

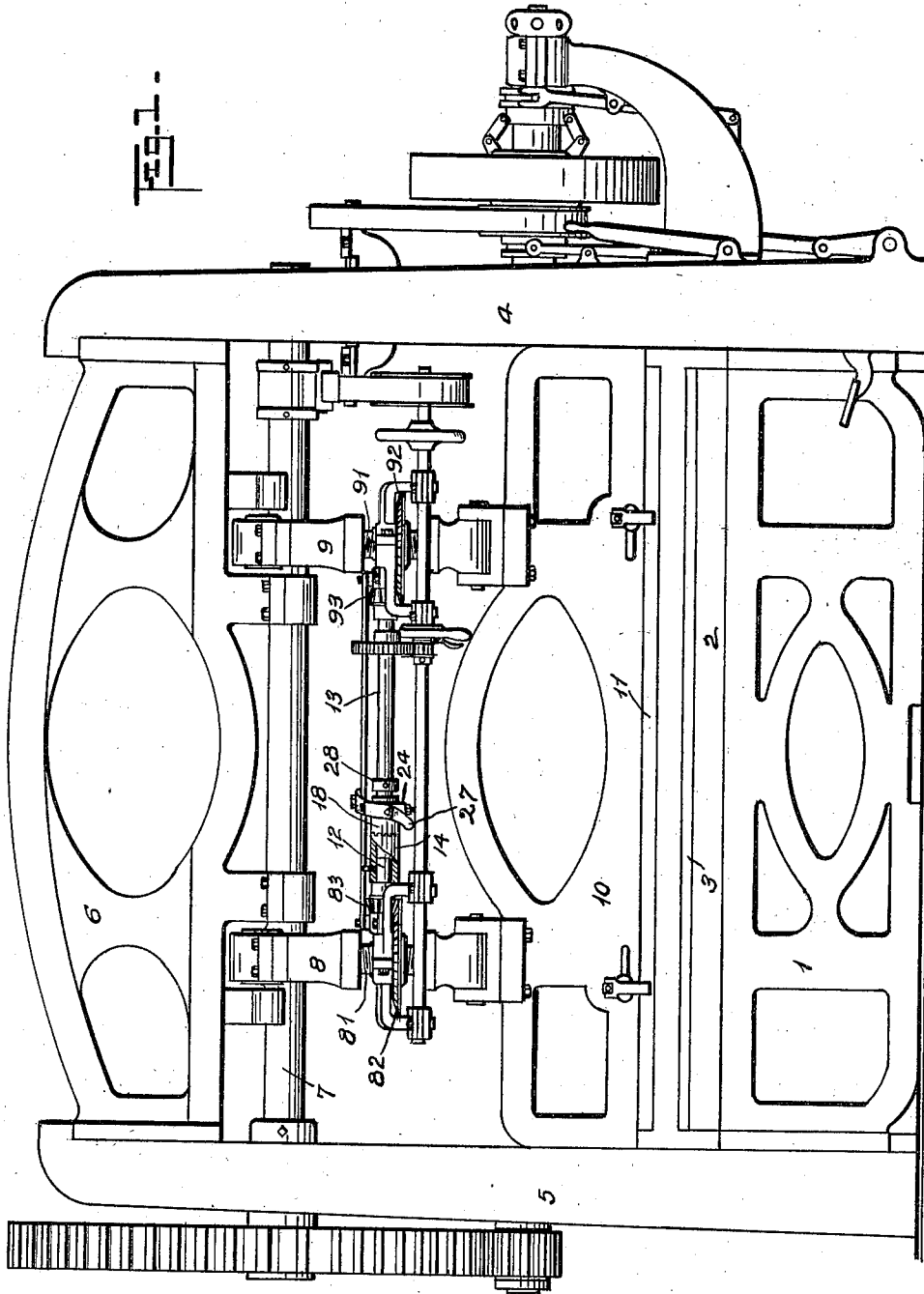
F. LOY.
PRESS.

APPLICATION FILED APR. 23, 1910.

1,001,868.

Patented Aug. 29, 1911.

2 SHEETS-SHEET 1.



WITNESSES

Fredrick German Jr.
Walter Stanch.

INVENTOR

Frank Loy,

BY

Russell M. Everett,
ATTORNEY.

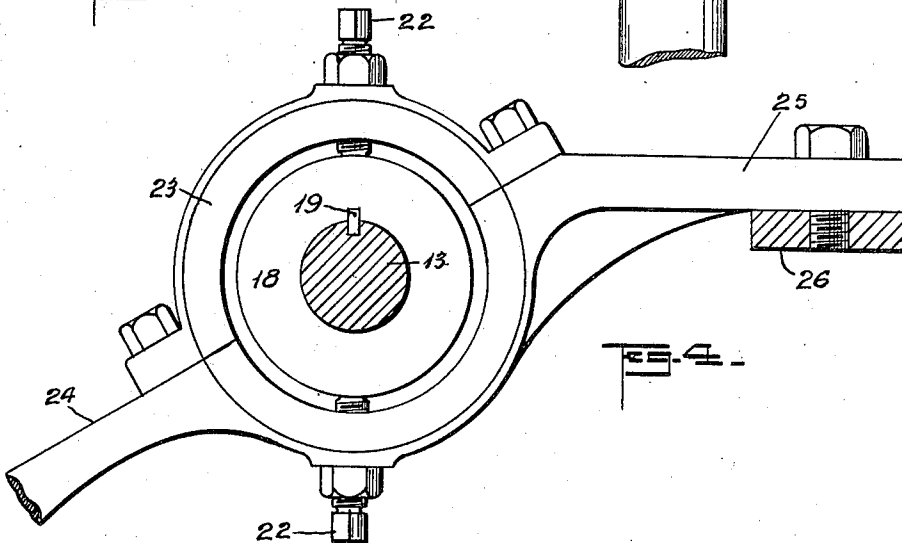
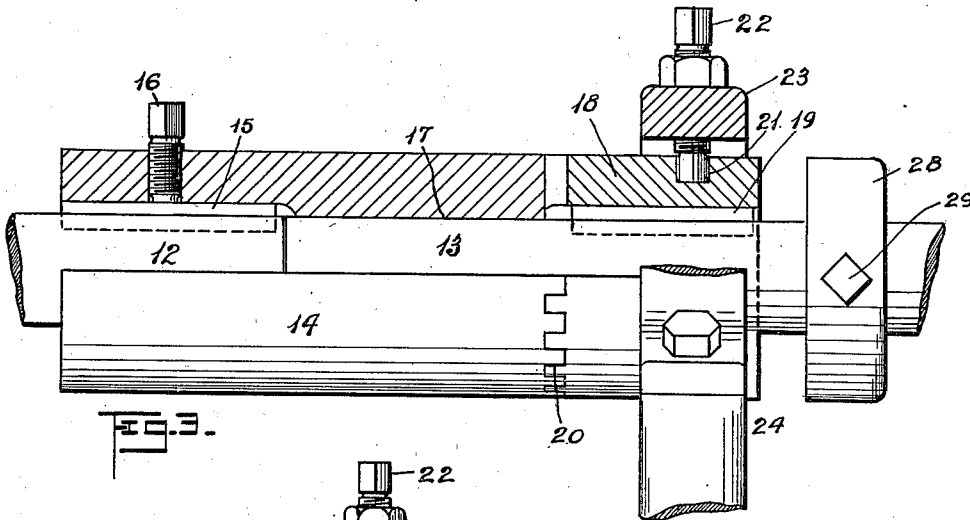
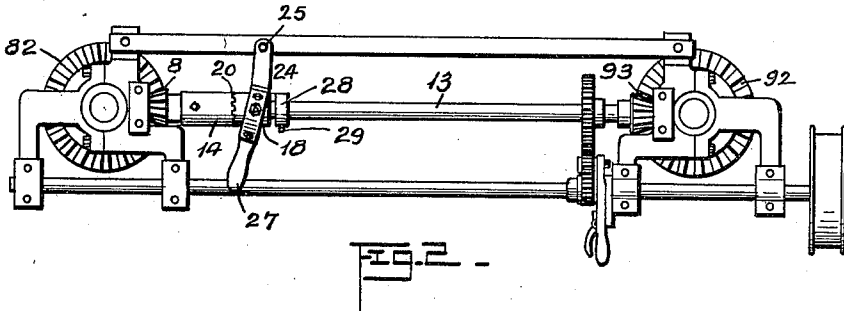
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WITNESSES
Theurich & Co. Inc.
Walter Staneck.

INVENTOR
Frank Loy,
BY
Russell W. Everett,
ATTORNEY.

UNITED STATES PATENT OFFICE.

FRANK LOY, OF NEWARK, NEW JERSEY.

PRESS.

1,001,868.

Specification of Letters Patent.

Patented Aug. 29, 1911.

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To all whom it may concern:

Be it known that I, FRANK LOY, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain Improvements in Presses, of which the following is a specification.

This invention relates to that class of presses in which a hammer or similar member is raised and lowered to exert pressure, and for purposes of illustration I have shown it applied to a sheet metal bending press, although I desire it to be understood that the invention may be employed in other presses or machines where it will perform the same functions as hereinafter set forth.

The objects of the invention are to enable either of the opposite ends of the hammer or similar member to be adjusted vertically independent of the other; to enable such adjustment to be made quickly and easily; to secure a simple construction for effecting such adjustment, which shall be strong, so as to not weaken the machine, and which shall not be liable to get out of order; to avoid a multiplicity of parts; to secure a construction which can be applied to machines already in use, and to obtain other advantages and results as may be brought out in the following description.

Referring to the accompanying drawings, in which like numerals of reference indicate corresponding parts in each of the several figures, Figure 1 shows in front elevation a sheet metal bending press having my improvements applied thereto; Fig. 2 is a plan of that portion of the machine to which my improvements are most directly applied; Fig. 3 is a front elevation, on larger scale, of certain clutch means employed in carrying out the invention, partly in longitudinal section, and Fig. 4 is an end view showing the operating handle or lever.

In said drawings, and particularly Fig. 1, 1 indicates the horizontal bed or support of a sheet metal power press, which bed or support provides an anvil 2 upon which a lower die 3 is seated. Housings 4 and 5 extend upward at the opposite ends of the bed 1 and are connected at their tops by a heavy leaf 6. A main shaft 7 is journaled in said housings just below the said top leaf and has cranks or eccentric portions receiving the upper ends of pitmen 8 and 9 pivotally connected at their opposite or

lower ends to a slide or hammer 10, which is vertically movable and carries at its lower edge an upper die 11 adapted to cooperate with the lower die 3 in bending sheet metal. The said pitmen 8 and 9 have each a middle portion, 81 or 91, which is oppositely screw-threaded at its extremities to engage the end portions of the pitmen and which screw-threaded portions by being turned will thus shorten or lengthen the pitmen. In order to turn these right and left screws of the pitmen, each is provided with a bevel gear, 82 or 92, and these bevel gears are engaged by pinions 83 and 93. All of the parts thus far described are common and well-known in the art, and heretofore the said pinions 83 and 93 have been fast upon a shaft which could be turned by any appropriate means to adjust the length of the pitmen 8 and 9 simultaneously. It has been found in practice, however, that one pitman often requires a different adjustment from the other, either because of greater wear and lost motion in the parts of one pitman than in the parts of the other or from other similar cause. This different adjustment of the two pitmen could be accomplished only by unhooking the shaft upon which the two pinions were carried, or one end of it, and shifting the engagement of its pinion with the gear wheel of the pitman, one or more teeth as might be required. It often happened, however, that even a single tooth made more difference than desired, and especially was this true because the teeth of the gear wheels and pinions cannot be made fine since they bear the strain of transmission. It was therefore inconvenient to adjust one end of the hammer independent of the other at all, and generally impossible to adjust it accurately, it being remembered that these machines must act with great precision and bend the sheet metal exactly in order for it to fit when assembled.

In carrying out my invention, I mount the pinions 83 and 93 fast upon aligned shaft portions 12 and 13, and connect said shaft portions by a clutch which when thrown in causes the said shaft portions and pinions to turn together and thus adjust the lengths of the pitmen 8 and 9 simultaneously, but which clutch can be thrown out to disconnect the said shaft portions 12 and 13 and thus enable one of the pitmen to be adjust-

ed in length independently of the other. This clutch may be of any well-known type which can be adapted to the purpose, but I prefer to employ a positive clutch as will next be described in detail.

Upon the end of one shaft portion, as 12, is fixed a tubular clutch member 14, said clutch member being made fast upon said shaft portion, as by means of the key 15 and set screw 16, and projecting beyond the end of the shaft portion to form a bearing for the end of the other shaft portion 13, as at 17, and thus hold the adjacent ends of the two shaft portions in accurate alinement. Upon the shaft portion 13 adjacent to the said clutch member 14 is a second clutch member 18 which is also in the form of a sleeve upon said shaft portion 13 and made rotatably fast with respect thereto by a key 19 which permits sliding of the sleeve or clutch member 18 upon said shaft portion 13. The adjacent ends of the two clutch members 14 and 18 have teeth adapted to interlock, as at 20, and obviously as these teeth are interlocked or separated the shaft portions will turn together or be independent of each other.

For sliding the clutch member 18 longitudinally of the shaft portion 13, I have shown it provided with an exterior annular groove 21 adapted to receive the ends of pins or screws 22 projecting inward from the ring 23 of a handle or lever 24, said ring loosely surrounding the sleeve or clutch member 18. The lever is at one end 25 fulcrumed in any convenient manner, as upon the bar 26 connecting the spider frames of the power press shown, and at its other end provides a handle 27 for grasping. Preferably a stop collar 28 is provided upon the shaft portion 13 adjacent to the sliding clutch member 18, so that it can be slid up against said clutch member and locked by the set screw 29 to prevent inadvertent disengagement of the clutch members, when desired.

In operation, it will be understood that if the die is not exerting equal pressure at its opposite ends and the bends are consequently not of uniform sharpness throughout their lengths, the sliding clutch member 18 of my improved device is thrown out of engagement with the other clutch member, and the machine operated to adjust the length of one of the pitmen independently of the other in just the same manner as it is operated to adjust both of the pitmen when the clutch is thrown in. The clutch teeth can be made sufficiently fine to secure the necessary nicety of adjustment, since when the clutch members are interlocked the strain of transmission between them is distributed among the teeth and not thrown upon one tooth at a time as in the case of bevel gears and pinions. Furthermore, by

increasing the radius of the toothed portions of the clutch members, a finer adjustment could be secured if desired.

Having thus described the invention, what I claim is—

1. The combination with an elongated die, pitmen supporting said die near its ends, each pitman having a middle portion oppositely screw-threaded at its opposite ends to engage the end portions of the pitman, gears on said middle portions of the pitmen, and means for rotating one of said gears independently of the other, whereby one end of the die can be adjusted while the other end is stationary.

2. The combination with an elongated die, pitmen supporting said die near its ends, each pitman having a middle portion oppositely screw-threaded at its opposite ends to engage the end portions of the pitman, gears on said middle portions of the pitmen, and means for either rotating said gears in unison or rotating one of them independently of the other, whereby the die can be adjusted as a whole or one end of said die adjusted independently of the other end.

3. The combination with an elongated die, parallel pitmen supporting said die near its ends, each pitman having a middle portion oppositely screw-threaded at its opposite ends to engage the end portions of the pitman, gears on said middle portions of the pitmen, pinions engaging said gears arranged in axial alinement between said pitmen and in substantially the same plane therewith, and means for either rotating said pinions in unison or rotating one of them independently of the other.

4. The combination with a die, parallel pitmen supporting said die at opposite points thereof, each pitman having a middle portion oppositely screw-threaded at its opposite ends to engage the end portions of the pitmen, gears on said middle portions of the pitmen, aligned shaft portions extending between said pitmen, pinions on the separated ends of the shaft portions engaging said gears of the pitmen, clutch members upon the adjacent ends of said shaft portions adapted to engage and cause the shaft portions to rotate in unison or disengage to allow said shaft portions to rotate independently of each other, means for operating the clutch, and means for turning one of said shaft portions.

5. The combination with a die, parallel pitmen supporting said die at opposite points thereof, each pitman having a middle portion oppositely screw-threaded at its opposite ends to engage the end portions of the pitman, gears on said middle portions of the pitmen, aligned shaft portions extending between said pitmen, pinions on the separated ends of the shaft portions engaging said gears of the pitmen, clutch members upon the

adjacent ends of said shaft portions having annular series of teeth in planes transverse to the shaft portions adapted to engage and cause the shaft portions to rotate in unison or disengage to allow said shaft portions to rotate independently of each other, means for operating the clutch, and means for turning one of said shaft portions.

6. The combination with a die, parallel pitmen supporting said die at opposite points, each pitman having a middle portion oppositely screw-threaded at its opposite ends to engage the end portions of the pitman, gears on said middle portions of the pitman, spider frames on said middle portions, a bar connecting said spider frames, alined shaft portions mounted in said spider frames and extending between said pitmen, pinions on the separated ends of the shaft portions engaging said gears of the pitmen, clutch members upon the adjacent ends of said shaft portions adapted to engage and cause the shaft portions to rotate in unison or disengage to allow said shaft portions to rotate independently of each other, means for turning one of said shaft portions, a handle or lever fulcrumed on said connecting bar in transverse relation to one of said clutch members and its shaft portion, and cooperating means on said lever and clutch member allowing independent rotation but compelling them to move together longitudinally of the alined shaft portions.

7. The combination with a die, parallel pitmen supporting said die at opposite points, each pitman having a middle portion oppositely screw-threaded at its opposite ends to engage the end portions of the pitman, gears on said middle portions of the pitmen, spider frames on said middle portions, a bar connecting said spider frames, alined shaft portions mounted in said spider frames and extending between said pitmen, pinions on the separated ends of the shaft portions engaging said gears of the pitmen, clutch members upon the adjacent ends of said shaft portions adapted to engage and cause the shaft portions to rotate in unison or disengage to allow said shaft portions to rotate independently of each other, means for turning one of said

shaft portions, a handle or lever fulcrumed on said connecting bar in transverse relation to one of said clutch members and its shaft portion, cooperating means on said lever and clutch member allowing independent rotation but compelling them to move together longitudinally of the alined shaft portions, and a stop collar on the shaft portion having a slidable clutch member adapted to limit the swinging of said lever.

8. The combination with a die, pitmen supporting said die at separated points, each pitman having a middle portion oppositely screw-threaded at its opposite ends to engage the end portions of the pitman, gears on said middle portions of the pitmen, alined shaft portions, pinions on the separated ends of the shaft portions engaging said gears of the pitmen, a tubular clutch member inclosing the adjacent ends of said shaft portions and being fast to one of them, a sliding clutch member rotatably fast on the other shaft portion adapted to engage the first-mentioned clutch member and rotate therewith or disengage to rotate independent thereof, means for operating the clutch, and means for turning one of said shaft portions.

9. The combination with a die, parallel pitmen supporting said die at separated points thereof, each pitman having a middle portion oppositely screw-threaded at its opposite ends to engage the end portions of the pitmen, bevel gears on said middle portions of the pitmen, alined shaft portions arranged between said pitmen, in substantially the same plane therewith, bevel pinions on the separated ends of the shaft portions engaging said bevel gears of the pitmen, clutch members upon the adjacent ends of said shaft portions adapted to engage and cause the shaft portions to rotate in unison or disengage to allow said shaft portions to rotate independently of each other, means for operating the clutch, and means for turning one of said shaft portions.

FRANK LOY.

Witnesses:

RUSSELL M. EVERETT,
FRANCES E. BLODGETT.