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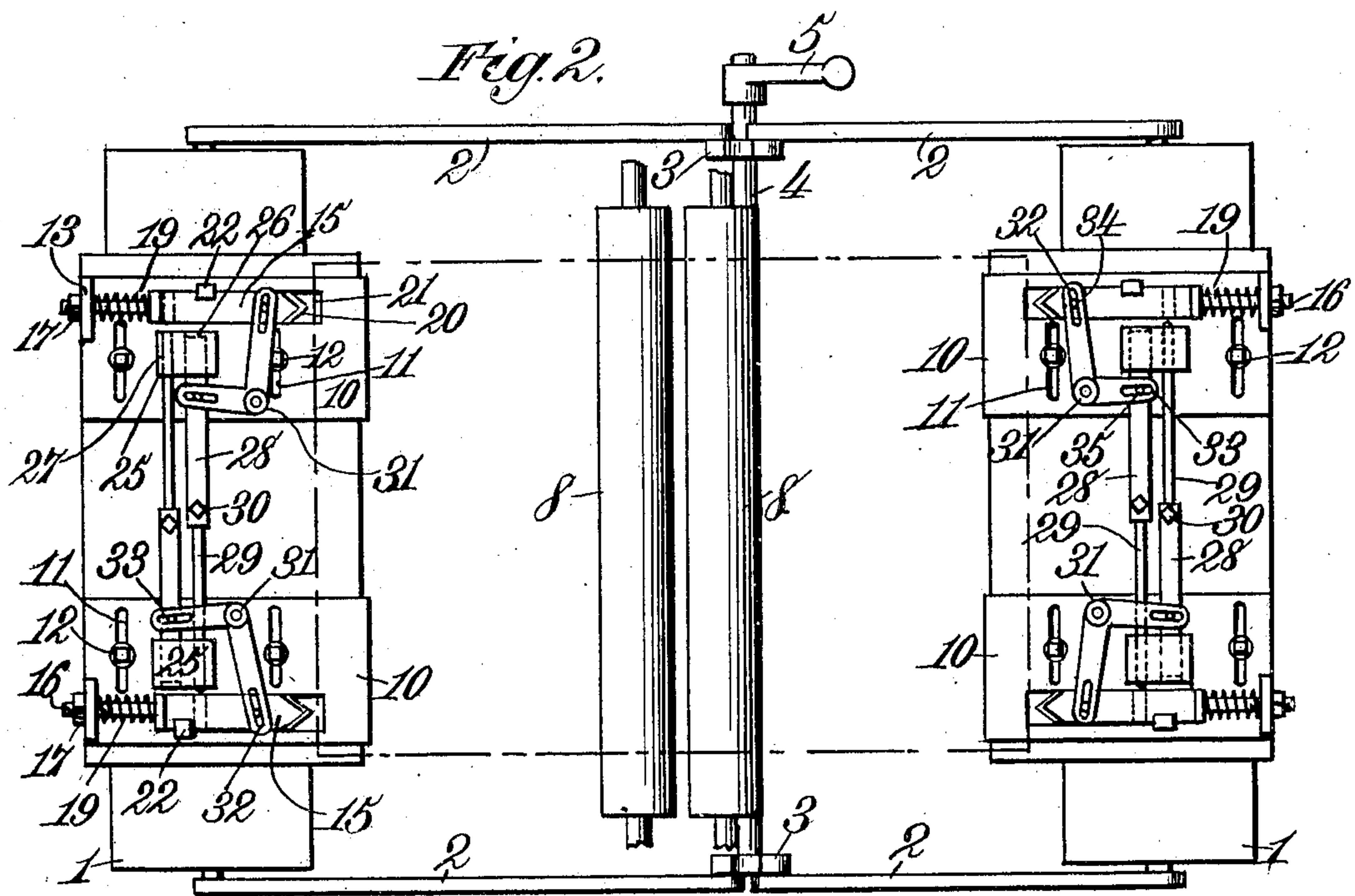
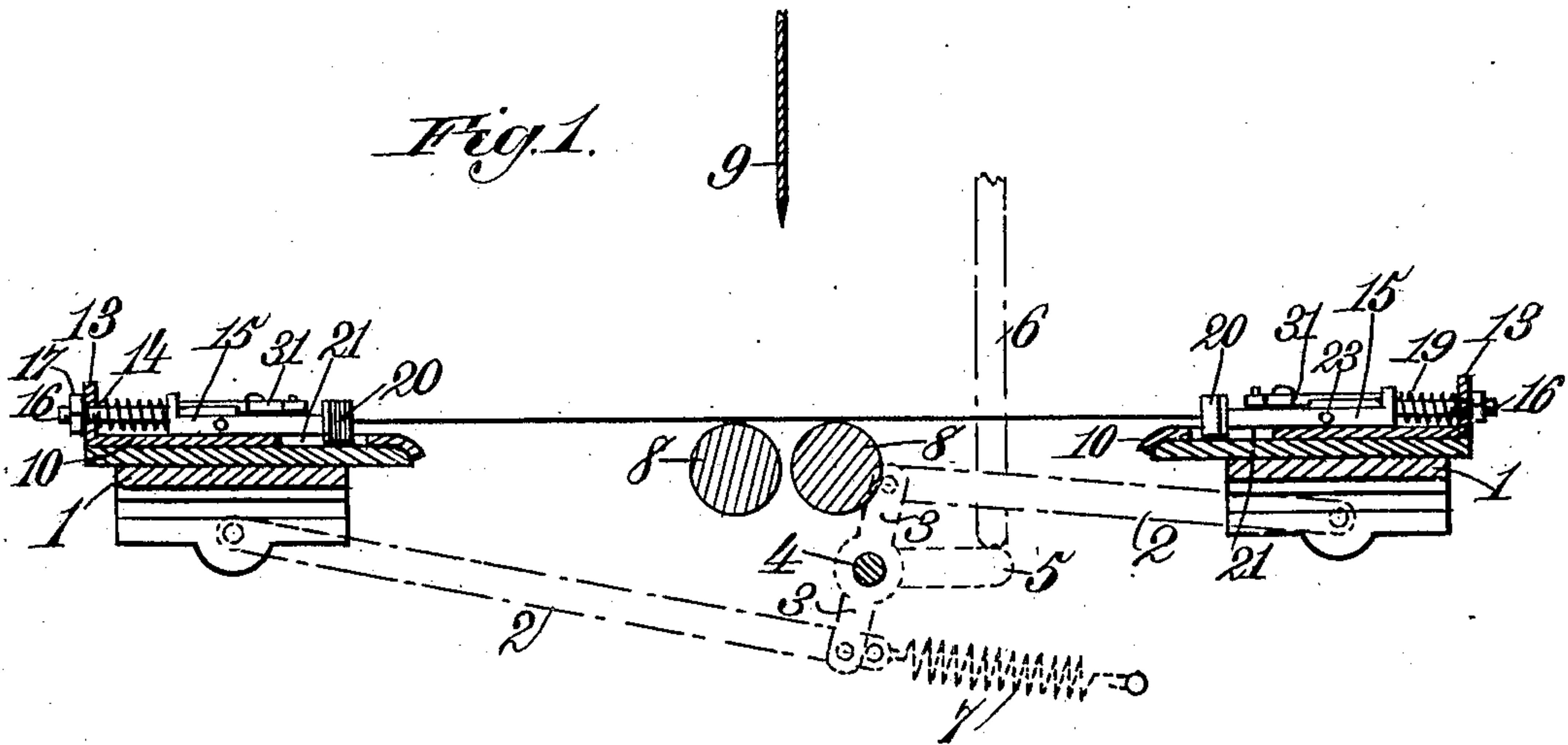
PATENTED MAR. 17, 1908.

F. WESTWOOD.

ATTACHMENT FOR PLATE DOUBLING MACHINES.

APPLICATION FILED DEC. 31, 1906.

2 SHEETS—SHEET 1.



Witnesses.

Robert Smith.

[Signature]

Inventor.

Felix Westwood.

By

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James L. Norris.

Att'y.

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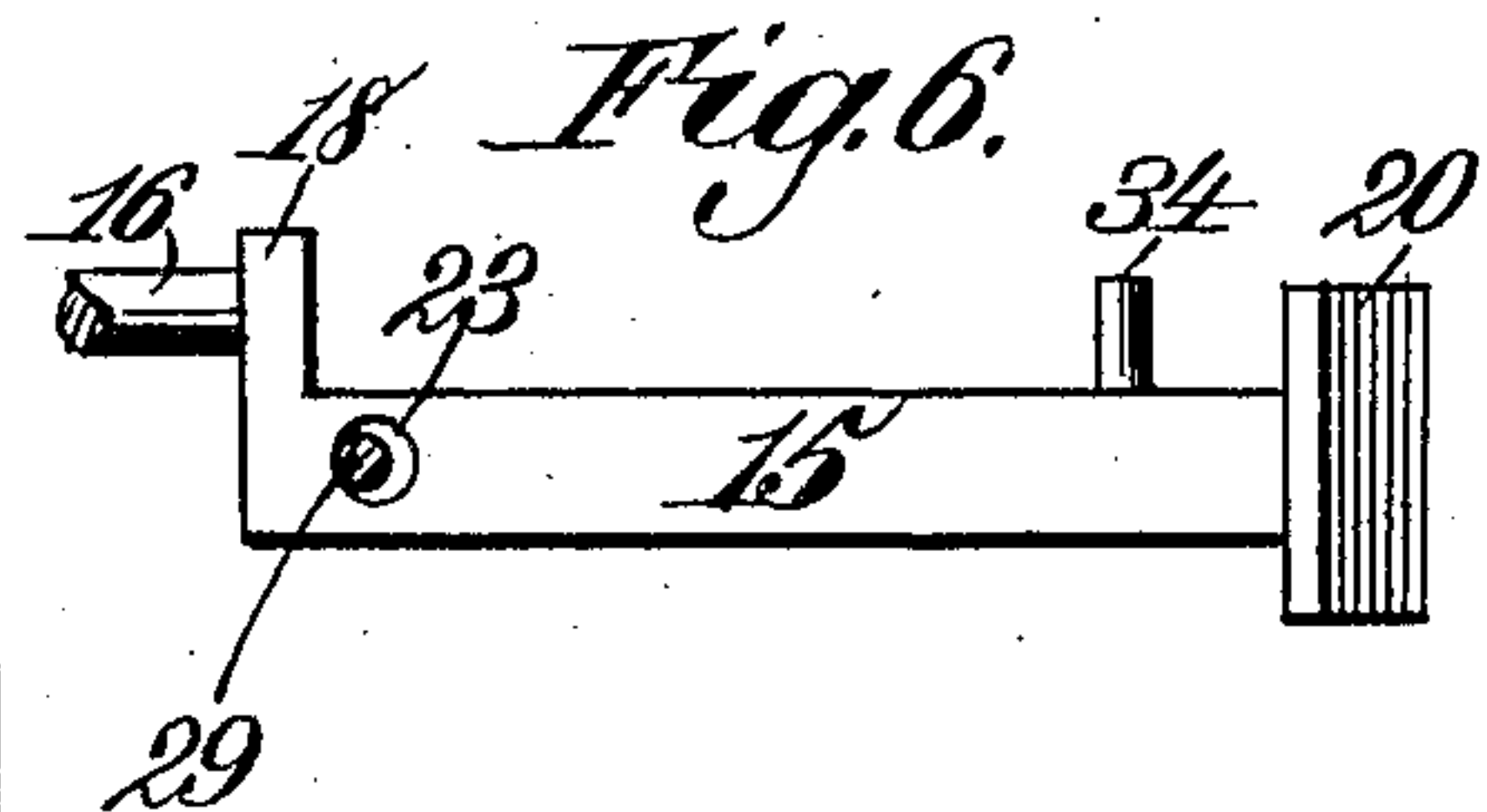
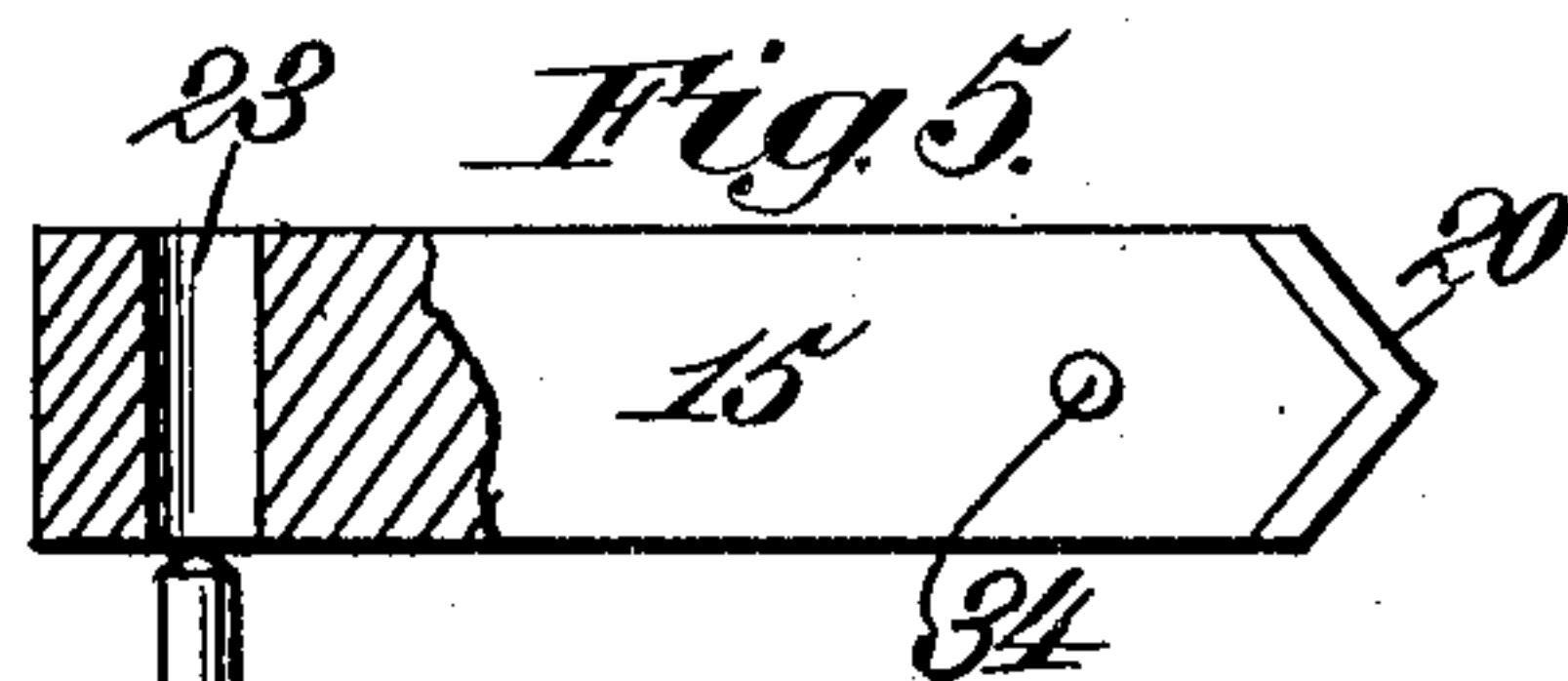
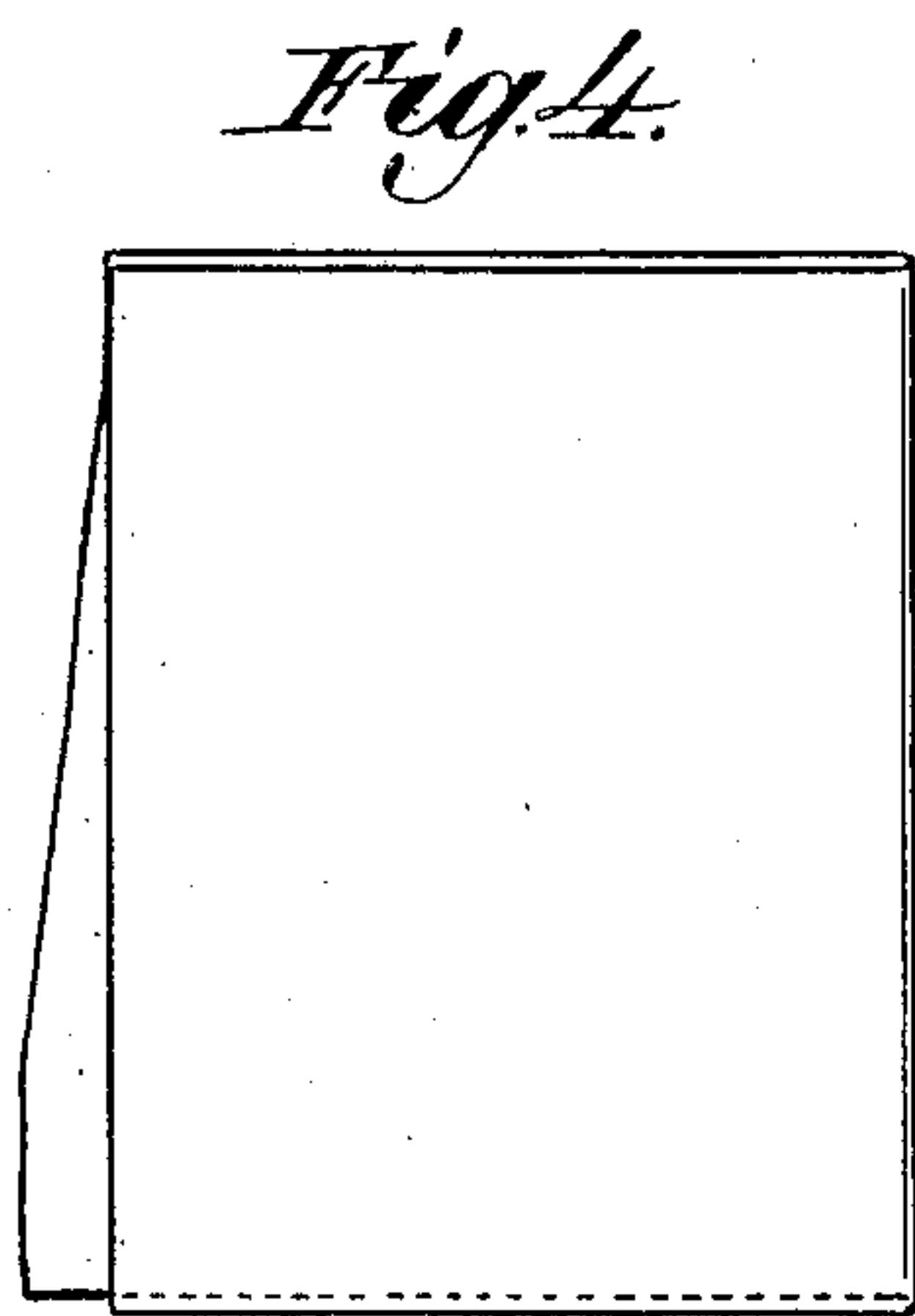
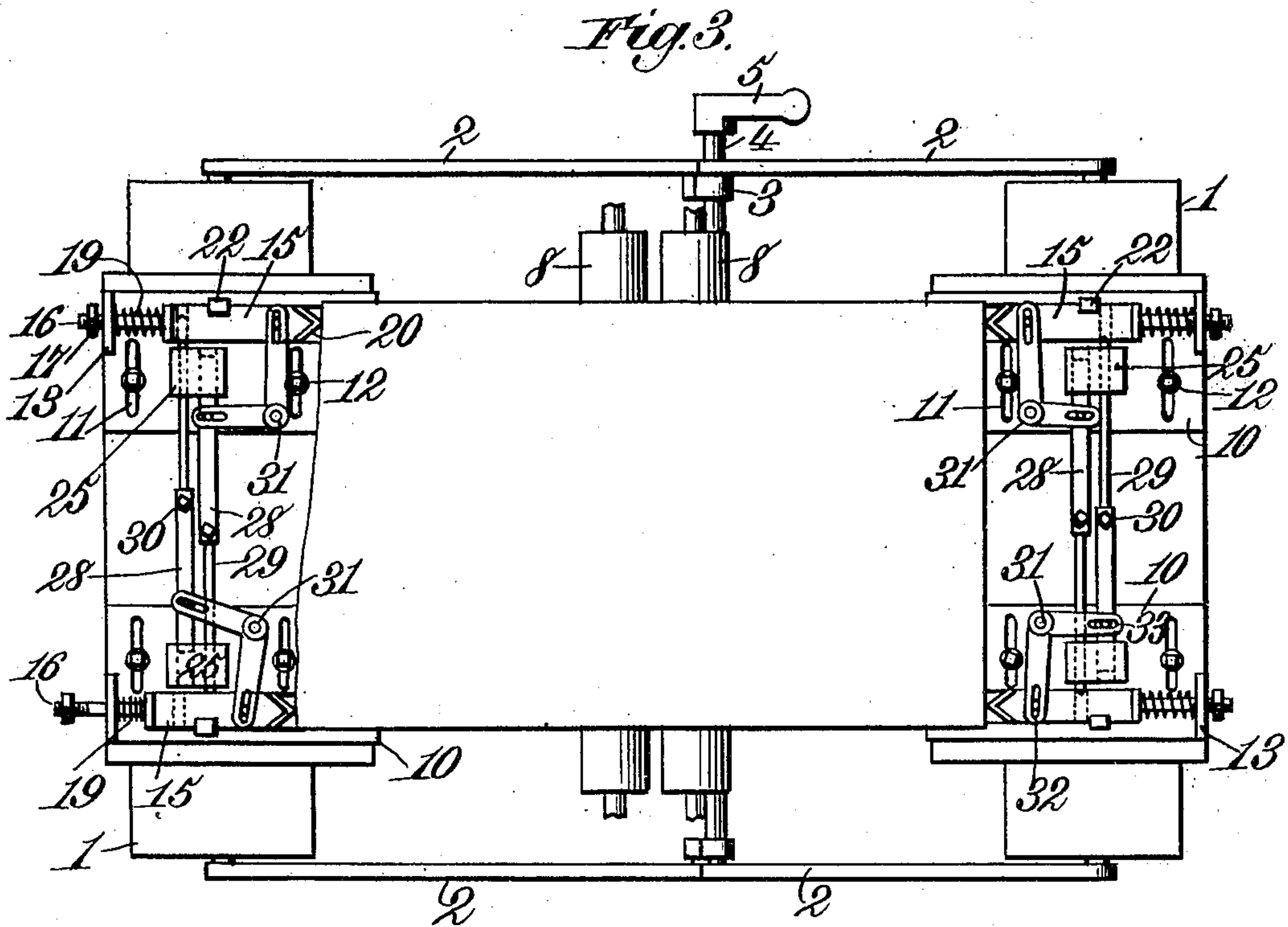
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

FELIX WESTWOOD, OF SHORT CREEK, WEST VIRGINIA.

ATTACHMENT FOR PLATE-DOUBLING MACHINES.

No. 882,434.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed December 31, 1906. Serial No. 350,222.

To all whom it may concern:

Be it known that I, FELIX WESTWOOD, a citizen of the United States, residing at Short Creek, in the county of Brooke and State of West Virginia, have invented new and useful Improvements in Attachments for Plate-Doubling Machines, of which the following is a specification.

This invention relates to a gage attachment for plate doubling machines, and the primary object of the same is to provide means for coöperating with the plate support, tables or leaves, whether the latter have a sliding, folding or other movement, to uniformly double a sheet that may have an irregular extremity at a central point with respect to the shortest length of the sheet.

A further object of the invention is to prevent unnecessary waste of metal in trimming the irregular ends of rolled sheets by doubling a sheet having one regular extremity at such point as to solely project the irregular extremity to permit the latter to be cut off or removed without affecting the regular extremity.

In rolling metal plates or sheets, the metal at one extremity of the sheet is frequently dragged out so that the sheet has an irregular end, and in pursuing the ordinary operation of doubling the sheet for rerolling or for simultaneously forming a pack containing a plurality of sheets in laminated arrangement, the doubling machines now commonly employed double or fold the sheet at such point as to render it necessary to trim both ends of the sheet in order to square up the latter. This operation results in material loss of metal, and the advantage of the present attachment over machines previously employed for doubling rolled sheets, is that the irregular extremity is projected for trimming purposes with considerable economy in the use of metal and expedition in performing the trimming operation.

The gage attachment embodying the features of the invention includes as essential elements a pair of slides normally projected inwardly a uniform distance and independently movable or capable of having irregular movement imparted to each automatically by engagement with the end of the metal plate or sheet when said end is irregular, or moved regularly when the sheet or plate end is practically square, the movement of one slide through intermediate mechanism causing the other slide to become locked when

the movements of the slide are irregular, and both slides when slightly moved by engagement with a squared sheet end becoming instantly locked to facilitate the actuation of the slides which may be in contact with an irregular extremity of a plate or sheet, and thus insure an accurate disposition of the plate or sheet in relation to the doubling mechanism and a fold or doubling of the sheet to fully project the irregular extremity beyond the regular extremity of the sheet.

In the drawings, Figure 1 is a longitudinal vertical section of a portion of a plate doubling machine showing the gage attachment thereon. Fig. 2 is a top plan view of the devices shown by Fig. 1, and showing the gage attachment at each end as it will appear when the parts are in normal position or coöperating with a sheet having the opposite extremities squared or regular. Fig. 3 is a view similar to Fig. 2, showing the gage attachment in coöperation with a sheet having one extremity irregular. Fig. 4 is a detail perspective view of a sheet doubled by the use of the gage and illustrating the irregular extremity of the sheet or plate projected for trimming purposes. Fig. 5 is a plan view of one of the gage slides and a portion of one of the locking bolts for the slide, illustrating parts of the slide and bolt as being broken away. Fig. 6 is an edge elevation of one of the gage slides.

Similar characters of reference are employed to indicate corresponding parts in the views.

In describing the application and operation of the gage attachment, reference will be made to one form of plate or sheet doubling machine for convenience in explanation, and this particular form of machine has inwardly and outwardly slidable or movable tables or supports. The use of the gage, however, is not limited in the least to this type of doubling machine, as it may be applied to a doubling machine having folding leaves with a break joint at the center, or to any other class of doubling machines to which it may be found applicable.

The numeral 1 designates an inwardly slidable table or support, one of these tables being located at each end of the machine and having an actuating lever 2 movably attached thereto and projecting inwardly towards the center of the machine. The inner ends of the two levers 2 are movably connected to diametrically opposed arms 3

secured on a rock shaft 4, the latter having an arm 5 projecting therefrom and operable at intervals by a suitable plunger 6 to impart movement to the rock shaft 4 in such direction as to throw the sliding tables or supports 1 outwardly to receive a plate or sheet, the outward movement of the tables 1 being in opposition to the retractile effort of a spring 7 attached to the inner end of one of the levers 2. Between the tables or supports 1 are a pair of doubling rolls 8, and over these rolls is a reciprocating creasing blade or analogous device 9. The mechanism thus far described forms no part of the present invention, and as hereinbefore indicated the gage attachment may be applied to a doubling machine having folding leaves with a break-joint at the center of the machine.

One of the improved gage attachments is applied to each end of the machine and the construction is precisely similar in both devices, and a description of one will suffice for both. Each attachment comprises a supporting plate or base 10 at opposite extremities, each supporting plate or base having transverse slots 11 formed therein and engaged by headed studs or screw devices 12 secured to the table 1. The plates or bases 10 carry all the working parts of the gage and are adjustable inwardly and outwardly with respect to each other to accommodate plates having different widths. Each plate 10 has an outer upwardly projecting lug 13, with an opening 14 therethrough. In line with the projecting lug 13 and movable longitudinally over the plate or base 10 is a slide 15, having an outer stem or shank 16 movable through the opening 14 of the lug 13 and provided with a nut 17 to bear against the outer surface of the lug 13 to limit the inward movement of the slide. At the inner termination of the stem or shank 16 the slide has an upstanding angular projection 18, and between this projection and the lug 13, and surrounding the stem or shank 16, is a spring 19, which tends to force the slide 15 inwardly into normal position when said slide is liberated or unengaged. The slide 15 has a V-shaped head 20 at its inner end, the said head being in planes at right angles to the slide and projecting equally above and below the latter to insure reliable contact with the edge of the plate to be doubled. The lower projecting portion of the head 20 extends into a slot 21 disposed longitudinally with relation to the supporting plate 10 in which it is formed. This slot 21 with the head 20 projecting therein provides means for preventing the slide from having lateral play, but does not in the least restrict the longitudinal movement of the slide over the supporting plate 10. The slide 15 is prevented from having a vertical movement or from jumping upwardly by an angular reten-

tion lug or guide 22, which engages the outer edge of the said slide. Each slide 15 at opposite ends of the attachment is duplicated in construction and has adjacent to the angular projection 18 thereof an opening 23 extending transversely therethrough.

On each plate 10 adjacent to the inner edge of the slide 15 is a guide 25 having an enlarged bore 26 extending therethrough, and a smaller bore 27 normally in alignment with the opening 23 of the slide, both bores 26 and 27 being in transverse relation to the guide and the one parallel to the other. The enlarged bores 26 movably receive enlarged shanks 28 of locking bolts, which have reduced stems 29 telescopically fitted therein and held in fixed position by set screws 30, one of the latter engaging each shank and stem. As before indicated, the shanks 28 are free to move in the bores 26, and the stems 29 have free sliding movement through the bores 27. The shanks and stems are in reverse positions to engage the two slides, and each is operated by one of the slides to lock the remaining slide through the medium of a bell-crank lever 31 fulcrumed at its angle on the plate 10 and having slots 32 and 33 in the free ends of its arms engaging studs 34 and 35 respectively projecting from the upper portions of the slide 15 and adjacent shank 28 of one of the bolts. The slots 32 and 33 permit the bell-crank lever 31 to move over the slide and bolt shank and thus have a clearance. It will be seen that as the slide 15 moves outwardly the bolt engaged by the bell-crank lever 31 will be shot across the attachment in planes at right angles to the movement of the slide and into the opening 23 of the opposing or remaining slide.

The diameter of the openings 23 is greater than the diameter of the shanks so as to cause the said shanks to enter the said openings after the slides have been slightly moved when engaged by the square end or extremity of the plate to be doubled, and which slight movement of the slides is necessary to shoot the bolts in opposite directions and lock the slides against movement to an extent greater than that required to obtain a positive engagement of the heads 20 with the plate end as clearly shown by Fig. 5. When a plate to be doubled is placed on the machine under the creasing blade 9 and such plate has square or regular ends, the gage attachments at opposite ends of the machine will serve to center the plate or position the latter to cause the creasing line to be exactly in the center with relation to the opposite ends, as clearly shown by Fig. 2. When a plate to be doubled is placed on the machine and has one squared or regular end and the opposite end irregular, the one gage attachment, or that cooperating with the regular end, will have the slides thereof actuated only sufficiently to cause the locking bolts to

engage the said slides, and the opposite end of the plate to be doubled will automatically actuate the slides of the opposite attachment through the pressure instituted by the spring 7 on the tables 1 until the irregularity is compensated for, and under these conditions the one slide 15 engaging the greatest portion of the irregular projection of the plate to be doubled will be pushed outwardly the required distance to compensate for such projection, whereas the remaining slide of the attachment at this end of the machine will become locked and the head thereof will remain in immovable contact with that part of the irregular end of the plate to be doubled which is nearest to the transverse central line of the plate, and the locking of this one slide permits the other slide to have unrestricted motion. When a plate to be doubled having an irregular extremity has been properly centered on the machine, as shown by Fig. 2, and in accordance with the operation just explained, the creasing blade 9 will be caused to descend and crease or double the plate in such manner as to have the irregular end of the plate projected outwardly beyond the regular end of said plate, as shown by Fig. 4, and permit the irregular projection at one end of the plate to be trimmed off with a minimum loss of metal and a material saving in treating a large number of plates.

When the plates are cleared from the machine by the doubling operation, the springs 19 cause the slides 15 to return to normal position and at the same time the tables or supports 1 also resume their normal locations. The bases 10, when adjusted on the tables 1 to adapt the attachment for use with plates having different widths, would, but for the telescopic or adjustable construction of the bolts, cause the said bolts to become inoperative. In making this change in the position of the plates 10, the stems 29 are correspondingly adjusted in the shanks 28, the relationship between the bell-crank levers and the bolt shanks always remaining the same in view of the fact that said bell-crank levers are mounted on the plates 10. When a plate to be doubled has both extremities irregular, which may frequently happen, the gage attachments will properly center the plate by coöperation with the opposite irregular extremities and the doubling operation will take place at such point with respect to the plate that both extremities will be projected for trimming purposes without the least unnecessary waste of metal. It will therefore be understood that the gage attachments operate effectually both with a plate having a single irregular extremity and a plate having both extremities irregular.

It will be understood that changes in the proportions, dimensions and minor details may be resorted to without departing from the spirit of the invention.

Having thus described the invention, what is claimed, is:

1. The combination with a plate doubling machine, of slides at the ends thereof, and locking means for the slides operated by the movement of the latter.

2. The combination with a plate doubling machine, of slides at opposite extremities provided with openings, and reversely movable locking devices operated by the slides to engage the said openings.

3. The combination with a plate doubling machine, of slides at the ends thereof adjustable to and from each other, and locking means for the slides operated by the movement of the latter and adjustable to correspond to the adjustment of the slides.

4. The combination with a plate doubling machine, of slides at the ends thereof adjustable to and from each other, and reversely movable locking bolts connected to said slides and comprising telescopic parts, the locking bolts being adapted to engage portions of the slides.

5. The combination with a plate doubling machine, of slides at the ends thereof adjustable to and from each other and having openings in the outer portions of the same, adjustable bolts to engage the slides, and levers connecting the slides and bolts.

6. The combination with a plate doubling machine, of slides at the ends thereof, and locking devices for the slides connected to and actuated by the latter, the locking devices being movable in reverse directions.

7. The combination with a plate doubling machine, of base supports at the ends thereof having slots therein, slides mounted on the base supports and provided with angular heads engaging the said slots, and means projecting upwardly from the base supports for preventing the slides from elevating above a predetermined plane.

8. The combination with a plate doubling machine, of base supports at opposite ends thereof provided with slots and upstanding guide devices, slides having angular heads engaging the slots and also with reduced stems movable through a portion of the upstanding guide devices, means for returning the slides to normal position, and locking means for and connected to the slides and operated by the movement of the latter.

9. The combination with a plate doubling machine, of slides at the ends thereof having angular heads projecting above and below the same, and locking means for the slides operated by the movement of the latter.

10. The combination with a plate doubling machine, of slides at the ends thereof having openings therethrough, and reversely movable locking devices operated by the slides to engage the said openings, the portions of the locking devices engaging the openings being of less diameter than the latter.

11. The combination with a plate doubling machine, of slides at the ends thereof having openings therethrough, and reversely movable locking devices operated by the slides to engage the said openings.

12. The combination with a plate doubling machine, of independently movable slides at the ends thereof, and reversely movable locking devices for the slides and operated by the movement of the latter.

13. The combination with a plate doubling machine, of slides at the ends thereof, and locking means interposed between the slides and operated by the movement of one slide to lock the other slide against movement.

14. A plate doubling machine having at opposite extremities movable devices for

engaging the ends of a plate, and automatically operating locking means to engage said devices, the devices at one end of the machine, when engaged by a plate having a regular end, being equally moved and becoming locked by said regular end of the plate in engagement therewith, and the similar devices at the opposite ends of the machine in engagement with an irregular plate end being irregularly moved and one of the same becoming automatically locked.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FELIX WESTWOOD.

Witnesses:

JAMES L. NORRIS, Jr.,
CHAS. S. HYER.