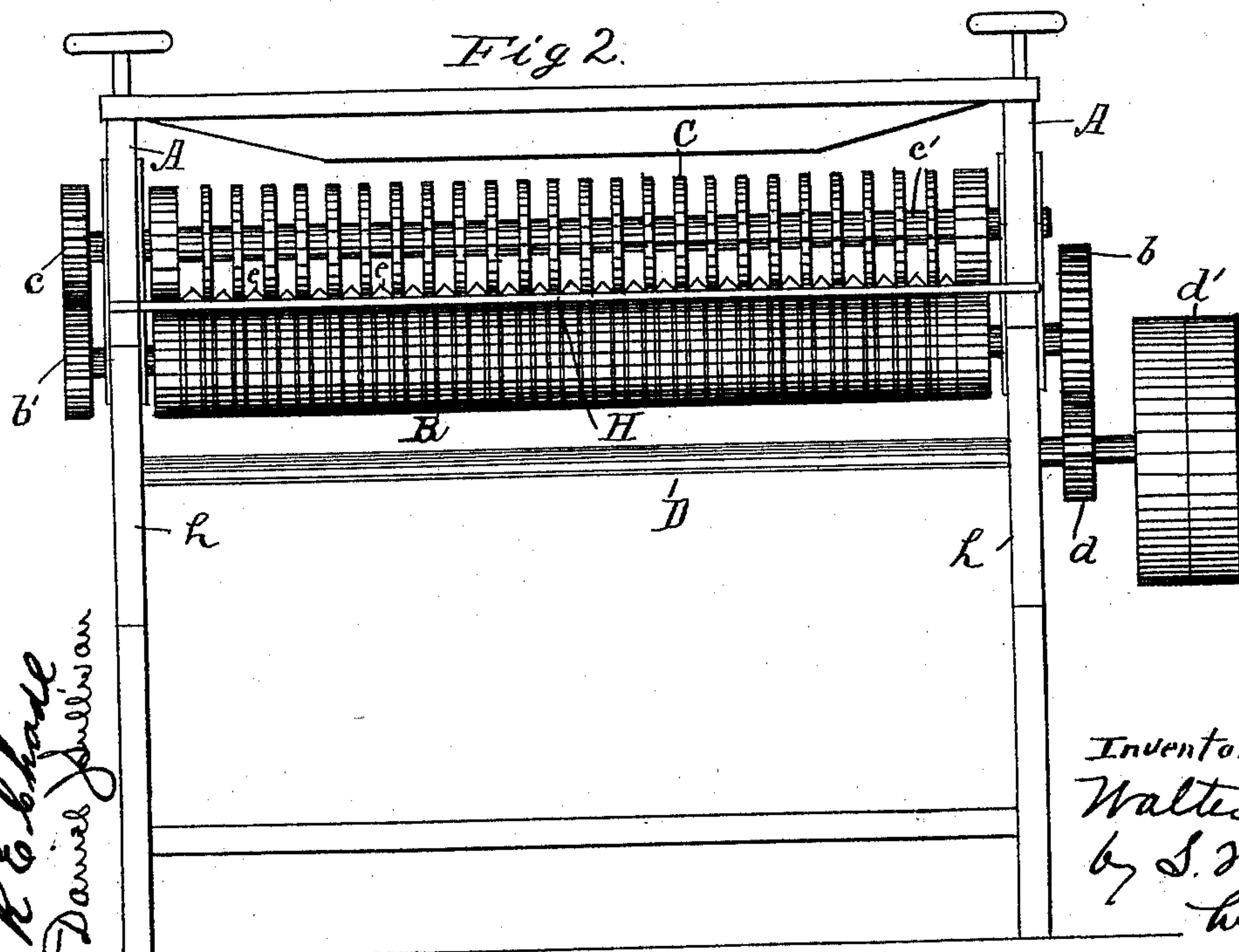
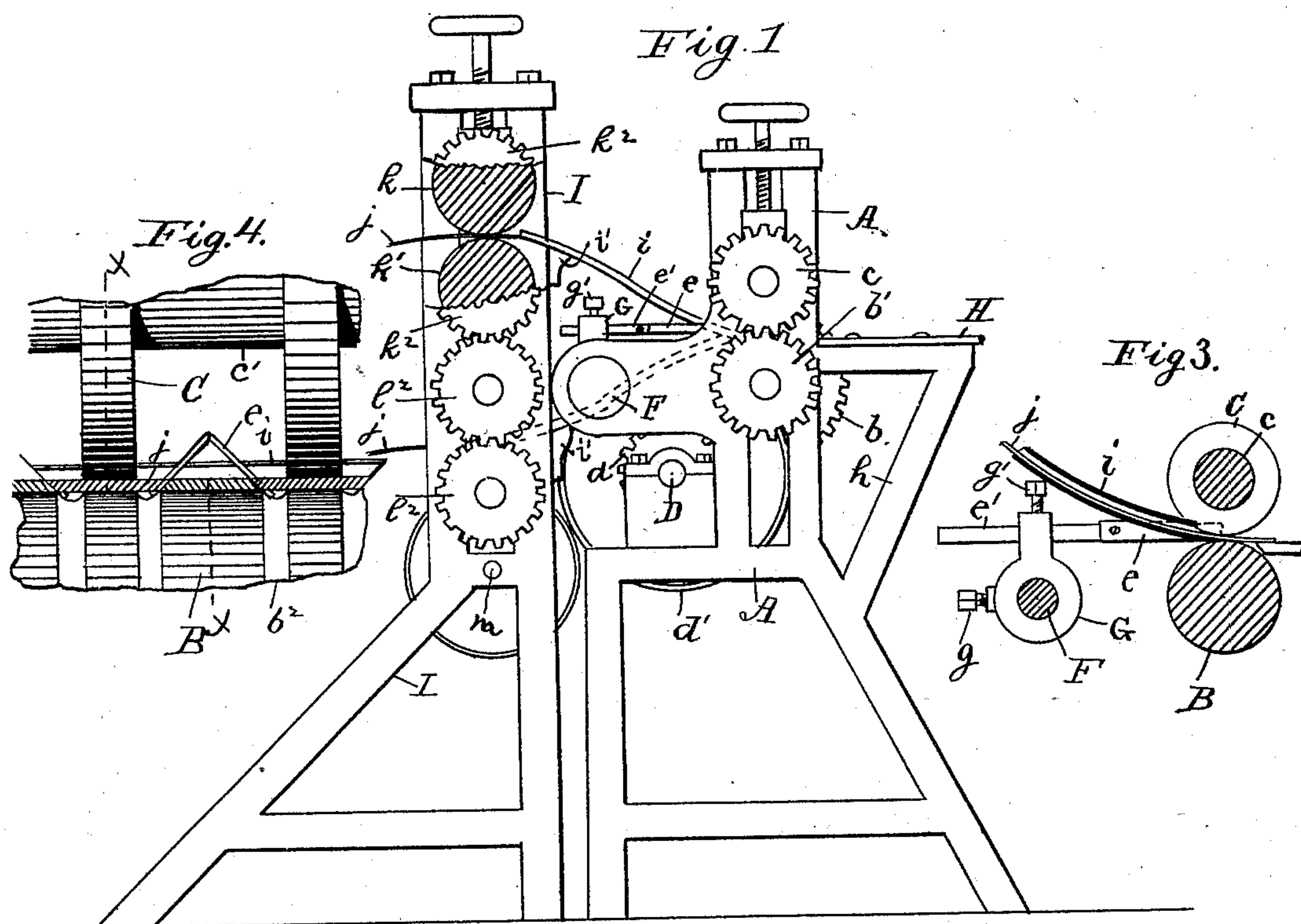


2 Sheets—Sheet 1.

No. 505,421.

Patented Sept. 19, 1893.



Witnesses:
Richard
Daniel Sullivan

Inventor:
Walter E. Frost
by S. M. Bates
his atty.

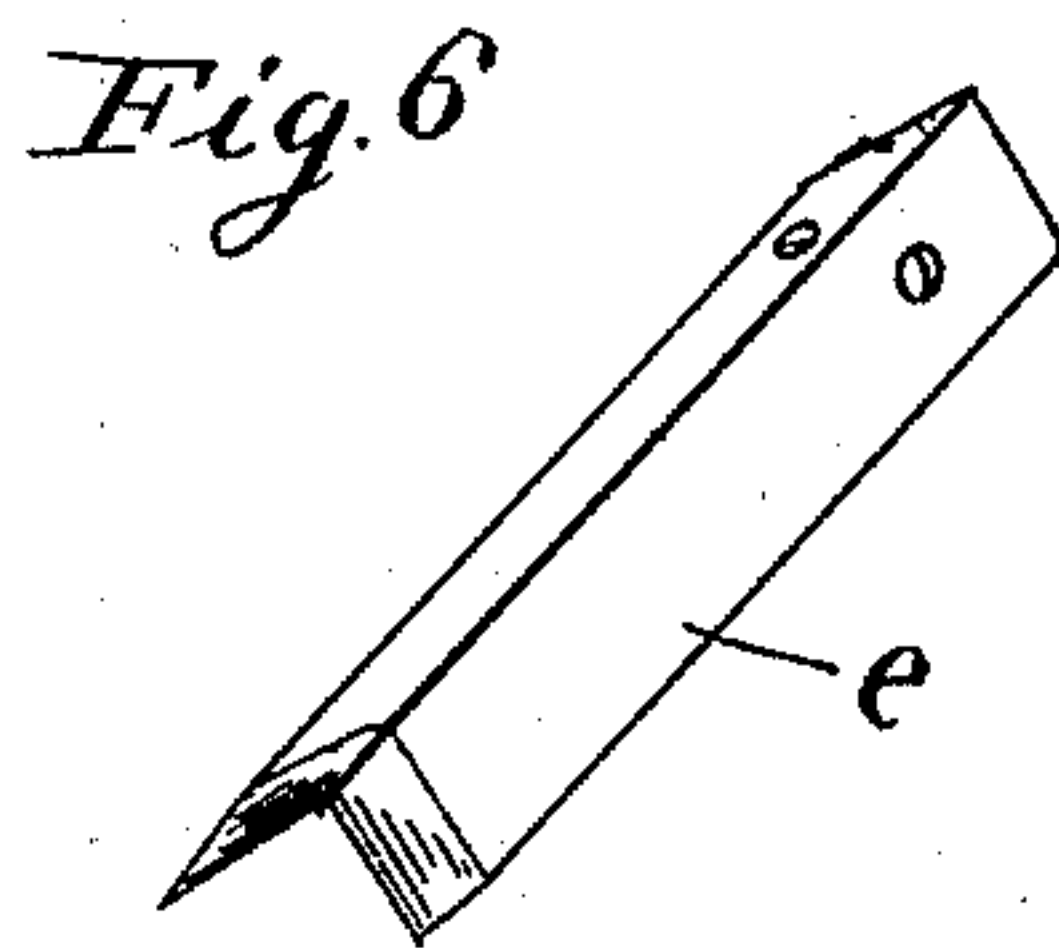
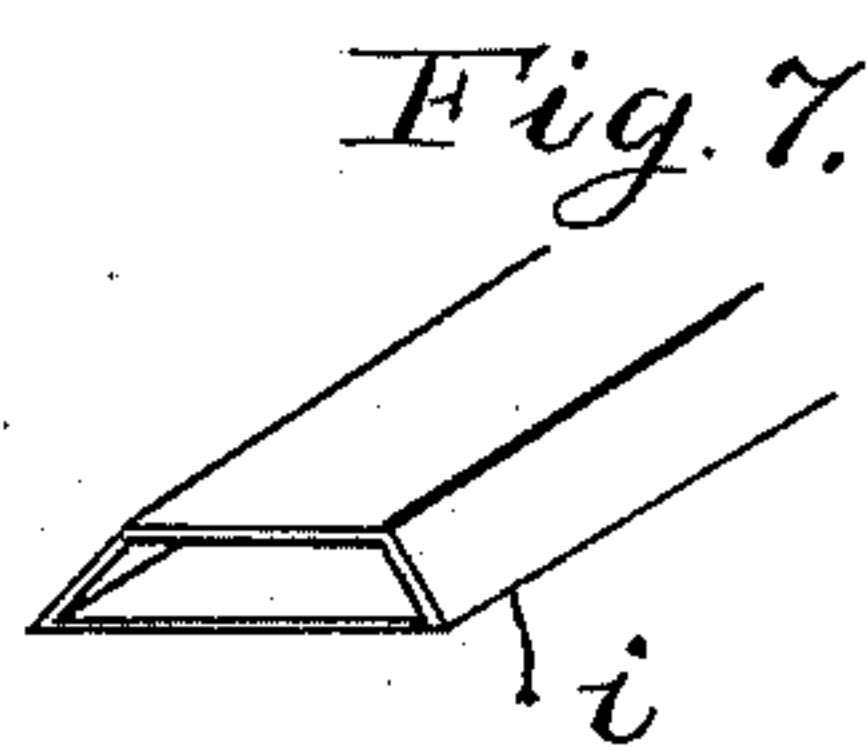
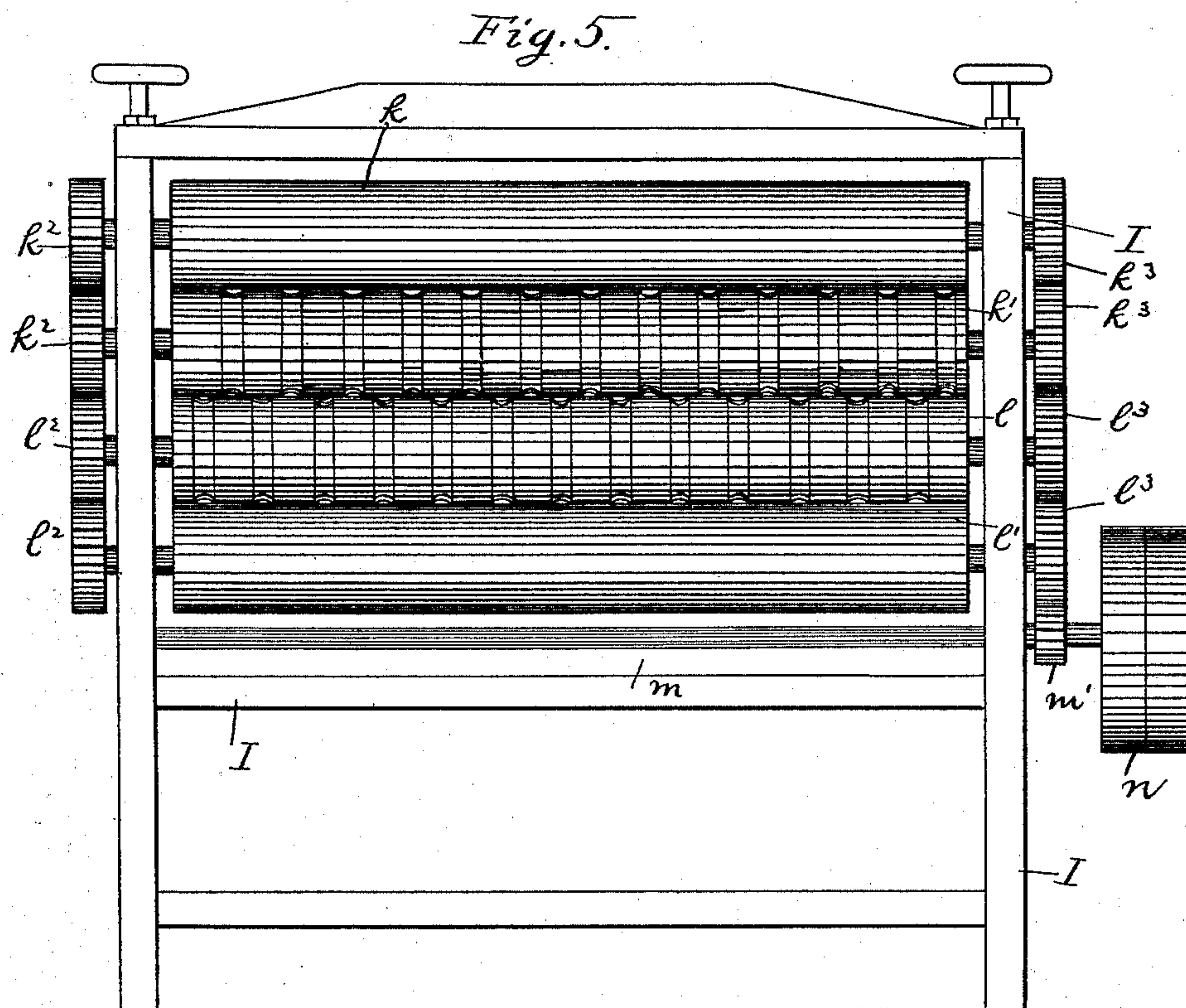
(No Model.)

2 Sheets—Sheet 2.

W. E. FROST.
MACHINE FOR MAKING PAPER HOOPS.

No. 505,421.

Patented Sept. 19, 1893.



Witnesses
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UNITED STATES PATENT OFFICE.

WALTER E. FROST, OF LEWISTON, ASSIGNOR OF THREE-FOURTHS TO LOUIS
J. COTÉ, OF WATERVILLE, MAINE.

MACHINE FOR MAKING PAPER HOOPS.

SPECIFICATION forming part of Letters Patent No. 505,421, dated September 19, 1893.

Application filed January 11, 1893. Serial No. 458,042. (No model.)

To all whom it may concern:

Be it known that I, WALTER E. FROST, a citizen of the United States, residing at Lewiston, in the county of Androscoggin and State of Maine, have invented certain new and useful Improvements in Machines for Making Paper Hoops; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a machine for cutting beveled hoops from sheets of paper or other like material and for pressing said hoops after they have been cut from the sheet. The hoops which I design to make on my machine are to be used on orange boxes, barrels, &c., and they are to be cut from leather board or some other strong material having tensile strength enough for this purpose.

One of the important objects of the machine is to cut the sheets into hoops having beveled edges without waste of material and a further object is to roll and compress these strips or hoops as they come from the cutting knives thus giving them an extra strength. These objects are accomplished by means of the mechanism illustrated in the accompanying drawings in which—

Figure 1 represents a side view of my machine with a part in section. Fig. 2. is a front view. Fig. 3. is a section on the line xx of Fig. 4. Fig. 4. is an enlarged front view of the cutting portion of the machine. Fig. 5. is a front view of the press rolls. Fig. 6. is a perspective of the cutting knife and Fig. 7. is a perspective of the guide which conveys the strip from the knives to the press rolls.

The cutting portion of the machine is mounted on a suitable frame A in which frame is journaled the bed roll B. On one end of the shaft on which the roll B is mounted is the gear b which engages the gear d mounted on the main driving shaft D, d' representing the main driving pulleys.

Above the roll B is a series of narrow feed rolls C mounted on a shaft c' . The feed rolls are operated by a gear c which engages a gear b' on the end of the bed roll B. The cutting is accomplished by means of knives e having

V-shaped cross section and V shaped cutting ends or edges. The cutting ends of these knives rest in an inverted position on the bed roll B, the edges of the knives resting in annular grooves formed in the roll for this purpose. The lower cutting edge of the knife is thus brought below the general surface of the roll and a clean cut is assured. The size and spacing of the knives are such that the cut section included between the two edges of one knife will be equal to the section between the adjacent edges of two adjacent knives, so that the sheet will be cut into strips of equal section and without any waste. The feed rolls C rest on the bed roll between the knives. The rear end of each knife is secured to a stem e' which is held by a set screw g' in an opening in a collar G the collar being in turn secured to a shaft F by means of a set screw g . By loosening the set screw g' the knife can be withdrawn or adjusted longitudinally and by loosening the set screw g the collar can be turned on the shaft F and the knife taken out. In front of the roll B is a table H resting on brackets h . In rear of the cutting portion of the machine are the press rolls $k k' l l'$ journaled in a suitable frame I. The two middle rolls are grooved to press the hoop to a half round section (so called) and the top and bottom rolls are plain. The pressing takes place between the two upper rolls and the two lower rolls. The grooving is such that the strips which come out from the cutters having the flat portion underneath will be rolled in the lower rolls while those which have the flat side on top are rolled on top. Guides i extend from the rear of the rolls B C to the press rolls for the purpose of carrying the strips to the required opening in the press rolls. These guides are supported on rests i' attached to the frame I. The ends of the press rolls are connected by gears $k^2 k^2$ and $l^2 l^2$ on one end and by gears $k^3 k^3$ and $l^3 l^3$ on the other and the lower gear l^3 is meshed to the gear m' on the main driving shaft m . n represents the driving pulley.

It will be seen that the sheet as it is fed through is cut by the V-shaped knives into beveled strips without waste of material and that the strips are then carried alternately to

the upper and under rolls where they are pressed and rounded off to form the pressed hoops which I aim to produce by the use of my machine. The hoops thus produced are
5 adapted to be used on boxes, barrels and the like and are found to be superior to wood for the reason that they will not break when bent around a sharp corner.

I am aware that machines for cutting paper have been used containing a series of feed rolls with upright cutting knives between them each strip as cut being drawn through by a pair of rolls. In my machine I dispense with every alternate pair of rolls by making
10 my knife V shaped as described, the strip which passes between the two parts of the knife being fed or drawn along by the uncut portion of the sheet. Again, my knives being once in adjustment require no further ad-

justment as the space between the two edges 20 of the knife and between the grooves remains constant.

I claim—

In a machine for cutting hoops from sheets of paper or other like material, the combina- 25 tion of a bed roll having annular grooves therein, knives having, when in position an inverted V-shaped cross section and end cutting edges, the lower edges of said knives resting at their forward ends in said grooves and
30 feed rolls between said knives, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WALTER E. FROST.

Witnesses:

S. W. BATES,

R. C. PINGREE.