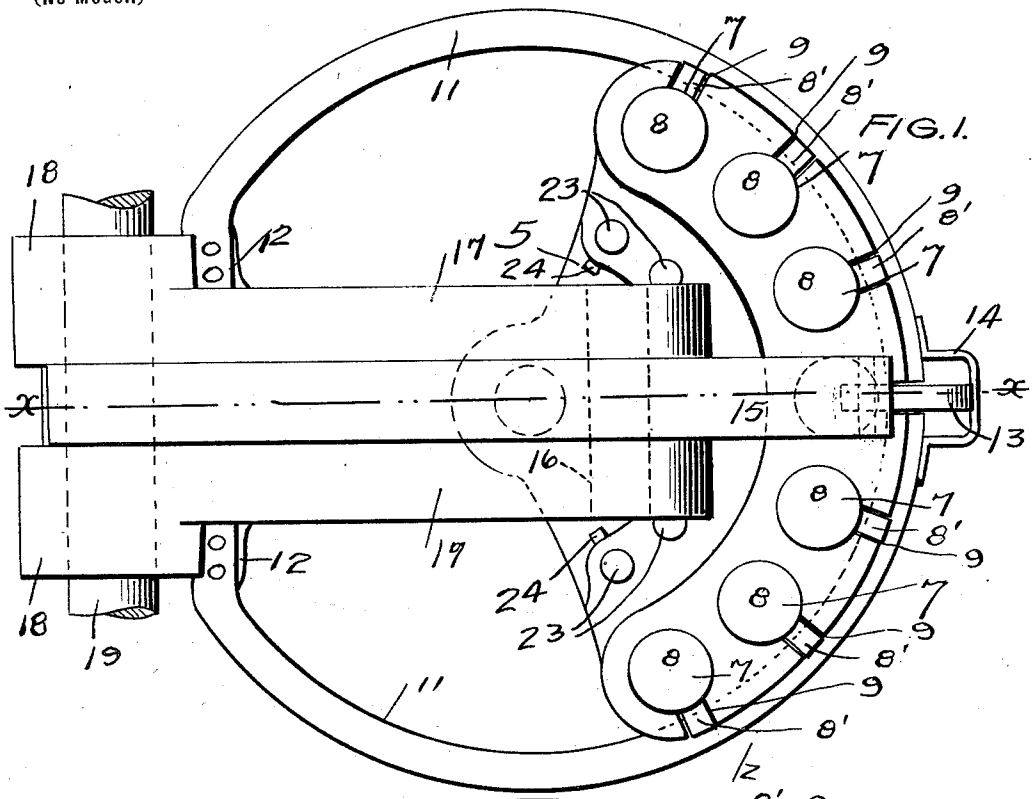
No. 699,552. Patented May 6, 1902.

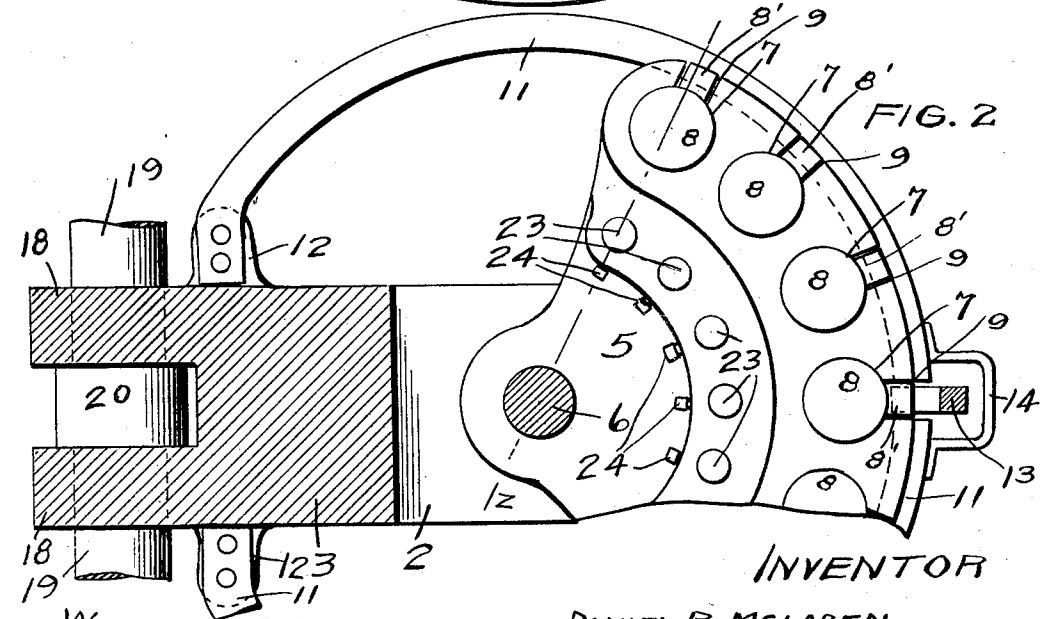
D. R. McLAREN.

PUNCHING MACHINE.

(Application filed Oct. 24, 1901.)

(No Model.) 2 Sheets—Sheet 1.





WITNESSES.
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FIG. 3

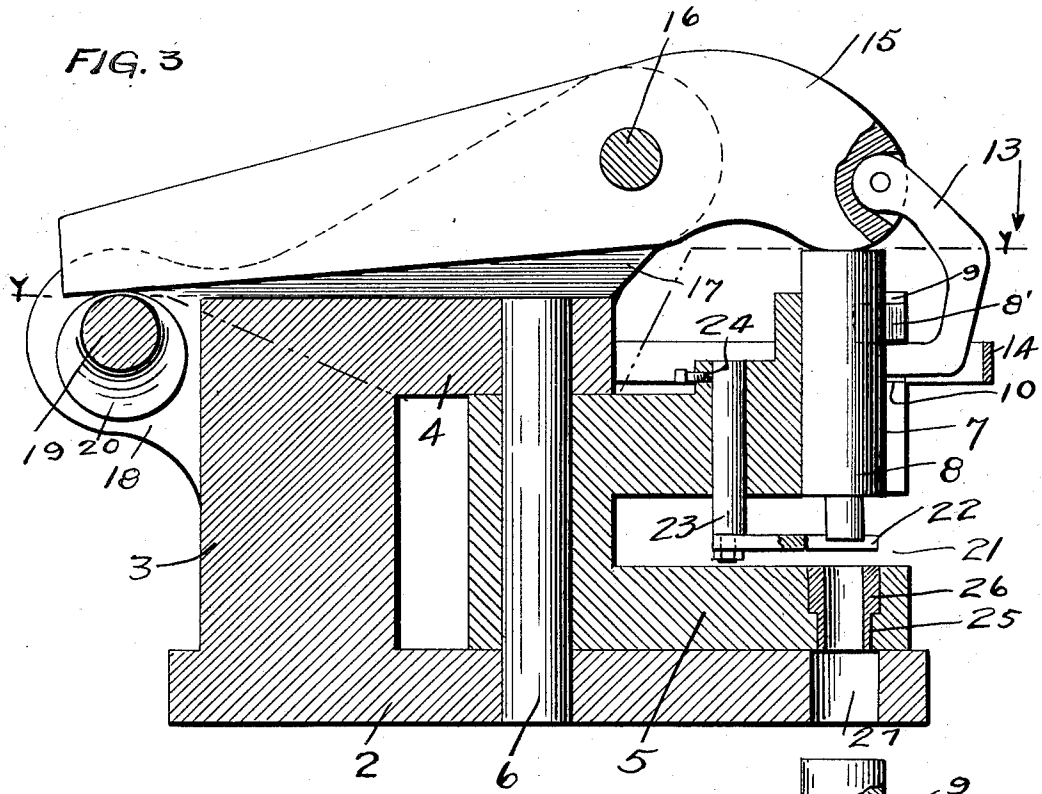
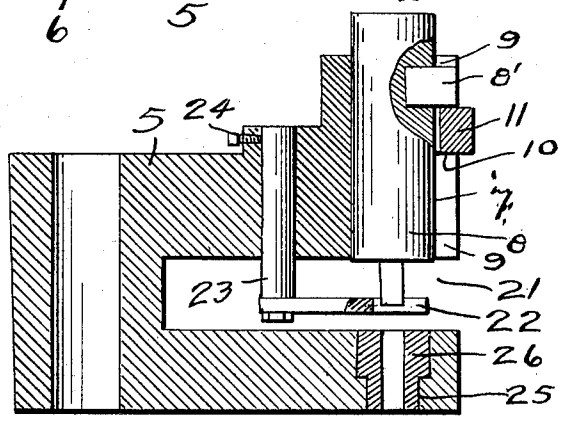


FIG. 4



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UNITED STATES PATENT OFFICE.

DANIEL R. McLAREN, OF HINCKLEY, MINNESOTA.

PUNCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 699,552, dated May 6, 1902.

Application filed October 24, 1901. Serial No. 79,751. (No model.)

To all whom it may concern:

Be it known that I, DANIEL R. McLAREN, of Hinckley, Pine county, Minnesota, have invented certain new and useful Improvements in Punching-Machines, of which the following is a specification.

The invention relates to metal-punching machines; and the object I have in view is to provide a machine carrying a series of punches of different sizes and shapes that are adapted for immediate use.

A further object is to provide a punching-machine having improved means for supporting and operating the punches.

Other objects of the invention will appear from the following detailed description.

The invention consists generally in various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan view of a punching-machine embodying my invention. Fig. 2 is a horizontal section on the line *y y* of Fig. 3. Fig. 3 is a vertical section on the line *x x* of Fig. 1. Fig. 4 is a section on the line *z z* of Fig. 2.

In the drawings, 2 represents a suitable base, preferably of metal, having at its rear side an upright standard 3, provided at the top with a horizontal bracket or arm 4, which overhangs the middle portion of the base.

5 is a sector-shaped block that is pivoted between the bracket 4 and the base 2 on a pin 6. This block is adapted to oscillate horizontally on said pin and describe a partial revolution, the standard 3 preventing its passing entirely around its pivot. Near its forward curved edge the block 5 is provided with a series of vertical holes 7, adapted to receive a corresponding number of punches 8, having points of different shapes and sizes to adapt the machine for various kinds of work. Each punch is provided with a lug 8′, that fits loosely within a slot 9 in the forward edge of said block and communicating with the adjoining punch-hole. Said block is also provided with a horizontal groove or slot 10, that is adapted to receive curved arms 11, whose rear ends are secured to ears 12 on the standard 3. The slot 10 intersects the slots 9 substantially at right angles thereto, and the lugs 8 consequently engage the arms 11 and are supported thereby when the punches are in their normal raised position. Opposite the center slot 9 of the series I prefer to cut away the ends of the arms 11, so that as the block is swung around a punch on passing this slot will be allowed to drop down in position to engage the work to be punched. At this point I provide a hook 13, limited in its outward swing by a guard 14 and pivoted to a lever 15, that has bearings 16 in the arms 17 on the bracket 4. This hook projects into the slot between the ends of the curved arms 11 in position to engage the lug on the punch that may happen to be opposite that point and supports said punch until the lever 15 is operated. On the return stroke of said lever the hook 13 will raise the punch with which it is in engagement to its normal position. The standard 3 is preferably provided with ears 18, in which a shaft 19 is mounted, having a cam 20 to engage the free end of the lever 15 and oscillate the same. The opposite end of the lever 15, near its pivotal connection with the hook 13, is adapted to bear upon any one of the punches that may be stopped opposite the slot between the ends of the curved arms. Movement of the shaft 19 will raise the free end of the lever 15, depress its opposite end, and force the punch through the material that is being operated upon.

The face of the swinging block is provided with a recess 21, in which I arrange a series of arms 22, one for each punch and having holes through which the points of the punches pass in their vertical movement, said arms being supported upon pins 23, that are adjustably held in the upper portion of said block by set-screws 24. The lower portion of the swinging block below the recess 21 is provided with a series of holes 25, wherein dies 26 are placed, which correspond to the point of the punch above. I also provide a hole 27 in the base 2 beneath the hook 13 and its operating-lever, and over which the punch and die will always be set prior to the punching operation. The material cut out by the punch will fall down through the hole 27, and the arm 22 will prevent the work from following the punch on its backward stroke. The weight of the lever 15 will ordinarily be sufficient to lift each punch out of engagement with the material

upon which it is operating; but I may provide a spring to aid in lifting the punches, if desired.

By providing a punch-holder or swinging block that has only a partial revolution on its pivot I am able to construct a very compact and strong frame for the machine and one that will withstand any strain to which it may be subjected. Furthermore, the use of the curved arms supporting all the punches when not in use enables me to dispense with all springs, that are likely to get out of order or broken and delay the operation of the machine.

By providing a punching-machine with an oscillating gang punch-block I am able to provide a series of punches of different sizes, any one of which can be quickly brought into the proper position for use by simply swinging the supporting-block on its pivot.

I claim as my invention—

1. The combination, with a base having a bracket or standard thereon, of a sector-shaped block pivoted on said base between it and said bracket and adapted to describe a partial revolution thereon, a series of punches carried by said block each punch being provided with a lug, means engaging each lug to support its punch during the movement of said block, and prevent longitudinal movement of said punch except at a certain predetermined point on said base, a lever adapted to engage each punch when opposite said predetermined point to perform the punching operation, and a hook device adapted to engage each lug and return its punch to its normal position when the punching operation has been completed.

2. The combination, with a base, of a block pivoted thereon, a series of punches mounted in said block, means for normally holding said punches in their raised position and preventing their depression except when opposite a certain predetermined point on said base, means for depressing said punches one at a time when opposite said described point, and means engaging said punches to return them to their normal position after the punching operation has been completed.

3. The combination, with a suitable base, of an oscillating block thereon, a series of punches loosely mounted in said block and provided with a corresponding number of lugs, curved arms engaging said lugs and normally holding said punches in their raised position, a space being provided between the ends of said arms to permit the punches to drop when opposite that point, a hook 13 projecting into the space between said arms and engaging the punch-lug opposite the same, means for depressing said hook and the punch with which it is engaged, and means for elevating them, substantially as described.

4. The combination, with a base, of an oscillating block mounted thereon and provided with a series of vertical holes and slots communicating therewith, a series of punches provided in said holes and having lugs extending into said slots, curved arms adapted to project into said slots and engage said lugs to support said punches, a space being provided between the ends of said arms to permit the depression of a punch when opposite that point, a hook 13 projecting into said space and engaging the punch-lug therein, and a lever 15 connected with said hook and adapted to engage the upper end of the punch, substantially as described.

5. The combination, with a base, of an oscillating sector-shaped block thereon, a series of punches provided near the curved face of said block and having lugs fitting loosely in vertical slots therein, stationary curved bars extending around the face of said lug and normally engaging said lugs and supporting said punches in their raised position, a space being provided between the ends of said bars wherein the lugs are slidable to permit the depression of their punches when opposite that point, means for depressing the punches, and means for raising the same.

6. The combination, with a suitable base, of an oscillating punch-holder thereon, a series of punches loosely mounted in said holder, arms for normally holding said punches in their raised position and preventing depression thereof except when opposite a certain predetermined point on said base, an operating-lever, and means for returning said punches to their normal position when released by said lever after the punching operation has been completed.

7. The combination, with a suitable base, of an oscillating punch-holder thereon, a series of punches loosely mounted in said holder, arms for normally holding said punches in a raised position and preventing their depression, a space being provided between said arms to permit the punches to drop through when opposite that point, an operating-lever adapted to engage said punches one at a time and a device carried by said lever to engage a punch when depressed and elevate the same to its normal inoperative position after the punching operation has been completed.

In witness whereof I have hereunto set my hand this 18th day of October, 1901.

DANIEL R. McLAREN.

In presence of—
M. G. NEWMAN,
W. ROSS NEWMAN.