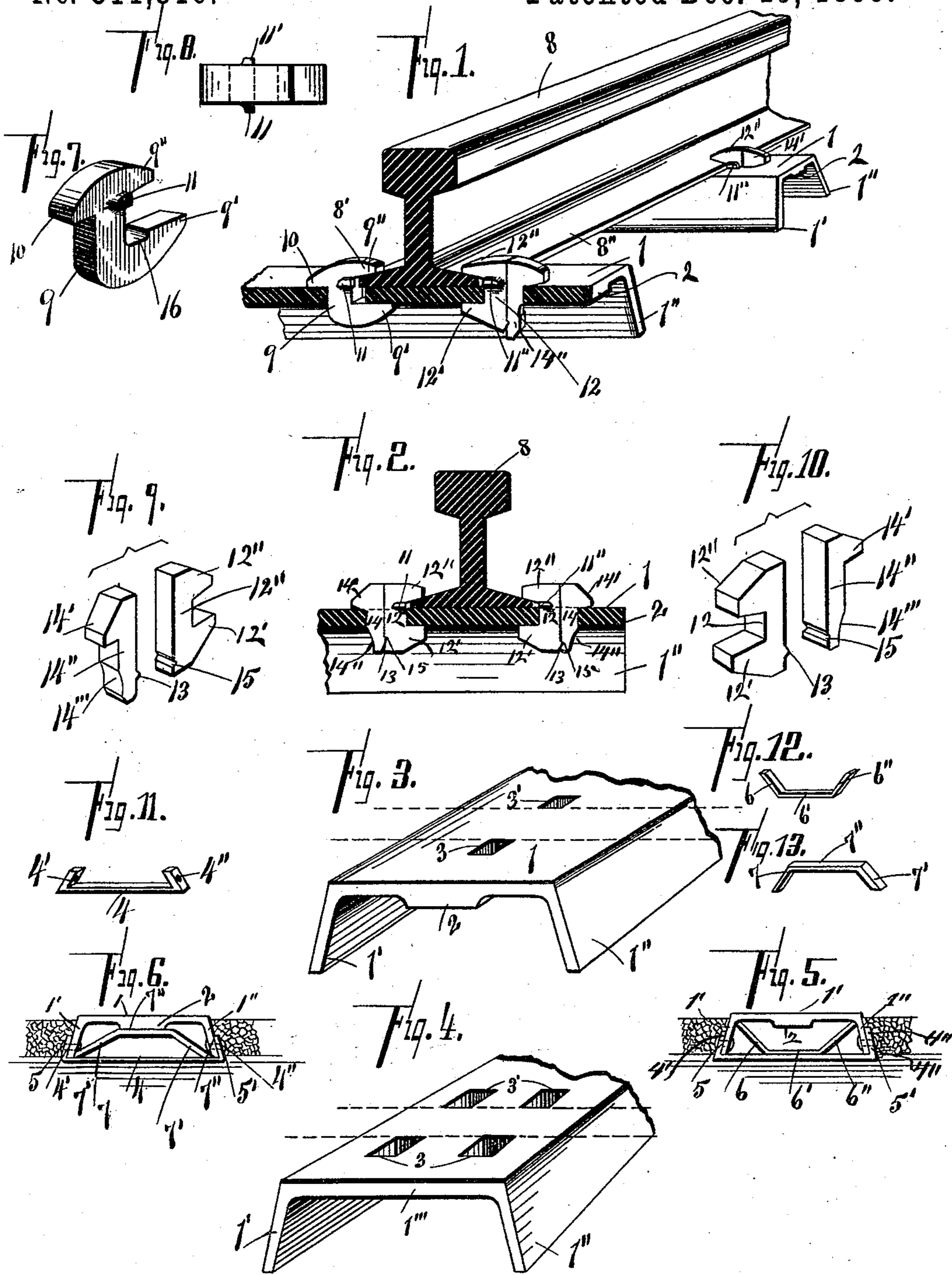


(No Model.)

T. M. BRINTNALL & H. C. BRADLEY.
RAILWAY TIE AND MEANS FOR SECURING TRACK RAILS THERETO.

No. 511,316.

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WITNESSES:

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UNITED STATES PATENT OFFICE.

THOMAS M. BRINTNALL, OF MEDINA, AND HOWARD C. BRADLEY, OF WARREN, ASSIGNORS OF ONE-HALF TO ROLLIN S. GIFFIN, OF CLEVELAND, AND BLAKE HENDRICKSON, OF MEDINA, OHIO.

RAILWAY-TIE AND MEANS FOR SECURING TRACK-RAILS THERETO.

SPECIFICATION forming part of Letters Patent No. 511,316, dated December 19, 1893.

Application filed April 12, 1893. Serial No. 470,123. (No model.)

To all whom it may concern:

Be it known that we, THOMAS M. BRINTNALL, a resident of Medina, in the county of Medina, and HOWARD C. BRADLEY, a resident of Warren, in the county of Trumbull, State of Ohio, citizens of the United States, have invented new and useful Improvements in Railway-Ties and Means for Securing Track-Rails Thereto, of which the following, with the accompanying drawings, is a specification.

Our invention relates to metallic cross-ties to which the rails of a railroad track are secured, and to means for securing rails to such metallic ties.

The object of our invention is a tie which, with the lightest weight of metal, will secure the greatest strength and endurance; and also an automatic locking device for securing the track rails to the metal tie, avoiding the use of all nuts and bolts, and securing simplicity of construction, effectiveness in operation, cheapness of production, and durability.

Our invention consists in the novel feature of construction described herein, illustrated in the drawings, and defined in the claims.

In the drawings which form part of this specification, Figure 1 is a section through a track rail and one of our ties, the braces under the tie being removed, and also illustrates in perspective the attachment of the track rail to one of our ties. Fig. 2 is a cross-section of a track rail and longitudinal section through one of our ties, and illustrates the application of a modification of one of the clamps and keys seen in Fig. 1. Fig. 3 is an enlarged broken perspective of our tie, and Fig. 4 is an enlarged broken perspective of a tie without one of the elements of our invention. Fig. 5 is an end view of one of our ties with lateral and diagonal braces, and Fig. 6 illustrates one of our ties with a modification of the diagonal braces seen in Fig. 5. Fig. 7 is a perspective view of our U-clamp, and Fig. 8 is a plan view of the same. Figs. 9 and 10 represent views of our blocks and keys. Fig. 11 is a perspective of our lateral brace, and Fig. 12 is a representation of the diagonal brace seen in Fig. 5, and Fig. 13 represents the diagonal brace seen in Fig. 6.

Our improved tie, seen in Figs. 1, 3, 5 and 6, consists of the flat surface 1 and the flanges 1' and 1''. Longitudinally thereof, on the under side, we form a reinforcing strip 2, to give the channel greater strength, and enable us to lighten the tie at other points.

The reinforced or thickened portion of the tie has a flat, broad under surface, and is of sufficient width to have the holes 3 and 3' cut through it, and when the fastening means are inserted in the holes, to permit them to bear upon the said flat under surface of the same, so that the tie is strengthened at the points where the greatest strain is brought to bear, thereby enabling other portions of the tie, where the strain does not come, to be made lighter, thus greatly reducing the cost of the tie.

Through the top of the tie are cut openings 3 and 3' for the insertion of the locking-clamps, blocks and keys, as hereinafter described.

Fig. 4 represents a tie, having openings 3 and 3' exactly like the openings 3 and 3' in Fig. 3, for the insertion of locking-clamps, blocks and keys, and has flanges 1' and 1'' like the channel illustrated by Fig. 3; but instead of employing a longitudinal reinforcing strip, the whole top of the channel, 1'', is made very heavy. The channel illustrated by Fig. 4 we employ at points where the track rails are jointed. For this reason four openings through the top 1'' of the channel are made to clamp the end of each meeting rail.

We employ a lateral brace 4, having lips 4' and 4'' to fit over the flanges 1' and 1'' of the channel to support the flanges of the channel. Rivets 5 and 5' pass through the lips 4' and 4'' of the lateral brace 4, and through the flanges 1' and 1'' of the channels. We prefer to use a diagonal brace interposed between the lateral braces 4 on the under side of the channel, as illustrated by Figs. 5 and 6. We prefer the form illustrated by Fig. 5. In this form the diagonal braces consist of a single piece forming the left slant 6, central plane 6' and right slant 6''. This form is illustrated in Fig. 12. If desired, the diagonal braces may be secured to the lateral brace 4 by means of rivets through the plane 6' and the lateral braces. In this form the upper ends of the

diagonal braces rest in the upper corners of the channel.

A modification of the diagonal brace is illustrated by Fig. 13, and its application is seen in Fig. 6. In this form, the slant braces 7 and 7' rest their lower ends in the corners formed by the flanges of the channel and the lateral braces, and the plane part, 7'', rests against the reinforcing strip 2 at the bottom of the top of the channel.

8 is the track rail, which is secured to the ties as illustrated. It will be seen that our fastenings provide two ways of securing the track rail 8 to the channels 1. One form is that illustrated by Fig. 1, and the other is that illustrated by Fig. 2. When the track rail is secured to the channel as illustrated by Fig. 1, we employ what we, for convenience, term a U-clamp, and a channel block and a key.

The U-clamp, 9, of our preferred construction, is illustrated by Figs. 7 and 8, and its application is seen in Fig. 1. In the U-clamp 9, the lower jaw 9', projects beyond the upper jaw 9''; and we provide a receding shoulder 10 and lateral lugs 11 and 11'. The office of the lugs 11 and 11' is to prevent the U-clamp from dropping clear through the openings 3 and 3', by the workmen, when said clamp is being put into position; and the purpose of the receding shoulder 10 is to form an extended bearing surface for impingement upon the top of the channel by any tipping inclination of the rail 8. Before the rail 8 is pushed into position on the channel 1, the U-clamp 9 is dropped through the hole 3', and the rail is then put upon the channel 1 and pushed back so that the flange 8' passes under the upper arm 9'' of the U-clamp. As the flange 8' is slanting, as indicated, it engages the inner face of the jaw 9'' before the outer edge of the rail comes into contact with the back of the U-clamp 9. In securing the opposite side of the rail 8 to the tie 1, we employ a block and key represented by Figs. 9 and 10. The preferred form is illustrated by Fig. 10, and is seen applied in Fig. 1, and on the right side of the rail in Fig. 2, while the other form or modification thereof is seen on the left side of the rail in Fig. 2.

12 represents a tie block which is dropped through the opening 3 and pushed up so that the jaws 12' and 12'' grasp the flange 8'' of the rail 8 and the top of the tie 1, as illustrated. On the back of said tie block is formed a bead 13. Said bead 13 is preferably placed below the under surface of the reinforcing strip 2. Said tie block 12 may be provided with side lugs 13'', which correspond to the lugs 11 and 11', for the purpose of keeping said block from dropping through the hole 3' when being placed in position. The tie blocks are shown with lugs 13 in Figs. 1 and 2, and without lugs in Figs. 9 and 10.

The key that we use with the tie block consists of the straight portion 14, having the shoulder 14', and being provided with a groove 15 which is adapted to receive the

bead 13 on the clamping block. The only difference between the forms of tie blocks and keys represented by Figs. 9 and 10 is that the bead 13 is upon the key 14 in Fig. 10, and in Fig. 9, the bead 13 is upon the key 14'', and the groove 15 is formed in the tie block 12. The lower end of the key, at the outside, is cut away as seen at 14''' to allow a slight spring of the metal near the end of the key. The U-clamp, the rail 8, and the tie block 12 being placed in position as described, the key 14 is inserted in the hole 3 back of the tie block 12 and driven down so that the lower end of the key springs out and allows the key to pass down to such point that the bead 13 rests in the groove 15. It will be seen that as the key is thus driven, when the bead 13 rests within the groove 15, the key becomes self-locking, and the rail is firmly and securely attached to the tie.

In Fig. 7 we have shown a notch 16 on the lower jaw 9' of the U-clamp 9. The object of the notch 16 is to make the U-clamp 9 more easy of insertion in the opening 3'.

Instead of using the U-clamp 9 upon one side of the rail and a channel block and key upon the other side, channel blocks and keys may be employed on both sides of the rail, as illustrated by Fig. 2. We prefer the manner of attachment illustrated by Fig. 1.

As the inclination of the flanges 8' and 8'' of the rail 8 engages the upper jaw 9'' of the U-clamp 9, and the upper jaw 12'' of the clamping-block 12, before the bottom of the U and the channel-block come in contact with the outer edges of the flanges 8' and 8'', it will be seen that provision is made for expansion, of the track rail 8.

In clamping the meeting ends of rails upon the channel illustrated by Fig. 4, the same means is applied and in the same manner, as at other points along the rails, and needs no further description.

It will be seen that our clamps, blocks and keys, and also our forms of braces may take on various modifications in mechanical details, and we do not, therefore, limit ourselves to the exact construction and combination of parts as illustrated and described.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A channel forming a railway tie, a lateral brace to support the flanges of the channel, diagonal braces interposed between the lateral braces and the under side of the channel, a U-clamp to secure one edge of a railroad track rail to the channel, and a self-locking key to secure the opposite edge of the track rail to the channel, substantially as illustrated and described.

2. A channel, a lateral brace to support the flange of the channel, and diagonal braces interposed between the lateral braces and the under side of the channel, substantially as illustrated and described.

3. A channel tie having a longitudinal rein-

forcing strip, a lateral brace to support the flange of the channel, and diagonal braces interposed between the lateral braces and the under side of the channel, substantially as illustrated and described.

4. In combination with a suitable railroad tie, provided with fastening holes in its top, a rail fastening consisting of two members, namely a clamp composed of a single piece of metal for holding one flange of a rail, and the other member comprising a clamping block and key comprising two pieces for holding the other flange of a rail, the clamp being seated in one of the holes of the tie and provided with an upper jaw which bears upon the top surface of the flange of the rail and a lower jaw which bears upon the under side of the top of the tie; the clamping block of the second member having an upper jaw which bears upon the top surface of the other flange of the rail, and a lower jaw which bears upon the under side of the top surface of the tie and having a straight back provided with a lug or bead near its lower end, and the key of the second member having a straight back corresponding to the straight back of the clamping block and provided near its lower end with a recess or groove to receive the lug on the clamping block, the said key also having a spring action at its lower end, so that in driving the key in place, its lower end striking the lug on the clamping block, will spring out until the recess in the key comes opposite said lug when the key springs back to its normal position and engages said lug thus locking the parts together, substantially as described.

5. In combination with a metallic tie, an approximately U shaped clamp made in one piece and having upper and lower jaws for holding one flange of a rail, a receding shoulder for preventing the clamp from being tilted backward and lateral projections for preventing the clamp falling through a fastening hole in the tie; and a clamping block and key comprising two pieces, the blocks formed with upper and lower jaws for holding the other flange of a rail and having a straight back formed with a lug near its lower end, and the key having a straight back and provided with a recess near its lower end for receiving the lug on the block, the said key being reduced at its lower end to give it a spring action, so that when the parts are adjusted, they will be held together automatically by spring pressure, substantially as described.

6. A metallic tie provided with a broad, flat, reinforcing portion running longitudinally with the top plate of the tie and which is approximately rectangular in cross section, rail fastening holes passed through the reinforcing portion, and fastenings passing through the holes and bearing with their lower jaws against the under side of the reinforcing portion, the fastening means comprising an approximately U shaped clamp

composed of a single piece with upper and lower jaws for holding one flange of a rail, and a clamping block and key comprising two pieces, the block having upper and lower jaws for holding the other flange of the rail and provided with a straight back having a lug near its lower end, and the key having a shoulder and straight back, which latter is provided near its lower end with a recess, the lower end of the key being reduced to give it a spring action so that in applying the key, its lower end striking against the lug on the clamping block will cause the key to spring outward and ride over said lug until the lug on the block comes opposite the recess in the key, when the key will spring back into place and hold the parts united by a spring lock, substantially as described.

7. In combination with a railroad tie, a rail fastening comprising an approximately U shaped clamping block having an upper and lower gripping jaw and a straight back portion with a lug formed on it near its lower end, and a key having a straight back portion formed with a recess near its lower end to receive the lug on the clamping block, and the lower end of the key having a spring action so that as the key is driven down its lower end will strike against the lug on the clamping block and ride over the same until the recess and lug coincide, when the key will spring back, the lug entering the recess and the parts be held in locked condition by spring pressure, substantially as described.

8. The combination with a suitable fastening for holding one flange of a rail, of a clamp consisting of a clamping portion and a key portion for holding the other flange of a rail, the clamping portion comprising an upper jaw which bears upon the top surface of the flange of the rail and a lower jaw which bears upon the under side of the top surface of the tie, and having a straight back provided with a lug or bead near its lower end; and the key portion provided with a straight back which bears against the straight back of the clamping block portion, and provided near its lower end with a recess or groove to receive the lug on the clamping block portion, the two parts being so constructed and arranged relative to each other that in applying the key its lower end will strike the engaging lug on the clamping block portion and ride over the same until the recess and lug coincide, when the key will spring back, the lug entering the recess and the parts be held in a locked position by spring pressure, substantially as described.

In testimony whereof we affix our signatures, in the presence of two witnesses, this 8th day of April, 1893.

THOMAS M. BRINTNALL.
HOWARD C. BRADLEY.

Witnesses:

J. A. OSBORNE,
DON M. OSBORNE.