No. 816,917. PATENTED APR. 3, 1906.

G. C. KEENE.

CORNICE BRAKE.

APPLICATION FILED OCT. 30, 1905.

Fig. 1.

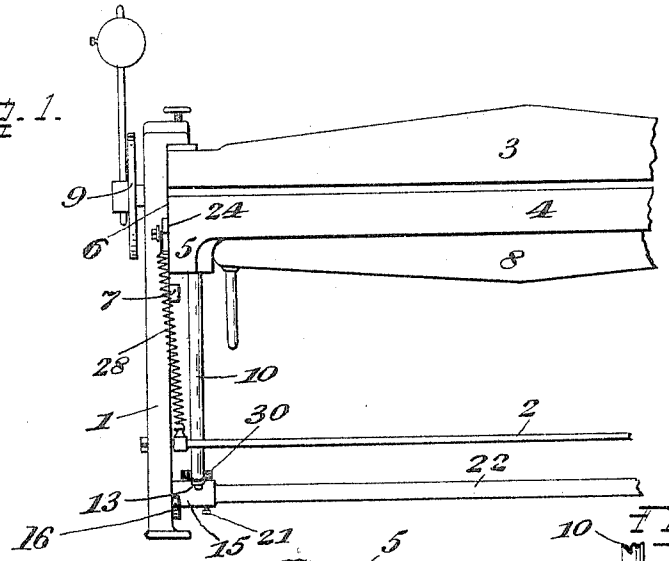


Fig. 4.

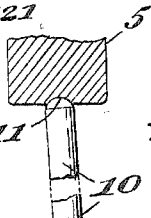


Fig. 5.

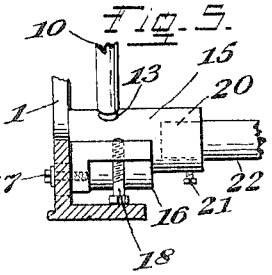
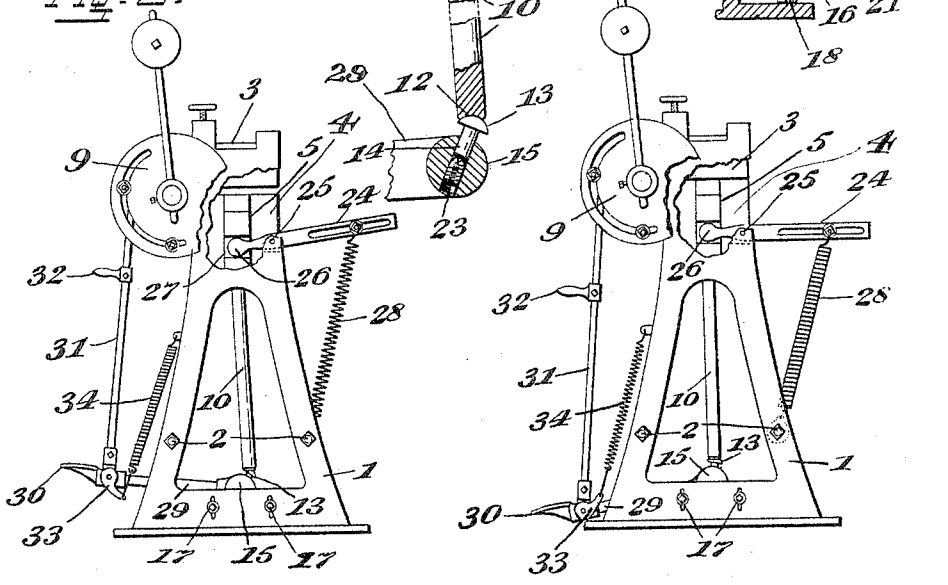


Fig. 3.

Fig. 2.



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CORNICE-BRAKE.

No. 816,917. Specification of Letters Patent. Patented April 3, 1906.

Application filed October 30, 1905. Serial No. 285,011.

To all whom it may concern:

Be it known that I, GEORGE C. KEENE, a citizen of the United States of America, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Cornice-Brakes, of which the following is a specification.

This invention relates to certain improvements in brakes, such as are especially designed for use in connection with sheet-metal work; and the object of the invention is to provide a device of this character of a simple and comparatively inexpensive nature and of a compact, strong, and durable construction having clamping means of an improved and simplified nature and capable of easy and convenient operation for securely holding the sheet metal in position.

The invention consists in certain novel features of the construction, combination, and arrangement of the several parts of the improved brake whereby certain important advantages are attained and the device is rendered simpler, cheaper, and otherwise better adapted and more convenient for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In the accompanying drawings, which serve to illustrate the invention, Figure 1 is a partial elevation showing the central and one end portion of a brake constructed according to my invention, the opposite end portion being omitted for lack of space and as being merely a duplication of the end portion herein shown. Fig. 2 is an end elevation of the improved brake, a portion of the end frame being broken out to illustrate the connection of the counterbalancing means with the lower platen or jaw, which latter is shown in lowered or opened position. Fig. 3 is a view similar to Fig. 2, but showing the parts adjusted so that the lower platen or jaw of the brake is in raised or closed position. Fig. 4 is an enlarged and broken sectional detail view illustrating certain features of the adjustable actuating means for the lower clamping jaw or platen of the brake, and Fig. 5 is a sectional detail view taken through the end frame of the improved brake and showing the structure and arrangement of the adjustable bearing for the end of the rock-shaft which forms a part of the means for actuating the lower clamping jaw or platen of the brake.

As seen in the views, the improved brake is provided with an end frame 1 of suitable construction, which is duplicated at each end of the device, one of said end frames being, however, omitted from Fig. 1 for lack of space and as being merely a duplication of the device at the end shown herein. Between said end frames are extended tie-rods 2 2, connecting the lower portions of the end frames together to afford rigidity to the structure, and 3 represents the upper platen or jaw of the brake, which is extended between the upper parts of the end frames, having connection therewith in any desired way. Preferably the said upper jaw or platen 3 will have adjustable connection with said end frames, although this is not essential to and forms no part of my present invention.

4 represents the lower clamping jaw or platen, which is extended lengthwise beneath the said upper jaw or platen 3 in a way adapted to clamp the sheet metal placed between the jaws when said lower jaw or platen is upwardly moved, and the ends of said lower clamping jaw or platen 4 have downwardly-extended extremities 5, which are guided and arranged to play vertically over vertical guiding-surfaces 6, produced on the inner sides of the end frames 1 of the device. To limit downward movement of the said lower clamping jaw or member 4, the end frames 1 are provided with inwardly-projecting lugs or parts 7, which by engagement beneath said downwardly-extended extremities 5 serve to prevent excessive downward movement of said lower jaw or member.

8 represents a bending-apron pivotally mounted upon the end frames of the device and extended along the jaws thereof for bending or otherwise working the sheet metal clamped between the jaws or members 3 and 4 of the brake, and 9 represents a weighted quadrant at the end frame 1 and connected with said bending-apron for the operation thereof in a well-known way. These parts form no portion of my present invention, and I do not desire to limit myself to the employment of any special structure or arrangement of such devices.

At each end frame of the improved brake is arranged a means for operating the lower clamping jaw or member 4, and it is to the special devices comprised in such means that the present invention has relation. The means at opposite ends of the brake are duplicates of each other, for which reason I have only shown one of said means, the other

having been omitted, with its adjacent end frame, for lack of space.

10 represents a lifting bar or rod extended in a vertical direction beneath the depending extremity 5 of the lower clamping jaw or member 4 and having a rounded upper extremity 11, which is seated in a similarly-formed socket produced in the lower surface of the extremity 5 of the jaw or member 4. The bar or rod 10 is extended along the inner side of the end frame 1 and has a socket or concaved hollow 12 produced in its lower end and in which is received the semispherical head 13 of a supporting-pin, the shank portion of which has loose engagement in a bore or opening 14, transversely extended through a hub or bearing-piece 15, mounted for loose rocking or turning movement in an open-topped bearing-plate 16, adjustably held by screws 17 at the lower part of the end frame 1 of the brake. The bearing-plate 16 is adjustable vertically by means of slots in which screws 17 are engaged, and the ends of said plate 16 are supported by means of screws 18, the heads of which are extended down for engagement upon the base-flange of said end frame 1. When the bearing-plate 16 is vertically moved, the screws 18 will also be turned to shorten or lengthen them, so that the ends of screws 18 will still rest upon the flange for secure support of the bearing-plate.

The hub or bearing-piece 15 has a socket produced in its inner end, as seen at 20 in Fig. 5, and said socket receives the extremity of a rock-shaft or bar 22, which is held to turn or rock with the hub or bearing-piece 15 by means of a set-screw 21 and serves to communicate the movement of the part 15 at one end of the brake to the corresponding part 15 at the opposite end thereof, so that the operating means at the respective ends may be actuated in unison.

29 represents an arm or lever extended forwardly from the hub or bearing-piece 15 and having a treadle 30 at its free end for engagement by the foot of the attendant for rocking the said hub or bearing-piece in one direction, and 31 indicates a slide-rod connected at its lower end with the treadle-lever 29 and having its upper end guided on the end frame in a well-known way and provided with a handle 32, which may be grasped by the operator for reversely moving said hub or bearing-piece 15 by raising the treadle-lever.

34 is a retracting-spring the upper end of which is secured to the end frame 1 above the treadle-lever and the lower end of which has connection with a compensating arm or link 33, pivoted upon said treadle-lever, the structure and arrangement of these parts being such that when the treadle is raised, as shown in Fig. 2, the spring 34 will not be under tension and the arm or link 33 will hang loosely downward below its connection with lever 29, so that when the treadle is depressed it will be permitted to move a certain distance before said arm or link is swung upwardly and tension is placed upon the spring 34, as shown in Fig. 3. In a reverse manner when downward pressure is removed from the treadle the retracting-spring 34 will only act to partially elevate the treadle-lever, the further movement of the same being effected by means of the slide-rod 31 in a well-known way.

24 is a slotted counterbalancing-lever pivotally mounted at 25 on the end frame 1, at the upper part thereof, with a rounded end 26 engaged in a recess or socket 27 at the end of the lower clamping jaw or member 2. The outer slotted end of said lever 24 is adapted for adjustable connection with the upper end of a counterbalancing-spring 28, which is extended downward below said lever and has connection with one of the tie-rods 2, as seen in Figs 1, 2, and 3.

In the operation of the improved brake the spring 28 by its lever connection affords a partial counterbalance to relieve the lifting bar or rod 10 of the excessive weight of the lower clamping member 4, the slotted form of the lever permitting a nice adjustment of the parts, so that only sufficient of the weight of said lower member 4 may be allowed to bear upon the lifting-rod to insure effective working of the press, it being desirable, of course, that said lower member should fall or drop into opened position by gravity when the actuating means is operated to permit such action. Since the lower member 4 is thus counterbalanced, it will be evident that but comparatively little pressure is required on the treadle for rocking the bearing-piece 15 to lift said member 4, such movement of the treadle being accomplished without placing spring 34 under tension and being sufficient to turn said hub or bearing-piece 15 until its pin 13 stands vertically above it, so that the member 4 is elevated to its greatest height and is caused to tightly clamp the sheet metal rested upon it against the upper member 3. Further downward movement of the treadle-lever can only be accomplished against the tension of the spring 34, and such further movement when effected will cause the pin 13 to pass the center line between the axis of hub or bearing-piece 15 and the member 4, so that the jaws or members 3 and 4 of the brake will be locked in closed position for holding the sheet metal while the same is being bent.

In the use of the improved brake it is desirable to provide for adjustment of the lower or clamping jaw or member in a vertical direction, so that compensation may be effected for differences in thickness of the metal to be operated upon, and I prefer to accomplish this result by adjusting the position of the pins 13 so that they are caused to project for a greater or less distance beyond the bearing-pieces or hubs 15 at opposite ends of the

frame. The preferred means for accomplishing such adjustment is shown in Fig. 4 and consists in inserting a screw 23 into the lower end of the bore or socket 14 in each hub 15, so as to engage beneath the corresponding pin 13. The notched ends of said screws 23 will be preferably uppermost, so that the screws may be readily turned by means of an inserted screw-driver on removal of pins 13. It will be evident that when the screws 23 are turned the vertical positions of their notched heads will be varied, so that the shanks of pins 13 will be permitted to engage deeper or less deeply in the sockets 14, and in this way the vertical positioning of said clamping member 4 may be readily adjusted. When such adjustment is necessary, the lower jaw or member 4 being elevated, a block may be inserted between the same and the lug 7 at each end frame 1, so that when the treadle-lever is raised the member 4 is prevented from descending, whereupon the removal of the lifting-rods 10 may be readily accomplished.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A device of the character described comprising clamping-jaws, an end frame, actuating means for moving one jaw toward the other, a lever pivoted on the end frame with one end connected with the movable jaw and a counterbalancing-spring having one end connected with the end frame and its opposite end connected with said lever.

2. A device of the character described comprising clamping-jaws one of which is movable toward and from the other, lifting-rods engaged beneath the ends of the movable jaw, bearing members having adjustable pins on which the lifting-bars are supported and means for operating the bearing members in unison.

3. A device of the character described comprising stationary and movable jaws, a lifting-rod engaged beneath the movable jaw, a bearing member having a socket, a pin adjustably held in said socket and whereon the lifting-bar is supported, a screw carried by the bearing member and engaged beneath the said pin for adjusting the same and means for rocking the bearing member.

4. A device of the character described comprising stationary and movable jaws, a lifting-rod engaged beneath the movable jaw, a bearing member having a socket extended downward in it and open at the upper part of said member, a screw having threaded engagement in the lower part of said socket and provided with a slotted upper end, a pin adjustably held in the socket with its lower end rested on said screw and its upper end engaged beneath the lifting-rod and means for rocking the bearing member.

5. A device of the character described comprising stationary and movable jaws, an end frame, a bearing-plate vertically adjustable at the lower part of the end frame and having screws for holding it in adjusted position, a lifting-rod engaged beneath the movable jaw, a bearing member mounted to rock in the bearing-plate and having an adjustable pin engaged beneath the lifting-rod and means for rocking the bearing member.

6. A device of the character described comprising stationary and movable jaws, a counterbalancing device connected with the movable jaw for counterbalancing the same, a lifting-rod engaged beneath the movable member, a bearing member mounted to rock and having a projection engaged beneath the lifting-rod, a treadle-lever connected to operate the bearing member and a retracting device connected with the treadle-lever for retracting the same.

7. A device of the character described comprising stationary and movable jaws, a counterbalancing device connected with the movable jaw for counterbalancing the same, a lifting-rod engaged beneath the movable jaw, a bearing member mounted to rock and having a projection engaged beneath the lifting-rod, a treadle-lever connected to operate the bearing member and a retracting device having a compensating connection with the treadle-lever and arranged to partially retract the same when fully depressed.

8. A device of the character described comprising stationary and movable jaws, a counterbalancing device connected with the movable jaw to counterbalance the same, a lifting-rod engaged beneath the movable jaw, a bearing member mounted to rock and having a projection engaged beneath the lifting-rod, a treadle-lever connected to operate the bearing member, an arm pivoted on the treadle-lever and adapted to depend therefrom when said lever is uplifted and a retracting-spring connected with the depending part of said arm and arranged to partially retract the treadle-lever when the same is fully depressed.

Signed at Cincinnati, Ohio, this 17th day of October, 1905.

GEORGE C. KEENE.

Witnesses:
JOHN ELIAS JONES,
WILLIAM SCHUCHARDT.