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CANNON CLAMP

FIG. 2.

FIG. 3.

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CANNON CLAMP

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4 Claims. (Cl. 80—51)

This invention relates to improvements in clamps for pierced or reeler cannons of the character employed in seamless tube mills and the like.

Such cannons are located at the inlet end of the mill or the like and receive and guide the billet or shell to the piercing operation. It is necessary to change the cannon for each change of size of the billet or shell, and to positively secure the cannon in place during operation of the mill.

My invention has in view to provide a fluid-actuated cannon clamp which will facilitate removal and change of cannon and which will positively and rigidly secure the same in position in the mill.

It is also an object hereof to provide a cannon clamp which is readily applicable to existing mills.

A further object is to provide a simple clamp having low maintenance cost.

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

Fig. 1 is a top plan view of the invention applied to a tube mill;

Fig. 2 is an elevational view thereof; and

Fig. 3 is an enlarged sectional view taken on the line III—III of Fig. 2.

Referring to the drawing, A designates a portion of a tube mill housing showing the inlet end thereof where the billet or shell to be pierced is introduced to said mill. As is customary, a cannon 2 is located at said inlet end of the mill for receiving and guiding the billet or shell into the mill and to the piercing mechanism therein. The housing A and the said piercing mechanism is conventional and therefore not illustrated in detail.

The cannon 2 rests upon or is seated in the housing A as shown at 3, being immediately beneath a vertically spaced abutment 4 on the housing.

For the purpose of providing a removable clamping device for exerting a holding pressure upon the cannon 2, I provide a fluid-actuated clamp movably mounted to selectively engage the abutment 4 and the cannon for positively and rigidly securing the latter upon its seat 3.

Said clamp includes a vertical cylinder 5 integrally closed at its upper end 6 and having a detachable head 7 at its lower end through which a vertically reciprocable plunger 8 extends. The plunger is provided with a pressure head 9 with-

in the cylinder including suitable packing rings 10, and a packing gland 11 seals the movement of the plunger through the head 7.

Fluid inlet and discharge connections 12 are provided at spaced intervals for selectively operating the plunger in opposite directions as by hydraulic or pneumatic fluid from a suitable source of supply and an adjustable valve, not shown. The valve may be operated to admit and exhaust fluid for alternately raising and lowering the plunger 8, as will be readily understood.

Extending laterally at one side of the cylinder, I provide an integral radial arm 13 having vertical pivot means 14 at its free terminal for pivotally mounting and supporting the cylinder 5, whereby the clamp may be horizontally swung in relation to the abutment 4 and the cannon 2.

Said pivotal connection 14 may be provided in any suitable manner, as for example, by means of a bracket 15 secured to the mill housing A at a suitable distance from the abutment 4.

Upon properly locating the clamp as stated, the same may be readily swung into the engaging position shown in the drawing, whereupon fluid pressure may be admitted to the cylinder 5 to lower the plunger 8 against the cannon 2, the upper end 6 of the cylinder engaging the abutment 4, whereby the reactive pressure of the clamp between said abutment and the cannon positively and rigidly anchors or secures said cannon in place.

When it is desired to change the cannon 2, as for a change of size of the billet or shell, the fluid pressure is applied to the clamp cylinder 5 to elevate the plunger 8, whereupon the said clamp may be swung horizontally away from the cannon so as to permit ready removal and replacement thereof. A radially projecting grip or handle 16 may be provided on the cylinder 5, which handle may be grasped by the operator for positioning the clamp.

The cannons 2 are provided with saddles or fillers 17, providing a horizontal seating face for engagement by the lower end of the clamp plunger 8. The said saddles or fillers 17 are varied in accordance with the size of the cannon so as to maintain a substantially constant distance between the engaged surfaces of said saddles and the clamp.

It will therefore be seen that I have provided a fluid actuated cannon clamp which may be readily and easily positioned for clamping a cannon in the mill housing or structure, and that the improved clamp may be readily swung out

of clamping position to permit changing the cannon.

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

I claim:

1. A clamp for holding the cannon of a tube mill or the like, including a cylinder, a fluid-operated plunger vertically reciprocable therein and extending beyond one end of the cylinder, and means for pivotally mounting the cylinder upon the mill for horizontal swinging movement between the cannon and a vertically spaced abutment of the mill thereabove, whereby the cylinder and plunger may be selectively positioned to exert a clamping pressure upon said cannon.

2. A clamp for holding the cannon of a tube mill or the like, including a cylinder, a fluid-operated plunger vertically reciprocable therein and extending beyond the lower end of the cylinder, and means pivotally mounting the cylinder upon the mill for horizontal swinging movement between the cannon and a vertically spaced abutment of the mill thereabove, the upper end of the cylinder being adapted to engage the abutment when said cylinder is positioned over the cannon, whereby the plunger may selectively

exert a downward clamping pressure upon the cannon.

3. A clamp for holding the cannon of a tube mill or the like, including a cylinder, a fluid-operated plunger vertically reciprocable therein and extending beyond the lower end of the cylinder, an arm laterally extending from the cylinder, and means for pivotally securing said arm to the mill for horizontal swinging movement between the cannon and a vertically spaced abutment of the mill thereabove, the upper end of the cylinder being adapted to engage the abutment when said cylinder is positioned over the cannon, whereby the plunger may selectively exert a downward clamping pressure upon the cannon.

4. A cannon clamp of the character described including a vertical cylinder, a plunger vertically reciprocable therein and extending beyond the lower end thereof, a supporting arm extending laterally at one side of the cylinder and having means for pivotally supporting the arm and cylinder for horizontal swinging movement thereof, said cylinder having fluid passages for the admission and discharge of pressure fluid for reciprocating the plunger.

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