

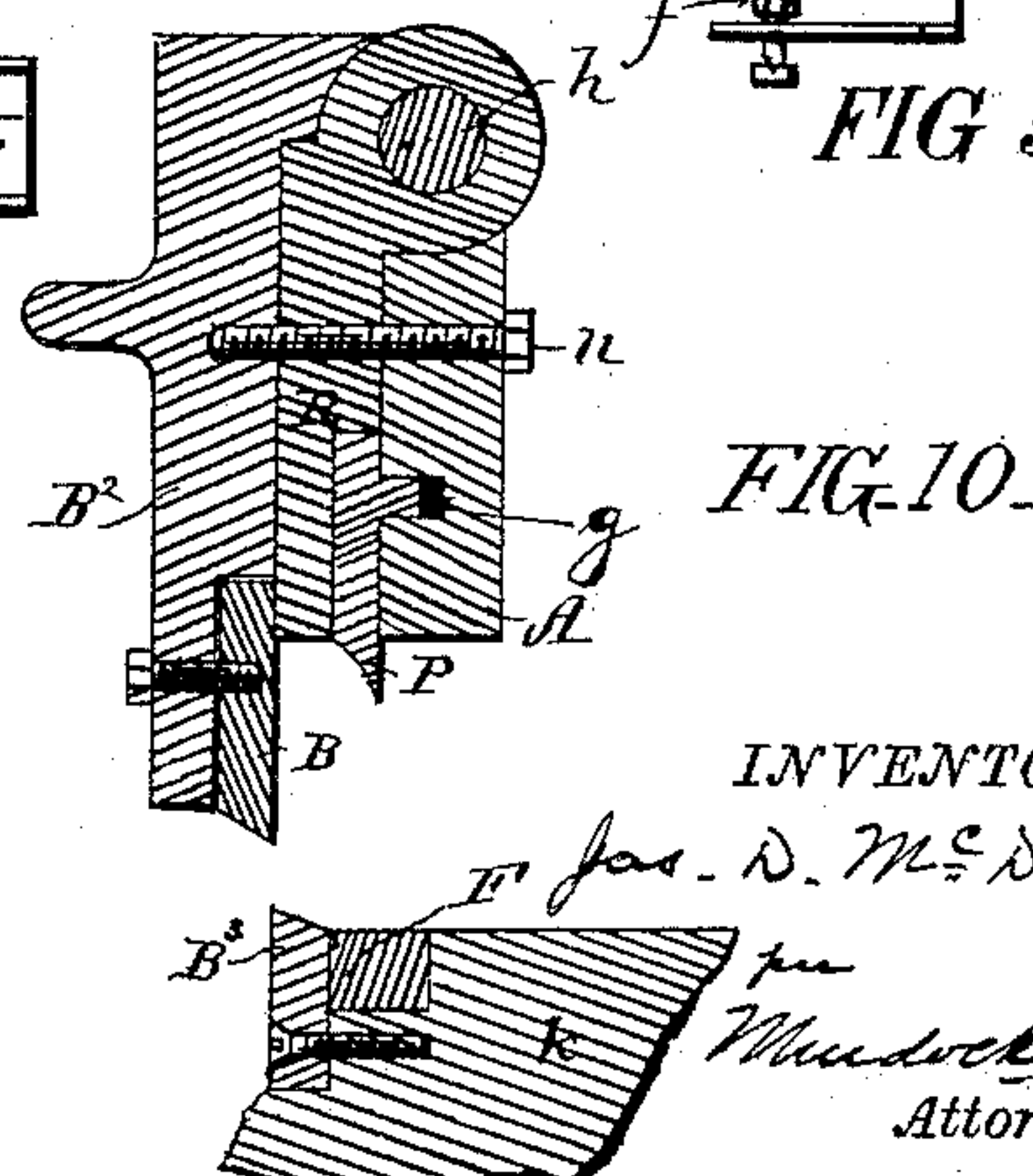
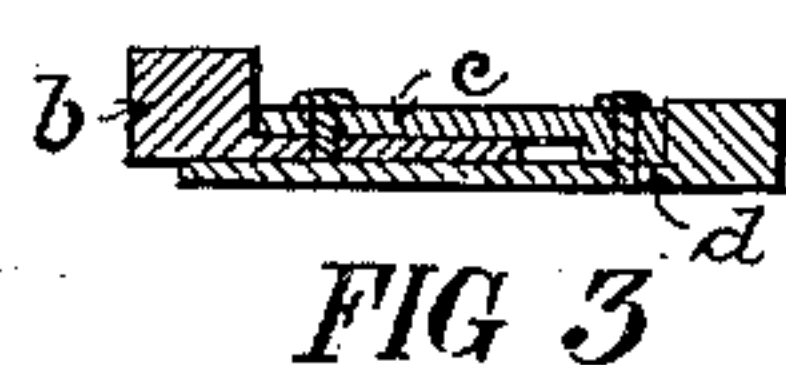
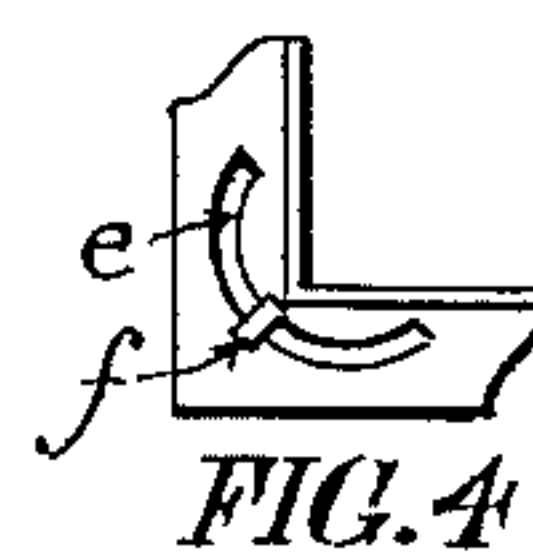
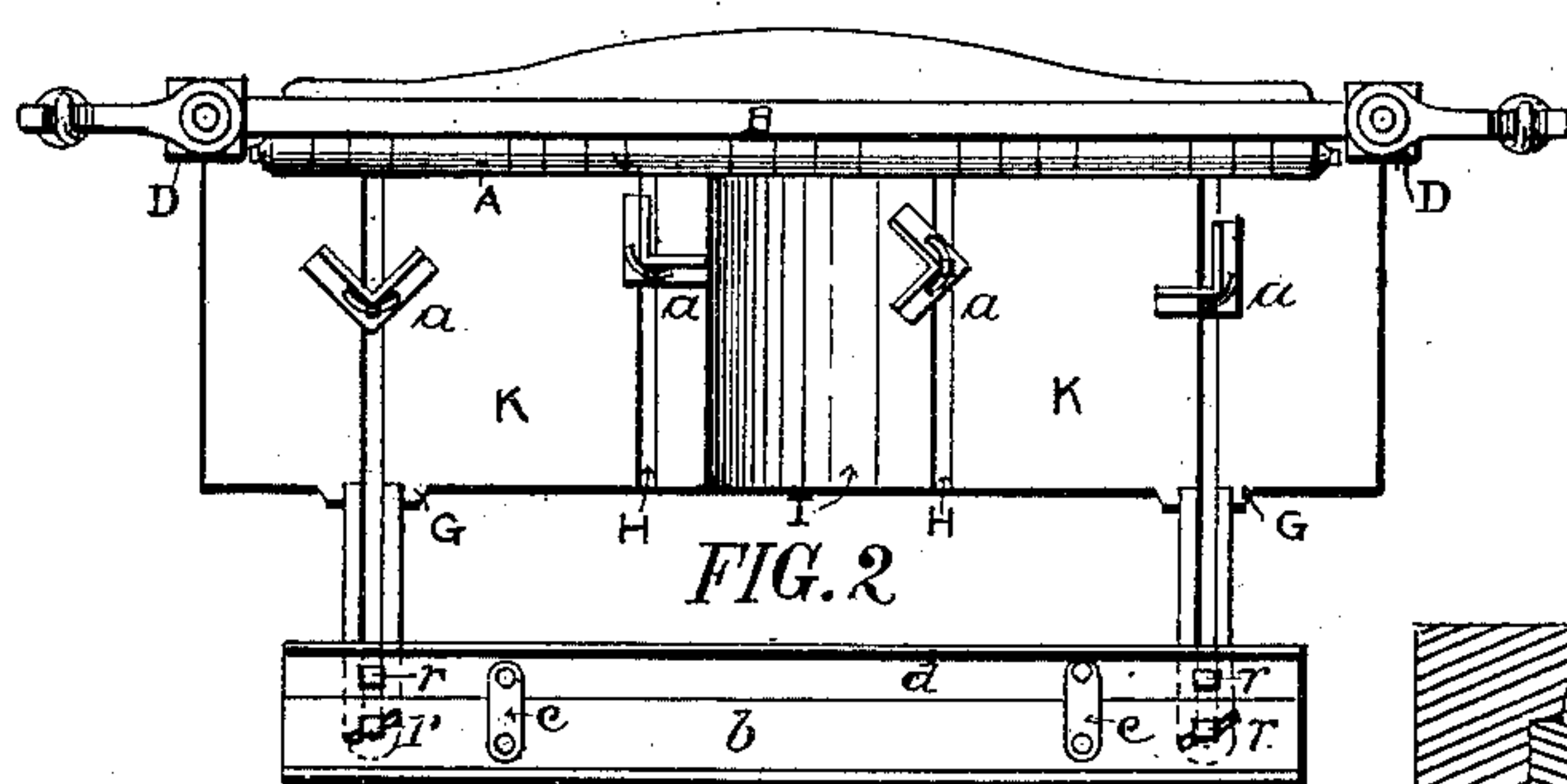
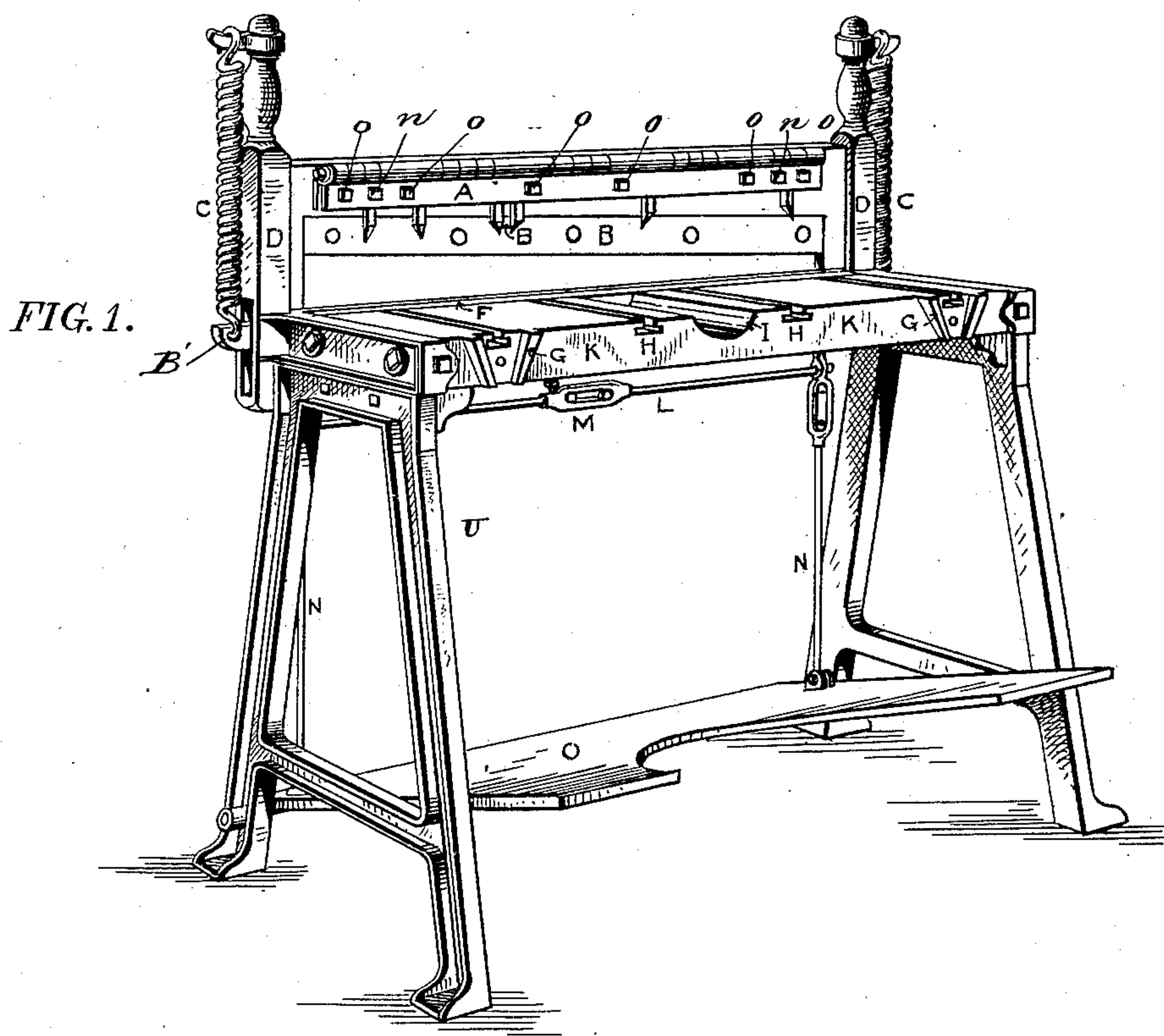
(No Model.)

2 Sheets—Sheet 1.

J. D. McDOUGAL.
METAL CUTTING MACHINE.

No. 354,334.

Patented Dec. 14, 1886.



WITNESSES
F. L. Ouraud
W. A. Smith.

INVENTOR

Mr Jas. D. McDougal
per
to Murdock & Murdock
Attorneys

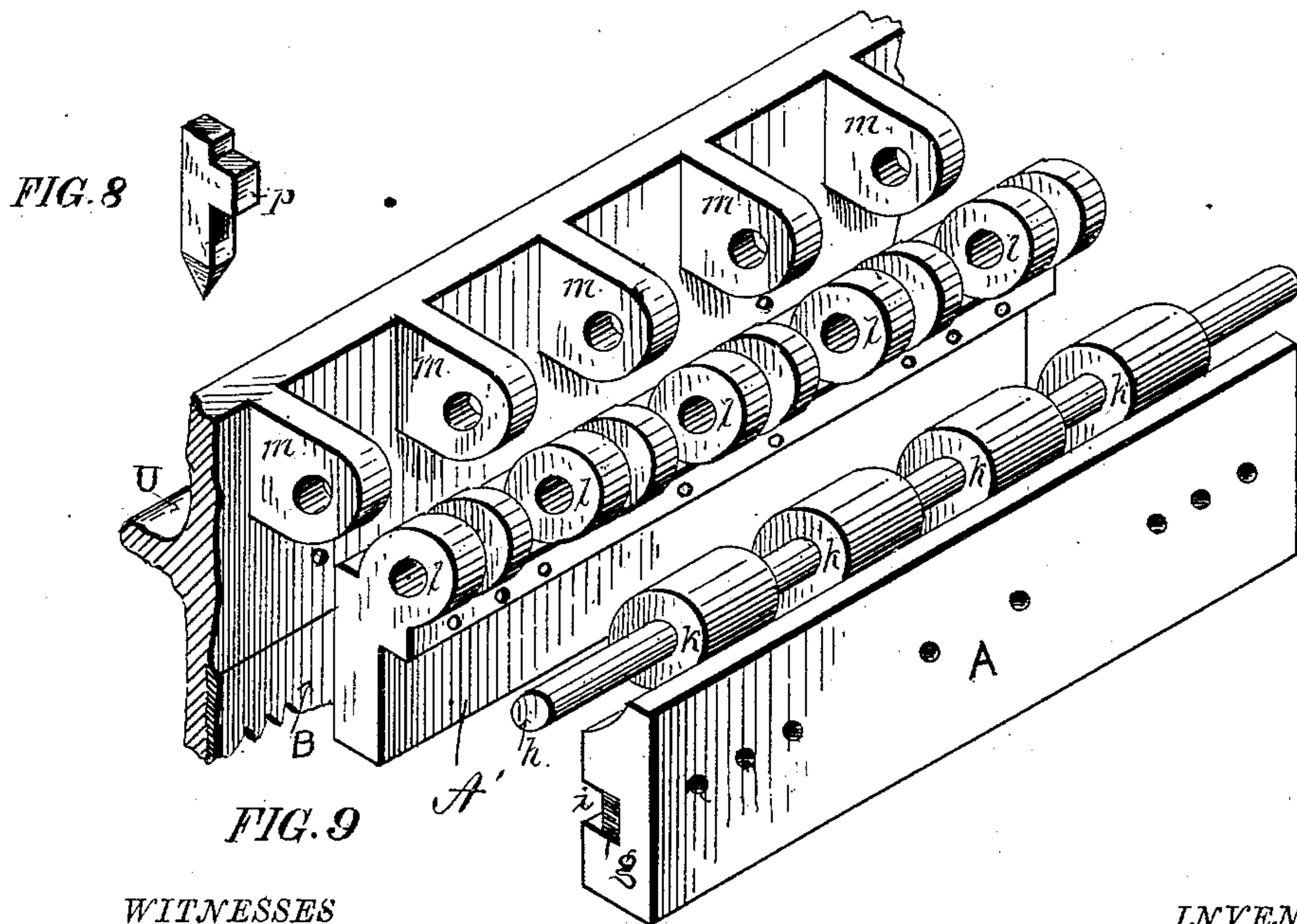
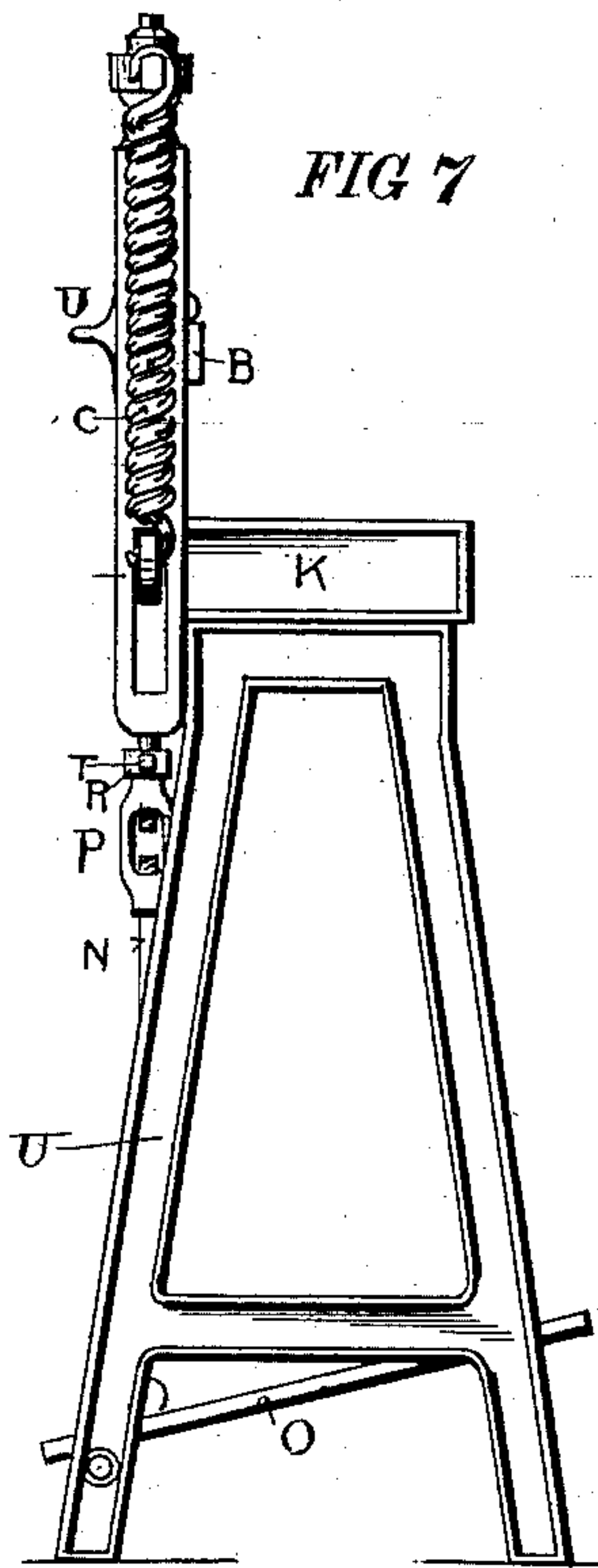
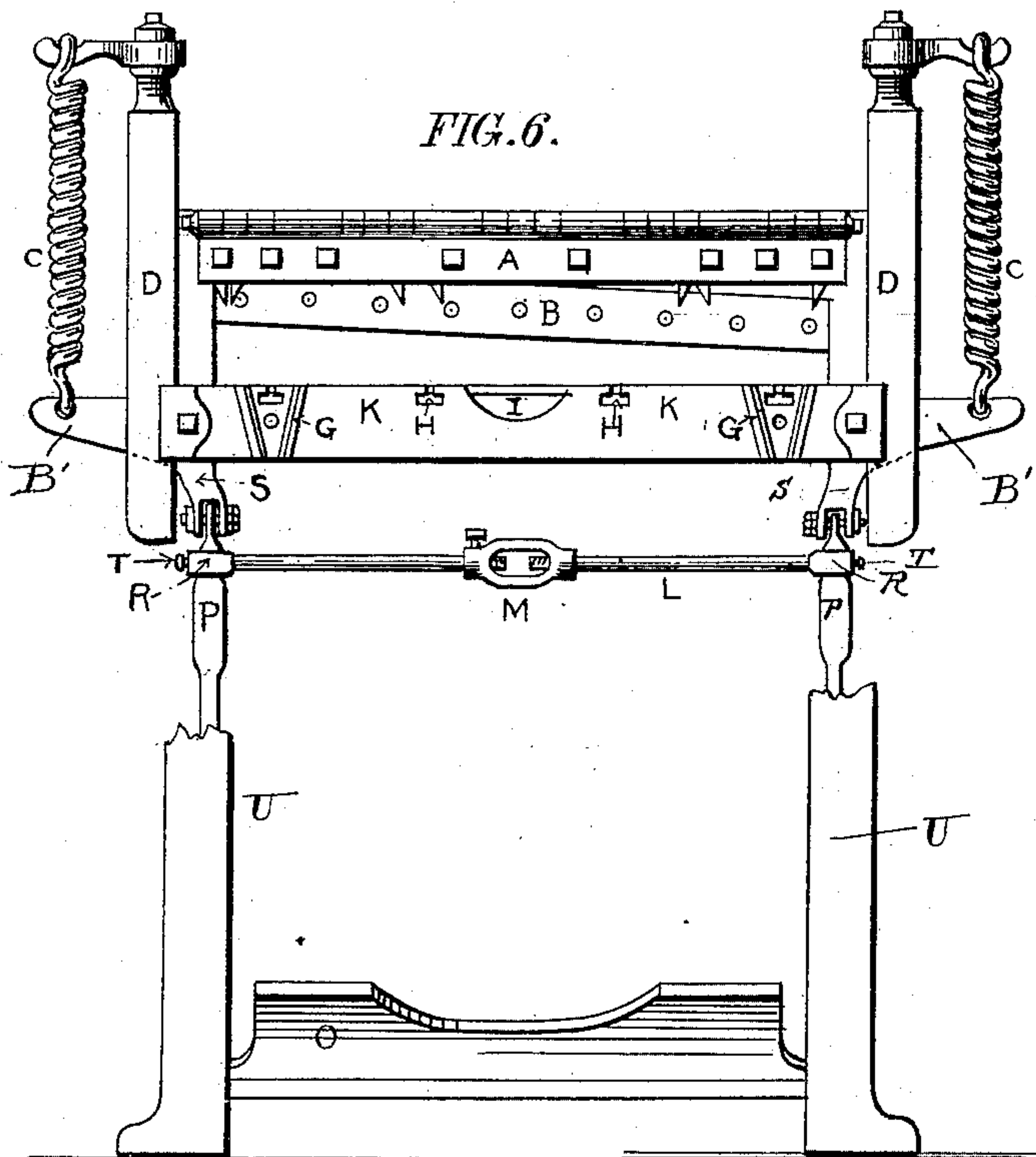
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WITNESSES
F. L. Ourand
W. A. Smith

INVENTOR
Jas. D. McDougal
per. M. M. Muddock
Attorney

UNITED STATES PATENT OFFICE.

JAMES D. McDOUGAL, OF COLUMBUS, OHIO, ASSIGNOR OF ONE-HALF TO
W. R. KINNEAR, OF SAME PLACE.

METAL-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 354,334, dated December 14, 1886.

Application filed September 21, 1886. Serial No. 214,175. (No model.)

To all whom it may concern:

Be it known that I, JAMES D. McDOUGAL, a citizen of the United States, and a resident of Columbus, county of Franklin, State of Ohio, have invented new and useful Improvements in Metal-Cutting Machines, of which the following is a full and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to improvements in metal-cutting shears; and it consists in the construction and arrangement of the parts to accomplish the following objects: first, to mark the metal for manipulation while being cut; second, to cut differing and certain lengths without a second adjustment of the parts; third, to cut different shapes without a second adjustment of the parts; fourth, to adjust the cutting-blades rapidly and easily; fifth, to prevent the slipping of the adjustment when once set.

My invention is used principally in the manufacture of sheet-iron moldings. The method heretofore adopted has been to cut the metal in square pieces and then make the measurements for the molding. The measurements are designated by holes punched by means of an awl or other pointed instrument. This takes a great deal of time and labor.

In the drawings, Figure 1 is a perspective view of metal-cutting shears provided with my improvements. Fig. 2 is a plan view of the same. Fig. 3 is a section of the parallel gages. Fig. 4 is a plan view of the angle-gages. Fig. 5 is an elevation of the same. Fig. 6 is a front elevation of the machine with the parallel gages removed. Fig. 7 is a side elevation of the same. Fig. 8 is a detail view of the marking-points. Fig. 9 is a detail view of the clamping-jaws separated. Fig. 10 is a section through the blades and clamping jaws.

In the drawings, K indicates the bed or table of the machine which is supported on the frame U. It is hollowed out in the center to form the basin I for the reception of the tools, and is provided with the slots H for the adjustment of the angle-gages *a*. It is also provided with the slotted brackets G upon its outer side for the reception of the parallel gage-supports. From the rear corners extend

upward the slotted arms D. The arms D are slotted on the inner side to form ways, in which the oscillating blade operates. At the lower extremity of the slots they extend through the arms D for the reception of the lugs B'. Attached to the lugs are spiral springs C, which are connected at the other end to the top of the arms D.

Operating in the slots in the arms D is the blade-frame B², which is provided with the lugs B', extending through the lower part of the slots. To the blade-frame is attached the blade B. Above the blade B the frame B² is provided with the hinge-lugs *m*, extending out over the table. Enfolded thereon are the hinge-lugs *l* upon the clamping-jaw A. Between each pair of the hinge-lugs *l* are swung the lugs *k* of the clamping-jaw A. The rod *h* being passed through all the lugs forms a hinge for the three parts.

The clamping-jaws A and A' are so constructed as to approach their faces near together. The meeting face of the jaw A has a longitudinal slot cut in it, into which is fixed the rubber cushion *g*. This cushion receives the projections upon the side of the pricking-points *p*, and accommodates itself to any inequalities of thickness in the said projections, and thus the said points are held firmly in position. The clamping-jaws and blade-frame are provided with bolts *n* and *o*, the former passing through the clamping-jaws and entering threaded perforations in the blade-frame, the latter passing through the clamping-jaw A and entering into threaded perforations in the jaw A'.

Between the jaws A and A' are placed at will the pricking-points E. These points are provided with the square lug *p*, which corresponds in size to the slot *i* in the jaw A, and are made rights and lefts for the purpose of getting close measurements.

Below the blades B, and secured to the table of the machine, is the ledger-blade B', which operates in conjunction with the blade B². Adjoining this ledger-blade, and directly beneath the pricking-points E, is placed a strip of wood, which is set in the table.

Pivotally attached to the depending lugs S of the blade-frame are the pulling-rods N. They are in two sections and are connected by

means of a swivel-link, P. The lower sections are pivotally attached to the foot-lever O, which is swung upon the frame of the machine. The two pulling-rods are connected at their tops by a jointed rod, the section of which has a ring, R, at the end that enfolds the upper part of the swivels P, and is provided with a set-screw, T. The swivel M upon the connecting-rod C is also provided with a set-screw, substantially as shown.

In the face of the cable K are cut four inverted-T-shaped slots. Into these slots are placed the heads of bolts which hold the angle-gages *a*. The angle-gages *a* are formed with perpendicular flanges on their inner sides to allow the angle of a piece of metal to set in them. They also are provided with a circular slot cut in them, as shown, through which the bolt *f* passes. Upon this slot is a set screw, which holds the gages in position.

Into the slotted brackets G upon the table K are placed the ends of the slotted supports of the parallel gages *d b*. The parallel gages are hinged together by means of the links *c*, and secured in position upon the slotted supports by means of the bolts *r*. The gage *b* is provided with small slots where the bolts *r* come through to allow of an opening and closing motion. The gages can be set any distance from the blade and secured by means of the bolts *r*.

In the manufacture of sheet-iron moldings the pieces are cut in squares marked and bent accordingly. To accomplish the first steps is what this machine is designed for. If the sheets are to be cut twenty by twenty-eight inches, the parallel gages are set with the inner face of *d* twenty inches from the blade. The gage *b* is then set eight inches from the inner face of the gage *d*. Both gages are then screwed firmly to the slotted supports by means of the bolts *r*. The sheets are now cut to the desired size without further adjustment, as one length is cut with the metal resting against the perpendicular face of the gage *d*, and the other with the metal resting against the face of the gage *b*. As the metal is cut it is marked close up to the blade by the pricking-points E, which are set as desired by loosening the bolts *o* and shifting the points. When the points are set, the bolts *o* are screwed into place and the points held rigidly. If it is desired to retain the measurements and not use the points, the bolts *n* are withdrawn and the clamping-jaws turned up and out of the way on the hinge *h*. When it is desired to cut the pieces in differing shapes, it is done by adjusting the angle-gages *a* each to cut a different angle, as shown in Fig. 2 of drawings, and then secured by means of the set-screw *f*. The slot *e* in the gages allows of any angular adjustment, while the slots in the table allow any forward or backward adjustment. When the gages are set, the operator can cut four differing angles or shapes without further adjustment.

At every fall of the blade-frame the springs C are extended, and when the frame is re-

leased they draw it into position. As the machines of this description are operated, the pulling-rods are lengthened out and the stroke of the blade becomes irregular. To prevent this, I have placed the swivel-links P upon each pulling-rod, so that a slight turn upon either rod will raise or lower the stroke of either end. To secure the adjustment the ringed ends of the connection-rod L, provided with the set-screws, are placed over the ends of the swivels and the set-screws tightened upon them. The connecting-rod L is used as a brace, and is also provided with a swivel-link and a set-screw.

What I claim is—

1. In a metal-cutting machine, and in combination with the blade thereof, of adjustable pricking-points held in position upon the said blade by any suitable device, substantially as set forth.

2. In a metal-cutting machine, and in combination with the blade thereof, of clamping-jaws opening upon a hinge and swung upon the blade-frame and provided with a tightening device, and pricking-points adapted to be held in said jaws, substantially as set forth.

3. In a metal-cutting machine, and in combination with the blade thereof, of clamping-jaws opening upon a hinge and swung upon the blade-frame, one of said jaws having a longitudinal slot cut in its inner face, pricking-points provided with a lug upon one side adapted to fit the slot in the said jaw, and tightening devices for said jaws, substantially as set forth.

4. In a metal-cutting machine such as described, the combination of the blade-frame, clamping-jaws opening upon a hinge and swung upon the blade-frame and provided with a tightening device, pricking-points adapted to be held in said jaws, and a strip of wood or other suitable material fixed in the table to receive the said pricking-points, substantially as set forth.

5. In a metal-cutting machine such as described, the combination of the blade-frame provided with perforated hinge-lugs, clamping-jaws provided with hinge-lugs and swung upon the hinge-lugs of said blade-frame, a bolt passing through all of said hinge-lugs, and two sets of screw-bolts, substantially as set forth.

6. In a metal-cutting machine such as described, the combination of the blade-frame provided with hinge-lugs and threaded perforations to receive the ends of bolts, clamping-jaws provided with hinge and swung upon the said blade-frame and provided with perforations, substantially as described, and two sets of bolts, one passing through said clamping-jaws and engaging the threaded perforations in said blade-frame, and the other set passing through one of the said clamping-jaws and engaging the perforations in the other, substantially as set forth.

7. In a metal-cutting machine such as described, the combination of a table provided with transverse slots, angle-gages having per-

pendicular flanges on their inner angles and provided with circular slots, substantially as described, and a bolt provided with a head fitting in said transverse slot, and a set-screw
5 to engage said gage, substantially as set forth.

8. In a metal-cutting machine such as described, the combination of a table provided with inverted-T-shaped slots passing transversely across the said table, angle-gages having perpendicular flanges about their inner
10 angle, a bolt fitted in said transverse slots and provided with a nut adapted to engage said angle-gages, and the cutting mechanism, substantially as set forth.

15 9. In a metal-cutting machine such as described, the combination of a table provided with transverse slots, parallel gages joined by equal links, and one provided with circular slots about the retaining bolts, and retaining-
20 bolts provided with heads fitting said transverse slots, a screw-thread and nut to engage said parallel gages, substantially as set forth.

10 10. In a metal-cutting machine such as described, the combination of a table provided
25 with inverted-T-shaped slots passing trans-

versely across the said table, parallel gages joined together by means of equal links and perforated to receive bolts, bolts fitted in said slots and provided with nuts adapted to engage
30 said gages, and the cutting mechanism, substantially as set forth.

11. In a metal-cutting machine such as described, the combination of the blade-frame provided with depending lugs, substantially
35 as described, with pulling-rods pivotally attached to said lugs and to the foot-lever, said pulling-rods being in sections provided with screw-threads and joined by swivel-links, a brace between said pulling rods provided with
40 rings adapted to fit over the swivel-links upon said pulling-rods and provided with set-screws in each ring, and a foot-lever pivotally attached to the frame of the machine and to said
pulling rods, substantially as set forth.

In testimony whereof I have hereunto set my
45 hand this 18th day of September, A. D. 1886.

JAMES D. McDOUGAL.

Witnesses:

J. A. KIGHT,
N. C. NEEDLES.