

(No Model.)

3 Sheets—Sheet 1.

J. MURRAY.
RULING MACHINE.

No. 468,549.

Patented Feb. 9, 1892.

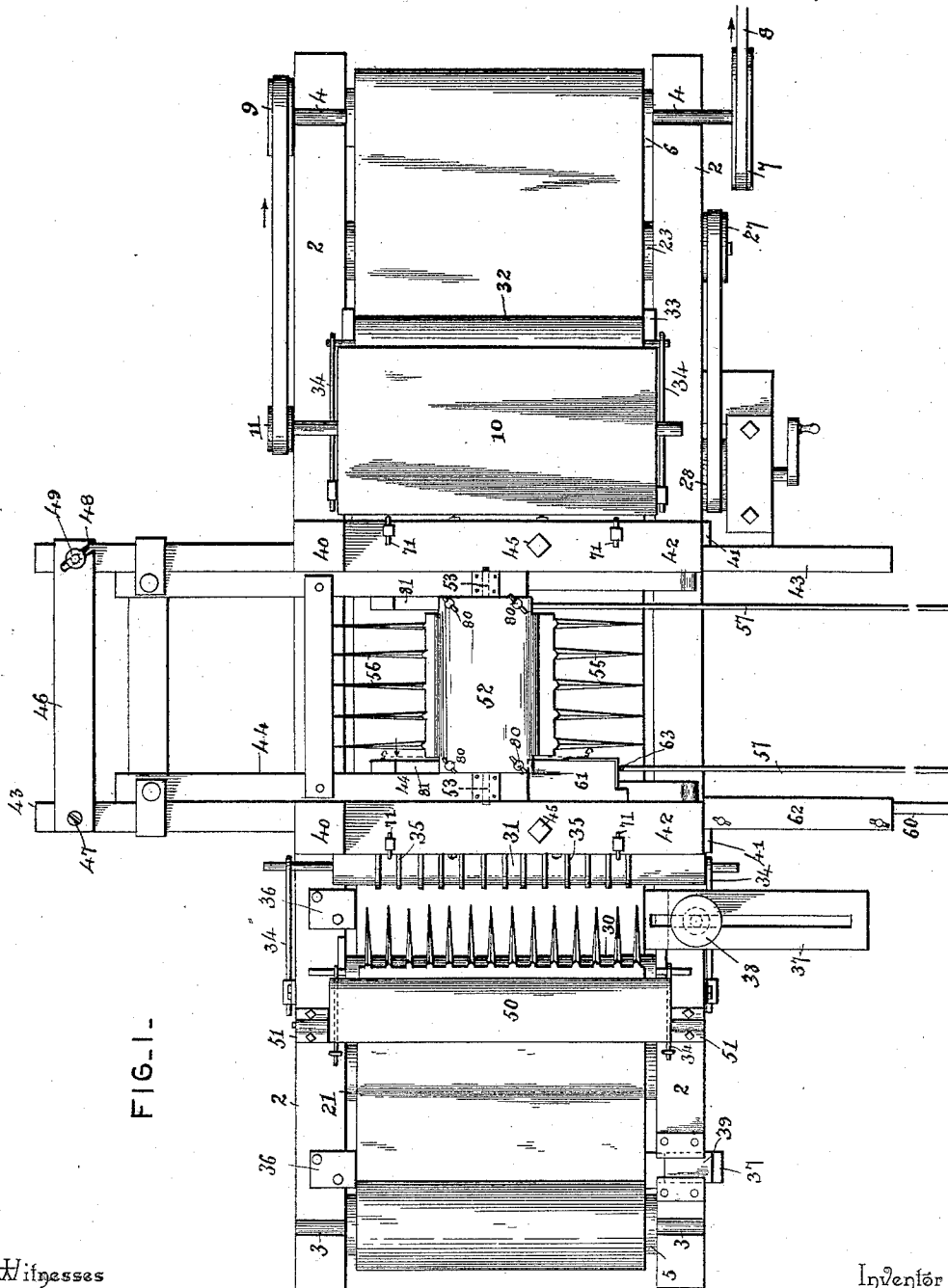


FIG. 1 -

Witnesses

Jas. K. McLathran

J. J. Collamer.

By his Attorneys,

Chas. Snow & Co.

Inventor

James Murray

(No Model.)

3 Sheets—Sheet 2.

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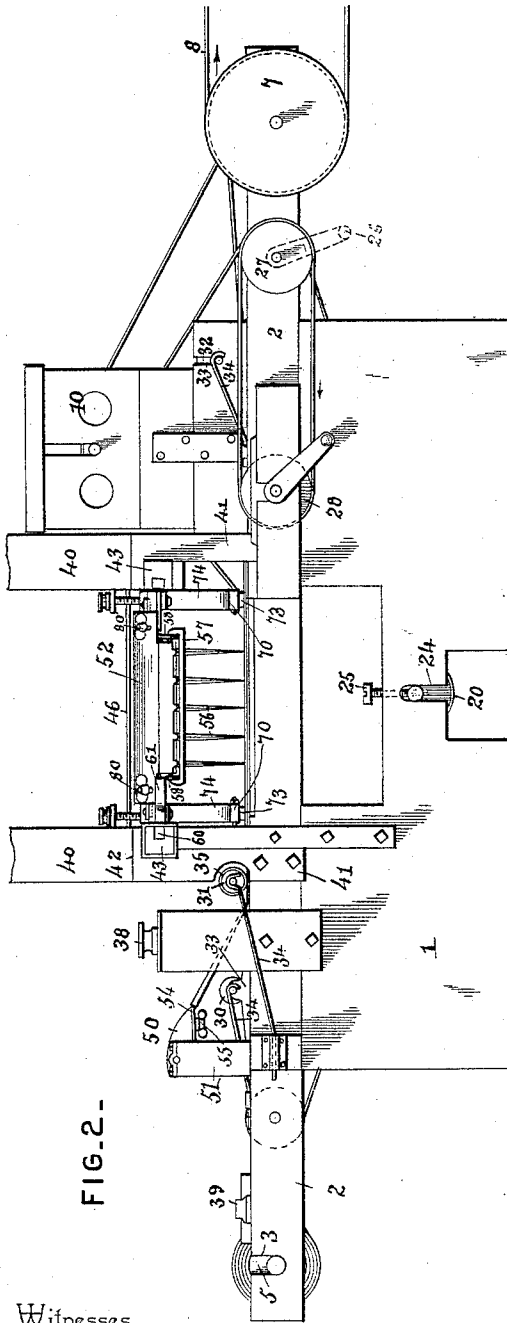


FIG. 2 -

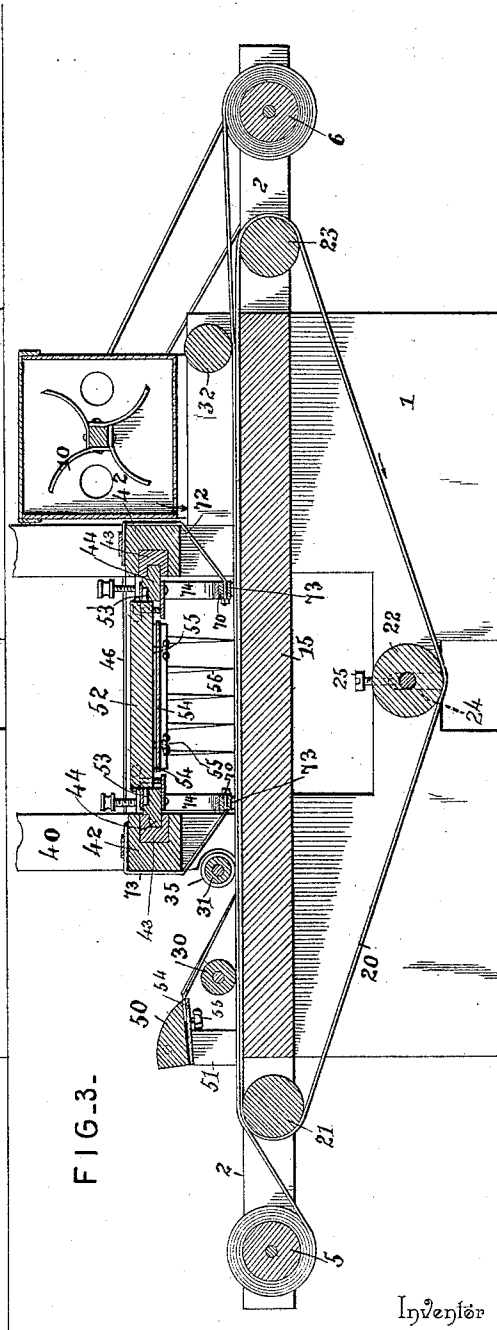


FIG. 3 -

Witnesses

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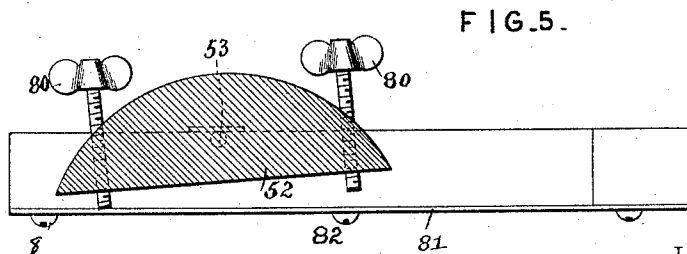
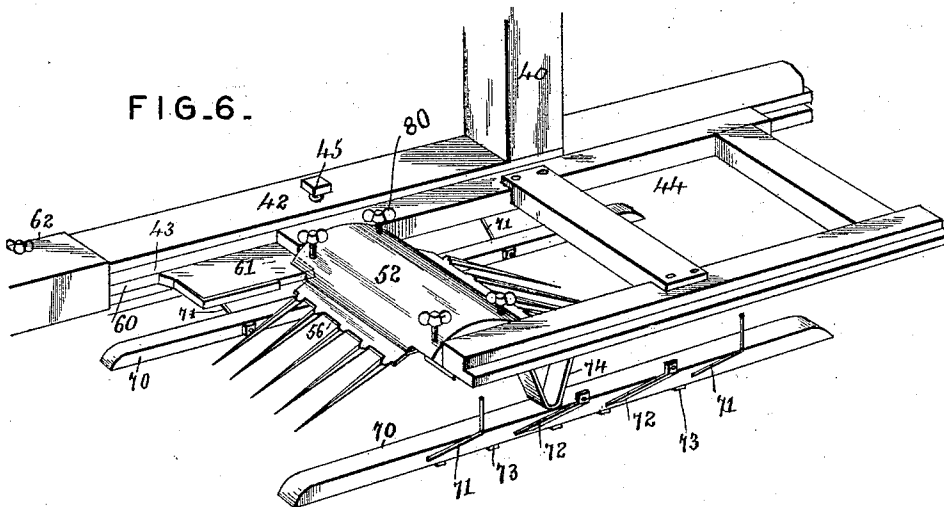
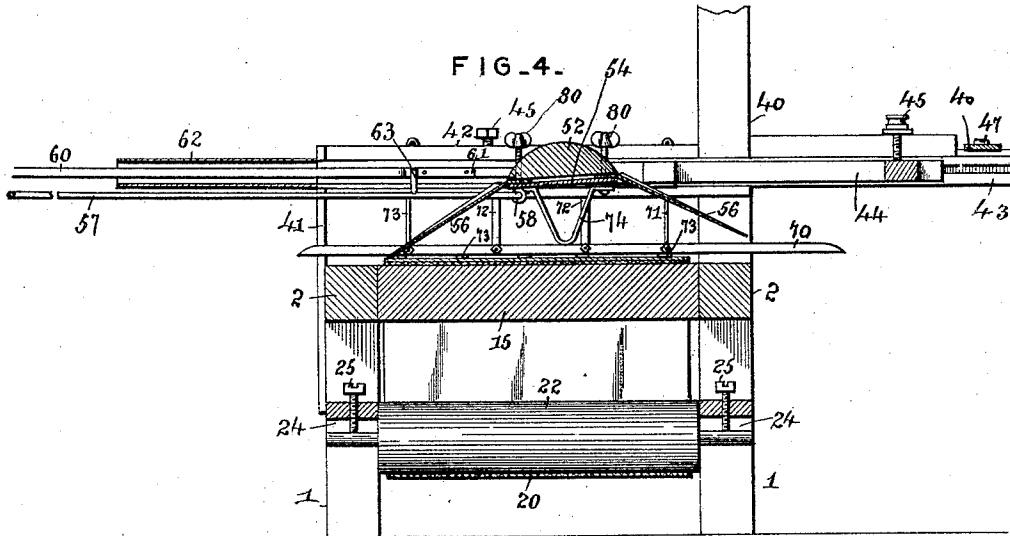
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3 Sheets—Sheet 3.

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Witnesses

Inventor

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UNITED STATES PATENT OFFICE.

JAMES MURRAY, OF HILLSBOROUGH, OHIO.

RULING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 468,549, dated February 9, 1892.

Application filed September 24, 1891. Serial No. 406,666. (No model.)

To all whom it may concern:

Be it known that I, JAMES MURRAY, a citizen of the United States, residing at Hillsborough, in the county of Highland and State of Ohio, have invented a new and useful Ruling-Machine, of which the following is a specification.

This invention relates to ruling-machines; and the object of the same is to produce a machine of this character which will rule paper in rolls or in sheets both longitudinally and transversely.

To this end the invention consists in a machine embodying the general and specific constructions hereinafter more fully described and claimed, and as illustrated on the three sheets of drawings, wherein—

Figure 1 is a plan view of this improved machine. Fig. 2 is a front elevation. Fig. 3 is a central longitudinal section showing the machine adapted for ruling paper in a roll. Fig. 4 is a central transverse section showing the machine adapted for ruling paper in sheets. Fig. 5 is an enlarged detail in section through the double pen-clamp on line 5 5 of Fig. 1. Fig. 6 is a detail of the carriage with its shoulders and the two stops.

Referring to the said drawings, 1 designates a base which supports parallel bars 2, comprising the main table. At the extremities of this table are open bearings 3 and 4, which respectively receive the shafts of the feed-roller 5 and the winding-roller 6. The latter carries on its front end a grooved pulley 7, which is connected by a belt 8 with a suitable source of power; but this belt is slightly loose, so that it may slip when necessary, as described below, and the rear end of this shaft may carry a pulley 9.

10 is a fan or blower of any suitable construction and located at any suitable point; but I preferably mount it above the table about where shown, and connect a pulley 11 on its shaft by belt with the pulley 9, by which means the fan is driven so as to impart a blast of air onto the face of the paper after it has been ruled.

Between the parallel bars 2 at points above the base 1 the table is solid, as shown at 15 in Fig. 3, and over this solid portion passes a felt or other fabric apron 20, which leads over

rollers 21, 22, and 23, journaled in the frame. The first roller is adjacent the feed-roller 5, and turns idly in its bearings. The second roller 22 is mounted in slots 24 in the base, and set-screws 25 bear upon its shaft, whereby it may be adjusted to tighten the apron 20, and the third roller 23 is journaled between the bars 2, adjacent the winding-roller 6, and may have a crank-handle 26 on the front end of its shaft; or, if the machine is long, may have a pulley 27, belted to another pulley 28 on the crank-shaft, as shown in Fig. 2.

I dispense with the usual endless cord belts for holding the paper down upon the endless apron by providing presser-rollers 30, 31, and 32, located about where shown and each having its shafts mounted in slotted bearings 33 and borne down by springs 34. The roller 30 is in advance of all the pens. The roller 31 is just in rear of the first brush or bank of pens, and it has rubber bands 35, removably mounted on its body and adapted to be moved longitudinally thereon, so that they will strike the paper between the lines which are ruled, and hence make no blots, and the roller 32 is preferably located just in rear of the fan 10 and need not be provided with these rubber bands, because the blast of air from the fan quickly dries the ink before it reaches this last roller.

36 are stationary guides on the rear bar 2, and 37 are adjustable guides on the front bar, these guides being mounted under set-screws 38 under wedges 39, or in any other suitable manner well known to the art, the object being that the operator can adjust them so as to properly guide the paper over the table and under the pens.

40 are posts rising from the rear bar 2, and these posts are connected with uprights 41, rising from the front bar by grooved cross-pieces 42. In the grooves of these pieces are located grooved guides or tracks 43, and 44 is a carriage having suitable tongues, which slide in the grooves of the tracks.

45 are set-screws through the cross-pieces 42, whereby the tracks may be adjusted when the parts become loose, and 46 is a plate connecting the rear ends of the tracks, one end being pivoted at 47 to one track, while the

other end is provided with an oblique slot 48, through which a set-screw 49 takes into the other track.

The pen-clamp 50 is pivotally mounted in posts 51, forward of the presser-roller 30, and is preferably of the construction shown in Fig. 3, except that that figure shows a double pen-clamp. The pen-clamp 52, which is located in the carriage 44, is double, as shown, and has pivots 53, by which it is pivoted between the side bars of the carriage. Each pen-clamp has a plate 54, removably clamped against its body by set-screws 55, and between the plate and body are located the removable pens 56, whose shanks are flat and whose points are grooved or guttered, as shown. When it is desired to adjust the ruling that the machine shall do, the plate 54 is loosened until the shanks of the pens can be moved or removed, as desired. The pens of the pen-clamp 50 project from only one side; but the pen-clamp 52 within the carriage is double—that is to say, pens project from each of its two sides. In order that these pens will work properly, I provide a handle 57, which is pivoted at 58 to the under side of the pen-clamp 52. When this handle is drawn on to move the carriage toward the front, it tips the pen-clamp on its pivots and then moves the carriage, thus causing the trailing pens only to touch the paper. In order that the point at which the pens shall touch the paper may be regulated, I provide a guide 60, sliding in the groove of one of the tracks 43 and having an enlarged inner end 61 abutting against the front end of the carriage and standing beneath the body of the pen-clamp 52. An adjustable sleeve 62 on the track surrounds the shank of the guide 60 and limits its forward movement. As the handle 57 is drawn on to move the pen-clamp 52 forward this guide moves also, and as the handle is pushed on a projection 63 on the handle strikes the enlarged inner end 61 of the guide and moves it to the rear along with the pen-clamp, while the inner extremity of this end stands under the pen-clamp and prevents it from tilting. When the point is reached where it is desired the pens shall commence to mark on the paper, the handle is lowered slightly, so that the projection 63 is dropped out of engagement with the end 61, and the continued movement of the handle pushes the pen-clamp off this end and causes it to tilt, as above described. If the paper be narrower than the endless apron 20, this device may be utilized for preventing the pens from marking on the apron until the edge of the paper is reached.

The roll of paper being applied to the feeding-roller, and the belt 8 placed upon the pulley 7 of the winding-roller, as soon as the latter commences to rotate and draw the paper beneath the pen-clamp 50, so as to make the longitudinal lines, it becomes necessary to provide some means for holding the paper stationary (the belt 8 slipping on the pulley 7)

while the transverse lines are to be drawn by hand, and this I accomplish in the following manner: 70 are transverse bars sustained by weak springs 71 at their ends and stronger springs 72 at their centers beneath the cross-pieces 42 and across the paper, and on the under side of each bar is a number of points or cushions 73, adapted to respectively puncture or bear upon the paper, as will be clear. On the carriage 44 is a pair of shoulders 74, which pass over these transverse stop-bars as the carriage is moved, the shoulders being of sufficient size to depress the bars and hold the paper against longitudinal movement while the carriage is passing, although such shoulders release the bars and allow them to rise when the carriage has passed. By reason of the fact that the central springs 72 are stronger the shoulders will depress only one-half of the stop-bars, except just as they are passing over the centers thereof.

The various parts being in proper position and under proper adjustment, the pens are applied and adjusted to draw the desired longitudinal lines on the strip of paper; but the endless apron need not necessarily be used when the paper is supplied in a long strip. The operator, standing in front of the machine, moves the pen-clamp 52 by the handle 57 whenever it is desired to draw transverse lines across the paper, and during such movements the operation of parts will be that described above.

When paper in sheets is to be ruled, the feed and winding rollers are taken off and the endless apron is applied, and in this case the presser-roller 31 is also removed; but otherwise the operation of the machine is substantially the same.

The degree of tilt of the double pen-clamp 52 is regulated by set-screws 80 through its body, whose lower ends strike plates 81, secured by screws to the side bars of the carriage 44 and projecting inwardly beyond the same.

What is claimed as new is—

1. In a paper-ruling machine, the combination, with a base, parallel bars carried thereby, and a solid table between said bars opposite the base, of rollers at the ends of said table, a roller having its shaft journaled in slots in the base, set-screws for adjusting the position of said shaft, an endless apron passing around all said rollers and over the table, and ruling-pens supported by said bars above the table, substantially as described.

2. In a paper-ruling machine, the combination, with a table and means for moving a flat strip of paper over the same, of a pen-clamp supported by the table and drawing lines on the said strip of paper, a presser-roller having rubber bands adapted to bear upon the paper between the ruled lines, slotted bearings for the shaft of said roller, and springs bearing said shaft downward, substantially as described.

3. In a paper-ruling machine, the combina-

tion, with the table, the pen-clamps, and means for passing paper over the table and under the pen-clamps, of a fan located upon the table near its delivery end and applying a blast of air to the face of the paper after all the lines have been drawn, substantially as described.

4. In a paper-ruling machine, the combination, with a table, a pen-clamp across the same, and means for moving the paper over the table and under the pen-clamp, of cross-bars above the table, tracks carried thereby, a carriage moving between said tracks, and a pen-clamp carried by the carriage, substantially as described.

5. In a paper-ruling machine, the combination, with a table, cross-bars above the same and having grooves in their adjacent faces, grooved tracks mounted in said grooves, and set-screws through the bars against the tracks, of a carriage having tongues sliding in the grooved tracks, a pen-clamp carried by said carriage, and means for moving the carriage, substantially as described.

6. In a paper-ruling machine, the combination, with a table, tracks above the same, a carriage moving on said tracks, and means for moving it, of means for moving the paper across the table at right angles to the length of the tracks, and a pen-clamp in the carriage making lines thereon in the length of its movement, substantially as described.

7. In a paper-ruling machine, the combination, with a table, tracks above the same, and a carriage moving on said tracks, of a pen-clamp pivoted between the side bars of the carriage, pens projecting from the opposite sides of said pen-clamp, and a handle pivotally connected with the pen-clamp body below its pivot in the carriage, as and for the purpose set forth.

8. In a paper-ruling machine, the combination, with a table, tracks above the same, a carriage moving in said tracks, a pen-clamp carried by the carriage, and a handle connected thereto and having a projection, of a guide moving in one of the tracks and having an enlarged inner end standing in the path

of the pen-clamp and of said projection, and a sleeve adjustably connecting said guide to the track, substantially as described.

9. In a paper-ruling machine, the combination, with the table, cross-pieces above the same, tracks carried by the cross-pieces, a carriage on said tracks, a pen-clamp in the carriage, shoulders on said carriage, and a handle for operating the carriage, of stop-bars located beneath said cross-pieces and having projections on their lower faces, a strong spring sustaining the center and weaker springs, the ends of each stop-bar, and means for moving the paper beneath said stop-bars, substantially as described.

10. In a paper-ruling machine, the combination, with a table, transverse tracks above the same, and a carriage sliding in said tracks, of a pen-clamp pivoted in said carriage, pens projecting from each side of the pen-clamp, and means for moving the carriage and simultaneously tipping the pen-clamp, so that the trailing pens only will touch the paper, as and for the purpose set forth.

11. In a machine of the class described, the combination, with the two tracks, a carriage moving on them, and means for moving the carriage, of cross-pieces supporting the tracks, a plate pivoted to one track and having an oblique slot, and a set-screw passing through said slot into the other track, substantially as hereinbefore set forth.

12. In a paper-ruling machine, the combination, with a table, tracks above the same, and a carriage moving on said tracks, of a pen-clamp pivoted between the side bars of the carriage, pens projecting from the opposite sides of said pen-clamp, and means for moving said carriage, as and for the purpose set forth.

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

JAMES MURRAY.

Witnesses:

A. D. WIGGINS,

B. F. LEE,

JOHN BOLLEDS.