(Model.) 2 Sheets—Sheet 1.

F. A. SAVAGE.

Spoke Finishing Machine.

No. 230,663. Patented Aug. 3, 1880.

Fig. 1.

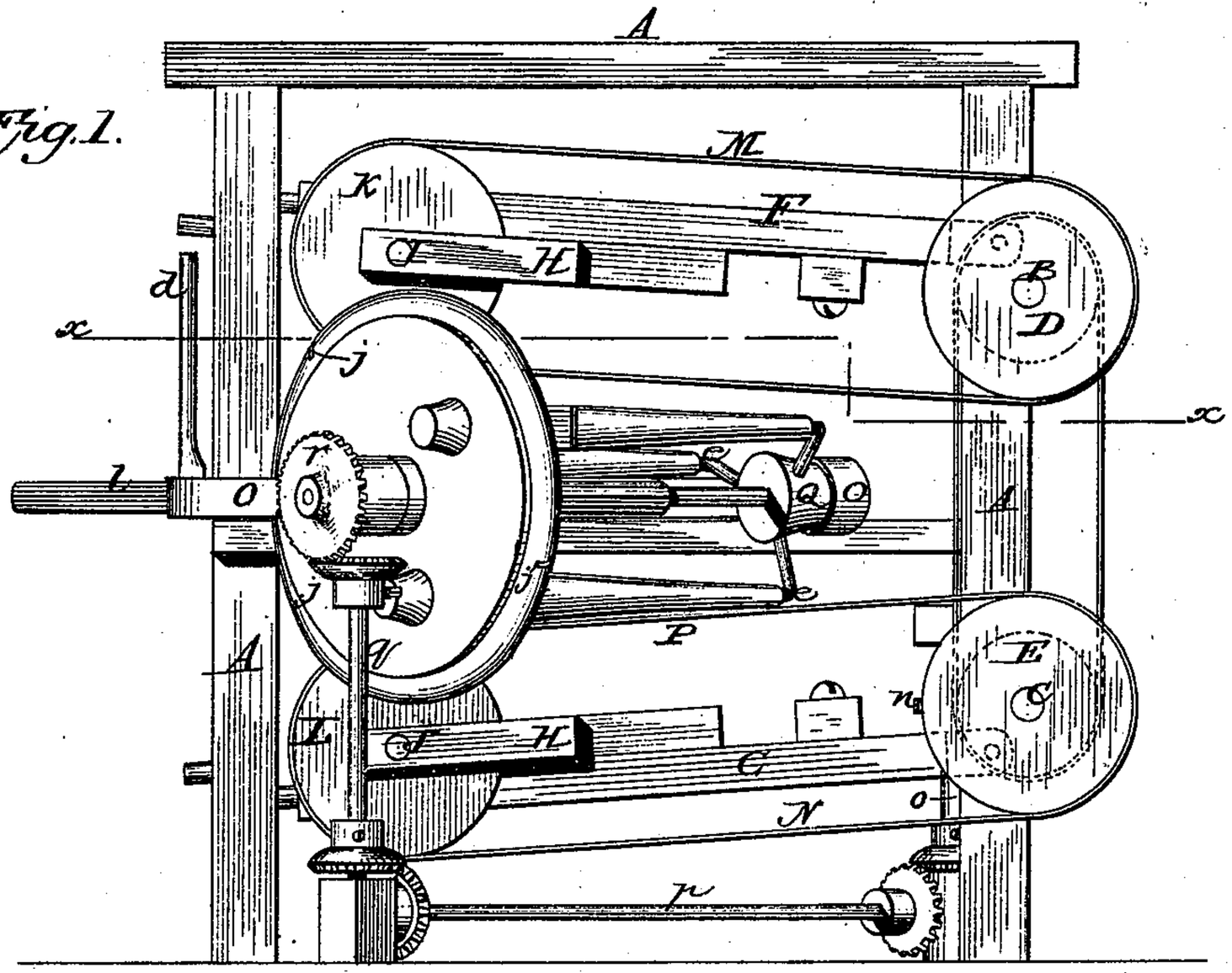
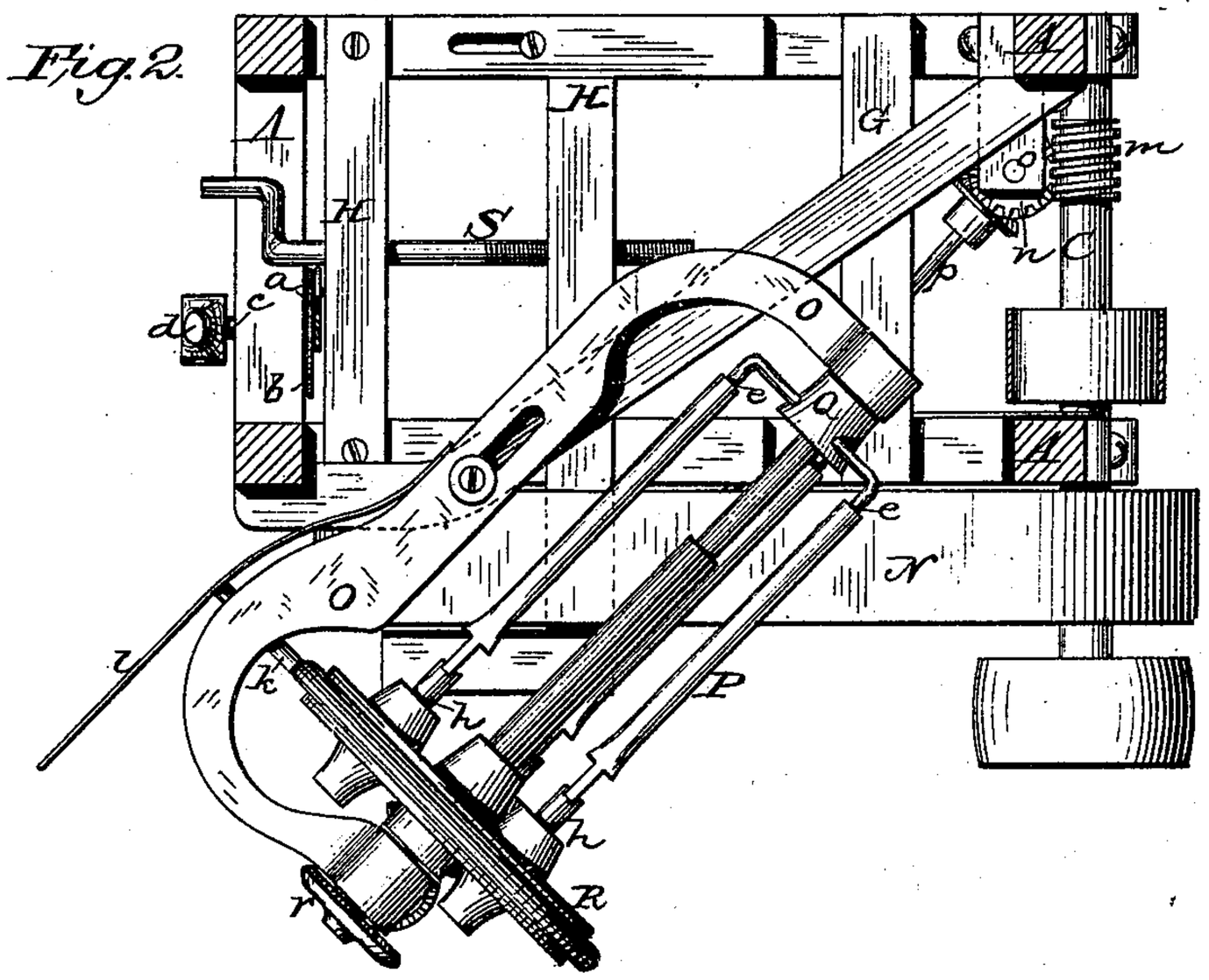


Fig. 2.



Attest.

Sidney P. Hollingsworth

Nathan C. Lane

Inventor.

F. A. Savage

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Attys.

(Model.)

2 Sheets—Sheet 2.

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Spoke Finishing Machine.

No. 230,663. Patented Aug. 3, 1880.

Fig. 3.

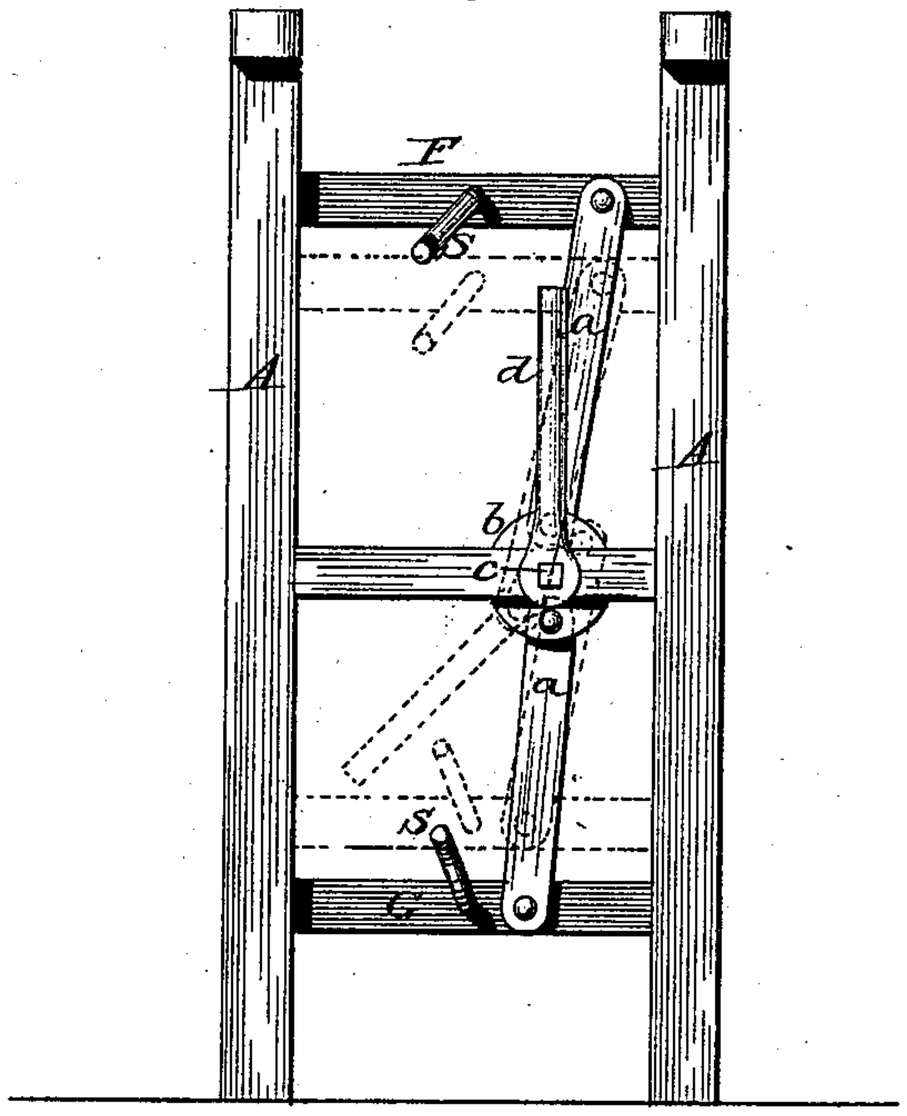


Fig. 4.

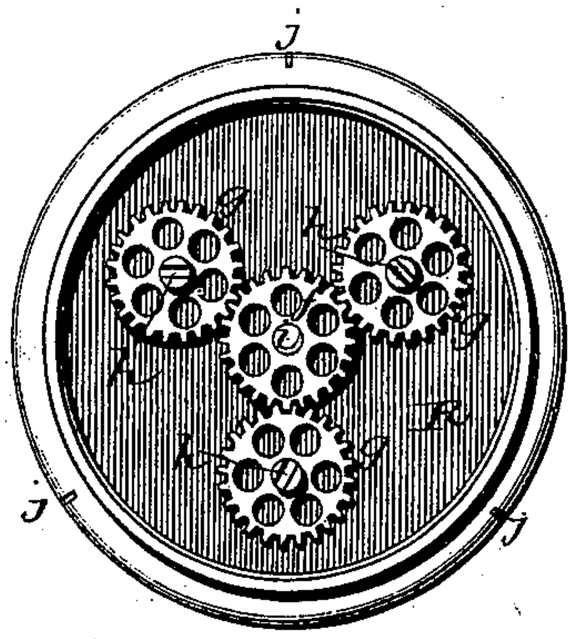
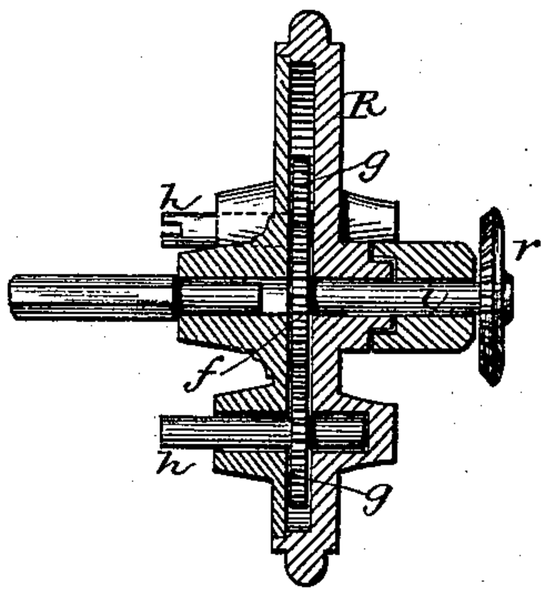


Fig. 5.



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UNITED STATES PATENT OFFICE.

FRANK A. SAVAGE, OF KUTTAWA, KENTUCKY, ASSIGNOR TO BOOTH, DULANEY & CO., OF SAME PLACE.

SPOKE-FINISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 230,663, dated August 3, 1880.

Application filed May 10, 1880. (Model.)

To all whom it may concern:

Be it known that I, FRANK A. SAVAGE, of Kuttawa, in the county of Lyon and State of Kentucky, have invented certain Improvements in Spoke-Finishing Machines, of which the following is a specification.

My invention relates to a spoke-polishing machine; and it consists in mounting a spoke-carrying frame between two endless belts of polishing material of different degrees of fineness arranged to act successively upon the spokes; in means for throwing the belts to or from the spokes and for tightening the belts; in mechanism for rotating the spoke-carrying frame and for imparting a turning or revolving motion to the separate spokes, and in other details hereinafter explained.

In the accompanying drawings, Figure 1 represents a side or face elevation of my improved machine; Fig. 2, a plan view, with a portion in section, on the line *x x* of Fig. 1; Fig. 3, an end elevation, showing the mechanism for throwing the belts into or out of an operative position; Fig. 4, an interior face view of the head which carries one end of the spokes, showing the gearing by which the separate spokes are rotated; Fig. 5, a transverse section taken through the center of the head.

The present invention is designed to produce a machine by which spokes and similar articles may be rapidly and efficiently dressed and polished, and which shall permit the insertion and removal of spokes without stopping the machine.

To this end the invention consists in providing a suitable frame-work and mounting therein two sets of band wheels or pulleys to carry the dressing and polishing belts and an intermediate revolving head or frame to hold the spokes and present them successively to the belts, the arrangement being such that while two spokes are being operated upon a third one may be removed and a new one substituted therefor.

The dressing and polishing belts are carried each around two belt pulleys or wheels, one of which in each pair is capable of adjustment to and from the other to regulate the tension of the belts, the shaft of each adjustable pulley being mounted in a sliding frame and moved by a screw. The two sliding frames are, in turn, arranged to move upon vertically-swinging and adjustable frames, each eccentrically connected with a block or disk provided with a hand-lever in such manner that by moving the hand-lever the block or disk is rotated and draws the pulleys toward one another, or separates them, according to the direction of rotation.

The frame or carrier in which the spokes are held is furnished at one end with a spider-frame having points to enter slightly into the end of the spokes, and thus hold and permit them to turn, and at the opposite end with a head having internal planet-gearing and projecting spoke-holders to receive the other ends of the spoke and impart a slow rotation thereto. This head and the spider at the opposite end are connected by a central shaft or rod, and the two, or the carrier as a whole, is journaled and adapted to be rotated in a frame attached to the main frame of the machine and provided with a locking device to hold the carrier in any adjusted position. Power is applied at any suitable point and transmitted through suitable gearing to the center pinion of the planet-gearing in the carrier-head and thence to the separate spoke carriers or holders.

Referring to the drawings, A represents the main frame of the machine, constructed of any suitable material and form, and having bearings at one end to receive and carry two transverse shafts, B C, provided, respectively, with belt wheels or pulleys D and E.

F and G represent two vertically-swinging or adjustable frames, each having its free end connected by a rod or link, *a*, with an intermediate disk, *b*, eccentrically, as shown, so that when the disk is rotated upon its central pivot, *c*, by means of the hand-lever *d* the frames F G are caused to approach or recede from each other, according to the direction and extent of rotation.

Upon each of the frames F G is mounted a second frame, H, slotted and arranged to be moved longitudinally upon the main frames by means of screws, as shown. The frames H

carry, respectively, transverse horizontal shafts I and J, respectively provided with belt pulleys or wheels K and L.

M represents an endlesss band or belt, coated on its surface with sand, emery, or other suitable material, and passing around the pulleys D K, and N represents a like belt passing around the pulleys E and L, but having its surface coated with material of different fineness from that used upon the other belt. Secured to the main frame, at the forward side thereof, and extending between the two belts, is a frame, O, in which is journaled a spoke-carrier, P, consisting of a spider, Q, at one end, having points *e* to hold the ends of the spokes, and permit the spokes to turn thereon, and a head, R, at the opposite end, provided with internal planet-gearing *f g*, the pinions *g* being each furnished with a central projecting stem or shaft, *h*, notched or slotted to receive one end of a spoke, as shown in Fig. 2. The head R is sustained by and free to rotate upon the shaft *i* of the center pinion, *f*, when not locked against rotating, and is furnished with a series of notches, *j*, in its periphery, corresponding to the number of spoke-holders, to receive the end of a spring locking-bolt, *k*, which passes through the frame O and serves to hold the head R stationary while the spokes are being operated upon.

The spring-arm *l*, to which the bolt *k* is attached, and by which it is operated, is extended outward and fashioned into a handle by which the bolt may be retracted when desired. The number of spoke-holders, and consequently the number of spokes placed at any time in the machine, may vary; but the relative positions should be such that while each belt is operating upon a spoke another may be removed and a new one substituted without stopping the machine.

Motion is imparted by a worm, *m*, on shaft C to a pinion, *n*, and thence, through shafts *o p q* and bevel-pinions connecting the same, to a pinion, *r*, on the shaft of the center pinion, *f*, which pinion, in turn, rotates the pinions *g*, and causes the spokes to rotate slowly while being acted upon by the belts.

When the belts have acted for a sufficient length of time upon their respective spokes the bolt *k* is withdrawn, and the head R is rotated sufficiently to carry the spoke which has been under the action of the dressing-belt from said belt to the finishing-belt. This rotation may be effected by hand or by simply withdrawing the bolt *k*, the resistance offered by the gearing *f g* being greater than that of the carrier P against revolving, and the latter being made in consequence to turn automatically.

If preferred, the belts M N may be thrown apart by moving the hand-lever *d*, when the carrier P is to be rotated or a spoke inserted or removed.

When the belts M N become loose or slack from any cause, they may be readily tightened by simply turning the screws S, and thereby moving outward the frames H upon the swinging frames F G.

The machine being thus constructed, the carrier P is provided with spokes and the machinery set in motion. The spokes are acted upon successively by the belts passing from one to the other, and then to a convenient position for removal and replacement.

The details of the machine may be considerably modified without departing from my invention—as, for instance, by substituting a toothed pinion for the disk *b* and providing the inner ends of links *a* each with an eccentric segmental rack meshing with the pinion in such manner that the rotation of the latter shall force the frames F G apart or permit them to approach each other, according to the direction of rotation, the weight of the upper frame causing it to fall, and weights, springs, or equivalent devices being provided to raise the lower frame; by substituting belts for the gearing employed to rotate the center pinion of the planetary gearing; by mounting the frames H to travel in ways, instead of slotting them and holding them in place by screws or bolts, and in other respects.

The belts may be of any suitable width and covered with any suitable dressing or polishing material, and the frame O slotted to permit its adjustment, a clamping-screw being provided to hold it where adjusted.

I am aware that in a spoke-finishing machine a revolving spoke-carrier has been provided with an automatic detent which permitted the carrier to rotate and remove the spoke from contact with the polishing-belt after the same had been acted upon a certain length of time; but I am not aware that any one has hitherto employed in such connection a detent, capable of being operated by hand, whereby the spoke may be subjected to the action of the belt for a longer or shorter time, as rendered necessary by the nature of the wood and the degree of previous finish of each individual spoke.

Having described my invention, what I claim is—

1. In a spoke-finishing machine, the combination of a dressing or smoothing belt and a polishing-belt of respectively different degrees of fineness, and an intermediate spoke-carrier adapted and arranged to simultaneously present one spoke to the dressing or smoothing belt and another to the polishing-belt, substantially as described.

2. In a spoke-finishing machine, the combination of an upper and a lower belt and a carrier located between said belts and adapted to present a spoke to the two belts successively, as described.

3. In combination with a spoke-carrier, two dressing or polishing belts adapted and arranged to be simultaneously withdrawn from

opposite sides of the carrier, substantially as and for the purpose set forth.

4. In combination with the frames F G, the disk *b* and connecting-links *a*, arranged and operating as described.

5. In combination with the carrier P, having the planetary gearing *f g*, the shaft C, provided with the worm *m*, and intermediate gearing connecting the worm and pinion *f*, as shown.

FRANK A. SAVAGE.

Witnesses:
H. B. DULANEY,
W. S. JEWELL.