

No. 741,180.

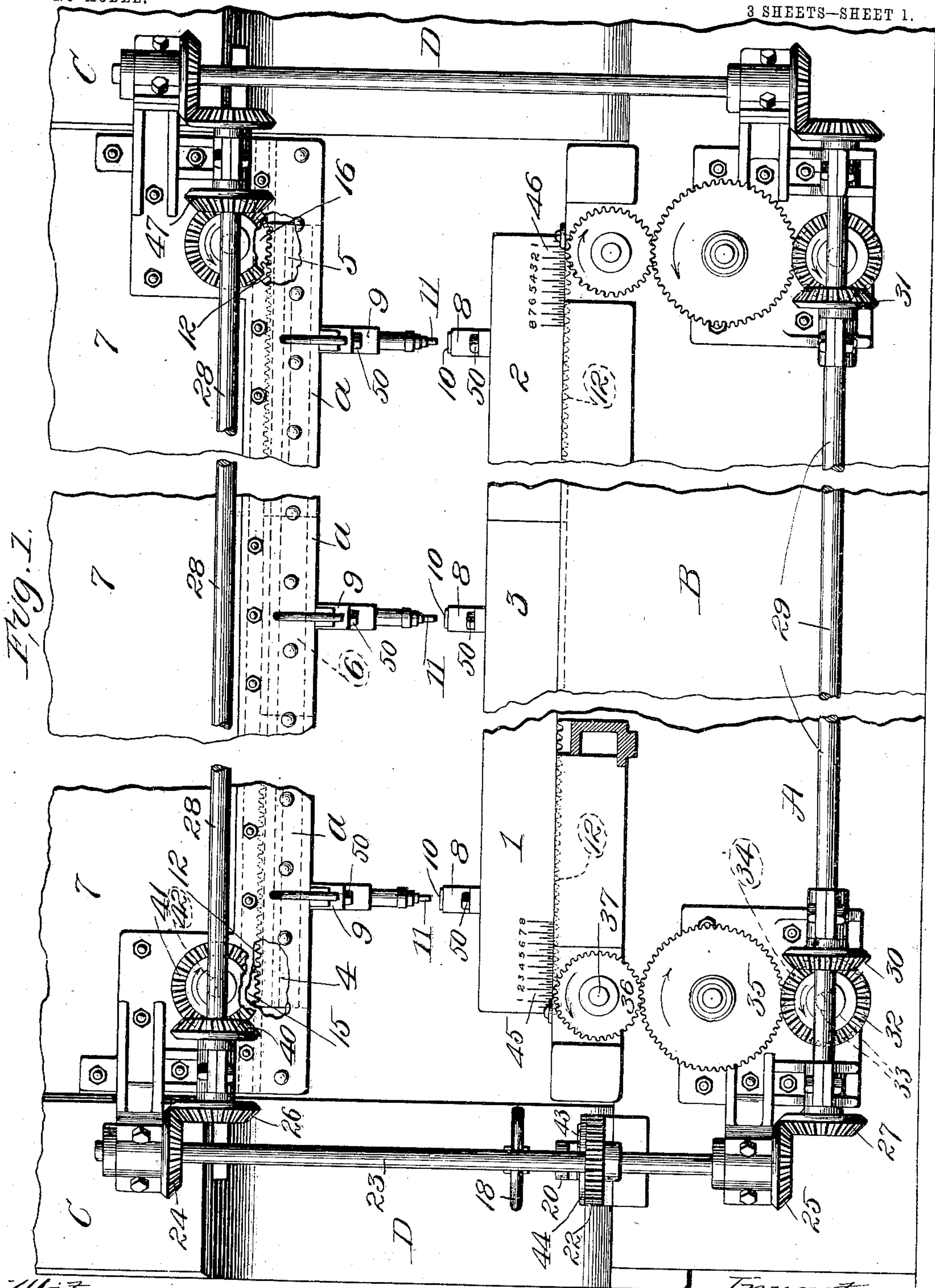
PATENTED OCT. 13, 1903.

J. S. STEVENSON.  
MULTIPLE PUNCHING MACHINE.

APPLICATION FILED NOV. 5, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses:

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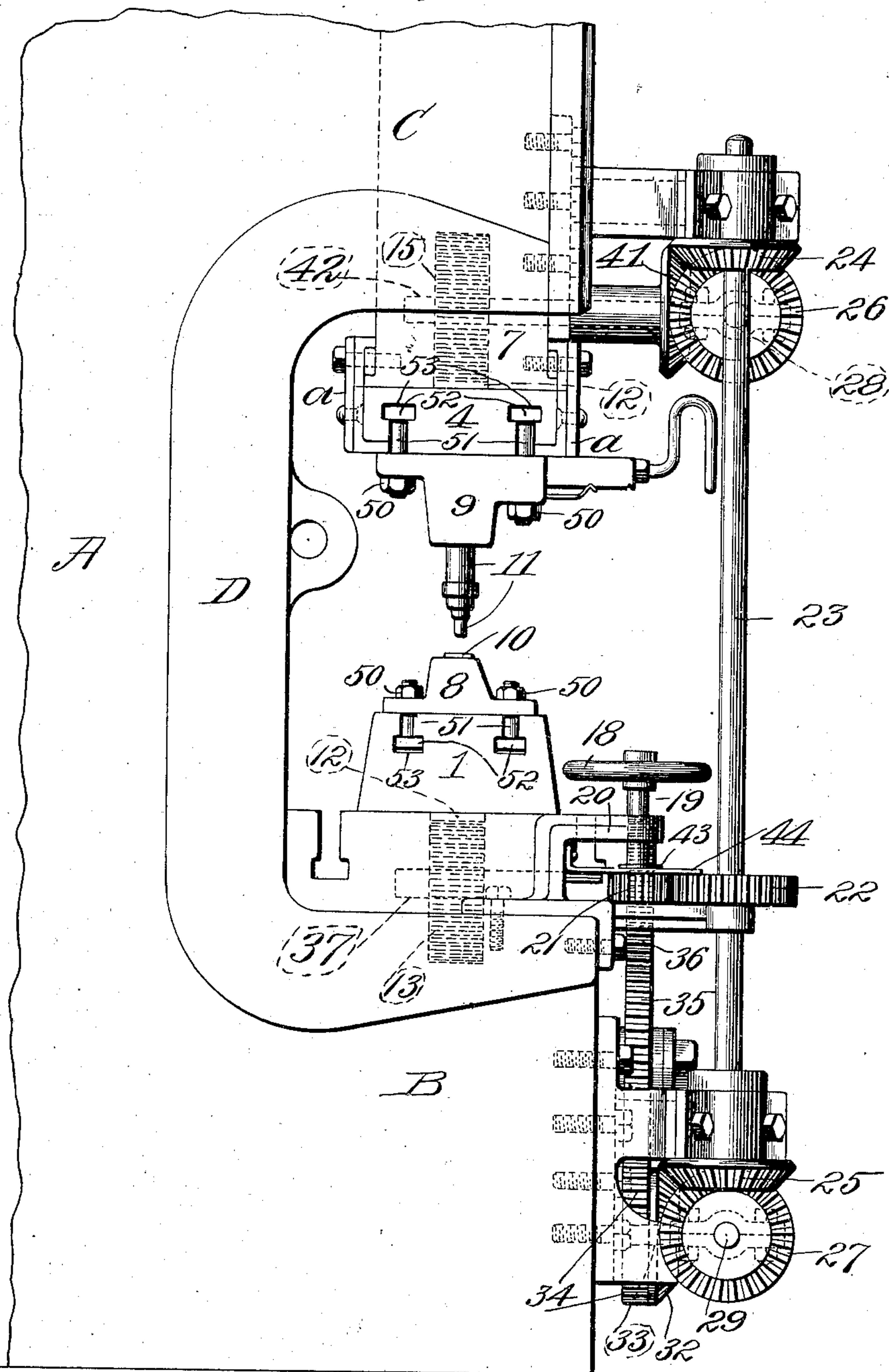
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3 SHEETS—SHEET 2.

Fig. 2.



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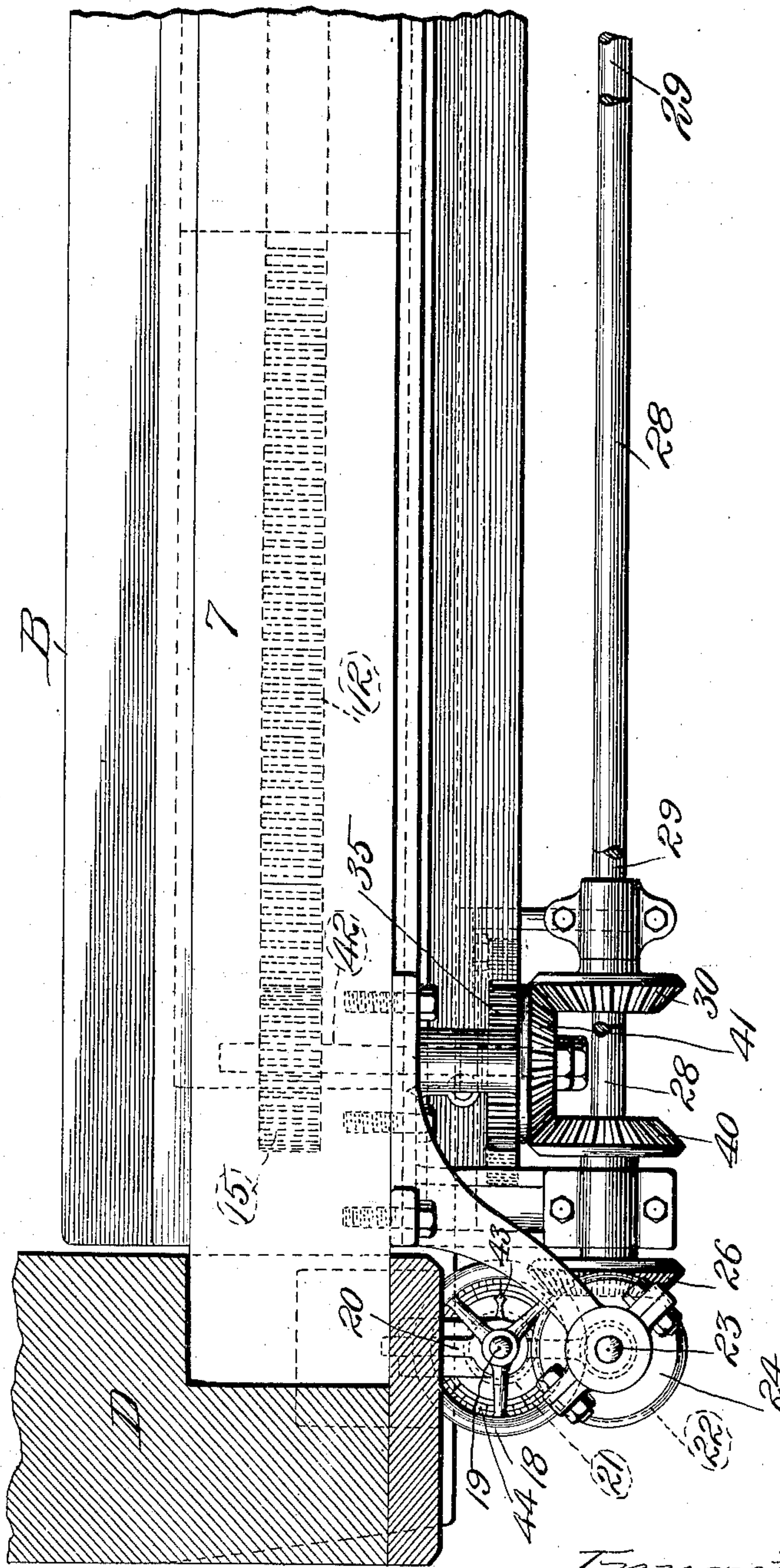
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3 SHEETS—SHEET 3.

Fig. 3.



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# UNITED STATES PATENT OFFICE.

JOHN S. STEVENSON, OF DETROIT, MICHIGAN, ASSIGNOR TO AMERICAN CAR & FOUNDRY COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF NEW JERSEY.

## MULTIPLE PUNCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 741,180, dated October 13, 1903.

Application filed November 5, 1902. Serial No. 130,158. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN S. STEVENSON, a citizen of the United States, residing at the city of Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Multiple Punching-Machines, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it ap-  
 10 pertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevational view, broken for the purpose of better illustration. Fig. 2 is an end elevational view of the gap of a multiple punch, and Fig. 3 is a top plan view of one end of the punch.

This invention relates to a certain new and useful improvement in multiple punching-  
 20 machines.

The object of this invention is to produce a multiple punching-machine in which a portion of the punches are held in relatively fixed position and the companion punches are capable of longitudinal movement across a por-  
 25 tion of the machine, the movement of punches at opposite sides being synchronized, so as to insure uniform spacing of the same from a fixed central point, said parts being manually operative and adjusted to scales which de-  
 30 termine the amount of movement thereof.

To that end the present invention consists of the features of construction and arrangement of parts, all as hereinafter fully de-  
 35 scribed, and specifically pointed out in the claims.

Referring to the drawings, A represents a broken portion of the frame of a power-punch, only that portion thereof surrounding the gap being shown, as it is only that portion of the machine with which my invention coöperates. B represents the lower portion of the frame, C the upper portion, and D the yokes at the ends, which yokes are integral with the frame  
 45 of the machine.

Resting upon the lower portion of the frame are bed-blocks 1, 2, and 3, the blocks 1 and 2 being movable longitudinally and the block 3 being held firmly in the central portion of

the length of said bed portion of the frame. 50  
 Coincident with said blocks 1, 2, and 3 and above the same are the slidable head-blocks 4, 5, and 6, respectively, which are carried from the vertically-movable head-piece 7 by means of yokes *a a*, secured to said head-  
 55 piece, partly surrounding and supporting said blocks 4, 5, and 6, so as to permit shifting of said blocks on said head, to which head is imparted reciprocatory motion for the punch-  
 60 ing operation in the usual manner characteristic of this class of machines and being well understood will not be described in detail. Secured in like manner to the upper face of blocks 1, 2, and 3 and the lower face of blocks  
 65 4, 5, and 6 are slidable blocks 8 and 9, which carry, respectively, the female members 10 and the male members 11 of the punch proper, and it is to secure proper positioning of these members that is sought by the present inven-  
 70 tion by manually-operated means characteristic of this machine, in contradistinction to power-operated devices in a self-contained machine in the application for patent for multiple punching-machine filed herewith. To that end the blocks 1 2 and 4 5 are pro-  
 75 vided on their lower and upper faces, respectively, with racks 12, with which racks mesh the pinions 13 14 and 15 16, which upon rotation in the direction of the arrows will cause the said blocks to move in a direction  
 80 away from the central portion of the machine and when moved in the opposite direction will cause said blocks to move toward the center, carrying with them the punches in either or both directions. 85

As it is important that the male and female members of the punch shall be in exact coincidence to properly perform this function, it is important that when once set when one member is moved in either direction the op-  
 90 posing member shall be moved the same distance in like direction. For that purpose I provide the hand-wheel 18 upon the shaft 19, held in the yoke 20, and with said shaft is carried the pinion 21, meshing with the  
 95 gear 22, which latter is secured to the shaft 23, provided at its upper and lower ends, respectively, with the bevel-gears 24 and 25,



keyed to said shaft and slidable thereon, meshing with the corresponding bevel-gears 26 and 27, keyed to the shafts 28 and 29.

Upon the shaft 29 are two beveled pinions 30 and 31, which have their beveled faces in opposite directions. The pinion 30 meshes with the pinion 32, keyed to the shaft 33, upon which is the pinion 34, meshing with the gear 35, which in turn meshes with the pinion 36, thereby causing pinions 32 and 36 to travel in the same direction, while pinion 36 is carried on the shaft 37, which has at its opposite or inner end the pinion 13, meshing with the rack 12 of block 1.

Near the upper end of the shaft 23 the pinion 24, meshing with pinion 26 and driving said shaft 28, gives rotary movement to the bevel-gear 40 on said shaft 28, which in turn meshes with the bevel-gear 41 upon the shaft 42, at the inner end of which is the pinion 15, meshing with the rack 12 on the upper face of the block 4.

Connected with the hand-wheel 18 is an indicating-pointer 43, which indicates upon the scale 44 the exact relative positions of the parts operated through said hand-wheel, the said scale and pointer being for the convenience of the person manipulating said hand-wheel, while the end blocks 1 and 2 are likewise provided with scales 45 and 46, so as to indicate from the front of the machine such relative positions also, thus serving as a safeguard against accidental displacement of the parts.

The description of the gearing herein applicable to the machine as located at one end is duplicated at the opposite end thereof, with this difference: The bevel driving-gears 30 and 40 at the left-hand end and the bevel driving-gears 31 and 47 at the right-hand end are reversed, thus causing opposite movement of all their correlated parts, and while synchronizing the movement thereof such movement is imparted in the opposite direction, so that as the blocks 1 and 4 move toward or away from the central portion of the machine their corresponding blocks 2 and 5 will also move toward or away from such central portion exactly the same distance, as will be indicated by the scales at the outer end of both blocks 1 and 2, during which movement the central blocks 3 and 6 remain fixed.

The particular application of the machine as invented by me has been to the punching of sheet-metal parts, such as sills used in the construction of metallic railway-cars, and it will be found especially applicable to that class of work or in any style of metallic structures in which precision of punching is required.

It will be apparent that the punches are capable of separate as well as simultaneous adjustment, which is readily accomplished by loosening the nuts 50 upon the bolts 51, the heads 52 of which travel in the longitudinal slots 53, whereby any single punch may be shifted to a new position upon its respective

block. It will also be apparent that while I have only illustrated three punches, one of which is fixed and two movable, a larger number proportioned to the capacity of the machine may be used to advantage, some of which may be capable of movement longitudinally the bed of the machine and others held in relatively fixed position, or the whole series may be movable, if desired, all of which will be within the spirit of my invention.

I am also aware that minor changes in the construction, arrangement, and combination of the several parts of my punching-machine may be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

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

1. In a machine of the described class, a supporting member, a plurality of dies movable thereon, a vertically-reciprocating carrying member, a plurality of punches carried thereby, and parallel, connected means passing longitudinally of said supporting member and said carrying member for causing synchronous movement of said punches and dies; substantially as described.

2. In a multiple punch, a series of adjustable punch-carrying means, and shifting devices extending longitudinally thereof adapted to synchronize the movement of a plurality of said punch-carrying means with relation to other punch-carrying means stationary in the same longitudinal series; substantially as described.

3. In a machine of the described character, a plurality of punches capable of longitudinal movement, some of which punches are movable laterally, in combination with longitudinally-movable supporting means, synchronously-movable dies cooperating therewith, supporting means for said dies, and means extending longitudinally of said supporting means for moving the same; substantially as described.

4. In a machine of the described character, a plurality of punches, some of which are relatively fixed, and some of which are synchronously adjustable with relation thereto, longitudinally-movable supports for said punches, and parallel connected means extending longitudinally thereof for causing such synchronous adjustment; substantially as described.

5. In a machine of the described character, a plurality of punches comprising separate independent male and female members, a movable head carrying a plurality of said male members, longitudinally-movable supports for said members, and connected means extending longitudinally thereof for simultaneously adjusting said male and female members; substantially as described.

6. In a multiple punch, a plurality of punches, and means for simultaneously adjusting the male and female members thereof



with relation to other punches carried in the same head-block; substantially as described.

7. In a machine of the described character, a plurality of longitudinally - adjustable punch-carrying means, and shifting devices extending longitudinally thereof, adapted to synchronize their movement; substantially as described.

8. In a machine of the described character, a plurality of adjustable punch - carrying means slidable on reciprocatory and longitudinally-movable blocks, punches therein, and shifting devices extending longitudinally thereof, and cooperating with said blocks, adapted to synchronize the movement thereof; substantially as described.

9. In a multiple punching-machine, a head-block, a plurality of adjustable reciprocatory punch-carrying means slidable on movable blocks supported in said head-block, and shifting devices adapted to synchronize the movement thereof cooperating therewith; substantially as described.

10. In a multiple punching-machine, a single head-block, a plurality of punch members therein, some of which are relatively fixed and some of which are adjustable, and means for shifting the said adjustable members in opposite directions from said fixed members; substantially as described.

11. In a machine of the described character, relatively fixed members, relatively fixed blocks and punch-carrying blocks slidable thereon, means for moving said punch-carrying blocks, and punch members slidable on said blocks independently of each other; substantially as described.

12. In a machine of the described character, a plurality of sustaining members, one of which is movable, means for moving the same, a slidable block on each of said members, an auxiliary slidable member supported thereby, and a punch member carried by each auxiliary member; substantially as described.

13. In a multiple punching-machine, a head-block, a plurality of relatively movable members carrying punches and dies, controlling means cooperating with said punch and die carrying means, and a fixed member carrying punch members between said movable members; substantially as described.

14. In a machine of the described character, a plurality of adjustable punch - carrying means slidable on longitudinally-movable blocks, and shifting devices extending longitudinally of said blocks, which are adapted to synchronize the movement thereof; substantially as described.

15. In a machine of the described character, a plurality of punch members, some of which are relatively fixed, and some of which are adjustable, longitudinally-slidable head-blocks, and means extending longitudinally thereof, for shifting the position of said adjustable members in opposite directions; substantially as described.

16. In a machine of the described character, a relatively fixed member, a block slidable longitudinally thereon, a punch member slidable on said block, and means extending longitudinally of said block for sliding the same; substantially as described.

17. In a machine of the described class, a supporting member, a plurality of dies movable thereon, a vertically-reciprocating carrying member, a plurality of punches carried thereby, and means for causing synchronous movement of such punches and dies; substantially as described.

18. In a multiple punch, a series of adjustable punch-carrying means, and shifting devices, adapted to synchronize the movement of a plurality of said punch-carrying means with relation to other punch-carrying means in the same series; substantially as described.

19. In a machine of the described character, a plurality of punches capable of longitudinal movement, some of which punches are movable laterally, in combination with synchronously-movable dies cooperating therewith; substantially as described.

20. In a machine of the described character, a plurality of punches, some of which are relatively fixed and some of which are synchronously adjustable with relation thereto, and means for causing such synchronous adjustment; substantially as described.

21. In a machine of the described character, a plurality of punches comprising separate independent male and female members, a movable head carrying a plurality of said male members, and means for simultaneously adjusting said male and female members; substantially as described.

22. In a multiple punch, a plurality of adjustable punch-carrying means, and shifting devices adapted to synchronize the movement thereof cooperating therewith; substantially as described.

23. In a machine of the described character, a plurality of adjustable punch - carrying means slidable on reciprocatory and laterally-movable blocks, punches therein, and shifting devices cooperating therewith adapted to synchronize the movement thereof; substantially as described.

24. In a machine of the described character, a plurality of adjustable punch - carrying means slidable on movable blocks, and shifting devices adapted to synchronize the movement thereof cooperating therewith; substantially as described.

25. In a machine of the described character, a plurality of punch members, some of which are relatively fixed and some of which are adjustable, and means for shifting the position of said adjustable members in opposite directions; substantially as described.

26. In a machine of the described character, a relatively fixed member, a block slidable thereon, and a punch member slidable on said block laterally and independently thereof; substantially as described.



27. In a machine of the described character, a plurality of relatively fixed members, blocks slidable thereon, and punch members slidable on said blocks laterally and independently thereof; substantially as described. 5

28. In a machine of the described character, a plurality of sustaining members, one of which reciprocates vertically, a laterally-slidable block on each of said members, an auxiliary slidable member supported thereby, and a punch member carried by each auxiliary member; substantially as described. 10

29. In a machine of the described character, a plurality of relatively movable members carrying punch members, and a fixed member carrying punch members cooperating therewith; substantially as described. 15

30. In a machine of the described character, a head-block, a plurality of punch-carrying means in alinement therein, punches separately movable therein, and means for moving said punch-carrying means, passing longitudinally therethrough; substantially as described. 20

31. In a machine of the described character, a plurality of punch-carrying means, punches capable of separate lateral adjustment therein, and means for moving said carrying means in the line of said movement; substantially as described. 25

32. In a machine of the described character, a plurality of punch-carrying means, means for moving said carrying means laterally independently of each other, and indicating means whereby the degree of such adjustment may be readily determined; substantially as described. 30

33. In a machine of the described character, a plurality of punch-carrying means, means for adjusting the same, and means for insuring synchronous uniform lateral movement of the male and female punch members carried thereby; substantially as described. 35

34. In a machine of the described character,

a plurality of punch-carrying means, means for changing the position of the same laterally of the machine independently of each other, and indicating means adapted to determine the position thereof; substantially as described. 45

35. In a machine of the described character, a plurality of punch members, some of which are centrally disposed and some of which are at each side of said central members, and means for simultaneously adjusting the position of said members without disturbing the central members; substantially as described. 50

36. In a machine of the described character, a plurality of punch members arranged upon opposite sides of a gap, and means for causing synchronous lateral movement of some of said punch members on one side of said gap with relation to others on the same side of said gap; substantially as described. 55

37. In a machine of the described character, a plurality of punch members arranged upon opposite sides of a gap, and means for causing synchronous lateral movement of some of said punch members on one side of said gap with relation to relatively fixed punch members cooperating therewith on the same side of the gap; substantially as described. 60

38. In a machine of the described character, a plurality of punch members arranged upon opposite sides of a gap, and means for causing synchronous lateral movement of some of said punch members on one side of said gap with relation to a relatively fixed punch member located therebetween on the same side of the gap; substantially as described. 65

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 29th day of October, 1902. 80

JOHN S. STEVENSON.

Witnesses:

ANTON EKSTROM,  
ARTHUR F. BIGGAR.