No. 647,272. Patented Apr. 10, 1900.

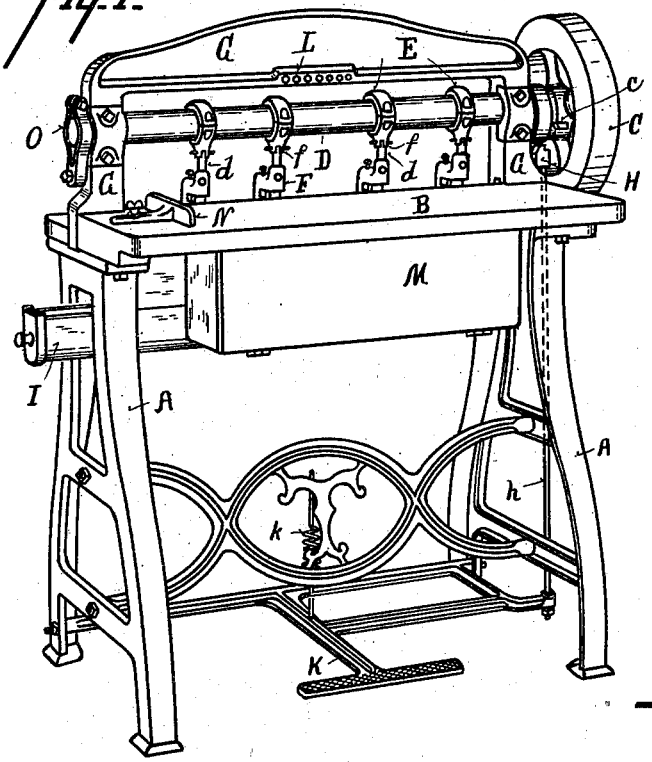
W. S. MENDENHALL.

PAPER PERFORATOR.

(Application filed June 23, 1899.)

(No Model.)

Fig. 1.



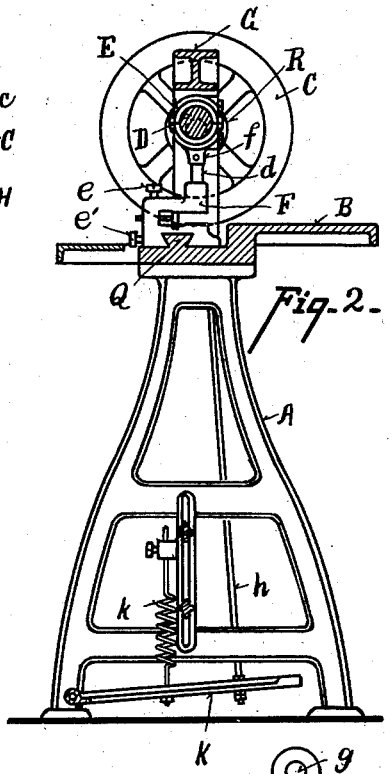


Fig. 2.

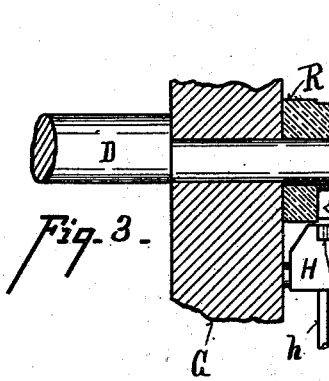


Fig. 3.

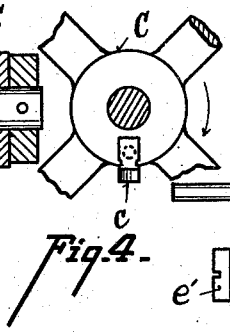


Fig. 4.

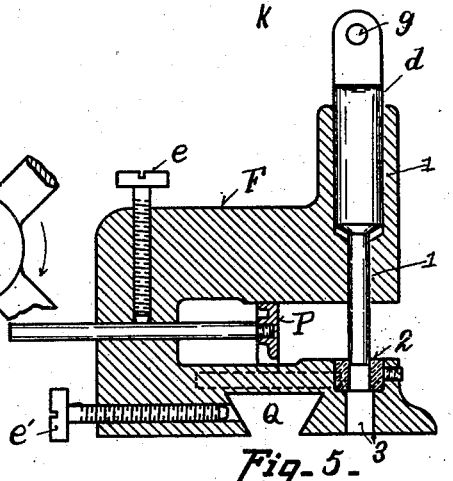


Fig. 5.

Witnesses
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UNITED STATES PATENT OFFICE.

WALTER S. MENDENHALL, OF NORWOOD, OHIO.

PAPER-PERFORATOR.

SPECIFICATION forming part of Letters Patent No. 647,272, dated April 10, 1900.

Application filed June 23, 1899. Serial No. 721,524. (No model.)

To all whom it may concern:

Be it known that I, WALTER S. MENDENHALL, residing at Norwood, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Paper-Perforators, of which the following is a specification.

One object of my invention is to provide a paper-perforator which can be operated by power to effectually perforate a large bundle of paper.

Another object of my invention is to provide means for readily adjusting two or more of the cases to any given gage or gages.

Another object of my invention is to provide self-contained cases which can be readily and conveniently applied to and removed from the machine.

The features of my invention are more fully set forth in the description of the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of my improvement. Fig. 2 is a central vertical section thereof. Fig. 3 is a longitudinal vertical section through the clutch mechanism shown in Fig. 1. Fig. 4 is a detail end view of the clutch. Fig. 5 is a central vertical section through a punch-case.

A represents the frame of the machine, and B the table for supporting the material.

C represents the driving power-wheel loosely mounted upon one end of an eccentric or crank shaft D, journaled in the supporting-standard G, extended above the table.

E represents rings or eccentric-straps which are mounted on eccentric shaft D and connected to the male punch member *d* of the cases F. The eccentric portion of this shaft is of course between the limbs of supporting-standard G, as shown in Fig. 3. The male punch members are preferably connected to the rings as follows: The rings are provided with pierced ears *f* and the male punch members with eyes *g*, which are placed between the ears, and a connecting-pivot is slipped through the ears and eye. This affords a ready and convenient means for attaching and detaching the punches to the rings.

The cases F are substantially U-shaped, the upper limbs containing guide-recesses 1, in which the male members *d* reciprocate. The male members necessarily, therefore, reciprocate in true vertical lines and register with the dies in the lower limbs of the cases. The base of the lower limb is grooved transversely to fit a corresponding longitudinal guide Q, supported by the frame of the machine. Between the limbs of the case is an adjusting or gage device P for regulating the depth to which the paper is to be inserted between the limbs. An index-plate may be placed along the side of the punch to positively determine the position of this gage.

e represents a set-screw tapping the bow of the case and engaging the gage P to secure it in its adjusted position.

e' represents a set-screw tapping through the case and engaging against the guide Q to secure the case in its longitudinal adjustment. Under the dies 2 are holes 3, through which the punchings are dropped and caught in a trough I, supported by the frame of the machine under the orifices 3.

K represents the foot-treadle for applying power through pitman *h*, the action of which is preferably controlled by spring *k*.

The following devices are preferably employed for applying and shutting off the power: Between the supporting-standard G and the power-wheel C is a fixed clutch-section R on shaft D, turning therewith. In this clutch-section is a detent-notch *r*. In the flange-hub of wheel C, loosely mounted on the projecting end of shaft D, is the spring detent-pin *c*, normally pressing inward, and adapted to enter notch *r* when the revolution of the wheel brings them opposite each other. This lug is projected downward below the clutch-section R and engages against a tripping-lug H, mounted on the upper end of the pitman *h*, this lug H holding spring-pin *c* normally out of contact with the clutch R. Upon the upper end of lug H is a beveled incline *t*. Then the treadle is depressed, lug H drops, and pin *c* presses against clutch-section R until it is opposite notch *r*, at which point it enters the notch and revolves the eccentric shaft D with wheel C as long as the treadle is depressed. When the treadle is released, it rises. When the lower end of pin *c* in its revolution arrives opposite beveled incline *t*, it rides up the incline and is forced outward until pin *c* is out of

detent-hole *r*. Any form of clutch could as readily be employed. Upon the other end of shaft D, outside of standard G, is a friction-clamp O. This acts as a brake when the power is removed to prevent the momentum from revolving shaft D beyond a given point, and it also cushions the action of the punches.

M represents a box under the table B, in which the punches are kept. L represents an index, showing the diameter of the standard punches.

Operation: The desired number of cases are taken from box M and slipped longitudinally upon guide Q, and the contained male punch members are pivoted to the appropriate rings E. The cases are moved to the desired adjustment, the rings sliding on shaft D. The bundle of paper is placed against the gage N on the side of table B, and the depth of insertion between the limbs of the case is fixed by gages P. Adjusting-screws *e e'* are then turned up and the power applied as desired.

The device may be operated by manual power, if desired. The eccentric shaft D rotates in its eccentric orbit within rings E, reciprocating vertically the punch male members *d* in the orifices 1 of the upper limbs of the case. This reciprocation might be effected by a vibratory movement of shaft D instead of a revolution, and I do not wish to be limited to any particular mode of operation.

The cases F, carrying male members *d*, can be readily attached, detached, and adjusted. By the use of these means any number of perforations, any diameter, diameters, or shapes of perforations, and any given spacing of perforations can be obtained through a maximum bundle of paper simultaneously, the sizes, numbers, and adjustments of perforations conveniently determined and effected. The punchings are all caught in a removable trough, so no litter is caused, and any changes can be easily effected. The punching may be continuous, the paper being moved along across the table, or a single punch may be given at a time.

Various means for operating the male punch members could be employed in lieu of the eccentric shaft, and I do not wish to be limited to this form.

Having described my invention, I claim—

1. In a paper-perforator the combination of a table, a longitudinal guide mounted thereon, an eccentric shaft, one or more cases mounted on said guide, each case comprising a die, a guide-orifice registering therewith and a punch mounted therein and connections between the said punches and eccentric shaft adapted to slide on said shaft, whereby a case with its self-contained die, punch and connections may be simultaneously adjusted longitudinally, substantially as specified.

2. In a paper-perforator the combination of a table, a longitudinal guide mounted thereon, an eccentric shaft, one or more cases mounted on said guide, each case comprising a die, a guide-orifice registering therewith and a punch mounted therein and pivotal connections detachably secured to the said punches and movably mounted on said shaft, whereby a case with its self-contained die, punch and connections may be simultaneously adjusted longitudinally substantially as specified.

3. In a paper-perforator the combination of a table, a longitudinal guide thereon, an eccentric shaft, one or more cases mounted on said guide, each case comprising a die, a guide-orifice registering therewith and a punch mounted therein, detachable connections between said punches and the eccentric shaft movably supported on the latter, and means for securing said cases to the said guide, whereby said cases with their self-contained dies, punches and connections may be simultaneously adjusted longitudinally at any desired intervals, substantially as specified.

4. In a paper-perforator the combination of a table, a longitudinal guide thereon, an eccentric shaft, one or more cases mounted on said guide, each case comprising a die, a guide-orifice registering therewith, and a punch mounted therein detachable connections between the punch members and eccentric shaft movably mounted on the latter, means for securing said cases to the guide, and means for gaging the depth of the article to be inserted, substantially as specified.

In testimony whereof I have hereunto set my hand.

WALTER S. MENDENHALL.

Witnesses:
OLIVER B. KAISER,
W. R. WOOD.