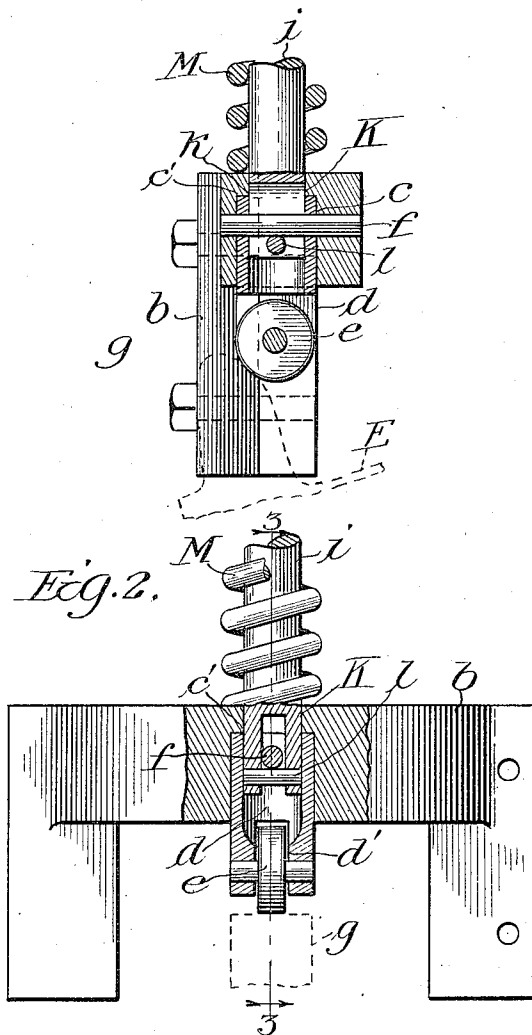
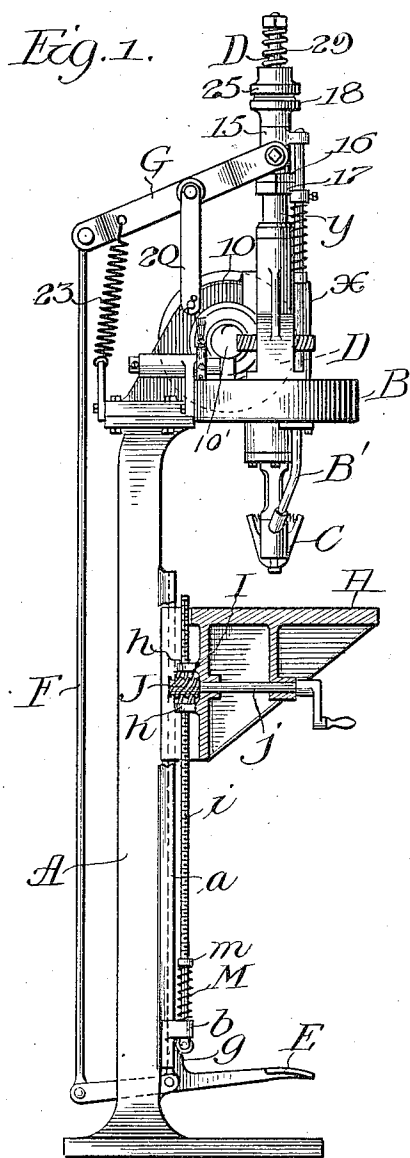


1,017,098.

Patented Feb. 13, 1912.



Witnesses
G. M. Kennick
E. Lundy.

Inventor
Wilson P. Hunt
by Frank D. Thomason,
att'y.

UNITED STATES PATENT OFFICE.

WILSON P. HUNT, OF MOLINE, ILLINOIS, ASSIGNOR TO REYNOLDS PATTERN AND MACHINE COMPANY, OF MOLINE, ILLINOIS, A CORPORATION OF ILLINOIS.

ADJUSTABLE TABLE FOR AUTOMATIC SCREW-DRIVING MACHINES.

1,017,098.

Specification of Letters Patent.

Patented Feb. 13, 1912.

Application filed February 26, 1910. Serial No. 546,242.

To all whom it may concern:

Be it known that I, WILSON P. HUNT, a citizen of the United States, residing at Moline, in the county of Rock Island and State of Illinois, have invented new and useful Improvements in Adjustable Tables for Automatic Screw-Driving Machines, of which the following is a full, clear, and exact description.

My invention relates to means for adjusting the bed or table of labor saving machines, such as automatic screw-driving machines, automatic and multiple drills, and the like. Its object is to provide suitable mechanism in a device, such as an automatic screw-driving machine, which, after the work has been placed on the table, and before the screw-driving operation has begun, will elevate said table and raise the work to a point where it is engaged and held securely between the same and the tool driving members of the machine, in proper relation to the screw-driving tool. This clamping operation is adapted to be performed by the same movement of the treadle or foot-lever that releases the screws from the magazine, but is so timed that it is adapted to be completed just before the driving operation is ready to commence, or before the screw reaches the devices for temporarily clamping and holding the same. I accomplish this by the means hereinafter fully described and as more particularly pointed out in the claims.

In the drawings:—Figure 1 is a side elevation, partly in section, of an automatic screw-driving machine having my improved adjustable table attached thereto. Fig. 2 is a front elevation, of a fragment of the same, showing the details of construction of the lifting or elevating frame thereof, drawn to a larger scale, and partly in section. Fig. 3 is a central transverse vertical section taken on dotted line 3—3, Fig. 2.

Referring to the drawings, A represents a suitable standard having its lower end flanged outward to form a base-plate, and provided at its upper end with a forwardly projecting portion that is adapted to support the mechanism of an automatic screw-driving apparatus, similar to the device set forth and described in an application for Letters Patent of the United States filed by me March 30, 1906, Serial No. 309,009 which has become Letters Patent No. 950,534, dated March 1, 1910. A bearing 10, for a trans-

verse horizontal drive shaft 10' is provided in the upper frame-work, as is also a vertical bearing α for the vertically reciprocable tubular shaft γ . These bearings permit of the driving of one shaft by the other through the medium of suitable worm-gearing (not shown), and allow the vertical shaft to be reciprocated independently of, (although revolved by) said drive-shaft.

The screw driving mechanism comprises a suitable magazine B from which the screws are fed one at a time through chute B' to suitable gripping or holding jaws C, where they are engaged and screwed into the work by a vertically disposed continuously revolvable bit D. This bit is brought into engagement with the head of the screw by depressing a suitable foot-lever or treadle E, which latter is fulcrumed mediate its ends in the bottom of this standard A, and has its rear end connected by a vertical rod F to the lower rear end of a lever G, fulcrumed mediate its ends to the upper end of link 20 and having its other end connected to suitable frictionally-operated motion-transmitting devices on the upper portion of the bit. A spring 23 having one end secured to said lever and the opposite end connected to the frame keeps the parts normally in the position shown in the drawing, with the forward end of lever G raised. The upper end of the shaft γ extends above its bearing α and is surrounded by a sleeve 15, and both above and below said sleeve it is screw-threaded. Below sleeve 15 nuts 16 and 17 are screwed thereon and above said sleeve has a collar 18 thus preventing the sleeve from moving longitudinally independent of the shaft while permitting the latter to rotate. Sleeve 15 is engaged by the forward bifurcated end of the horizontal lever G. The upper face of collar 18 is engaged by a friction-disk 25 that is kept normally pressed downwardly against said collar by a coil-spring 29 surrounding the upper end of bit D between said disk and an adjusting nut on its upper end. The tension of said spring (regulated by the nut) increases or diminishes the friction between the disk 25 and collar 18 so that when the screw has been turned a proper distance the friction between the same will be overcome and the bit will cease to revolve.

Secured to or cast on the two forward vertical corner edges of the standard, are

suitable parallel guide-columns *a, a*, which are engaged by the grooves indicated in dotted lines in the vertical supporting plate of the bracket shaped work-table or platform H, which latter is movable to and from the bit D for adjusting it to different sizes of work. The rear portion of this table is provided with a pair of integral lugs *h, h*, between which a bevel gear or worm-pinion I is mounted on a vertically disposed non-rotatable screw-threaded bar *i*, whose lower end is yieldingly seated in a suitable lifting-frame *b* and extends up through said lugs *h, h*, and is engaged by the screw-threaded bore of pinion I.

Mounted in bearings on and in a horizontal position below the bed of the table H is a suitable longitudinally disposed shaft *j*, which is provided on its extended forward end with a crank and has a worm-pinion J on its rear end that meshes with worm-pinion I. By turning said crank, shaft *j* revolves and through the medium of pinion J revolves worm I, which, as the bar *i* does not revolve, climbs up the same or works downward thereon between lugs *h* and carries the bed-plate up or down with it according as desired, to relatively adjust the work toward or away from the bit. Mounted on the guide-columns *a, a*, near the lower ends thereof, is an inverted substantially U-shaped lifting or elevating frame *b*, the vertical members of which engage said tracks *a*, and the transverse horizontal member of which bridges the space between the same. This horizontal member of frame *b* is provided with a centrally located vertical opening *c*, the lower portion of which is slightly greater in diameter so as to provide a suitable shoulder *c'*. Fitting into and filling this lower wider portion of bore *c* until its upper edges abut against shoulder *c'*, is a suitable hollow plug *d*, the lower end of which is bifurcated to provide bearing lugs *d'*, between which an anti-friction roller is journaled on a suitable pin secured in said lugs. Said plug is adapted to be held securely in place by a transverse pin *f* extending through its upper portion into the horizontal member of said elevating frame *b*. Roller *e* is, preferably, engaged by a cam or hump *g* made integral with treadle E at about its pivotal point and when the treadle is depressed, the cam rises so that its greatest diameter engages said anti-friction roller and pushes the elevating frame in an upward direction a slight distance sufficient to bring the work into engagement with the overhanging screw-driving mechanism. The lower end of the screw-threaded bar *i* fits into the reduced portion of opening *c* and extends down into the bore of the plug *d* of the elevating frame, and its lower end is provided with a longitudinally elongated slot *h* strik-

ing diametrically through the same to form a pair of parallel arms or bifurcations K that extend down below and straddle retaining pin *f*. Below pin *f* a transversely arranged pin *l* is driven through said bifurcations K. The bar is held at the limit of its upward movement by means of a coil-expansion spring M surrounding it above frame *b*, which is seated on said frame and extends upward to a suitable adjusting gage-nut mounted on the rod.

In operation when it is desired to adjust the table to accommodate various thicknesses of work, the crank on the outer end of the shaft *j* is turned in one direction or other until, approximately, the proper distance has been allowed. The work is then placed upon the table and the foot-lever E is depressed, causing frame *b*, bar *i* and table H to rise and elevate the work and clamp up under the bit. If there is a slight variation in the dimension of the work, spring M will permit the table to remain stationary while the elevating frame continues to rise, and thus compensate for such variation in the construction of the article being operated on. This elevation of the table is so timed that the work will reach the chuck just before or about the time the screw is started into the work by the bit D.

What I claim as new is:—

1. In a machine of the kind specified comprising a downwardly movable revoluble bit, an upwardly movable bed-plate, mechanism including a vertically adjustable screw-threaded yielding bar, a rotatable shaft supported by said bed-plate, gearing connecting said shaft and bar through the medium of which said bed-plate is adjustable vertically, and means for simultaneously actuating said rod and bar.

2. A machine of the kind specified comprising a downwardly movable bit, an upwardly movable bed-platen, mechanism, including a vertical rod for moving said bit downward, an elevating frame having a vertical opening, a hollow plug filling the lower end of said opening, a vertical bar the lower end of which is seated in and has a limited longitudinal movement in the upper portion of said opening, a spring governing the movement of said bar in said opening, and a foot-lever engaging said plug and having one end connected to said rod, which latter is actuated by said lever simultaneously with said bar.

3. A machine of the kind specified comprising a downwardly movable bit, an upwardly movable bed-platen, mechanism including a vertical rod for moving said bit downward, an elevating-frame having a vertical opening, a hollow plug filling the lower end of said opening, and having a transverse retaining pin passed through the

upper end of the same, a vertical bar having a bifurcated lower end the arms of which straddle said pin and are retained thereon by a pin, a spring on said bar tapped through the same below and at an angle to said first mentioned pin, and a foot-lever engaging said lug and having one end connected to said rod which latter is actuated by said lever simultaneously with said bar.

10 4. A machine of the kind specified comprising a downwardly movable bit, an upwardly movable bed-platen, mechanism, including a vertical rod for moving said bit downward, an elevating frame having a vertical opening, a hollow plug filling the lower end of said opening and having a transverse retaining pin passed through the upper end of the same and provided with an anti-friction roller on its lower end, a vertical bar having a bifurcated lower end the arms of which straddle said pin and are retained thereon by a pin passed through the same below and at an angle to said first mentioned pin, a spring on said bar, and a foot lever engaging the roller on said plug and having a cam mediate its ends that engages said roller, one end of said lever connected to

said rod which latter is actuated by said lever simultaneously with said bar.

5. A machine of the kind specified comprising a downwardly movable bit, an upwardly movable bed-platen, mechanism including a vertical rod for moving said bit downward, an elevating-frame having a vertical opening, a hollow plug filling the lower end of said opening, and having a transverse retaining pin passed through the upper end of the same, a vertical bar having a bifurcated lower end, the arms of which straddle said pin and are retained thereon by a pin tapped through the same below and at an angle to said first mentioned pin, a spring on said bar, and a foot-lever pivoted mediate its ends and provided with a cam that engages said plug and having one end connected to said rod which latter is actuated by said lever simultaneously with said bar.

In witness whereof I have hereunto set my hand this 14th day of February 1910.

WILSON P. HUNT.

Witnesses:

G. D. REYNOLDS,
CHAS. HINTZ.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."