P. E. HUNTER.

METAL SUPPORTING AND TRANSFERRING TABLE.

APPLICATION FILED JUNE 29, 1918.

1,352,811.

Patented Sept. 14, 1920.

2 SHEETS—SHEET 1.

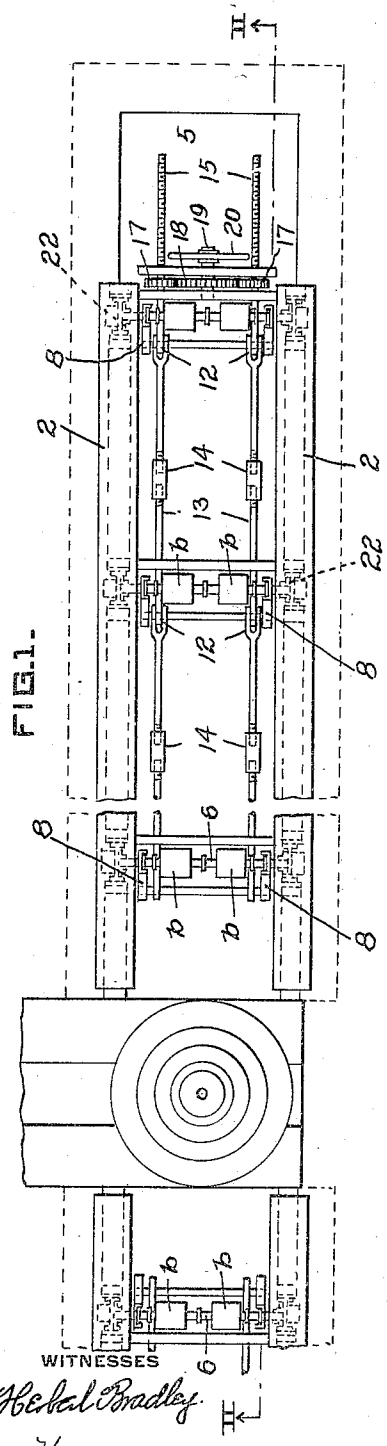


FIG. 1.

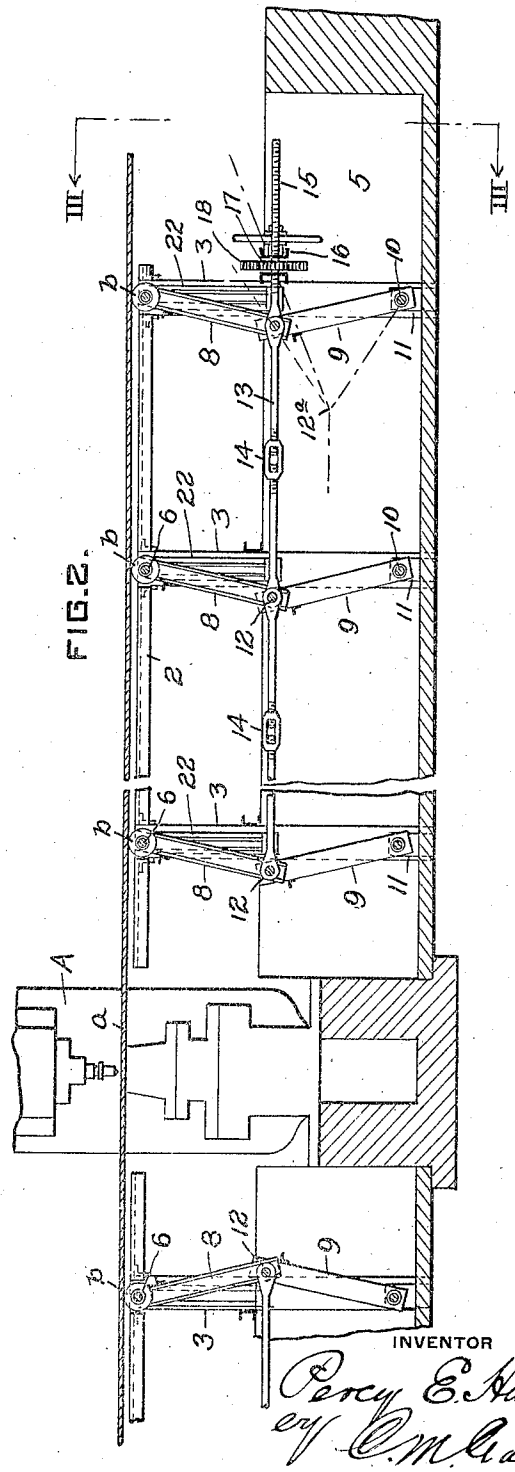


FIG. 2.

WITNESSES

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2 SHEETS—SHEET 2.

FIG. 4.

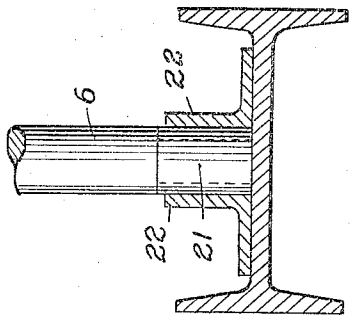


FIG. 5.

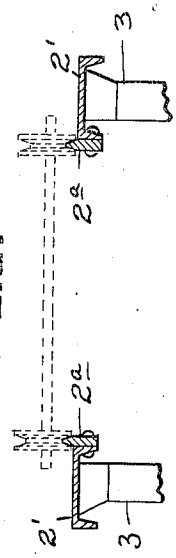
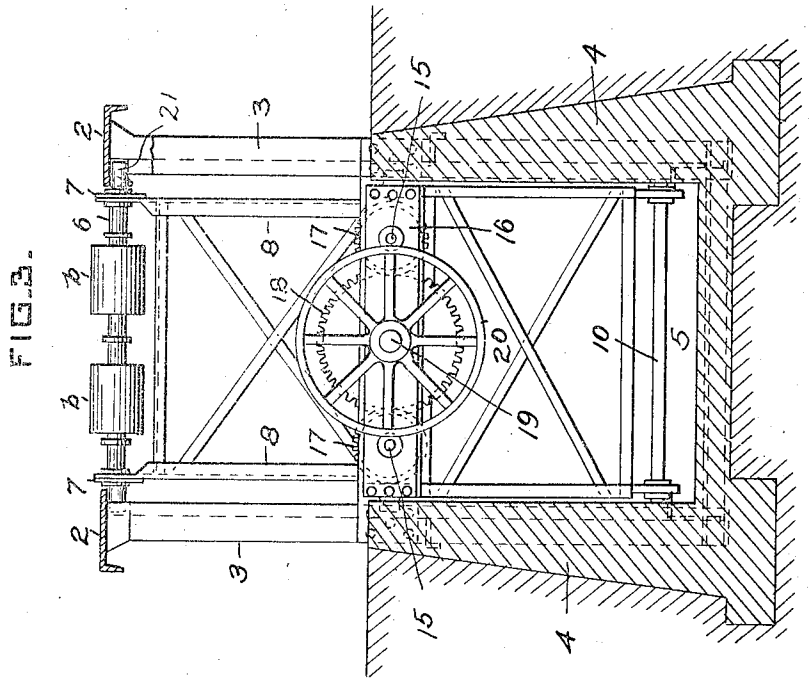


FIG. 3.



WITNESSES

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METAL SUPPORTING AND TRANSFERRING TABLE.

1,352,811. Specification of Letters Patent. Patented Sept. 14, 1920.

Application filed June 29, 1918. Serial No. 242,568.

To all whom it may concern:

Be it known that I, PERCY E. HUNTER, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Metal Supporting and Transferring Tables, of which the following is a specification.

My invention consists of an improvement in manipulating tables for handling metal in connection with a punch or other similar operating mechanism. The invention has in view to provide a flexible table construction which is adjustable to various shapes, as plates, structural shapes, and the like, whereby to enable the operator to adjust the piece to operative position with relation to the punch or other tool and to provide for easy travel toward or from the same.

In the punching of metal, the anvil or die block is usually stationary, and where various articles of different physical depth or thickness are to be punched, it necessitates the provision of means for supporting the same with relation to a common plane of operation. I have provided for these conditions in my improved machine by so mounting the supporting or carrying rollers of the table as to be vertically adjustable to any desired position below such common plane by the mechanism illustrated in the drawings, and as more fully hereinafter described.

In the drawings, which show one preferred embodiment of the invention:—

Figure 1 is a general plan view of the apparatus partly broken away;

Fig. 2 is a longitudinal vertical sectional view indicated by the line II—II of Fig. 1;

Fig. 3 is a cross sectional view indicated by the line III—III of Fig. 2;

Fig. 4 is an enlarged sectional detail view showing the roller mounting for the end of the roller shaft;

Fig. 5 is a cross sectional view through the upper portion of the table showing a modified construction providing a trackway.

The punch A, which is merely indicated in partial diagrammatic section, is located at a suitable position with relation to the table structure which extends in opposite directions at each side of the punch, and is adapted to bring the metal plate, shape or other article to be operated upon to the punch on the plane *a* corresponding to the top of the die. In the case of plates, these are propelled along on such general plane on the supporting rollers *b* when at their elevated position, as indicated in Figs. 2 and 3, and substantially at their uppermost position with relation to the longitudinal supporting channels 2, 2. These channels are rigidly mounted along the tops of a series of supporting columns or posts 3, 3, which may be of suitable structural shape as I-beams fixedly embedded in a concrete foundation 4 providing an interior clearance and operating pit 5. Channels 2 provide, by their upper flat surfaces, a convenient means for attachment of any of the several well-known spacing devices in common use, whereby the table is thus easily adapted to use therewith, as will be easily understood by those skilled in the art.

Rollers *b*, *b*, are mounted upon supporting shafts or spindles 6 carried in journal bearing 7 of upright members 8 of a supporting frame, each of which constitutes the upper member of a toggle jointed lever construction. A similar toggle frame 9 is provided by shaft 10 in suitable bearings 11 at the lower inner portions of columns 3, and the toggle frames 8 and 9 meet at the common pivoting center 12 where they are connected with the longitudinal movement imparting members. These members comprise the connecting rods 13, connecting adjacent sets of toggle members preferably with intervening adjusting turn-buckles 14, at one side of the endmost set of roller actuating toggle members, and such endmost set is connected by pivotal joint 12 at the other side with the terminals of actuating screws 15.

In the construction shown, two such longitudinal sets of connections 13 and screws 15 are provided, at each side of the normal center of the machine, the screws extending through transverse framing members 16, between which are located pinions 17, the hubs of which have threaded engagement with the screws 16. An intermediate gear 18 engages pinions 17, 17, and is itself provided with an actuating shaft 19 and hand wheel 20, mounted in transverse members 16, whereby pinions 17 are operated together.

Shaft 6, carrying supporting rollers *b*, *b*, is provided at each end with a roller thimble 21 mounted on the reduced end of the shaft and adapted to maintain the shaft and rollers *b*, *b*, always in vertical relation to the columns 3 by means of vertically arranged

guides 22, 22, of angle form, as shown in Fig. 4. These angle guides 22 extend vertically throughout the operative travel of the roller shafts along the inner face of columns 3 and maintain the roller shafts in operative position at all times and at whatever levels they may be adjusted to.

Two such sets of supporting rollers with their adjusting mechanism are preferably utilized, one at each side of the die block as indicated, the construction of each being substantially the same, with their accompanying framework.

While the apparatus above described is adapted for manual manipulation of the piece to be operated upon, it will be readily understood that any suitable actuating mechanism for pushing or pulling the metal may be utilized.

Also, that while the table and its supporting columns and other parts are shown as constructed of rolled structural shapes, the several parts may be of cast construction if desired, or of a combination of both rolled and cast pieces.

In Fig. 5 I show the longitudinal supporting channels 2′ provided with supplemental tracks 2^a adapted to support the wheels of any adaptable carriage mechanism, as indicated in dotted lines, thereby facilitating the employment of pushing or pulling apparatus for the metal being operated on, or spacing or other mechanism ordinarily used in connection with the handling, cutting or fabrication of metal forms.

The construction and operation of the invention will be readily understood and appreciated from the foregoing description. In the case of plates, the rollers *b* are ordinarily maintained at their uppermost position as shown in the drawings, the plates being propelled thereover in the ordinary manner with the partial support of the channels 2. In the case of structural shapes, as I-beams, channels, etc., rollers *b* are lowered by the adjusting mechanism to a depth corresponding to the depth of the shape below the common plane of travel corresponding to the top of the die block or die, below which the body portion of the beam, channel, etc. extends, resting upon the lowered rollers *b*. Such lowered position is indicated by the dotted center lines at the right hand portion of Fig. 2, in which case the pivotal joint 12 may be lowered to the position indicated at 12^a or lower, as needed.

The adjustments are easily, quickly and accurately made by the means shown and described. The apparatus is extremely flexible and capable of accommodation to a wide range of variation in size of material, and is especially useful and economical in the handling of metal of frequently varying shapes. It is comparatively simple in construction, can be built out of easily available material at a minimum of machine work, and is readily adapted to installation in connection with shears, punches, and other like machinery.

The apparatus may be variously changed in design, construction, or various details by the skilled mechanic, but all such changes are to be considered as within the scope of the following claims.

What I claim is:—

1. In combination with a supporting framework having an upper common plane of travel, a plurality of simultaneously adjustable supporting rollers and shafts having projecting terminals, vertically arranged guides therefor, and toggle joint mechanism for actuating all of said shafts and rollers simultaneously.

2. Supporting table mechanism for variable shaped articles having a longitudinally arranged support at each side, a plurality of longitudinally separated supporting rollers arranged between the supports for simultaneous vertical adjustment whereby to elevate the peripheries of all of the rollers above the level of the side supports, or to depress them below such level, individual carrying frames for the rollers, means for guiding the roller-supporting portions of the frames in their upward and downward movement, and means for imparting raising and lowering movement to the frames and the rollers carried thereby.

3. Supporting table mechanism for variable shaped articles having a stationary longitudinally arranged support at each outer side, a plurality of supporting rollers located between the supports, shafts therefor having projecting terminals, guiding means for the shaft terminals providing for vertical travel thereof, and toggle jointed mechanism for raising and lowering all of said shafts and rollers together simultaneously.

4. Supporting table mechanism for variable shaped articles having a stationary longitudinally arranged support at each outer side, a plurality of supporting rollers located between the supports, shafts therefor, guiding means for the shaft terminals providing for vertical travel thereof, and a series of toggle jointed levers and actuating mechanism therefor for raising and lowering the shafts and rollers.

5. In combination with the laterally arranged outer longitudinal trackways and supporting members therefor having inner vertically arranged roller shaft guideways; a plurality of rollers between the trackways and shafts therefor mounted in said guideways, toggle jointed actuating levers for said shafts, an adjusting screw for the levers and means connecting adjacent actuating levers.

6. In combination with the laterally ar-

ranged outer longitudinal trackways and supporting members therefor having inner vertically arranged roller shaft guideways; a plurality of rollers between the trackways and shafts therefor mounted in said guideways, toggle jointed actuating levers for said shafts, adjusting screw mechanism connected with one set of actuating levers, and means connecting adjacent sets of levers provided with adjusting mechanism.

In testimony whereof I hereunto affix my signature.

PERCY E. HUNTER.