

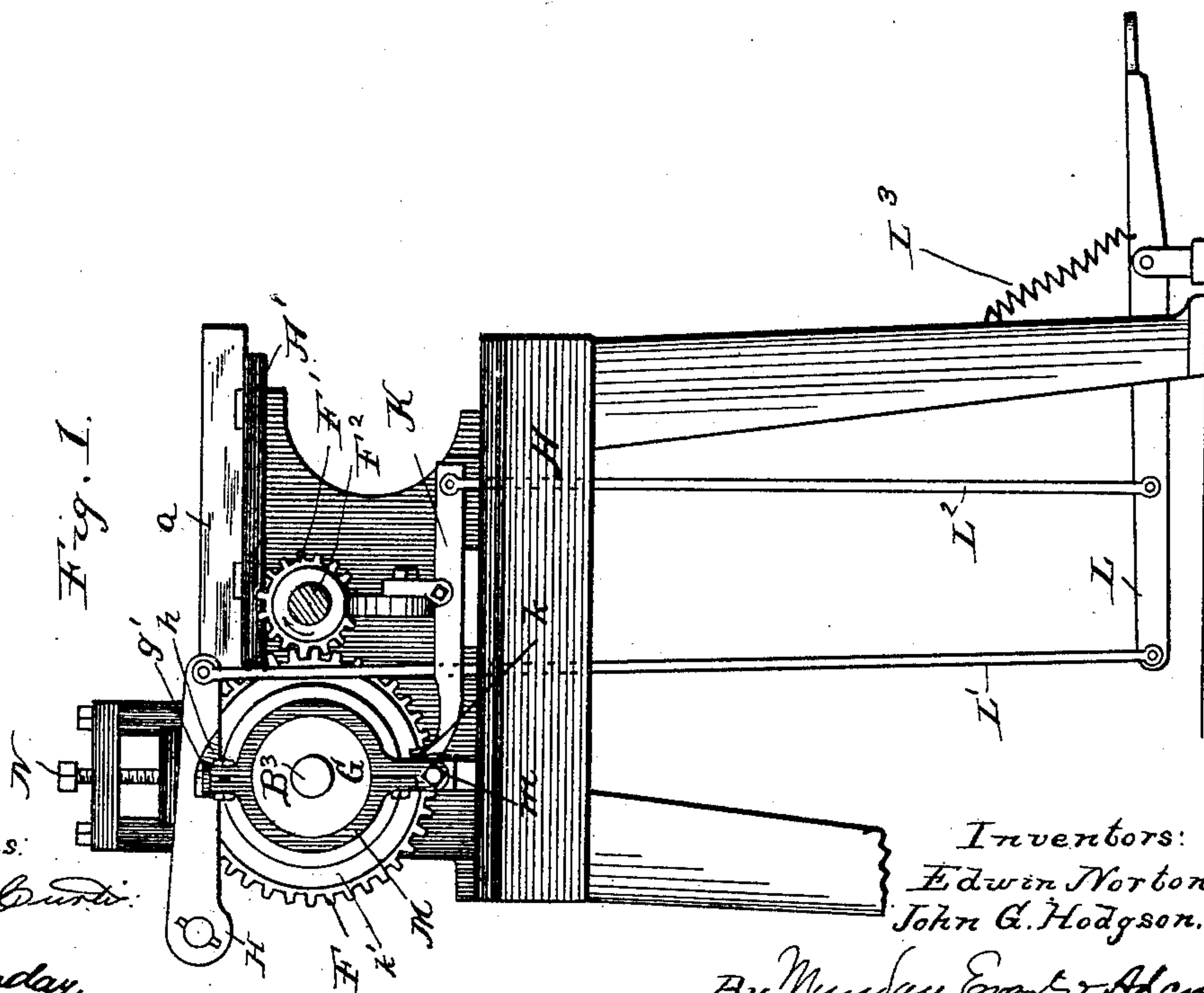
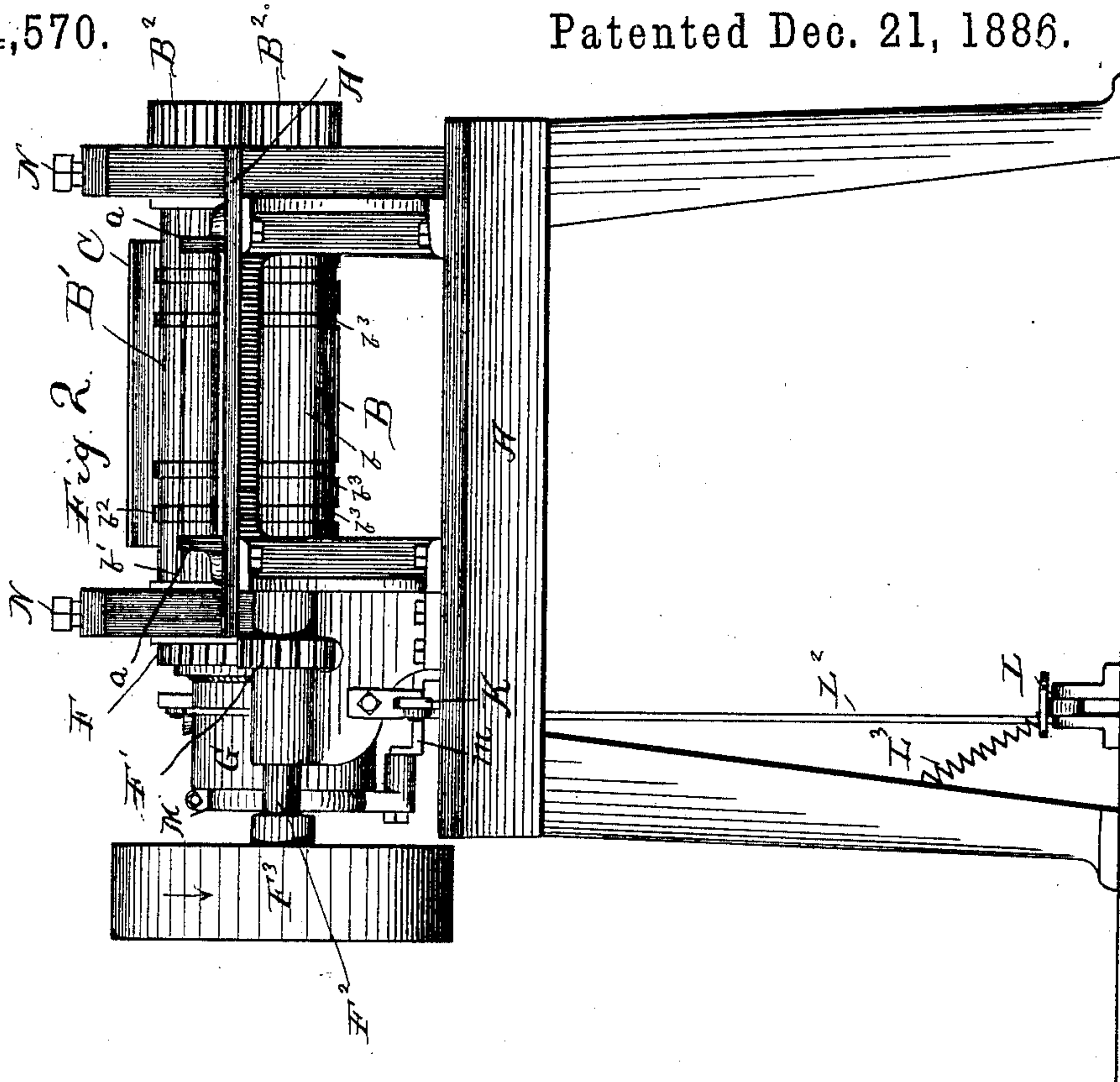
(No Model.)

2 Sheets—Sheet 1.

E. NORTON & J. G. HODGSON.
MACHINE FOR MAKING SHEET METAL BARRELS.

No. 354,570.

Patented Dec. 21, 1886.



Witnesses:
 Law. C. Curtis.
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Inventors:
Edwin Norton,
John G. Hodgson.

By Munday, Evans & Adcock
their Attorneys.

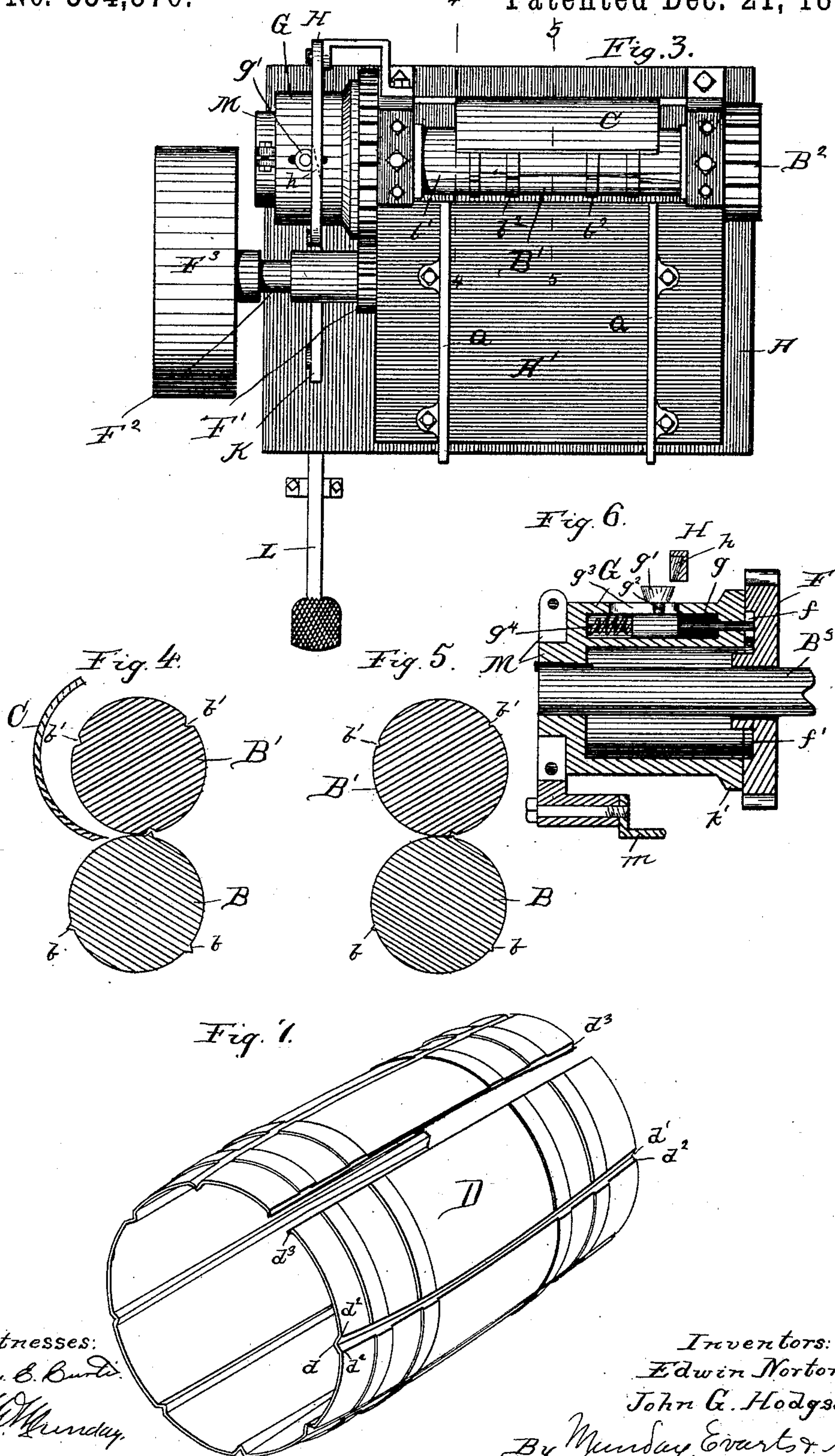
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2 Sheets—Sheet 2.

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MACHINE FOR MAKING SHEET METAL BARRELS.

No. 354,570.

Patented Dec. 21, 1886.



Witnesses:
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UNITED STATES PATENT OFFICE.

EDWIN NORTON AND JOHN G. HODGSON, OF CHICAGO, ILLINOIS, ASSIGNORS
TO EDWIN NORTON AND OLIVER W. NORTON, BOTH OF SAME PLACE.

MACHINE FOR MAKING SHEET-METAL BARRELS.

SPECIFICATION forming part of Letters Patent No. 354,570, dated December 21, 1886.

Application filed September 3, 1886. Serial No. 212,570. (No model.)

To all whom it may concern:

Be it known that we, EDWIN NORTON and JOHN G. HODGSON, citizens of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Machines for Manufacturing Sheet-Metal Barrel-Form Bodies, of which the following is a specification.

Our invention relates to the manufacture of barrel-form sheet-metal bodies having gore-shaped or tapering longitudinal strengthening ribs or folds marking the divisions between the staves.

The object of the invention is to provide a machine to curve or form a rectangular sheet of metal into an approximately circular form, and at the same time mark out or partially form the gore-shape or tapering longitudinal fold, which, when completed, gives the body a barrel shape by contracting its circumference more at each end than at the middle.

To this end our invention consists in a pair of forming or curving rolls furnished with intermeshing gore-shaped longitudinal grooves and projections tapering from each end toward the middle, which serve to form a series of longitudinal gore-shaped or tapering grooves or partial folds in the sheet of metal at the time it is being curved into an approximately cylindrical form by the rolls and the curved guide or former. By increasing or diminishing the inclination of the sides of the tapering grooves and projections any desired degree of curvature may be given to the body. Where the machine is designed simply to produce strengthening longitudinal ribs or folds in a cylindrical body without giving it a curved or barrel form, the grooves and ribs on the rolls will be made of the same size throughout from one end to the other. The number of the longitudinal grooves and ribs on the rolls may be varied, and will depend somewhat on the size of the rolls and the diameter of the sheet-metal body to be produced. Their distance apart circumferentially on the rolls will of course correspond to the width of the staves to be made on the barrel-form body.

The invention also consists in the novel devices and novel combinations of devices herein

shown and described, and more particularly pointed out in the claims.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts, Figure 1 is an end view of a machine embodying our invention. Fig. 2 is a front elevation. Fig. 3 is a plan view. Fig. 4 is a cross-section of the rolls on line 4 4 of Fig. 3. Fig. 5 is a cross-section on line 5 5 of Fig. 3. Fig. 6 is a detail central longitudinal section, showing the clutch mechanism; and Fig. 7 is a perspective view showing the sheet-metal body as formed by the machine, said body being ready to be completed by pressing or squeezing the walls of the partially-formed folds together.

In said drawings, A represents the frame of the machine. B B' are the forming-rolls journaled in suitable bearings thereon. The upper roll, B', is furnished with one or more (preferably three) longitudinal grooves, b', tapering from each end toward the middle, and the roll B is furnished with corresponding tapering ribs or projections, b. The roll B' is furnished with cross beads or ribs b², and the roll B with corresponding cross-grooves, b³, to form the cross-beads representing hoops in the sheet-metal body.

C is a stationary curved guide or former, which serves to curve the sheet into an approximately cylindrical form as it passes between the rolls B B'.

A' is a feed-table, and a a are feed-guides for the edges of the sheet to abut against, to insure its being fed squarely to the rolls. The grooves b and ribs b' are preferably of a triangular form in cross-section, as indicated in the drawings, so that the apex of the triangle will mark the central line, d', of the fold, while the marginal lines d² d² of the fold will be marked by the outer edges of the groove and rib. In this way the grooves b and ribs b' mark the line and begin the folding of the stock on the lines whereon it is to be completed by the subsequent step of compressing the walls of the fold flat together.

As one of the folds d of the sheet D is formed by the similar abutting flanges, d³ d³, on the opposite edges of the sheet, which, when

abutted together and soldered, constitute the side seam of the sheet-metal barrel-body, it is important that when the sheet is fed in between the rolls B B' its front edge should properly register with one of the intermeshing grooves and ribs *b b'* of the rolls, and to effect this we provide the rolls, or one of them, with a clutch adapted to always stop the roll at the proper point for feeding in the next sheet, so that when the sheet is pushed in between the rolls and the rolls then put in motion the edge of the sheet will properly register with one of the grooves and ribs *b b'* on the rolls B B'. The rolls B B' are geared together by the spur-gears B² B² on their shafts. The shaft B³ of the lower roll, B, is furnished with a loose spur-gear, F, which meshes with the gear F', fixed to the driving-shaft F².

F³ is the driving-pulley.

G is the clutch-head, secured rigidly to the shaft B³. The clutch-head is connected to or disconnected from the loose gear F by means of the sliding pin or pawl *g*, which engages a projection, *f*, in the annular chamber or groove *f'*, cut in the side face of the gear F. The sliding pin *g* is provided with a cam-shaped head or projection, *g'*, preferably an inverted-cone-shaped friction-roller, mounted on a stud, *g*², which projects through a slot, *g*³, in the clutch head or wheel G.

H is a clutch-lever having a corresponding cam-face, *h*, adapted to operate against the inclined or cone face of the projection or friction-roller *g'* and disengage the pin *g* from the stop or projection *f*. A spring, *g*⁴, serves to move the sliding pin *g* in the opposite direction.

K is a stop lever or pawl pivoted to the frame or bracket thereon, the end of which engages a stop-notch, *k*, in the rim *k'* of the clutch-head G. The levers H and K are simultaneously operated from a treadle or lever, L, through the connecting-rods L' and L². The shaft B³ is also furnished with a friction-brake, M, which clamps the clutch-head G or a collar or shoulder turned thereon. The friction-clamps M are secured to a bracket, *m*, attached to the frame of the machine. The friction-brake serves to stop, or tends to serve to stop, the revolution of the rolls B B' the instant the clutch-pin *g* is disengaged from the loose pulley F. The stop-lever K, however, causes a positive arrest of the revolution of the rolls at a fixed point by its engagement with the notch or stop *k*.

In operation the spring L³ serves to hold or press the lever H down the moment the operator's foot is removed from the treadle L, and as the clutch-head revolves the projection *g'* is carried around against the cam-surface *h* of the lever H, thereby retracting the sliding pin *g* from the gear F when said projection *g'* reaches its vertical position, as shown in Fig. 1, and at the same time the lever or pawl K engages the notch *k*, and thus arrests the motion of the rolls B B' always at the same point. After the front edge of the sheet is inserted

between the rolls, the operator, by placing his foot upon the treadle, disengages the stop-lever K from the notch *k*, and at the same time raises the lever H, and thus permits the sliding spring-pin *g* to engage the gear F.

The rolls B B' are forced together with the requisite pressure by the adjusting-screws N.

The sheet-metal body or barrel herein referred to, as well as other mechanism used in the process of making the same, form the subject-matter of separate applications filed of even date herewith by Edwin Norton, and are not herein claimed.

The longitudinal grooves and ribs *b b'* taper on slightly-curved lines, as indicated in Figs. 2 and 3, and also in Fig. 7, so as to give the body a true barrel shape or curvature from end to end.

We claim—

1. The rolls B B', furnished with a longitudinal gore-shaped or tapering intermeshing groove and rib, substantially as specified.

2. The rolls B B', furnished with a longitudinal gore-shaped or tapering intermeshing groove and rib, in combination with a curved guide or former, C, substantially as specified.

3. The rolls B B', furnished with a longitudinal gore-shaped or tapering intermeshing groove and rib, in combination with a clutch mechanism adapted to stop and start said rolls always at a certain point, so that said rib and groove will register with the front edge of the sheet, substantially as specified.

4. The combination of the rolls B B', furnished with intermeshing longitudinal triangular grooves and ribs *b b'*, said rolls having smooth intervals between the contiguous grooves or ribs thereon, with a curved guide or former, C, and mechanism for stopping and starting said rolls always at a certain point, so that one pair of said ribs and grooves will register with the front edge of the sheet, substantially as specified.

5. The combination of the rolls B B', furnished with intermeshing longitudinal ribs and grooves, with loose gear F, having slot or groove *f'*, projection *f*, clutch-head G, having sliding pin *g*, provided with projection *g'*, lever H, having cam-surface *h*, stop-lever K, operating-lever L, and connecting-rods L' L², substantially as specified.

6. The combination of the rolls B B', furnished with intermeshing longitudinal ribs and grooves, with loose gear F, having slot or groove *f'*, projection *f*, clutch-head G, having sliding pin *g*, provided with projection *g'*, lever H, having cam-surface *h*, stop-lever K, operating-lever L, connecting-rods L' L², and friction-brake M, substantially as specified.

7. The combination of the rolls B B', furnished with intermeshing longitudinal triangular grooves and ribs *b b'*, with a curved guide or former, C, mechanism for stopping and starting said rolls always at a certain point, table A', and feed-guides *a a*, substantially as specified.

8. The rolls B B', furnished with intermesh-

ing longitudinal gore-shaped or tapering grooves and ribs b b' , and transverse cross-beads and grooves b^2 b^3 , to form the hoops, substantially as specified.

- 5 9. The rolls B B', furnished with intermeshing gore-shaped or tapering longitudinal grooves b b' , triangular in cross-section, and transverse hoop-beads and grooves b^2 b^3 , substantially as specified.

10. The rolls B B', furnished with longitudinal intermeshing grooves and ribs b b' , tapering on curved lines from each end toward the middle, substantially as specified.

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JOHN G. HODGSON.

Witnesses:

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O. R. SWIFT.