mills and to edging roll pairs for edging flat sections, particularly in plate rolling mills of the type where the rolls are mounted at each end in bearings which are supported in girders whereby the gap between the rolls is free in the direction of the roll axes. The invention is characterized in that said girders, and thus the rolls supported therein, are maintained at an adjustable distance by at least one tension screw adjacent said rolls and at least one thrust screw more remote therefrom.

The invention will be described with reference to the accompanying drawings, in which

FIG. 1 is a side view, partially in section, of an edging mill according to the invention;

FIG. 2 is a section along the line II—II of FIG. 1;

FIG. 3 is a top plan view of the edging mill of FIG. 1; and

FIG. 4 is a section through the adjusting screws of the edging mill according to the invention along the line IV—IV of FIG. 1.

The invention is shown in a partially sectioned side view, FIG. 1 showing the edging rolls **1** mounted in spherical roller bearings **2** in a common roll bearing casing **3** secured in the girder **5** by tension gloves **4** (FIG. 3).

The girders **5** are maintained in their fixed positions against the rolling pressure P from the material *a* by tension screws **6** (tractive force P_6) and thrust screws **7** (compressive force P_7) anchored in the adjusting screw gear **8** which is fastened in the foundation by the beams **9**.

The rolls **1** are driven via gear coupling (spline coupling **10**) and gearing means **11, 12** by motors **13** secured in the girders **5**.

FIG. 2 shows one roll of the edging roll pair in a section II—II through the adjusting screws **6** and **7** where the material *a* is carried by the rollers **16** of the roller table. Fixed support beams **17** are provided with the object of receiving the acceleration forces from the material *a* and the tractive and compressive forces, when the material is rolled at the same time in an adjacent four-high pair.

The rolling pressure P from the material *a* tends to press the rolls **1** and the girders **5** away from each other. In order to fix the girders **5**, and thus the rolls **1**, in a fixed position the rolls **1** are pulled away from each other by the tension-adjusting screws **6** at the same time as the thrust-adjusting screws **7** compress the rolls. In such a manner the rolls are maintained in fixed positions leading to more exact widths of the material.

The girders **5** with associated rolls and driving means are supported by two pairs of wheels **14** provided rather near each other. They are so placed in relation to the center of gravity G between the left hand and right hand part of the roll mill that the weight of those parts causes a further tractive force in the tension-adjusting screws **6** and a further compressive force in the thrust screws **7** by positioning the tension-adjusting screws **6** at a higher level than the centers of the wheels and the thrust screws **7** at a lower level than the centers of the wheels. These forces work in the same direction as the rolling pressure P and cause the elimination of play in the adjusting equipment.

For protecting the adjusting screws **6** and **7** against water and scale, the girders **5** are provided with meniscal

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(i.e., half moon-shaped) passages above the adjusting screws **6** and **7**, through which passages extend hemicylindrical protective shields **18, 19**.

FIG. 3 shows a top view of the edging roll pair, and FIG. 4 a section through the adjusting screws **6** (or **7**) which are provided with right-hand and left-hand threads and run-in nuts **6***a* (and **7***a* respectively) threaded into the girders **5**. The adjusting screws **6** (and **7**) are rotatably secured in the adjusting screw gear **8** by axial bearings **6***b* (and **7***b* respectively), thereby maintaining the central line of the material to be rolled laterally unchanged.

The invention is not restricted to edging mill stand constructions but may be applied also to two-high mills where there is a special demand for having one roll end completely accessible (for maintenance and removal of cobbles), but where it is yet desired to have the rolls mounted in bearings on both sides of the barrel in order to obtain small deflections. In conventional constructions with the roll bearings mounted on one end, the neck and thus also the roll bearings closest to the roll must be given a large diameter in order to obtain somewhat acceptable deflection. For this reason, the roll diameter must be made larger than it need be for rolling.

According to the invention, the roll diameter can be chosen suitable for the rolling, because the roll is supported in bearings at both ends and mounted in a rigid frame which can be constructed with a great momentum of inertia at the adjusting screws **6**, thus giving small deflections and making possible very quick roll changes.

When the roll pair is to be utilized as a two-high pair in a continuous rolling mill, preferably a motor with associated pinion gear should be employed which drives the rolls via coupling spindles. In that case, the driving equipment is preferably placed separately without connection with the girders **5**.

What I claim is:

1. Rolling mill stands for two-high rolling mills and edging mills comprising two roll assemblies, each consisting of a roll mounted at each end in bearings which are supported in a girder whereby the gap between the rolls is free in the direction of the roll axes, characterized in that said girders, and thus the rolls supported therein, are maintained at an adjustable distance from each other by at least one tension screw adjacent said rolls and at least one thrust screw more remote therefrom, each of said rolls being provided with a motor and drive means, so that the rolls can be adjusted within a very wide play range.

2. Rolling mill stands according to claim **1**, wherein each roll assembly, including a roll with its girder motor and drive means, rests upon wheels located to one side of the center of gravity of the roll assembly, so that the tractive and compressive forces in the tension and thrust screws, due to the weight of the roll assembly, act in the same direction as the roll pressure, thus eliminating thread play between the screws and nuts associated therewith.

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