(No Model.) 2 Sheets—Sheet 1.

W. J. MORDEN.

RAILWAY CONSTRUCTION.

No. 481,368. Patented Aug. 23, 1892.

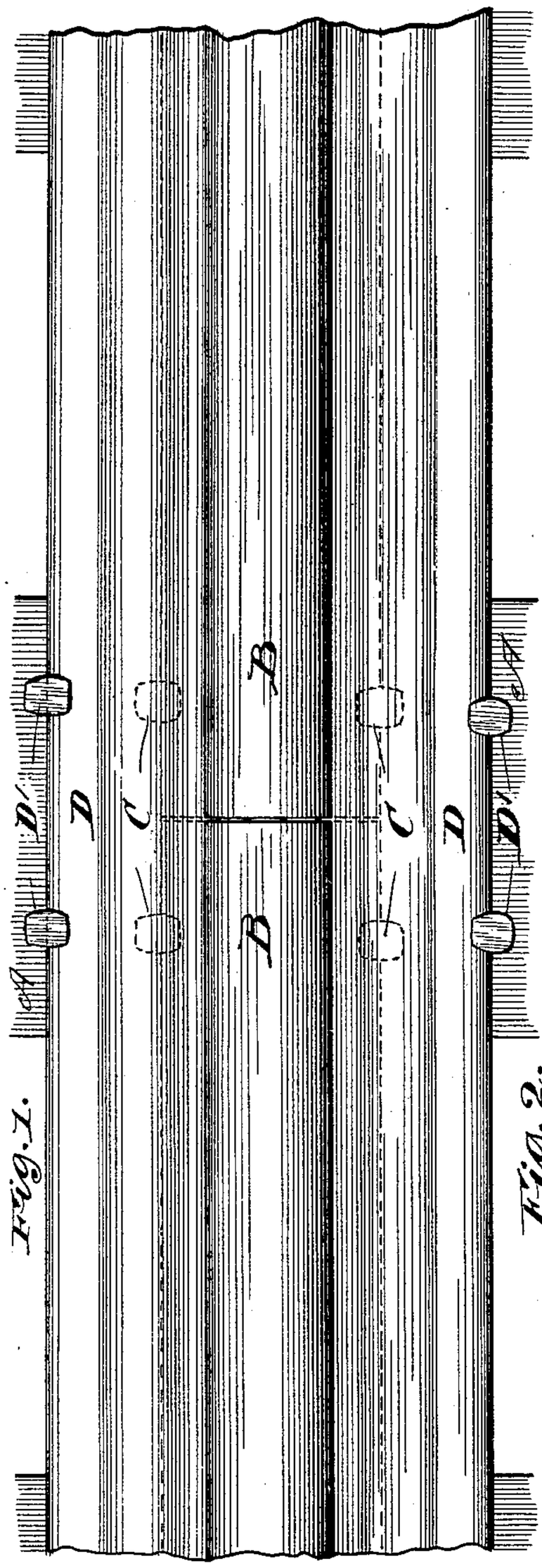

Fig. 1.

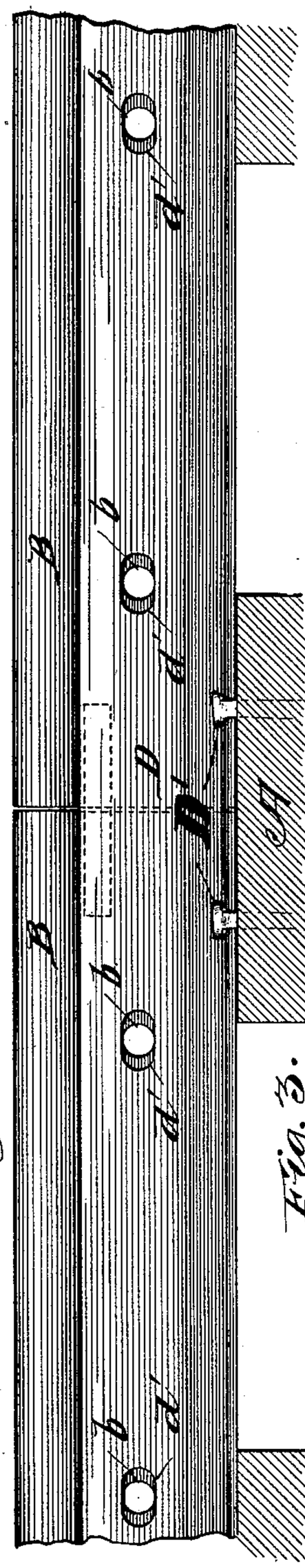

Fig. 2.

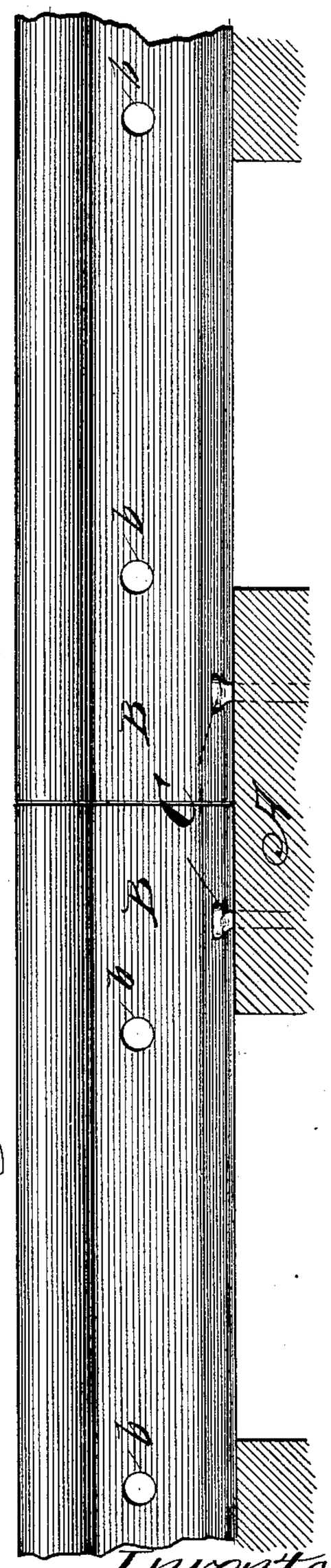

Fig. 3.

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Fig. 4.

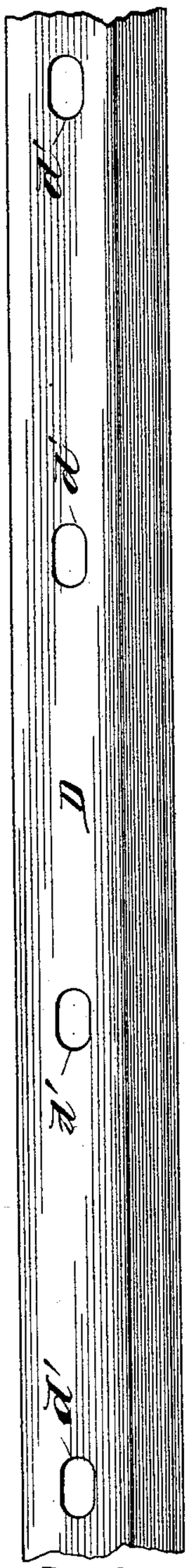


Fig. 5.

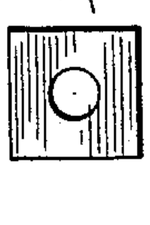
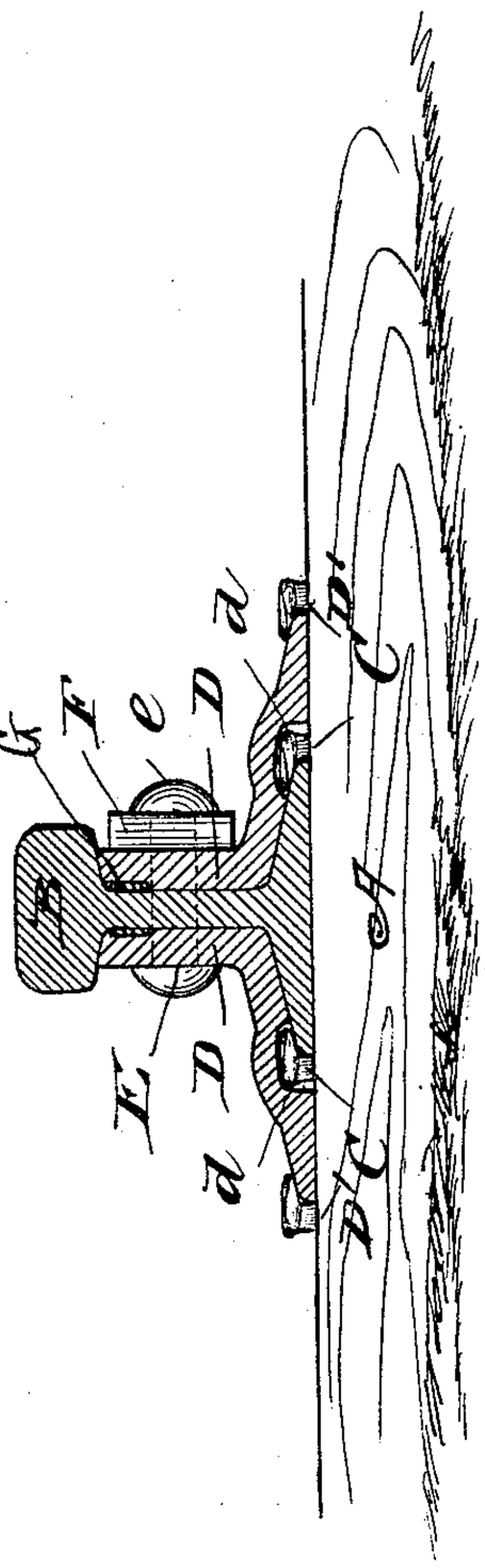


Fig. 6.



Witnesses,
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UNITED STATES PATENT OFFICE.

WILLIAM J. MORDEN, OF CHICAGO, ILLINOIS.

RAILWAY CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 481,368, dated August 23, 1892.

Application filed November 23, 1891. Serial No. 412,790. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. MORDEN, a citizen of the United States, residing at Chicago, Illinois, have invented certain new and useful Improvements in Railway Construction, of which the following is a specification.

The object of my invention is to provide efficient means for securing railway-rails to the ties. A frequent cause of derailment of trains is the so-called "spreading" of the rails. The term "spreading" is a misnomer, the fact being that the rails do not spread laterally without first turning over, and the present tendency toward the use of rails having high webs increases this danger of tipping the rails, particularly on curves, where the strain is exerted laterally against the head of the rail. So long as the spikes hold in the ties it is impossible to force the bases of the rails apart without turning one or both of them over; but the constant vibration of the rails, as is well known, operates to pull the spikes, and as soon as the rail thus becomes loose it is in danger of being toppled over, owing to the lateral strain on its head. Any construction which increases the height of the head of the rail above the tie without at the same time broadening or strengthening the base thereof is therefore mechanically incorrect, and the principle involved in my invention is that of broadening the base in correspondence with the elevation of the tread and at the same time of covering the heads of the spikes which secure the rail to the track, so as to prevent their withdrawal by vibration or by evil-disposed persons. To these ends I secure the track-rail to the ties in the common way, primarily, and then employ plates or brace-bars having one member adapted to fit beneath the head of the rail, against the web, and upon the foot thereof and with a marginal portion overlapping the heads of the rail-spikes and resting upon the ties. To secure the parts at suitable intervals, the webs of the rails are perforated and the bars are apertured to correspond, except that the apertures thereof are elongated to provide for expansion and contraction. Rivets are then passed through the apertures, and by preference washers are passed over the rivets and the end of the latter headed down over the washers. The bars have the under sides of their horizontal members continuously grooved to form seats for the rail-spikes, and their margins which rest upon the ties are preferably secured thereto by other spikes. By this means the heads of the rail-spikes are completely covered, so that they are absolutely prevented from withdrawal except by the raising of the spikes which hold the bars to the ties. The bearing of the rail upon the tie is thus practically widened and an efficient check afforded against overturning by lateral strain. The bars are continuous, being secured end to end, and thus they connect the track-rails together and dispense with the usual fish-bars. In case the rail breaks the bars prevent separation of the parts, whereby derailment or other accident might occur. These long bars are also provided with longitudinal grooves in their vertical portions, which grooves form seats for a bar or wire of suitable conducting material, serving to electrically connect the track-rails, and thereby adapting the latter to serve as conductors of electricity. This feature of the invention is incidental to the main purpose and object of the invention, but which is peculiarly adapted thereto, because it furnishes a conductor protected from moisture and from outside interference. The structure afforded by my invention is a safeguard against the malicious destruction of tracks, because the rail-spikes are entirely concealed from view and their withdrawal is rendered impossible except by cutting the rivets securing the bars to the track-rail, which operation would require such time and labor as to frustrate attempts of this sort.

In the accompanying drawings, Figure 1 is a plan view of a track-rail secured by the side bars in accordance with my invention. Fig. 2 is a side elevation of the same with the rivets removed. Fig. 3 is a similar view showing the rails with the bars removed. Fig. 4 is a side elevation of the bar. Fig. 5 shows the washer; and Fig. 6 is a cross-section of the track-rail and bars, showing the ties in side elevation.

In the drawings, A represents the tie; B, the railway-rail, which may be of the usual construction; C, the spikes, which secure it to the tie; and D represents the bars. These bars may be conveniently rolled out, and in general terms would be designated "angle-

bars." The upright member thereof fits beneath the head of the rail B, against its web, and upon the upper side of its foot and projects beyond the edge of said foot, so as to take a bearing upon the ties. The under side of the horizontal member of this bar has a continuous groove *d*, which provides seats for the heads of the rail-spikes, and the groove is preferably formed by rolling the plate with a swell over the groove, so as not to thin the metal. The rail B is perforated, as at *b*, for the passage of the rivets, and the upright members of the bars have elongated apertures *d'* for the passage of the same rivets.

E represents the rivet having the usual rounded head and its shank passed through the apertures of the bars and the perforations in the web of the rail. The washer F is placed over the projecting end of the rivet, which is then headed, as shown at *e*. The bars D are preferably secured to the ties by the usual spikes D'.

To adapt the track-rails to serve as electrical conductors, a groove G may be formed on the inner faces of the upright member of the bars D, as shown in the drawings, particularly Fig. 6, and so arranged that these grooves will register at the joints between the ends of the track-rails. Within these grooves are bars or wires of metal of high conductivity, and these conductors are clamped to the sides of the rails by the rivets which secure the bars thereto. An efficient conductor is thus provided which is protected from moisture and from meddlesome interference, alike easy and disastrous to the usual unprotected wire connections between the ends of railroad-rails.

It will be understood that the details of construction hereinabove described are not essential, although novel and preferable. The construction hereinabove described would be efficient even if the spikes which secure the bars to the ties were omitted, or if they passed through apertures in the horizontal members of the bars instead of engaging the edges or margins thereof. A valuable feature of this construction resides in the fact that these continuous brace-plates serve to maintain the ends of the track-rails in horizontal alignment and prevents the sagging of the rails, and what is known as "high and low joints," thus preventing the pounding of the truck-wheels, whereby the joints of the rails are battered and the rolling-stock injured. The bearing of the rails is thus made practically continuous, and is necessarily evenly distributed upon all of the ties.

I claim—

1. In means for securing track-rails, the combination, with the rail, of continuous brace-bars having one member thereof secured with the web of the track-rail and the other member thereof provided with seats to receive the heads of the track-rail spikes, substantially as described.

2. In means for securing railway-rails, the combination, with said rails, of continuous bars joined end to end and having members fitted beneath the head of the track-rail, against the web, and upon the foot thereof, grooves in the lower members of said bars to receive the heads of the track-spikes, and bolts or rivets for securing the bars and rails together, substantially as described.

3. In means for securing railway-rails, the combination, with rails having perforations through their webs, of angle-bars joined end to end and having elongated apertures registering with the said perforations, and horizontal members overlapping the track-rail spikes and secured to the ties, and bolts or rivets passed through said apertures and perforations to secure the bars and rails together, substantially as described.

4. In means for securing railway-rails, the combination, with said rails having perforations therein, of angle-bars having in their upright members elongated apertures registering with said perforations, the horizontal members of the bars provided with seats for and overlapping the rail-spikes, rivets having their shanks passed through said perforations and apertures, washers applied to the ends of said rivets, and the rivets headed over said washers, substantially as described.

5. The combination, with railway-rails, of continuous angle-bars secured therewith, substantially as described, whereby said bars serve as fish-bars to maintain the rails in alignment, and said bars having their lower members overlapping the rail-spikes, substantially as described.

6. In combination with railway-rails, continuous angle-bars secured therewith, substantially as described, such bars having upright members provided with grooves on their inner faces and metallic conductors inserted in said grooves, and means for securing the bars to the rails, whereby to clamp and protect the conductors, substantially as described.

WILLIAM J. MORDEN.

Witnesses:
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A. A. TAYLOR.