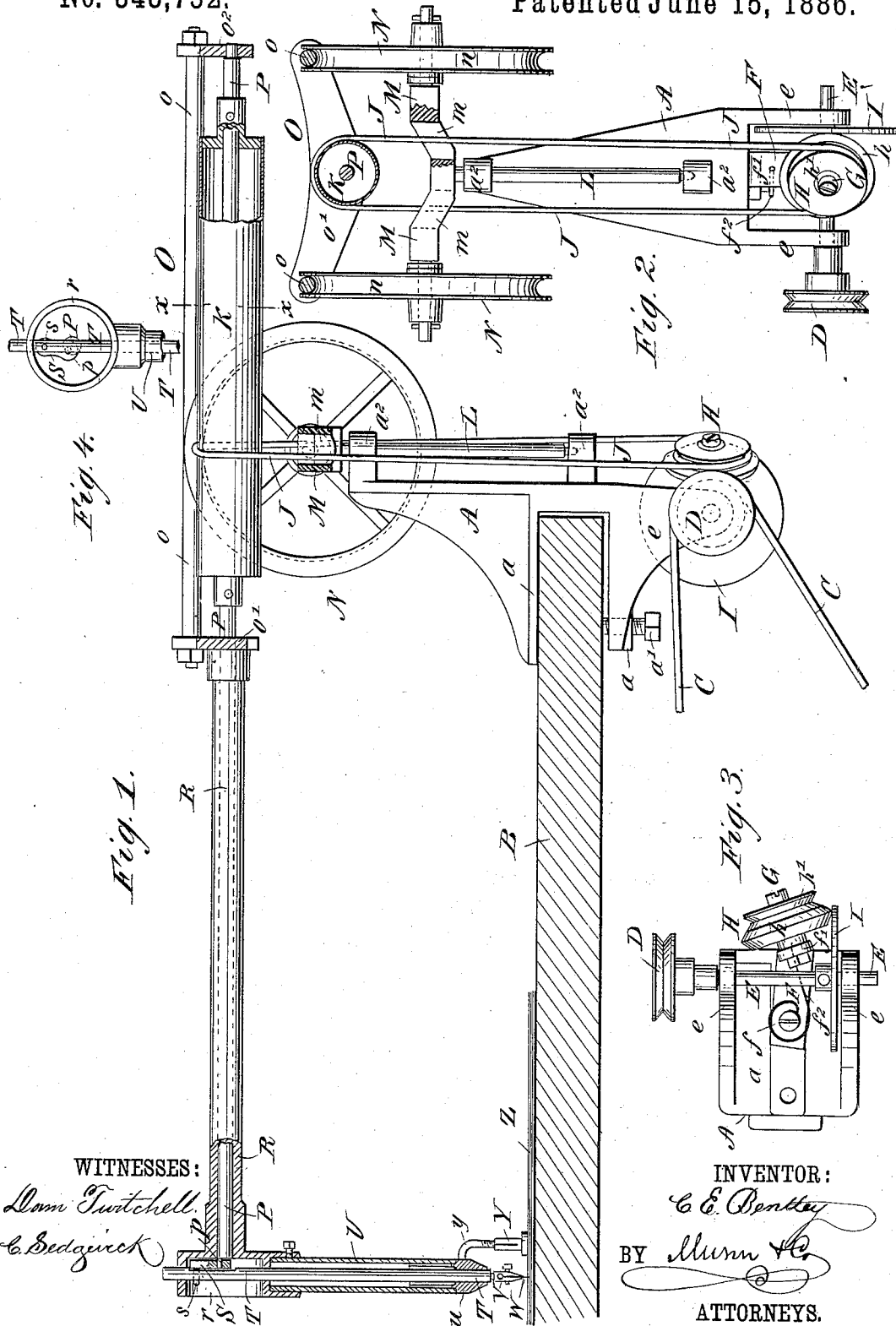


(No Model.)

C. E. BENTLEY.
PERFORATING MACHINE.

No. 343,752.

Patented June 15, 1886.



WITNESSES:
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PERFORATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 343,752, dated June 15, 1886.

Application filed January 27, 1886. Serial No. 189,937. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. BENTLEY, of the city, county, and State of New York, have invented a new and Improved Perforating-Machine, of which the following is a full, clear, and exact description.

My invention relates to machines adapted for perforating sheets of paper through a traced pattern laid on the paper, to prepare the paper for stamping fabrics by passing an inked roller over a perforated paper sheet laid on the fabric, and thereby producing designs on the fabric, to be wrought out by needle-work or otherwise; and the object of the invention is to provide a simple, inexpensive, and efficient machine of this character.

The invention consists in certain novel features of construction and combination of parts of the perforating-machine, all as hereinafter fully set forth.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the perforating-machine attached to a table, which is shown in section. Fig. 2 is a view taken at right angles to Fig. 1, and with the traversing yoke or head and the driving-drum in cross-section on the line $x x$ of Fig. 1. Fig. 3 is an under side view of the machine-frame and lower driving mechanism, and Fig. 4 is a detail view of the needle bar-driving mechanism.

The machine-frame A is cast with two jaws, $a a$, forming with the screw a' , threaded into the lower jaw, a clamp by which the machine may be supported on and by a table, B, like a sewing-machine table, and which will have pedals operating a drive-wheel, (not shown,) from which the band or belt C runs to a pulley, D, which is fast to a shaft, E, journaled in lugs $e e$, pendent from the frame A.

To the under side of the lower frame-jaw a is jointed by a pin or screw, f , the angle-bracket F, to the pendent arm f' of which is journaled on a pin, G, the drive-wheel H, which has a rubber periphery, h , which is pressed normally against the face of a friction driving wheel or disk, I, fast on shaft E, by a spring, f^2 , attached at opposite ends to the pivot and bracket F; and the wheel H also

has a grooved peripheral portion, h' , forming a driving-pulley over which a band or belt, J, passes to the needle-driving drum K, presently described.

In lugs $a^2 a^2$, cast on the front of the frame A, is journaled and stepped the vertical spindle L, to the top of which is fixed the cross-head M, which swings freely in horizontal plane as the spindle turns axially in its bearings.

At opposite ends of the cross-head M are journaled the anti-friction wheels N N, which have grooved peripheries $n n$, giving support to the opposite parallel side or track bars, $o o$, of the traversing yoke or head frame O, which has opposite end plates or bars, $o' o'$, to which the side bars are fixed.

The driving-drum K is fixed to a horizontal ranging-shaft, P, which is journaled in the end plates, $o' o'$, of yoke O, and projects beyond the plate o' through a tubular arm, R, which is fixed at one end to the plate o' , and at its outer end the arm R has a cup-shaped head-piece, r , open at one side. An eccentric wrist-pin, p , formed on or fixed to the end of shaft P, projects into the head r of arm R, and on it is hung the pitman S, which connects pivotally by a pin, s , with the vertically-movable bar, T, which is journaled in the head-piece r , and in the foot u of a tubular stem, U, which is fixed in the head r , and extends down nearly to the table B.

Any suitable clamp device, V, held at the lower end of the bar T, holds the perforating-needle W, and a bent arm, y , fixed to the foot u of stem U, carries the vertically-adjustable gage or foot-piece Y, which may be set to govern the depth of working of the needle W, as the number or thickness of sheets of paper, Z, laid on the table to be perforated shall require.

The driving-belt J, in passing from the pulley H to the drum K, runs through eyes or holes $m m$, made through the swiveled cross-head M, said eyes m serving as guides to prevent the belt J being thrown out of line either way by the endwise movement of the drum K, as it is carried back and forth by the movement of the traversing yoke O.

The operation of the machine is as follows: As the pulley D is rotated by the driving-belt C to turn-shaft E and friction-wheel I, the

wheel H will be rotated, and through the band or belt J will give a rapid rotation to the drum K, which through its shaft P will give a corresponding number of reciprocations to the needle-bar T, to carry the needle W through the pattern and the sheets of paper laid below it on the table B, at a speed of about two thousand strokes per minute, the operator guiding the needle over the outlines of the pattern by taking hold of the pendent arm U, or the foot-gage and stem Y y.

It is obvious that as the yoke O is fulcrumed on the swiveled support L N N, the needle-carrying arm U may be freely raised and lowered and swung to either side, and the arm may also be freely moved toward or from the frame A as the traversing yoke O slides over the anti-friction wheels N N on the swiveled support M; hence the perforating-needle W may be guided over either straight lines of the pattern or over curved lines of any configuration with the greatest facility. The high speed of the driving-drum allows it to slip freely backward and forward in the bight of the driving-belt J as the yoke O moves over the wheels N N.

It is evident that the yoke O may be supported to slide on smaller anti-friction wheels journaled at the top of upturned opposite ends of the swiveled support M, and also that the yoke may be arranged to slide directly upon upturned ends of the swiveled support, without the interposition of anti-friction wheels; but the construction shown, with large wheels N, to support the yoke, is preferred, as the easy movement of the yoke is thereby facilitated.

The open-sided head *r* of the arm R gives free access to the pitman S, and the pins which connect it to the driving-shaft and the needle-bar, for oiling the parts whenever required.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, in a perforating-machine, of a supporting-frame, a cross-bar swiveled to said frame, a traversing yoke carrying a belt-receiving drum and supported by said swiveled cross-bar, a needle-carrying bar connected to the shaft of the drum and adapted to be reciprocated thereby, and a belt passing from the drum to a driving-pulley, substantially as and for the purposes herein set forth.

2. The combination, in a perforating-machine, of a supporting-frame, a cross-bar swiveled to said frame, anti-friction wheels journaled on said cross-bar, a traversing yoke carrying a belt-receiving drum and fulcrumed on the anti-friction wheels, a needle-carrying bar connected to the shaft of the drum and adapted to be reciprocated thereby, and a belt passing from the drum to a driving-pulley, substantially as and for the purposes herein set forth.

3. The combination, in a perforating-machine, of a frame, A, a cross-bar, M, swiveled to frame A by a spindle, L, anti-friction wheels N N, journaled at the opposite ends of bar M, a yoke, O, made with opposite parallel track-bars, *o o*, and end parts, *o' o'*, an arm, R, fixed to yoke O, a shaft, P, journaled in said yoke and arm, a drum, K, on said shaft, a belt, J, leading from said drum to a driving-pulley, and a needle-carrying bar, T, connected to an eccentric pin on the shaft by a pitman, S, and having support in a pendent arm, U, substantially as and for the purposes herein set forth.

4. The combination, in a perforating-machine, of a supporting-frame, a cross-bar swiveled to said frame, a traversing yoke carrying a belt-receiving drum and supported by said swiveled cross-bar, a needle-carrying bar connected to the shaft of the drum and adapted to be reciprocated thereby, a belt passing from the drum to a driving-pulley, and guide-eyes, as at *m m*, in or on the swiveled cross-bar for the driving-belt, substantially as and for the purpose herein set forth.

5. In a perforating-machine, the primary driving mechanism for operating the perforating-needle, comprising a pulley, H, made with a friction-ring, *h*, and a drive-wheel, *h'*, to receive the needle-driving belt J, said pulley H journaled in a spring pressed arm, F, pivoted to frame A, a shaft, E, journaled in frame A and carrying a drive-pulley, D, and a friction disk or wheel, I, against which the rim *h* of pulley H is pressed by the spring, substantially as and for the purposes herein set forth.

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Witnesses:

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