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HOT-NUT PRESS.

Application filed June 6, 1924. Serial No. 718,350.

To all whom it may concern:

Be it known that I, ALFRED DE FRIES, a citizen of the German Republic, residing at Cassel, Germany, have invented certain new and useful Improvements in Hot-Nut Presses, of which the following is a specification.

In hot nut presses, the tool slides of which have an irregular forward and backward stroke, the movement of the slides cannot be controlled by a simple crank drive and a cam drive has to be used. In presses the slide of which has to be rapidly advanced from the position of rest the cam strikes strongly on the rear part of the slides.

This blow-like pressure of the cam does however not act in the direction of the horizontal axis of the slide but at an angle to this axis from above. This shock is transferred by the slide to the lower surface of the rear part of the slide and on the guides from which results a comparatively strong wearing of these parts after a short time of service of the press. As the front part of this slide is not exposed to this rapid wear the slide and its tool will evidently adopt, after a comparatively short time, an oblique position with regard to the corresponding counter-tool arranged opposite so that an accurate engagement of these tools and consequently a uniform working is no longer possible. The parts submitted to wear must therefore be frequently repaired. This wear is especially perceptible when two slides are arranged one in the other as is the case for all nut presses provided with stock-saving devices.

The inconvenience of the rapid wear of the slides and of the guides for the same is avoided according to the invention by the insertion, between the pressure cam and the slide, of a mechanism which transforms the cam pressure action on the slides in an inclined direction from above into a pressure which acts in a line substantially parallel to the slide.

An embodiment of the invention in its application to a hot nut press is shown by way of example on the accompanying drawing, in which—

Fig. 1 shows in longitudinal section the punch slide and the hole punch slide.
Fig. 2 is a plan view of Fig. 1.
Fig. 3 is a section on line A—B of Fig. 1.
Fig. 4 is a section on line C—D of Fig. 1.

On the main slide 1 containing the die plate 2 and the die 3 two slides are arranged viz. the punch slide 4 containing the punch 5 and the slide 6 containing the piercing element 7. The main slide 1 slides on the guiding plate 8 and the slides 4 and 6 on the guiding plate 9 this latter being embodied in the main slide.

The machine or the slide is driven from pulley 10 by the pressure cams 12, 13, 14, keyed on shaft 11 journaled in the frame in line with the slides, the two cams 12, 14 serving to operate the main slide and the cam 13 serving to operate the piercing element slide. On the shaft 16 arranged in the machine frame 15 above the rear ends of the slides three levers 17, 18, 19 are suspended. The heads of the levers stand between the slides and the pressure cams and the latter are provided on the surface turned towards the slides with hardened pressing pieces 20 rollers 21 being arranged on the opposite side facing the pressure cams. These rollers are in contact with the pressure cams. In the machine frame a stop 23 is arranged, which passes through the slide 1.

Below the slides the double-armed lever 22 is arranged, this lever being so arranged as to oscillate on the bolt 24 embedded in the machine frame 15.

The operation of the mechanism described above is as follows: At the rotation of shaft 11, the pressure cams 12, 13, 14 rotate in the direction of the arrow until they come in contact with the rollers 21 of the levers 17, 18, 19, and thereby cause the rollers and also the slides to advance. Through their shaft 16, the levers 17, 18, 19 completely intercept the pressure of the cams acting in downwardly inclined direction so that merely the pressure of the lever heads acting in substantially axial direction is transferred to the slides. In other words each element mounted on the bearing 16 has a portion extending between the slides and said cams and is operable under the influence of the cams so as to obtain a direct action from the cams through the interposed or intermediate members or elements to the slides in a line substantially parallel to the slides. The result is that these elements 17, 18 and 19 being arranged between the cams and the rear ends of the tool slide eliminate all lateral friction otherwise caused by the downwardly inclined pressure of the cams with regard to the slides. The elimination
of lateral friction and consequently of side wear on the slides is of special importance in nut presses on account of the piercer carrying slide being located in the punch carrying slide. Any wear on either of these slides will affect the position of the tools carried by the slides and throw them out of center, and as the wear on slides in nut presses, due to scale and water is well known, this elimination of friction results in a very important improvement in the quality of the product.

The return of the slides is operated by means of the double-armed lever 22 in such a manner that the cam 13, after having advanced the lever 18 and thereby the slide 6, presses upon one arm of the lever 22 and pushes it downward, whereby the other arm of this lever, which acts on the slides, pulls the slides 1, 6 back. The punch slide is carried backward by slide 1 until the former hits against the stop 23, the punch slide being thereby brought into the proper working position with regard to the other slides.

The rollers 21 shown in the drawings and described above might be omitted although they ensure an especially smooth working of the press.

It would further be possible to provide the mechanism described only for one of the two slides for ensuring the same against rapid wear.

I claim:

A hot nut press including a frame, tool slides mounted on the frame, a punch carried by one of said slides, a piercing element carried by another of said slides, a shaft journalled in the frame in line with the slides, cams on the shaft, a bearing mounted on said frame, intermediate elements movably mounted on said bearing, each having a portion extending between the slides and said cams and operable under influence of the cams to obtain a direct action from the cams through the intermediate elements to the slides in a line substantially parallel to the slides.

In testimony whereof I affix my signature.

ALFRED DE FRIES.