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DEVICE FOR CONTROLLING THE VERTICAL SLIDE ON DOUBLE ACTING BOLT PRESSES

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Fig. 1.

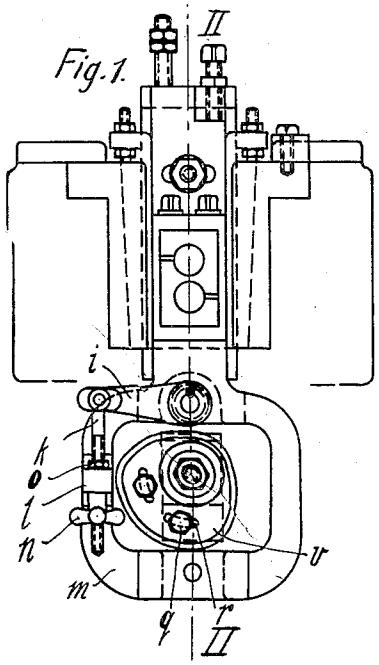
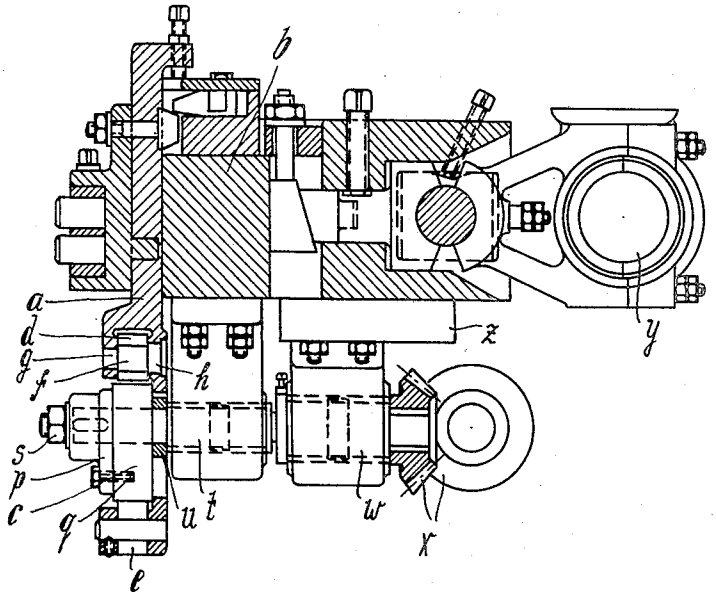


Fig. 2



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UNITED STATES PATENT OFFICE

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DEVICE FOR CONTROLLING THE VERTICAL SLIDE ON DOUBLE ACTING BOLT PRESSES

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This invention relates chiefly to the vertical slide of double acting bolt presses and consists in substituting for the known lever controlling mechanism a mechanism merely requiring shafts for operating this slide.

Thus, the movement of the slide is not only more accurate, but the wear is also considerably reduced; further, considerably less time is required for erecting the mechanism. The machine moreover attains much higher speed, and finally the working of the parts is much easier and simpler and the adjustment of the slide greatly facilitated.

For controlling the slide a cam disc driven by the crank shaft is employed according to the invention and surrounded by the slide having rollers, bearing at the top and at the bottom against the disc. In order to allow of readjustment in the case of the eccentric disc, the upper roller runs on the eccentric middle portion of a bolt mounted concentrically at each end, said bolt being adjustable by means of an arm fixed to one end of the bolt. In order to enable the eccentricity of the disc to be adjusted, this disc is according to the invention fixed on a face plate mounted on the end of the shaft. This face plate is provided with elongated holes, for accommodating the fixing bolts. The shaft on which the cam is mounted is preferably journaled on the press carriage and guided adjustable by means of a groove and key in a hollow shaft journaled in the machine frame and driven by the crank shaft through the intermediary of bevel wheels.

An embodiment of the invention is illustrated by way of example in the accompanying drawing in which:

Fig. 1 shows the device in front elevation.

Fig. 2 is a section on line 2—2 of Fig. 1.

The vertical slide *a* is guided in the press carriage *b*. Its lower portion surrounds a cam *c* and runs on this cam by means of an upper roller *d* and a lower roller *e*. The upper roller *d* is mounted on the eccentric middle portion *f* of a bolt, the ends *g* and *h* of which are concentrically fixed in the carriage. An arm *i* is mounted on the end *g*, and on the outer end of this arm a bolt *k*, provided with screw threads, is arranged which is vertically adjustable in a lug *l* of the frame *m* with the aid of a wing nut *n* and can be fixed by a counter nut *o*. According to the adjustment of the bolt the roller *d* will be raised or lowered, owing to the eccentricity of the middle part *f* of the bolt, so that the roller can be re-adjusted according to the wear of the cam disc *c*.

The cam disc *c* is fixed on the shaft with the aid of a face plate *p* through the intermediary of bolts *q* which extend through elongated holes *r* provided in the face plate *p*. The face plate *p* is fixed on the end of the shaft *t* with the aid of a nut *s*. On the other side of the cam the shaft *c* carries a block *u* which is guided in a slot *v* provided in the slide *a*. The shaft *t* extends into a hollow shaft *w* and is guided therein in a known manner by a key and groove. The hollow shaft is driven by the crank shaft *y* through the intermediary of bevel wheels *x* having a suitable ratio of transmission. The shaft *t* is journaled in the press carriage, whereas the bearing for the shaft *w* is situated on the machine frame *z*.

I claim:—

1. A device for controlling the vertical slide of double acting bolt presses, comprising in combination a crank shaft, a slide, a cam disc driven by said crank shaft, rollers on said slide engaging said cam disc one on the upper side and the other on the lower side, a bolt having an eccentric middle portion carrying said upper roller and concentrical end portions pivotally mounted in said slide, and an arm fixed on one end of said bolt adapted to adjust said bolt and consequently the portion of said upper roller.

2. A device as specified in claim 1, comprising in combination with the cam disc, a shaft, a face plate on said shaft having elongated holes, and fixing bolts extending one through each of said holes adapted to clamp said cam disc on said face plate.

3. A device as specified in claim 1, comprising in combination with the machine frame the crank shaft, the press carriage and the cam disc, a shaft carried by said carriage, a face plate on said shaft carrying said cam disc, a splined hollow shaft journaled in said machine frame adapted to slidably receive and guide said shaft which is carried by said carriage, and a bevel wheel gearing adapted to drive said hollow shaft from said crank shaft.

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