L. STREIBEL.

PUNCHING MACHINE.

APPLICATION FILED JAN. 18, 1922.

1,417,867.

Patented May 30, 1922.

Fig.1

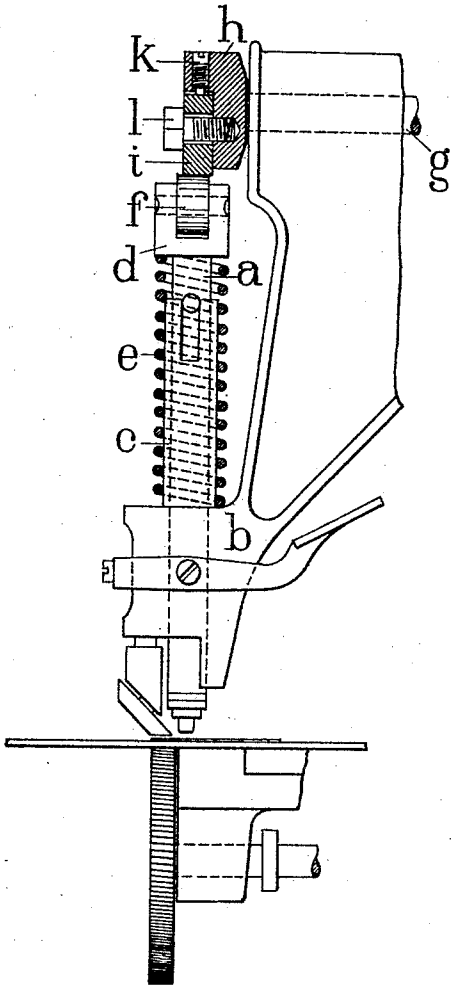
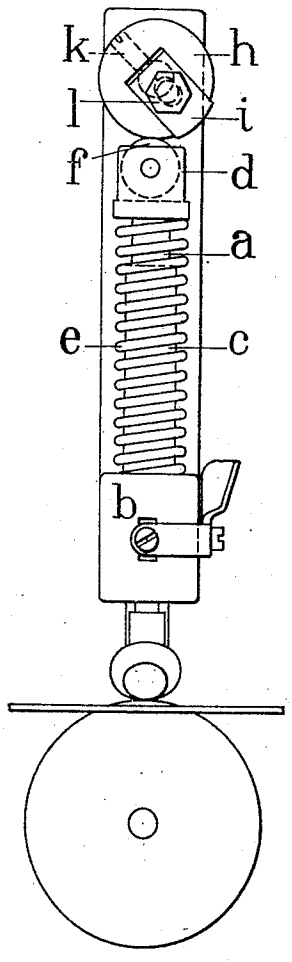


Fig.2



INVENTOR:

Ludwig Streibel

UNITED STATES PATENT OFFICE.

LÜDWIG STREIBEL, OF KARLSRUHE, GERMANY, ASSIGNOR OF TWO-THIRDS TO ADAM EHRESMANN AND OSCAR MAIER, BOTH OF KARLSRUHE, GERMANY.

PUNCHING MACHINE.

1,417,867. Specification of Letters Patent. **Patented May 30, 1922.**

Application filed January 18, 1922. Serial No. 530,154.

To all whom it may concern:

Be it known that I, LÜDWIG STREIBEL, a German citizen, residing at Karlsruhe, Germany, have invented certain new and useful Improvements in Punching Machines (for which I have filed an application in Germany, January 8, 1921), of which the following is a specification.

This invention relates to machines for punching holes in leather, paper, and the like, particularly for making the usual ornamental perforations in the edge of the uppers of boots and shoes. The invention relates especially to the device driving the punch- or die-holder. This device consists as usual of a cam-disk mounted on the driving shaft, toward which cam-disk the punch-holder is pressed by means of a helical spring mounted on the holder, and which cam-disk on rotation of the shaft presses down the holder against the action of said spring.

According to the invention that part of the cam-disk which causes this downward movement of the punch-holder, i. e. the proper cam, is radially adjustable in the circular disk by means of an adjusting screw, so that the stroke of the punch may be easily and readily regulated with the greatest fineness and exactness.

A construction embodying the invention is illustrated by way of example in the accompanying drawing in which Fig. 1 is a side view of the front part of a machine for making ornamental perforations in the edge of the uppers of boots and shoes, and Fig. 2 is a front view thereof.

The punch-holder *a* is vertically movable in the part *b* of the machine-frame and in the sleeve *c* supported by this part and has a forked head *d*. Between this head and the part *b* and on the sleeve *c* is mounted a helical spring *e* which has the tendency to press the punch-holder *a* upwards, so that with a roller *f* mounted in the head *d* the holder bears against the periphery of the cam-disk mounted on the front end of the driving shaft *g*. This cam-disk consists of a circular part, i. e. the proper disk *h*, and of an approximately rectangular part, i. e. the proper cam *i*, the latter being radially adjustable in a suitable groove provided in the front face of the disk *h*, so that the curved outer end of the cam projects more or less over the periphery of the disk. On rotation of the shaft *g* with the disk *h* and the cam *i* the latter strikes the roller *f* and presses down the punch-holder *a* against the action of the spring *e*.

For adjusting the cam *i* a headless forcing screw *k* is provided which fits into a screw-threaded bore in the back of the disk *h* opposite the cam and presses upon the inner end of the latter; and for fixing the cam *i* in its position a set screw *l* is provided which passing freely through a slot in the cam *i* and fitting into a screw-threaded bore in the disk *h* presses upon the front face of the cam. The screw *l* having been loosened, the screw *k* may be turned inwards thereby pushing the cam *i* outwards and thus increasing the projection of the outer end of this cam over the periphery of the disk *h* as well as the stroke imparted by the cam *i* to the punch-holder *a*. Or, the screw *k* having been turned outwards, the cam *i* may be pushed inwards by hand thus decreasing said projection as well as said stroke. In this manner the stroke of the punch-holder *a* may be easily and readily adjusted with the greatest fineness and exactness.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a punching machine in combination, a machine frame, a punch-holder vertically movable in said machine frame, a driving shaft rotatably mounted in said machine frame, a circular disk mounted on said shaft, a spring pressing said punch-holder upwards against the periphery of said disk, a cam being radially adjustable in said disk so as to project more or less over the periphery thereof, which cam on the rotation of said shaft presses down said punch-holder against the action of said spring, and means for adjusting said cam and for fixing the same in its position.

2. In a punching machine in combination, a machine frame, a punch-holder vertically movable in said machine frame, a driving shaft rotatably mounted in said machine frame, a circular disk mounted on said shaft, a spring pressing said punch-holder upwards

against the periphery of said disk, a cam being radially adjustable in said disk so as to project more or less over the periphery thereof, which cam on the rotation of said shaft presses down said punch-holder against the action of said spring, a forcing screw sitting in said disk and pressing upon the inner end of said cam, and a set screw fitting through a slot in said cam into said disk and pressing upon the front face of said cam.

In testimony whereof I affix my signature.

LÜDWIG STREIBEL.