

(No Model.)

A. HUNTER.
SCALPING AND GRADING DEVICE.

No. 420,803.

Patented Feb. 4, 1890.

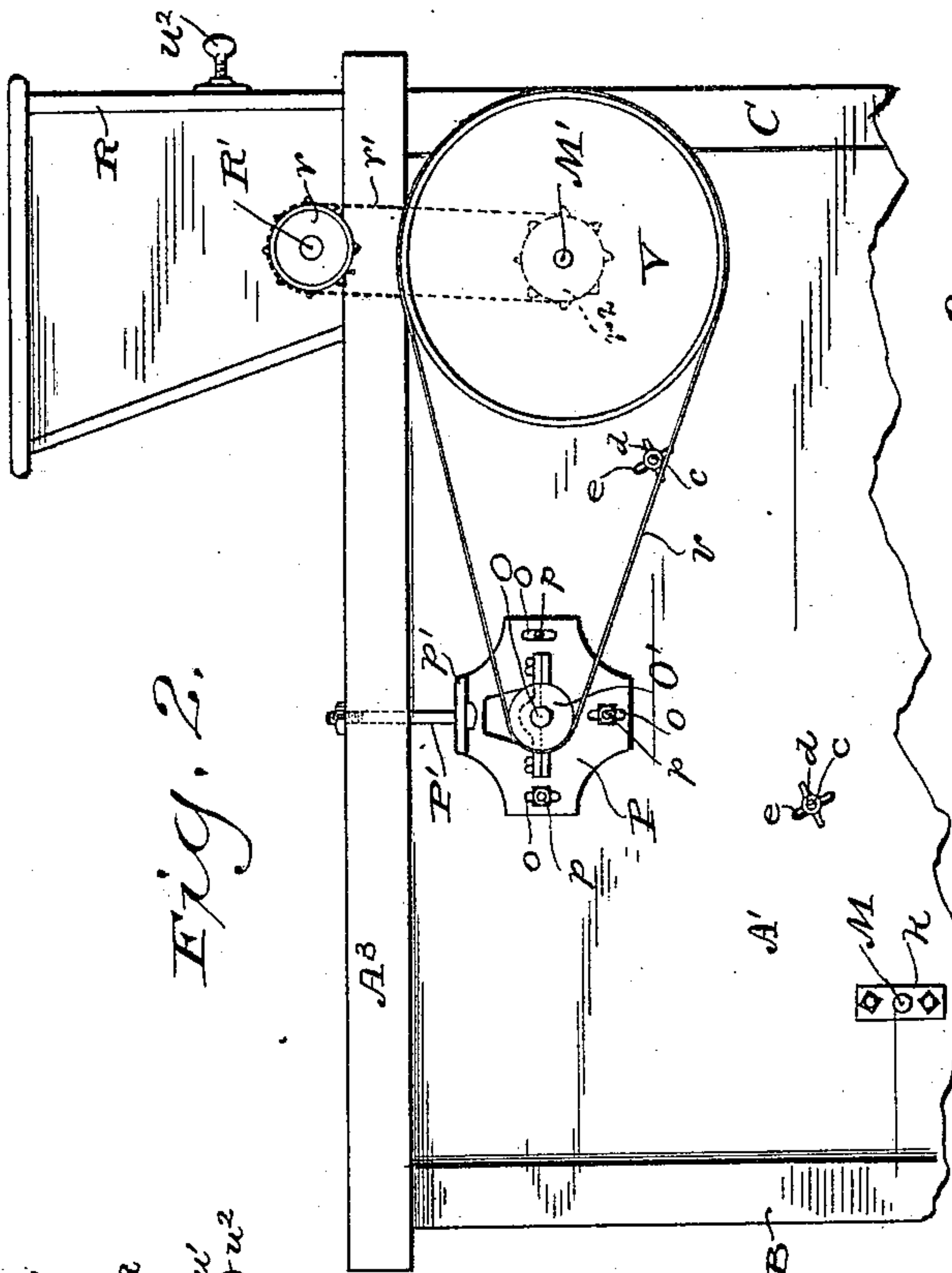


Fig. 2.

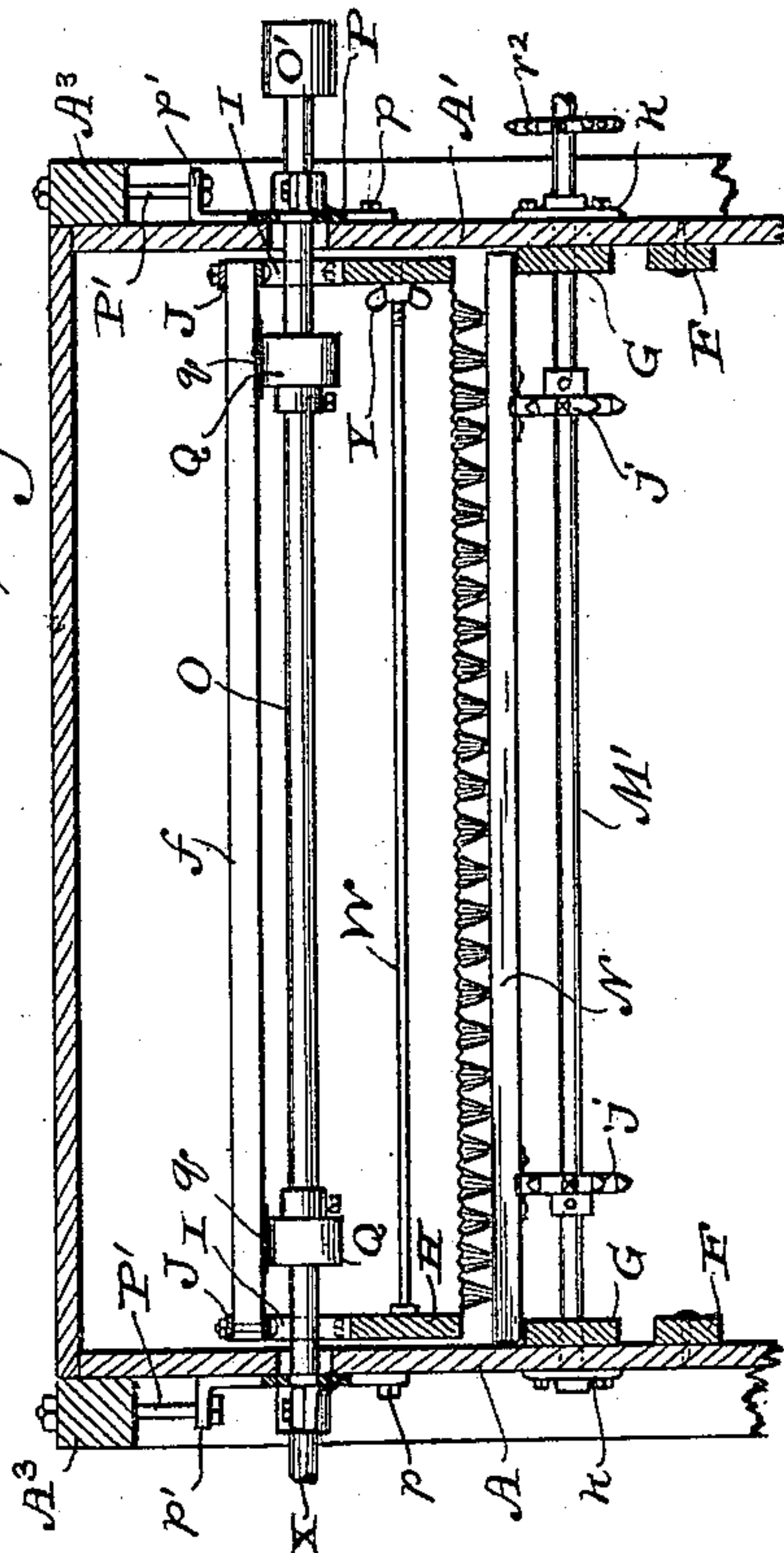


Fig. 3.

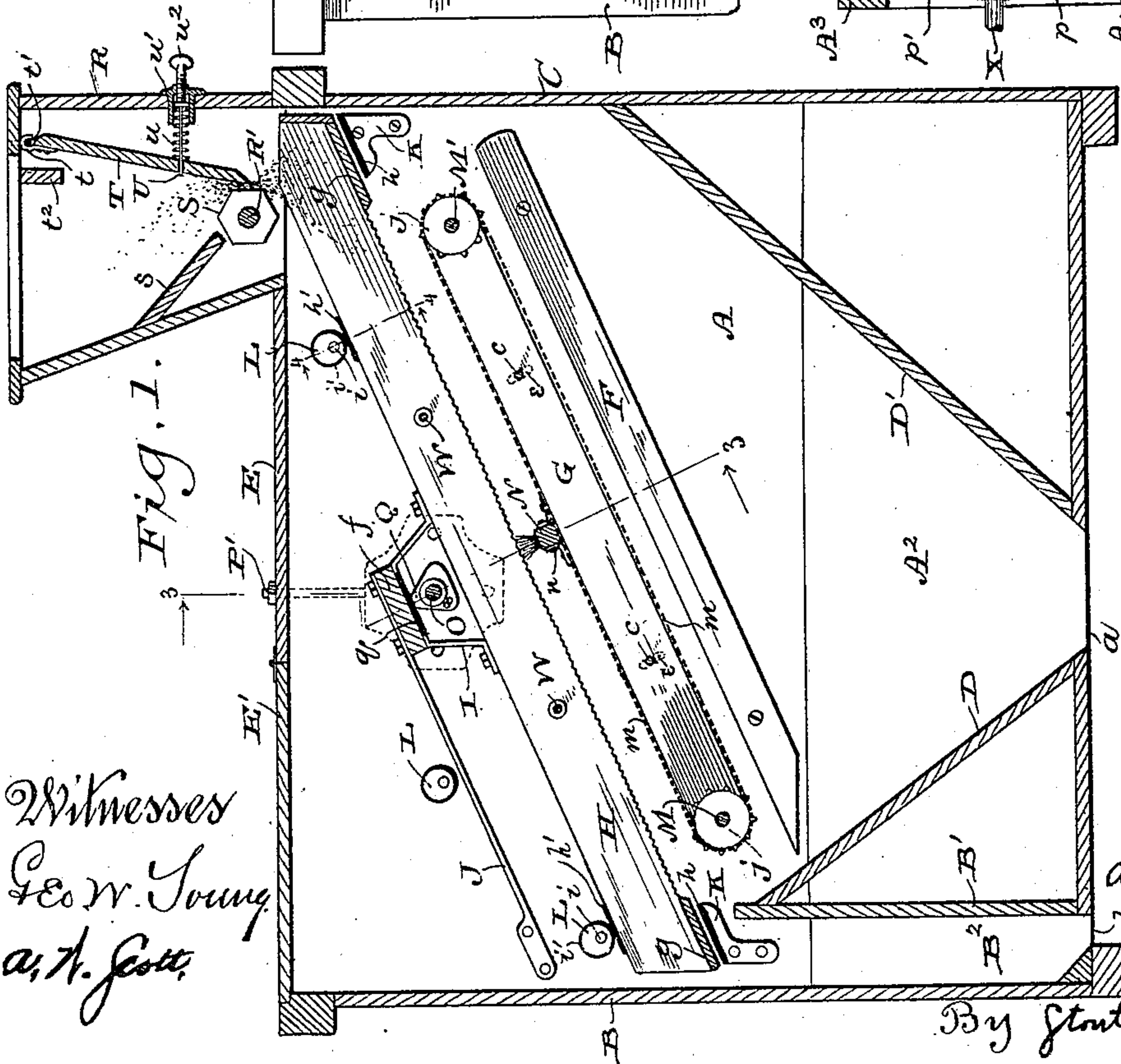
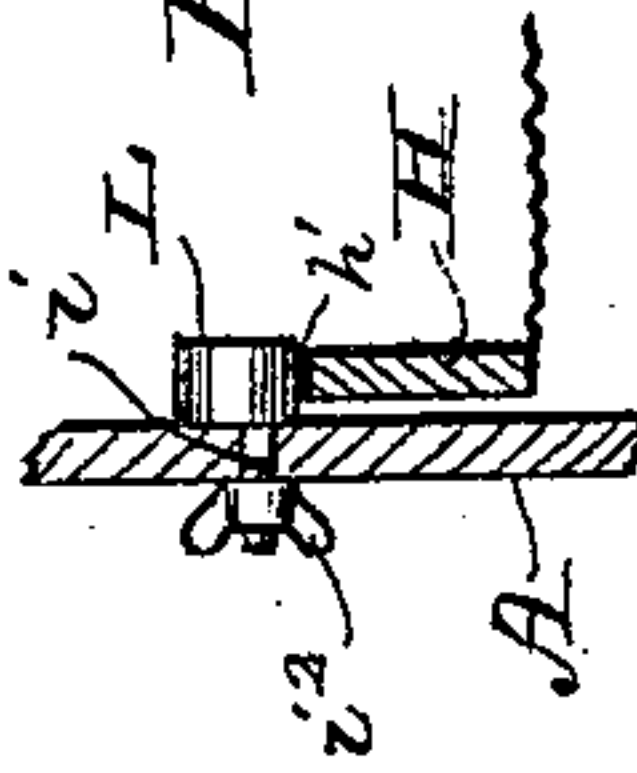


Fig. 1.

Fig. 4.



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SCALPING AND GRADING DEVICE.

SPECIFICATION forming part of Letters Patent No. 420,803, dated February 4, 1890.

Application filed January 9, 1889. Serial No. 295,868. (No model.)

To all whom it may concern:

Be it known that I, ANDREW HUNTER, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Scalping and Grading Devices; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to scalping and grading devices for the treatment of breaks and other products resulting from the manufacture of grain into flour, and will be fully set forth hereinafter, and pointed out in the claims.

In the drawings, Figure 1 is a vertical longitudinal section through my improved machine, taken near one side thereof. Fig. 2 is a partial side elevation. Fig. 3 is a section on the line 3 3 of Fig. 1, and Fig. 4 is a detail section on the line 4 4 of Fig. 1.

A A' represent the side walls of my machine, B the tail end, and C the head end, A² representing one of the inclined cant-boards projecting inwardly from the lower portions of the side walls A and A', forming, with the other interior cant-boards D D', arranged at right angles to the cant-boards A², a four-sided hopper having a discharge-opening at *a*, the board D' extending up to the head wall C, while the board D extends up only about as high as the partition B', which forms one wall of the spout B² between said partition and the tail wall B, said spout having its discharge-opening at *b*.

E E' represent the top of the machine, the portion E' being hinged, as shown, to afford a convenient means of access to the interior.

F F designate stationary guides secured at an angle to the interior of the side walls A A', and G G represent adjustable guides above the guides F F, held to the said side walls by bolts *c c*, passing through slots *e e* in the said side walls, and tightened to place by thumb-nuts *d d*.

H is a screen, to the top of the side walls of which are secured (at about the center) stirrups I, united by a transverse piece *f*, to each end of which is secured one end of a spring-strip J, (of wood or metal,) the other ends of said spring-strips being secured to the side walls A A' of the machine. Each end of the screen is provided with cross-

strips *g g* on the under side, beneath which are brackets or rests K K, having their upper edges covered with pieces of rubber, leather, or other suitable material *h h*, similar pieces *h' h'* being applied to the upper surface of the side walls of the screen-frame, near each end, as shown, and above these last-named pieces the side walls A and A' are perforated for the admission of the shanks or journals *i* of the eccentric-stops L, which latter are covered with rubber or analogous material *i'*, the ends of said journals being screw-threaded, and after the stops have been adjusted to the desired position (so as to leave less or more space between them and the screen below, as required) the said stops are clamped tightly against the side walls A and A' by means of the thumb-nuts *i'*, as shown in detail in Fig. 4. Above each of the spring-strips J there is another of these adjustable eccentric-stops L, similarly secured to place.

M M' represent two rods extending through the machine from side to side, carrying near each end, inside the machine, sprocket-wheels *j j*, while the outer projecting ends of said rods are suitably journaled in boxes *k k*, and around these sprocket-wheels at each side of the machine there pass the sprocket-chains *m*, which are united by the transverse brush or scraper N, whose ends travel around the guides G and between the same and the guides F, scraping or brushing the lower surface of the screen H, all as clearly shown in Figs. 1 and 3. In order to prevent the brush from tipping backward, I preferably secure to each end thereof an angle-plate *n*, whose horizontal arm slides along the guide G at each side of the machine.

O is a shaft extending through suitable openings in the side walls of the machine and journaled in vertically-adjustable boxes P, which boxes are slotted, as shown at *o*, to receive bolts *p*, passing through holes in the side walls A A', and having set-nuts, the said boxes having upper flanges *p'*, through which pass bolts P', which pass up through the upper timbers A³ of the machine-frame, and are there secured by nuts for aiding in the adjustment and support of the boxes P. This shaft O is provided inside the machine near each end, with the cams Q Q, which bear against the under side of the transverse

piece *f*, which is re-enforced at such points by strips *q q*, of leather, rubber, or other suitable material.

R is the hopper, having a hexagonal or other polygonal-faced feed-roller S in the lower part thereof mounted on a shaft R', which projects through the said hopper, one end of said shaft carrying a sprocket-wheel *r*, from which a sprocket-chain *r'* extends to a similar sprocket-wheel *r*² on the outer projecting portion of the rod M' below. The hopper has the usual bottom opening above the screen, and is furnished with a stationary guard or cant-board *s*, to prevent the material falling down on the wrong side of the feed-roller, and with a pivoted feed-board T, hung by hooks *t* to loops or eyes *t'*, depending from the top of the hopper just in front of a transverse guard-strip *t*², and the lower portion of this feed-board T is kept normally against the feed-roller S, but permitted to yield, so as to allow the material to pass between it and said feed-roller, by means of a spring *u*, mounted, preferably, on a guide-pin U, which passes through a hole in said feed-board, the guide-pin having a head, which, with the adjacent end of the spring *u*, is received in a cup *u'*, fitted in the front board of the hopper, this cup having a screw-threaded bore to receive an adjusting-screw *u*², the end of which presses against the said head of the said guide-pin, thus forcing the spring forward and compressing it, the other end of said spring bearing against the feed-board T, as shown. The feed-hopper R and the feed-board T extend the entire width of the machine, and I preferably employ a guide-pin U, with spring *u* and adjusting-screw *u*² near each end of the same.

The described shaft O (which is the power-shaft) is provided with a pulley O' at the end opposite to the end X, which carries the pulley (not shown) by which it is driven, and this pulley O' is connected by belt *v* with a large pulley V on the extreme end of the rod M', (beyond the sprocket-wheel *r*²), which pulley V is about five times (more or less) the diameter of the pulley O', while the sprocket-wheels *j*, *r*², and *r* are of the same size, so that in the operation of the machine the power-shaft O will move very rapidly, causing an incessant agitation of the screen by reason of the impact of the cams Q Q against the transverse piece *f*, secured, as described, to said screen, while by reason of the large pulley V the motion of the feed-roller S and the brush N is correspondingly much slower. The object of having the boxes P adjustable, as described, is to give more or less throw to the screen.

By the use of my centrally-arranged single shaft O and stops L L, I guard against the screen being accidentally raised higher at one end than at the other by the action of the cams on the shaft, while if I desire to have a greater rise at the head of the screen I have only to turn the adjacent eccentric-stops L, so that there will be more space between them

and the screen than at the lower end, and set the stops, and this result is accomplished.

In order to tightly stretch the wire-cloth or other material of which the bottom of my screen is composed and prevent sagging, I employ rods W, extending across the screen from side to side, one end of each rod being screw-threaded and provided with a thumb-nut Y, as shown.

The advantage of my polygonal-faced feed-roller lies in the fact that the extending points thereof serve to draw in the material being fed better than a smooth feed-roller or one having corrugations or depressions, and by reason of my described automatically-adjusting feed-board the material falls in an even sheet the entire width of the machine, whether there is a light or heavy feed of said material, the springs compressing or expanding according as the pressure against the feed-board is increased or diminished, thereby producing an even flow the whole width of the screen.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a scalping and grading device, the combination of a suitable frame, an inclined screen, brackets secured to said frame for supporting the screen-frame, stirrups rising from the side walls of the screen-frame at or near the center thereof and connected by a transverse piece, elastic supports secured to the side walls of the machine-frame and to the screen-frame, and a shaft located above the screen and beneath and in line with said transverse piece and carrying cams for engagement with the under side of the latter, substantially as set forth.

2. In a scalping and grading device, the combination of a suitable frame, an inclined screen, brackets secured to said frame for supporting the screen-frame, stirrups rising from the side walls of the screen-frame at or near the center thereof and connected by a transverse piece, spring-strips secured at their rear ends to the side walls of the machine-frame and at their front ends secured to said transverse piece, and a shaft located above the screen and beneath and in line with said transverse piece, and carrying cams for engagement with the under side of the latter, substantially as set forth.

3. In a scalping and grading device, the combination of a suitable frame, an inclined screen, brackets secured to said frame for supporting the screen-frame, stirrups rising from the side walls of the screen-frame at or near the center thereof and connected by a transverse piece, a shaft located above the screen and beneath and in line with said transverse piece and carrying cams for engagement with the under side of the latter, and adjustable stops located above the side walls of the screen-frame near each end thereof for regulating the height to which each end can rise, substantially as set forth.

4. In a scalping and grading device, the

combination of a suitable frame, an inclined screen, brackets secured to said frame for supporting the screen-frame, stirrups rising from the side walls of the screen-frame at or
5 near the center thereof and connected by a transverse piece, vertically-adjustable boxes secured to the side walls of the machine-frame, and a shaft journaled in said boxes and extending through the machine above
10 the screen and beneath and in line with said transverse piece, and provided with cams for engagement with the latter, substantially as set forth.

5. In a scalping and grading device, the
15 combination of a suitable frame, an inclined screen, brackets secured to said frame for supporting the screen-frame, stirrups rising from the side walls of the screen-frame at or near the center thereof and connected by a
20 transverse piece, spring-strips secured at their rear ends to the side walls of the machine-frame and at their front ends secured to said transverse piece, a shaft located above the screen and beneath and in line with said
25 transverse piece and carrying cams for engagement with the under side of the latter, and adjustable stops located above the side walls of the screen-frame near each end thereof, substantially as set forth.

30 6. In a scalping and grading device, the combination of a suitable frame, an inclined screen, brackets secured to said frame for supporting the screen-frame, stirrups rising from the side walls of the screen-frame at or
35 near the center thereof and connected by a transverse piece, spring-strips secured at their rear ends to the side walls of the machine-frame and at their front ends secured to said transverse piece, a shaft located above
40 the screen and beneath and in line with said transverse piece and carrying cams for engagement with the under side of the latter, adjustable stops located above the side walls of the screen-frame near each end thereof, and
45 other adjustable stops located above the said spring-strips, substantially as set forth.

7. In a scalping and grading device, the combination, with an inclined screen, of a shaft transversely arranged practically in line with
50 the center of the screen-frame and carrying cams for agitating said screen, and adjustable stops located above the side walls of the screen-frame near each end thereof for regulating the height to which each end can rise,
55 substantially as set forth.

8. In a scalping and grading device, the combination, with a frame the side walls of which are provided with vertical slots, of vertically-adjustable boxes secured to the said side walls adjacent to said slots, an inclined
60 screen, and a shaft journaled in said boxes and passing through said slots, said shaft being transversely arranged practically in line with the center of the screen-frame and carrying cams for agitating said screen, substantially as set forth. 65

9. In a scalping and grading device, the combination, with a suitable frame, of an inclined screen, adjustable inclined guides secured to the side walls of said frame beneath
70 said screen, stationary inclined guides secured to said walls beneath said adjustable guides, rods extending from one side wall to the other at each end of the adjustable guides, said rods carrying sprocket-wheels near each
75 end, sprocket-chains connecting the sprocket-wheels of the said rods at each side of the machine, and a transverse brush connecting said sprocket-chains, the ends of said brush being adapted to travel around the adjustable
80 guides and between the same and the stationary guides, and being provided with angle-plates to guard against tipping backward in their travel, substantially as set forth.

10. In a scalping and grading device, the
85 combination of a feed-hopper, with a feed-roller located in the lower portion thereof, and an automatically-adjustable feed-board extending the entire width of the said hopper and linked to the upper part thereof and
90 normally bearing against the said feed-roller, a cup fitted in the front board of the hopper, a spring-surrounded guide-pin having a head within said cup and a point passing through a hole in said feed-board, and an adjusting-
95 screw passing through a screw-threaded bore in the outer end of said cup and bearing against the head of said pin, substantially as set forth.

In testimony that I claim the foregoing I
100 have hereunto set my hand, at Minneapolis, in the county of Hennepin and State of Minnesota, in the presence of two witnesses.

ANDREW HUNTER.

Witnesses:

J. L. PARKER,
FRED ANDREWS.