Aug. 17, 1943. H. E. GUDE 2,327,103

MEANS FOR PROCESSING STRIP METAL

Filed Aug. 3, 1942

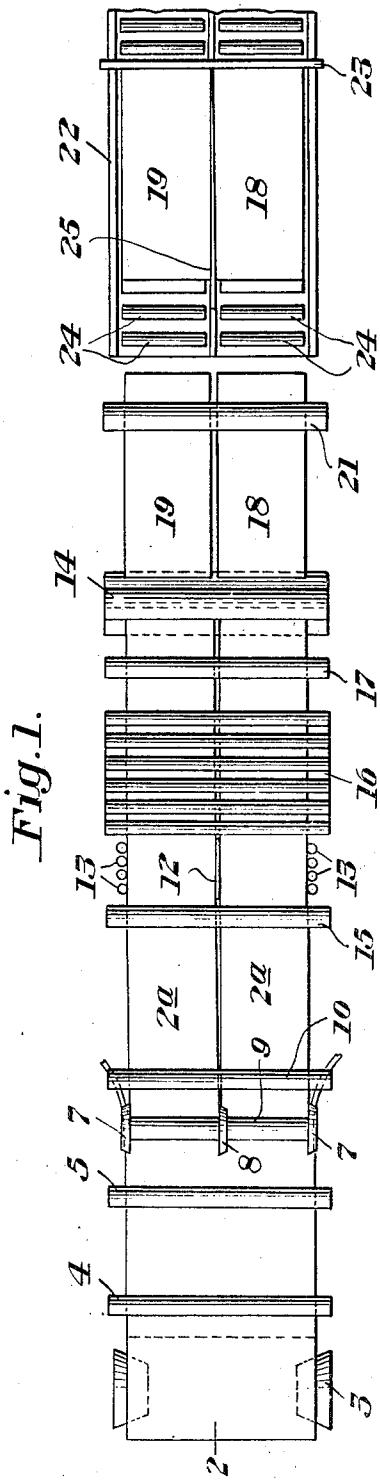


Fig. 1.

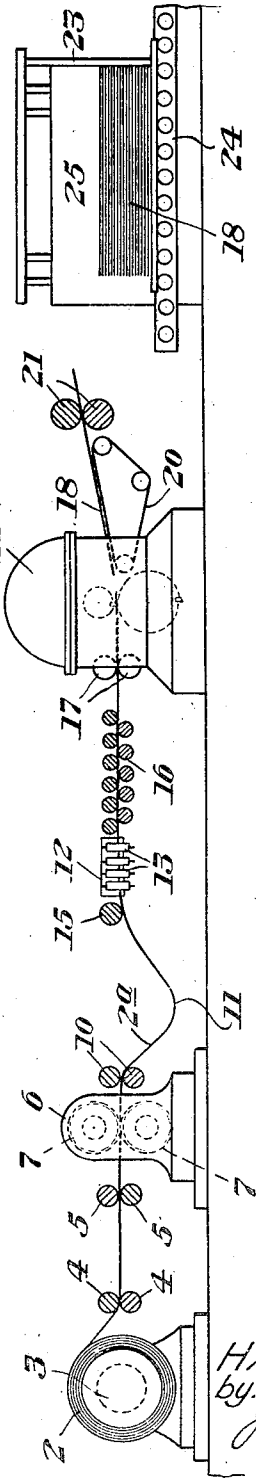


Fig. 2.

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Patented Aug. 17, 1943

2,327,103

UNITED STATES PATENT OFFICE

2,327,103

MEANS FOR PROCESSING STRIP METAL

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Application August 3, 1942, Serial No. 453,475

1 Claim. (Cl. 164—61)

This invention relates to improvements in means for processing of metal strip, and more particularly to the ultimate production of sheets from strip in accordance with the customer's requirements as to the flat size thereof, such as for example, steel sheets.

Cold rolled steel sheets have been produced heretofore by various related and sequential continuous practices, commencing with the production of hot rolled strip and including the shearing of the cold rolled metal into the desired sheets.

For example, the metal is first hot rolled in strip form, pickled in strip form, cold rolled to gauge and to the approximate width of the finished sheets, trimmed and sheared into sheets of the required size; and then annealed and temper rolled. As a variation of such practice, the shearing and trimming may be employed after temper rolling, thereby retaining the metal in strip form until finally cut up into sheets of the proper size.

Such prior practices involve undue handling and rehandling of the metal during the processing thereof which contribute substantially to high manufacturing costs and low tonnage output of the finished product. The cost items and restrictions on output are reflected in the particular product and in overall mill operation as well, due to the additional man-hours and machine hours, and the extra machines and floor space required. Also, the handling and rehandling unnecessarily exposes the product to damage, as by gouging, scratching, etc.

It is a prime object of my invention to provide the means for processing steel strip into sheets which will minimize and expedite the handling of the metal, and provide increased tonnage at decreased processing cost.

My invention contemplates first producing cold rolled strip of a width substantially equal to multiple of the sheet width desired, continuously trimming and slitting the cold rolled strip, followed in uninterrupted sequence, by shearing the multiple widths to lengths, and finally piling the finished sheets for packaging, or for such subsequent treatment as may be necessary.

By the introduction of such a continuous sizing operation at the proper point in the production of sheets from multiple width strip, the final sheets will be produced at less cost in increased amount, and of excellent squareness and surface condition.

Additional objects and advantages will become apparent from the following description taken in connection with the accompanying drawing wherein:

Fig. 1 is a diagrammatic plan view illustrating a processing line embodying my invention; and

Fig. 2 is an elevational view thereof, with parts in section.

Referring to the drawing, 2 designates a coil of cold rolled steel strip of the desired gauge and having a width substantially equal to the multiple of the final width of the sheets to be cut therefrom. For example, if the finished sheet width is 30 inches, the width of the strip for the processing line illustrated would be about 60¾ inches to allow for trimming as hereinafter described.

The coil 2 is mounted in an uncoiler indicated at 3, and the strip is passed through driven feed rolls 4 and pinch rolls 5 into a trimming and slitting shear indicated at 6 in Fig. 2.

The shear 6, as shown in Fig. 1, includes trimming or edging knives 7, and at least one slitting knife 8, said knives being mounted on a suitable spindle as indicated at 9 and being driven in the usual manner to longitudinally cut the strip. While the knife 8 is shown equidistant from the edging knives 7 to cut the strip into two strips of equal width, it will be apparent that additional slitting knives may be employed and their spacing varied in accordance with the desired width or widths of the finished sheets, without departing from the present invention.

Hence, the shear 6 trims and cuts the strip into two or more strips 2a of the desired width or widths, and said strips pass between guide rollers 10, are looped at 11, and then pass through suitable guide means to insure that said strips are straight and parallel. The guide means includes a separator 12 which may be in the form of a thin upright flat plate between the strips, and series of vertical rollers 13 along the strip edges, said plate and rollers defining parallel passes for the strips 2a for guiding the same in paths normal to a common flying shear 14. An idler roll 15 may be employed to exert a hold-down pressure upon the strips 2a immediately in advance of the entry thereof to the said guide means, and a roller leveler 16 or the like may be employed between the guide means and the shear 14 to feed strips into the shear at desired speed and to maintain the desired flatness of the strips.

Pinch rolls 17 feed the strips 2a into the shear 14 simultaneously and the latter is properly actuated to simultaneously cut the strips into sheets 18 and 19 of the desired lengths, follow-

ing which the said sheets are discharged upon a belt conveyor 20 and are thereby delivered to a pair of driven pinch rolls 21.

The pinch rolls 21 are driven at increased speed to discharge the sheets 18 and 19 into a piler 22, said piler being of well known construction, having an end stop 23 and separate conveyor tables 24 each receiving a pile of said sheets as indicated. A stationary vertical separator 25 is provided which preferably tapers rearwardly to permit the piles to be readily freed from and conveyed out of said piler.

Various changes and modifications are contemplated within the scope of the following claim.

I claim:

In processing means for strip steel and the like means for uncoiling the strip, a trimming and slitting shear for edging and slitting the strip into a plurality of strips, a separator between the plurality of strips and edge guides therefor, said separator and edge guides coacting to guide the plurality of strips in parallelism, a shear for simultaneously shearing said strips to length into sheets, piling means for separately piling the sheets from each of said strips, and means for continuously driving the strip steel through all of said devices in the order stated.

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