

(No Model.)

2 Sheets—Sheet 1.

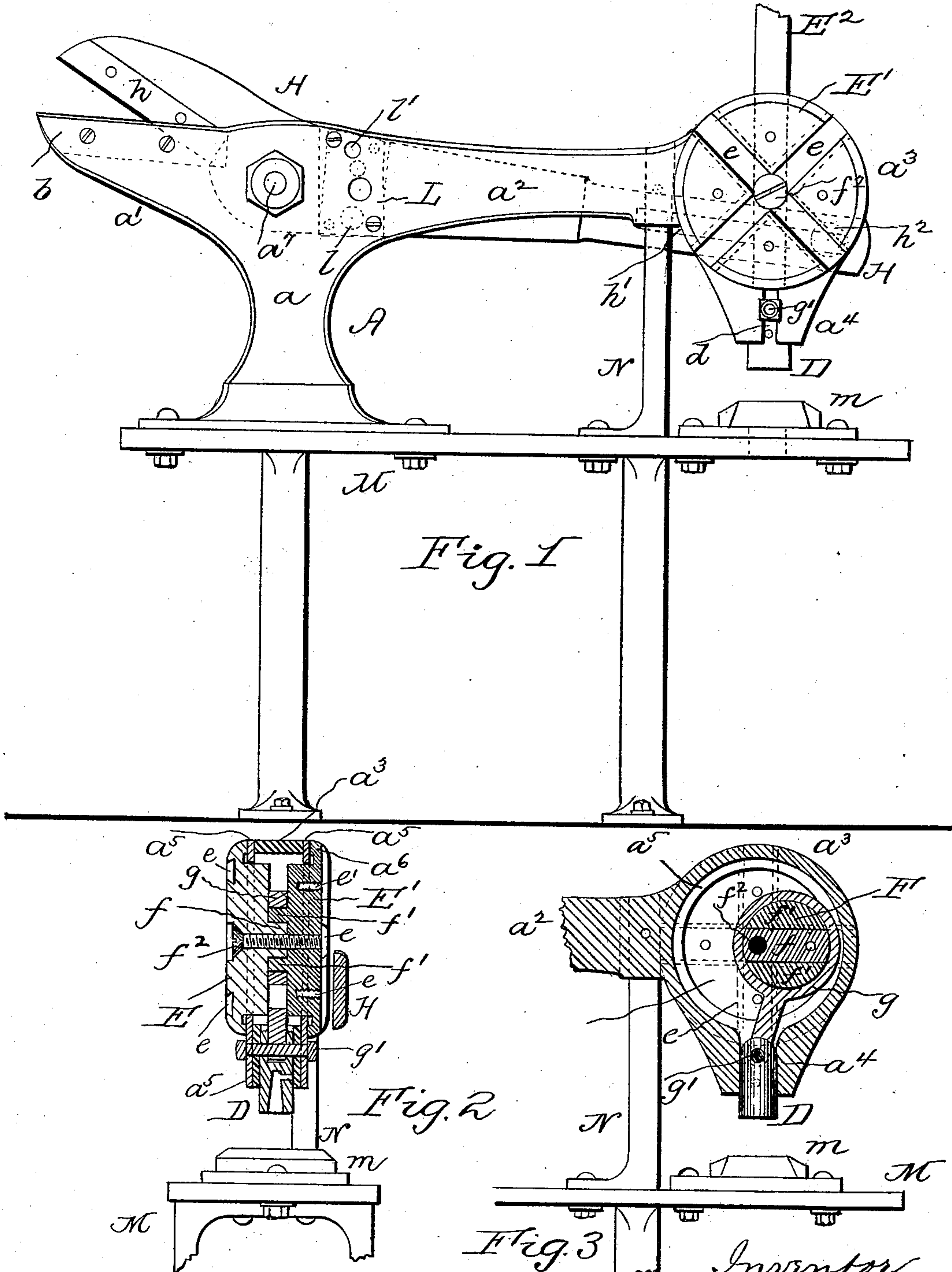
J. STORTZ, Dec'd.

J. T. STORTZ & H. SCHMIDT, Administrators.

COMBINED SHEARS AND PUNCHING MACHINE.

No. 362,468.

Patented May 3, 1887.



Witnesses
Chas. F. VanStavoren
Wm. H. VanStavoren

Inventor
John Stortz
By S. J. VanStavoren
Attorney

(No Model.)

2 Sheets—Sheet 2.

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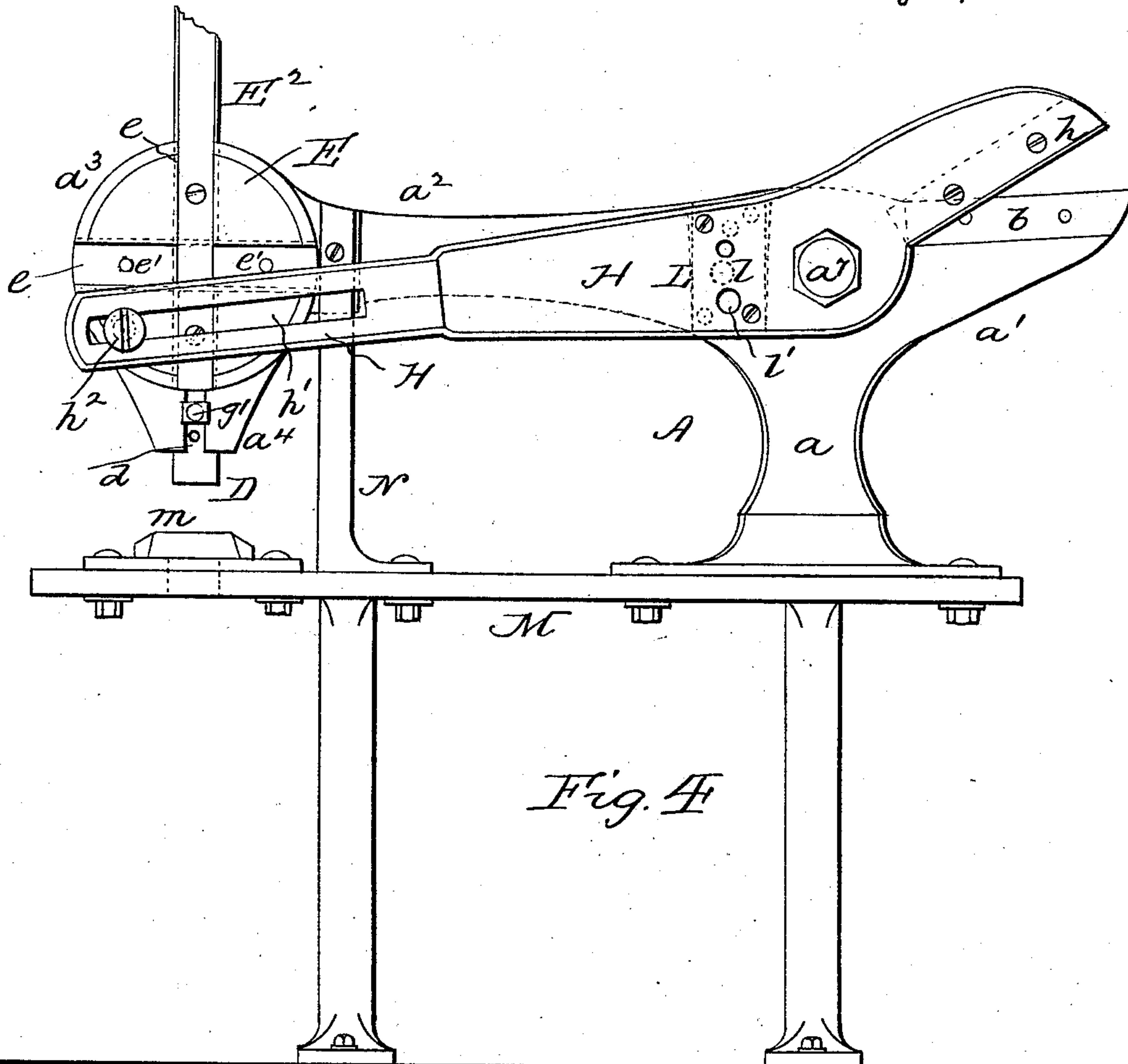


Fig. 4

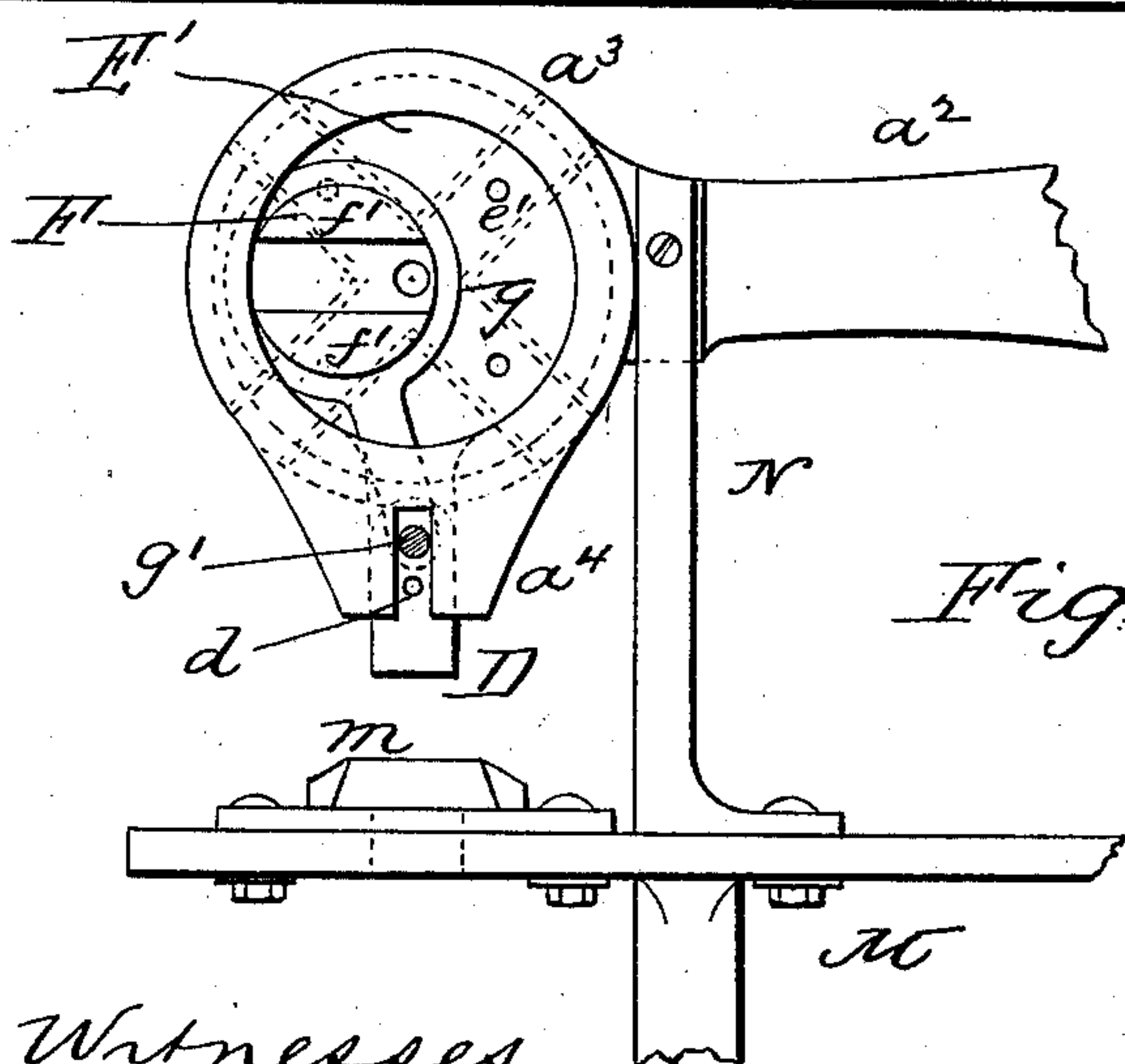


Fig. 5

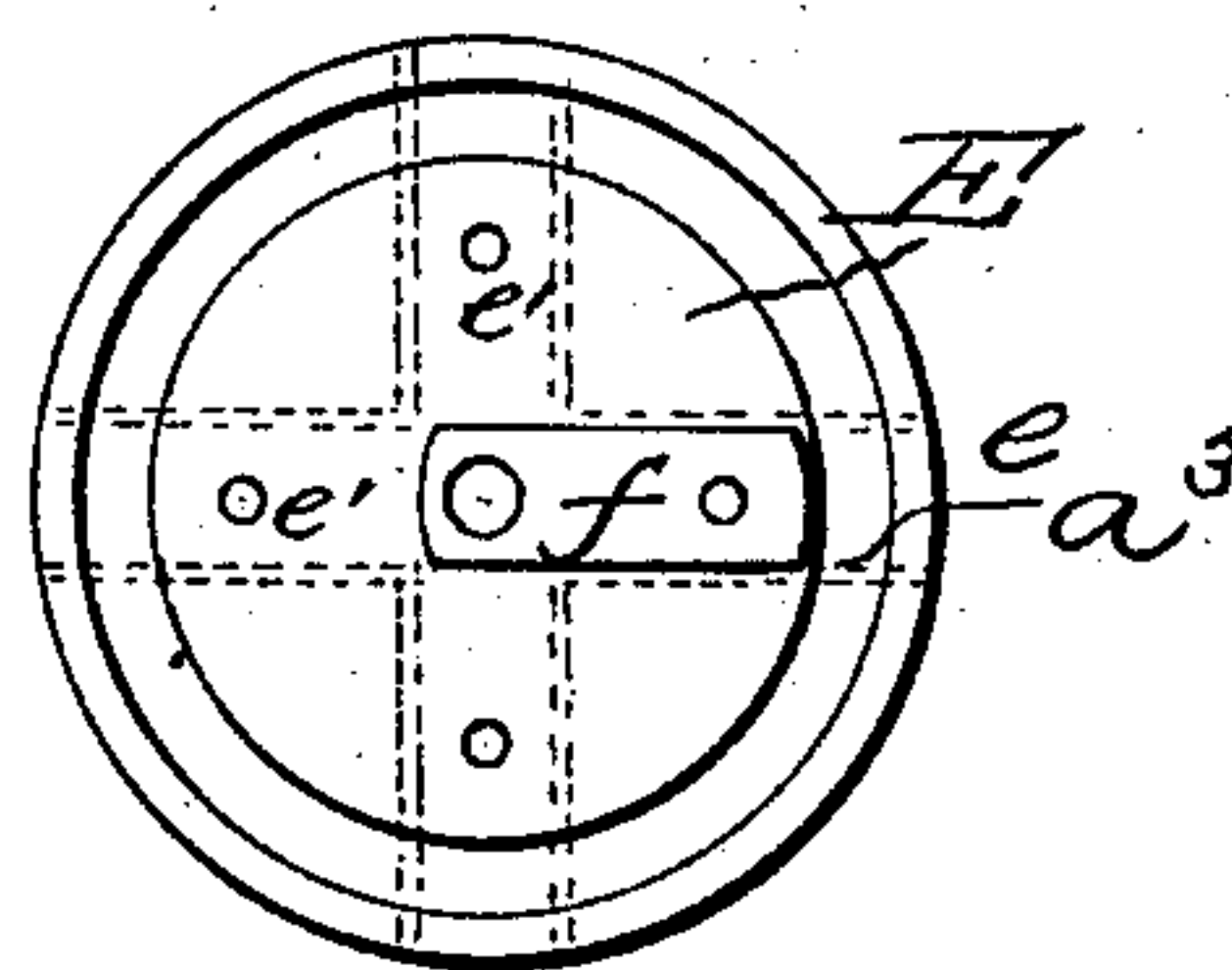


Fig. 6

Witnesses
Chas. F. VanStavoren
Wm. J. VanStavoren

Inventor
John Stortz
By S. J. VanStavoren
Attorney

UNITED STATES PATENT OFFICE.

JOHN STORTZ, OF PHILADELPHIA, PENNSYLVANIA; JOHN T. STORTZ AND HENRY SCHMIDT ADMINISTRATORS OF SAID JOHN STORTZ, DECEASED.

COMBINED SHEARS AND PUNCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 362,468, dated May 3, 1887.

Application filed October 13, 1886. Serial No. 216,138. (No model.)

To all whom it may concern:

Be it known that I, JOHN STORTZ, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Combined Shears and Punching-Machines, of which the following is a specification, reference being had therein to the accompanying drawings, wherein—

10 Figure 1 is a side elevation of a combined metal cutting or shearing and punching-machine embodying my improvements. Fig. 2 is a vertical section through the punch and operating devices therefor. Fig. 3 is a longitudinal section of same. Fig. 4 is a side elevation of the machine, the reverse of that shown in Fig. 1. Fig. 5 is an elevation of the punch end of the machine with one of the rotating or circular disks, with part of affixed eccentric to it detached therefrom. Fig. 6 is an elevation of rear side of said detached disk.

My invention has relation to combined metal shearing or cutting and punching machines of the form wherein the cutting devices are located at one and the punching device at the other end of the machine, both of which devices are operated simultaneously by a common driving mechanism; and it has for its object to provide a simple, efficient, powerful, and durable combined punch and shears which is easily operated either by hand or by power to cut or shear sheet metal or other material, cut off round rods or bars, and to punch the metal, as desired.

35 My invention consists of the construction, combination, and arrangement of parts, as hereinafter more fully described and claimed, having reference particularly to a base-plate or support which has at one end a shear or cutting blade, and at its other end a chamber or bearing for a punch and its operating mechanism, and to a lever or arm pivoted to said plate or support, which has at one end a shear or cutting blade arranged to make a shear-cut with the blade on the base-plate, and at its other end a slot and eccentric-connection with rotating disks for driving or operating the punching devices, whereby a movement of the punch-operating devices also produces a move-

ment of said pivoted lever or arm to produce a shear-cut between the cutting-blades; to a punch having a connection with an eccentric composed of two parts, each connected to or formed on rotating disks coupled together and mounted in suitable bearings, and provided with a driving crank or handle, and to diametrical slots in said rotating plates for an adjustable engagement of the driving-handle with said plates.

In the drawings, A represents a bed plate or frame composed, essentially, of a standard, a , having lateral projections or arms a' and a'' . The arm a' is shorter than the arm a'' , and to its upper edge, at its outer end, is screwed or otherwise secured a cutting-blade, b . The end of the long arm a'' terminates in a circular chamber or ring, a^3 , having on its lower side a cylindrical guide or opening, a^4 , for a punch or like tool-holder, D. To the open sides of the ring a^3 are suitably secured annular plates a^5 , which form inwardly-projecting flanges for the sides of ring a^3 , to provide bearings for rotating disks E E', which extend part way into the ring or chamber a^3 , and have shoulders or cap edges a^6 , fitting over the annular plates a^5 , as shown more plainly in Fig. 2. Between these disks E E' is an eccentric, F, which revolves with the disks; but, to provide for the rotation of the disks in unison with one another and to firmly connect them and the eccentric F together, the latter is made in two parts—viz., a central oblong part, f , fitting between two outside parts, f' , (see more plainly in Fig. 3)—the former of which is secured to or formed on disk E, and the latter is correspondingly-affixed to disk E', and through the center of disks E E' passes a screw, f^2 . The screw f^2 secures the disks together, while the interlocking of the separable parts $f f'$ of eccentric F provides for the disks rotating in unison.

The use of the separable or divided eccentric F admits of the employment of a continuous or one-part eccentric-strap, g , for connecting the punch-holder to eccentric F, as shown more plainly in Figs. 3 and 5.

In the outside faces of the disks are radially or diametrically arranged grooves e for the

insertion of a handle or crank, E^2 , to turn the disks $E E'$ and eccentric F for operating the punching-tool.

If desired, the pin or bolt connection g' between the eccentric strap g and punch-holder D may pass through vertical slots d , formed in the sides of guide a' , and be provided with end collars or nuts to serve as additional guides for the punch-holder.

To base-plate A is pivoted or fulcrumed, as shown at a' , a vibrating arm or lever, H , having at its forward end a blade, h , which is arranged to cut against blade b to make a shear-cut. The opposite end of lever or arm H is slotted, as shown at h' , and has an eccentric pin or connection, h^2 , with disk E' , said pin working in a slot, h' , in said lever end.

The operation is obvious. A movement of crank E^2 , either by hand, a treadle, or other power, rotates disks $E E'$ and eccentric F , which, through medium of strap g , actuates the punching-tool, and through the medium of eccentric-pin h^2 , working in the slotted end of lever H , vibrates it to effect a shear-cut between the blades $h b$. If desired, a steel or other plate, L , having circular or other shaped apertures, l , is secured to the side of base-plate A , adjacent to the lever H , which plate and lever are provided with correspondingly-shaped apertures, l' , which are used for cutting off lengths of round or other shaped bars. This plate L and openings $l l'$ are placed near to the pivot-point a' , or in line with the body of the standard a , so as not to impair the strength of the base-plate and admit of its resisting the strain incident to cutting the bars into lengths. The combined shearing and punching device is secured to a suitable stand or platform, M , upon which is secured a suitable female die or analogous devices, m , for completing the punch part of the machine. I do not limit myself to any particular form of punching tool or die, nor to their arrangement, as the female die or hollow punch may be inserted in the holder D .

To give sufficient strength to the punching end of the device, in order to enable it to resist the strains incident to the operation of punching, a standard or brace, N , is formed or cast thereon and suitably bolted to the platform M .

If desired, suitable threaded openings, e' , may be provided in grooves e to screw the handle E^2 to either of disks $E E'$, as shown more plainly in Figs. 2 and 4.

In the cap edges a^6 of disks $E E'$, adjacent to the plates a^5 , are annular grooves a^3 , and these are provided to reduce the friction between said disks and plates. The grooves or slots e in disks $E E'$ may be arranged as desired; but I prefer to so arrange them that the slots of one disk are intermediate of the slots of the other disk, as shown more plainly in Fig. 1. This arrangement affords greater facility for changing the angle of the handle E^2 , by removing it from the slot of one disk to that of the other disk to obtain better leverage.

What I claim is—

1. In combination with a base-plate, A , having at one end a cutting-blade and at the other a punching-tool and operating mechanism, a pivoted lever or arm, H , having an eccentric connection with said operating mechanism, and a cutting-blade, h , arranged to make a shear-cut with the blade on the base-plate, substantially as set forth.

2. The combination, with fixed bed-plate A and vibrating arm H , having shear-cutting blades, a ring or bearing on the end of the base-plate, disks $E E'$, coupled together in said bearing, having an eccentric connection with a punching-tool and a like connection with arm H , substantially as set forth.

3. The combination of base-plate A and vibrating lever H , having blades $b h$, the punch-holder D , disks $E E'$, coupled together, eccentric F , punch-holder D , mounted on base-plate A , and eccentric connection between one of said disks and lever H , substantially as set forth.

4. In combination with a support, A , having chamber a^2 , provided with a punch-holder, D , rotating disks $E E'$, coupled together, having a bearing in said chamber and each provided with a part of an eccentric, and connection between the eccentric and punch-holder, substantially as set forth.

5. In combination with a punch-holder, the rotating disks $E E'$, having outside grooves, e , eccentric F , formed on said disks, and connection between the eccentric and punch-holder, substantially as set forth.

6. In combination with base-plate A and lever H , a shears at one end of said plate and lever, a punching device at the opposite end of plate A , operating devices for said punch and lever H , cutting-plate L , having apertures l , and openings l' in said base-plate and lever, substantially as and for the purpose set forth.

7. A combined shears and punching device, having a base-plate, A , and brace or support N , adjacent to the punching device, substantially as set forth.

8. In combination with plate A , the bearing a^2 , having annular side plates, a^5 , rotating disks $E E'$, having eccentric F and coupling-screw, strap g , and punch-holder, substantially as set forth.

9. In a punching-machine, the disk E , having lug or part f , disk E' , having lugs $f' f'$, said lugs $f f' f'$ forming an eccentric between said disks to lock them together, and a coupling-screw, f^2 , for said disks, substantially as set forth.

10. In a punching-machine, the combination of chamber or ring a^3 , having side flanges, a^5 , guide a' , having lateral slots d , punch-holder D , disks $E E'$, and strap g , and connecting pin or guide for strap g , and holder D , working in slots d , substantially as set forth.

11. In combination with bearing a^2 , having flanges a^5 , the disks $E E'$, having caps or edges a^6 , in which are annular recesses a^3 , substantially as and for the purpose set forth.

12. In combination with bearing a^2 , the ro-

tating disks E E', having in their outer faces slots or grooves *e*, the slots *e* of one disk being located intermediately of those of the other disk, substantially as and for the purpose set forth.

13. In combination with the bed-plate A and lever H, having blades *b* and *h*, the bearing α^3 on plate A, disks E E', and eccentric

connection between one of said disks and lever H, substantially as shown and described. 10

In testimony whereof I affix my signature in presence of two witnesses.

JOHN STORTZ.

Witnesses:

JOHN RODGERS,
S. J. VAN STAVOREN.