

No. 769,955.

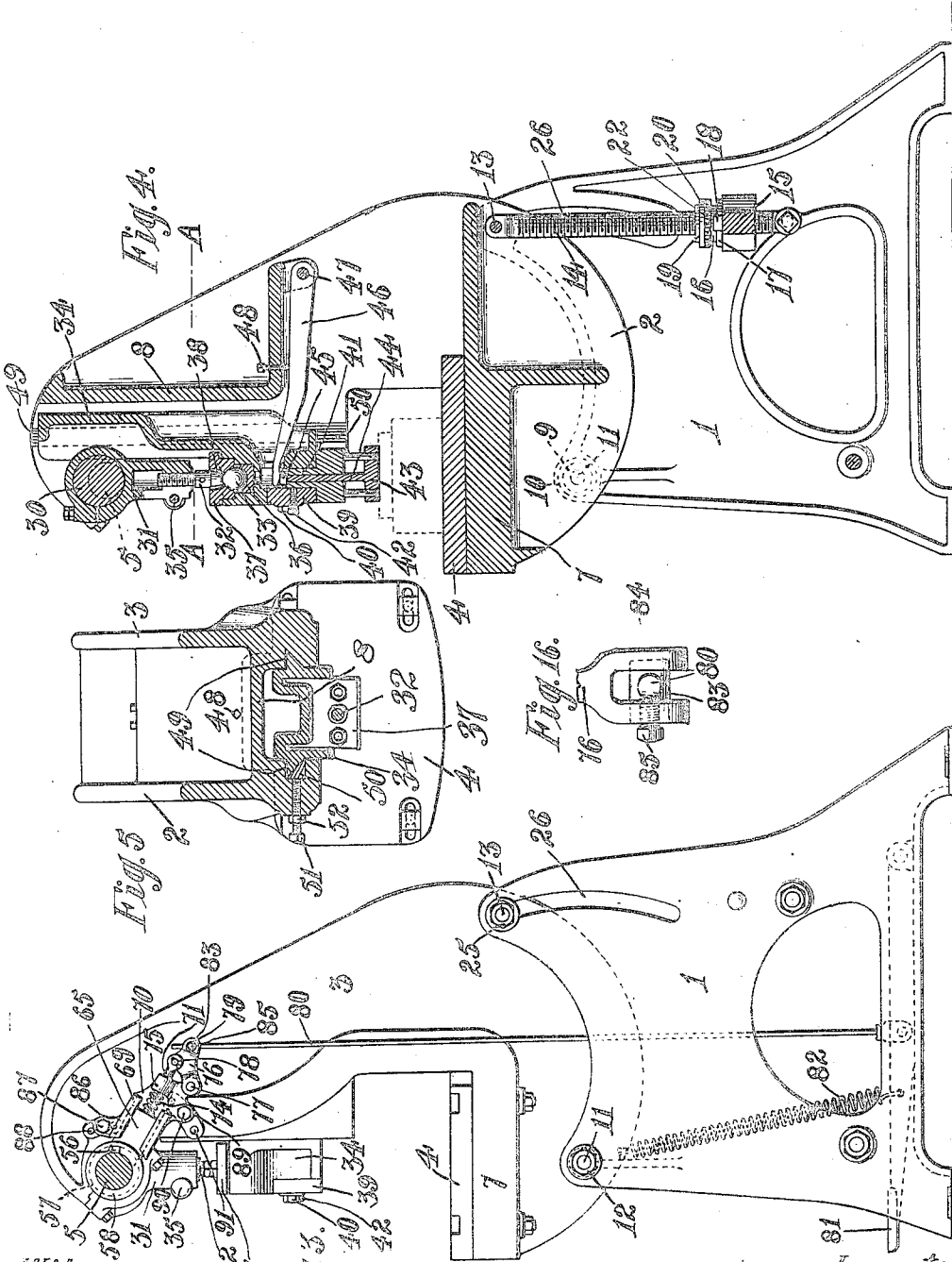
PATENTED SEPT. 13, 1904.

H. OSSWALD.
POWER PRESS.

APPLICATION FILED JAN. 22, 1903.

NO MODEL.

3 SHEETS—SHEET 2.



Witnesses:
 F. S. Hachenberg
 Henry Pheme

Inventor:
 Herman Osswald
 By Brown & Oswald
 his Attorneys

No. 769,955.

PATENTED SEPT. 13, 1904.

H. OSSWALD.
POWER PRESS.

APPLICATION FILED JAN. 22, 1903.

NO MODEL.

3 SHEETS—SHEET 3.

Fig. 7.

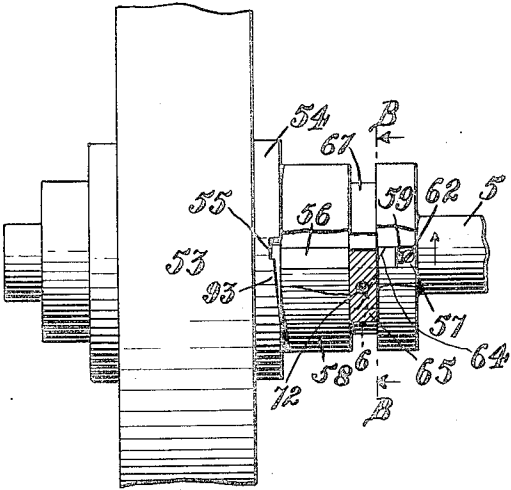


Fig. 8.

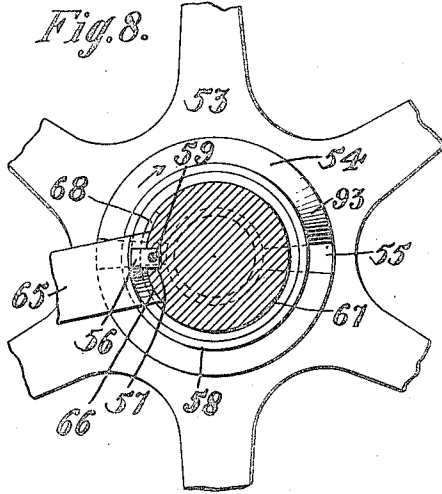


Fig. 9.

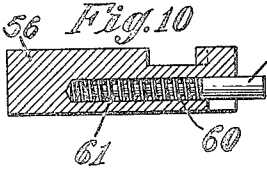


Fig. 17.

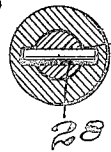


Fig. 11.

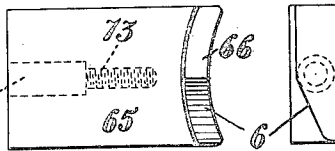


Fig. 12.



Fig. 13.

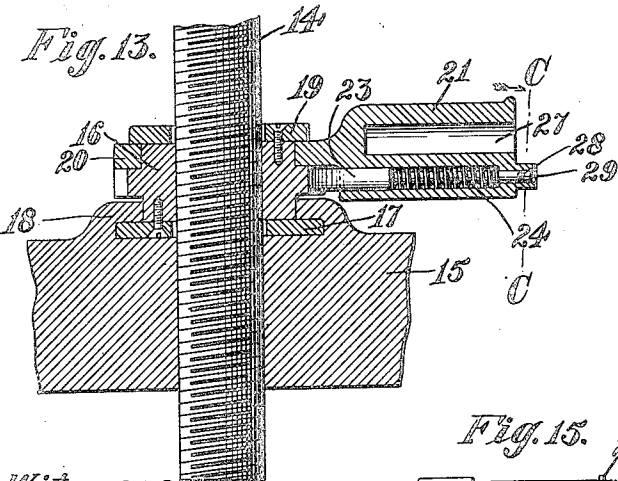


Fig. 14.

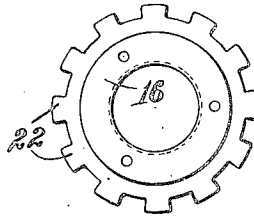


Fig. 15.



Witnesses:
 Ed. Heckenroth
 Henry Greene

Inventor:
 Herman Osswald
 by Brown & DeWard
 his Attorneys

UNITED STATES PATENT OFFICE.

HERMAN OSSWALD, OF NEW YORK, N. Y.

POWER-PRESS.

SPECIFICATION forming part of Letters Patent No. 769,955, dated September 13, 1904.

Application filed January 22, 1903. Serial No. 140,144. (No model.)

To all whom it may concern:

Be it known that I, HERMAN OSSWALD, a citizen of the United States, and a resident of the borough of Brooklyn, in the city and State of New York, have invented a new and useful Improvement in Power-Presses, of which the following is a specification.

This invention relates to a power-press for cutting and forming sheet metal and other material, with the object in view of increasing the efficiency and durability of the press.

In the accompanying drawings, Figure 1 is a view of the press in front elevation, partly in section. Fig. 2 is a view of the same in side elevation. Fig. 3 is a view of the same in opposite side elevation, showing the drive-shaft in section. Fig. 4 is a vertical section from front to rear. Fig. 5 is a horizontal section through the frame of the machine and the slide and connecting-rod in the plane of the line A A of Fig. 4. Fig. 6 is a view in detail, showing the hub of the drive-wheel in elevation with the clutch-bearing pins in position. Fig. 7 is a view in detail, on an enlarged scale, showing the central portion of the drive-wheel, its hub, and clutch in position thereon. Fig. 8 is a transverse section of the same in the plane of the line B B of Fig. 7. Fig. 9 is a view of the clutch-dog in elevation. Fig. 10 is a view of the same in section, showing the dog-operating pin in position. Fig. 11 is a plan view of the switch-plate. Fig. 12 is an end view of the same. Fig. 13 is an enlarged view in section through the ratchet mechanism for tilting the bed-plate and parts carried thereby. Fig. 14 is a view of the ratchet-wheel in side elevation. Fig. 15 is a view of the ratchet-dog. Fig. 16 is an enlarged view in detail, showing the connection of the treadle-rod with the clutch-operating lever; and Fig. 17 is an enlarged section in detail in the plane of the line C C of Fig. 13 looking toward the right.

The frame of the press includes a hollow pedestal 1, open at the front and back, and a superposed rocking section comprising a pair of side pieces 2 3, symmetrical in design and formed to represent an irregular G, the die-bolster 4 resting on the front lower portion of the side pieces 2 3, while the drive-shaft 5

is mounted in the upper overhanging portions of the side pieces, the position of the shaft 5 relative to the die-bolster 4 being such that the slide 34 (see Fig. 4) for carrying the tool toward and away from the work may pass back of the shaft 5 and move in its sliding movement above the top of the superposed frame-section, thereby providing for a vertically-extended bearing for the slide throughout the extent of its movement toward the material to be operated upon, whether the said movement be short or long. The side pieces 2 and 3 are connected at their lower portions (see Fig. 4) by a heavy web 7 and at their upper portions by a lighter web 8 to move together as a single supporting-frame.

The particular curved shape of the superposed frame is such as to insure the great strength required without employing an unnecessary quantity of metal and at the same time furnishes a machine very attractive in appearance and convenient for the operator to manipulate. In order to tilt the superposed frame into different positions toward and away from the operator to change the position of the die-bolster 4 to suit the work in hand and at the same time maintain the height of the die-bolster at the point where the two work substantially the same whatever the tilted movement of the superposed frame, I have provided means for pivoting the superposed frame to the pedestal at a point well toward the front and preferably in a transverse line directly beneath the center of the die-bolster 4, as clearly shown in Figs. 1 to 4, inclusive, and have provided for rocking the superposed frame about this pivotal line within certain desirable limits.

The superposed frame is provided with trunnions 9, one of which is exposed in Fig. 1, which rest in sockets 10, formed on the inner faces of the sides of the pedestal 1, bolts 11, provided with nuts 12, extending through from the outside of the pedestal into the trunnions and serving to hold the sides of the pedestal against any liability to spread at this pivotal point. At the back of the superposed frame a rod 13 extends transversely through the frame, and from it depends an adjusting-screw 14, passing through the girder 15, as clearly shown in detail in Fig. 13. A nut 16,

engaged with the adjusting-screw 14, is seated in rotary adjustment on the girder 15, the nut having secured to its lower end a plate 17, the outer portion of which extends into an undercut 18 in the top of the girder, thereby serving to hold the nut against unintentional lifting from the girder. The nut 16 is also provided with a cap-plate 19, which projects over its top sufficiently to hold in place the annular band 20 of the socket-piece 21. The nut is further provided, in the present instance about centrally, with a series of teeth 22, with which a spring-actuated dog 23, carried by the socket-piece 21, engages to turn the nut as the socket-piece 21 is swung back and forth. The dog 23 is thrown normally toward the nut by a spring 24 and rides freely over the teeth 22 when the socket-piece 21 is swung in one direction and engages the teeth and carries the nut along with the socket-piece when the latter is swung in the opposite direction, thereby serving to elevate the adjusting-screw 14 when the nut is forced in one direction and to lower the adjusting-screw 14 when the nut is turned in the opposite direction. The superposed frame is held in the tilted position into which it may have been adjusted by means of the nuts 25 on the opposite ends of the rod 13, the said rod extending through the opposite sides of the pedestal 1 and moving along curved slots 26 in the opposite sides of the pedestal 1 as the superposed frame is tilted. The socket-piece 21 is provided with a socket 27 for the reception of a hand-lever for operating the nut 16, and provision is made for operating the nut in either of two opposite directions by providing the shank of the dog 23 (see Figs. 13 and 15) with a cross-pin 28, working in a slot 29, formed in a projection at the end of the socket-piece 21, to hold the dog in its proper relation to the teeth on the ratchet-wheel and to permit the said dog to be turned half around by removing the pin 28 and held in that position by again inserting the pin.

The drive-shaft 5 carries an eccentric 30, engaged by the strap of a pitman 31, which receives the screw-threaded end of a connecting-rod 32, provided at its lower end with a spherical bearing 33 for attaching the connecting-rod to the tool-carrying slide 34. The screw-threaded end of the connecting-rod 32 is clamped in the desired vertical adjustment in the jaws of the pitman by means of a screw 35 in position to force together the walls of the split end of the pitman. The spherical bearing 33 at the opposite ends of the pitman rests in a concave-faced bearing-block 36, fitted in the socket in the forwardly-projecting lower portion of the slide 34, and is held in position by means of the nut 37, screwed into the top of the socket and having its lower face fitted to conform to the spherical bearing 33, while the opening 38 in the nut 37, through which the pitman passes, is made slightly larger than the pitman to permit the latter to center itself on the

bearing-block 36 in the event of any slight variation in the intended relative adjustments of the eccentric on the drive-shaft and the tool-carrying slide. The lower portion of the slide 34 is provided with a removable gripping-jaw 39, held in position by clamp-screws 40, for the purpose of clamping the shank 41 of the tool to the slide, whether the latter be circular or polygonal in cross-section. The shank 41 of the tool is further held in position by means of a set-screw 42, which passes through the removable clamping-jaw 39 into engagement with the shank of the tool.

Provision is made for stripping the material from the cutting-tool by providing a vertically-reciprocating device consisting of a foot-piece 43 and shank 44, the latter extending up within the shank of the tool-head and provided with a laterally-projecting lug 45, which as the slide 34, carrying the tool therewith, is lifted comes in contact with a stripper-operating lever 46, pivoted to the superposed frame at 47 and extending thence forwardly to a point over the path of the lug 45. The point at which the stripper-operating lever 46 shall positively act upon the stripper during the upward movement of the slide is determined by means of a set-screw 48, set in the web 8 of the superposed frame with its free end in position to engage the top of the lever 46 and limit its upward swing.

The ways 49, (see Figs. 4 and 5,) in which the slide 34 moves, are located in the superposed frame back of the position which the operating-shaft 5 occupies, thereby permitting their free extension to the top of the superposed frame back of the shaft, and so providing for the extension of the tool-carrying slide up back of the shaft 5, giving it a very long bearing on the ways and permitting it as it moves upwardly to project, if need be, above the top of the superposed frame, thereby providing for a long movement of the tool or a short one, as may be provided for by the eccentric on the shaft or by other well-known or approved means, and yet providing at the same time for holding it true to its work during its entire movement. This feature becomes of great importance when work of an unusually accurate character is required, as all trembling or wobbling motion is avoided. Further provision against any such laterally-wobbling or irregular movement of the tool-carrying slide during its reciprocating movement is made by providing a long gib 50, extending, if desired, throughout the length of the ways 49 and adjusted to take up any wear or lost motion by means of set-screws 51, seated in the wall of the ways with their free ends bearing against the back of the gib 50, the said set-screws being locked in position by suitable lock-nuts 52.

The drive-shaft 5 is locked to and released from the power-transmitting wheel 53 by means of a clutch, as follows: The power-trans-

mitting wheel 53 runs freely on the shaft 5, except when locked to the shaft by the clutch, and the hub 54 of the wheel is provided with one or more radially-extending recesses 55, (see Fig. 6,) in the present instance two, located on its end in positions diametrically opposite for the reception of the nose of the spring-actuated dog 56. (See Figs. 7, 8, 9, 10.) The latter has a limited endwise-sliding movement in a longitudinal groove 57, formed in an enlarged portion 58 of the shaft 5 in proximity to the end of the hub 54 of the wheel. The dog 56 is under normal spring-pressure, tending to force it into locked engagement with the hub 54 by means of a spring-actuated plunger 59, seated in a socket 60, tapped into the end of the dog, and provided with a coil-spring 61, located within the socket 60 and surrounding a reduced portion of the plunger 59. The outer end of the plunger 59 bears against a stop 62, set in the bottom of the groove 57, and the dog may be moved endwise on the plunger 59 against the tension of the spring 61 to withdraw it from engagement with the hub 54.

For the purpose of withdrawing the dog from locking engagement with the hub the dog is provided with a transverse recess 63 in its outer face, one wall of the recess being beveled, as at 64, for the purpose of gradually engaging the switch-plate. The switch-plate is denoted as a whole by 65. Its operating-face is curved, as at 66, to conform to the periphery of an annular groove 67, formed in the enlarged portion 58 of the shaft, and one part of its operating-face is provided with a bevel 6 to cooperate with the bevel 64 on the dog in order to produce a wedge-like action upon the dog to gradually withdraw it from its locking position as the shaft 5, carrying the dog, rotates the latter into engagement with the face of the switch-plate 65. The bottom of the groove 67 in the enlarged portion 58 of the shaft is slightly recessed, as shown at 68, Fig. 8, in proximity to the groove 57, in which the dog 56 is located, so that when in contact with the bottom of the groove or in position to withdraw the dog from the hub 54 it (the switch-plate 65) will at the same time form a positive stop against the further rotation of the shaft 5.

The switch-plate 65 (see Fig. 3) is guided to and from its position to operate the dog 56 by means of ways 69, secured to a removable plate 70, attached to one of the side pieces 3 of the superposed supporting-frame. The switch-plate 65 has an operating-stem 71 secured to its outer end, preferably by tapping the outer end of the plate in such a manner as to form an outer enlarged socket portion 72 and an inner screw-threaded reduced socket portion 73, (see Fig. 11,) the stem 71 being screwed into the part 73 and a coil 74, surrounding the stem, being seated within the enlarged portion 72 of the socket and bearing against a lug 75 on the plate 70, through which the stem passes

and in which it is guided. The tension of the spring 74 tends to throw the switch-plate 65 inwardly into position to force the dog 56 away from its locking position in the hub 54. An inner lever 76 is pivotally secured to the frame 70 at 77, and the outer end of the operating-stem 71 of the switch-plate is pivotally secured to the said lever at 78 intermediate of its pivotal point 77 and its free end 79, where the rod 80 is attached to the lever 76 for connecting the lever 76 with the foot-treadle 81. The treadle 81 is held normally elevated by means of a spring 82, one-end of which is attached to the treadle 81 and its opposite end to the pedestal 1. The means for attaching the switch-operating rod 80 with the lever 76 is a simple one and is shown in detail in Fig. 16.

The end of the lever 76 through which the rod 80 extends is bifurcated, and a pin 83 (see Fig. 16) is permitted a free rocking movement in the two branches. The rod 80 extends through a perforation 84 in the pin intermediate of the two branches and is locked therein by means of a set-screw 85, tapped into the end of the pin 83 and bearing against the rod. This permits of the ready adjustment of the rod 80 relative to the lever while the rod 80 locks the rocking pin 83 against displacement with respect to the branches of the bifurcated end of the lever.

The supporting-plate 70, which carries the switch-plate and the lever for operating it, is made adjustable to different positions with respect to the periphery of the drive-shaft, as follows: A perforated lug or ear 86 on the upper side of the plate 70 may be secured, by means of a bolt or set-screw 87, in any one of three positions represented by perforations 88 for receiving the bolt or screw 87, the perforations being arranged concentric with the center of the drive-shaft, and a lug or ear 89 on the lower side of the plate 70 may in a similar manner be secured in any one of three positions by a bolt or screw 90, passing through it into any one of three perforations 91, the latter being in a line concentric with the center of the drive-shaft. The perforations 88 and 91 are formed in the superposed frame, and each perforation 88 has its corresponding perforation 91 at a distance therefrom corresponding to the distance between the perforations in the lugs 86 and 89. By thus adjusting the switch-plate in different peripheral positions with respect to the drive-shaft the clutch-dog may be made to disengage the shaft as early or late as desired, thus adapting the shaft to a great variety of speeds and variation of transmitting means, such as cams, gears, and cranks.

The end of the hub 54 of the power-transmitting wheel is provided, as shown in Fig. 6, with square-headed bearing pins or plates 92, set therein and forming the walls of the recesses, against which the locking-dog 56 bears when the shaft is locked to the power-

transmitting wheel to force the tool to its work. These pins are of very hard metal in order to keep these walls perfect and prevent any liability of the dog jumping past and are so arranged that they may be removed and inserted with another of their four sides exposed when one side becomes partially worn, thereby providing for utilizing the four sides of the heads of the pins in exposed position, and so materially extending the useful life of the pin. The end of the hub 54 is further provided with a gradual running off or bevel 93 at the edge of the recess, over which the dog rides into locking position in order to insure the interlocking of the wheel with the shaft whenever the switch is withdrawn to permit it.

The number of locking-recesses in the hub of the wheel is a matter of choice, the two shown being the number which has been found convenient in practice in order not to require too long a time between the operation of the switch and the actual interlocking of the power-transmitting wheel and shaft. It is obvious that this number, however, might be increased or one only might be used, if so desired.

When it is desired to force the tool toward the material to be operated upon, the foot of the operator is placed upon the treadle, thereby withdrawing the switch-plate for the locking-dog and permitting the latter under the pressure of its actuating-spring to move toward the hub of the power-transmitting wheel, and it as soon as the hub of the wheel presents a recess opposite it will engage the recess, thereby locking the shaft carrying the tool-operating cam to the power-transmitting wheel and forcing the tool down into engagement with the work and again lifting it and causing the stripper to operate to strip the work from it. This operation will be continued at each revolution of the shaft so long as the operator holds his foot on the treadle, and thereby holds the switch-plate out of engagement with the locking-dog. When, however, it is desired to stop the press, the foot is merely lifted from the treadle, the switch-plate under its actuating-spring immediately moving into position to engage the dog when the latter is brought around into position opposite it by the rotary movement of the shaft, and such rotary movement of the shaft will cause the dog to be slid back out of locking position, and the shaft will be positively stopped by the engagement of the switch-plate in the recessed portion of the groove in the dog-carrying sleeve.

The press as a whole is economical in operation and very efficient and convenient for general work in cutting, punching, and pressing metals and other materials.

What I claim is—

1. A frame for the die-bolster, tool-carrying slide and drive-shaft, a drive-shaft mounted in an upper overhanging portion of the frame, a tool-carrying slide mounted in the frame back of the drive-shaft and means for connecting the drive-shaft and slide.

2. A frame for the die-bolster, tool-carrying slide and drive-shaft, a drive-shaft mounted in an upper overhanging portion of the frame, a tool-carrying slide, ways for the tool-carrying slide extending upwardly along the frame back of the drive-shaft, a gib extended along one of the ways, screws located at intervals along the way for adjusting the gib to the slide and means for connecting the drive-shaft and slide.

3. In combination, the pedestal, the superposed frame pivoted thereon and means for tilting the superposed frame into different positions, said means for tilting the frame including a screw depending from the frame, a toothed nut engaged with the screw and seated in the pedestal and a lever mounted on the nut and carrying a dog or pawl in position to engage the toothed nut to operate the screw.

4. The combination with the frame-adjusting screw depending into the pedestal and the nut engaged with the screw and held in the pedestal, of the nut-operating lever provided with a spring-actuated dog or pawl, and means for reversing the dog or pawl in the lever to operate the nut in either of two opposite directions.

5. The combination with the frame-adjusting screw depending into the pedestal and the pedestal provided with a girder having an undercut, of a nut engaged with the screw and provided with a base-plate extending into the undercut on the girder, a nut-operating lever mounted on the nut, a cap-plate for holding the lever in position and a reversible spring-actuated dog carried by the lever for operating the nut and hence the screw in each of two opposite directions.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 8th day of January, 1903.

HERMAN OSSWALD.

Witnesses:

FREDK. HAYNES,
HENRY THIEME.