

No. 692,133.

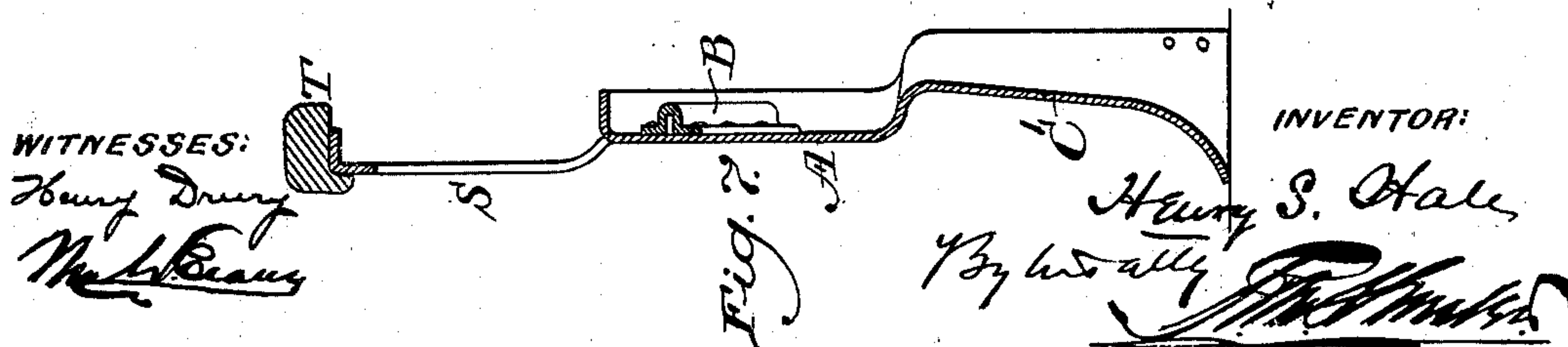
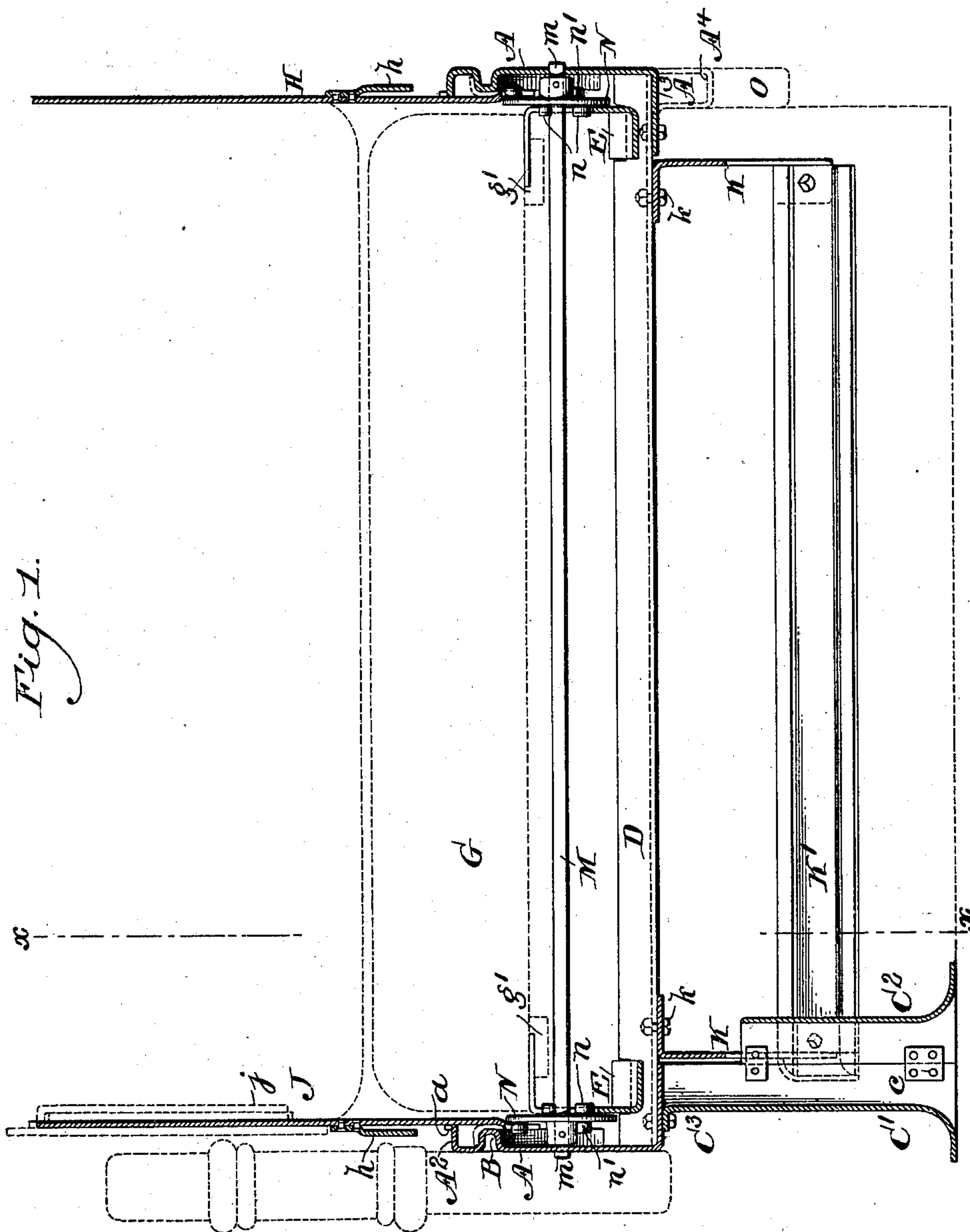
Patented Jan. 28, 1902.

H. S. HALE.
CAR SEAT.

(Application filed Mar. 25, 1898.)

(No Model.)

2 Sheets—Sheet 1.



H. S. HALE.
CAR SEAT.

(Application filed Mar. 25, 1898.)

(No Model.)

2 Sheets—Sheet 2.

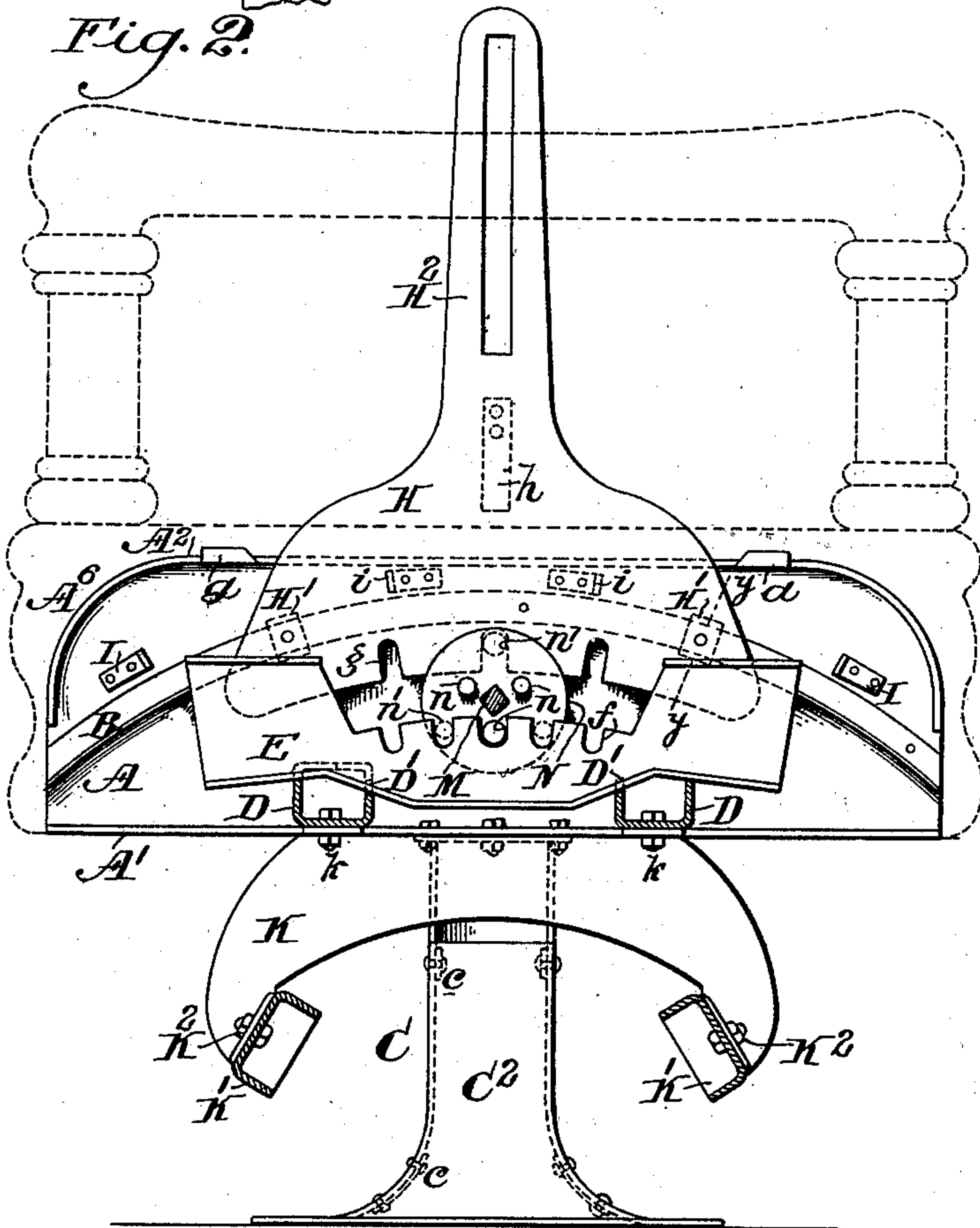
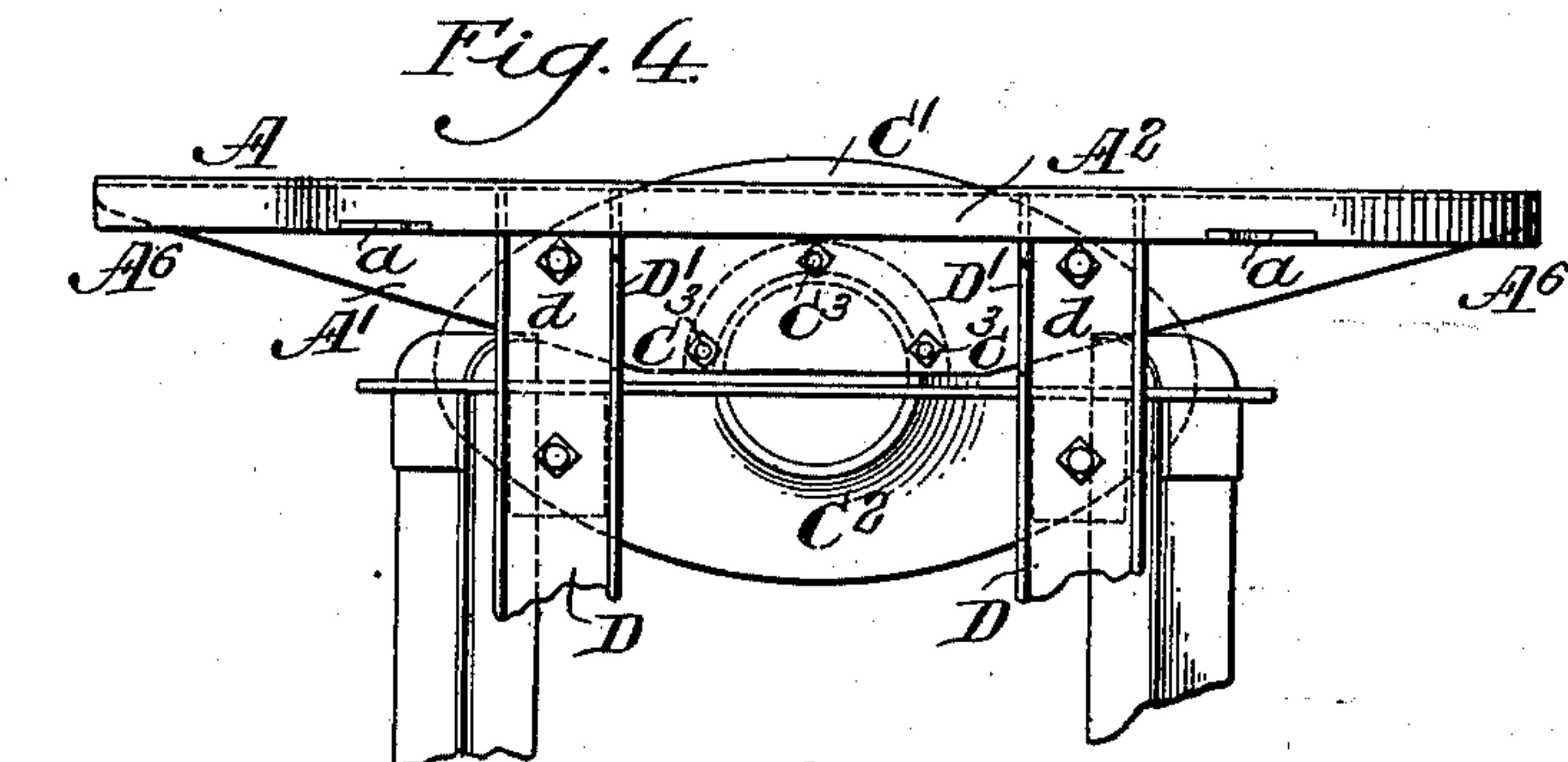


Fig. 5.

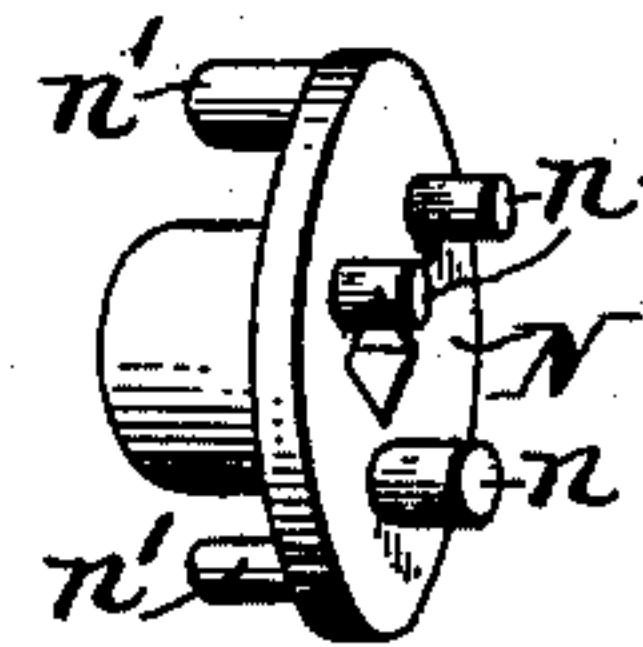
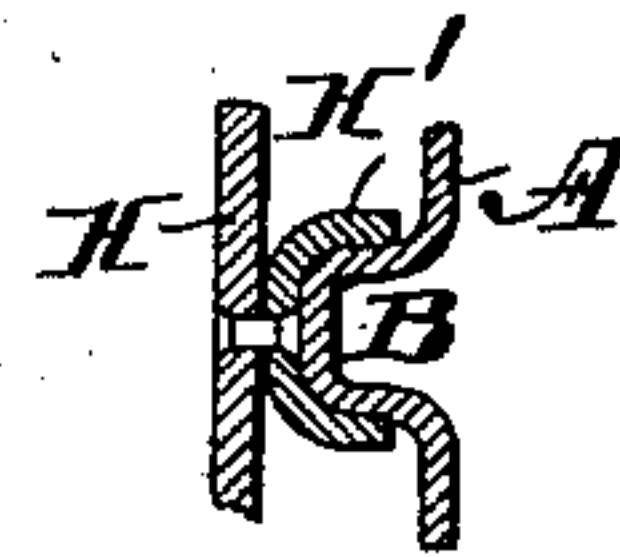
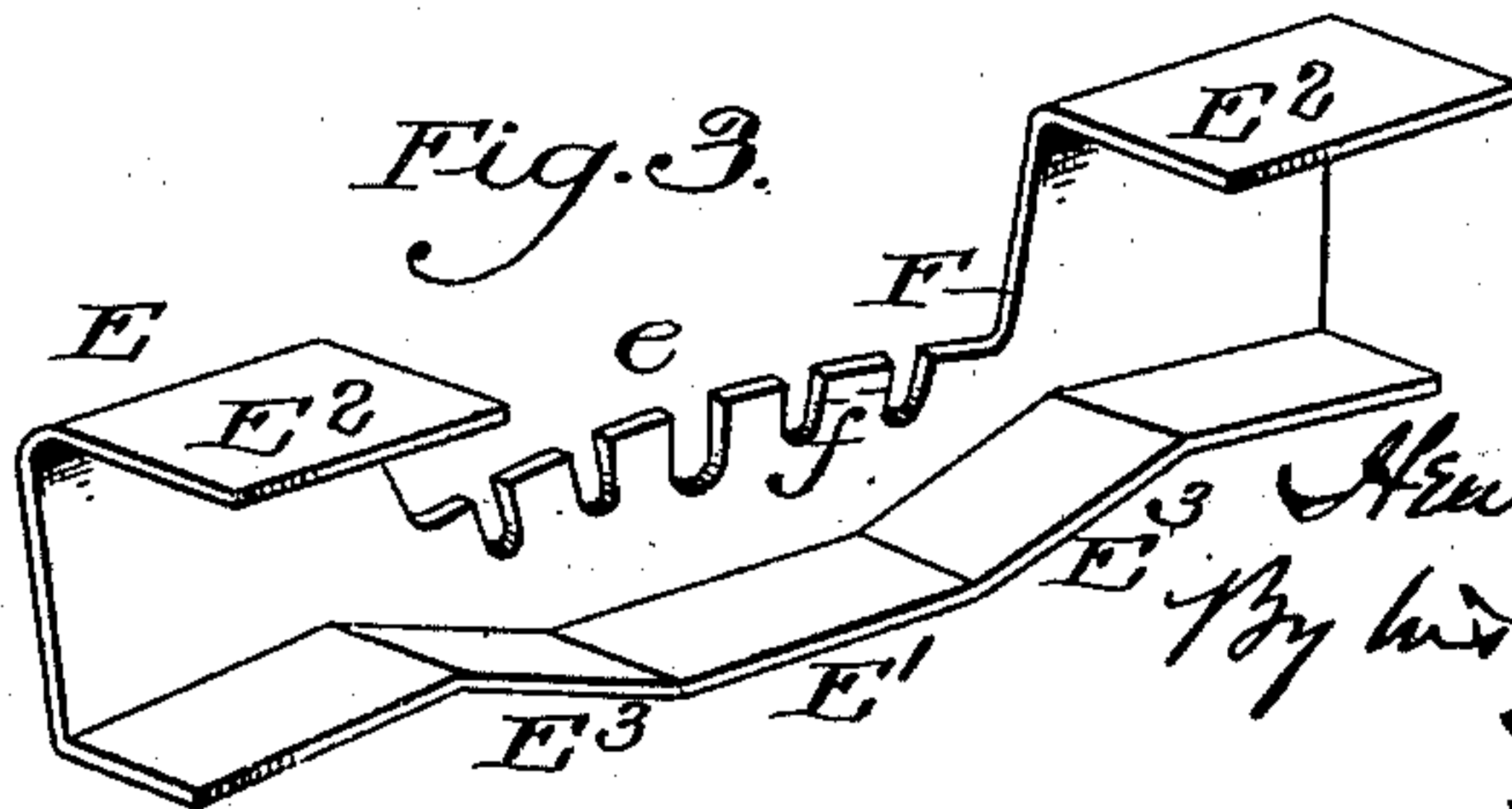


Fig. 6.

Fig. 3.



WITNESSES:

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Wm. H. Dwyer

INVENTOR:

Henry S. Hale
By his atty

[Signature]

UNITED STATES PATENT OFFICE.

HENRY S. HALE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
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CAR-SEAT.

SPECIFICATION forming part of Letters Patent No. 692,133, dated January 28, 1902.

Application filed March 25, 1898. Serial No. 675,075. (No model.)

To all whom it may concern:

Be it known that I, HENRY S. HALE, of the city and county of Philadelphia, State of Pennsylvania, have invented an Improvement in Car-Seats, of which the following is a specification.

My invention has reference to car-seats; and it consists of certain improvements which are fully set forth in the following specification and are shown in the accompanying drawings, which form a part thereof.

The object of my invention is to provide a car-seat of great strength and durability and of minimum weight in the metal-work. My object is, further, to form the metal-work of a car-seat of sheet, plate, or rolled metal stamped or otherwise formed into the requisite shape, whereby steel may be employed throughout in the construction, securing not only the results mentioned above, but also cheapness and compactness, the latter feature giving more clearance under the seat available for cleaning of the car.

As a further result of the improvements of my invention I am enabled to reverse the seat with the least necessary exertion, since the weight and friction of the moving metal parts have been reduced to a minimum and the fixed portions present smooth guide-surfaces upon which said moving parts move.

My invention comprehends a reversible car-seat having its metal-work formed wholly or largely of stamped sheet metal and embodying details of construction referred to hereinafter.

In carrying out my invention I form the metal-work of the end of the seat of stamped sheet-steel, the shapes, bends, and drawn portions thereof being such as to give great strength consistent with lightness and beauty of design. Furthermore, the moving or guiding portions are so formed as to secure easy movement and proper shifting and tilting of the seat-cushion relative to the reversal of the back.

The various features constituting my improvements will be better understood by reference to the accompanying drawings, in which—

Figure 1 is a longitudinal sectional elevation of my improved car-seat with the seat-

back moved immediately above the seat-cushion in act of reversing. Fig. 2 is a transverse section of my improved car-seat on line *xx* of Fig. 1. Fig. 3 is a perspective view of one of the shifting seat-cushion-supporting frames. Fig. 4 is a plan view of one end of the car-seat frame with the shifting seat-cushion-supporting frame and seat back and arms removed. Fig. 5 is a cross-section of Fig. 2 on line *yy*. Fig. 6 is a perspective view of the shifting disk and rocker-shaft, and Fig. 7 is a vertical section of a modified form of end plate and pedestal.

Each end of the car-seat is substantially the same, with the exception that on the side next to the window there is no pedestal, but instead the frame is supported directly by the frame or sill of the car, which invariably runs along the side wall below the windows. I will therefore describe the aisle end of the seat structure, which will answer as the description for both of the ends.

A is the end frame and is formed of stamped sheet-steel, preferably of the shape shown, and having a base-flange *A'* of considerable horizontal depth, a top lateral flange *A²* with or without the upwardly-turned lugs *a*, and the segmental or arc-shaped rib *B* on its inside. This rib *B* may be omitted and the guide formed of sheet or rolled metal separately and riveted in position, as indicated in Fig. 7. In addition to this the frame *A* may have its upper end edges flanged and extended by the curved portion *A⁶* to unite with top flange *A²*, giving great rigidity and protection to the working parts, since they are inclosed, as it were, in a box. This end frame *A* rests upon the top flange of a pedestal *C* and is bolted thereto at *C³* or otherwise secured. The pedestal is composed of two stamped sections *C'* *C²*, of sheet-steel, which are united by straps *c c*, riveted to the sections. The sections are so shaped that when secured together they present a smooth round body terminating at the bottom in a flaring oval base adapted to be screwed to the floor of the car. The inner section *C²* of the pedestal is preferably of less height than the section *C'* to leave space for the foot-rest support. If desired the end frame *A* and section *C'* of the pedestal may be formed of one

integral piece of metal, as shown in Fig. 7. Any other type of supporting leg or legs may be used to sustain the frames A from the floor in lieu of the pedestal shown.

5 At the window end of the car-seat the frame A has no supporting-pedestal, but may rest directly upon the longitudinal timber or sill O of the car or be secured to the wall by screws. The frame A at this end may be bent
10 with an offset A³ or with an extension (indicated at A⁴ in dotted lines, Fig. 1) to fit to the sill O, as required. The frame may be screwed directly to the sill or side of the car and rely on this solely for its support, if so
15 desired.

The two end frames A A are secured together by two channel or grooved bars D D, of rolled metal, which are bolted at *d* to the bottom flanges A' of the frames A. The cross-
20 section of these bars may be modified to suit the wishes of the user. If desired, they may be tubular.

K represents foot-rest frames made of stamped sheet-steel, preferably crescent-shaped, and having their upper parts flanged and bolted at *k* to the bottom of the flanges A' of the end frames A. The lower and free
25 ends of these foot-rest frames are flanged also and receive the foot-rests K', to which they are bolted at K². The foot-rests are formed of angle or channel bars and on the
30 ends next to the aisle are finished off, as shown, to improve their appearance. These foot-rest bars K' may form additional means for positively and strongly connecting the
35 end frames A A. The foot-rests may be otherwise formed, if so desired.

At the aisle end the woodwork supporting the arm-rest is indicated in dotted lines and
40 is secured to the frame A by screws.

If desired, the end frame A may be combined with a pedestal C' and upright arms S, as indicated in Fig. 7. The wooden hand-
45 rest T would be secured upon the top of the arms S. The arms S are integral with the end frame A and extend upward from the upper flange thereof. As shown in this figure, the curved guide B is made U-shaped
50 and is riveted to the vertical face of the end frame, thus being a substitute for the U-shaped guide B shown in the other figures. It is evident that the end frame may be integral with the arms S alone or with the pedestal alone, or with both, as indicated.

55 E represents seat-cushion-supporting frames and are of the shape shown in Fig. 3, being stamped from sheet metal. They comprise the vertical or body part, two top flanges E², leaving a space *e* between them, and a
60 bottom flange E', having the oblique or cam portions E³. The body part is furthermore cut down at the middle, as at F, and formed with a series of notches *f*. These frames rest upon the channel-bars D D and are guided
65 thereon, while adapted to be shifted by working in notches D' in the inner flanges of the channel-bars. G is the seat-cushion and rests

upon the frames E and has upon its under part at its ends the bars *g'*, fitting the recess
70 *e* of the frames to prevent lateral shifting upon said frames. It will now be understood that when these frames E are shifted the cushion G moves with them and at the same time tilts upward at its forward edge, due to
75 the cam-surfaces or flanges E³ riding up upon one bar D and downward upon the other or rear bar. (See Fig. 2.)

H represents seat-back frames and are formed of stamped sheet metal substantially of the shape shown. They are each extended
80 at the bottom, as shown in Fig. 2, with an upwardly-extending shank H², upon which the back J is fitted, it having suitable sockets *j* to receive the said shanks, so as to be detachable. These frames H have near each
85 end of their extended lower parts U-shaped guides H', riveted to them and adapted to the segmental or curved ribs B on the end frames A. In this manner the seat-back J is supported by the frames A and adapted to be bodily
90 shifted upon them over the seat-cushion G when reversing the seat. The frames H are also provided with lugs *i*, which strike stop-lugs I, secured near each end of the end
95 frames A, to limit the extent of movement of the seat-back. The frames H may be further provided with lugs *h*, which extend outward and downward to fit over the lugs *a* on the frames A to prevent any lateral shifting
100 of the frames H and seat-back.

It is to be understood that I do not confine myself to the sliding type of supports H for the seat-back, as the well-known hinge-arms may be used in connection with the end frames and seat-cushion-shifting devices; but I pre-
105 fer the construction herein set out.

M is a rock-shaft extending between the end frames A A and journaled therein at *m*. This rock-shaft is preferably made square or
110 polygonal in cross-section and is arranged above the lower portions of the seat-supporting frames E. It is fitted near each end with a disk N, having lateral projecting pins *n n'*. The pins *n* are preferably three in number and arranged equidistant about the shaft and
115 at a less distance radially than the pins *n'*, which project from the opposite face of the disk. These disks are firmly secured to the rock-shaft, so as to rock with it. The pins *n* work in the notches *f* of the seat-shifting
120 supports E, so that the rocking of the rock-shaft will shift both of the cushion-supports from the guides and shift the seat-cushion. One of the pins *n* may be made of larger diameter than the other two, and one of the
125 notches *f* is of larger width, so as to receive this enlarged pin. This insures the proper assemblage of the parts, so that no mistake whatever can arise in putting the parts together when setting up the seat as a whole.
130 The three pins *n'* on the other side of the disk work in connection with similar notches *g*, formed on the lower edge of the seat-back frames H, one of which notches is made of

greater width than the other, so as to receive the enlarged one of the three pins n' , which likewise performs the function of securing the proper assemblage of the parts in setting up the seat. The difference in the radial position from the pins n n' secures different degrees of movement to the parts upon which they operate—that is to say, the pins n produce a much smaller movement to the seat-cushion than is produced on the back acting on the pins n' , as it should be, since the seat-back in reversing the seat is required to move a distance greater than the whole width of the seat, whereas the seat-cushion moves but a very small distance, relatively considered. In practice the disks with their pins secured to the rock-shaft may be formed of malleable casting or in any other manner desired. Now it is evident that when the seat-back is shifted the frames H operate on the pins n' , cause the rock-shaft to rock, and thus, by means of the pins n , cause the seat-supports E to shift, together with their seat-cushion G, the movements of the seat-back and the cushion G being in the opposite direction. It is also clear that the movements to both ends will be alike in view of the employment of the rock-shaft and the positive connection and the movable parts. Hence no binding at the inner end is possible. The construction is such that the disk and pins are wholly protected and hidden from view by the end frames A, and consequently there is nothing to project or act as an obstruction. It is manifest that the pins n n' might be on the frames E H and the slots on the disk, as such reversal would not change the operation.

I do not confine myself to the particular connecting means for shifting the frames E from the frames H, as any other lever means may be carried by the rock-bar and connect these two parts.

While I have described my invention in an excellent form for practical use, I do not limit myself to the details thereof, as they may be varied without departing from the spirit of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a car-seat, two end frames of sheet metal having top and bottom flanges, and an intermediate curved guide, longitudinal wrought-metal bars having upwardly-directed webs mechanically connected to the two end frames, two sheet-metal movable supports for the seat-cushion supported and guided upon the longitudinal bars and having upper and lower flanges bent wholly to one side so that they form proper guide and supporting surfaces and the vertical part shall be permitted to come close to the end frame, a seat-cushion supported upon the said movable supports, and a seat-back having flat plates extending down between the movable supports and end frames and guided upon the curved guides, the whole being formed to occupy but little

lateral space and to permit the movable supports to be brought up very close to the seat-back-supporting plates.

2. In a car-seat the end frame combined with and suitably supported upon a sheet-metal pedestal consisting of two semitubular upright portions of different heights flaring at the bottom into a flange and united at intervals in their height the section or portion of greatest height being secured to the end frame, and the shorter portion being independent thereof.

3. A car-seat having its fixed end frames formed of sheet metal and on the aisle end extending from the level of the seat-cushion to the floor and provided with curved guides, combined with sheet-metal supporting-frames for the seat-back having guides adapted to the curved guides and guided thereon for the purpose of permitting shifting the seat-back in reversing the seat, longitudinal metal bars united at their ends to the end frames and each having an upright wall or rib notched at the ends, and sheet-metal cushion-supports guided in the notches and supported directly by the longitudinal bars for sustaining the seat-cushion in its shifted positions.

4. A car-seat having its fixed end frames formed of stamped sheet metal extending from the level of the seat-cushion to the floor and independent longitudinal metal bars connecting the end frames, combined with stamped sheet-metal supporting-frames for the seat-back guided and supported directly by the end frames for the purpose of shifting the seat-back in reversing the seat, a shifting frame carrying the seat-cushion directly supported by the longitudinal bars, a rock-shaft, and laterally-projecting pins parallel to the shaft and slots or notches making a connection between the rock-shaft and the upper edge of the shifting frame of the seat-cushion and the lower edge of the seat-back and supports whereby the seat-cushion is shifted upon reversing the seat-back.

5. An end frame for a car-seat consisting of thin sheet metal having an upper edge flanged inward and of uniform width and a lower flange of greater width toward the middle part than at the ends adapted to support longitudinal bars, and a curved guide forced upward from the body-surface in the direction of and between the flanges and extending transversely.

6. In a car-seat the combination of two end frames having smooth segmental guides, a seat-back having frames movable upon the guides of the end frames, two independent shifting seat-cushion-supporting frames, a seat-cushion resting upon said supporting and tilting frames, a longitudinal rock-shaft journaled in the end frames, and connecting devices between the rock-shaft and each of the cushion-supporting frames and seat-back frames consisting of disks secured to and rocking with the rock-shaft and lateral pins and notches carried by the disks cushion-shifting

frames and seat-back frames whereby the said cushion is shifted and tilted upon reversing the seat-back.

7. In a car-seat the combination of a main frame having smooth grooved guides, a seat-back having supporting and shifting frames adapted to said guides so as to shift the seat-back, a seat-cushion, shifting supports for said cushion, a rock-shaft arranged in the main frame between the seat-cushion supports and supports for the back, disks secured to said rock-shaft and having laterally-projecting pins or teeth and notches or recesses respectively in the supports for the seat-cushion and supports for the seat-back upon opposite sides of the rock-shaft and in which one of the notches on said parts and one of the teeth on each side of each disk is made larger than the others to insure proper assemblage of the parts in putting the structure together and whereby the shifting of the seat-back simultaneously shifts the seat-cushion in the opposite direction.
8. In a car-seat, the combination of two end frames formed of stamped sheet metal, and two continuous longitudinal metal bars firmly bolted to said end frames, with shifting seat and back supported respectively by said bars and end frames.
9. In a car-seat, the combination of two end frames formed of stamped sheet metal, two longitudinal metal bars firmly bolted to said end frames, and a pedestal formed of pieces of stamped sheet metal united together arranged under one of the end frames and secured to it, with shifting seat and back supported respectively by said bars and end frames.
10. In a car-seat, the combination of an end frame formed of stamped sheet metal, longitudinal bars for securing the end frame in position, a pedestal formed of pieces of stamped sheet metal united together secured to the lower part of the end frame for supporting it, and a shifting seat-back supported by and guided on the end frame.
11. In a car-seat, the combination of end frames, two connecting longitudinal metal bars of U-shaped cross-section formed with the open side upward and having notches in the upper edges of the sides to form guides near each end, seat-supporting frames of stamped sheet metal having bottom flanges adapted to said guides and made cam-shaped to tilt them when shifted, a seat-cushion supported by said supporting-frames, a movable seat-back, and means controlled by the seat-back for shifting the supporting-frames and cushion upon reversing the seat-back.
12. In a car-seat, an end frame formed of stamped sheet metal having its edges bent

over to form flanges and a segmental curved rib U-shaped in cross-section extending from the body of the metal within the boundary of the top and bottom flanges, and of less projection than the upper flange, in combination with a sliding frame having independent replaceable guides adapted to the curved rib, and a seat-back secured to the sliding frame.

13. In a car-seat, the combination of end frames having curved guides, with seat-back-supporting arms made of thin flat plates extended at the bottom, and two guides removably secured to the lower ends of the supporting-arms near the front and back edges thereof and adapted to the curved guides whereby the seat-back-supporting arms may slide freely upon the end frames.

14. In a car-seat, an end frame, in combination with a supporting-pedestal formed of stamped sheet metal consisting of two sections each formed of a curved semicylinder terminating in a flaring base which when united constitutes a cylindrical body with a flaring elliptical base, and in which one section is of greater height than the other and secured to the under part of the end frame.

15. In a car-seat, an end frame formed of stamped sheet metal having a curved guide portion U-shaped in cross-section extending from the body of the frame, a shifting frame for supporting the seat-back extended to considerable width at the bottom and having widely-separated independent replaceable guides adapted to the curved guide portion of the end frame.

16. In a car-seat, the combination of the two end frames of stamped sheet metal, in combination with two longitudinal bars separate from the end frames having their ends of metal formed with guides independent of the end frames, means for fastening the longitudinal bars and their guides to the end frames, a movable seat-back, a movable seat-cushion, supporting devices for the seat-back sustained and guided by the end frames, and supporting-frames for the seat-cushions supported by the guides of the longitudinal bars independently of the end frames.

17. In a seat, an end frame and arms formed of sheet metal as an integral structure and in which the end frame is formed with upper and lower flanges and provided with an intermediate curved guide and the arms extended upward from the upper flange.

In testimony of which invention I hereunto set my hand.

HENRY S. HALE.

Witnesses:

H. G. BARNES,
A. F. OLD.