

Sept. 2, 1958

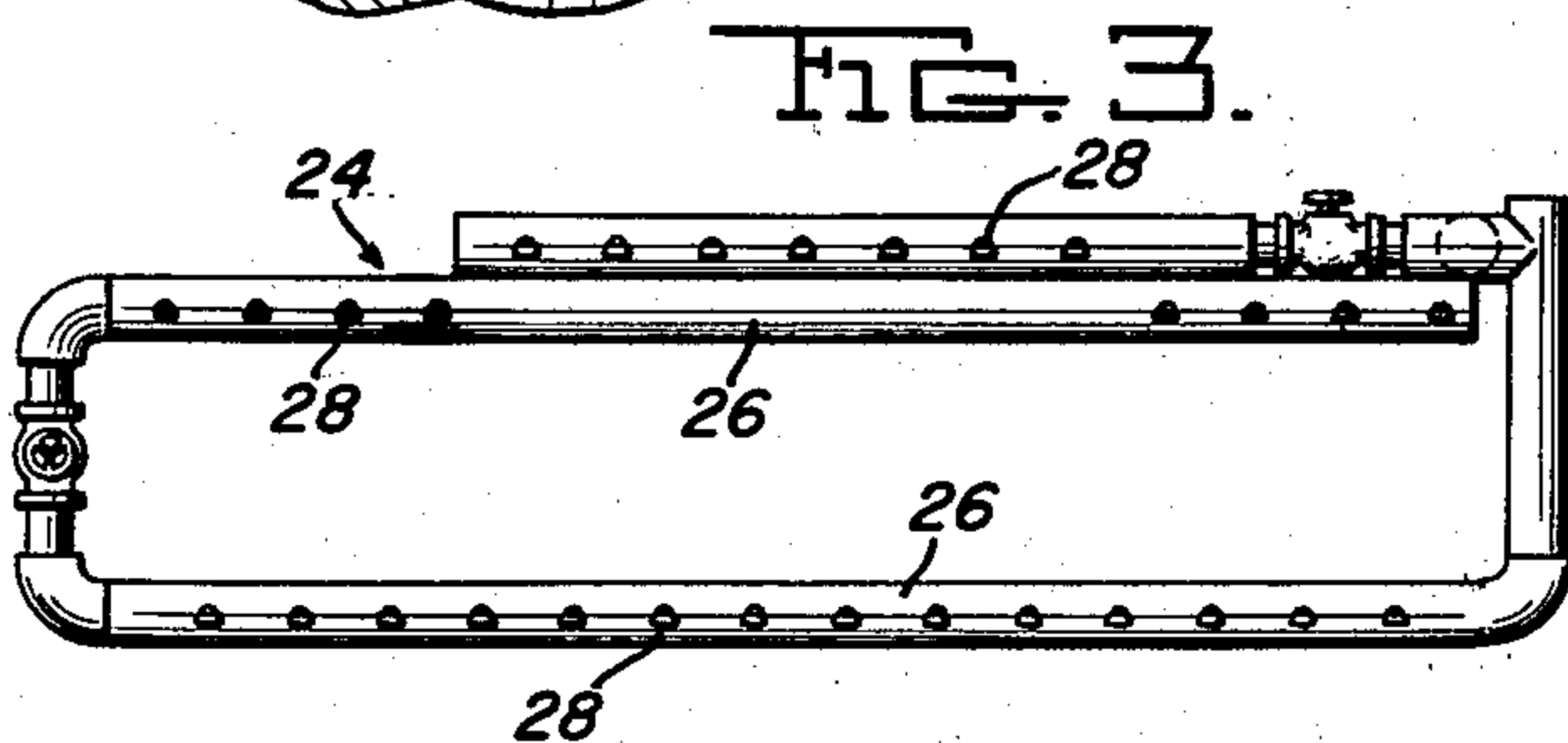
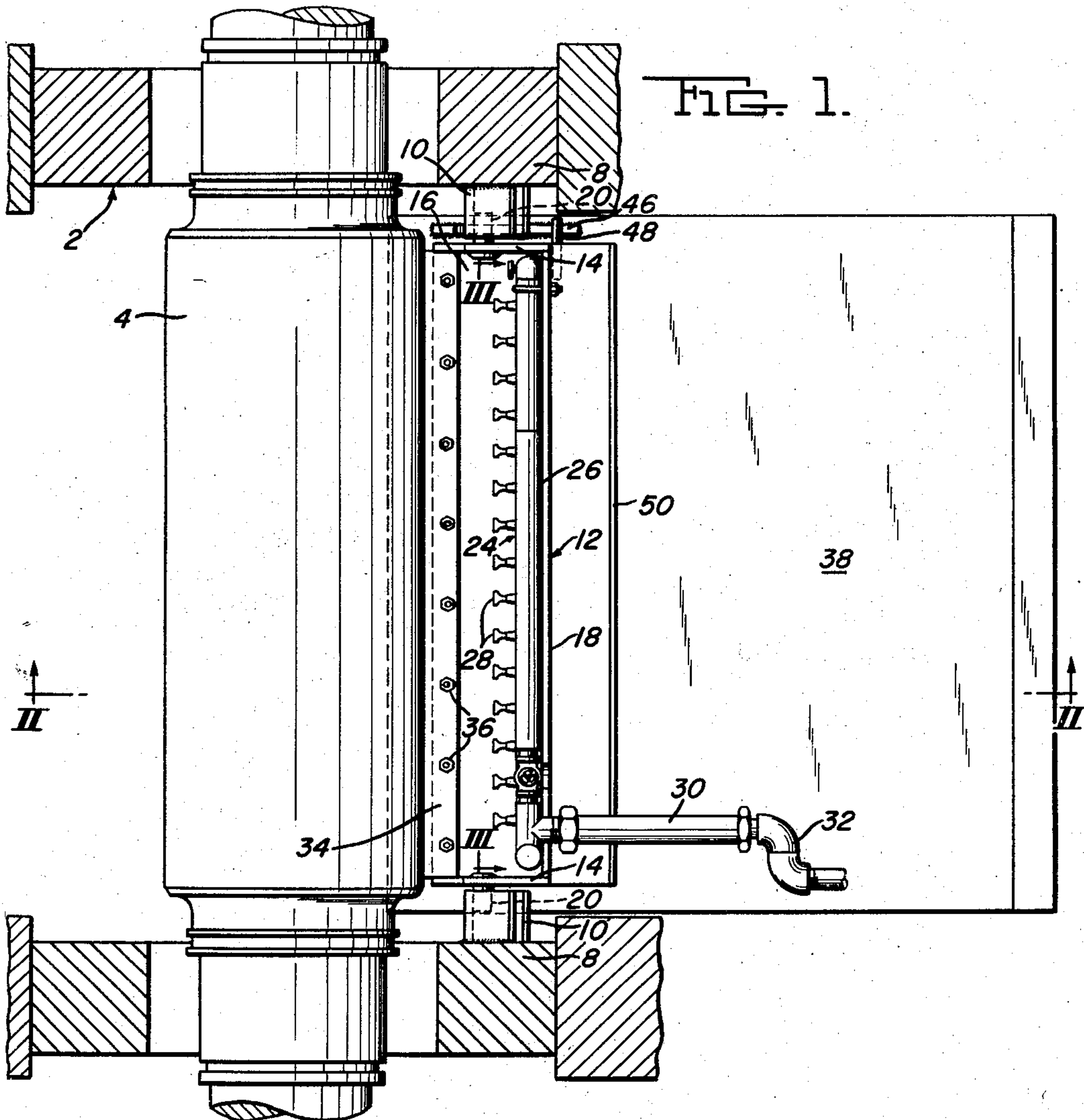
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2,849,905

COOLING WATER SPRAY HEAD AND COLLECTOR TROUGH FOR MILL ROLLS

Filed Jan. 21, 1955

2 Sheets-Sheet 1



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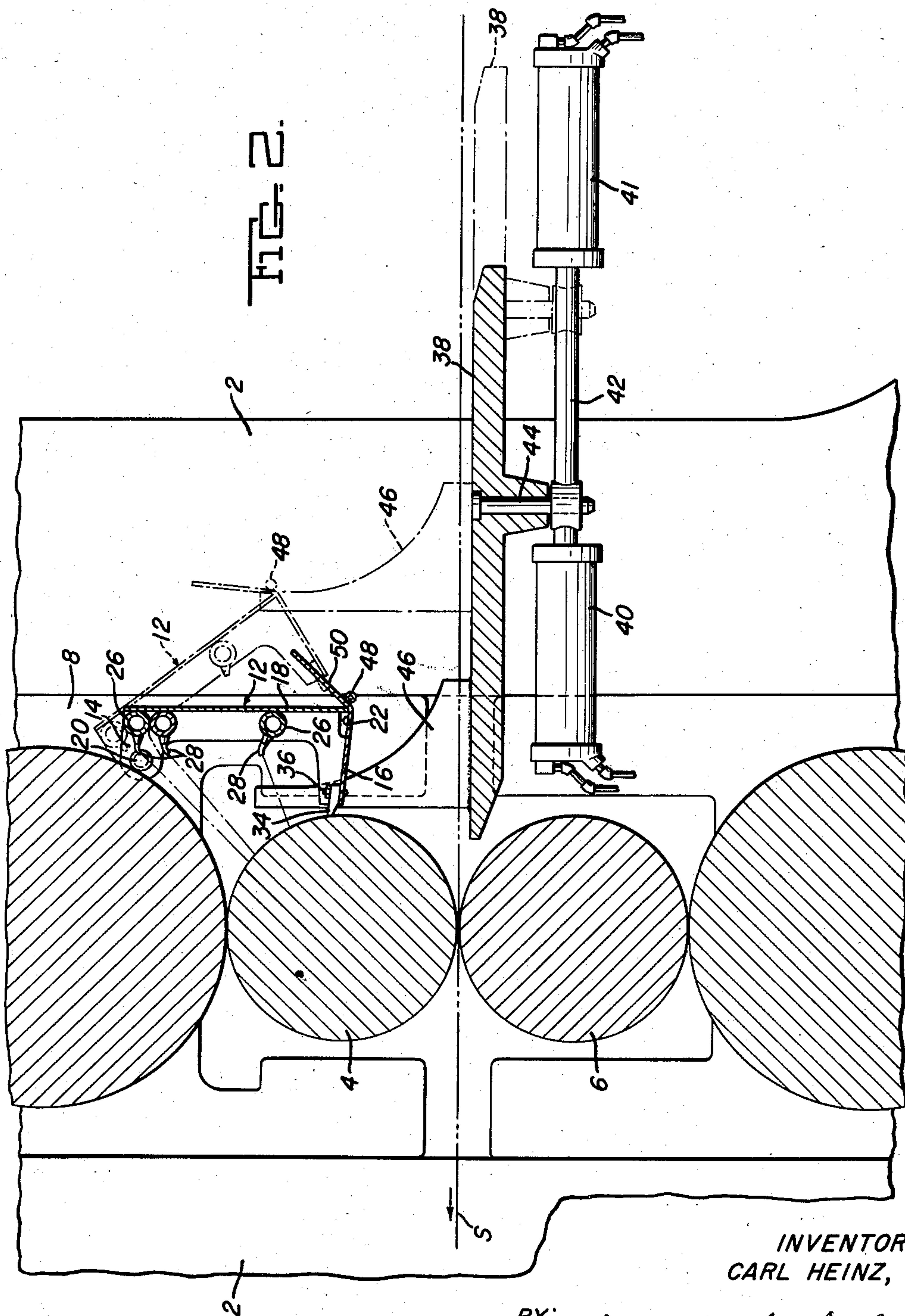
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## COOLING WATER SPRAY HEAD AND COLLECTOR TROUGH FOR MILL ROLLS

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1 Claim. (Cl. 80—41)

The present invention relates to metal rolling mills and more particularly to apparatus for fluid-cooling the work rolls of metal rolling mills.

Prior to the present invention it was usual practice to cool a work roll of a metal rolling mill by means of a series of nozzles mounted on the mill parallel to the work roll and directed against the peripheral surface thereof. In order to prevent the coolant, which was usually water, from cascading from the upper work roll onto the metal being rolled, it was a common expedient to provide a wiper strip installed on the mill in a manner to bear on the roll surface between the nozzles and the strip of metal being rolled. The water collected on the wiper and drained over the ends thereof into an open trough below the mill table. This arrangement of wiper and spray nozzles was inefficient and presented considerable difficulties when it became necessary to move the wiper and nozzles in order to provide sufficient clearance for a roll change.

It is, accordingly, the primary object of this invention to provide a combination spray and wiper assembly for a metal rolling mill which is efficient in operation and which may be quickly and easily repositioned to provide clearance for roll changes.

This and other objects will become more apparent after referring to the following specification and attached drawings in which:

Figure 1 is a plan view, partly in section of the cooling apparatus in position on a mill;

Figure 2 is a sectional view taken on the line II—II of Figure 1; and

Figure 3 is a view taken on the line III—III of Figure 1.

Referring more particularly to the drawings reference numeral 2 designates generally a conventional metal rolling mill provided with an upper work roll 4 and lower work roll 6 mounted in the housing 8 in vertical alignment and defining a roll pass therebetween for rolling a metal strip S. A pair of U-shaped brackets 10, which are mounted on the housing 8 one adjacent each end of the roll 4 some distance thereabove, supports a substantially L-shaped channel member 12. The frame member 12 has a pair of spaced vertical webs 14 one at each end which are attached to generally horizontal leg 16 and generally vertical leg 18. Each web 14 has a supporting lug 20 at its upper end extending laterally from each end of the frame 12. The lugs 20 fit into and are pivotally supported by the U-shaped brackets 10 so that the frame 12 is normally positioned with its open end facing the upper work roll 4. The leg 16 extends from the leg 18 at an angle slightly less than 90°, so as to form a trough 22, the purpose of which will become more manifest as this description proceeds.

A spray assembly, designated generally by the reference numeral 24, having header pipes 26 and nozzles 28, is mounted on the leg 18 with the nozzles 28 directed toward the upper work roll 4. Water is supplied to the header 26 by means of a flexible rubber hose 30 connected to a swivel type pipe joint 32 which in turn is connected to a water supply line (not shown). The supply connection to the spray assembly 24 is made flexible for the purpose of eliminating any interference with the pivotal movement of the frame 12.

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A wiper bar 34 preferably made of wood is securely mounted on the leg 16 of the frame 12 by means of bolts 36, and bears against the periphery of the work roll 4 parallel to the longitudinal axis thereof in normal operating position. The wiper 34 has the dual function of diverting the flow of water from the roll surface and removing any scale particles which may adhere to the roll surface. The cooling water diverted by the wiper bar 34 is collected in the trough 22 and discharged from both ends of the frame to a pit (not shown) located below the mill without coming in contact with the strip S being rolled.

A reciprocating apron plate 38 is mounted on the mill 2 subjacent the pass line thereof for movement toward and away from the mill. The apron plate 38 is reciprocated as desired by means of a pair of pressure cylinders 40 and 41 provided with a common piston rod 42 which is connected with the apron plate by means of a pin 44.

A finger 46 is mounted on and projects upwardly from the apron plate 38 at the end toward the mill. A stop pin 48 projects laterally from the bottom of the frame 12 into the path of the guide finger 46 so that it is engageable thereby when the apron 38 moves away from the mill.

An extension 50 extends upwardly at an angle from the lower rear portion of the web 18 to provide an abutment effective to force down center buckles which may occur in the strip prior to its entrance into the mill.

In operation, when it is necessary to change rolls in the mill, the cylinder 40 is actuated so as to cause movement of the piston rod 42 and connected apron plate 38 away from the mill. As the apron plate 38 moves away from the mill the upwardly projecting guide finger 46 engages the pin 48 and swings the frame 12 upwardly away from the mill about its pivots 20 to the broken line position shown in Figure 2. The frame 12 is maintained in this position until the roll change is completed. After the roll change has been made the cylinder 41 is actuated to move the apron plate 38 back to its solid line position with the frame 12 swinging back toward the mill by its own weight as the guide finger advances toward the mill.

While one embodiment of my invention has been shown and described, it will be apparent that the other adaptations and modifications may be made without departing from the scope of the following claim.

I claim:

In a metal rolling mill having upper and lower work rolls the improvement therewith of a frame pivotally mounted on said mill at its upper end, a fluid spray assembly carried by said frame having spaced nozzles along the length of said frame directed toward said upper work roll, a wiper bar carried by said frame and extending therealong, said wiper bar being adapted to contact the peripheral surface of said upper work roll when said frame is not pivoted away therefrom, a horizontal apron plate mounted below said frame for movement toward and away from said mill, an upwardly projecting guide finger on the side of said apron plate adjacent the end thereof toward said work rolls, a pin projecting laterally from said frame adapted to be engaged by said guide finger to pivot said frame away from the upper work roll when said apron plate is moved away from said mill, and means for moving said apron plate toward and away from said mill.

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