(No Model.) 3 Sheets—Sheet 1.

E. C. STEARNS.

DRILL PRESS.

No. 404,367. Patented May 28, 1889.

Fig. 1.

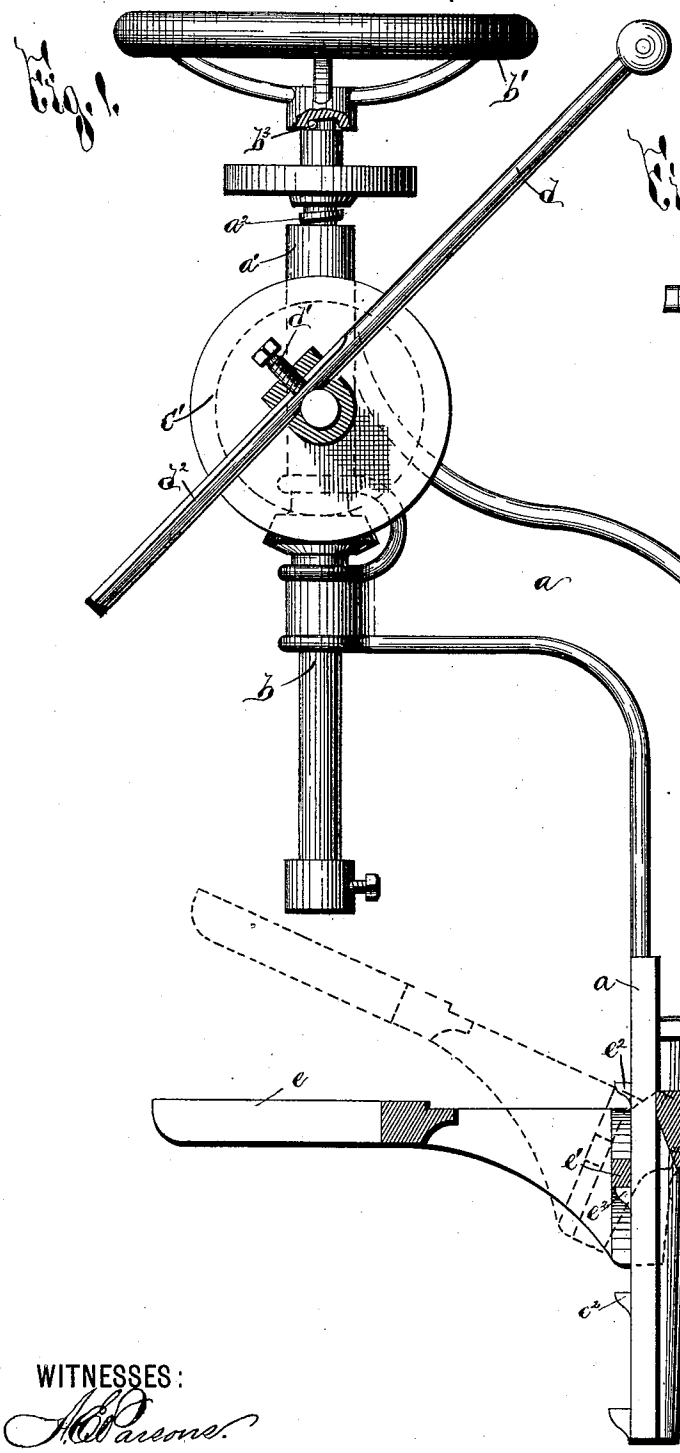
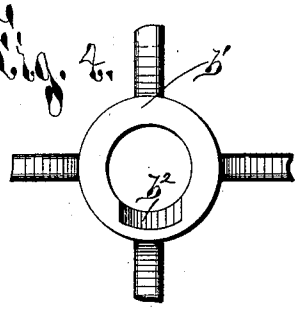


Fig. 4.



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Fig. 2.

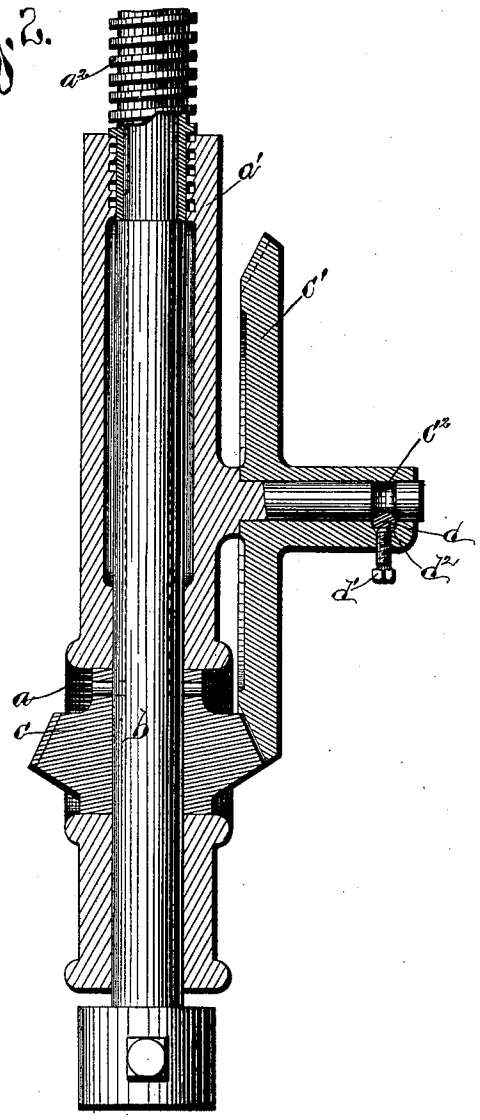
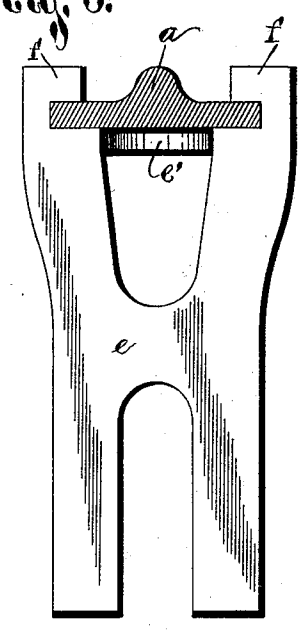


Fig. 3.



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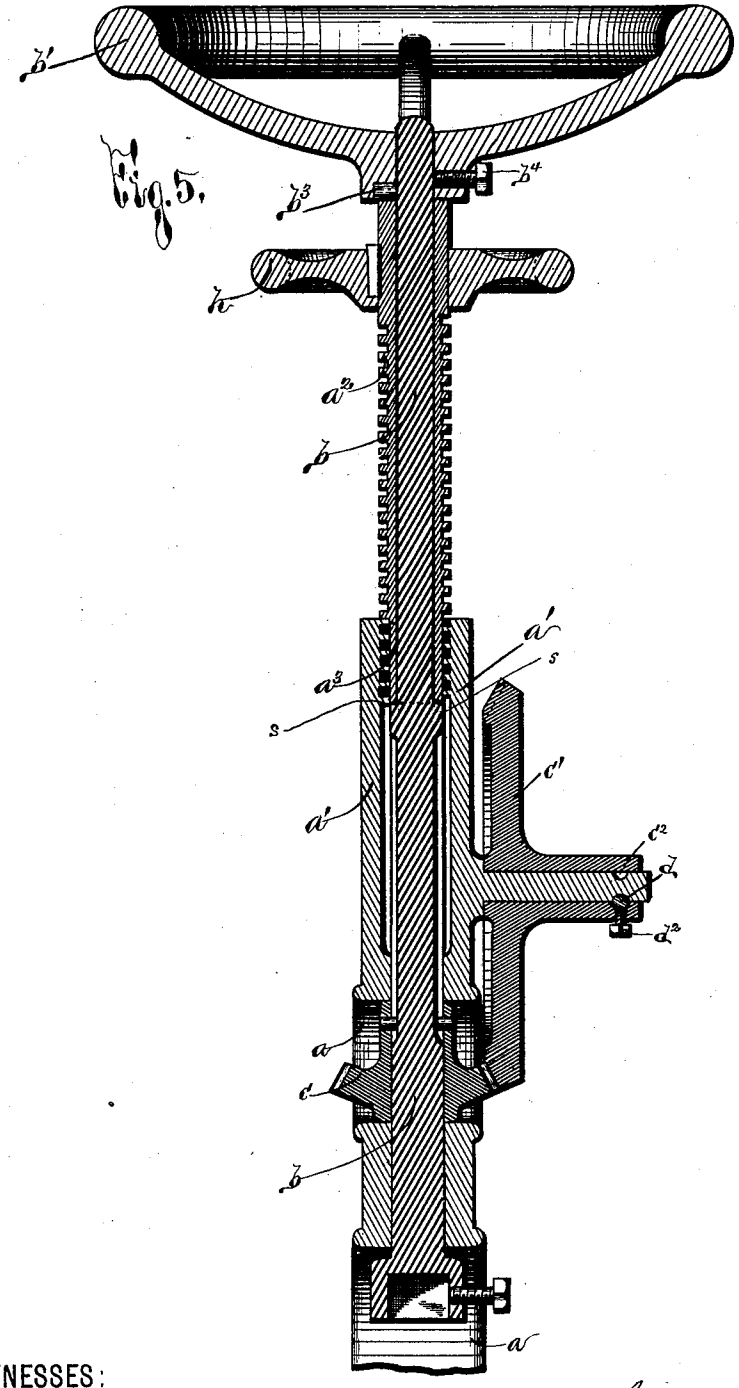
(No Model.) 3 Sheets—Sheet 3.

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DRILL PRESS.

No. 404,367. Patented May 28, 1889.

Fig. 5.



WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWARD C. STEARNS, OF SYRACUSE, NEW YORK, ASSIGNOR TO EDWARD C. STEARNS & CO., OF SAME PLACE.

DRILL-PRESS.

SPECIFICATION forming part of Letters Patent No. 404,367, dated May 28, 1889.

Application filed June 9, 1888. Serial No. 276,580. (No model.)

To all whom it may concern:

Be it known that I, EDWARD C. STEARNS, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Drill-Presses, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to an improvement in drill-presses; and it consists in certain peculiarities of the construction and arrangement of the same, substantially as will be hereinafter more fully set forth and claimed.

In order to enable others skilled in the art to which my invention pertains to make and use the same, I will now proceed to describe its construction and operation, referring to the accompanying drawings, in which—

Figure 1 is a side elevation of my drill-press, partly sectioned. Fig. 2 is a vertical section of the feeding-screw; Fig. 3, a plan view of the work-table with the standard or main frame of the press in section, and Fig. 4 is a detail view of the hub of the hand-wheel. Fig. 5 is an enlarged vertical section of the spindle, its actuating-screw, and its supporting bearing or sleeve.

a represents the main frame of my machine, of any desired or suitable form and size, provided with a sleeve or bearing, *a'*, through which passes and is supported the feeding-screw a^2, which is loose upon the spindle *b*, which is upon its lower end provided with a drill-chuck, as usual, and on its upper end with a balance-wheel, *b'*, which is secured thereon by a set-screw, b^4, or other suitable means, and has the under side of its hub formed on one side with an inclined recess, b^2, (shown in Figs. 1 and 4,) and in this recess, resting upon the top of the screw-sleeve, is a small roller, b^3. This roller is normally resting in the large end of the recess; but when the wheel is to be brought into use a slight turn will wedge the roller into the small end of the inclined recess and lock together the screw-sleeve and balance-wheel secured on the spindle *b*, so they may be turned freely for a purpose presently explained.

The feeding-screw sleeve a^2 is mounted loosely on the spindle *b*, interposed between a shoulder, *s*, provided thereon, and the balance-wheel *b'* secured thereto, and the screw-sleeve is provided, preferably, with a hand-wheel, *h*, secured thereto in any suitable manner, in order that the drill may be easily actuated by a wheel of suitable size, as the balance-wheel *b'* is of too large diameter to successfully and expeditiously work the drill-press. It will be observed, however, that when desired such hand-wheel might readily be dispensed with and the balance-wheel used to perform the same function.

As seen in Figs. 2 and 5 of the drawings, the feeding-screw sleeve is provided with suitable threads engaging with the supporting-bracket *a'*; but at the lower extremity of said sleeve the threads are cut away, leaving a plain sleeve, a^3, closely fitting the interior of the thread provided in said bracket. When the screw-sleeve has been forced to its extreme height by means of the actuating mechanism, it will be seen that, by reason of the threads being cut away on the extremity a^3, the screw-sleeve cannot be disengaged from its supporting-bracket, thus preventing the machine from being injured by amateurs or careless operators, who by unduly forcing upward the sleeve would cause the same to be disengaged, requiring some time to replace the same. The threads on the screw-sleeve a^2 are preferably arranged to run out or disengage before the usual chuck secured to the spindle contacts with the sleeve *a'*, thus preventing the same from becoming unduly marred or battered.

Upon the spindle *b* is placed a pinion, *c*, through which the spindle slides, and meshing with this is a gear, *c'*, journaled on a stud on the main frame, said stud being formed with a circumferential groove, c^2, near its outer end, as in Fig. 2. The operating-handle *d* is simply a straight rod with a hand-hold upon one end. This handle is passed through the hub of the gear *c'* and lies in the groove c^2 of the stud, thereby not only acting as a handle for operating the machine, but also locking the gear in place. The handle is pushed through the hub to give more or less power, and is secured at any point by a set-screw, *d'*, the point of which lies in a longitudinal groove, d^2, in the handle, and serves, also, to prevent said handle from turning.

The work-supporting table *e* is a plain

bracket-casting formed with a cross-bar, e', which rests upon a series of projections, e^2, upon the face of the main frame. It is also formed with a pair of hooked lugs, f, which embrace the edges of the main frame and are beveled, as at f', to allow the supporting-table to be lifted at its outer end, as in dotted lines in Fig. 1, and it will be noted that this throws the cross-bar e' out and around the projections e^2, so the table may be readily raised and lowered.

In operation the work is placed upon the table and the handle turned by the operator, thus imparting a rapid motion to the drill. The spindle, as will be noted, is sustained by the screw-sleeve, and the weight of this, together with its balance and hand wheels, is usually sufficient to feed the spindle and drill down with proper speed, and when they are to be turned backward the turning of the hand-wheel at once locks the balance-wheel, secured to the spindle b, and the feeding-screw together, and the spindle is quickly lifted.

Stress is laid on the extreme simplicity of the extension-handle and its double use as a lock for the driving-gear, so that all the parts are very quickly taken apart and put together again when necessary.

It will be understood that, when desirable, instead of the balance-wheel b' being secured at the extremity of the spindle b, a suitable collar, b', might be used, or instead of the shoulder s, provided on the spindle b, against which the screw-sleeve abuts, a pin, s, might be provided upon the spindle b and projecting therefrom; also, there may be other changes in the detail construction and arrangement of the parts of my device without departing from the spirit of my invention.

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

1. The combination, with the main frame of a drill-press provided with a series of projections on its face, of an adjustable work-supporting table formed with a cross-bar to rest on said projections, and with a pair of arms hooked around the edges of the main frame and having their rear ends beveled, substantially as and for the purpose set forth.

2. In a drill-press, the combination, with the drill-spindle, of a supporting bracket or frame, a shoulder, s, provided upon said spindle between its opposite extremities, a wheel or collar, b', secured to the spindle on one side of the shoulder s, a loose screw-sleeve, a^2, mounted upon the spindle and interposed between said wheel b' and shoulder s, a roller, b^3, interposed between said loose screw-sleeve a^2 and the wheel b', locking the screw-sleeve a^2 and wheel b' together, with gearing for actuating the spindle, and a hand-hold connected to said gearing and adjustable at different distances to the motor shaft or spindle of the gearing, substantially as and for the purpose set forth.

3. In a drill-press, the combination, with the main frame provided with a stud circumferentially grooved near its end, of a main driving-gear mounted upon said stud, and an adjustable handle passed through the hub of the gear and the groove in the stud, substantially as and for the purpose set forth.

4. In a drill-press, the combination, with the drill-spindle, the screw-feeding sleeve thereon, and the main frame, of a wheel or collar secured upon the top of the spindle, having an inclined recess in its hub, and a small roller placed in said recess, substantially as and for the purpose set forth.

5. In a drill-press, the combination, with a drill-spindle, of a shoulder and loose screw-sleeve mounted on the spindle, means for engaging the screw-sleeve with its spindle, the plain extremity a^3, provided on the screw-sleeve, and a suitable bracket provided with threads engaging the screw-sleeve, substantially as and for the purpose set forth.

6. In a drill-press, the combination of the frame a', spindle b, guided rectilinearly therein, a shoulder, s, projecting from said spindle between the opposite extremities thereof, a wheel or collar, b', secured on the upper extremity of the spindle, a loose screw-sleeve mounted on a spindle and interposed between the collar and shoulder, an inclined recess in the hub secured on the spindle, and a roller placed in said recess and bearing upon the upper face of the loose screw-sleeve a^2, binding the opposite face of the screw-sleeve against the shoulder provided on the spindle b, substantially as and for the purpose set forth.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 14th day of March, 1888.

EDWARD C. STEARNS.

Witnesses:
FREDERICK H. GIBBS,
W. C. MCARTHUR.