June 30, 1936. C. A. UPSON 2,045,812

PRACTICING MACHINE FOR ADJUSTERS

Filed Feb. 18, 1935 2 Sheets-Sheet 1

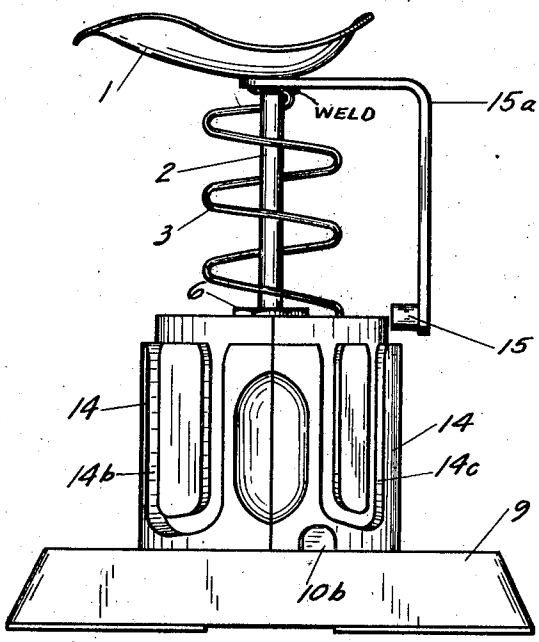


FIG-1

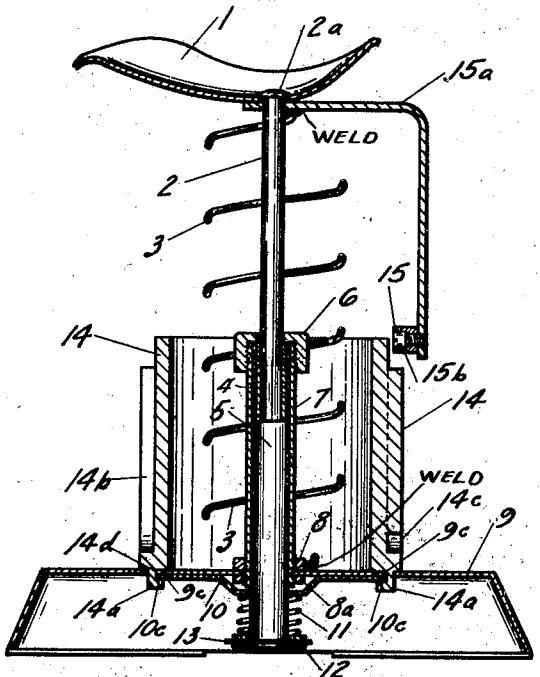


FIG-2

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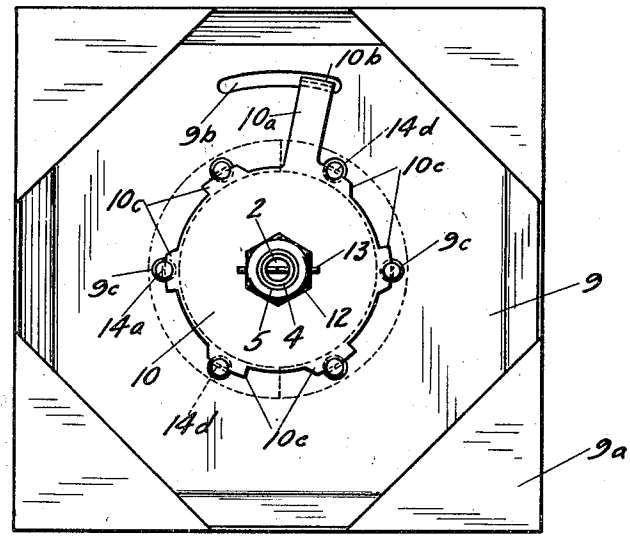


FIG-3

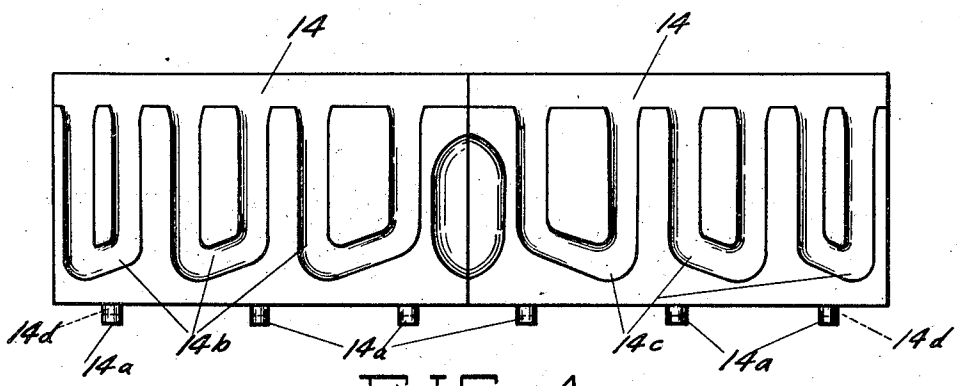


FIG-4

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UNITED STATES PATENT OFFICE

2,045,812

PRACTICING MACHINE FOR ADJUSTERS

Carl A. Upson, Hammond, Ind.

Application February 18, 1935, Serial No. 7,052

20 Claims. (Cl. 35—17)

My machine relates to a new and useful machine or instrument for use by chiropractic students in practicing the manual movements utilized in administering chiropractic adjustments to the spine or vertebræ.

The objects of my invention are:

1. To provide a simple, inexpensive apparatus upon which various movements utilized in administering chiropractic adjustments may be practiced which will afford sufficient resistance and recoil to simulate the natural resistance and recoil of a human spine;

2. To provide such an instrument having means adapted to guide the movements practiced thereon both as to power and length of thrust and direction and extent of torque;

3. To provide such an instrument on which various degrees of thrust and torque may be practiced;

4. To provide such an instrument in which thrust, torque and recoil movements may be practiced in rapid succession.

I accomplish these objects by the means illustrated in the accompanying drawings, in which,—

Figure 1 is an end elevation of my apparatus;

Figure 2 is a vertical section through the middle of the apparatus as shown in Figure 1;

Figure 3 is a plan view looking upwardly at the bottom of the apparatus; and

Figure 4 is a side elevation of the grooved guide plates as they would appear if straightened out.

Similar numerals refer to similar parts throughout the several views.

My apparatus comprises a base, 9, which is preferably composed of a metal stamping, but may be cast or otherwise formed of any desired material. The base in general is composed of a flat plate with flanges extending downwardly therefrom and triangular reenforcing plates, 9a, united to the lower edges of the flanges at the corners.

A pair of matched guide plates, 14, which together form a cylinder, are mounted upon the base, 9, and have lock pins, 14a, united to or formed integral with their lower ends. These lock pins, 14a, are seated in suitable openings or bores, 9c, formed in the top of the base and project through the base. Each lock pin is provided with a slot on its inner side just below the top plate of the base which slots are adapted to receive keys or lugs, 10c, formed upon the periphery of a key plate or locking plate, 10, and project laterally therefrom.

A column, 7, is seated in a suitable central opening in the top of the base, 9, and secured thereto by lock nuts, 8 and 8a, respectively above and below the top plate of the base. This column, 7, extends vertically upwardly approximately the height of the guide plates, 14, and a cap, 6, is threaded upon the upper end thereof.

Within the column, 7, a tube, 5, is mounted which extends below the column, 7, and forms a support for the locking plate, 10, which is formed with a central opening through which the tube, 5, extends.

A nut, 12, is united to the lower end of the tube 5, and may be secured thereto by a pin, 13. A spiral spring, 11, is mounted encircling the lower end of the tube, 5, between the nut, 12, and the locking plate, 10, and acts to keep the locking plate, 10, upward in close contact with the top of the base, 9. The center of the locking plate, 10, is formed with a central depression which allows it to clear the locking nut, 8a.

A rod, 2, is slidingly mounted in the tube, 5, and has a bushing, 4, united to its lower end to fit closely the inside of the tube, 5. The pin, 13, acts as a stop to limit the downward movement of the rod, 2, and the cap, 6, acts as a detent to limit the upward movement thereof.

A spiral spring, 3, is mounted surrounding the rod, 2, with its lower end resting upon and united to the top plate of the base, 9, and its upper end united to a right-angle arm, 15a, one end of which is united to the top of the rod, 2, and the opposite end of which carries a plunger, 15, secured thereto by a set screw, 15b.

The spring, 3, is preferably united to the base plate, 9, and to the arm, 15a, by spot-welding.

A head or scoop, 1, preferably formed of sheet metal, is united to the top of the rod, 2, which has a head, 2a, formed thereon to secure the head, 1, to it. This head or scoop may be of any desired size and conformation, but as the portion of the hand actually utilized to effectuate a chiropractic adjustment is usually that portion of the heel of the palm adjacent the pisiform bone, I prefer to form the scoop or head, 1, of a size corresponding to that portion of the palm of the operator. The scoop will therefore normally have an area equal to less than one-fourth of the total area of the palm exclusive of the fingers. In using my device, the pisiform bone will be placed directly above the upper end of the rod, 2, as shown in Figure 2. It may be formed of any suitable material and the shape and size may be varied to meet the requirements of different operators. The curve of the head, 1, conforming to the curves of the contacting portion of the palm of the hand, gives the hand a firm

grip thereon and facilitates the torque movements hereinafter described.

The grooves shown in Figures 1 and 4 are to be regarded as illustrative of the direction and timing (as explained below in clause beginning "That is") of the vertical and torque movements of the operator's hand rather than as critical examples or as limitations of the scope of the apparatus. That is, the torque movement preferably comes approximately at the end of the downward movement. A variety of grooves will be provided for each machine and a plurality of plates, 14, having different forms of grooves, may be provided with each machine if desired. It should be noted that the grooves indicate not only vertical movement, but also the torque or rotational movement and as the vertical and torque movements utilized in actual practice vary greatly, a corresponding variance may be provided in the different grooves of each series, as well as in the different series of grooves for the same or different machines.

The guide plates, 14, are provided with substantially U-shaped grooves, 14*b* and 14*c*, of sufficient width and depth to receive and guide the plunger 15. The distance between the vertical branches of the U-shaped grooves may be varied to permit a greater or less lateral travel of the plunger and the slope of the bottom portion of the grooves may be varied in direction as well as angle so as to permit practicing the application of torque while the hand is still traveling downward or to permit the application of the torque after the downward travel has been completed upon the return movement. It may likewise be varied to permit the application of torque either to the right or left as desired.

This arrangement will permit and assist the application of torque at the desired point and in the desired direction and for the desired distance and the spacing of the U-shaped grooves will afford limits to the torque movement beyond which it cannot pass.

For convenience, I refer to the downward movement of the rod, 2, as the thrust and to the upward movement of the rod, 2, as the recoil and to the rotative movement of the rod, 2, as the torque.

The locking plate, 10, is provided with an arm, 10*a*, which extends laterally therefrom and at the outer end of the arm, 10*a*, the arm is turned upwardly at 10*b* and extends upwardly through the arcuate slot, 9*b*, formed in the top plate of the base, 9, which arcuate slot is constructed on a radius from the center of the column, 7.

The arm, 10*a*, is so positioned that when swung to the right as shown in Figure 3, the keys or lugs, 10*c*, will enter the slots, 14*d*, and lock the pins, 14*a*, rigidly to the top of the base, 9, thus securing the semi-circular plates, 14, in position upon the top of the base. When it is desired to change the plates, 14, the locking plate, 10, is rotated to the left as shown in Figure 3 and the keys or lugs, 10*c*, are disengaged from the pins, 14*a*, thus unlocking the semi-circular plates, 14, and permitting them to be lifted off the base, 9. The bores, 9*c*, are all of the same size and uniformly spaced so that the plates, 14, may be moved to bring any particular U-shaped groove, 14*c* or 14*d*, into register with the pin, 15.

In the construction of my apparatus, a plurality of springs, 3, may be furnished of different degrees of compressibility so that they can be changed to greater or less resistance as desired. In the use of my apparatus, it is assembled with the spring, 3, of the desired resistance and the guide plates, 14 and 14*b* are adjusted so as to bring the particularly desired groove, 14*b* or 14*c*, in register with the plunger, 15.

The hand of the operator is then placed lightly upon the head, 1, where it may be suddenly pressed downward for the desired distance, carrying the plunger, 15, to the bottom of the adjacent groove, 14*b* or 14*c*, as the case may be. At the bottom of the stroke or thrust, the torque or twisting movement of the hand is applied to the right or left as the case may be, sufficiently to carry the plunger to the opposite vertical branch of the groove. The downward pressure upon the head, 1, is then suddenly released and the recoil of the spring, 3, carries the head, 1, back to its original position. It is well known that the natural elasticity of the back when supported by tables such as the B. J. Palmer Hi-lo, allows downward movements in the lumbar region of six inches or more and the elasticity of the tissues allows a very considerable torque or rotation of the operator's hands without excessive rotation of the vertebra concerned. The apparatus disclosed assists the pupil to learn these motions.

It is obvious that the pattern of the grooves, 14*b* and 14*c*, may be varied to provide for a wide variation in thrust and torque, both as to length and direction of travel.

My apparatus will thus enable the student to practice the entire range of manual movements utilized in chiropractic adjustments of the vertebræ and will permit the user to train himself thoroughly in the various movements, as well as strengthen his muscles and to acquire agility and facility of movement requisite for the most difficult adjustments.

It is obvious that various equivalents may be substituted for various parts of my apparatus and I do not limit my claims to the precise structures shown in the drawings.

It is obvious that the top of the spring, 3, may be united either to the arm, 15*a*, or to the scoop or head, 1, or directly to the rod, 2, and the lower end of the spring, 3, may be united either directly to the base, 9, or intermediately by being united to the nut, 8, or the column, 7, and such attachment may be made by spot-welding and/or other suitable means.

I claim:

1. An apparatus for practicing chiropractic adjusting movements comprising a base, a vertical column erected thereon, a thrust rod slidingly mounted within the column, a head united to the top of the rod, an angular arm rigidly united to the rod and having a downward extension spaced from the rod, a plunger united to the downward extension, vertical circular plates surrounding the rod and spaced therefrom having substantially U-shaped grooves formed in their outer faces, said grooves being adapted to receive and guide the plunger through downward, transverse and upward travel successively, and resilient means to resist the downward and rotative travel of the rod and to return it to its normal position at the end of the thrust and torque strokes thereof.

2. An apparatus for practicing chiropractic adjusting movements comprising a base, a vertical column erected thereon, a thrust rod slidingly mounted within the column, a head united to the top of the rod, an arm rigidly united to the rod and having a downward extension spaced

from the rod, a plunger united to the downward extension, plates surrounding the rod and uniformly spaced therefrom having grooves formed in their outer faces, said grooves being adapted to receive and guide the plunger through downward and transverse travel successively, and resilient means to resist the downward and rotative travel of the rod and to return it to its normal position at the end of the thrust and torque strokes thereof.

3. An apparatus for practicing chiropractic adjusting movements comprising a base, a vertical column erected thereon, a thrust rod slidingly mounted within the column, a palm-shaped head united to the top of the rod, an arm rigidly united to the rod and having a downward extension spaced from the rod, a plunger united to the downward extension, plates surrounding the rod and uniformly spaced therefrom having grooves formed in their outer faces, said grooves being adapted to receive and guide the plunger through downward and transverse travel successively, and resilient means to resist the downward and rotative travel of the rod and to return it to its normal position at the end of the thrust and torque strokes thereof.

4. An apparatus for practicing chiropractic adjusting movements comprising a base, a vertical column erected thereon, a thrust rod slidingly mounted within the column, a palm-shaped head united to the top of the rod, an angular arm rigidly united to the rod and having a downward extension spaced from the rod, a plunger united to the downward extension, vertical circular plates surrounding the rod and uniformly spaced therefrom having substantially U-shaped grooves formed in their outer faces, said grooves being adapted to receive and guide the plunger through downward, transverse and upward travel successively, and resilient means to resist the downward and rotative travel of the rod and to return it to its normal position at the end of the thrust and torque strokes thereof.

5. An apparatus for practicing chiropractic adjusting movements comprising a base, a vertical column erected thereon, a thrust rod slidingly mounted within the column, a head united to the top of the rod, an angular arm rigidly united to the rod and having a downward extension spaced from the rod, a plunger united to the downward extension, vertical circular plates surrounding the rod and spaced therefrom having substantially U-shaped grooves formed in their outer faces, said grooves being adapted to receive and guide the plunger through downward, transverse and upward travel successively, and resilient means connected to, and adapted to resist the downward and rotative travel of, the rod and to return it to its normal position at the end of the thrust and torque strokes thereof.

6. An apparatus for practicing chiropractic adjusting movements comprising a base, a vertical column erected thereon, a thrust rod slidingly mounted within the column, a head united to the top of the rod, an angular arm rigidly united to the rod and have a downward extension spaced from the rod, a plunger united to the downward extension, interchangeable vertical circular plates surrounding the rod and spaced therefrom having substantially U-shaped grooves formed in their outer faces, said grooves being adapted to receive and guide the plunger through downward, transverse and upward travel successively, and resilient means to resist the downward and rotative travel of the rod and to return it to its normal position at the end of the thrust and torque strokes thereof.

7. An apparatus for practicing chiropractic adjusting movements comprising a base, a vertical column erected thereon, a thrust rod slidingly mounted within the column, a head united to the top of the rod, an arm rigidly united to the rod and having a downward extension spaced from the rod, a plunger united to the downward extension, interchangeable plates surrounding the rod and uniformly spaced therefrom having grooves formed in their outer faces, said grooves being adapted to receive and guide the plunger through downward and transverse travel successively, and resilient means to resist the downward and rotative travel of the rod and to return it to its normal position at the end of the thrust and torque strokes thereof.

8. An apparatus for practicing chiropractic adjusting movements comprising a base, a vertical column erected thereon, a thrust rod slidingly mounted within the column, a palm-shaped head united to the top of the rod, an arm rigidly united to the rod and having a downward extension spaced from the rod, a plunger united to the downward extension, interchangeable plates surrounding the rod and uniformly spaced therefrom having grooves formed in their outer faces, said grooves being adapted to receive and guide the plunger through downward and transvere travel successively, and resilient means to resist the downward and rotative travel of the rod and to return it to its normal position at the end of the thrust and torque strokes thereof.

9. An apparatus for practicing chiropractic adjusting movements comprising a base, a vertical column erected thereon, a thrust rod slidingly mounted within the column, a head united to the top of the rod, an angular arm rigidly united to the rod and having a downward extension spaced from the rod, a plunger united to the downward extension, vertical circular plates surrounding the rod and spaced therefrom having substantially U-shaped grooves formed in one face thereof, said grooves being adapted to receive and guide the plunger through downward, transverse and upward travel successively, and resilient means to resist the downward and rotative travel of the rod and to return it to its normal position at the end of the thrust and torque strokes thereof.

10. An apparatus for practicing chiropractic adjusting movements comprising a base, a vertical column erected thereon, a thrust rod slidingly mounted within the column, a head united to the top of the rod, an arm rigidly united to the rod and having a downward extension spaced from the rod, a plunger united to the downward extension, plates surrounding the rod and uniformly spaced therefrom having grooves formed in one face thereof, said grooves being adapted to receive and guide the plunger through downward and transverse travel successively, and resilient means to resist the downward and rotative travel of the rod and to return it to its normal position at the end of the thrust and torque strokes thereof.

11. An apparatus for practicing chiropractic adjusting movements comprising a base, a support erected thereon, a manually depressible means mounted upon the support, an arm united to said means having a downward extension spaced therefrom, a plunger united to the downward extension, vertical plates surrounding said means and spaced therefrom having grooves formed in one face thereof adapted to receive and guide the

plunger through downward, transverse and upward travel successively, and resilient means united to the depressible means adapted to resist the downward and rotative travel thereof and to return same to its normal position at the end of the thrust and torque strokes thereof.

12. An apparatus for practicing chiropractic adjusting movements comprising a base, a support erected thereon, a manually depressible means mounted upon the support, an arm united to said means having a downward extension spaced therefrom, a plunger united to the downward extension, vertical plates surrounding said means and spaced therefrom having grooves formed in one face thereof adapted to receive and guide the plunger through downward and transverse travel successively, and resilient means united to the depressible means adapted to resist the downward and rotative travel thereof and to return same to its normal position at the end of the thrust and torque strokes thereof.

13. An apparatus for practicing chiropractic adjusting movements comprising a base, a support erected thereon, a manually depressible means mounted upon the support, an arm united to said means having a downward extension spaced therefrom, a plunger united to the downward extension, vertical plates surrounding said means and spaced therefrom having grooves formed in one face thereof adapted to receive and guide the plunger through downward and transverse travel successively, and resilient means united to the depressible means adapted to resist the downward travel thereof and to return same to its normal position at the end of the thrust stroke thereof.

14. An apparatus for practicing chiropractic adjusting movements comprising a base, a support erected thereon, a manually depressible means mounted upon the support, an arm united to said means having a downward extension spaced therefrom, a plunger united to the downward extension, vertical plates surrounding said means and spaced therefrom having grooves formed in one face thereof adapted to receive and guide the plunger through downward, transverse and upward travel successively, and resilient means connected to and interposed between the depressible means and the base adapted to resist the downward and rotative travel of said means and to return same to its normal position at the end of the thrust and torque strokes thereof.

15. An apparatus for practicing chiropractic adjusting movements comprising a base, a vertical column erected thereon, a thrust rod slidingly mounted within the column, a head united to the top of the rod, an angular arm rigidly united to the rod and having a downward extension spaced from the rod, a plunger united to the downward extension, vertical circular plates surrounding the rod and spaced therefrom having substantially U-shaped grooves formed in their outer faces, said grooves being adapted to receive and guide the plunger through downward, transverse and upward travel successively, and resilient means connected to and interposed between the rod and the base adapted to resist the downward and rotative travel thereof and to return same to its normal position at the end of the thrust and torque strokes thereof.

16. An apparatus for practicing chiropractic adjusting movements comprising a base having a top plate with downwardly extending supports, a vertical column erected thereon, a thrust rod slidingly mounted within the column, a head united to the top of the rod, an angular arm united to the rod and having a downward extension spaced from the rod, a plunger united to the downward extension, interchangeable guide-plates surrounding the rod and spaced therefrom having substantially U-shaped grooves formed in their outer faces, said grooves being adapted to receive and guide the plunger through downward, transverse and upward travel successively, pins formed integral with the bottoms of the guide-plates, bores formed in the top plate of the base adapted to receive said pin slots formed in the pins, a locking plate revolvably mounted within the base having lugs adapted to enter the slots in the pins and lock the guide-plates rigidly upon the base.

17. An apparatus for practicing chiropractic adjusting movements comprising a base having a top plate with downwardly extending supports, a vertical column erected thereon, a thrust rod slidingly mounted within the column, a head united to the top of the rod, an angular arm united to the rod and having a downward extension spaced from the rod, a plunger united to the downward extension, interchangeable guide-plates surrounding the rod and spaced therefrom having substantially U-shaped grooves formed in their outer faces, said grooves being adapted to receive and guide the plunger through downward, transverse and upward travel successively, pins formed integral with the bottoms of the guide-plates, bores formed in the top plate of the base adapted to receive said pin slots formed in the pins, a locking plate revolvably mounted within the base having lugs adapted to enter the slots in the pins and lock the guide-plates rigidly upon the base, and resilient means connected to and interposed between the rod and the base adapted to resist the downward and rotative travel thereof and to return same to its normal position at the end of the thrust and torque strokes thereof.

18. An apparatus for practicing chiropractic adjusting movements comprising a base, a support erected thereon, a manually depressible means mounted upon the support, an arm united to said means having a downward extension spaced therefrom, a plunger united to the downward extension, vertical plates surrounding said means and spaced therefrom having grooves formed in one face thereof adapted to receive and guide the plunger through downward, transverse and upward travel successively, pins formed integral with the bottoms of the guideplates, bores formed in the top plate of the base adapted to receive said pin slots formed in the pins, a locking plate revolvably mounted within the base having lugs adapted to enter the slots in the pins and lock the guide plates rigidly upon the base.

19. In an apparatus for practicing chiropractic adjusting movements, the combination with a base, of a support united thereto, manually depressible means slidingly mounted upon the support, a guide pin rigidly united to said depressible means, guiding means united to the base adapted to receive and guide said guide pin during thrust, rotative and recoil movements of said depressible means, and resilient means united to the depressible means adapted to afford resistance to the downward and rotative travel thereof and to return same to its normal position at the end of the thrust and torque strokes thereof.

20. An apparatus for practicing chiropractic adjusting movements comprising a base having a top plate with downwardly extending supports,

a vertical column erected thereon, a thrust rod slidingly mounted within the column, a head united to the top of the rod, an angular arm united to the rod and having a downward extension spaced from the rod, a plunger united to the downward extension, interchangeable guide-plates surrounding the rod and spaced therefrom having substantially U-shaped grooves formed in their outer faces, said grooves being adapted to receive and guide the plunger through downward, transverse and upward travel successively, means formed integral with the guide plates, bores formed in the top of the base adapted to receive said means, and a locking plate revolvably mounted within the base having lugs adapted to engage said means and lock the guide plates rigidly upon the base.

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