

(No Model.)

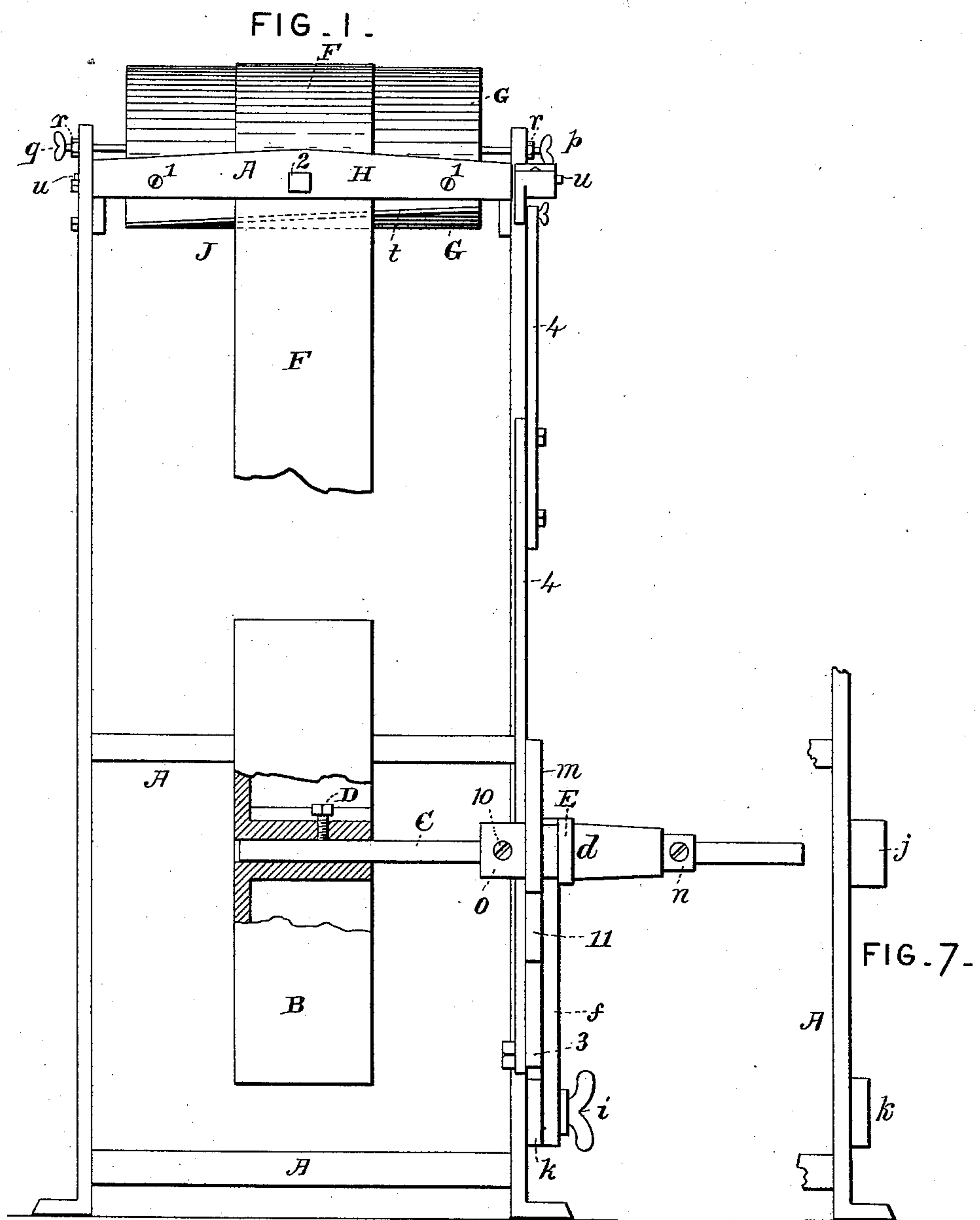
3 Sheets—Sheet 1.

C. E. CLUTE.

CUTTING OFF DEVICE FOR PAPER BOX COVERING MACHINES.

No. 393,964.

Patented Dec. 4, 1888.



Attest,
Geo. T. Smalleywood,
Lex. Smith.

Inventor:
Charles E. Clute,
By S. M. Smith atty.

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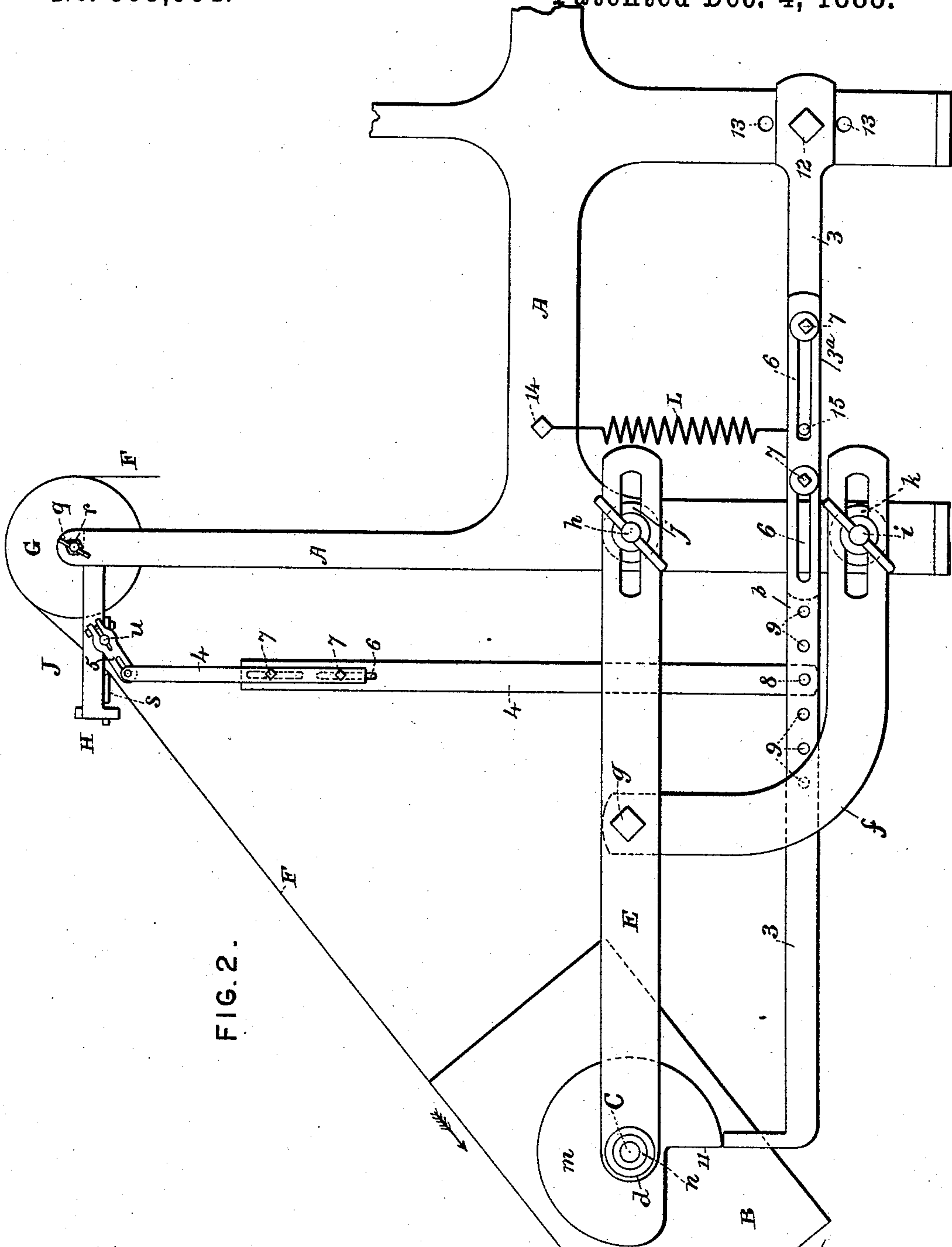


FIG. 2.

Attest:
Geo. T. Smallwood,
Per, Smith,

Inventor.
Charles E. Clute,
By A. L. Smith, atty.

C. E. CLUTE.

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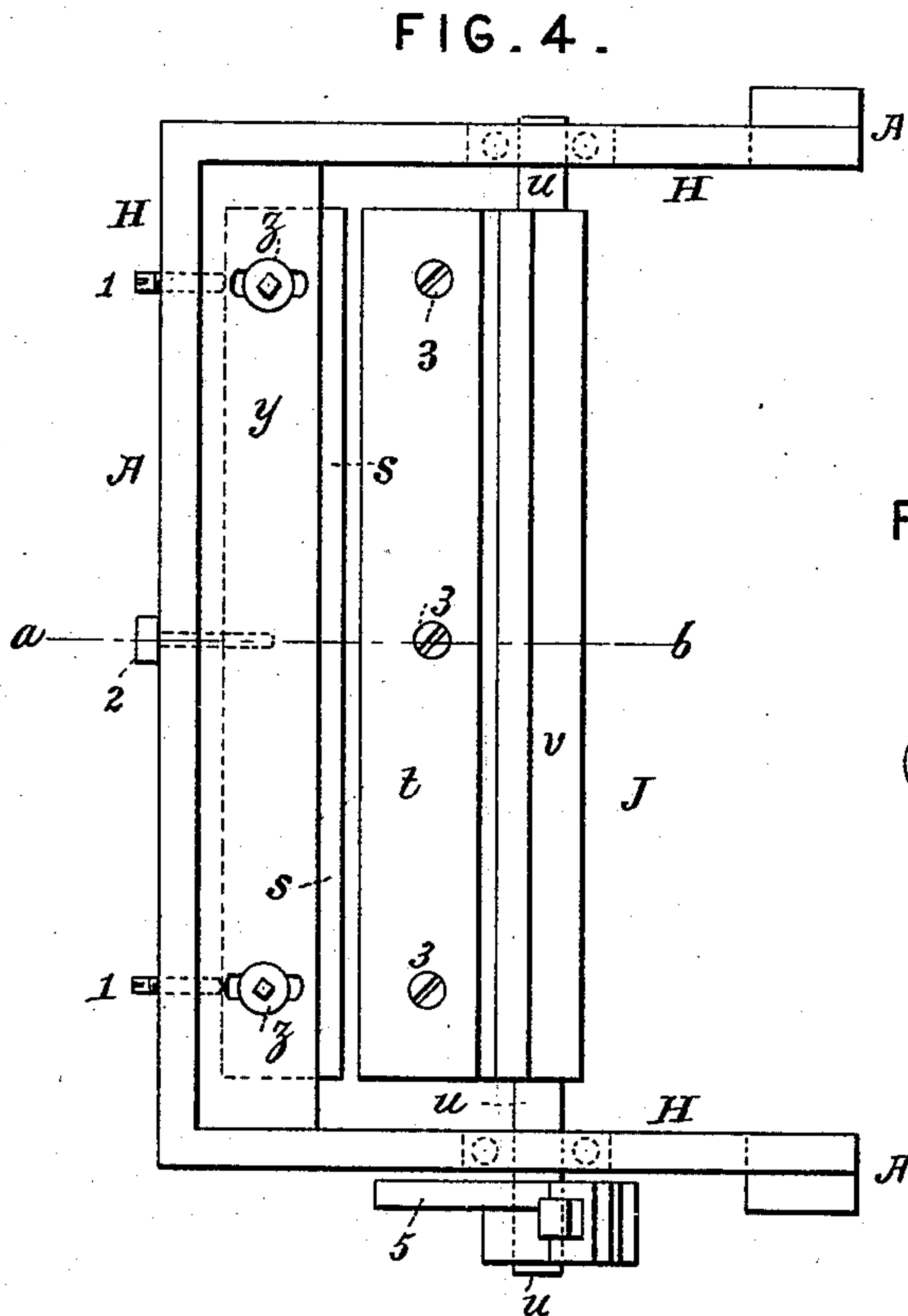
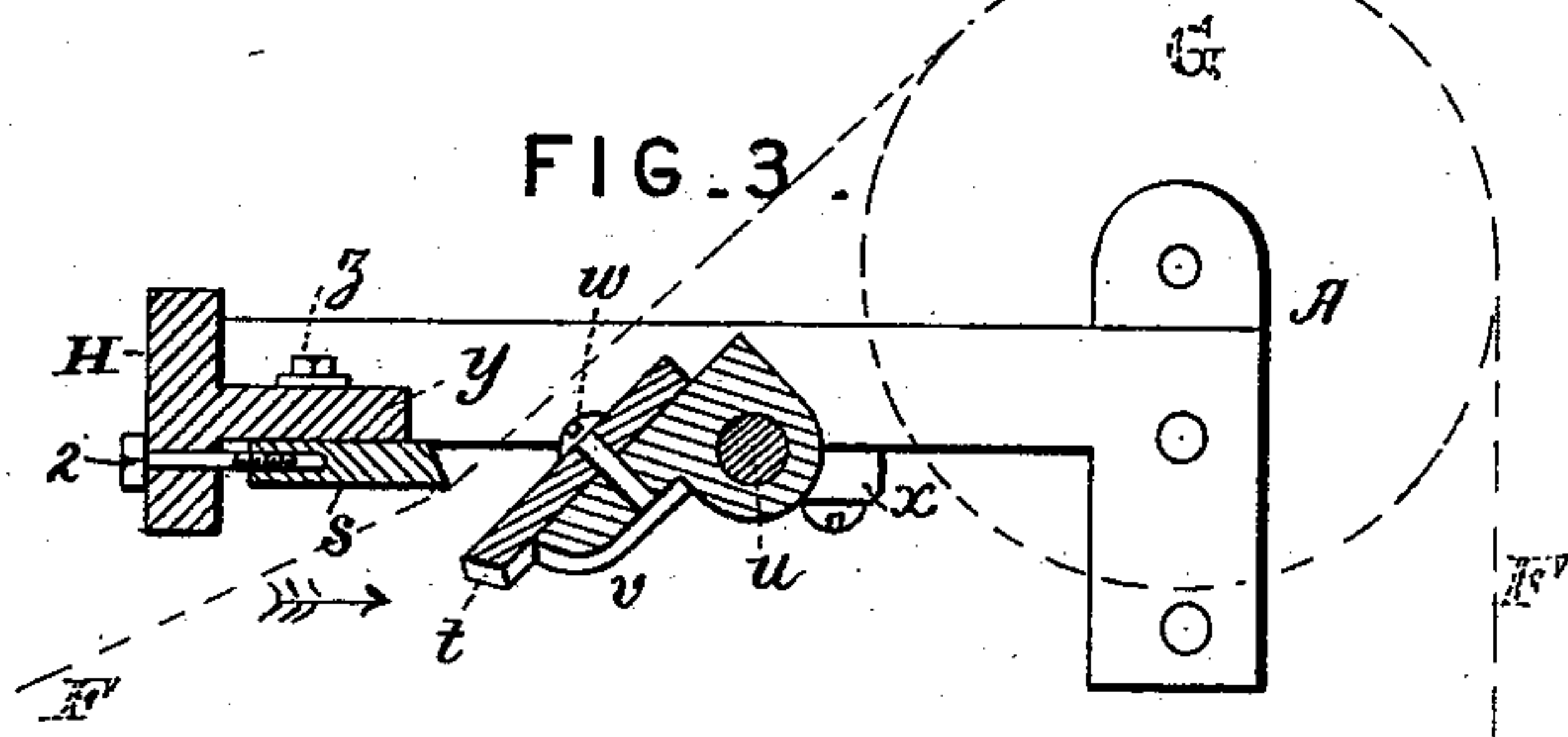
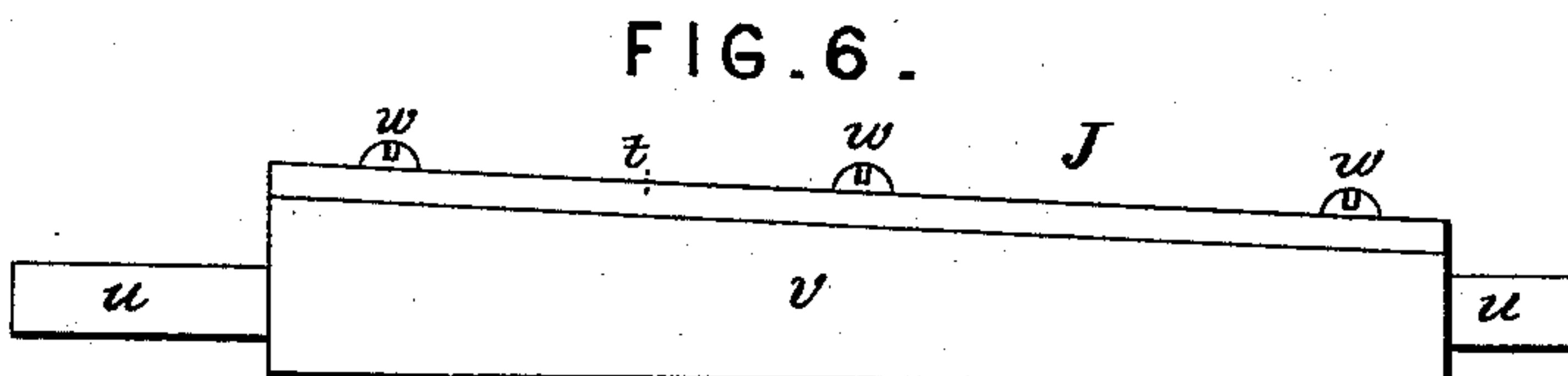
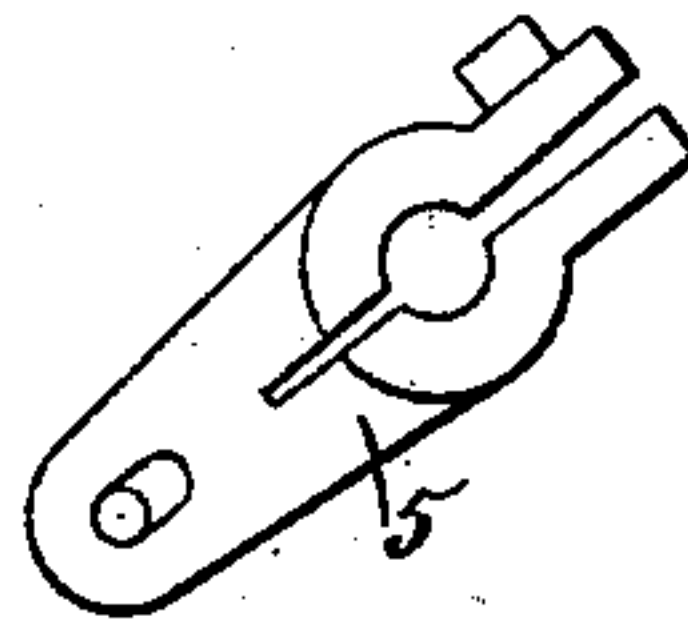


FIG. 5.



attest.
Geo. T. Smallwood.
Res. Smith

Inventor:
Charles E. Clute
By A. U. Smith atty.

UNITED STATES PATENT OFFICE.

CHARLES E. CLUTE, OF COHOES, NEW YORK.

CUTTING-OFF DEVICE FOR PAPER-BOX-COVERING MACHINES.

SPECIFICATION forming part of Letters Patent No. 393,964, dated December 4, 1888.

Application filed June 20, 1887. Serial No. 241,858. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. CLUTE, of Cohoes, county of Albany, and State of New York, have invented a new and useful Improvement in Cutting-Off Devices for Paper-Box-Covering Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to improvements in the details of construction and in the devices for operating the knives or shears employed in machines for covering paper boxes for cutting the strip or strips of continuous roll covering paper into suitable lengths.

In the accompanying drawings, Figure 1 is a front elevation of certain parts of a paper-box-covering machine having my improvements, only such parts being shown as are required for illustrating and fully describing my invention. Fig. 2 is a side elevation of Fig. 1. Fig. 3 is a longitudinal vertical section of Fig. 4 on the line *a b*, representing the cutting-blades, blade-holders, and other devices. Fig. 4 is a plan of Fig. 3. Fig. 5 is a side elevation of the adjustable slotted arm, seen in plan in Fig. 4. Fig. 6 is a rear view of the vibrating knife or cutter and its holder as it would appear from the direction indicated by the arrow in Fig. 3. Fig. 7 represents a detached portion of the frame, showing bosses to receive the studs for the adjustable hanger.

Like letters and numbers of reference refer to like parts in the several figures.

A is the frame, of which only a part is shown.

B is the box-holder, upon which the box is placed to receive the covering-paper.

In order to cover boxes of different sizes, holders, larger, smaller, and adjustable in size, are employed, being exchanged one for the other, as required, in the same machine.

In Fig. 1 a part of the box-holder is broken out in order to show the hub in section and the shaft C, to which it is secured by the set-screw D. The shaft C is carried by and turns freely in the sleeve *d* of the adjustable carrier or hanger E.

The adjustable hanger E consists of a slotted bar having the sleeve *d*, and having a

slotted brace, *f*, hinged to it by a suitable hinge-bolt, *g*, the bar E and brace *f* being attached to the frame adjustably by suitable studs, *h* and *i*, projecting from the frame and passing through the slots in the bar and brace in a manner substantially as shown in the drawings.

When the studs *h* and *i* and the hinge-bolt *g* are loosened, the sleeve *d*, carrying the shaft C and box-holder B, may be moved up or down, or toward or from the frame A, until the box-holder is in a suitable position to receive the covering strip or strips. Then by tightening the studs *h* and *i* and the hinge-bolt *g* the hanger E is rigidly secured to the frame and held in place. The bosses *j* and *k* project sufficiently from the frame to bring the parts of the hanger into suitable lines or planes.

The box-holder B may be adjusted in position laterally, if desired, by moving it with the shaft to the right or left, as required, the shaft C moving freely through the sleeve *d*, cam *m*, and collar *n*, when the set-screw 10 in the hub *o* of the cam and those in the collar are loosened. When the said set-screws are tightened, the collar and the hub of the cam retain the axle in position; but I do not find it necessary to move the box-holder B or the shaft C laterally. On the contrary, I prefer to fix the collar *n* permanently on the shaft C. Power may be applied to the end of the shaft.

F is the covering-paper. (Shown in dotted lines in Fig. 3.)

G is a light cylinder, generally made of sheet metal, tin, copper, or brass, over which the covering-paper passes with the paste or glue side on the cylinder. A straight smooth cylindrical metallic rod is sometimes substituted as an equivalent for the sheet-metal cylinder G. The other rolls or cylinders employed in the paper-box-covering machine and the devices for applying and distributing the paste or glue are not shown in the drawings, as being well known to all skilled in the art, and quite unnecessary to an understanding of my invention. One, two, or more strips of covering-paper are sometimes applied at once, and may be so applied with my invention.

The cylinder G is shown in dotted lines in Fig. 3. The shaft of cylinder G in this ex-

ample is hung upon the conical ends of adjustable bearing-screws *p* and *q* in the usual manner. Jam-nuts *r* are employed to prevent the untimely loosening of the bearing-screws.

H is the knife-frame or cut-off frame, which may be attached to and form a part of the frame A, or it may be of any suitable form and be secured in its proper position in any suitable manner.

The cutting-off device J consists of the combination, with a suitable frame, H, of a stationary knife or cutter, *s*, and means for adjusting the same, a vibrating knife or cutter, *t*, having a suitable shaft, *u*, inclined from the plane of the vibrating knife-edge and parallel with the plane of the stationary knife-edge, and certain details of construction and arrangement herein set forth.

A suitable form of the vibrating knife-holder *v* is clearly shown in the drawings. The cutter *t* is or may be formed from a flat plate of steel with parallel edges, the cutting-edge forming a perfectly straight line, and not curved or spiral, as in other cutting-off devices. The plane surface of holder *v*, to which the cutter *t* is attached by means of screws *w*, is inclined to the plane of the axis of shaft *u* in the manner shown in the drawings, but in a less degree than therein shown. About one-eighth, or at most three-eighths, of an inch of inclination to a foot in the length of the knife is sufficient.

The cutting-edge of the vibrating blade *t* should be sharp, the angle not more than sixty degrees. The angle of the edge of knife *s* should be only as much less than ninety degrees as is required to clear the edge of the knife *t* when making a cut. The throw of the vibrating blade should be so adjusted that it will pass no farther upward at each stroke than just far enough to complete the cut. The paper F, in passing from the cylinder G or its equivalent cylindrical rod to the box on the holder, passes with its outer or finished surface against the edge of the stationary blade, as is clearly shown in the drawings. The shaft *u* is carried in suitable bearings or boxes, *x*, in frame H, with the axis of the shaft a little above the plane of the lower face of the knife *s*. The plane of the knife or cutter *t* is thus thrown up toward the paper, and makes a cleaner cut than if the shaft were placed in a lower position.

By placing the vibrating cutter under and on the pasted or glued side of the paper the upward cut against the horizontal stationary edge bevels slightly the edge of the paper, cutting more off the under or white side of the paper than from the upper finished, colored, or dark side, in such manner that where the end of the covering-paper appears on the face of the covered box no white line is seen, as would be and is the case when the cut is made at a different angle or from above, as in other cutting-off devices. By thus cutting from below upward, making a quick cut and

not allowing the vibrating cutter to pass upward more than is necessary, I find in practice that the knives or cutters do not accumulate glue or paste, and are therefore very easily kept clean.

The stationary blade, knife, or cutter *s* is secured to a suitable rib, *y*, by screws *z*, passing through slots in the blade to admit of adjustment by the adjusting-screws 1 and 2 or otherwise. It is evident that either or both the knives may be provided with adjusting devices or equivalents for those described for adjusting the cutting-edges to each other by moving and securing the stationary blade *s*.

The cutting-off device J of my invention may be provided with suitable appliances for operating it by the foot or in any other convenient manner; but I prefer to have it act automatically, for which purpose I employ a suitable cam, *m*, spring L, vibrating cam-rod 3, connecting-rod 4, slotted arm 5, and means for attaching, connecting, and adjusting the same.

When the shaft C is carried by an adjustable hanger, E, as described, the parts must be made adjustable in length, as is clearly shown in the drawings, by suitable slots and bolts or otherwise, in order that the parts may be adjusted to the shaft C. The slots 6, bolts 7, screw-stud 8, and change-holes 9 are provided for that purpose. The slotted arm 5 is also constructed with a clamp, as shown, to be easily changed and adjusted in position on the shaft *u*, and is slotted, as shown, to regulate easily the throw of the knife or cutter *t*.

The relative angular positions of the box-holder B and cam *m* may be readily adjusted either by means of set-screw D or of set-screw 10.

When the machine is in operation, the end of the covering-paper F is stuck onto the box, which has been placed on the holder B, and the holder is turned by hand or otherwise until the length of paper, if cut off where it lies across the edge of the stationary cutter, is just sufficient to go around the box and lap over just enough. The cam *m* is then placed and secured in the position shown clearly in Fig. 2 and the parts so adjusted that the vibrating knife-edge is in its lowest position. The next movement in the direction of the arrow, Fig. 2, will allow the end of the cam-rod to fly up into the recess 11 of the cam, and the spring L will then draw it instantly up into that recess, imparting the desired quick and rapid motion to the vibrating cutter, shearing the paper off along the edge of the stationary knife.

The cam *m*, I place upon the left side of the sleeve *d*, as shown in the drawings, in order that the weight of the box-holder may be in part neutralized by the upward pressure of the end of the cam-rod, thereby reducing the wear of the shaft C in the sleeve to a minimum. The cam-rod 3 is divided, as shown at 3^a, and is pivoted to a leg of the frame A by

a stud-bolt, 12, which may be changed to the holes 13 to correspond with changes in the position of the parts of hanger E. The spring L may be any suitable spring attached in any manner to give the proper throw in the direction required; but in the drawings it is represented as a spiral wire attached at its upper end to the frame A by a suitable stud, 14, and to the rod 3 by a suitable stud, 15. In this example of my invention the rod 3 is guided by the frame A on one side and by the brace-bar *f* on the other. When the paper thus automatically cut off has been laid upon the box, the box, having been revolved to receive it, is then removed from the holder and another placed thereon. By the last turning of the box-holder the cam has been also revolved, bringing the edge of the vibrating cutter to its lowest position, and the operator finds the end of the paper lying upon the face of the vibrating knife. He takes hold of the paper, pulls it down, attaches it to the box, and again turns the box in the direction of the arrow until a second length is automatically cut off as before.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a paper-box-covering machine, the combination of a stationary knife or cutter, a frame upon which said knife is mounted, a vibrating knife or cutter, a shaft carrying said vibrating knife, arranged above the plane of the lower face of the stationary knife, and

with the movable knife secured thereto in a plane inclined to that of the stationary knife, the cam on the box-holder shaft, and connections, substantially as described, interposed between said cam and cutter for vibrating said movable knife.

2. The box-holder shaft C, in combination with the adjustable hanger E and its brace *f*, the cam *m* on said shaft, the cam-arm 3, the cutting mechanism, and means, substantially as described, for communicating the movements of said arm to the cutting mechanism.

3. The combination, with the frame A, of the cylinder G, knives *s* and *t*, the shaft *u*, carrying the knife *t* and provided with the arm 5, the shaft C, the box-holder B and cam *m* on said shaft C, the pivoted cam-rod 3, the rod 4, connecting the cam-rod with the arm 5, and a spring for retracting the rod 3, substantially as described.

4. The combination, with the frame A, cylinder G, knives *s* and *t*, shaft *u*, and the arm 5 on said shaft, of the shaft C, carrying the box-holder and cam *m*, the adjustable hanger E, adjustable cam-rod 3, the rod 4, connecting said cam-rod and the arm 5, and the retracting-spring L, substantially as described.

In testimony whereof I have hereunto set my hand this 18th day of June, A. D. 1887.

CHARLES E. CLUTE.

Witnesses:

DAVID R. SMITH,
HENRY BURHER.