

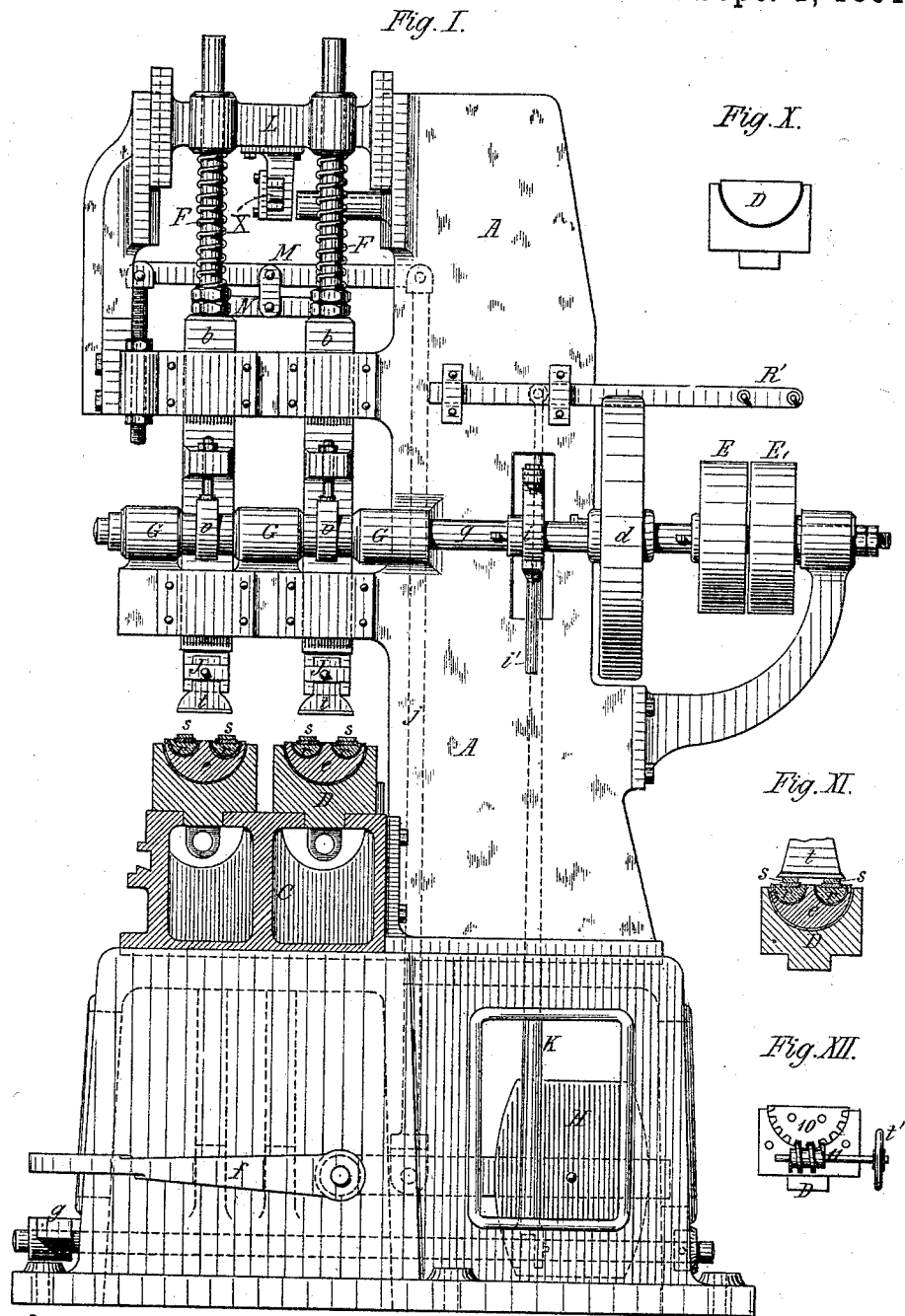
(No Model.)

3 Sheets—Sheet 1.

J. & T. FISCHER.
FILE CUTTING MACHINE.

No. 458,732.

Patented Sept. 1, 1891.



Witnesses:-

E. L. Richards
C. B. Hampson

Inventors-

Joseph Fischer, Theodor Fischer.

by *Richardson*
Attorneys.

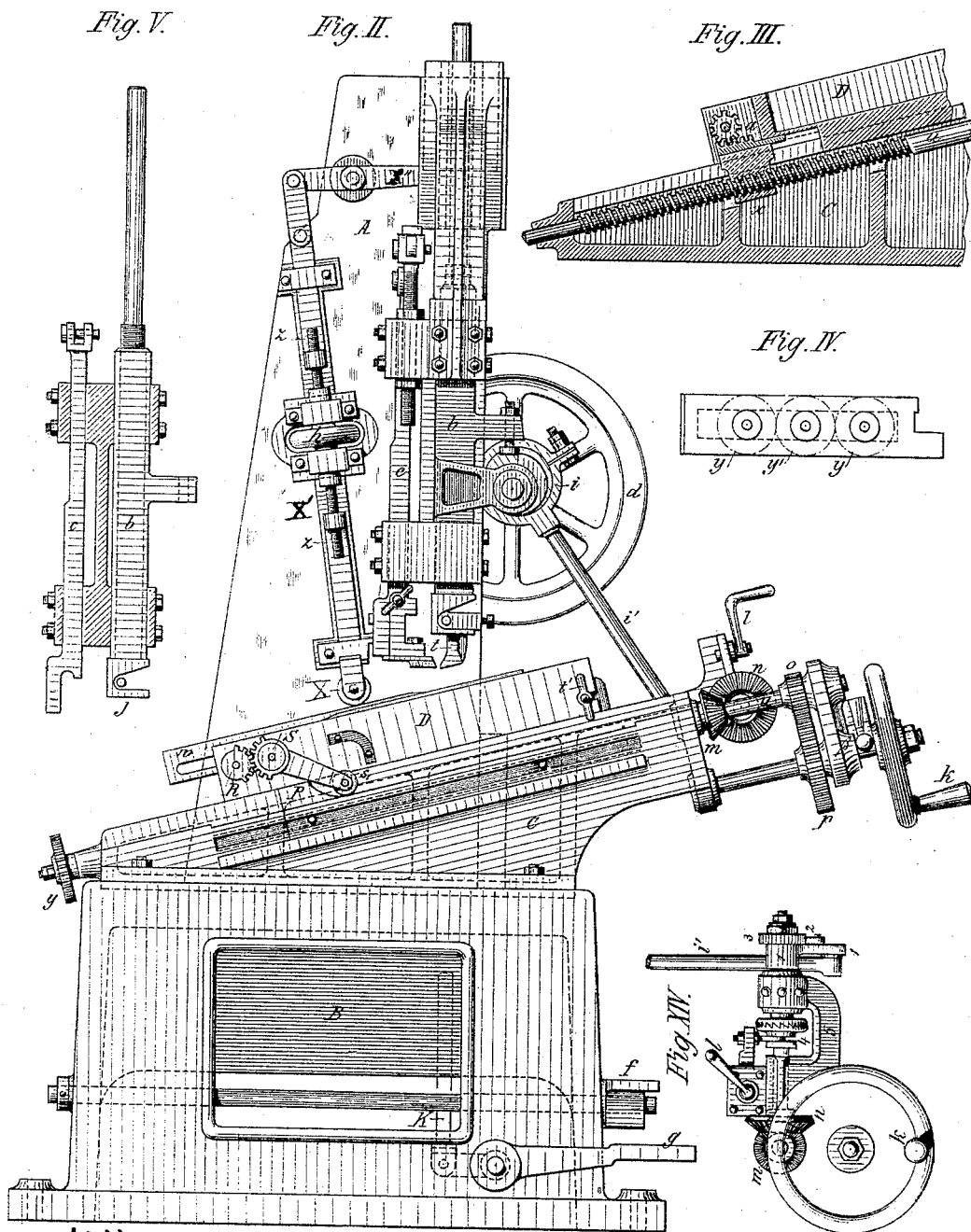
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3 Sheets—Sheet 2.

J. & T. FISCHER.
FILE CUTTING MACHINE.

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Witnesses:-

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(No Model.)

3 Sheets—Sheet 3.

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Fig. XIII.

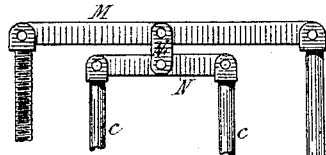


Fig. VIII.



Fig. XI^b

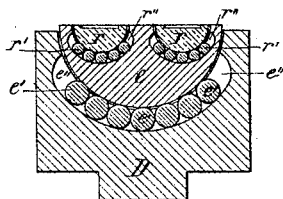


Fig. IX.

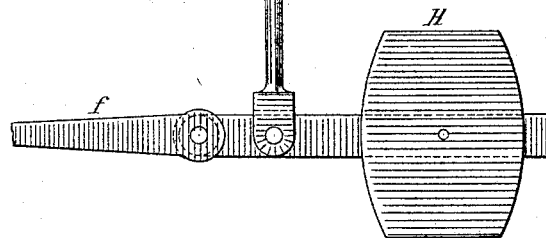


Fig. XI^a

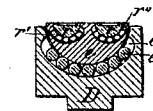


Fig. VI.

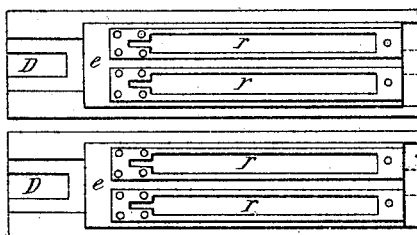
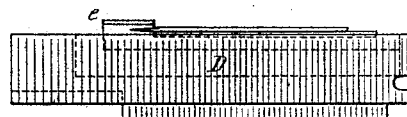


Fig. VII.



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UNITED STATES PATENT OFFICE.

JOSEPH FISCHER AND THEODOR FISCHER, OF VIENNA, AUSTRIA-HUNGARY.

FILE-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 458,732, dated September 1, 1891.

Application filed July 19, 1890. Serial No. 359,475. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH FISCHER and THEODOR FISCHER, residing at Vienna, Austria-Hungary, have invented certain new and useful Improvements on File-Cutting Machines to Cut Four Files at Once, of which the following is a specification.

Our invention relates to an improved file-cutting machine for simultaneously and uniformly cutting four surfaces.

In the accompanying drawings, Figure 1 is an elevation of our improved machine, partly in section. Fig. 2 is a side view, and Figs. 3 to 14 details of the machine.

In the standards A, two hammers *b b* are so arranged in vertical bearings that the upper part of the hammer-stems protrude through guides in the cross-head of the slides; but the hammers themselves are simultaneously lifted and allowed to fall by means of the tappets *v v'* on the driving-shaft *g*. For preventing the rebound and attaining powerful strokes of the hammers helical springs *F F* are arranged around the hammer-stems. If desired, the strength of the blow of the hammers can be increased or decreased by screwing up or loosening the screw-nuts, on which rest the helical springs *F*, or by turning the tie-screw *z* by means of the hand-wheel *h*.

This device carries at its lower end a friction-roller *X*, which rests on the correspondingly-profiled guide-rails *w*, and by means of screw-carrier *X'* and the lever *X''*, pivoted to the standard A, attain a uniform tension of the springs *F F* during the cutting operation. Two rests *D D* are arranged parallel to each other on the rest-standards C, each of the said rests carrying a nut *x* and being guided by the same on the screw-spindles *u u*, Fig. 3. These nuts *x* are fixed to small racks *a*, Fig. 3, arranged to slide in longitudinal guides, in order that in beginning the cutting at the tip of the file the cutting may be closer, this being attained by the movement of the nuts *x*, being slightly braked by the toothed segments *R* and *S*, arranged on the rests *D D* until the rack comes in contact with the walls of the rest. For regularly producing this movement a recess is formed in the guide-rails *P*, and above which the roller *S'* of the lever-arm to the toothed segment *S* glides.

The operation of the screw-spindles *u u* is

effected by means of the gear mechanism, consisting of the eccentric *i* on the driving-shaft *g*, with eccentric-rod *i'*, the lever *I*, Fig. 14, and pawl 2, gearing into the teeth of the ratchet-wheel 3, which latter, by means of the bevel-wheels *n m*, which can be put in and out of gear by the claw-coupling 4, will operate the screw-spindle *u*, and will communicate to the rest a jerking forward movement. In order to transfer this jerking forward movement to the second support, we prefer to employ a set of toothed wheels *y y y'*, as represented in Fig. 4. The reverse movement of the two rests *D D* is effected by means of the cog-wheel *o*, which is operated by the hand-wheel *k* and cog-wheel *p*, which can be readily brought in and out of gear with the wheel *o* by means of the releasing device. The file-pressers *c c*, Figs. 2, 5, and 13, are at their upper ends jointed to a cross-bar *N*, and are uniformly pressed onto the files by the weight *H*, Fig. 1, on the double lever *f* by means of the connecting-rod *j*, the pressure-lever *M*, and the links *N'*. By treading on the free end of the lever *f* the weight *H*, connecting-rod *j*, links or members *N'*, and cross-bar, and with these also the two file-pressers *c c* are lifted, so that the files can be removed, and fresh blanks exchanged for the same.

The file-bed carriers *e e e* are preferably made of wrought-iron, the file-beds *r r* of steel, and the latter also provided with a zinc bearing-surface for the files. The driving-shaft *g* also carries a fly-wheel *d* and the fast and loose drums *E E'*. The driving-strap is shifted by means of the fork or shifter *R'*, which is operated by means of the treadle on the two-armed lever *g* and the connecting-rod *K*. The holders *J J* for the cutters are arranged to turn in the hammers *b b*, so that they can be adjusted by set-screws to any desired incline of the cut. The file-bed carriers *e e*, Figs. 6 to 11^b, are preferably arranged on friction-rollers in the rests *D D*, as are also two file-beds *r r*, arranged in each of the file-bed carriers *e*. In order to attain the greatest possible uniformity of the movement of these parts during the cutting operation, so that all four files lie in exactly the same plane and each cutter will at each blow cut a like distance into the surfaces of the files, cylin-

drical rollers $e' e'$ and $r' r'$ are so arranged in series between the rests D D and the file-bed carriers $e e$ and between the latter and the file-beds $r r$ in the recesses or cavities e^2 5 r^2 that they can move freely and in this manner produce an appropriate anti-friction bearing-surface for the parts D D, $e e$, and $r r$. It will be evident that the length and number of these rollers arranged side by side and also 10 their number and the distance the recesses are placed apart must correspond with the length of the file-beds and file-bed carriers.

In order that the file-bed carriers may be adjusted according to the form of the files to 15 be cut, we provide an arrangement consisting of worm-wheels 10 and 11, the former fixed to the file-bed carriers. These wheels are operated by means of the handle t^2 .

Having now particularly described and as- 20 certained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim, and desire to secure by Letters Patent, is—

1. The combination of the drop-hammers b 25 b , helical springs F F, and adjustable tool-holders with the tension device for the springs, consisting of tension-screws $z z$, hand-wheels h , and carriers X' , which glide by their rollers X on the profiled guide-rails, and with file- 30 pressers c , with cross-bar N, on which the weight H, by means of levers f , connecting-rods j , pressure-levers M, and links or members N' , exercise a uniform pressure, which

can, however, be removed by operating a treadle, substantially in the manner set forth 35 and shown.

2. In combination with the drop-hammers $b b$, helical springs F F, spring-tension device $z z$, and file-pressers $c c$, the two rests D D, operated by eccentric gearing from the main 40 shaft and carried by the beds C in the standards, with two file-bed carriers $e e$, movable in longitudinal direction on anti-friction rollers $e' e'$, and which carry two file-beds $r r$, with anti-friction rollers $r' r'$, substantially as 45 set forth and shown.

3. The combination, with the rests D D, screw-spindles u , nuts $x x$ thereon, and racks a , attached to said nuts, of toothed segments R S for moving said rests, substantially as and 50 for the purpose set forth.

4. The combination, with file-bed carriers $e e$, resting on friction-rollers, of means for adjusting the same, consisting of worm-wheel 10, fixed to the same, worm-wheel 11, gearing 55 with wheel 10, and handle t^2 , substantially as set forth.

In witness whereof we hereunto set our hands in presence of two witnesses.

JOSEPH FISCHER.
THEODOR FISCHER.

Witnesses:

VICTOR TISCHLER,
POPRUM DALLY,
Engineers.