(No Model.) 3 Sheets—Sheet 1.

H. M. WILCOX.

SET WORKS FOR SAW MILLS.

No. 347,908. Patented Aug. 24, 1886.

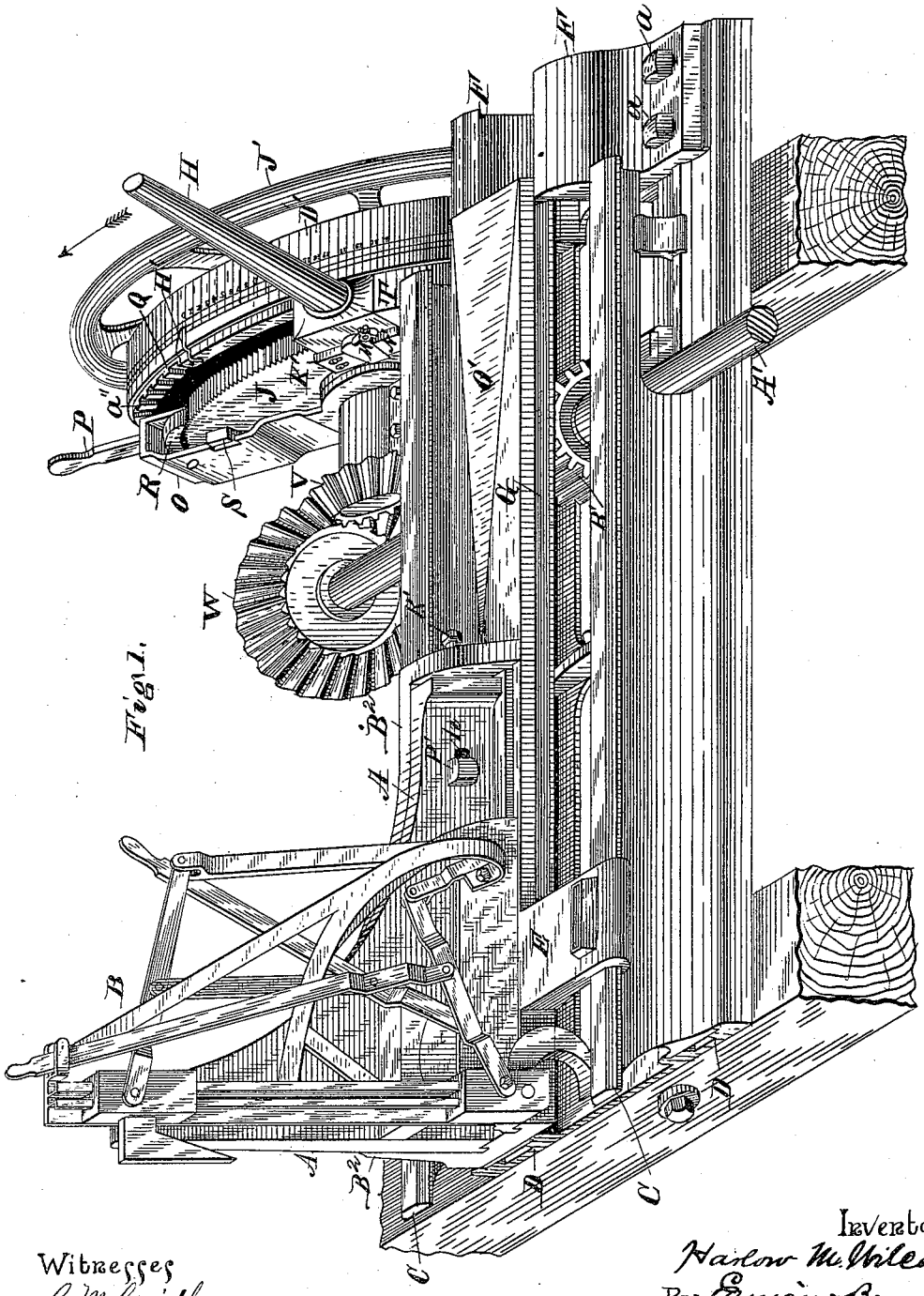

Fig. 1.

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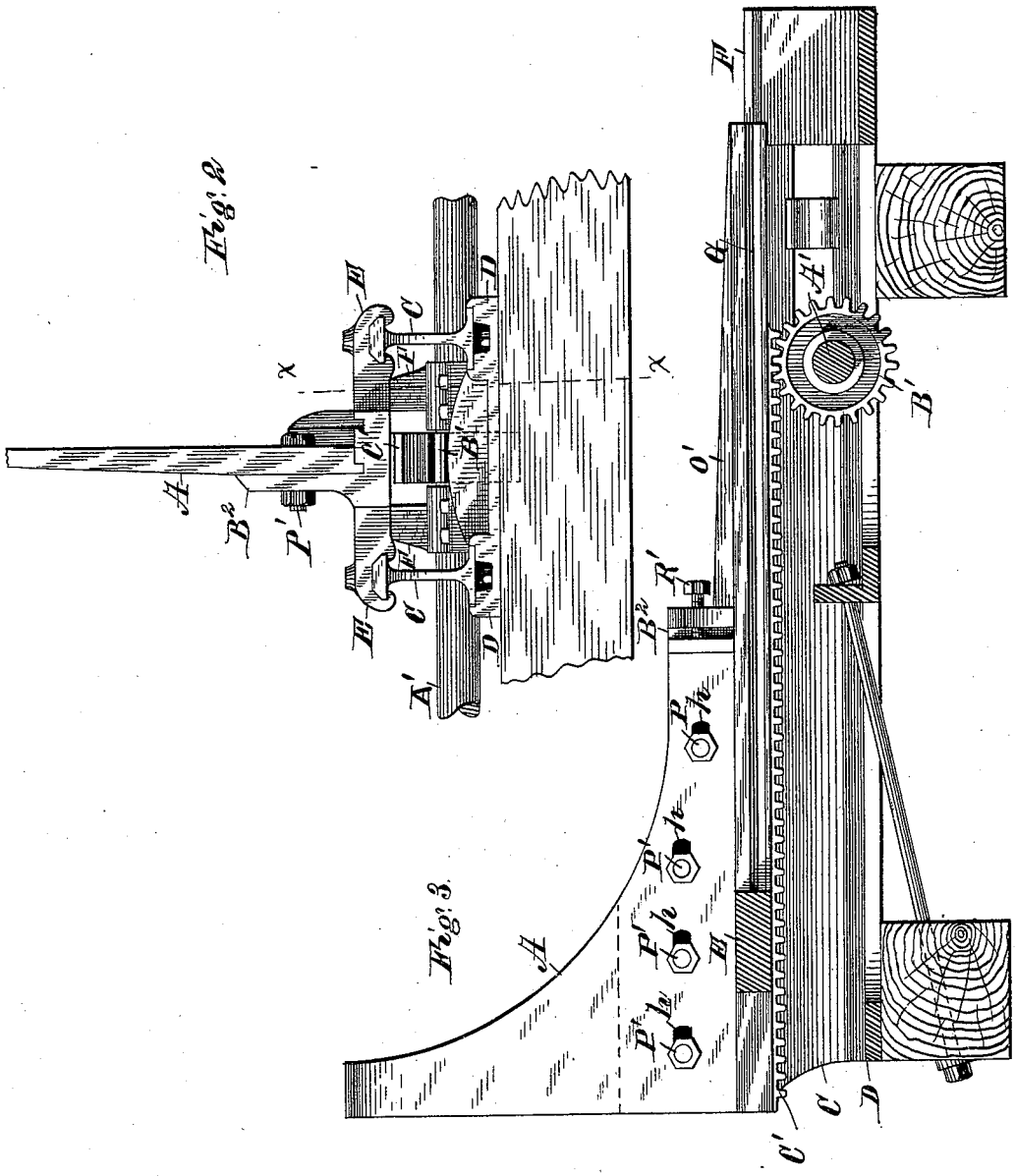

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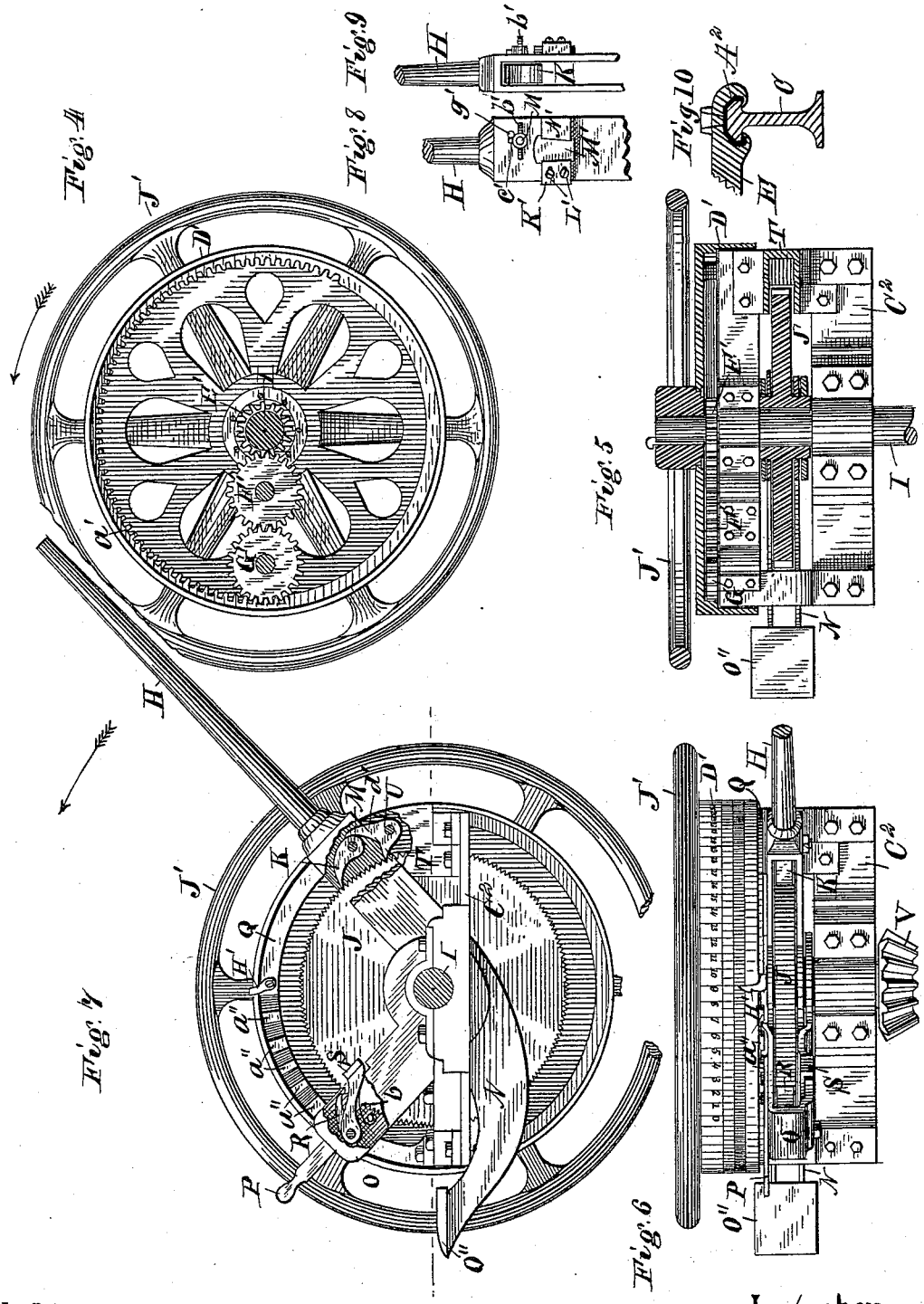

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UNITED STATES PATENT OFFICE.

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SET-WORKS FOR SAW-MILLS.

SPECIFICATION forming part of Letters Patent No. 347,908, dated August 24, 1886.

Application filed April 11, 1885. Serial No. 161,910. (No model.)

To all whom it may concern:

Be it known that I, HARLOW M. WILCOX, a citizen of the United States, residing at Wausau, in the county of Marathon and State of Wisconsin, have invented certain new and useful Improvements in Set-Works for Saw-Mills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in set-works for saw-mills; and it consists in certain improved devices, and in certain combinations and arrangement of devices, as hereinafter more fully set forth.

In the drawings, Figure 1 represents a perspective view of the set-works embodying my invention. Fig. 2 is an end view of the head-block and supporting-ways with dog removed. Fig. 3 is a vertical section drawn on line *x x* of Fig. 2. Figs. 4, 5, 6, 7, 8, 9, and 10 are details.

Like parts are represented by the same reference-letters throughout the several views.

The head-block or knee A, dog B, and all the parts that move bodily therewith are supported midway between and upon two separate ways, C C, whereby a space is provided beneath the dog and jack-head between said ways for the reception of sawdust, bark, or such refuse matter as otherwise might obstruct their forward movement. For convenience of construction the ways C are formed of ordinary steel railway-rails, and they are secured to the supporting-timbers upon the bed-plates D. The supporting-arms E E of the head-block are cast to loosely fit said rails, when Babbitt metal is poured between the bearings of said arms and the ways, as shown at A^2, Fig. 10, which form a smooth closely-fitting bearing-surface within said arms for said rails, which bearing-surfaces are cheaply and easily made.

The rear end of the carriage is supported by two gibs, F F, which have their bearings in the grooves G. Said gibs are made adjustable toward and from each other upon the base D, so that by loosening their retaining-bolts *a a* they may be set to take up wear, either of the gibs or the bearings of the carriage. To permit of such adjustment of the gibs F the holes for the reception of the retaining-bolts of the gibs are made slightly elongated, as shown. A forward motion is communicated to the jack-head and dog with each cut of the saw by a rearward turn of the lever H, as indicated by the arrow. The lever H turns freely on the shaft I, and motion is communicated from said lever first to the ratchet-wheel J by the pawl K, which pawl is attached to said lever by pivot M. The short arm N of said lever is provided with a foot-bearing or step, O″, upon which the operator may place his foot when turning the lever, and thus aid by his gravity in moving the set-works.

The rearward movement of the lever H is limited by the adjustable stop O, to correspond to the various thicknesses of the lumber cut, the stop being set rearward, or farther from the lever, for thick material, and forward, or nearer to the lever, for thinner material. The stop is set at the various points of adjustment by the spring-lever P, which lever is rigidly affixed to the side of said stop and engages between the teeth *a″* of the stationary segmental plate Q, said lever being thrown by its own elasticity toward the right between said teeth, and is drawn out from between them by the operator when setting the stop. Thus as the lever H is turned rearward the pawl K engages in said ratchet-wheel J and turns said wheel with it until said lever H is arrested by contact with said stop. To prevent said ratchet-wheel J from turning by its momentum still farther past the point of contact of said lever and stop, the pawl R is provided, which pawl is pivoted to the side of the said stop, and is kept out of contact with said ratchet-wheel while the same is being moved by the lever by the spring *b;* but when said lever is near the point of contact with said stop it is brought in contact with the arm S of said pawl R, whereby said spring *b* is depressed and said pawl R is brought in contact with the teeth of said ratchet-wheel, and thus

causes said wheel to stop simultaneously with the lever.

The lever H is always thrown forward to the same point, and is stopped by contact with the fixed bearing T, (shown in Figs. 1, 5, and 7,) the length of its stroke being always limited solely by the adjustment of the stop O at the extremity of its rearward movement, as mentioned. To prevent the ratchet-wheel J from turning forward with the lever or otherwise, I provide a stationary pawl, U, which is pivoted to the inside of the stop T.

The teeth of the ratchet-wheel J are V-shaped, and are equally adapted to engage pawls inclined from either direction.

The ratchet-wheel J is rigidly affixed to the shaft I, and said shaft consequently turns a partial revolution with each rearward movement of the lever H, the length of such movement corresponding to the adjustment of the stop O, as mentioned. From the shaft I motion is communicated to the jack-head and dog through the beveled gears V and W, shaft A′, pinion B′, and rack C′. The mechanism for transmitting the motion of the shaft A′ through said gears and rack-bar is of the ordinary construction.

D′ is an index-wheel, by which the forward movement of the jack-head and dog is indicated, and by which the operator of the set-works can readily ascertain just what proportion of the log remains to be cut. The index-wheel D′ turns loosely upon and independently of the shaft I, and a slow motion is communicated to it from said shaft I through the chain of gears E′ F′ G′. The gear E′ is rigidly affixed to the shaft I and turns with it. Thus as the shaft I performs one revolution but a small fraction of a revolution is communicated through the gears E′, F′, and G′ to the index-wheel, the motion being so reduced by said gears as to cause the index-wheel at its periphery to move the exact distance that the log is fed forward by the set-works; and the index-marks on the wheel are made in inches and fractions of inches, so that the operator may readily ascertain by the movement of the index-wheel beneath the pointer just the thickness of the log, in inches, remaining to be cut, as mentioned.

To the side of the stationary plate Q is attached at a fixed point the index-finger H′, which, as the index-wheel, with its scale, passes beneath it, indicates the forward movement of the log. The log having been all cut, the dog and jack-head are drawn back again in position for the first cut of another log by turning back the fly-wheel J′, which is rigidly connected to the shaft, as shown in Fig. 5, when it is obvious that by thus reversing the movement of the shaft I a rearward motion will be communicated through the connecting gears and shafts to the dog and head-block. Preparatory to thus drawing back the dog and head-block, it becomes necessary to disengage the pawls K and U from the ratchet-wheel J, so that said ratchet-wheel will be free to turn back also to the starting-point, as it must necessarily be caused to by the action of the chain of gears E′ F′ G′, with which it is connected to said shaft and fly-wheel. The said pawls K and U are thrown out of contact with said ratchet-wheel simultaneously by turning the supporting-pin M of said pawl K. The pin M is rigidly affixed to said pawl K, and projects through the side of the lever, as shown in Fig. 8, and has thumb pieces or lugs *b′* attached, by which said pin and pawl are readily turned and thrown out of contact with the teeth of said ratchet. The pawl U is provided with an arm, *d′*, which bears against said pawl K, whereby as the pawl K is thrown out from the ratchet it raises said pawl U also. As said pin is turned, it is drawn forward slightly, so as to permit lug *c′* to pass the end of a stop or pin, *g′*, when said pin is pushed inward again until lug *c′* engages against said stop *g′*, whereby said pin M is prevented from turning back, and whereby said pawls are both retained out of contact with said ratchet-wheel as the same is rotated forward, as mentioned. The jack-head and dog being thus drawn back, the thumb-nut *b′* is drawn forward until it escapes said stop *g′*, when said pawls K and U drop of their own gravity in contact with said ratchet-wheel again.

To provide against any lost motion of the operative mechanism, which might diminish the action of the lever H, and which might make it desirable to slightly increase or diminish the effect of its forward stroke, I provide an adjustable bearing, K′, on said lever, which may be so set as to slightly extend in front of said lever, thereby shortening the stroke of the same; or said bearing may be set back, so as to slightly increase the length of the stroke of said lever, and thus be nicely adjusted at any time to give the exact movement to the mechanism desired. The bearing K′ is attached to said lever by set-screws L′, passing through elongated holes therein, which, when said screws are loosened, permit said bearing to be moved in either direction—forward or rearward. In addition to said set-screws, a key, M′, is interposed between said bearing and a stationary shoulder, N′, which prevents said bearing from moving when brought in contact with the stop O.

To further provide for any defect in the forward movement of the jack-head and dog, as may arise by a slight twist in the shaft A′, or by the wear of the pinions, the jack-head A is adjustably secured to the vertical flange B^2 of the carriage O′ by bolts P′, operating in slots *h*. The bolts P′ being slightly loosed, said head may be moved slightly forward or rearward, as required, to remedy any defect or inaccuracy in the operative mechanism, as mentioned, when the bolts are again tightened and said head-block and the dog attached thereto are secured in place, and the machine thus kept in condition to do perfect work. When the head-block is thus adjusted in place, the set-screw R′ is adjusted against it, as

shown in Fig. 3, whereby said head-block is held more firmly in place and enabled to resist the backward pressure to which it is subjected when brought in contact with a log.

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

1. The combination, with the carriage O′, provided with vertical flange B^2, of the jack-head A, provided with elongated slots *h*, for the reception of the retaining-bolts P′, retaining-bolts P′, and set-screw R′, said bolts being adapted to permit of the horizontal adjustment of said jack-head, substantially as set forth.

2. In set-works for saw-mills, the combination of gibs F F, adjustably secured to the supporting-base D by retaining-bolts *a a*, supporting-base D, reciprocating carriage O′, provided with a horizontal groove, G, for the reception of the supporting ends of said gibs, supporting-arms E E, and rails C C, substantially as and for the purpose specified.

3. The combination, with shaft I, of the two-armed lever H, pivoted upon said shaft, foot-rest O″, attached to the lower end of the short arm of said lever, and pawl K, adapted to engage in the teeth of the ratchet-wheel J, and wheel J, supported upon the pivotal shaft of said two-armed lever H, substantially as set forth.

4. The combination, with the adjustable stop O, provided with a locking-lever adapted to engage the teeth of the stationary plate Q, of the pawl R, provided with arm S, spring *b*, and ratchet-wheel J, said pawl being adapted by contact of the lever H with said arm S to engage the teeth of said ratchet-wheel J and arrest its movement at the point of contact of said lever with said arm, substantially as set forth.

5. In set-works for saw-mills, the combination, with the gear-shaft I, of the fly-wheel J′ and pinion E′, rigidly affixed thereto, index-wheel D′, turning freely on said shaft and provided with internal gear, *a′*, pinions F′ and G′, supported in journal bearings of the frame, and adapted to communicate motion from the pinion E′ to said index-wheel as said shaft I is turned, and pointer H, supported at a fixed point above the index-marks of said wheel, the movements and spaces of said index-wheel being adapted to correspond with and indicate a corresponding forward and rearward movement of the jack-head, and such movement be readily observed by the operator, substantially as set forth.

6. The combination, with the pawl U, provided with arm *d′*, adapted to bear upon the pawl K, pawl K, pin M, projecting through the sides of the retaining-slot in the lever H, thumb-lugs *b′*, pin *g′*, and lug *c′*, said lug *c′* and pin *g′* being adapted, through said pin M, to hold said pawls K and U out of contact with the ratchet-wheel J as the same is turned forward with the gear-shaft I, substantially as set forth.

7. The combination of lever H, adjustable block K, located in a retaining-recess in said lever H, retaining-screws L′, and adjusting-key M′, interposed between said adjustable block and stationary shoulder N, affixed to said lever H, substantially as and for the purpose set forth.

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

HARLOW M. WILCOX.

Witnesses:
C. A. WILLIAMS,
J. F. EUSTER.