

No. 810,845

PATENTED JAN. 23, 1906.

J. C. CROMWELL.
SHEAR TABLE.

APPLICATION FILED APR. 18, 1903.

2 SHEETS—SHEET 1.

Fig. 2.

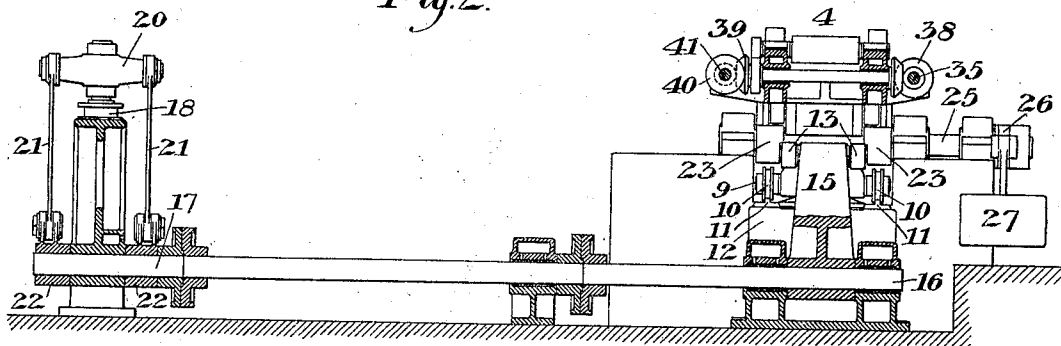
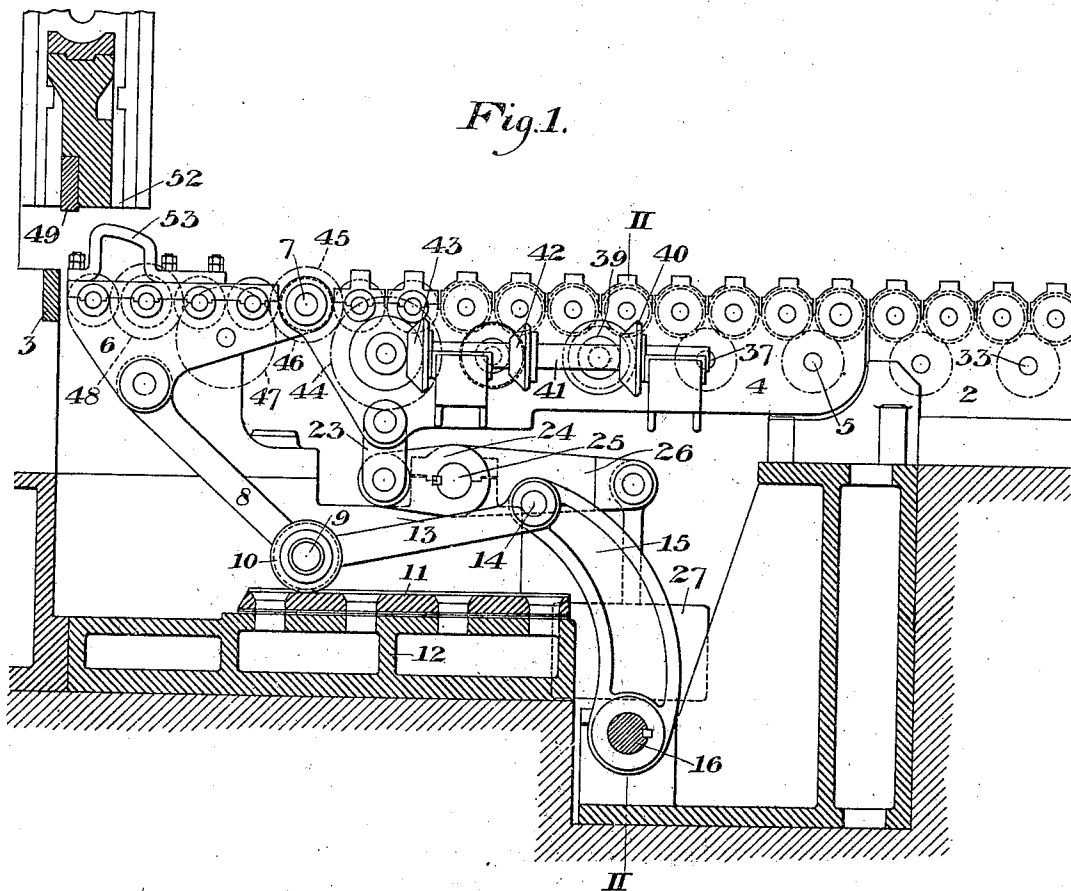


Fig. 1.



WITNESSES

Warren W. Swartz
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INVENTOR

J. C. Cromwell
by B. H. Brown & Rymer
his attys

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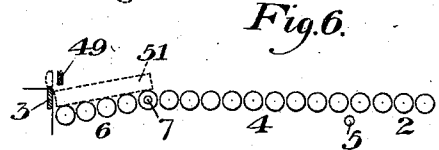
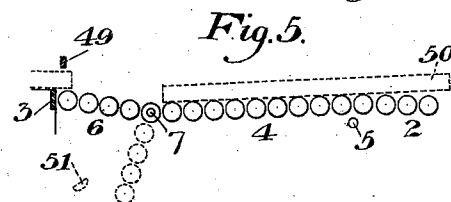
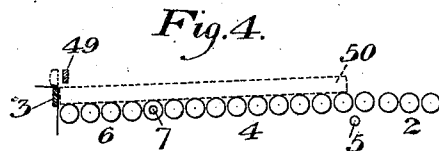
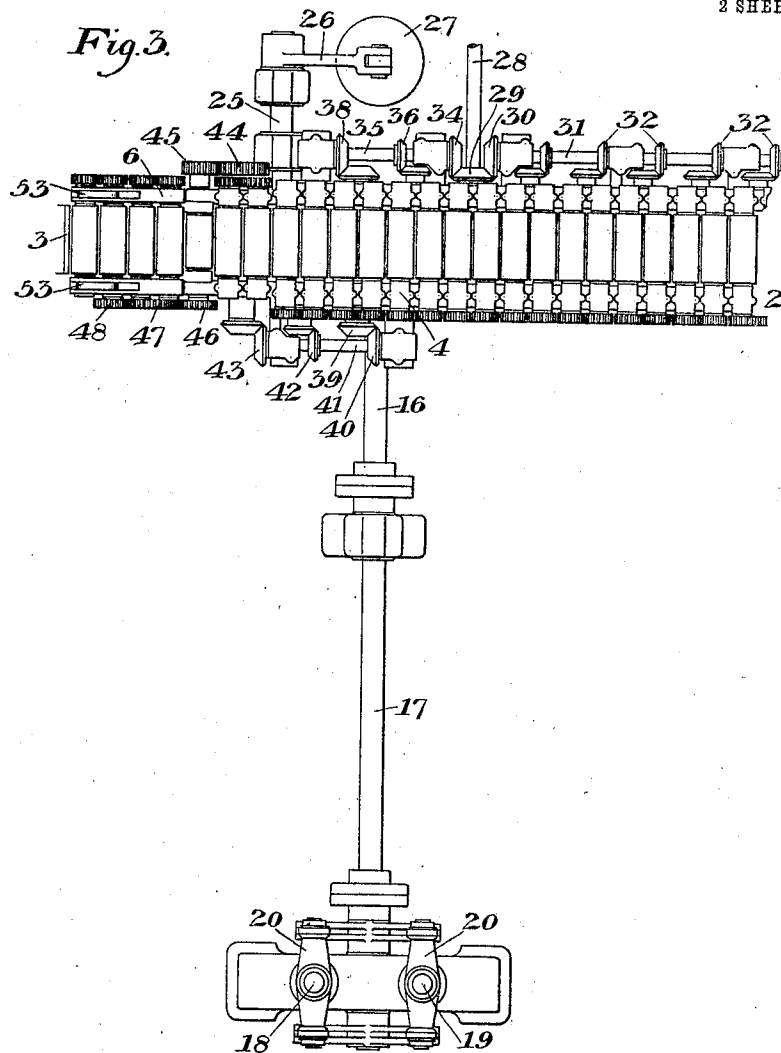
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2 SHEETS-SHEET 2.



WITNESSES

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Fig.6.

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UNITED STATES PATENT OFFICE.

JOHN C. CROMWELL, OF CLEVELAND, OHIO, ASSIGNOR TO THE GARRETT-CROMWELL ENGINEERING COMPANY, A CORPORATION OF OHIO.

SHEAR-TABLE.

No. 810,845.

Specification of Letters Patent.

Patented Jan. 23, 1906.

Application filed April 18, 1903. Serial No. 153,275.

To all whom it may concern:

Be it known that I, JOHN C. CROMWELL, of Cleveland, Cuyahoga county, Ohio, have invented a new and useful Shear-Table, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation, partly in section, of my improved shear-table. Fig. 2 is a vertical cross-section on the line II II of Fig. 1. Fig. 3 is a top plan view of the table and connections, and Figs. 4, 5, and 6 are diagrammatic views showing different positions of the table during shearing operations.

My invention relates to the class of lifting-tables for shears, and is designed to provide an improved construction of tilting table which will move downwardly under the power of the shear and automatically return to its normal position. It is also designed to provide mechanism for positively swinging the table or a part thereof downwardly to discharge scrap and, further, to provide simple and effective mechanism for carrying out these improvements and driving the rollers on the table where such are used.

In the drawings, 2 represents the stationary portion of the table, which may be of any desirable length and between which and the lower shear-blade 3 is placed the swinging table 4, pivoted at its outer end on trunnions at 5. The inner end portion or section 6 of the tilting table 4 is pivoted to this table at 7, and the side plates of the portion 6 are provided with angular pivoted links 8, which at their lower ends are pivotally connected to a shaft 9, carrying a roller 10. The roller 10 is arranged to roll over a bed-plate 11, suitably supported upon and secured to the base 12. The shaft 9 is connected by pivotal links 13 with a shaft 14, which extends through the upper end of the rock-arm 15, rigidly secured to transverse shaft 16. The shaft 16 extends to one side of the table and is coupled endwise to a shaft 17, which at its outer end extends between hydraulic cylinders 18 and 19. The movable element of each cylinder is provided with a cross-head 20, and these cross-heads are connected by pivotal angular links 21 to collars 22, rigidly connected to the shaft 17. The hydraulic cylinders 18 and 19 are of different diameters, the smaller one being connected with a source of constant pressure, such as an accumulator, this pressure nor-

mally holding the feed-table portion 6 in elevated position. The supply and exhaust for the other and larger cylinder lead to an ordinary hydraulic valve, so that the operator by admitting fluid to this larger cylinder may swing down the part 6 of the table to discharge scrap.

The inner end of the table 4 adjacent to the portion 6 is connected by pivotal links 23, extending down from the side plates to rock-arms 24, secured to a shaft 25. This shaft extends outwardly and laterally to the side of the table opposite the shaft 16 and is provided with a rock-arm 26, to which is hung a counterweight 27 by a pivotal connection. This counterweight normally holds the portion 4 of the table in elevated position, but allows the whole table to yield downwardly, the counterweight being lifted, and then raising the table when the pressure is removed.

The table-rollers may be driven in any suitable manner, and I have shown for this purpose an actuating-shaft 28, preferably connected to an electric motor through slow-motion gearing, this shaft being in registry with the axis 5 of the table 4. The shaft carries a beveled wheel 29 at its inner end, this bevel-wheel intermeshing with a bevel-wheel 30 on a shaft 31, mounted in stationary bearings and extending along the stationary part of the roller-table. The rollers on this stationary portion are driven by bevel-gear connection 32 to shaft 33, having gear connection with the table-rollers. The bevel-wheel 29 intermeshes on the other side with a bevel-wheel 34, secured to a short shaft 35, mounted in bearings secured to the side of the swinging table 4. The shaft 35 is provided with bevel-gearing 36, connecting it with a shaft 37, geared to part of the rollers, and is also connected by bevel-gearing 38 with a transverse shaft carrying at the opposite end on the other side of the table a bevel-wheel 39, intermeshing with a bevel-wheel 40 upon a short shaft 41, mounted in bearings secured to the opposite side of the table portion 4. The shaft 41 has bevel-gear connection 42 with a driving-shaft for part of the rollers, and also has bevel-gear connection 43 with a transverse shaft carrying at its other end a toothed wheel 44, intermeshing with a pinion or toothed wheel 45, which is coincident with the axis of the swinging table portion 6. The pinion 45 is on a shaft carrying at its

other end a pinion 46, intermeshing with a larger toothed wheel 47 at a lower level, the toothed wheel 47 intermeshing with a wheel 48 for driving rollers on the table portion 6.

5 The operation of the table will be readily understood by referring to Figs. 4, 5, and 6. Fig. 4 shows the position assumed by the entire swinging table when shearing ingots of extreme weight and length. In this case 10 the entire table is depressed against the pressure of the smaller hydraulic cylinder and the power of the counterweight, the upper shear-blade being indicated at 49 and the ingot at 50 in dotted lines. In order to prevent friction on the shear-blade in depressing the table, I provide on the shear-blade 15 plunger projections 52, one at each side, which projections engage yokes or brackets 53, bolted to the side of the table at its front end. When the shear-blade is depressed, 20 these projections engage those on the table and force the table down in the manner indicated in Fig. 4. These projections are shown in Figs. 1 and 3. From this position 25 the table is moved to its normal position when the shear-blade is raised. In Fig. 5 is shown the shearing position while a large ingot is in motion on the table, as shown at 50. In this case the joint at 7 is broken down- 30 wardly against the action of the counterweight. The dotted-line position of the table portion 6 in this figure shows this portion swung downwardly to allow the scrap 51 to drop. This is done by admitting fluid to the 35 larger hydraulic cylinder, which overcomes the pressure in the smaller cylinder and swings down the table portion 6. After the scrap is ejected the fluid is exhausted from the larger cylinder, and the smaller cylinder 40 returns this table portion to its normal position. In Fig. 6 is shown the position assumed in shearing a small or light-weight ingot. In this case the table portion 6 will be forced downwardly, while the table portion 4 will 45 remain in substantially its normal position.

The advantages of my invention result from the automatic nature of the table, from the means for discharging the scrap, and the 50 connections for actuating the table-rollers in the swinging portions. The movements are positive and the action is efficient.

Many variations may be made in the form and arrangement of the table and its parts, the shearing mechanism, and the automatic 55 return mechanism, as well as in the connections for driving, &c., without departing from my invention.

I claim—

1. A roller shear-table hinged or pivoted 60 at its outer end to tilt as a whole under the action of the shear-blade, its inner end portion being formed by a separately-tiltable section; substantially as described.

2. A roller shear-table hinged or pivoted 65 at its outer end to tilt as a whole, under the

action of the shear-blade, and having its inner end portion formed by a separately-tiltable portion, means for raising and lowering the separately-tiltable portion, and means 70 for swinging the table as a whole upwardly to its normal position after it has been tilted by the shear-blade; substantially as described.

3. A roller shear-table pivoted or hinged to tilt as a whole and having at its inner end portion a separately-tiltable portion pivoted 75 thereto, and actuating connections for swinging the separately-tiltable portion to discharge scrap; substantially as described.

4. A tilting shear-table having a tilting section pivoted thereto and extending to the 80 shear, a shear-blade arranged to depress the table during shearing automatic mechanism for returning the table to its normal position, and mechanism for swinging the tilting section to discharge the scrap; substantially as 85 described.

5. A tilting shear-table having at least a portion thereof pivoted to the table proper and arranged to swing downwardly, a shear- 90 blade arranged to depress the table during shearing automatic mechanism for exerting a lifting pressure on the swinging portion, and mechanism for positively swinging this portion to discharge the scrap; substantially 95 as described.

6. A tilting shear-table having a swinging table-section pivoted thereto, a shearing- 100 blade arranged to depress the table during shearing automatic counterbalance mechanism arranged to return the parts to their normal position, and mechanism for positively swinging the tilting section to discharge the scrap; substantially as described.

7. A tilting shear-table having a swinging section pivoted thereto, a shearing-blade 105 arranged to depress the table during shearing positively-driven feed mechanism on the table and swinging section, automatic counterbalance mechanism for returning the parts to their normal position, and mechanism for 110 swinging the tilting sections to discharge the scrap; substantially as described.

8. A tilting shear-table having an extension pivoted thereto, a shearing-blade 115 arranged to depress the table during shearing counterbalance mechanism for the table and the tilting section, and power-driven feed mechanism on both the table and swinging section; substantially as described.

9. The combination with a tilting shear- 120 table having yokes or brackets at its front end, of a shear-blade plunger having projections at each side to engage the yokes or brackets; substantially as described.

In testimony whereof I have hereunto set 125 my hand.

JOHN C. CROMWELL.

Witnesses:

H. D. SMITH,
HORACE W. LASH.