

G. WOODWORTH.

TAPPING ATTACHMENT FOR DRILL PRESSES.

No. 541,029.

Patented June 11, 1895.

Fig. 1.

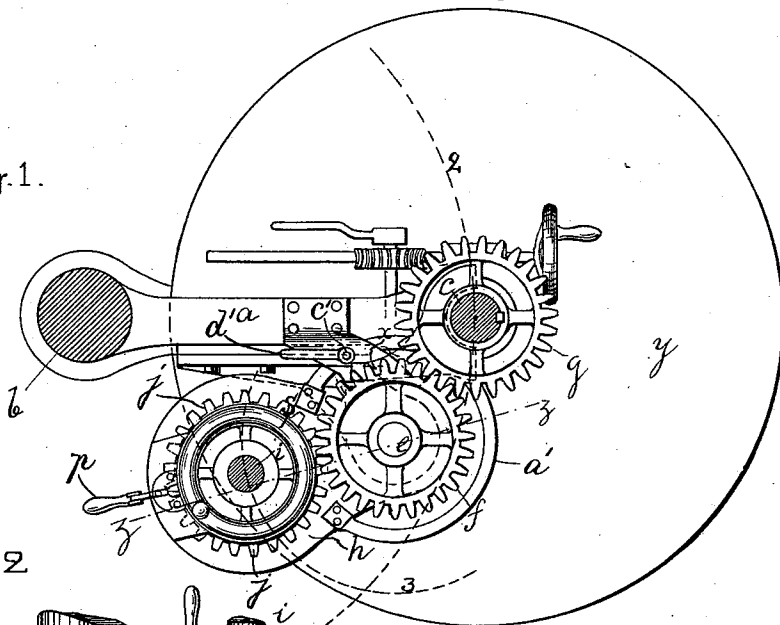
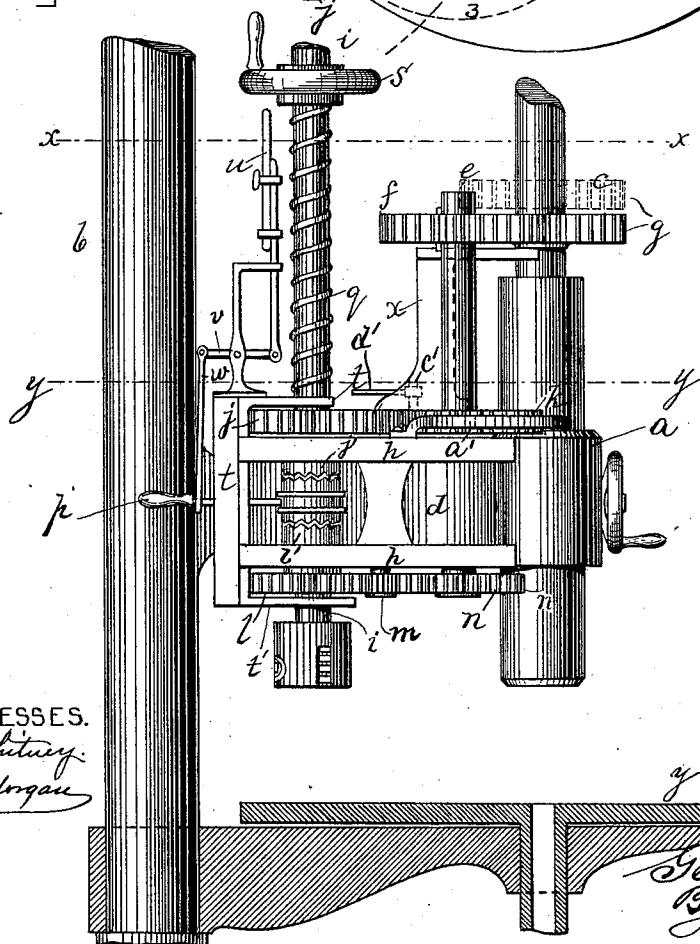


Fig. 2.



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(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

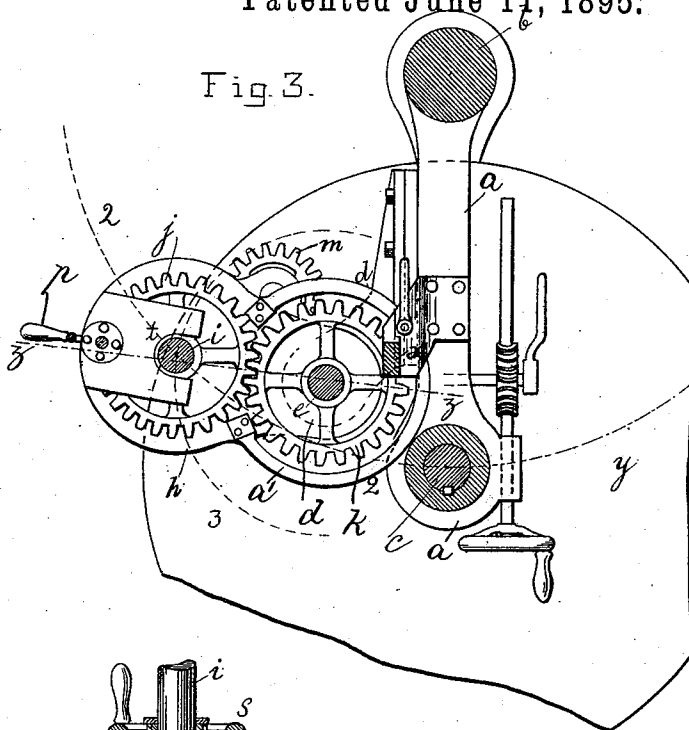


Fig.4.

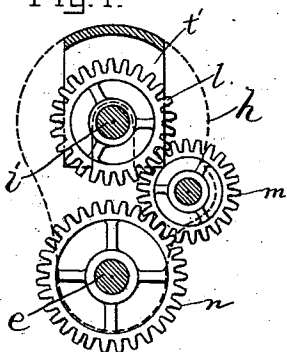
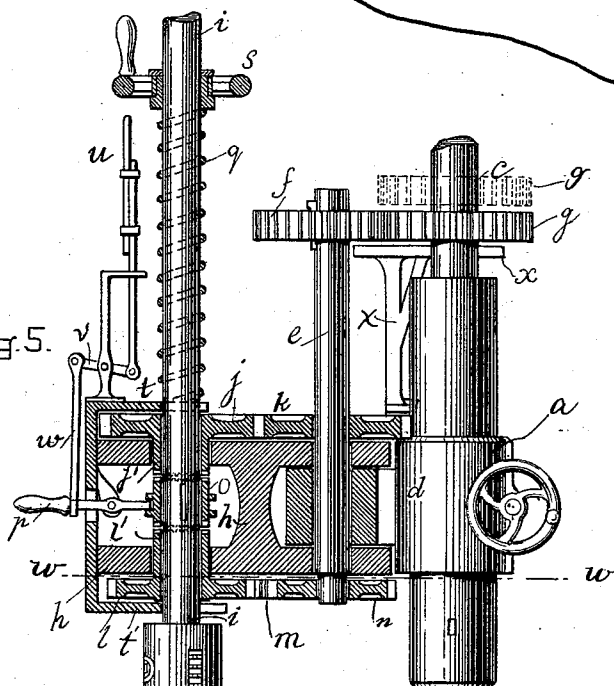


Fig.5.



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UNITED STATES PATENT OFFICE.

GEORGE WOODWORTH, OF BROOKLYN, NEW YORK.

TAPPING ATTACHMENT FOR DRILL-PRESSES.

SPECIFICATION forming part of Letters Patent No. 541,029, dated June 11, 1895.

Application filed June 24, 1892. Serial No. 437,838. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WOODWORTH, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Tapping Attachments for Drill-Presses, of which the following is a specification.

My invention consists of a tapping spindle mounted in an improved, simple and efficient construction and arrangement of apparatus, in suitable relation to the drilling spindle for bringing the holes drilled into position for receiving the tap without shifting the work on the table, all as hereinafter fully described, reference being made to the accompanying drawings, in which—

Figure 1 is a horizontal section of a drill-press having my improved attachment on line *x x*, Fig. 2. Fig. 2 is partly a side elevation and partly a sectional elevation. Fig. 3 is a horizontal section on line *y y*, Fig. 2. Fig. 4 is a horizontal section of parts on line *w w*, Figs. 2 and 5. Fig. 5 is an elevation of part of the drill, with the tapping attachment in section, on line *z z*, Figs. 1 and 3.

On the arm *a*, of the standard *b*, supporting the drill spindle *c*, of usual form and arrangement, I have provided the laterally projecting bracket *d*, in the outer extremity of which is mounted a vertical counter shaft *e*, parallel with the drill spindle so as to rotate freely and having at its upper end a toothed wheel *f*, gearing with another corresponding wheel *g*, on the drill spindle for rotating it. This shaft *e* is in, and also forms in this case the pivot of a swinging bracket *h*, jointed to the end of bracket *d*, by said shaft. The pivot for the swinging bracket may however surround the shaft. This swinging bracket carries the tapping spindle *i*, parallel to the drill spindle and so as to swing on the axis of shaft *e*. At the upper side of the swinging bracket *h*, the tapping spindle has a loose wheel *j*, geared with another wheel *k*, keyed on the counter shaft *e*, and at the lower side of said bracket *h* the tapping spindle has another loose wheel *l*, geared with shaft *e*, through the intermediate wheels *m*, and the wheel *n* on said shaft *e*. Wheels *j* and *l* have clutch hubs *j'* and *l'*, respectively with which the clutch *o*, splined or feather keyed on the drill mandrel engages to

drive the spindle forward for inserting the tap, or backward for withdrawing it according as said clutch is engaged with wheel *j*, or *l*, by the shifting lever *p*.

The tap spindle is adapted to slide up and down in the wheels *j* and *l*, and clutch *o*, as usual in such devices and it is provided with the coiled spring *q*, to hold it up in the normal position said spring being applied on the spindle between the hub of the hand wheel *s*, at the upper end of the spindle and the plate *t*, employed for the spring to rest on and also as a guard to prevent wheel *j*, from rising along with the spindle when it moves upward, said plate having its support on the end of the swinging bracket *h*, and its lower extremity *t'*, extends under wheel *l*, to hold it in its working position. The wheels *j* and *l* may however be held in position by means of collars on the inner ends of the clutch hubs or other approved means.

The gear train *l, m*, and *n*, for withdrawing the tap from the work is adjusted for higher speed of the tap spindle than the train *j, k*, for entering the tap as is usual in such cases.

I have provided an adjustable automatic tripping device for unclutching and stopping the tapping spindle which consists of the extensible sliding rod *u*, fixed in an upright support under the hand wheel coming in contact with the upper end of said rod when the tap has nearly entered to the desired depth in the work and then force said rod downward. The extensible rod *u* is connected at its lower end with one end of the rock lever *v*, pivoted at its center and connected at its other end with the clutch lever *p*, by the rod *w*, so that the downward movement of rod *u*, shifts clutch *o*, out of connection with the hub of wheel *j*, and into connection with the hub of wheel *l*, to reverse the tap and withdraw it from the work automatically.

The standard *x* supports the wheel *g*, on the drill spindle *c*, which has to slide up and down in said wheel. Wheel *g* may be shifted upward and supported out of gear with wheel *f*, as indicated in dotted lines, in Figs. 2 and 5, when the machine is to be used for drilling only.

It will be seen that holes drilled in the work supported on the table *y*, may be brought under the tap suitably for being entered by the

tap, without shifting the work on the table, this being accomplished by swinging table *y*, on the standard *b*, and swinging the tapping spindle on the pivot *e*, to the point where the
5 paths of the hole and the tap cross as indicated by the dotted lines 2 and 3.

When the tap is to be entered the attendant clutches the tap spindle with the driving train and then with the hand wheel *s*, presses the
10 spindle down until the tap enters, and when the tap is withdrawn from the work by the reverse motion the spring again shifts the spindle to the normal position.

To secure the tapping spindle in position
15 while at work a curved bar *a'* is attached to the swinging bracket *h*, and a set screw *c'* having a handle *d'* is fitted in the base plate *b'* of the standard *x* so as to be screwed against the bar arranged under said base and thus
20 secure it in a way enabling it to be secured and released readily.

I claim—

1. The combination with the drill spindle

located in fixed supports, and with the swinging work table, of the swinging tapping spindle parallel with the drill spindle, and having its pivotal center eccentric to that of the table, said tapping spindle having suitable direct and reverse driving gear substantially as described.

2. The combination with the drill spindle, and with the swinging work table, of the tapping spindle parallel with the drill spindle, the swinging frame pivoted on the bracket of the spindle supporting arm, the counter shaft
35 in the axis of the tapping spindle supporting frame, and the gears connecting the drill spindle and tapping spindle substantially as described.

Signed at New York, in the county of New York and State of New York, this 26th day of March, A. D. 1892.

GEORGE WOODWORTH.

Witnesses:

W. J. MORGAN,

W. B. EARLL.