(No Model.) 5 Sheets—Sheet 1.

L. L. SAGENDORPH & G. C. KEENE.

POWER SHEARING MACHINE.

No. 377,500. Patented Feb. 7, 1888.

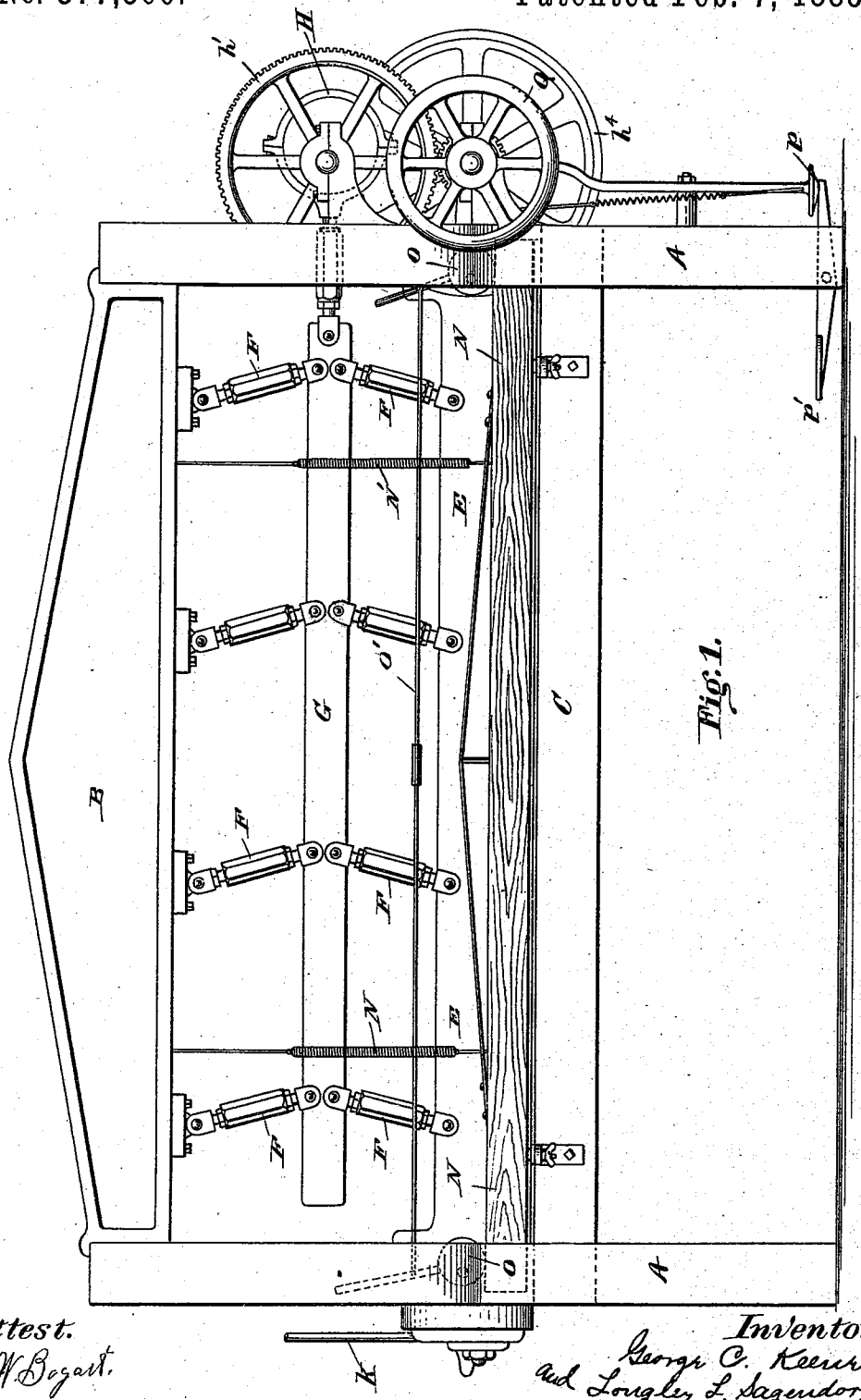


Fig. 1.

Attest.
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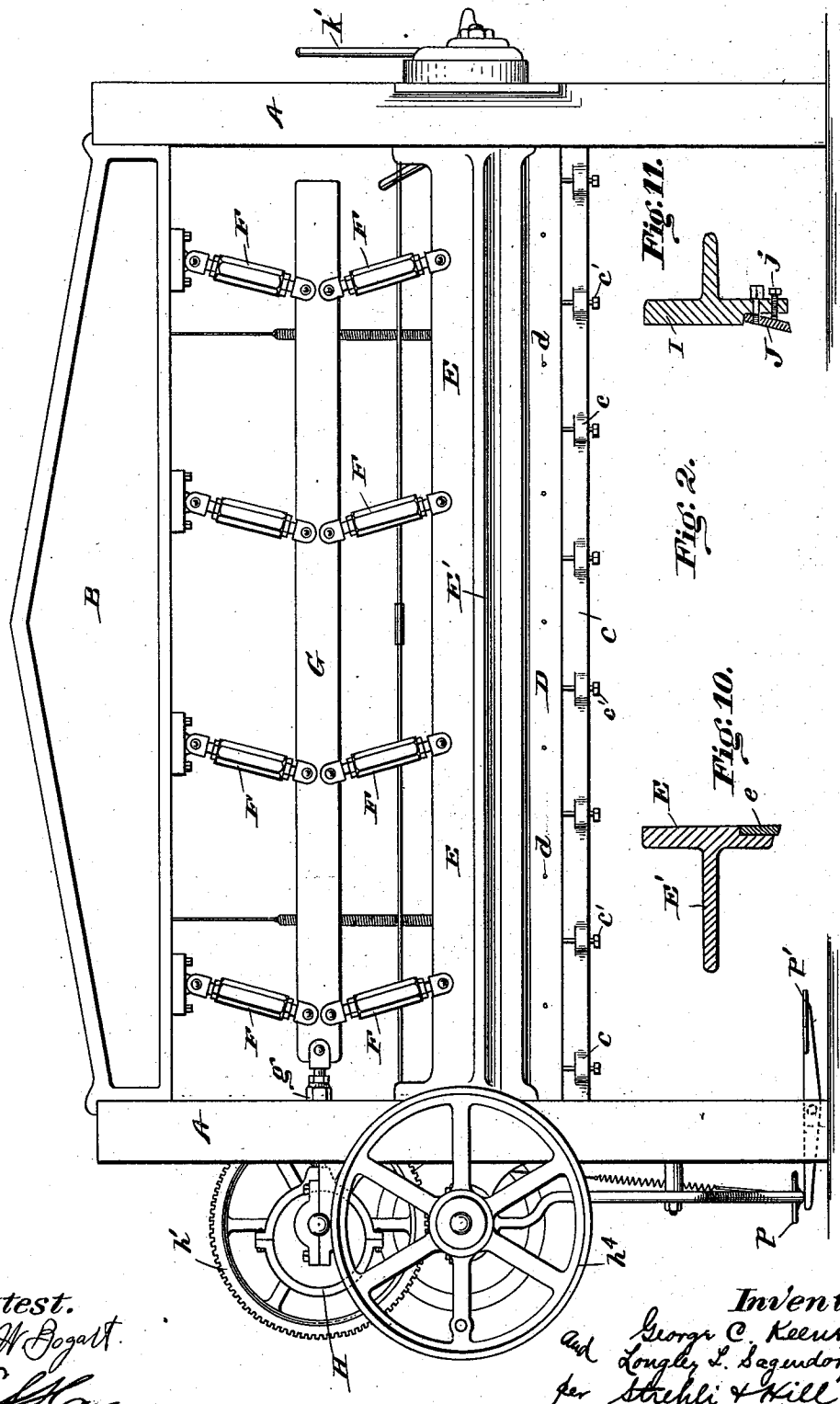
N. PETERS, Photo-Lithographer, Washington, D. C.

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L. L. SAGENDORPH & G. C. KEENE.

POWER SHEARING MACHINE.

No. 377,500. Patented Feb. 7, 1888.



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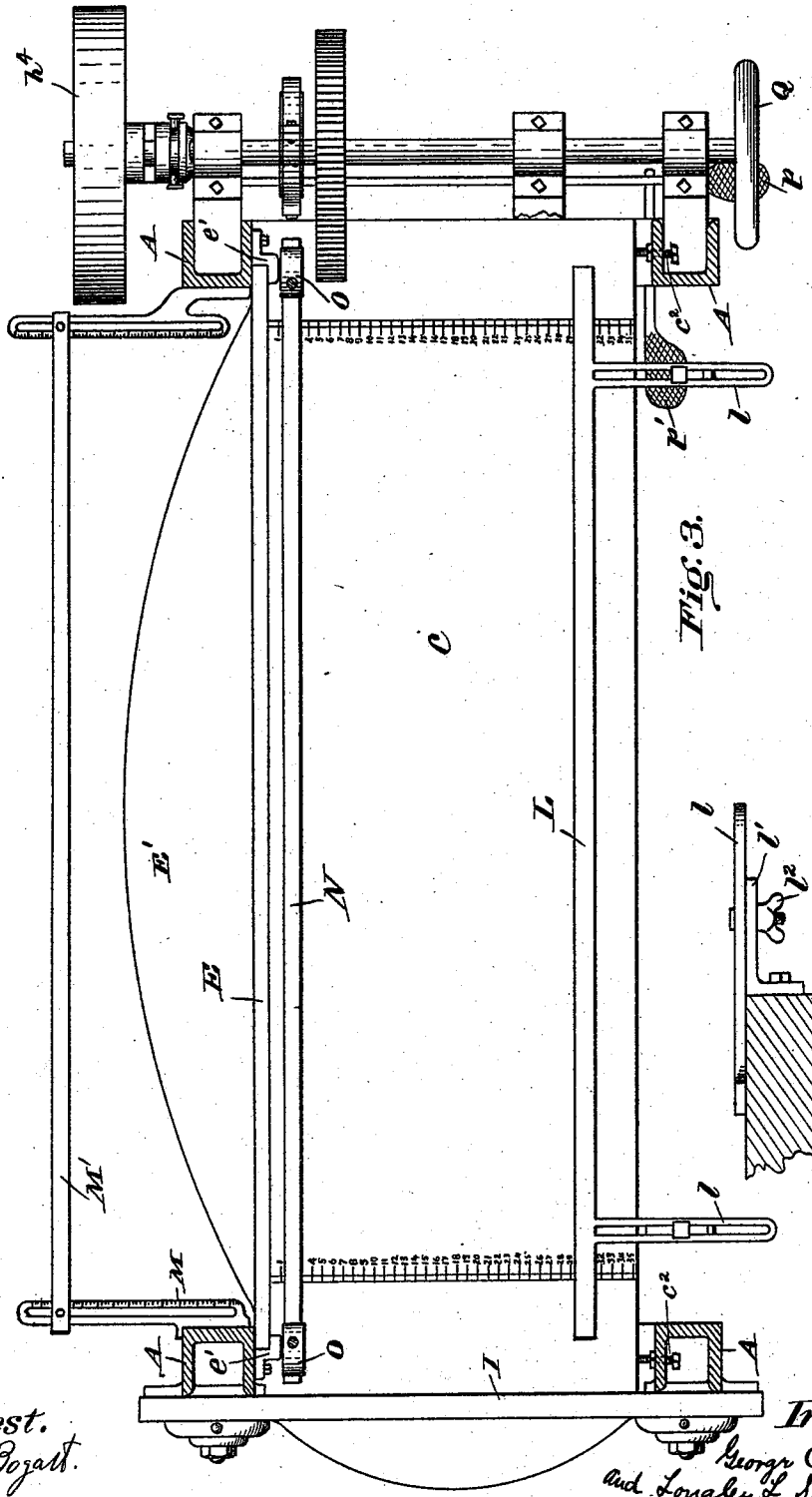
N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 5 Sheets—Sheet 3.

L. L. SAGENDORPH & G. C. KEENE.

POWER SHEARING MACHINE.

No. 377,500. Patented Feb. 7, 1888.



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(No Model.) 5 Sheets—Sheet 4.

L. L. SAGENDORPH & G. C. KEENE.

POWER SHEARING MACHINE.

No. 377,500. Patented Feb. 7, 1888.

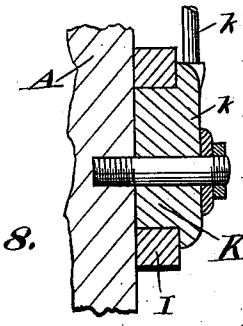


Fig. 6.

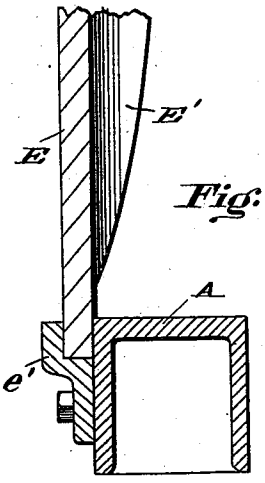


Fig. 8.

Fig. 4.

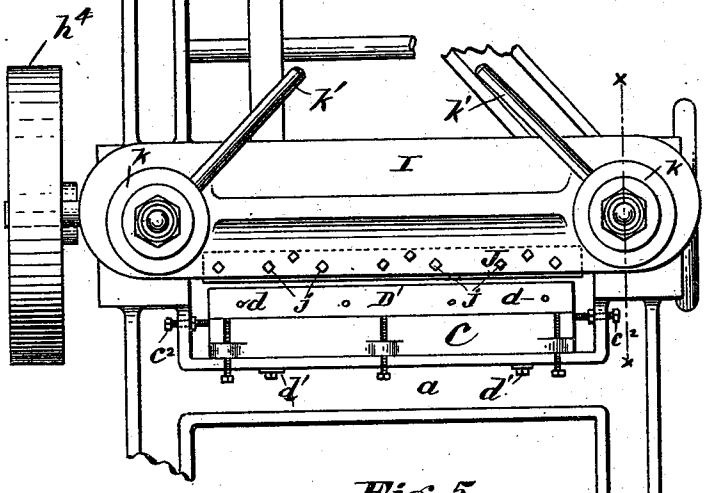


Fig. 5.

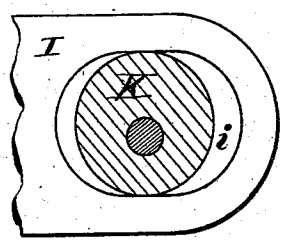


Fig. 7.

Attest.
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(No Model.) 5 Sheets—Sheet 5.

L. L. SAGENDORPH & G. C. KEENE.

POWER SHEARING MACHINE.

No. 377,500. Patented Feb. 7, 1888.

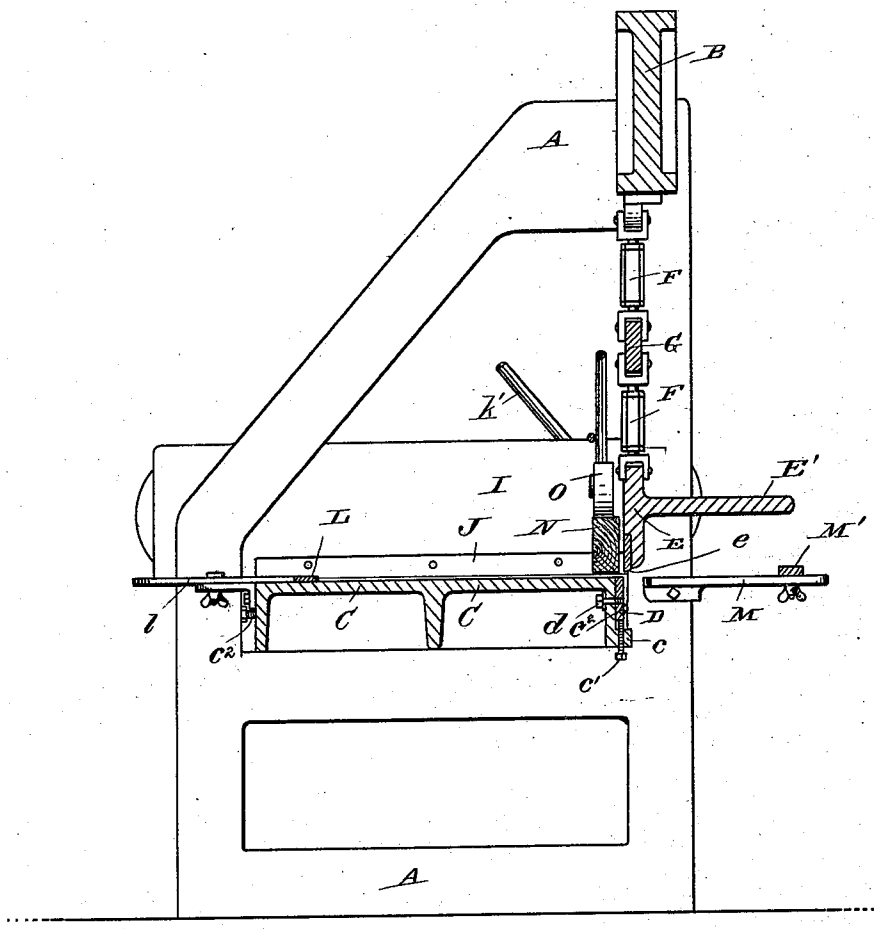


Fig. 12.

Attest.
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N. A. Hicks

Inventors,
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and George C. Keene.
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UNITED STATES PATENT OFFICE.

LONGLEY LEWIS SAGENDORPH AND GEORGE C. KEENE, OF CINCINNATI, OHIO, ASSIGNORS OF ONE-THIRD TO HARLAN P. LLOYD, OF SAME PLACE.

POWER SHEARING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 377,500, dated February 7, 1888.

Application filed October 24, 1887. Serial No. 253,186. (No model.)

To all whom it may concern:

Be it known that we, LONGLEY LEWIS SAGENDORPH and GEORGE C. KEENE, both citizens of the United States, and residents of Cincinnati, Hamilton county, State of Ohio, have jointly invented certain new and useful Improvements in Power Shearing-Machines, of which the following is a specification.

In the accompanying drawings, forming part of this specification, Figure 1 is a view in elevation of the front side of our improved machine. Fig. 2 is a view in elevation of the back side of the machine. Fig. 3 is a top view of the machine, the top portion of the frame and toggle-arms being removed. Fig. 4 is a view in elevation of the right-hand end of the machine, showing the preferred form of mechanism for operating the large vertically-reciprocating knife. Fig. 5 is a view in elevation of the left-hand end of the machine, showing the preferred form of construction for the short end reciprocating bar and knife. Fig. 6 is a central sectional view taken at the line *x x* of Fig. 5, showing the manner of connecting the eccentric K and bar I to the frame. Fig. 7 is a view in elevation of one end of the end cutting-bar, the eccentric being shown in section. Fig. 8 is a sectional view taken through one of the back corner-posts of the frame and a part of the side reciprocating bar to which the knife is attached, showing the preferred form of connection and guide for said bar. Fig. 9 is a view in side elevation, showing one form of connection for the gage-bar and bed-plate. Fig. 10 is a cross-section of the side reciprocating bar and knife. Fig. 11 is a cross-section of the end reciprocating cutter-bar and knife, showing the device for lateral adjustment of said knife. Fig. 12 is a vertical transverse section taken through the center of the machine at right angles to the plane of Fig. 1.

The machine as a whole is supported by two cast frames, A, held to place by having the bed-plate C screwed thereto, as shown in Figs. 4 and 5, and by the top beam, B, as shown in Figs. 1 and 2. These frames A are each cast in one piece and hollow, forming three flanges, as shown in section in Fig. 3.

The bed-plate C is secured to the frames A by means of screw-bolts passed through the upper flanges of the center portions, *a*, of the frames, as shown in Figs. 4 and 5. The holes in said flanges are elongated to admit of the bed-plate being moved backward and forward, in order to laterally adjust the side cutting-knives, as will be more fully set forth. To the top back edge of this bed-plate C is secured the knife D, which fits in a suitable recess, so that the outer surface of said knife will come flush with the outer surface of the bed-plate and the top cutting-edge flush with the top surface of the bed-plate. This knife D is secured to the bed-plate by suitable screw-bolts, *d*, the heads of which are countersunk in the knife, the bolts extending through the flanged portion of the bed-plate and screwed thereto on the under side.

The bed-plate is preferably cast hollow on its under surface, forming a flange on all four of its sides. The slots in the side flanged portion of the bed-plate through which the bolts *d* pass are vertically elongated to admit of the knife D being vertically adjusted on said bed. To accomplish this object suitable lugs, *c*, are cast to the lower back edge of the bed-plate, as shown in Fig. 2, through which is made a screw-threaded hole, into which the set-bolts *c'* pass and operate. To adjust this knife vertically the knife is loosened from the bed-plate. The bolts *c'*, bearing against the lower edge of the knife, are screwed up or down, as may be desired, to properly adjust the knife. The knife being properly adjusted, the nuts on the bolts *d* on the under side of the bed-plate (not shown) are screwed up tightly, holding said knife firmly to the bed-plate. The object of this adjustment is to set the cutting-edge of the knife with reference to the top surface of the bed-plate. The short knife D' on the end of the bed-plate (shown in Fig. 5) is secured thereto in a manner similar to the long knife D, just described, having similar set-bolts for vertical adjustment.

In order to adjust the cutting-edge of knife D laterally, we have provided the following effectual device: The bed-plate rests on the center portions, *a*, of the frames A, as shown in Figs. 4 and 5, and does not occupy all the space between the corner-posts of said frames, sufficient space being left to permit the bed-plate being moved back and forth. Suitable screw-threaded bolts, c^2, pass through screw-

threaded holes in the inner flanges of the frame-posts, said bolts bearing against the sides of the bed-plate. When the knife D needs lateral adjustment, the nuts d' are unscrewed and the bed-plate set at the desired position. The nuts d' are then tightened and the set-bolts c^2 screwed up against said plate, thus securing it firmly in position.

Having now described the preferable construction of the bed-plate and knives and the means for their vertical and lateral adjustment, we will now briefly describe the construction and operation of the vertically-reciprocating cutter-bar and knife e. This reciprocating bar E is recessed on its lower front surface, into which the knife e is properly secured. This bar E has cast thereto the rib E' to afford strength to the bar. The bar E is secured to the inner surface of the frames A by means of the guides e', as shown in Figs. 3 and 8, and is made to slide up and down in said guides in the following preferable manner: To the upper portion of this bar E are pivoted the lower toggle-arms F, the top ends of said arms being suitably secured to the operating-bar G. The upper set of toggle-arms F are similarly secured to said bar G and to the top beam, B, as shown in Figs. 1 and 2. To one end of this bar G is pivoted the arm g, which latter is suitably attached to the eccentric H. This eccentric is attached to the shaft h, which latter is rotated through the agency of pinion h', meshing with pinion h^2 on shaft h^3. The shaft h^3 is rotated by means of the band-wheel h^4, secured thereto. The two shafts h and h^3 operate in suitable journals secured to the end frame, as shown in Fig. 4. Power being applied to the band-wheel, the eccentric H is made to rotate by means of the mechanism just described. This rotation of the eccentric causes the arm g to advance, and with it the bar G. This advancement of the bar G (through the medium of the toggle-arms F) causes the bar E to descend, and with it the knife e. The forward end of this bar and knife is somewhat wider than the other end, and when the knife e descends the forward end will begin to cut first, and continues with a shearing cut the length of the bed-plate.

The eccentrically-reciprocating bar I at the end of the frame to which the knife J is secured is constructed and operated by hand-power, as follows: In each end of this bar I is the elongated recess i, as shown in Fig. 7, in which the eccentric K rotates. When the eccentric is in the position shown in Fig. 7, the end of the bar and knife is raised, and when given half a turn it is lowered. This eccentric K has cast to it the outer casing, k, to which is secured the handle k'. To shear off the end of a piece of metal, it is placed between the two knives D' and J at the desired point, and one of the handles, k', is then given about one-half a turn, causing the knife J to descend and partly cut the sheet. The other eccentric is now operated, completing the cut. One end of this bar and knife may be left down and the cutting all accomplished by means of one of the eccentrics; but for shearing heavy metal it is preferred to use both eccentrics.

The lateral adjustment of the end knife, J, is accomplished in the following manner: The knife being suitably secured to the bar I, we have provided the set-screws j, which screw through the plate I, as shown in Fig. 5, and bear against the knife J, as shown in Fig. 11. By this arrangement the lateral adjustment of the knife J is accomplished.

To properly measure the sheet to be cut, we have provided two devices, viz: In the first device the scale of inches is cut into the top of the bed-plate, as shown in Fig. 3, and the measurement taken from the back of said plate by means of the gage L. This gage has the slotted extensions l, to which the bracket l' is connected by means of the set-screw l^2. The bracket l' is rigidly attached to the front face of the bed-plate, as shown in Fig. 9. The other device for measurement consists in attaching to the back frame of the machine the slotted brackets M, having the scale of inches thereon. To these brackets are secured the T-rail M' by means of suitable set-screws. When this last-named device is used, the measurement is taken backward from the back of the bed-plate, thus measuring the strip cut off instead of the strip left on the bed-plate.

To firmly hold the strips of sheet metal on the bed-plate in position for cutting after the proper measurements have been taken, the following device is preferably employed: The clamping-bar N is preferably made of wood and is suspended and held from off the bed-plate near the cutter-bar E by means of the springs N', attached to the beam B. To each of the end frames are properly secured the eccentrics O, the handles of which are connected by the reciprocating rod O', as shown in Fig. 1. In Fig. 1 this clamping-bar N is shown raised. When desired to clamp the sheets of metal, the handles of the eccentrics O are turned to the right, the weight of said eccentrics and handles being sufficient to hold the bar firmly in place. When desired to remove the sheets of metal, the handles of said eccentrics are turned to the left, releasing the clamping-bar, which latter is raised by the resiliency of springs N'.

To stop and start the machine at pleasure, we have provided the usual clutch, P, to engage and disengage with the band-wheel. This clutch is operated by the foot-treadles p and p', the former being used to disengage and the latter to engage said clutch with the band-wheel, as shown in Figs. 1 and 4.

If desired to raise the vertically-reciprocating bar E and knife without applying power to the band-wheel, we have provided the hand-wheel Q, made stationary to shaft h^3, by means of which the said bar can be easily raised and the metal inserted to be sheared.

Having given in detail the construction and

operation of each part of our machine separately, we will now give a brief description of the operation as a whole.

If the metal to be cut is not of proper length, it is cut by means of the knives D′ and J at the end of the machine, as shown in Fig. 5. Having the metal cut to proper length, the desired width of the sheet is measured off by either of the two devices afore described, and then clamped to the bed-plate by means of bar N and eccentrics O. The metal being now in position to be sheared, power is applied to the band-wheel, when the reciprocating bar E and knife *e* are made to descend by means of the connecting and operating mechanism described, one revolution of the eccentric being sufficient to cause said bar and knife to descend and rise again. Several sheets of metal may be sheared at one operation.

The advantages of our machine are apparent, and consist in the facilities for shearing large quantities of sheet metal in a short length of time. The mechanism employed is simple and strong in construction and is cheap of manufacture.

The means employed for vertical and lateral adjustment of the long knife on the bed-plate, as hereinbefore described, is quite an advantage, and is very effectual for that purpose.

While the various features of our invention are preferably employed together, one or more of said features may be employed without the remainder, and in so far as applicable one or more of said features may be employed in connection with shearing-machines of a construction differing from that herein described.

We are aware that it is not new in a power shearing-machine to operate the vertical reciprocating knife by means of toggle-arm-connecting mechanism such as is shown and claimed in an application of L. L. Sagendorph, (one of the inventors herein,) Serial No. 241,220, and hence do not claim that feature, broadly, in this application; but

What we claim as new, and desire to secure by Letters Patent, is—

1. In a shearing-machine, the bed-plate carrying a suitable knife on the side thereof and means, substantially as set forth, for vertical and lateral adjustment of said knife, in combination with a vertical reciprocating knife adapted to operate at right angles to said laterally-adjustable knife on the bed-plate, and mechanism, substantially as described, for operating said vertically-reciprocating knife, substantially as set forth.

2. In a shearing-machine, the bed-plate C, having knife D suitably secured thereto and capable of vertical adjustment, frames A, and bolts c^2, for lateral adjustment of said bed-plate and knife attached thereto, in combination with a vertically-reciprocating knife, *e*, adapted to operate at right angles to knife D, substantially as specified.

3. In a shearing-machine, the bed-plate C, having knives D and D′ suitably secured thereto and capable of vertical adjustment, frames A, and bolts c^2, for lateral adjustment of knife D, in combination with the vertical reciprocating knives *e* and J, substantially as set forth, and for the purposes specified.

4. In a shearing-machine, the combination of frames A, bed-plate C, having knife D′ attached thereto and capable of vertical adjustment, bar I, having knife J suitably secured thereto, and eccentric K, operating in the recess *i* in said bar, substantially as set forth.

5. In a shearing-machine, the bed-plate C, having knife D attached thereto and capable of vertical and lateral adjustment, in combination with frames A, guides *e′*, bar E, having knife *e*, toggle-arms F, bar G, beam B, arm *g*, and eccentric H, and mechanism, substantially as described, for rotating said eccentric, for the purposes set forth.

LONGLEY LEWIS SAGENDORPH.
GEORGE C. KEENE.

Witnesses:
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SAMUEL FORSYTHE.