H. E. GYNN.

SPRING SEAT.

APPLICATION FILED OCT. 26, 1920.

1,418,561. Patented June 6, 1922.

Fig. 1

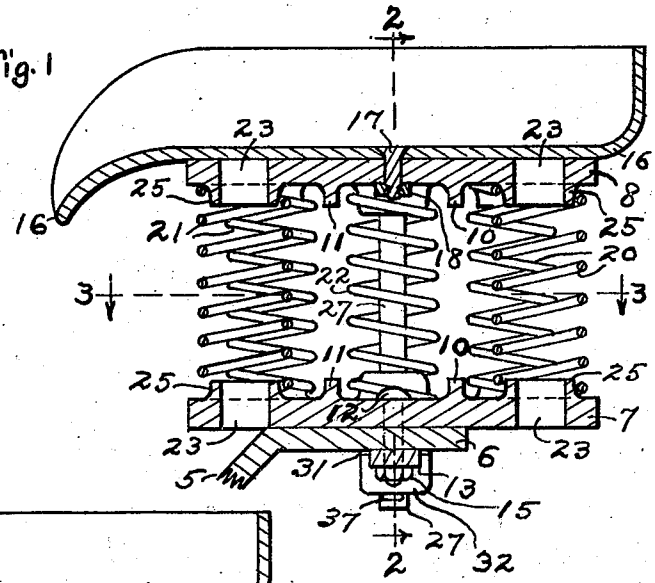


Fig. 2

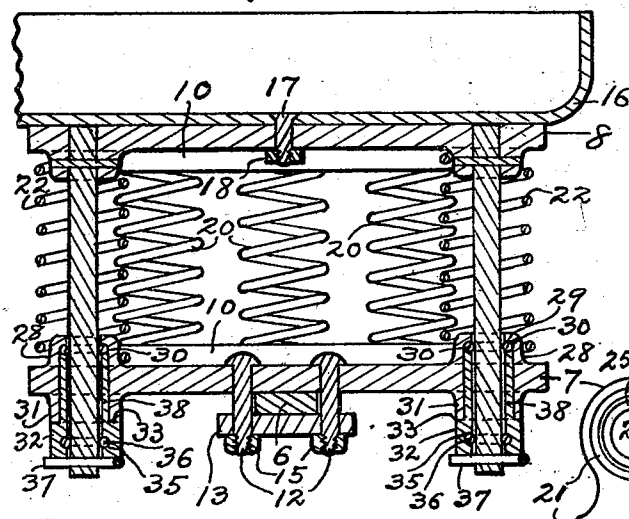


Fig. 3

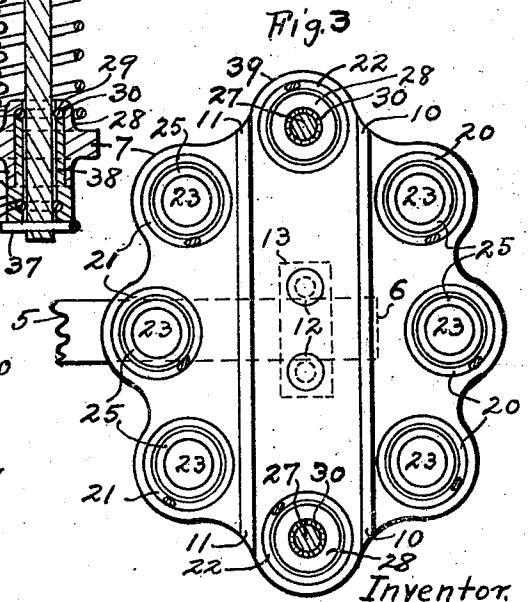
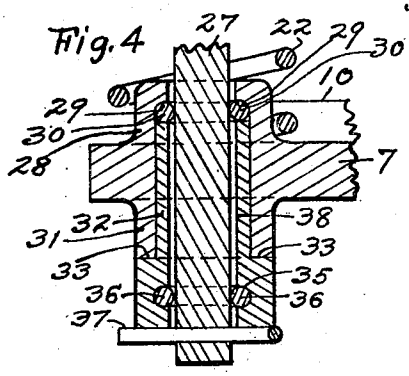


Fig. 4



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UNITED STATES PATENT OFFICE.

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SPRING SEAT.

1,418,561. Specification of Letters Patent. **Patented June 6, 1922.**

Application filed October 26, 1920. Serial No. 419,650.

To all whom it may concern:

Be it known that I, HATTIE E. GYNN, a citizen of the United States, and residing at Cleveland Heights, in the county of Cuyahoga and State of Ohio, have invented a new and useful Spring Seat, of which the following is a specification.

This invention relates to improvements in spring-seats, and pertains more especially to a spring-seat suitable for use on a tractor or other farming machine and comprising two vertically spaced and opposite substantially horizontal plates and also springs supporting the upper plate from the lower plate.

The object of this invention is to produce a highly practical and comfortable spring-seat which is simple, strong and durable in construction and light in weight, and can be manufactured with facility and readily applied and maintained in good condition.

With this object in view this invention consists in certain features of construction, and combinations and relative arrangements of parts, hereinafter described in this specification, pointed out in the claims, and illustrated in the accompanying drawings.

In said drawings, Figure 1 is a side view, in central section, of a spring-seat embodying my invention. Fig. 2 is a vertical section taken along the line 2—2, Fig. 1, looking rearwardly. Fig. 3 is a horizontal section taken along the line 3—3, Fig. 1, looking rearwardly. Fig. 4 shows a portion of Fig. 2 on a larger scale.

Referring to said drawings, 5 indicates the upper portion of a bracket adapted to be carried by the framework of a tractor or other vehicle or machine at the rear end. Said bracket has a rearwardly projecting arm 6 shown supporting the seat which comprises two vertically spaced and directly opposite substantially horizontal metal plates 7 and 8. The lower plate 7 is shown lying on the bracket-arm 6. The upper plate 8 is supported from the lower plate 7 as will hereinafter appear. Each plate is provided at its inner face with a pair of substantially parallel reinforcing ribs 10 and 11 which are formed between the central portion and rear end and forward end respectively of the plate and extend between and substantially to the side edges of the plate. Two bolts 12 (see Fig. 2) are arranged at opposite longitudinal edges respectively of the bracket-arm 6 and centrally between the reinforcing ribs 10 and 11 of the lower plate. Said bolts have their shanks extending vertically through the lower plate 7 and are employed in securing said plate to the bracket-arm 6. Said bolts have their heads overlapping the top or inner face of the lower plate 7. The shanks of said bolts extend through a bar 13 which is arranged next below and transversely of the bracket-arm 6. Nuts 15 are threaded below said arm onto said shanks and abut against the under side of the bar 13. The lower plate 7 is therefore rigidly but removably secured to the bracket-arm 6 in the desired adjustment of said plate longitudinally of said arm. The seat-proper 16 of the seat is shown mounted on the upper plate 8 and (see Figs. 1 and 2) removably secured to said plate, between the reinforcing ribs 10 and 11 of the plate, by a bolt 17 and a nut 18.

The seat illustrated comprises three substantially vertical helical springs 20 arranged rearward of and spaced from and longitudinally of the rear ribs 10 of the plates 7 and 8 and interposed between said plates. Said seat also comprises three substantially vertical helical springs 21 arranged forward of and spaced from and longitudinally of the forward ribs 11 of said plates and interposed between the plates. Said seat furthermore comprises two substantially vertical helical side springs 22 arranged at opposite sides respectively of the space between the central portions of the plates 7 and 8. It will be observed that the upper plate 8 is supported from the lower plate 7 through the medium of the springs 20, 21 and 22, and that the reinforcing ribs 10 and 11 of each plate are formed between the rearward and forward springs and extend the one to a point at the back of and the other to a point in front of each side spring 22.

To reduce the weight of the plates 7 and 8 rearward of the ribs 10 and forward of the ribs 11 each plate is provided at the adjacent end of each of the springs 20 and 21 (see Fig. 1) with an opening 23 extending vertically through the plate. Circumferentially of each opening 23 in each plate extends an annular flange 25 which is formed at the inner face of and integral with and projects inwardly from said plate, and said flange is concentric in relation to and embraced by the adjacent spring so that said flange is arranged to prevent displacement

of the adjacent end of said spring in relation to said plate.

Centrally of each side spring 22 is a substantially vertical guide-member 27, and therefore two guide-members 27 are spaced circumferentially of the space between the central portions of the plates 7 and 8. Each guide-member 27 is secured at its upper end in any approved manner (see Fig. 2) to the upper plate 8. The guide-members 27 extend from the upper plate 8 downwardly to and through and below the lower plate 7 and are depressible with the upper plate independently of the lower plate and against the action of the springs 20, 21 and 22. The lower plate 7 is provided at each guide-member 27 (see Fig. 4) with a substantially vertical tubular member 28 formed at the inner face of and on said plate and surrounding said guide-member and forming an upwardly projecting annular flange which is concentric in relation to said guide-member and provided internally with a downwardly facing annular shoulder 29, and anti-friction balls 30 are arranged under and overlapped by said shoulder and supported from the lower plate as will hereinafter appear and afford lateral bearing to said guide-member.

The lower plate 7 is provided at each guide-member 27 (see Fig. 4) with a downwardly projecting annular flange 31 surrounding a barrel 32 which consists preferably of a substantially vertical tubular member made of steel and surrounding said guide-member, and said tubular member or barrel extends into the lower plate from below and is tightly fitted into and rigid with but removable downwardly by force from said plate. Said barrel is provided externally, below the adjacent flange 31, with an upwardly facing annular shoulder 33 which abuts against the lower end of said flange and prevents said barrel from being driven too far upwardly during the assemblage of the parts. Each lower flange 31 of the lower plate 7 is arranged in line vertically with the adjacent upper flange 28 of said plate, and the barrel 32 surrounded by said flange is spaced at its upper end downwardly from the shoulder 29 of said upper flange, and the adjacent anti-friction balls 30 are seated on said end of said barrel and consequently supported from said plate. Each barrel 32 is provided internally and below the adjacent flange 31 with an annular recess 35, and anti-friction balls 36 engage said recess and afford lateral bearing to the adjacent guide-member 27. Each upper flange 28 and the adjacent barrel 32 are large enough in internal diameter to be out of contact with the adjacent guide-member 27.

Each guide-member 27 is provided below the adjacent barrel 32 with a pin 37 which abuts against the lower end of said barrel in the upper and normal position of said guide-member. The guide-members 27 operate to prevent the upper plate from displacement horizontally in relation to the lower plate, and the pins 37 of said guide-members cooperate with the lower ends of the barrels 32 in limiting the maximum spacing of the upper plate from the lower plate. Preferably each barrel 32 measures in internal diameter enough more than the diameter of the adjacent guide-member 27 to effect the formation, between the two sets of anti-friction balls 30 and 36, of an annular chamber 38 for holding grease to be supplied to said chamber to insure adequate lubrication of said balls. Preferably each plate has its portions through which the guide-members 27 extend, projecting laterally and outwardly, as at 39, as shown in Fig. 3, and it will be observed that each plate, by the extension of its ribs 10 and 11 respectively behind and in front of the side springs 22 so that said ribs extend the one at the back of and the other in front of the guide-members 27, is rendered strong enough, without unduly increasing its weight, to successfully withstand strains to which it may be subjected by a tendency of the upper plate to shift horizontally independently of the lower plate.

What I claim is—

1. In a spring-seat, two vertically spaced and substantially horizontal opposite plates, springs supporting the upper plate from the lower plate, and two substantially vertical guide-members spaced circumferentially of the space between the central portions of the plates and extending from the upper plate to and through the lower plate and depressible with the upper plate independently of the lower plate, the lower plate being provided at each guide-member with a substantially vertical tubular member which is formed at the inner face of and on the lower plate and forms an upwardly projecting annular flange which surrounds said guide-member and is provided internally with a downwardly facing annular shoulder, and anti-friction balls internally of said flange-forming member, said balls affording lateral bearing to said guide-member and arranged under and overlapped by said shoulder.

2. In a spring-seat, the combination, with two vertically spaced and substantially horizontal opposite plates, springs supporting the upper plate from the lower plate, and two substantially vertical guide-members spaced circumferentially of the space between the central portions of the plates and extending from the upper plate downwardly to and through the lower plate and depressible with the upper plate independently of the lower plate, the lower plate being provided at each guide-member with an up-

wardly projecting member which surrounds said guide-member and is provided internally with a downwardly facing annular shoulder, of a barrel which surrounds said guide-member and extends into the lower plate from below and is rigid with said lower plate and spaced downwardly from said shoulder, and anti-friction balls seated on the upper end of said barrel and overlapped by the aforesaid shoulder and affording lateral bearing to said guide-member.

3. In a spring-seat, the combination, with two vertically spaced and substantially horizontal opposite plates, springs supporting the upper plate from the lower plate, and two substantially vertical guide-members spaced circumferentially of the space between the central portions of the plates and extending downwardly from the upper plate to and through and below the lower plate and depressible with the upper plate independently of the lower plate, the lower plate being provided at each guide-member with a downwardly projecting annular flange extending circumferentially of said guide-member, of a barrel which surrounds said guide-member and extends into the lower plate from below and is rigid with said lower plate and provided externally below said flange with an annular shoulder which abuts against the lower end of said flange and also provided internally with an annular recess, said guide-member being provided below said barrel with a member abutting against the lower end of the barrel, and anti-friction balls engaging said recess and affording lateral bearing to said guide-member.

4. In a spring-seat, the combination, with two vertically spaced and substantially horizontal opposite plates, springs supporting the upper plate from the lower plate, and two substantially vertical guide-members spaced circumferentially of the space between the central portions of the plates and extending through and below the lower plate and depressible with the upper plate independently of the lower plate, the lower plate being provided at each guide-member with a downwardly projecting annular flange and an upwardly projecting annular flange which are in line vertically and surround said guide-member, the last-mentioned flange being provided internally with a downwardly facing annular shoulder, of a barrel which surrounds said guide-member and extends into the lower plate from below and is rigid with said lower plate and spaced downwardly from said shoulder and provided internally below said lower flange with an annular recess, anti-friction balls engaging said recess, and anti-friction balls seated on the upper end of said barrel and overlapped by said shoulder, all of said balls affording lateral bearing to said guide-member, and the aforesaid upper flange and said barrel being out of contact with said guide-member.

In testimony whereof I sign the foregoing specification this 21st day of October, 1920.

HATTIE E. GYNN.