

A. J. SETTER.
PUNCHING APPARATUS.
APPLICATION FILED SEPT. 3, 1909.

961,653.

Patented June 14, 1910.

3 SHEETS—SHEET 2.

Fig. 5.

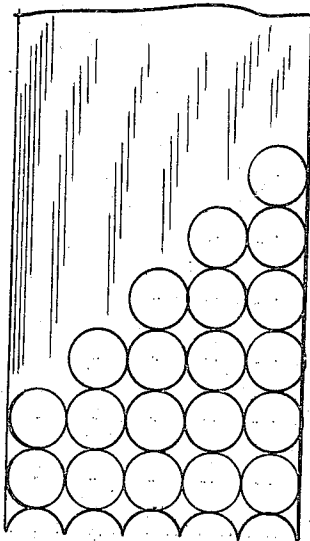


Fig. 6.

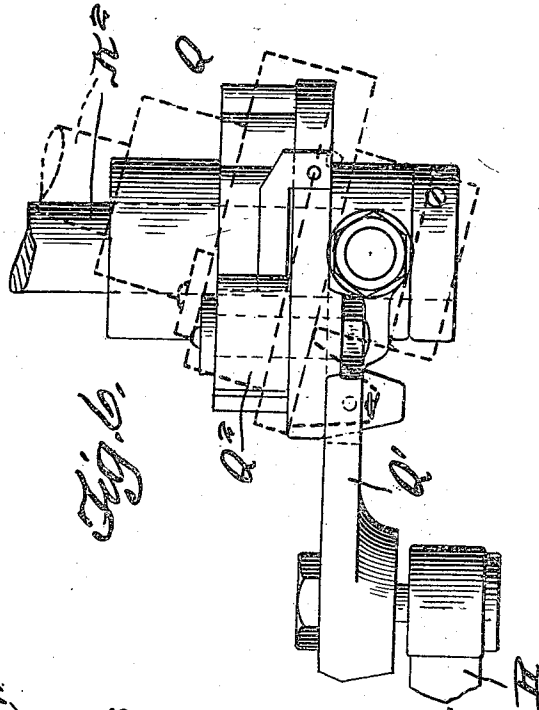
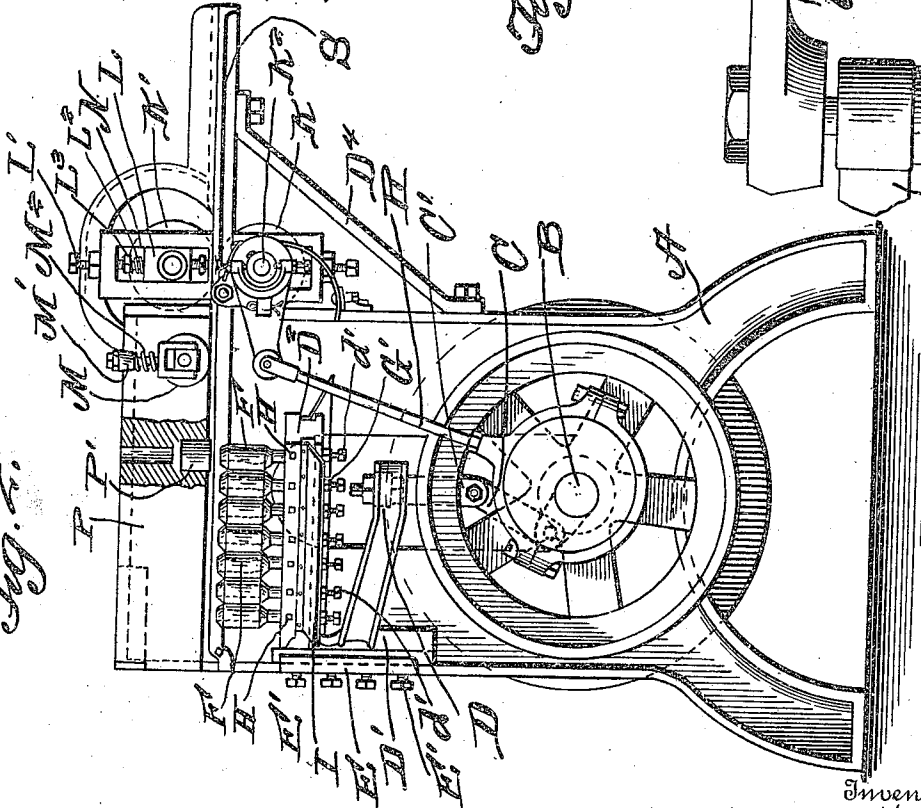


Fig. 7.



Witnesses

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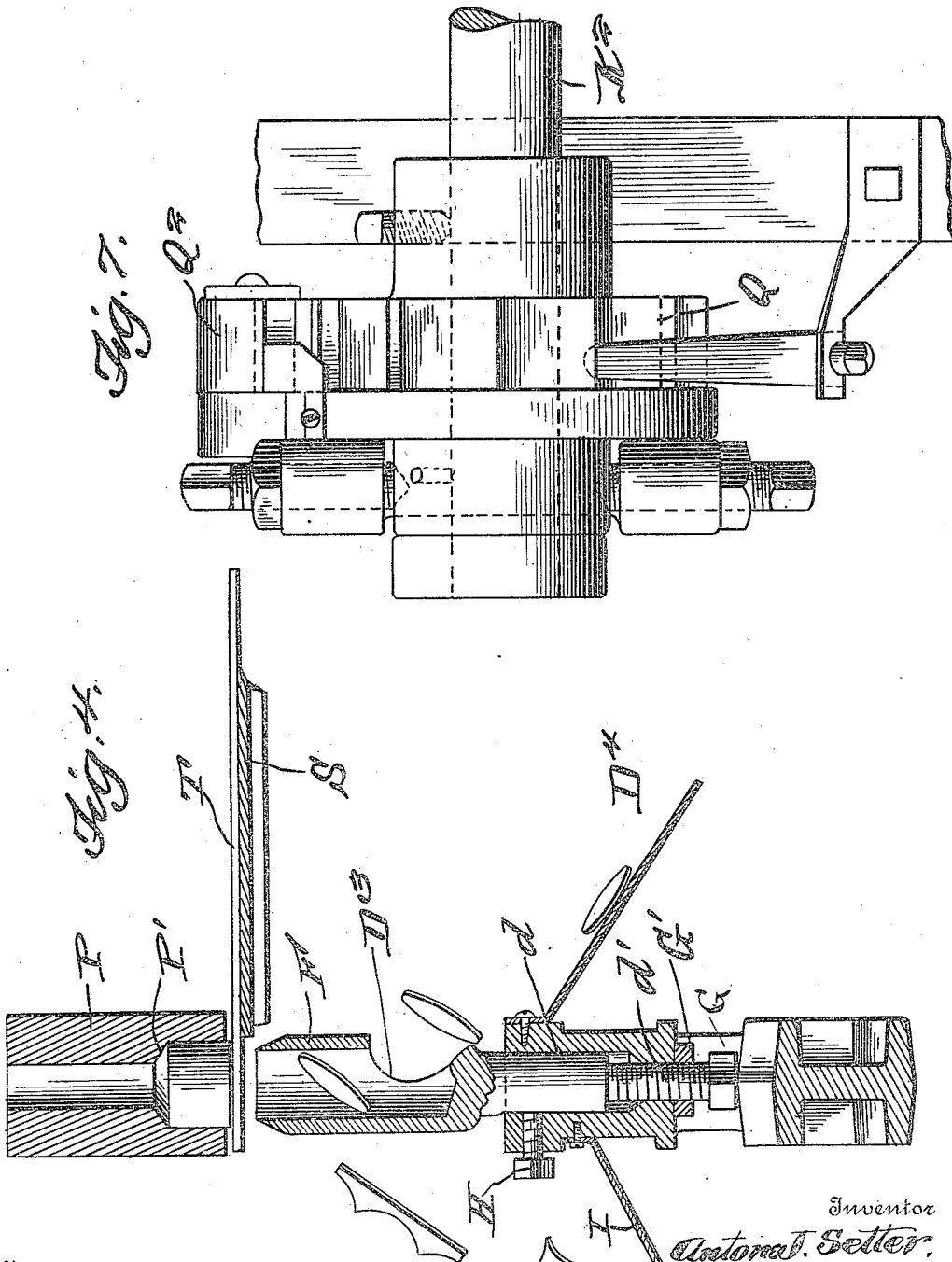
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UNITED STATES PATENT OFFICE.

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PUNCHING APPARATUS.

961,653.

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To all whom it may concern:

Be it known that I, ANTONE J. SETTER, a citizen of the United States, residing at Cattaraugus, in the county of Cattaraugus and State of New York, have invented certain new and useful Improvements in Punching Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in apparatus for cutting disks of wood, paper, metal or other material from solid sheets and comprises series of punches mounted upon a cross head and movable against the punching surfaces, the punches being mounted in multiple and at an angle of preferably 45 degrees to the line of feeding of the sheet.

The invention comprises various details of construction, combinations and arrangements of parts which will be hereinafter fully described and then specifically defined in the appended claims.

I illustrate my invention in the accompanying drawings, in which:—

Figure 1 is a top plan view of a punching apparatus embodying the features of my invention. Fig. 2 is an end elevation, parts being in section. Fig. 3 is an enlarged detail in elevation showing the ratchet feed mechanism. Fig. 4 is an enlarged detail sectional view longitudinally through a punch and a head block and feeding block, and Fig. 5 is a detail view showing a sheet of metal partially punched. Fig. 6 is a detail in top plan view. Fig. 7 is an edge view of the construction shown in Fig. 6.

Reference now being had to the details of the drawings by letter, A designates the frame of the apparatus having a driving shaft B mounted in suitable bearings in said frame, and C designates a pitman connected to the crank of the driving shaft and connected to a link C' which in turn is fastened to an arm D of the cross head D', which latter is adapted to reciprocate in the guide blocks E forming a portion of the frame of the apparatus. Suitable adjustment screws

E' are mounted in said block for the purpose of regulating the play of the crosshead.

Mounted upon a laterally projecting arm D² of the crosshead is a series of punches F, an enlarged detail view of one of which is shown in Fig. 4 of the drawings, and which punch is mounted in a socket d with an aperture in its bottom through which an adjusting screw d' passes, the head of said screw resting upon the bottom of a recess G formed in the laterally projecting portion D² of the crosshead. A jam nut G' is mounted upon the threaded portion of said adjusting nut in the manner shown clearly in Fig. 4 of the drawings. A set screw H is mounted in a threaded aperture in the wall of each socket and is adapted to bear against and hold the shank portion of the punch in an adjusted position. Said punch is hollow and has an opening in its circumference as at D³, affording means whereby the disk, as it is cut from a sheet, may make exit. Fixed to the laterally projecting arm D² of the crosshead is an apron D⁴ positioned underneath the exit opening in the punch and affords means whereby the disk, as it is cut, may be deflected away from the crosshead, and opposite the apron D⁴ is a similar apron I fastened also to a laterally projecting portion of the crosshead and upon which the waste pieces are adapted to fall as they are severed from the sheet.

Mounted in suitable bearings upon the frame of the two feeding rollers K and K', the former of which has spindles which are mounted in boxes in the elongated opening N forming a part of the frame, and a set screw J is mounted in the lower end of the roller K' and has a jam nut J' mounted thereon, said screw J being adapted to adjust the lower bearing box in which the spindle of the roller K is mounted. An adjusting screw O is mounted within the opening N and upon which the boxing L of the roller K' rests and an adjusting screw L' bears against the upper end of the box L and a coiled spring L² is interposed between a nut L³ and the top of the box L.

Fixed to the shaft K² is a ratchet wheel Q, and Q' designates an arm which is journaled upon the spindle of the roller K and carries a pawl Q² adapted to engage the teeth of the ratchet wheel. A spring pawl Q³ is fixed to the frame and engages the

teeth of the ratchet wheel and is adapted to prevent a reverse rotary movement thereto. A rod R is pivoted at one end to the arm Q' and its other end is fastened to an eccentric and affords means whereby the feeding of the sheet T upon the table S may be regulated. A presser roller M is mounted in a boss M' upon the frame and a spring M² serves to hold the presser roller down against the sheet to be punched. A head block, designated by letter P, is mounted upon the frame and recessed as at P' for the reception of the punch as it moves upward and co-operates with the marginal edge of the head block for punching the disk.

Referring to Fig. 1 of the drawings, it will be noted that a guide W is provided and is shown as adjustable, whereby it may be moved to adapt the same for use in cutting disks of different sizes. Bolts W' are mounted upon the guide and adapted to pass through the elongated slots W² and afford means for holding the guide member in adjusted position.

What I claim to be new is:—

1. A punching apparatus comprising a frame, a driving shaft journaled therein, a vertically movable crosshead, pitman connections between the same and said shaft, a series of punches mounted upon a laterally projecting portion of said crosshead, a head block positioned over said punches, a table having an inclined edge which is scalloped and positioned adjacent to said punches, feed rollers, and means for imparting an intermittent rotary motion thereto.

2. A punching apparatus comprising a frame, a driving shaft journaled therein, a vertically movable crosshead, pitman connections between the same and said shaft, a series of punches mounted upon a laterally projecting portion of said crosshead, a head block positioned over said punches, a table, an adjustable guide upon the table, feed rollers, said table having an inclined edge which is scalloped and positioned adjacent to the punches.

3. A punching apparatus comprising a frame, a driving shaft journaled therein, a vertically movable crosshead, pitman connections between the same and said shaft, said crosshead having a laterally projecting arm with recesses therein, a set screw mounted in a threaded aperture in the bottom of each recess and having its head resting upon the wall of an opening in said laterally projecting part, a punch having a shank portion mounted in each of said recesses and against which said screw is adapted to bear, recessed head blocks positioned above the punches, a table, an adjustable guide upon the table, and feed rollers.

4. A punching apparatus comprising a frame, a driving shaft journaled therein, a

vertically movable crosshead, pitman connections between the same and said shaft, said crosshead having a laterally projecting arm with recesses therein, a set screw mounted in a threaded aperture in the bottom of each recess and having its head resting upon the wall of an opening in said laterally projecting part, a hollow punch having a shank portion positioned in one of said recesses against which said screw is adapted to bear, said punch having a circumferential exit opening in the wall thereof, a recessed head block positioned above each punch, a table, an adjustable guide upon the table, and feed block rollers.

5. A punching apparatus comprising a frame, a driving shaft journaled therein, a vertically movable crosshead, pitman connections between the same and said shaft, said crosshead having a laterally projecting arm with recesses therein, a set screw mounted in a threaded aperture in the bottom of each recess and having its head resting upon the wall of an opening in said laterally projecting part, a hollow punch having a shank portion positioned in one of said recesses against which said screw is adapted to bear, said punch having a circumferential exit opening in the wall thereof, aprons fastened to the laterally projecting portion of the crosshead, a recessed head block positioned above each punch, a table, an adjustable guide upon the table, and feed rollers.

6. A punching apparatus comprising a frame, a driving shaft journaled therein, a vertically movable crosshead, pitman connections between the same and said shaft, said crosshead having a laterally projecting arm with recesses therein, a set screw mounted in a threaded aperture in the bottom of each recess and having its head resting upon the wall of an opening in said laterally projecting part, a hollow punch having a shank portion positioned in one of said recesses against which said screw is adapted to bear, said punch having a circumferential exit opening in the wall thereof, aprons fastened to the laterally projecting portion of the crosshead, a recessed head block positioned above each punch, a table, guide members having elongated slots therein, fixed bolts passing through said slots, and nuts upon the bolts.

7. A punching apparatus comprising a frame, a driving shaft journaled therein, a vertically movable crosshead, pitman connections between the same and said shaft, said crosshead having a laterally projecting arm with recesses therein, a set screw mounted in a threaded aperture in the bottom of each recess and having its head resting upon the wall of an opening in said laterally projecting part, a hollow punch having a shank portion positioned in one of said recesses

against which said screw is adapted to bear,
said punch having a circumferential exit
opening in the wall thereof, aprons fastened
to the laterally projecting portion of the
5 crosshead, a recessed head block positioned
above each punch, a table, guide members
having elongated slots therein, fixed bolts
passing through said slots, nuts upon the
bolts, a finger fixed to the end of said guide

member, and an anti-friction roller carried 10
by said finger.

In testimony whereof I hereunto affix my
signature in the presence of two witnesses.

ANTONE J. SETTER.

Witnesses:

C. A. RICH,
F. F. HINMAN.