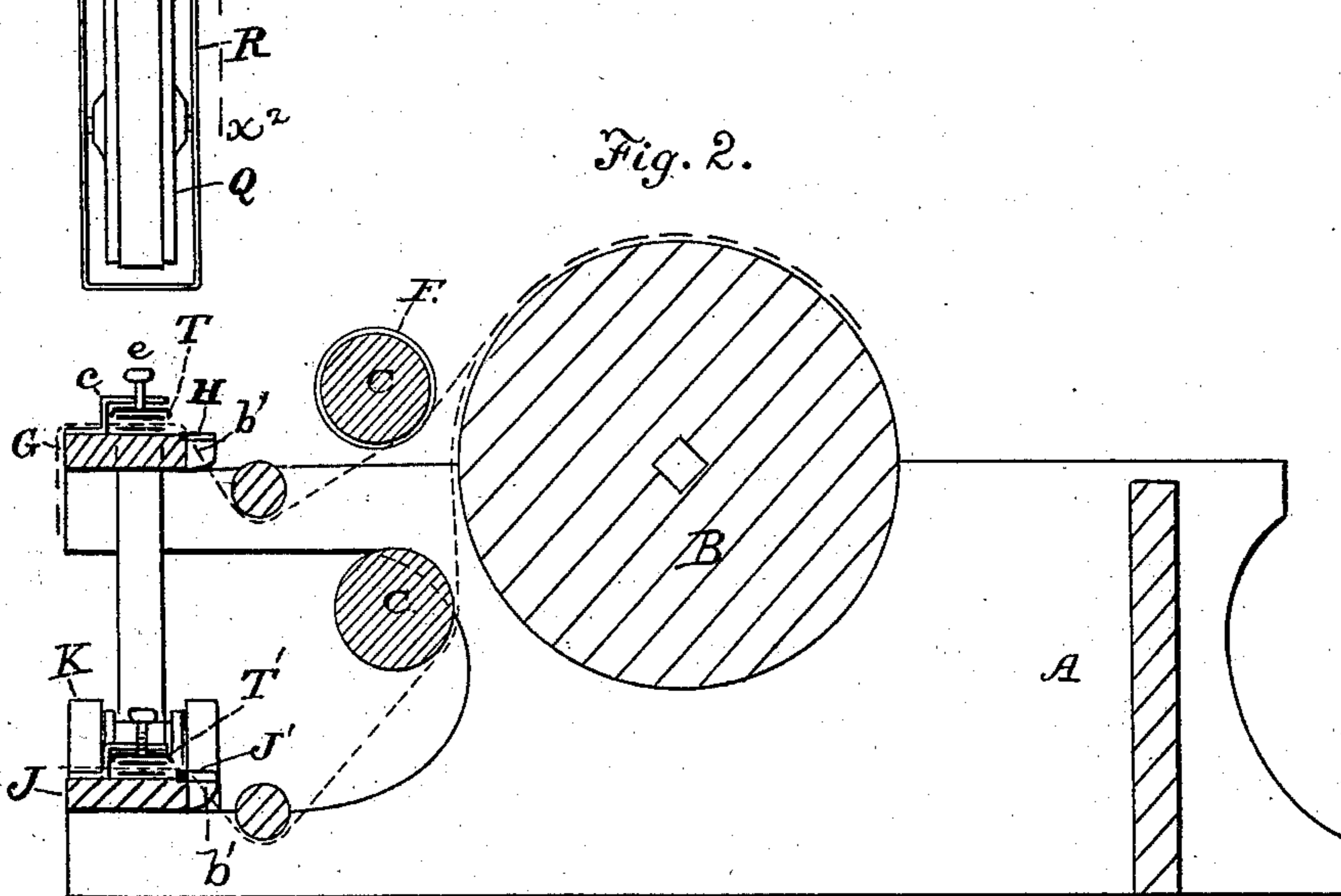
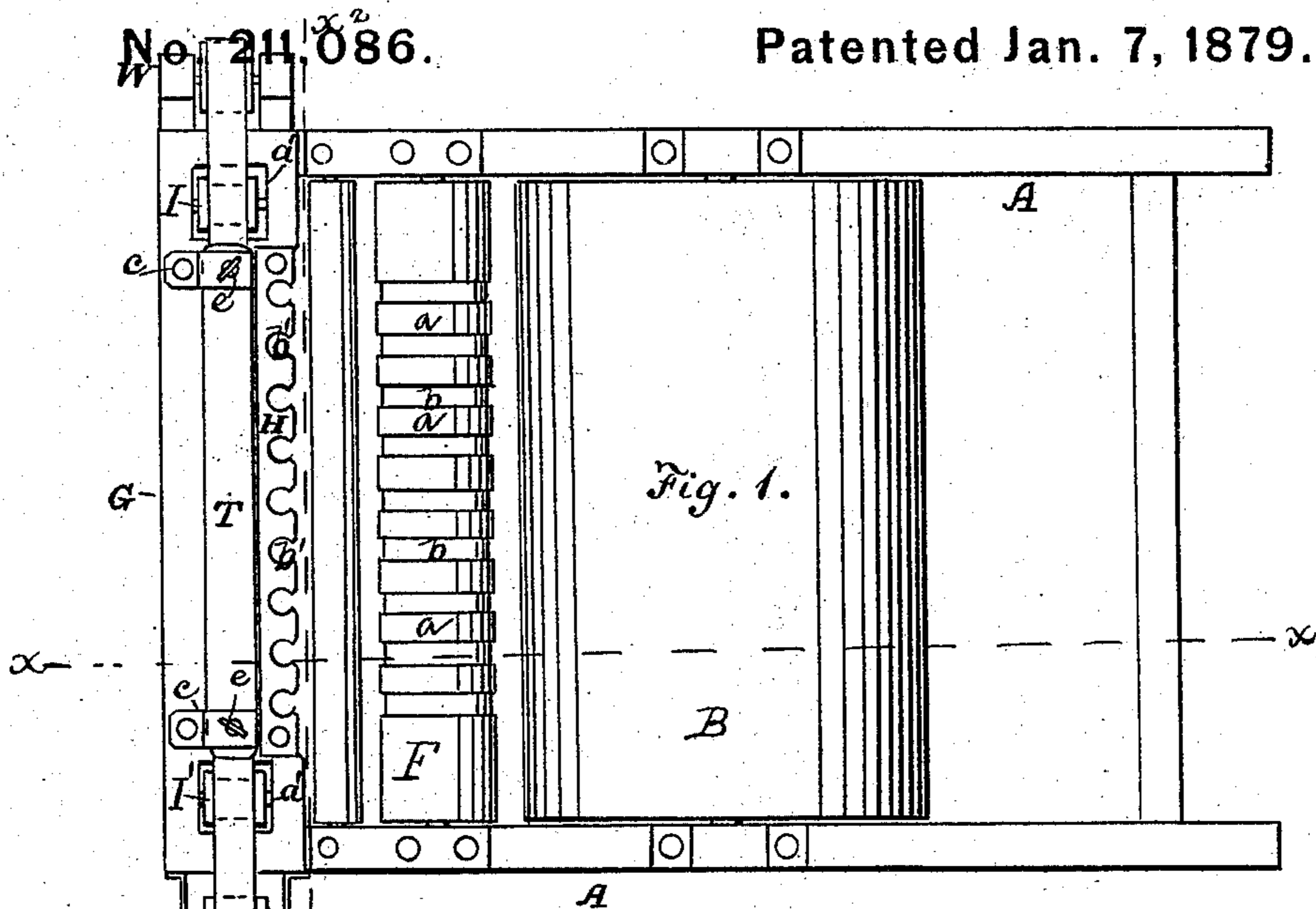


W. CHEETHAM & T. HALL.  
Wool-Condenser for Carding-Machines.

No. 211,086.

Patented Jan. 7, 1879.



Witnesses:  
John Donoghue.  
E. H. Bradford

Inventors:  
William Cheetham  
Thomas Hall.  
By H. J. Ennis  
Attorney.

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Fig. 3.

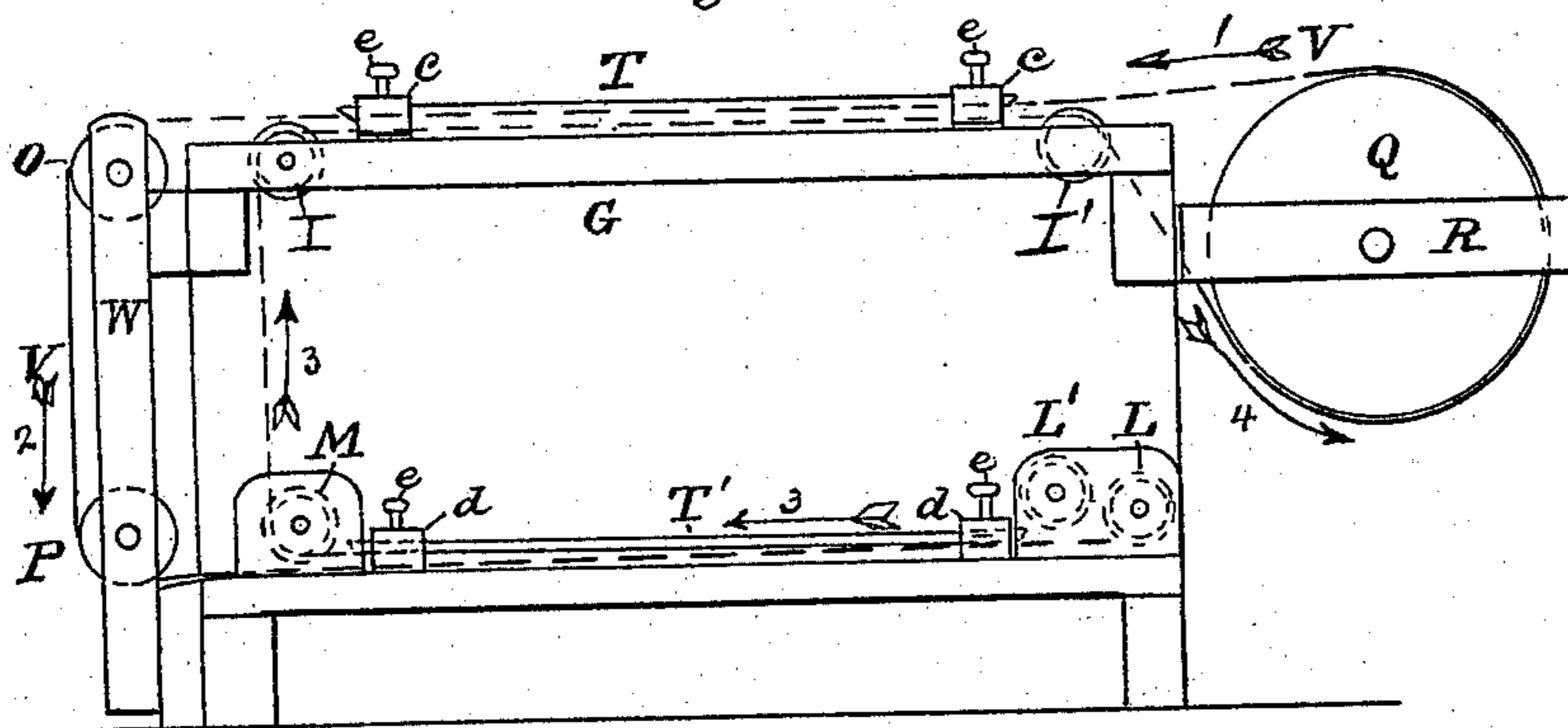
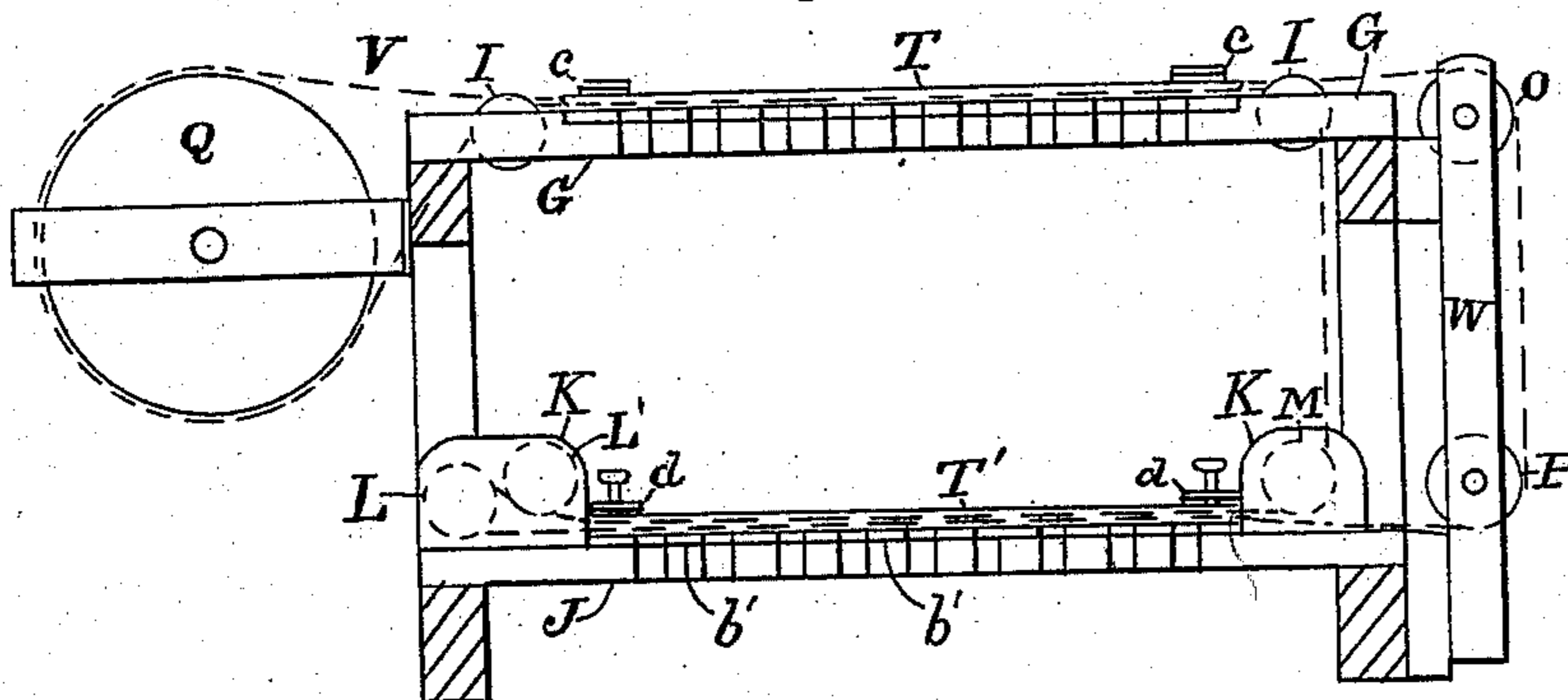


Fig. 4.



Witnesses:  
John O'Donnoghue.  
E. H. Bradford

Inventor:  
William Cheetham  
Thomas Hall  
By H. J. Davis  
Attorney.

# UNITED STATES PATENT OFFICE.

WILLIAM CHEETHAM AND THOMAS HALL, OF LAWRENCE, MASSACHUSETTS;  
SAID CHEETHAM ASSIGNOR TO SAID HALL.

## IMPROVEMENT IN WOOL-CONDENSERS FOR CARDING-MACHINES.

Specification forming part of Letters Patent No. **211,086**, dated January 7, 1879; application filed August 21, 1878.

*To all whom it may concern:*

Be it known that we, WILLIAM CHEETHAM and THOMAS HALL, of Lawrence, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Wool-Condensers for Carding-Machines; and we do hereby declare that the following is a full, clear, and exact description of the invention, which 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 of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in finishing carding-machines in which wool and other fibrous material are treated in the ordinary manner; and the improvement consists in dispensing with the rub-rolls and iron condensing-tubes generally in use in connection with this class of machines, and substituting in lieu thereof an endless belt, passing over pulleys, and running at right angles to the directions of revolution of the doffers, conductors, and regulators, said belt from its arrangement forming a double condenser, whereby the wool or other fibrous material received from the doffers of the finishing carding-engine is passed between the surfaces of the endless belt, and by their rubbing action reduced to a state of twist and condensation that renders it ready for the reel or other receiving apparatus, as will be hereinafter more fully set forth.

Figure 1 is a plan view of a portion of a finishing carding-machine, showing our improvement attached thereto. Fig. 2 is a longitudinal vertical sectional view of the same, taken through the line  $xx$  of Fig. 1. Fig. 3 is a front elevation, and Fig. 4 is a rear sectional view, taken through the line  $x^2 x^2$  of Fig. 1.

In the annexed drawings, A represents the frame, and B the main cylinder, of an ordinary finishing carding-engine. At the end of the machine, or where the wool or fibrous material arrives in order to be taken off, are arranged two doffing-cylinders, F, one above the other, so as to take an equal amount of carded wool from the main cylinder. These doffing-cylinders are provided with a series of

card-rings,  $a$ , at regular distances, leaving spaces  $b$  between the rings, whereby a number of continuous strips of wool are removed from the carding or main cylinder by each doffer. The construction and operation of these doffing-cylinders are old. At this point our improvement now commences. Immediately opposite the card-rings, on the upper doffing-cylinder, are arranged a series of guideways,  $b'$ , in the cross-beam G, for conducting the strips or ribbons of wool to the space between the belt's surfaces, hereinafter described.

The cross-beam G, supported upon the carding-engine frame, is provided with an opening,  $a'$ , at each end, within which are journaled the flanged pulleys I I'. At the upper forward horizontal edge is attached a metallic plate, H, provided with a series of guide-openings similar to those of  $b'$ , and registering therewith, as fully shown in Figs. 1 and 2 of the drawings. Below the beam G is another beam, J, similarly constructed—that is to say, the inner edge is provided with a series of guideways,  $b'$ , and is also provided with a metallic plate, J', having a series of openings coinciding with the openings below. These guideways in the beams above and below serve as conductors for the ribbons of wool or slivers in passing from the doffers to the condensing mechanism.

The cross-beam J is provided with lugs K at each end, instead of recesses, forming journal-bearings for the flanged pulleys L M and tension or guide pulley L'. Two uprights, W, are attached to one side of the frame A, but in a vertical plane with the ends of the cross-beams G J, furnishing the bearings for the journals of the two pulleys O P. At the opposite side of the frame, in a direct line, is arranged a bracket, to which is journaled a large pulley, Q.

It will be observed by reference to Figs. 3 and 4 of the drawings that an endless belt or band passes over and under these flanged pulleys. We will now follow the movement of the endless belt, commencing with the large pulley. The belt moves in the direction indicated by the arrow 1, through a tension-guide above the cross-beam, over the pulley O; thence downwardly, as indicated by arrow 2, and under

the pulley P; thence running parallel under a tension-guide, above the lower cross-beam, and over the pulley L and under the tension-pulley L'; thence returning in the direction indicated by the arrow 3, immediately above the advancing portion of the belt, and under pulley M; thence upward and over the pulley I in the direction indicated by the arrow 4, immediately under the advancing portion of the belt, but traveling in opposite direction; and, finally, over the pulley I', and under the large pulley, Q, to the starting-point. Thus it will be noticed that the portions of the belt adjacent to each other travel in opposite directions, so that the slivers in passing between the belts at those portions on its way to a spool, reel, or other receiving apparatus are condensed by the frictional contact of the inner surfaces of the belt, which gives to the slivers a rolling movement.

To regulate the width or space between the belts at the point where the slivers pass through, are attached hangers or brackets *c d* to the upper surfaces of the cross-beams, and these are provided with set or adjusting screws *e*, which act in return upon plates T T', which serve as tension-plates, and extend the entire

length of the condensing-surfaces of the belt. By adjusting the set-screws *e* the tension-plates are raised or lowered, which brings the adjacent portions of the endless band nearer to or farther from each other, as desired, whereby the requisite size can be given to the roving as it passes onward. The guideways in the cross-beams above and below keep the slivers from being moved out of a straight course while feeding to the condensing mechanism.

What we claim is—

In combination with a finishing carding-machine, the cross-beams G and J, having a series of independent guideways, and provided with flanged pulleys at their ends, the journal-pulleys O, P, and Q, an endless belt, passing over and under the pulleys, and the tension-plates T T', substantially as set forth.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

WILLIAM CHEETHAM.  
THOMAS HALL.

Witnesses:

W. FISK GILE,  
CHARLES G. MERRILL.