

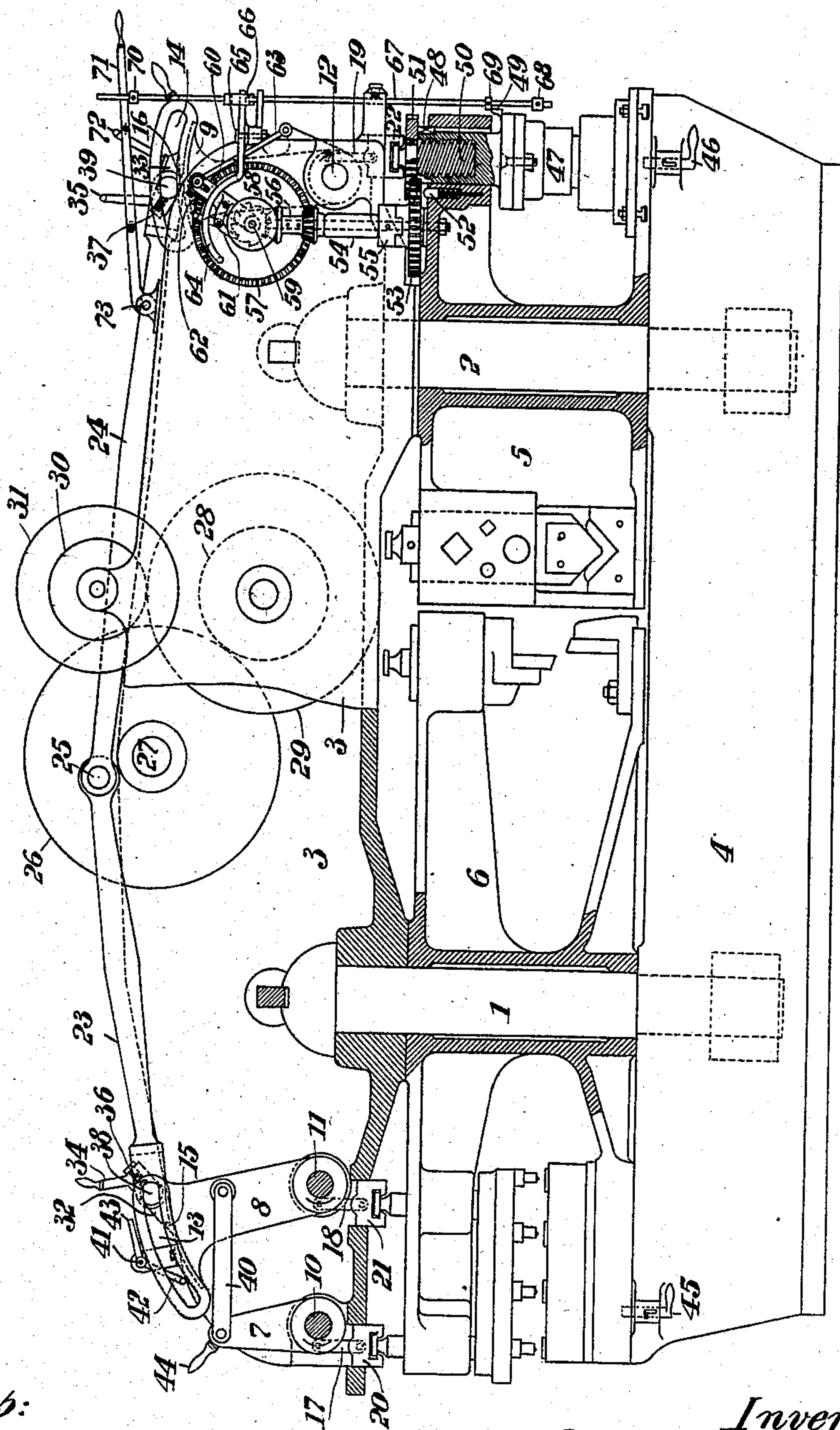
J. CLIPFEL.
 MULTIPLEX PRESS.
 APPLICATION FILED MAR. 18, 1907.

900,147.

Patented Oct. 6, 1908.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

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Inventor:

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 Attorney

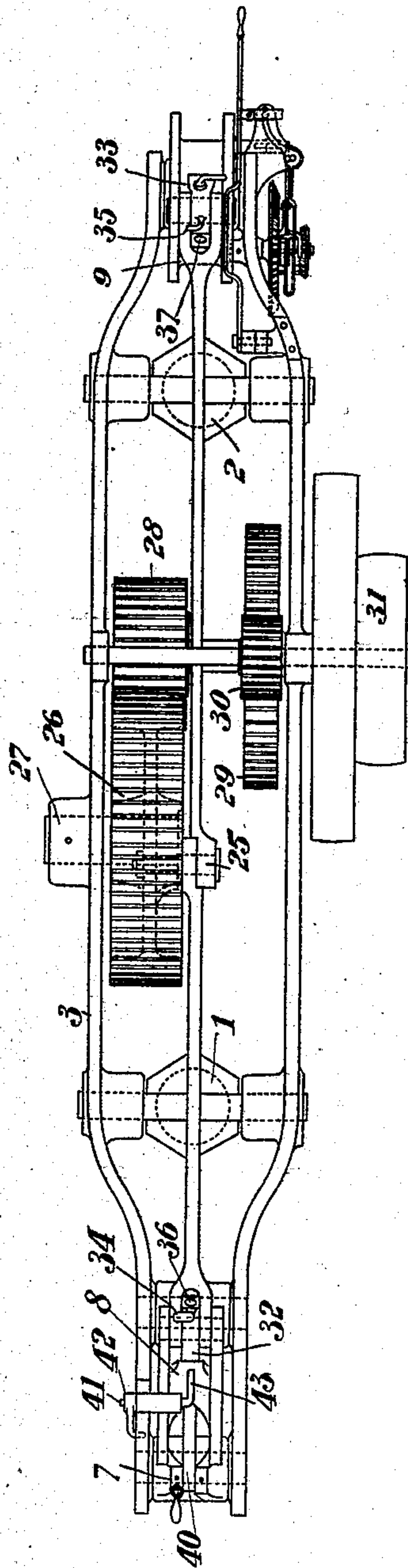
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2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

JULES CLIFFEL, OF MAUBEUGE, FRANCE.

MULTIPLEX PRESS.

No. 900,147.

Specification of Letters Patent.

Patented Oct. 6, 1908.

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To all whom it may concern:

Be it known that I, JULES CLIFFEL, a citizen of the French Republic, and resident of Maubeuge, in the North Department, France, have invented certain new and useful Improvements in and Relating to Multiplex Presses, of which the following is a specification.

This invention relates to presses and especially to multiplex presses driven by power, the object of this invention being to provide a press of this kind comprising a plurality of rotatable tool carriers, carrying each a plurality of working tool sets.

Another object of this invention is to provide a press of this kind carrying at one end two simultaneously working tool sets.

Still a further object is to provide a machine of this kind wherein an automatic disengaging device is provided for the working tools and wherein one or more of the tool holders are extensible, these extensible tool holders being provided with an automatic actuating and reversing device as well as with a device for automatically stopping the action of the said extensible tool holder.

With these objects in view my invention consists in the combination of parts and details of construction hereinafter described and especially pointed out in the appended claims.

In the annexed drawings in which similar reference numerals designate corresponding parts throughout several figures, Figure 1 is a general side elevation view of the machine certain parts being shown in cross section, Fig. 2 is a top plan view of the machine.

My improved multiple action press comprises a main framework formed by an upper part 3 and a lower part 4 rigidly connected to one another by means of connecting stay-bolts 1 and 2. Adapted to be rotated round these two bolts 1 and 2 are two smaller frames 5 and 6 which carry all the tools the movable as well as the stationary ones which are necessary for the works to be performed by the machine or press.

The upper part 3 of the main framework carries the press levers 7, 8 and 9 adapted to oscillate each around a suitable shaft 10, 11 and 12. The said press levers 8 and 9 are each provided at their upper part with two curved slots 14 and 13 respectively as well as with an abutment 15 and 16. The hub of each of the levers is provided with a prismatic connecting member 17, 18, 19 respec-

tively adapted to connect the levers with claw coupling boxes 20, 21, 22 adapted to slide vertically in the upper frame 3 and to receive the heads of the corresponding upper tools.

Connecting rods 23 and 24 connect the levers 8 and 9 with the crank pin 25 which is secured to the driving toothed wheel 26 adapted to rotate round a shaft 27. This toothed wheel receives a continuous rotary motion from a series of intermediate gearings such as 28, 29 and 30 actuated by a belt pulley 31 provided with a flywheel, or by any other suitable power transmitting device. The connecting rods 23 and 24 are each provided at their ends which are pivotally connected with the press levers, with a coupling pawl 32, 33 the latter being each provided with a handle 34, 35 and a pressure spring 36, 37 acting on suitable flat parts of the connecting bolts 38 and 39 respectively. The said pawls are adapted to oscillate on the corresponding connecting bolt 38 and 39 respectively the ends of which slide in the said slots 13, 14. 40 is a link pivotally connecting the two press levers 7 and 8. A device arranged on shaft 41 and provided with a crank and abutment 43 constitutes the automatic disengaging device. 44 is a handle allowing of the device being actuated by hand. 45 and 46 are locking bolts adapted to rigidly connect at the required moment, the framings 5 and 6 with the main frame work. One of the movable framings for instance 5 may contain one or more extensible tool carriers. Such an extensible tool carrier is composed of a sleeve 47 whereto the working tools are secured. A vertical guide key 48 as well as an abutment 49 are provided on the said sleeve in which is equally screwed a screw 50 rigidly secured to a toothed wheel 51. A spring controlled buffer 52 tends to constantly hold in a raised position the whole extensible tool carrier. The toothed wheel 51 is actuated by a second toothed wheel 53 supported in the framing 5. The said toothed wheel 53 is provided with a slot engaged by a rib of a coupling member 55 secured to shaft 54 which is journaled in a lateral bracket of the upper framing 3. Secured to the same shaft 54 is a double bevel gearing 56 adapted to be actuated alternatively by two bevel gear wheels 57, 58 having different diameters and to each of which is rigidly secured a ratchet wheel. The said driving bevel wheels rotate freely

with the ratchet wheels on a horizontal shaft 59. On the same shaft freely rotates a crank 60 which is provided with a pawl 61 controlled by a pressure spring 62. A link 63
 5 hingedly connects the crank 60 with the oscillating lever 9. The pawl 61 is engaged in a fork 64 which is adapted to oscillate round a stationary bolt 65. The opposite
 10 end of the fork 64 is engaged in an oblique slot 66 arranged in a vertical disengaging rod 67, carrying at its lower end adjustable abutting rings 68, 69. A third adjustable abutting piece 70 secured to the upper end of the rod is adapted to strike against a laterally
 15 yielding lever 71 which is fulcrumed at 73 on the framing 3. This lever 71 is adapted to engage a bent rod 72 secured to the pawl 33 and to thus disengage the latter when the said lever 71 is raised by the rod.

20 The operation of the machine is as follows: The rotary motion of the crank pin 25 is converted by the connecting rods 23, 24 into a reciprocating oscillatory motion which is transmitted to the levers 8, 9 and from the
 25 lever 8 to the lever 7 by means of the link 40. The said levers convert their motion by the intermediary of the links 17, 18, 19 into a vertically ascending and descending motion which is transmitted to the tool holders.
 30 When it is for instance desired to stop the motion of the tool holders on the side of the framing 6, the abutting piece 43 of the disengaging device is brought, by means of the handle 42, into the way of the crank 34 of the
 35 pawl 32 so that the latter is lifted and held stationary in its position by the spring 36 acting on a corresponding flat of the bolt 38. Consequently this bolt 38 of the connecting rods slide freely in its slots. When the abut-
 40 ting member 43 has been brought back into its upright position, shown in dotted lines in Fig. 1, the disengaging operation evidently does not take place and the motion of the tools takes place in an uninterrupted manner.
 45 The reengagement of the raised pawl is effected by hand and at will.

The operation of the extensible tool carrier is as follows: After the lever 9 has performed an oscillation corresponding to the
 50 descending stroke of the tool carrier 47 it returns and again begins to raise the claw coupling box 22. However the sleeve 47 is held down by the tool being engaged into the block to be worked and the pawl 61 entering
 55 into action at this moment raises the screw 50 to a suitable extent. As a matter of fact at the very moment, at which begins the backward motion of the lever 9 the said pawl 61 is moved forward by the said backward
 60 motion of the lever 9 by the intermediary of the link 63 and the crank 60. The said pawl 61 is engaged in the teeth of the ratchet wheel of the small bevel gear 58 so that motion is transmitted to the latter and there-
 65 from by the intermediary of the toothed

wheel 53 engaged with the toothed wheel 51. Thus the screw 50 is unscrewed from the sleeve 47 and is consequently adapted to follow along the ascensional motion of the coupling box the sleeve and the tool being as
 70 stated held below. After a certain number of such working periods during which the sleeve is more and more lowered at each stroke, the abutting member 49 of the sleeve finally strikes against the suitably adjusted
 75 ring 68 of the rod 67. The latter is therefore also lowered and causes by the intermediary of slot 66 the fork 64 to oscillate so that the pawl 61 is engaged into the teeth of the ratchet wheel of the large bevel gearing 57.
 80 During the following ascensional motion not only the sleeve is carried on but at the same time also the screw 50 is rapidly screwed again into the sleeve 47 owing to the very quick rotation of the toothed wheel 51. The
 85 said screw is thus brought back rapidly into its initial position. At the end of the rising motion of the sleeve the abutting piece 49 of the latter abuts against the ring 69 of the rod 67 thus raising the latter so that the pawl is
 90 pushed back on the teeth of the ratchet wheel of the bevel gear 58. At the same time the lever 71 is actuated by the abutment 70 which raises the pawl 33 of the connecting rod so that no further motion is transmitted
 95 until the pawl 33 is again engaged by hand, whereafter the same motion as above is repeated.

Having now fully described my said invention what I claim and desire to secure by
 100 Letters Patent is:

1. In a multiplex press the combination with a stationary lower framework of an upper framework, two vertical connecting stay-bolts rigidly securing the upper framework
 105 with the lower one at spaced relation, two framings mounted on the said vertical stay-bolts so as to be adapted to be rotated round the said bolts, means for locking the said framing in their adjusted position, a plural-
 110 ity of sets of stationary lower and vertically movable upper tools mounted on the said revoluble framings, means mounted in the upper stationary framework and adapted to actuate the outer vertically movable tools of
 115 the said revoluble framings and means for coupling the said actuating means with the said vertically movable tools, substantially as and for the purpose set forth.

2. In a multiplex press the combination
 120 with a stationary lower framework of a stationary upper frame work, two vertical stay-bolts spaced apart and rigidly securing the said upper framework to the lower one in spaced relation, two framings mounted on
 125 the said stay-bolts and adapted to be rotated round the latter, means for locking the said framings in their adjusted position, two sets of vertically movable upper and stationary lower tools at one of the said rotatable fram-
 130

ings and one set of similar tools at the other end of it and at both ends of the other framing, mechanical means mounted in the said upper framework for actuating the outer vertically movable tools of the said rotatable framings and means for coupling the said actuating means with the said vertically movable tools, substantially as and for the purpose set forth.

3. In a multiplex press the combination with a stationary lower framework, of a stationary upper frame work connected with and held in spaced relation to the lower framework by two spaced stay-bolts, two framings revolubly mounted on the said stay-bolts, means for locking the said revoluble framings in their adjusted position, a pair of vertically movable upper tools coöperating with a pair of stationary lower tools mounted at one end of one of the said revoluble framings, one upper vertically movable tool coöperating with a stationary lower tool arranged at the other end of the said framings, an upper extensible and vertically movable tool carrier mounted in one end of the other revoluble framing and coöperating with a lower stationary tool, an upper vertically movable tool coöperating with a lower stationary tool mounted in the other end of the last named revoluble framing, means arranged at one end of the said upper framework and adapted to actuate the said pair of vertically movable upper tools, means for coupling the said actuating means with the said pair of upper tools, actuating means mounted on the other end of the said upper framework and adapted to actuate the upper movable tools of the said other revoluble framing and means for coupling the last named actuating means with the corresponding upper tools, substantially as and for the purpose set forth.

4. In a press of the kind described the combination with a lower framework, an upper frame work and revoluble tool carrying frames, of a driving device comprising a crank, means for rotating the said crank by power, a press lever fulcrumed at each end of the said upper framework, two parallel curved slots at the upper end of the said lever, a cross bolt adapted to slide in the said curved slots, a connecting rod connecting the said cross bolt with the said crank, a

pawl fulcrumed on the said cross bolt, an abutment on the said press lever and adapted to be engaged by the said pawl, means for automatically disengaging the said pawl from the said abutment, a vertically movable claw coupling box adapted to engage the upper head of the corresponding tool carrier and a link pivotally connecting the said claw coupling box with the said press lever, substantially as and for the purpose set forth.

5. In a press of the kind described the combination with a lower framework, an upper framework and revoluble tool carrying framings of a driving device comprising a crank, means for rotating the said crank by power, a press lever fulcrumed at each end of the said upper framework, two parallel curved slots at the upper end of the said lever, a cross bolt adapted to slide in the said slots, a connecting rod connecting each of the cross bolts with the said crank, a pawl fulcrumed on the said connecting bolt, an abutment on the said press lever and adapted to be engaged by the said pawl, an extension on the said pawl, a handle on the said extension, a crank mounted on the said upper framework, an abutment secured to the said crank and adapted to be engaged by the extension of the said pawl so as to disengage the latter from the said abutment of the press lever when the crank occupies one position, and to be out of the way of said extension when its crank occupies its other position, means for holding the said pawl in its engaged and disengaged positions, a vertically movable claw coupling box adapted to engage the upper head of the corresponding tool carrier, a link connecting the said coupling box with the said press lever, a second press lever fulcrumed at one end of the upper framework, a link connecting the said second press lever to its neighboring one, a coupling box associated with the said second press lever, a link connecting the latter with the coupling box and a handle for moving the said press levers, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in presence of two witnesses.

JULES CLIPFEL.

Witnesses:

GREGORY PHELAN,
B. IVAN NELSEN.