

No. 723,164.

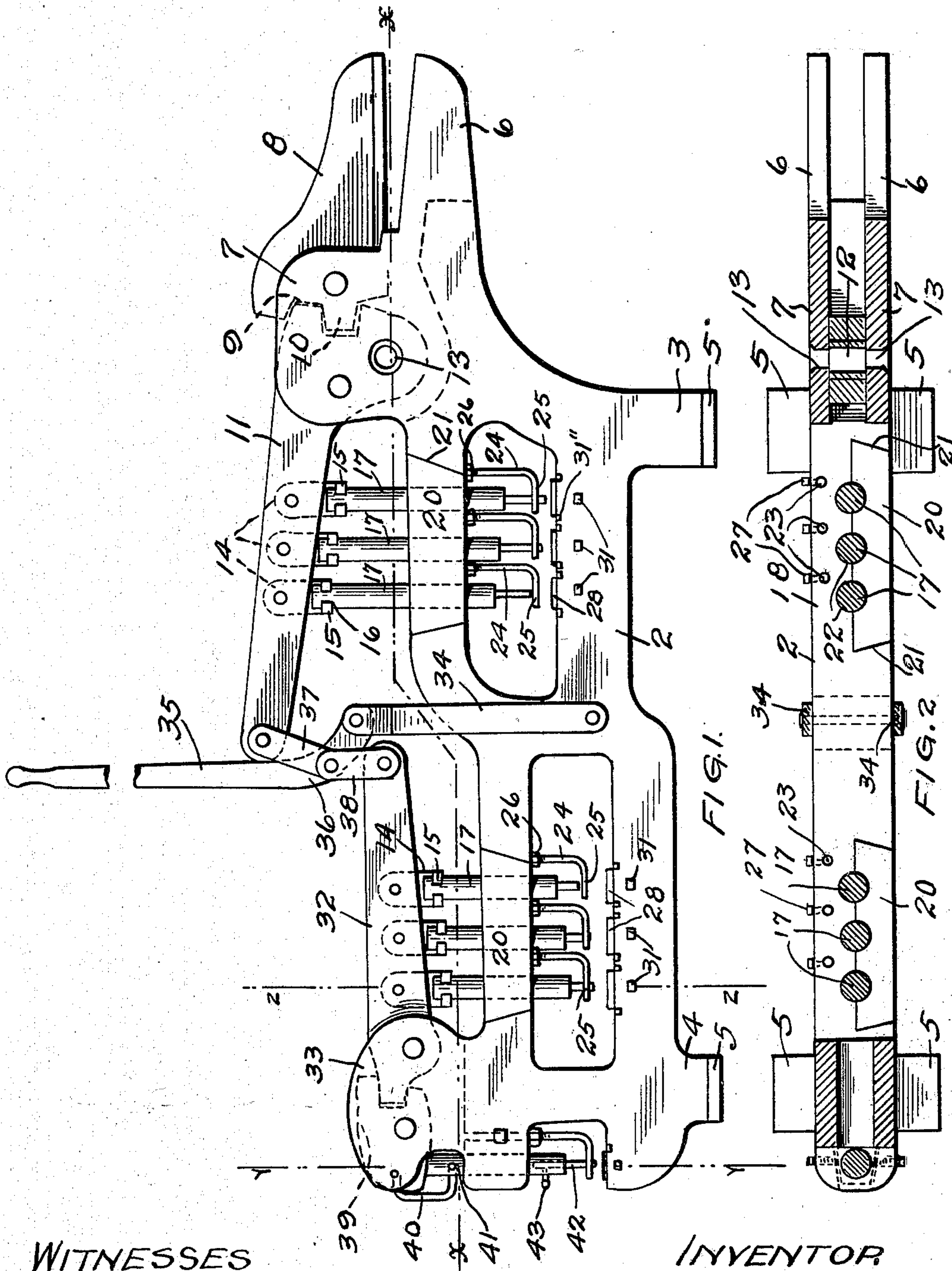
PATENTED MAR. 17, 1903.

O. KNUDSON.
COMBINED PUNCH AND SHEARING MACHINE.

APPLICATION FILED JAN. 20, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES
E. G. Stander
M. D. Norman

INVENTOR
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HIS ATTORNEYS

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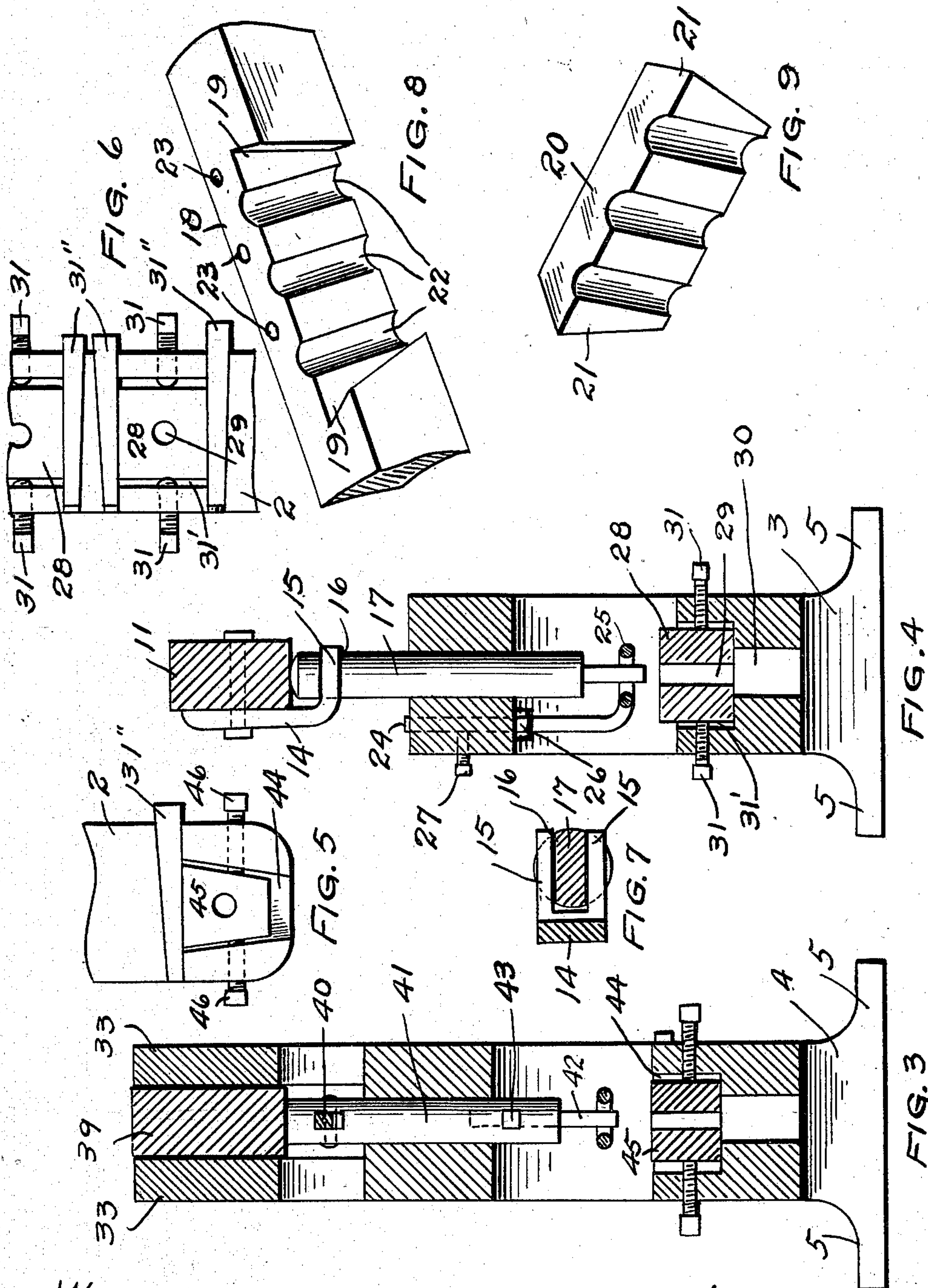
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UNITED STATES PATENT OFFICE.

OLE KNUDSON, OF DELHI, MINNESOTA.

COMBINED PUNCH AND SHEARING MACHINE.

SPECIFICATION forming part of Letters Patent No. 723,164, dated March 17, 1903.

Application filed January 20, 1902. Serial No. 90,460. (No model.)

To all whom it may concern:

Be it known that I, OLE KNUDSON, of Delhi, Redwood county, Minnesota, have invented certain new and useful Improvements in a
5 Combined Punch and Shearing Machine, of which the following is a specification.

The object of my invention is to provide a machine wherein sheets or bars of metal may be placed for the purpose of punching holes
10 of different sizes therein or for shearing or cutting the same.

A further object is to provide a machine wherein a sheet of metal and a bar or rod of similar material may be cut simultaneously.

15 A further object is to provide a punching-machine adapted to contain a number of punches of different sizes, any one of which is adapted for immediate use.

Other objects of the invention will appear
20 from the following detailed description.

The invention consists generally in various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

25 In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of a punching and shearing machine embodying my invention. Fig. 2 is a section on the line *xx* of Fig. 1. Fig. 3 is a
30 vertical section on the line *yy* of Fig. 1. Fig. 4 is a similar view on the line *zz* of Fig. 1. Figs. 5 and 6 are details of the female dies arranged below the punches and the means for securing the same. Fig. 7 is a detail of
35 the means for supporting the punches in the machine. Fig. 8 is a perspective of a portion of the machine-frame, showing the guides for the punches and the recess for the removable block. Fig. 9 is a perspective of a removable
40 block, which permits the convenient detachment of the punches from their supports and from the machine.

In the drawings, 2 represents a suitable frame, having legs 3 and 4, provided with the
45 spreading feet 5. At one end of said frame is a fixed shearing-jaw 6, above which between brackets 7 a movable jaw 8 is pivoted. This jaw 8 is adapted to coact with the jaw 6 to cut sheets or strips of metal placed be-
50 tween the jaws. The jaw 8 has a recess 9 and a lug 10 to coöperate with a corresponding recess and lug provided in the end of a

lever 11, that is pivoted between the brackets 7, and provided with a hole 12, coinciding with similar holes 13 in said bracket, and
55 wherein metal rods or bars may be inserted and sheared off at any desired length. The reciprocation of the lever 11 causes the jaw 8 to swing on its pivot and coöperate with the fixed jaw 6 to cut the metal. The shank of
60 the lever 11 extends back over the middle portion of the machine and is provided with a series of hangers 14, that are preferably bolted to said lever and have projecting fingers or jaws 15, that are adapted to enter re-
65 cesses 16 near the upper ends of punches 17 and support them, while permitting their vertical movement when the lever is oscillated.

Beneath the lever 11 is a bar 18, having a recess 19, adapted to receive a block 20, pro-
70 vided with beveled ends 21, fitting snugly within said recess, but readily removable to permit access to the punches for the purpose of removal or repair. In the bottom of the recess 19 I provide depressions or sockets 22,
75 forming guides for the punches and wherein they are vertically slidable when the supporting-lever is operated. The bar 18 is also provided with a series of holes 23 to receive the
80 shanks 24 of the strippers or guards 25, that are looped around the lower ends of the punches and engage the work to prevent it from following the punch when raised. The
85 shanks 24 are preferably threaded and provided with burs 26, and said shanks are held in the frame by set-screws 27, by means of which and said burs the strippers may be
90 adjusted at any desired distance from the work. To remove any or all of the punches from the machine, it is only necessary to de-
95 tach the removable block 20 and slip the upper end of the punch out from between the supporting-fingers 15. The lower ends of the punches may be of different shapes and sizes, according to the work to be performed.

Beneath each punch is a female die 28, having a socket 29 to receive the punch and adjustably supported over a hole 30 in the base by means of set-screws 31. These dies
100 fit within recesses 31' in the base and are substantially rectangular in form and are adjustable laterally by the set-screws, as described, and lengthwise in the machine by the tapered plug or keys 31". At the oppo-

site end of the machine from the shearing-jaws is a lever 32, pivoted between brackets 33 and carrying a series of punches corresponding to those described with reference to the lever 11, but having shorter shanks and being preferably of a larger size. The end of the lever 11 preferably overhangs the lever 32, and between these levers, pivoted upon standards 34, is a hand-lever 35. This lever extends between the levers 11 and 32 and has a curved edge 36, that is adapted to bear upon the free end of the lever 32, and said lever 35 is connected with said levers 11 and 32 by links 37 and 38. Depression of the lever 35 will force down the lever 32 and draw down on the lever 11, and the elevation of the lever 35 will cause a corresponding movement of the levers 11 and 32. Consequently, by the movement of a single hand-lever I am able to cause the operation of two gangs or sets of punches, there being preferably three in each set, which may be of the same or different size, according to the needs of the work upon which the operator is engaged. At the same time that the lever 11 is oscillated the jaw 8 will be moved also to perform any desired shearing operation. The punches supported by the lever 32 are removable in the same manner as those described with reference to the lever 11 and are provided with correspondingly-arranged female dies.

Between the brackets 33 is a pivoted block 39, having a socket to receive the end of the lever 32, and carrying a hook 40, that is pivoted within a recess in a pin 41, that is vertically slidable within a socket in the frame of the machine and is engaged at its upper end by a block 39. The lower end of the pin 41 has a socket wherein the shank of a punch 42 may be secured by a set-screw 43 or other suitable means. Beneath the punch 42 in the base of the machine is a tapered recess 44, wherein the female die 45 is placed. This die is adjustable laterally in the recess by set-screws 46, and may be moved toward the outer end of said recess by means of a tapered plug or key corresponding to those heretofore described. When the lever 32 is operated, the block 39 will be swung on its pivot and the pin 41 raised or lowered. The punch carried by the pin 41 may be of any suitable size and adapted for work which could not be as conveniently operated upon by the sets of punches.

My combined punch and shear is very compact, easily operated, and by the arrangement of levers adapted to contain a number of punches arranged in sets or gangs, which enable the operator to punch holes of different sizes without the necessity of removing a punch from the machine for the purpose of substituting one of larger or smaller size. The operator can also during the punching operation cut up sheets of metal or bars or rods with very little greater exercise of power

than will be required to operate the sets of punches.

I do not wish to be confined to the particular shape of the supporting-frame or the arrangement of the parts therein, as the same is capable of various modifications without departing from my invention.

I claim as my invention—

1. The combination, with a suitable frame, of punch-supporting levers pivotally arranged therein, a series of punches arranged in groups carried by said levers, dies whereby said punches cooperate, and a hand-lever pivotally supported between the free ends of said levers and link connections provided between said hand-lever and said punch-supporting levers, whereby as said hand-lever is reciprocated said punch-supporting levers will be operated also, substantially as described.

2. The combination, with a suitable frame, of punch-supporting levers pivoted in said frame near the opposite ends thereof, the free ends of said levers extending toward the middle of said frame and one lever being above the other, a series of punches carried by each of said levers, female dies cooperating with said punches, a curved hand-lever pivoted on said frame between said punch-supporting levers, and link connections provided between said hand-levers and the free ends of said punch-supporting levers, whereby the reciprocation of said hand-lever will raise or lower said punch-levers, substantially as described.

3. The combination, with a suitable frame having brackets or standards and provided with a fixed jaw, of a movable jaw pivoted between said brackets and cooperating with said fixed jaw, a pivoted lever provided between said brackets and engaging said movable jaw to operate the same, said lever having a hole adapted to coincide with corresponding holes in said brackets and wherein rods or bars of metal may be inserted and cut off, a hand-lever pivoted on said frame, and links connecting said hand-lever and said first-named lever.

4. The combination, with a frame, of a punch-supporting lever pivoted therein, a series of hangers provided on said lever and having fingers at their lower ends, punches provided with transverse grooves near their upper ends and upon opposite sides thereof to receive said fingers, suitable guides provided for said punches in said frame beneath said lever, and an oscillating hand-lever connected with the free end of said punch-supporting-lever.

5. The combination, with a suitable frame provided with a recess, of a pivoted punch-supporting lever arranged above said recess, a series of punches carried by said lever and adapted to reciprocate within said recess, a block having beveled ends removably fitted within said recess and normally preventing

lateral movement of the punches therein, and a pivoted hand-lever connected with the free end of said punch-supporting lever.

6. The combination, of a frame, with a pivoted lever 32 mounted therein, a block pivoted in said frame and having a recess to receive the end of said lever, a pin supported by said block and vertically slidable within a socket in said frame, a punch removably arranged in the lower end of said pin, a hand-lever 35 pivoted in said frame near the free end of said lever 32, the pivoted end of said hand-lever being curved to bear upon the free end of said lever 32 to depress the same when said hand-lever is depressed, and links connecting said hand-lever with the free end of said lever 32.

7. The combination, of a suitable frame, with punch-supporting levers 11 and 32 pivoted in said frame near the opposite ends thereof, the free ends of said levers lapping by each other near the middle of said frame, a series of punches carried by each of said levers and adapted to be operated simultaneously, female dies cooperating with said punches, a hand-lever pivoted in said frame between the free ends of said punch-supporting levers, and links 37 and 38 connecting said hand-lever with said free ends, whereby the reciprocation of said hand-lever will raise or lower said punch-supporting levers simultaneously.

8. The combination, with a suitable frame, of punch-supporting levers 11 and 32 pivoted in said frame near the opposite ends thereof, the free ends of said levers extending between each other and one being above the other, a series of punches carried by said levers and operable simultaneously by the

movement of the same, standards 34 provided on said frame, a hand-lever 35 pivoted on said standards and having a curved surface to bear upon said lever 32, and links 37 and 38 connecting said hand-lever with the free ends of said levers 11 and 32, whereby when said hand-lever is operated said punch-supporting levers will be raised or lowered.

9. The combination, with a suitable frame provided with a recess, of a pivoted punch-supporting lever arranged above said recess, a series of punches carried by said lever and adapted to reciprocate within said recess, a block removably fitted within said recess and normally preventing lateral movement of the punches therein, and a pivoted hand-lever connected with the free end of said punch-supporting lever.

10. The combination, with a suitable frame, of punch-supporting levers 11 and 32 pivoted therein, the free ends of said levers extending between each other one being above the other, a series of punches carried by said levers and adapted to reciprocate within recesses provided in said frame, blocks removably fitted within said recesses and normally preventing lateral movement of the punches therein, a hand-lever pivotally supported upon said frame between the free ends of said levers 11 and 32, and links 37 and 38 connecting said hand-lever with said free ends, substantially as described and for the purpose specified.

In witness whereof I have hereunto set my hand this 10th day of January, 1902.

OLE KNUDSON.

In presence of—

L. ABRAHAMSON,
J. L. PARROTT.