
EDMUND JORDAN, OF BROOKLYN, NEW YORK.

DRAWING OR STAMPING PRESS.


Application filed February 1, 1893. Serial No. 463,926. (No model.)

To all whom it may concern:

Be it known that I, EDMUND JORDAN, 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 Drawing or Stamping Presses, of which the following is a specification.

My invention relates to drawing or stamping presses for sheet metal, and consists essentially in novel contrivances of apparatus for actuating the blank holder and causing it to pause and hold the blank during the action of the stamping plunger, and it also consists in certain other features of construction, all as hereinafter fully described reference being made to the accompanying drawings in which—

Figure 1, is a side elevation of my improved drawing or stamping press. Fig. 2, is a front elevation. Fig. 3, is a central sectional elevation of the same except the bed plate on line x x, of Fig. 2. Fig. 4, is a horizontal section of parts of the press on line y y, Fig. 2.

Fig. 5, is a side elevation of the cross-head carrying the male die or plunger. Fig. 6, is a horizontal section of the standards of the frame on line z z, Fig. 2. Fig. 7, is a top plan of the frame, and some of the apparatus for automatically unclutching the driving gear. Fig. 8, is a detail of apparatus used for operating the blank holder. Fig. 9, is a side elevation of some of the clutching and unclutching apparatus on an enlarged scale.

Fig. 10, is a plan view of the bracket in which the driving shaft is mounted. Fig. 11, is a side elevation, and Fig. 12, an end elevation of said bracket detached from the rest of the machine.

The female bed die a is arranged on the base b, between the standards c. The blank holding die d is arranged to slide in ways e, on the standards, and the stamping die or plunger f is carried in the cross head f' arranged to slide in the ways g, in the stock of the blank holding die d, in the usual way, the plunger being coupled by its connecting rod g', with the crank h, which is geared by the spur wheel i, on one end of the crank-shaft, with the pinion j of the counter shaft k which is geared by the spur wheel l, with the pinion m of the clutch n, on the driving shaft o to which power is applied by the pulley o, on which the driving belt runs.

To operate the blank holding die as usual in such presses, viz: to close down on and hold the margin of the blank a' in the recess y of the bed die, as indicated by the dotted lines b'. Fig. 3 in advance of and while the plunger f, is doing its work, I use two other crank-shafts as q on the front and back sides of the standards respectively, and preferably a little lower than the main crank-shaft h, said shafts having intermittent rotation and preferably having two cranks in each and being coupled by connecting rods s and bars v with the cross-head t of the blank holding die, said cross-head having in this example the perforated lugs u, in which the screw threaded rods w, pendent from bars v, are secured by nuts x, whereby the cross-head may be readily adjusted to gage the blank holding die with relation to the bed die for gripping the blank with the proper pressure, but the means of making the connection and adjusting the blank holder may be varied at will.

To operate these crank-shafts I gear them with another crank-shaft as y, turning twice as fast as crank-shaft h, and preferably located on the top of the press in such manner that so the blank holder will be moved downward in half the time of the down movement of the stamping die and will then be held down by the cranks of the shafts q, until the plunger has completed its work, when said holding 85 die will be raised in shorter time than the time of the rise of the plunger and be held up until the beginning of the descent of the plunger again, this being effected through the intermittent motion of the crank-shafts q, one pause of which occurs when the blank holder is bearing on and holding the blank, the cranks of shaft y being then in the line for sustaining the pressure of the blank holder, and the other pause occurs when said blank holder is in the upper part of its range, the pausing crank shafts thus rotating in unison with the rotations of the main crank-shaft which operates the plunger. While these crank-shafts q may have such intermittent 100 rotations imparted to them in various ways, means which I have adopted in this example of my invention consist of the reciprocating duplex toothed rack o' arranged in slide ways.
U on the outside of one of the standards c and coupled by connecting rod d' with the crank e' of shaft y, said rack being geared with the crank-shafts q by the loose pinions f' thereon; the pawls g' pivoted to the pinions and the ratchets h' keyed to the shafts so that said crank-shafts q will only be turned while the pinions turn forward during the down strokes of the rack, and will dwell while the pinions turn backward during the up strokes of the rack.

The crank-shaft y is geared with the main crank-shaft h by the spur wheel l on the latter, and the pinion j' being half the size of wheel l' to double the speed of said shaft y. The crank-shafts q are mounted at the extremities of arms k' projecting from the sides of the standards c and preferably cast integral with them. The cross head l' carrying the plunger f is coupled by the ball and socket joint m' in the usual arrangements of these parts in presses of this kind.

To start and stop the press readily as is frequently required the friction clutch n is employed with a bell-crank n' to slide the cone forward under the arms g' to connect the parts by the clutch and backward therefrom for disconnection with a foot treadle q' to be pressed down by the foot to shift the cone forward to connect the clutch. In order that the clutch may be automatically disconnected and the press stopped after each revolution when so desired, and may also be caused to run continuously without stopping when such action may be desired, I connect the toggle jointed links w' one of said links being jointed to said free end of the shifter and the other link having a fulcrum at w', so that after the clutch has been connected by pressing the treadle down, and the toggle jointed links w' and the shifter s' of the bell-crank; said shifter is pivoted at b' to a fixed support and the free end bears on one of the arms of the bell-crank. A recess w' is made in the face of the plate v on which the bell-crank and bell-crank shifter are pivoted to provide space for the link w' that is connected to the bell-crank shifter behind said shifter and bell-crank. A hook x' is dependent from the bar y' to which it is pivoted at z' and being thrust by the spring a' will engage stud pin b' in the free end of the bell-crank n'; the bar y' has a fulcrum at w' and is connected by the rod d' with the crank e' of a rock-shaft f' supported in the bracket q', and connected by a crank k', and link b' with the lever j' pivoted in the bracket k' so that the tappet e' on the crank-shaft h will thrust said lever when the blank holder and plunger reach the uppermost position and raise hook x' so as to disconnect the clutch. The shifter s' has a stud pin m' which prevents hook x' from engaging the bell-crank while the foot treadle is held down by the attendant so that by holding it down he may cause the press to run continuously as long as he desires.

The plate v' to which the bell-crank n' is pivoted at b' is also the bell-crank shifter e' of f', also one of the links w' at v', and also the bar at y' at u' is a part of the bracket w' in which the driving shaft o' is mounted; the hole 4 in the flange of the bracket and the perforated lug 5, constitute slide ways for the guide bar 3 of the cone o'; the rod e' extends through the hole f'.

I claim—

1. In a drawing or stamping press, the combination of a reciprocating plunger, a reciprocating and passing blank holding die, and intermittently or pausing but only forwardly moving rotatory crank-shafts for operating said holding die, and holding it for holding the blank substantially as described.

2. In a drawing or stamping press, the combination of a reciprocating plunger, a reciprocating and passing blank holding die, intermittently or pausing rotating crank-shafts for operating said holding die, and holding it for holding the blank, and means for rotating said passing crank-shafts in unison with the rotations of the shaft actuating the plunger substantially as described.

3. In a drawing or stamping press, the combination of a reciprocating plunger, a reciprocating and passing blank holding die, intermittently or pausing rotating crank-shafts for operating said holding die, and holding it for holding the blank, the reciprocating rack, and the forwardly and backwardly idle pinions for rotating said crank-shafts substantially as described.

4. In a drawing or stamping press the combination of a reciprocating plunger, a reciprocating and passing blank holding die, intermittently pausing rotating crank-shafts for operating said holding die, and holding it for holding the blank; the reciprocating rack, the forwardly driving, and backwardly idle pinions for rotating said crank-shafts, and the crank-shaft connected with the rack and having double the speed of the stamping die actuating shaft substantially as described.

5. In a drawing or stamping press the combination with the clutch shifting bell-crank, and the spring-actuated hook connecting it with the automatic tripping mechanism subject to the tappet on the main crank shaft, of the bell-crank shifter coupled with the foot treadle, and having the stud controlling said spring-actuated hook substantially as described.

Signed at New York city, in the county and State of New York, this 21st day of January, A. D. 1893.

EDMUND JORDAN.

Witnesses:
W. J. MORGAN,
C. E. WHITNEY.