

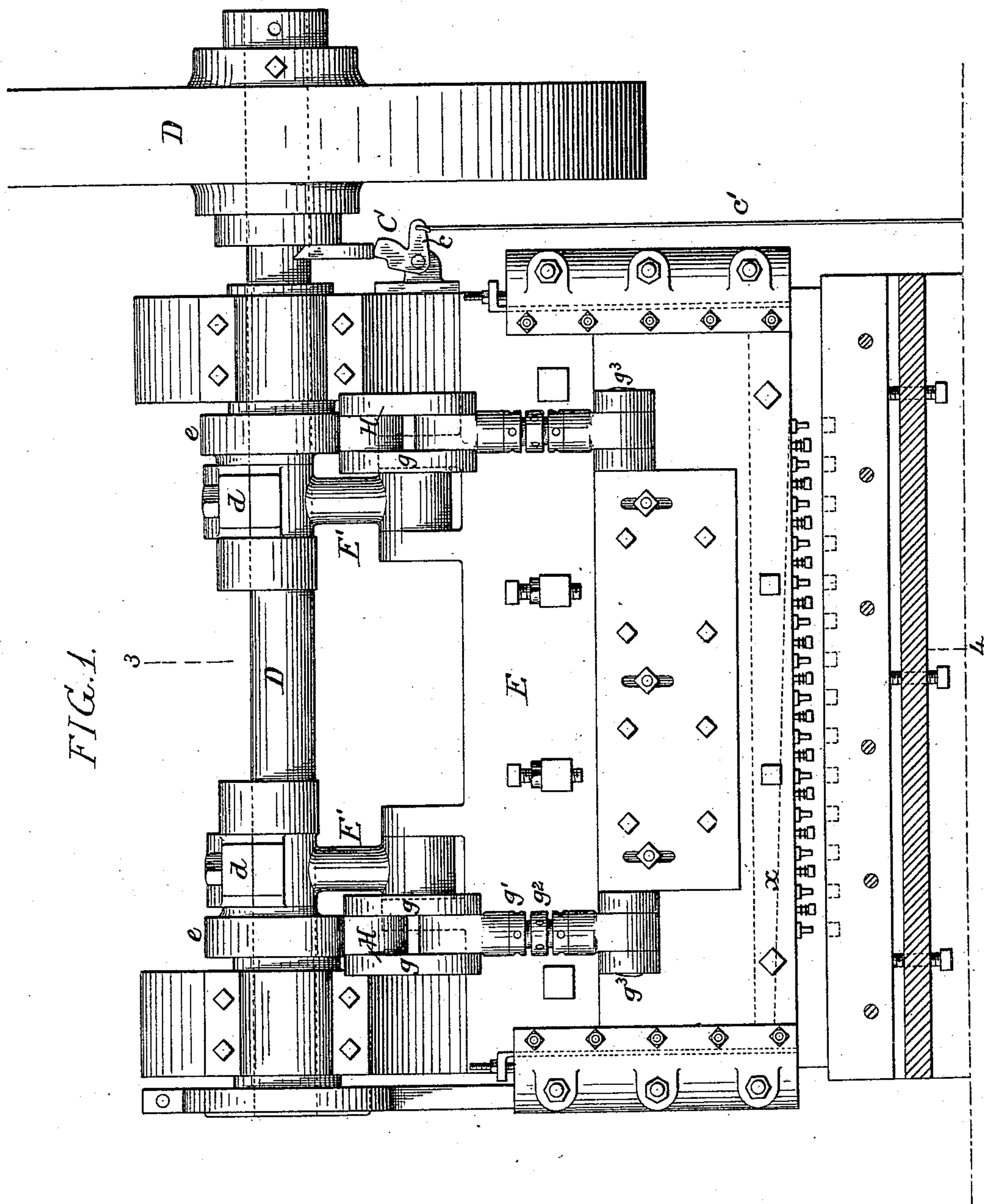
(No Model.)

2 Sheets—Sheet 1.

G. E. HOPKIN.
METAL PUNCHING AND CUTTING MACHINE.

No. 471,084.

Patented Mar. 15, 1892.



Witnesses:
Alex. Barkoff
Hamilton D. Turner.

FIG. 3.

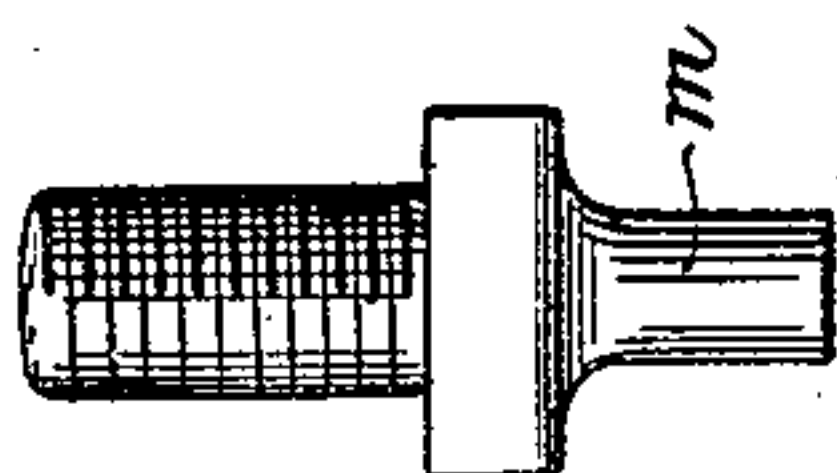


FIG. 4.



Inventor:
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FIG. 2.

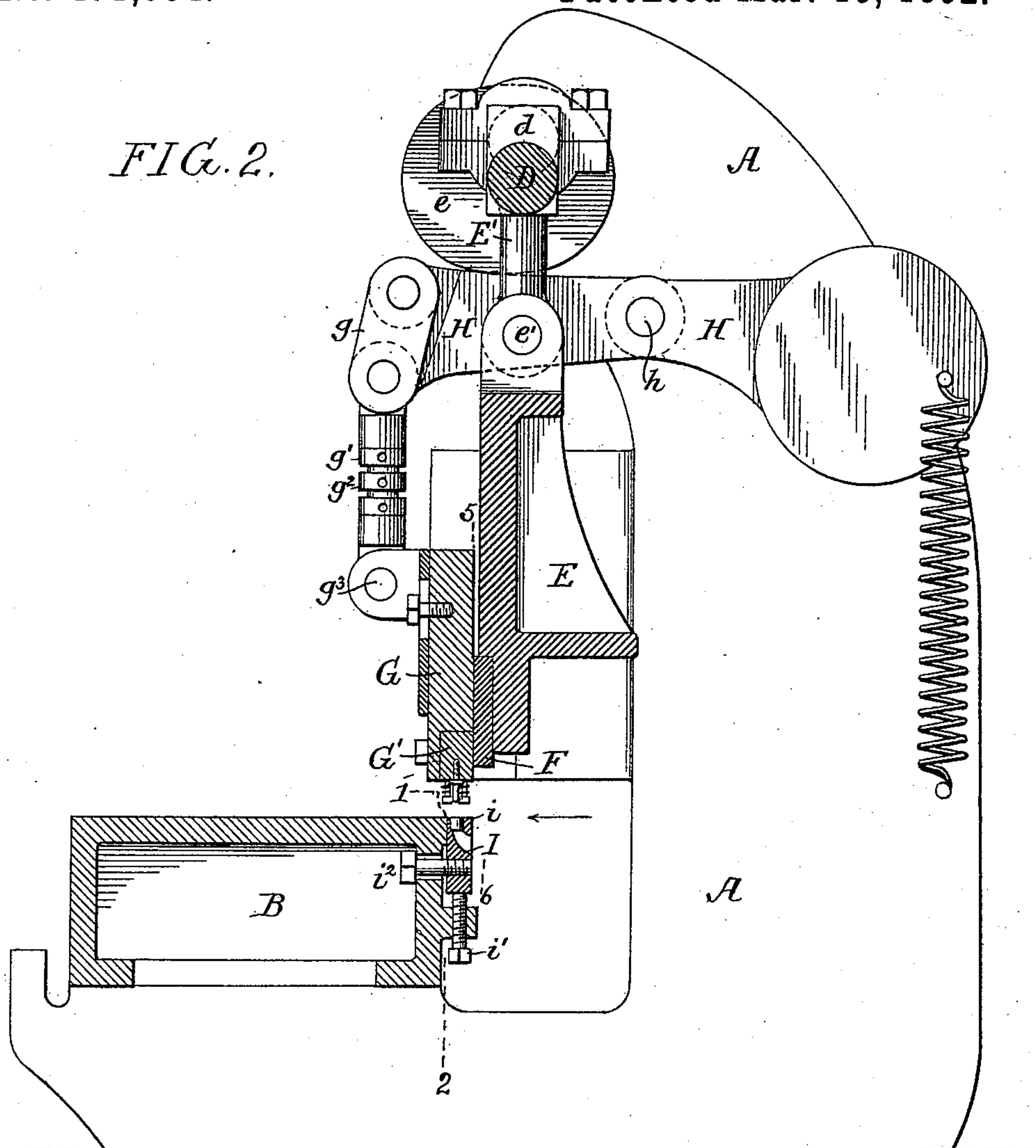


FIG. 5.

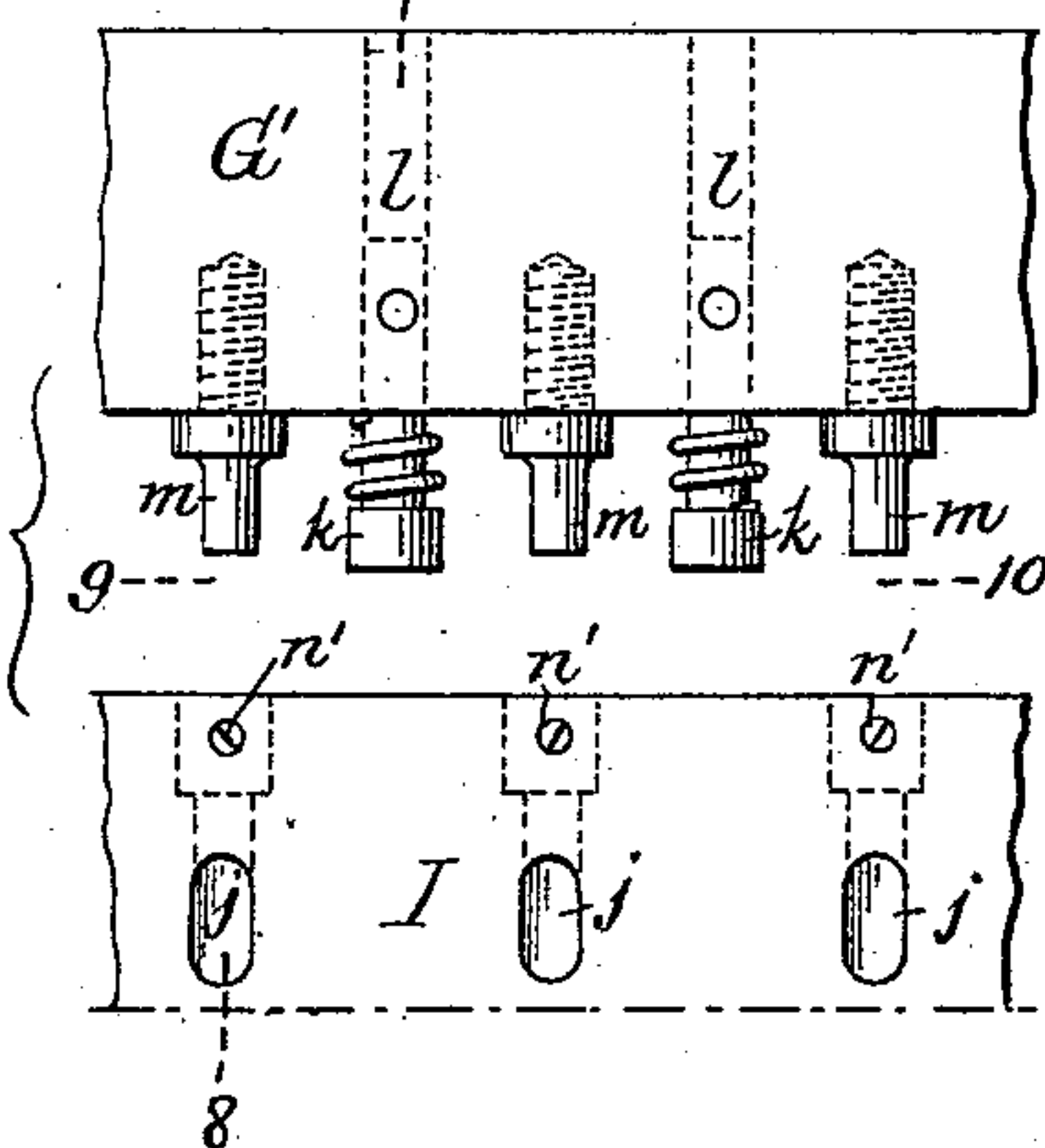
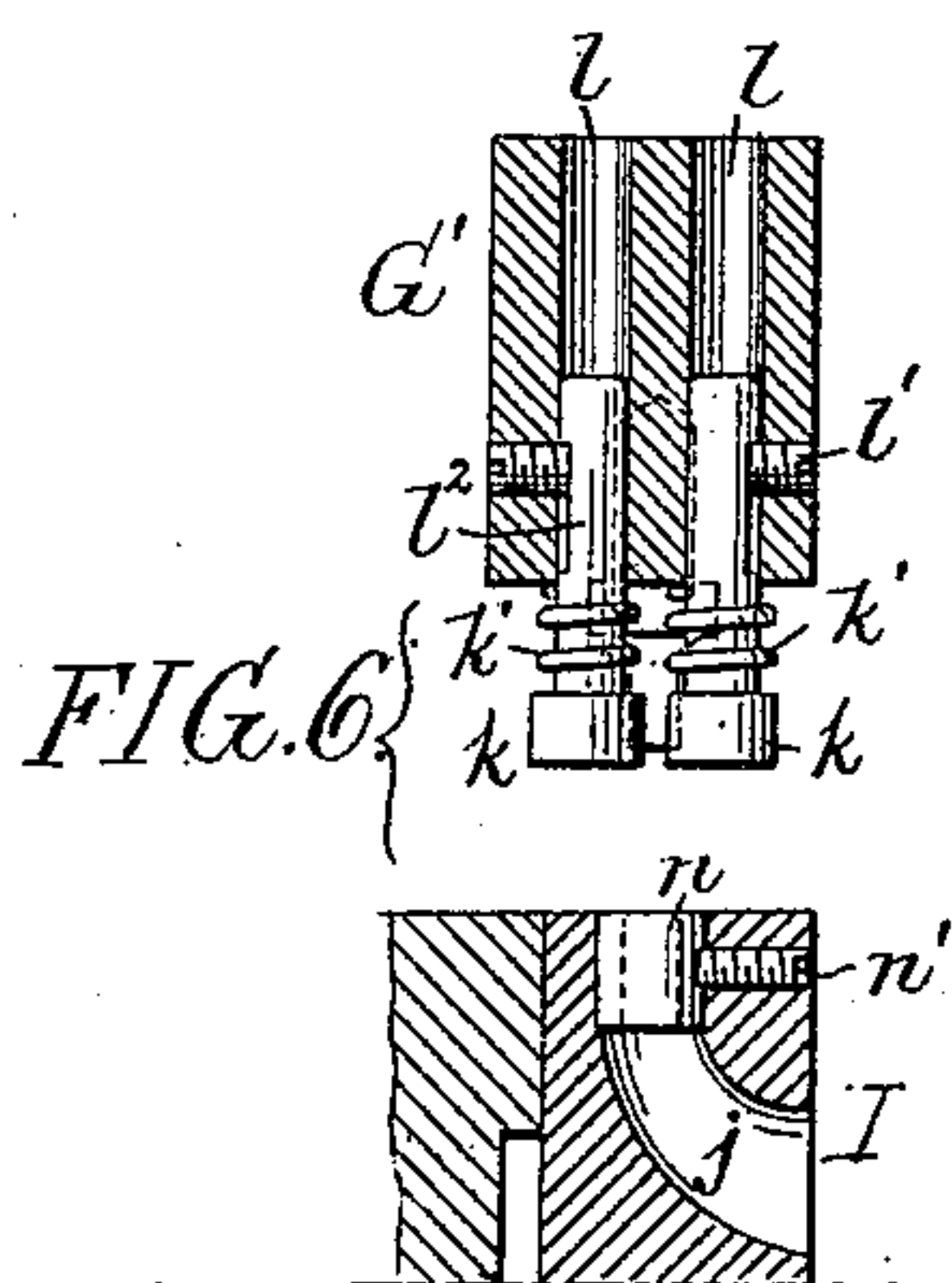
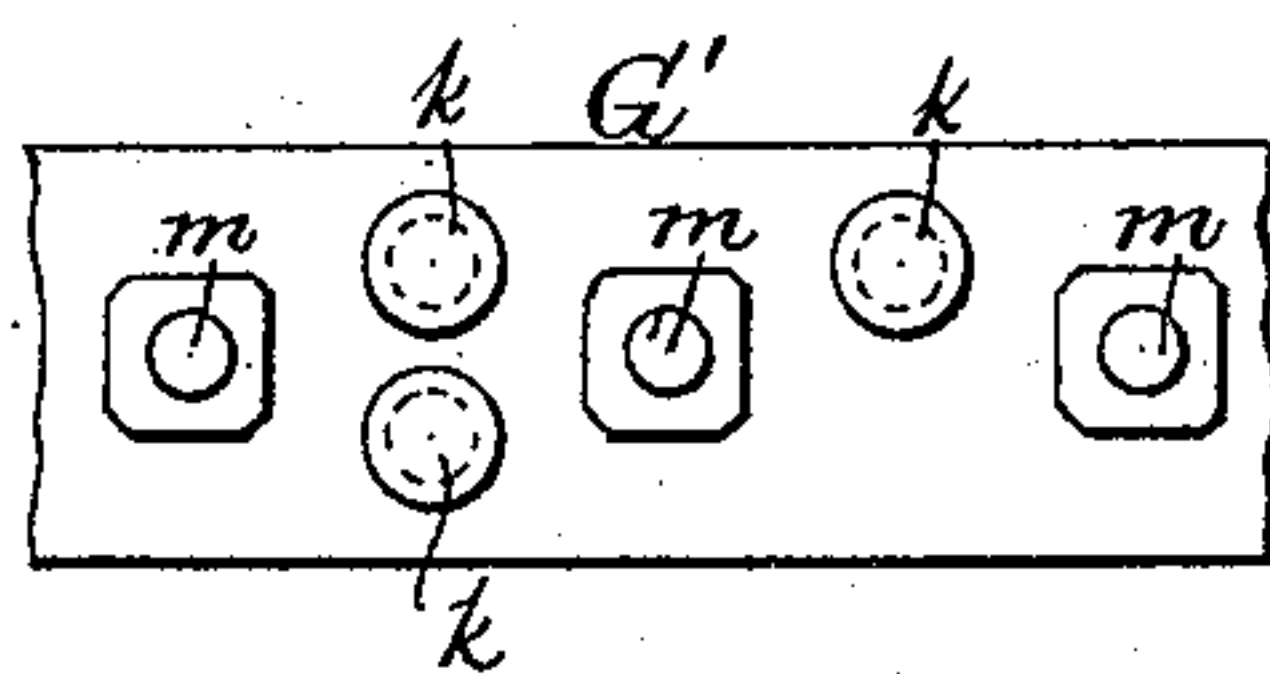


FIG. 7.



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UNITED STATES PATENT OFFICE.

GEORGE E. HOPKIN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
ABRAM COX STOVE COMPANY, OF SAME PLACE.

METAL PUNCHING AND CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 471,084, dated March 15, 1892.

Application filed November 19, 1890. Serial No. 371,980. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. HOPKIN, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Metal Punching and Cutting Machines, of which the following is a specification.

The object of my invention is to construct a machine for cutting and punching sheet-metal plates.

My invention is especially applicable for simultaneously punching and cutting the plates used in the construction of drums for heaters and tanks.

In the accompanying drawings, Figure 1 is a face view of my improved punching and cutting machine with the table in section on the line 1 2, Fig. 2. Fig. 2 is a transverse section on the line 3 4, Fig. 1. Fig. 3 is an enlarged view of one of the punches. Fig. 4 is a sectional view of one of the dies. Fig. 5 is an enlarged rear view on the line 5 6, Fig. 2. Fig. 6 is a section on the line 7 8, Fig. 5. Fig. 7 is an inverted plan view on the line 9 10, Fig. 5, showing the punches and extracting-plungers.

A is the frame of the machine.

B is the table on which the metal to be punched and cut is placed.

D is the driving-shaft, having two cranks d d and two cams e e , as shown clearly in Figs. 1 and 2. On the shaft D is a fly-wheel D' , which is also the belt-wheel of the machine. This wheel can be clutched to or released from the shaft by means of a clutch C. (Shown in Fig. 1.) The lever c of this clutch is connected to a treadle by a cord or rod c' , so that on depressing the treadle the shaft will be clutched to the wheel and will turn with it one revolution, the clutching-pin being thrown out automatically. Any suitable clutch may be used without departing from my invention. During the one revolution of the shaft the metal is both cut and punched.

E is a slide adapted to ways in the frame A, and connecting this slide with the crank d of the shaft D are connecting-rods E' , pivoted to pivot-pins e' on the slide. This slide E' carries the knife F, which is bolted to the slide in any suitable manner, and its edge is preferably inclined, as shown by dotted lines

x in Fig. 1, so as to have a gradual shear cut. The edge i of the bar I acts as the opposite edge of the shear. This bar is adjustable vertically by screws i' , and is held in place by clamp-screws i'' , Fig. 2.

Directly in front of the slide E is the punching-slide G, adapted to suitable ways in the frame A.

H is a weighted lever pivoted at h to the frame, and acting on this lever is the cam e , carried by the shaft D. The lever H is connected to the punching-slide G by links g and a connecting-rod g' , which is provided with adjustable sections g^2 for regulating the vertical position of the punching-slide in respect to its lever H. The rods g' are connected to the slide by pins g^3 , adapted to lugs on the slide.

Secured to the lower portion of the slide G is a punch-carrier G' , in which are secured the series of punches m , and at points between the punches are placed ejectors in the form of plungers k k , having enlarged heads, between which and the surface of the punch-carrier are placed springs k' . These plungers are held in place by set-screws l' , adapted to slots l^2 in the shanks of the plungers, so that their movement is limited, the slots l^2 , however, being made of a sufficient length to allow the punching of metal of any thickness required. The placing of the ejectors at points between the punches enables the operator to accurately adjust the work and punch the metal at the points required.

In the block I is a curved orifice j , and adapted to the upper portion of this orifice is the die n , into which passes the punch m . These dies n are secured in their several orifices by set-screws n' , as clearly shown in Fig. 6. The pieces punched from the metal pass through the curved orifices in the block I to waste. Thus it will be seen that if, for instance, the plates to form a drum are placed on the table B, adjusted and held in their proper position when the clutch is tripped the shaft turns one revolution, the series of holes will be punched in the metal, and immediately after the punching the metal will be cut the proper distance from the holes. By this means sheet metal is quickly and accurately punched and cut, and after the machine is once

set a series of plates forming a drum can be punched and fitted and readily riveted together.

I claim as my invention—

5 1. The combination, in a cutting and punching machine, of the independently-reciprocated cutting and punching slides, punches on said punching-slide, a block I, having a cutting edge, and a series of dies carried by
10 said block I and adapted to act in conjunction with the punches carried by the punching-slide, substantially as specified.

2. The combination of the independently-reciprocated cutting and punching slides, punches on the punching-slide, the bed-plate,
15 a block I, adjustably secured to said bed-plate and having a cutting-edge, punching-dies carried by said block I, and a series of punches on the punching-slide, adapted to act
20 in conjunction with said punching-dies, substantially as specified.

3. The combination, in a cutting and punching machine, of the cutting-slide E and punching-slide G, situated side by side, a cutter on
25 the cutting-slide, a series of punches carried

by the punching-slide, a cranked shaft D, connecting-rods connecting the cranks with the cutting-slide, a weighted lever connected to the punching-slide, cams on the shaft D, acting on the levers, with a cutting and punching block, the whole arranged substantially as described. 30

4. The combination, in a cutting and punching machine, of the cutting-slide E, the punching-slide D, the block I, the edge of which
35 forms one of the cutting-blades of the cutter, dies carried by said block, with a series of punches carried by the punch-slide, and a series of ejector-punches also carried by said slide and situated between the series of
40 punches, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE E. HOPKIN.

Witnesses:

HENRY HOWSON,
HARRY SMITH.