2 Sheets--Sheet 1.

J. M. SEYMOUR.

Machine for Boring Blind Stiles.

No. 168,532. Patented Oct. 5, 1875.

Fig. 1.

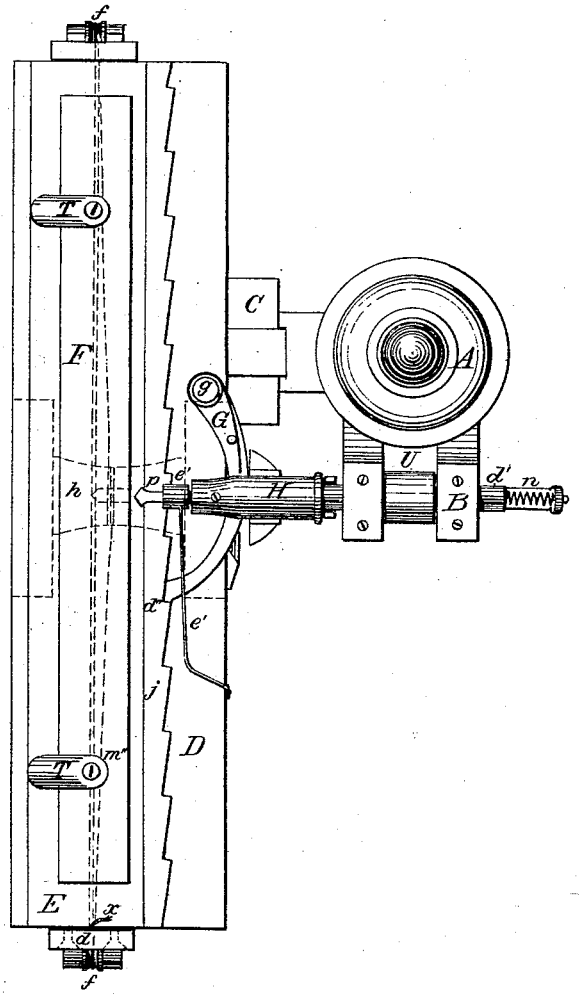
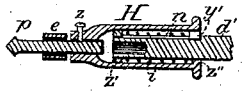


Fig. 2.



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2 Sheets--Sheet 2.

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Fig. 4.

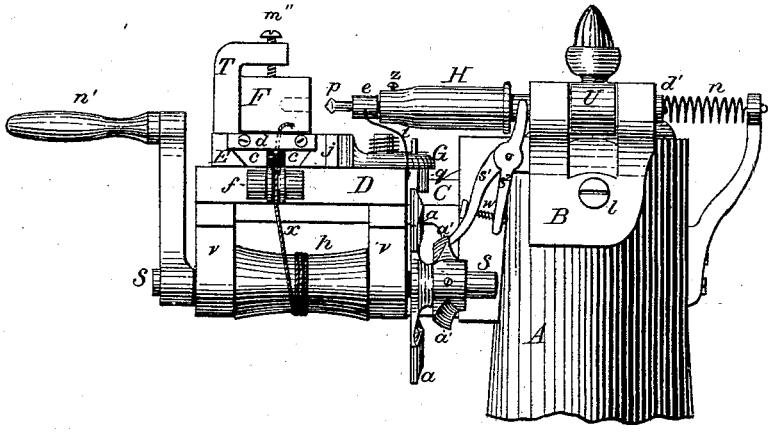


Fig. 5.

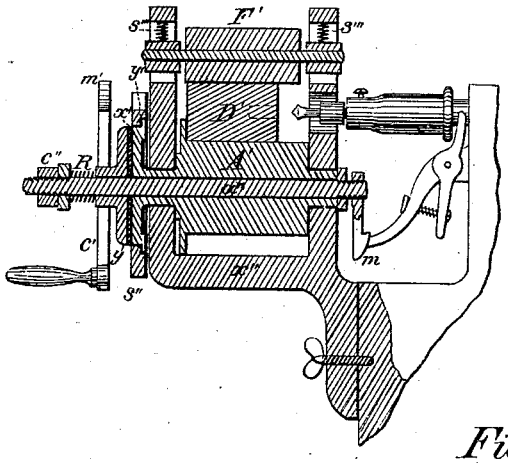


Fig. 6

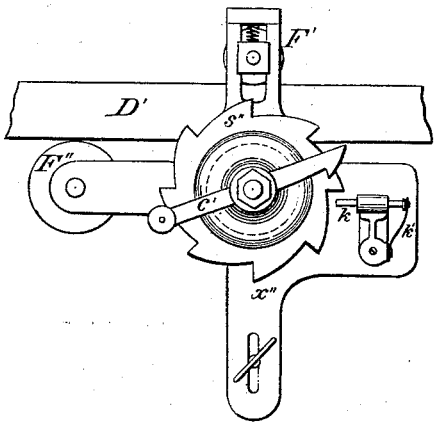
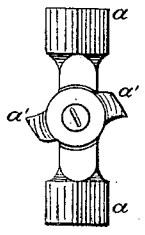


Fig. 3



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UNITED STATES PATENT OFFICE.

JAMES M. SEYMOUR, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN MACHINES FOR BORING BLIND-STILES.

Specification forming part of Letters Patent No. **168,532**, dated October 5, 1875; application filed March 2, 1875.

To all whom it may concern:

Be it known that I, JAMES M. SEYMOUR, of the city of Newark, in the county of Essex, in the State of New Jersey, have made certain Improvements in Machines for Boring Blind-Stiles, of which the following is a specification:

The subject of this invention is to produce a machine for spacing and boring or punching blind-stiles or other articles accurately and with great rapidity; and it consists in arranging the operating parts with relation to each other, as will be hereinafter fully described, and then specifically pointed out in the claims.

In the drawings, Figure 1 represents a top or plan view of the machine; Fig. 2, a sectional view of the sliding bit-holder and part of spindle; Fig. 3, an end view of cams that impart motion to sliding bit-holder and pawl; Fig. 4, a side elevation and view of the actuating parts; Fig. 5, a sectional view, showing the same principle applied in a more condensed form; Fig. 6, an end view of Fig. 5.

A is a stand, to which the adjustable bed-plate C is attached. D is a sliding carriage, which rests on bed-plate C, and which can be moved transversely to and from the boring-bit *p*, to accommodate the different widths of material to be spaced and bored. E is the spacing-carriage, on which the material F to be spaced and bored is placed. This carriage E has a longitudinal motion, and is kept in proper position by the longitudinal dovetails *c c*. T T are arms attached to carriage E. *m''* are screws for the purpose of securing the material F to carriage E when being spaced and bored. *j* is a stop-rack, attached in any convenient way to carriage E, and made of suitable material, with notches spaced so as to conform with the spacing required in the material F. G is a pawl, pivoted at *g* to the transverse sliding carriage D. *q* is a pin extending down from and fast in pivot G. *t* is a spring, which presses the pawl against the stop-rack *j*, and which engages a notch, *d''*, as the carriage E is moved toward the pawl G, and thus prevents any further motion of the carriage E until it is released by either of the cams *a a*, which disengage the pawl from the notch *d''* by their coming in contact with pin *q*. *c c* are longitudinal dovetails attached to carriage D, having a space between them for the purpose of admitting cord *x*. *x* is a friction-cord that gives motion to carriage E, and which is fastened to one end of carriage E, and then passed through the space between the longitudinal dovetails *c c* to pulley *f*, at the opposite end of carriage E, and thence to the friction-drum *h*, where it is wound a sufficient number of times around the drum to give the required friction. The cord is then carried to the opposite pulley *f*, and from there, through the space between dovetails *c c*, to the opposite end of carriage E, and there fastened by clamp *d*, after having first been drawn tight enough, so that when the crank *n'* is put in motion there will be sufficient friction to move the carriage E. S is a crank-shaft, supported by bearings in the projecting arms *v v*, which are attached to carriage D. *h* is a concaved friction drum or pulley fastened to shaft S, and which, by means of the friction-cord *x*, gives motion to carriage E. *a a* are cams attached to shaft S, and are used for disengaging the pawl G from the notches in the stop-rack *j*. *a' a'* are cams fastened to shaft S, and are used to impart motion to the sliding bit-holder H. S^2 is a clutch-shifter, and is an intermediate for transmitting motion from the cams *a' a'* to the sliding bit-holder H. The shifter S^2 is made flexible by means of the loose arm S^1 and the spring *w*, so as to overcome any irregularity that might arise either from the material F or other causes, it being of the utmost importance that there should be a yielding spot somewhere between the bit *p* and where the motion is received. B is an adjustable head for holding spindle *d'*, and is attached to stand A by means of the screw *l*. U is a pulley to give motion to spindle *d'*. H is a sliding bit-holder, which has a reciprocating as well as a rotary motion, the construction of which will be readily explained by the sectional view, as seen in Fig. 2. *d'* is a spindle, and *n* a groove cut in the same. *z'* is a collar fitted on the end of shaft *d'*, and also made to fit the inside of bit-holder H. The bit-holder at *z''* is made to fit spindle *d'*. Y' is a feather fitted in the bit-holder H, and, at the same time, made to slide freely in groove *n*, which allows the bit-holder H to have a reciprocating motion while

being carried around by the spindle d'. i is a spring, with one end pressing against collar z', and the other end against bit-holder H, at z, so that the bit-holder, after being pushed forward and then released from the action of the cam a' against the clutch-shifter S^2, it will, by the pressure of spring i, fly back to its proper place and be ready to be acted upon by the next cam. p is the boring-bit, and z a screw for holding it to bit-holder H. e is a gage for regulating the depth of hole to be bored, and is supported to its position by spring e', and which also allows the gage e to be carried forward to the material by the bit-holder H. The spindle d', with the bit p attached to it, could be moved forward, instead of the sliding bit-holder, and, in that case, a spring, n, would be necessary to bring it back. Other devices to carry the bit to the work can be used, but the one shown in Fig. 2 I deem among the best.

By making the friction-drum h concave a very desirable and important result is obtained, which consists in having an even tension on the friction-cord x, which would not be the case if the drum were straight on its face, for, after a few revolutions of the drum, the cord would become too tight and ride over the coils of cord on the drum; but by making the drum h concave the cord x can only work a short distance from the center of the drum before it receives its proper tension, and after that, as the pressure is applied, it will keep gradually slipping back toward the center of the drum, thereby necessarily keeping an even tension on the cord x. The stop-rack j having been properly fastened to the spacing-carriage E, and the material F also securely held upon spacing-carriage, the operator takes hold of the crank n', and runs the carriage E far enough back, so that when the motion of crank n' is reversed, and the carriage E is moved in the opposite direction, the pawl G will engage one of the notches in the stop-rack j, so the bit p will be opposite the place where the hole is required to be bored. The crank n' is then kept in motion; but, as the spring on pivot q has caused pawl G to engage in notch d'', the carriage E consequently remains stationary, and cord x must slip on drum h until cam a' has, by means of clutch-shifter S^2, forced the boring-bit p, which is held and revolved by sliding holder H, into material F. So soon as cam a' becomes disengaged from clutch-shifter S^2 the spring i, shown in Fig. 2, forces the holder and bit p back from the material F and to the position it held previous to being moved by cam a'. After cam a' has performed its duty cam a is brought in contact with pin q, which, disengaging pawl G from notch d'', leaves carriage E free, and it is immediately moved forward by the friction of cord x on drum h until again stopped by pawl G engaging itself in the next notch.

An end view of cams a a and a' a', showing about the relative position they should hold to each other, is seen in Fig. 3. The same principle, applied in a more condensed form, is seen in Figs. 5 and 6, and which is one of several ways to accomplish the same result, rollers A', F', and F'' being substituted for the spacing-carriage E, x performing the same function as carriage D, and the friction-leather x', with the friction-plates y and y', and the spring R and nut c'' on shaft a'', take the place of drum h and cord x. The circular-moving stop S'' performs the same duty as stop-rack j; stop-catch k and spring k' the same work as pawl G. Cam m' on crank c' takes the place of cams a a and crank n'. S''' and S''' are pressure-springs, taking the place of arms T T. D represents the material F, and cam m the substitute for cam a'.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The sliding bit-holder H, having a reciprocating as well as a rotating motion, in combination with the shifter S^2 and cam a', arranged to operate substantially as described.

2. The spacing-carriage E, in combination with stop-rack j, pawl G, cam a, friction-drum h, and friction-cord x, arranged and operated substantially as described.

3. The transverse sliding carriage D, in combination with bed-plate C and stand A, with the actuating parts thereto attached, substantially in the manner and for the purpose described.

4. Gage e, in combination with a boring-bit, p, having a reciprocating motion, and bit-holder H, operated substantially as described.

5. In a machine for spacing, boring, or punching, and moving the material by means of friction, as herein described, the combination of a reciprocating boring-bit or punch, p, frame G, and stop-rack j, all being arranged to operate automatically, in the manner and for the purpose described.

6. The concave friction-drum h, in combination with friction-cord x, laterally-adjustable bed D, and spacing-carriage E, operated substantially as herein described.

7. The yielding clutch-shifter S^2, in combination with the reciprocating bit-holder H, and cams a a, constructed and operated substantially as and for the purpose herein set forth.

JAS. M. SEYMOUR.

Witnesses:
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WALLACE H. PARKER.