(No Model.) 2 Sheets—Sheet 1.

M. H. REYNOLDS.

GRINDING AND POLISHING MACHINE.

No. 529,048. Patented Nov. 13, 1894.

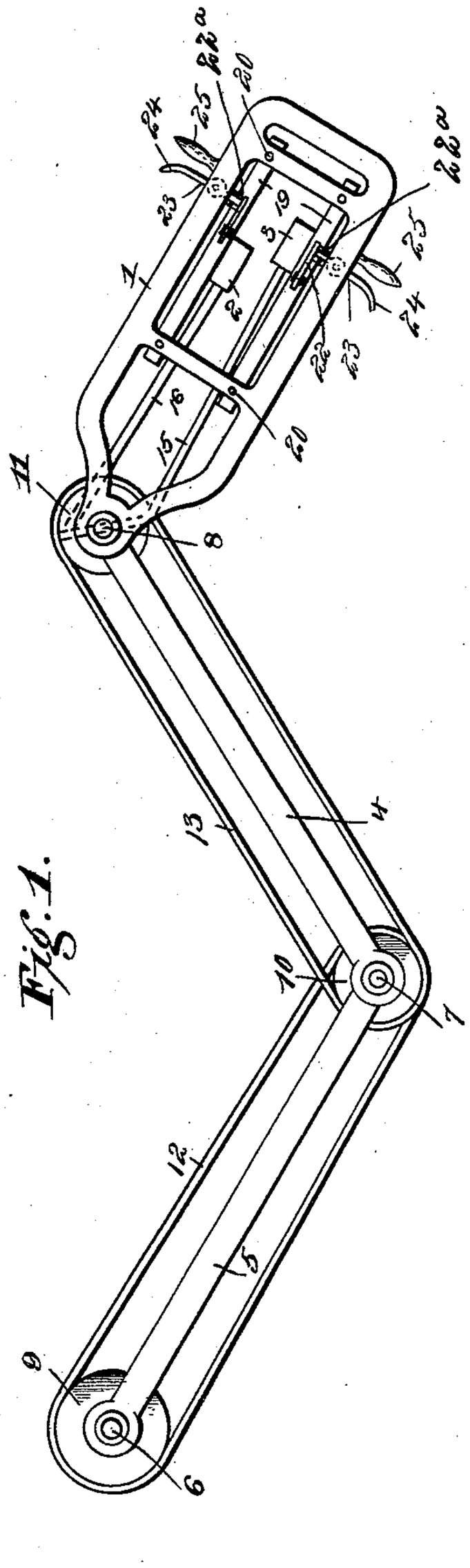

Fig. 1.

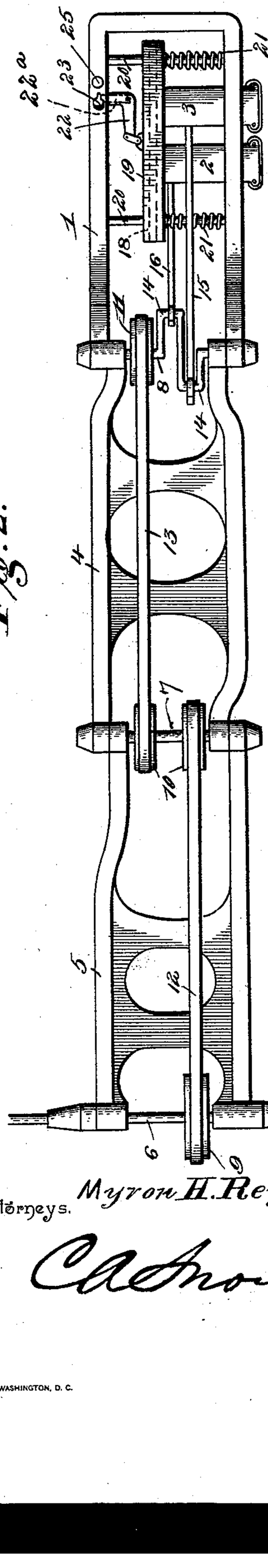

Fig. 2.

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Fig. 3.

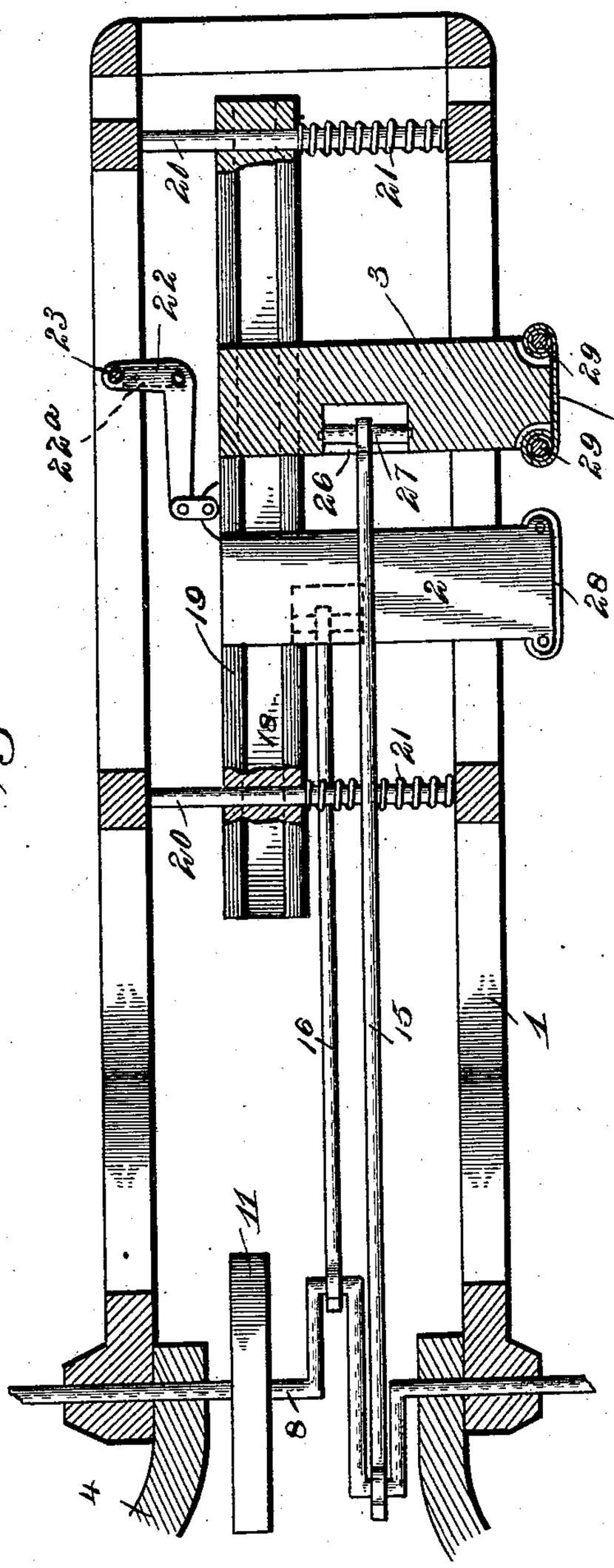


Fig. 5.

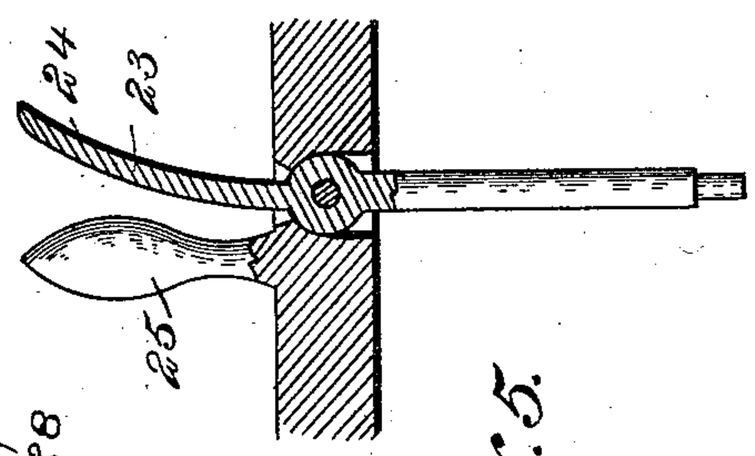
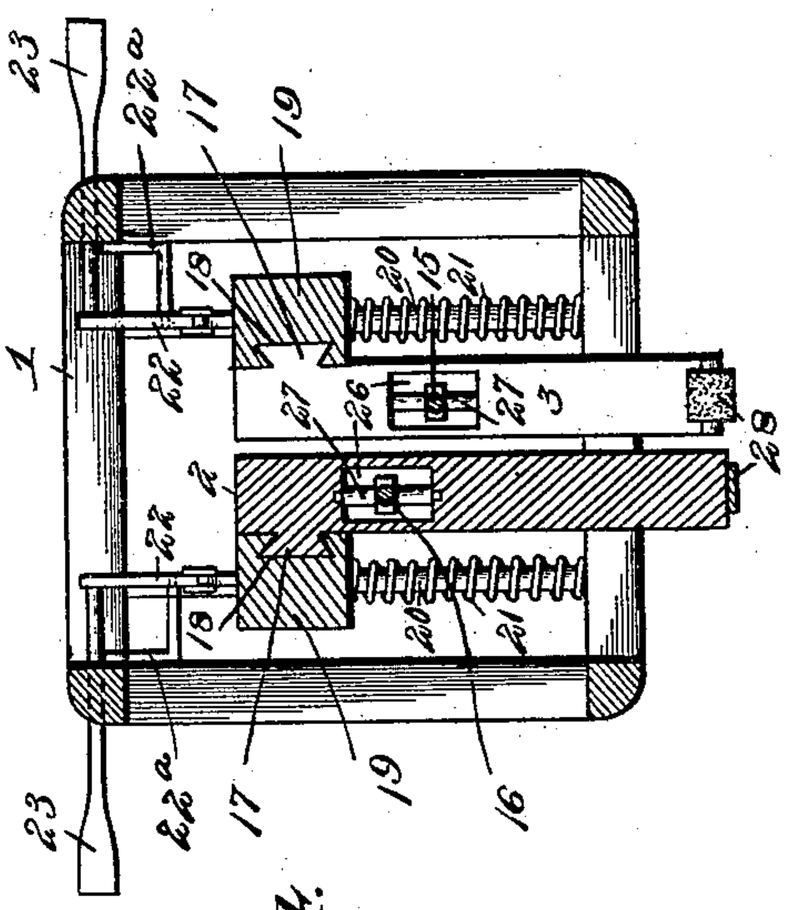


Fig. 4.



Inventor

Witnesses

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UNITED STATES PATENT OFFICE.

MYRON H. REYNOLDS, OF OLEAN, NEW YORK.

GRINDING AND POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 529,C48, dated November 13, 1894.

Application filed March 22, 1894. Serial No. 504,711. (No model.)

To all whom it may concern:

Be it known that I, MYRON H. REYNOLDS, a citizen of the United States, residing at Olean, in the county of Cattaraugus and State of New York, have invented a new and useful Grinding and Polishing Machine, of which the following is a specification.

The invention relates to improvements in grinding and polishing machines.

The object of the present invention is to improve the construction of that class of grinding and polishing machines known as arm sanders, and to enable the sand-paper or other abrasive material employed to have a direct reciprocating motion to facilitate the polishing of wood.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings and pointed out in the claims hereto appended.

In the drawings—Figure 1 is a plan view of a grinding and polishing machine constructed in accordance with this invention. Fig. 2 is a side elevation of the same. Fig. 3 is a longitudinal sectional view of the frame. Fig. 4 is a tranverse sectional view. Fig. 5 is a detail sectional view of one of the handles.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 designates a frame carrying a pair of reversely reciprocating rubbers or cross-heads 2 and 3, and hingedly connected with and supported by similarly jointed arms 4 and 5. The end arm 5 is hingedly connected by an end shaft 6 with a suitable support. The inner end of the intermediate arm 4 is similarly connected with the end arm 5 by a shaft 7, and the outer end of the arm 4 is hingedly connected with the inner end of the frame 1 by a crank shaft 8. The arms 4 and 5 permit the frame 1 to have a swinging or oscillating motion. They enable it to be moved back and forth in a straight line or by a rotary motion, and by this means the rubbers may be readily brought into the desired relation with the work operated on.

The shafts 6, 7, and 8 carry pulleys 9, 10, and 11, which are connected by belts 12 and 13, whereby the crank shaft is rotated.

The crank shaft is provided with oppositely disposed arms or crank bends 14, which communicate a reciprocating motion to the cross-heads or rubbers 2 and 3, by means of pitmen 15 and 16; and it will be readily seen that the oppositely disposed crank arms 14 will produce in the rubbers or cross-heads a reverse reciprocation.

The rubbers or cross-heads 2 and 3, are provided at their inner or upper ends with dove-tailed flanges or tenons 17, which are each slidingly mounted in a dove-tailed longitudinal way or groove 18 of a transversely adjustable bar 19. Each bar 19 is disposed longitudinally of the frame 1. It is mounted on parallel vertically-disposed transverse rods or shafts 20, and it is capable of transverse adjustment thereon to force the cross-heads or rubbers against the work. The transversely adjustable bar is normally held upward by spiral springs 21, disposed on the lower portions of the shafts 20, and interposed between the bar 19 and the bottom of the frame.

Each rubber or cross-head is forced against the work independently of the other by a bell-crank lever 22, which is fulcrumed at its angle on a bracket or support 22^a of the frame and which has its horizontal arm connected with the adjacent transversely or laterally adjustable bar 19; and the upper end of its vertical arm is connected with the adjacent one of a pair of oppositely-disposed handle levers 23, having their outer portions 24 bent at a slight angle and arranged adjacent to stationary handles 25, whereby, when the outer portions of the handle levers 23 are drawn against or in the direction of the stationary handles, the rubbers or cross-heads will be forced downward.

The handle portions 24 of the levers 23 are arranged adjacent to the stationary handles 25 in order to facilitate their operation as the two parts may be readily grasped in the hand, and by tightening the grasp the downward movement of the rubbers or cross-heads is effected. Each rubber or cross-head is provided with an opening 26, in which is mounted a pin 27, or the like, that is attached to the outer end of the companion pitman.

Sand-paper or any suitable material may be employed to effect the grinding and polishing. It is preferably arranged in sheets or strips 28, each of which has its ends wound upon opposite shafts 29 arranged at opposite

sides of the cross-head or rubber, and as the sand-paper becomes worn it may be unwrapped from one shaft and wound upon the other to present a fresh, unused portion to the work.

It will be seen that the grinding and polishing machine is simple and comparatively inexpensive in construction; that an oscillating or rubbing motion is imparted to the rubbers or cross-heads; that the latter may be arranged in any desired position, and that the sand-paper or similar material may be held against the work with the desired pressure. It will also be apparent that as the rubbers or cross-heads are independently operated or forced downward one may carry a coarser paper than the other, and the two kinds of sand-paper may be successively used on a piece of work.

Changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. In a grinding and polishing machine, the combination of the hinged arms a swinging frame hinged to one of the arms, the bars disposed longitudinally thereof and arranged for transverse reciprocation thereon, a crank shaft provided with oppositely-disposed crank arms, rubbers slidingly mounted on the bars, and pitmen connected with the arms of the crank shaft and with the rubbers, substantially as and for the purpose described.

2. In a grinding and polishing machine, the combination of a frame, a longitudinal bar arranged for transverse movement thereon, a reciprocating rubber carried by the bar, a bell-crank lever journaled on the frame and having one of its arms connected with the bar, and a handle lever connected with the other arm of the bell-crank lever, substantially as described.

3. In a grinding and polishing machine, the combination of a frame, a bar disposed longitudinally thereof and mounted for transverse movement thereon, a reciprocating rubber carried by the bar, springs for forcing the bar upward, a bell-crank lever fulcrumed on the frame and having one of its arms connected with the bar, and a handle lever connected with the other arm of the bell-crank lever, substantially as described.

4. In a grinding and polishing machine, the combination with a frame, vertical rods or shafts mounted thereon, the longitudinal bars arranged on the rods or shafts and provided with longitudinal ways, reciprocating rubbers slidingly mounted in the ways of the bars, a crank shaft having oppositely-disposed crank arms, pitmen connecting the crank arms, spiral springs disposed on the lower portions of the rods or shafts and supporting the bar, stationary handles mounted at opposite sides of the frame, bell-crank levers journaled on the frame and each having one of its arms connected with the bar, and handle levers fulcrumed on the frame and having their outer portions arranged adjacent to the stationary handles, and their inner portions connected with the other arms of the bell-crank levers, substantially as described.

5. In a grinding and polishing machine, the combination of the hinged arms a swinging frame hinged to one of the arms, the longitudinal bars mounted on the frame for independent transverse movement and provided with ways, the reciprocating rubbers mounted in the ways, and means for forcing the rubbers independently of each other in the direction of the work, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

MYRON H. REYNOLDS.

Witnesses:

CHARLIE S. JONES,

GEORGE HOFFMIRE.