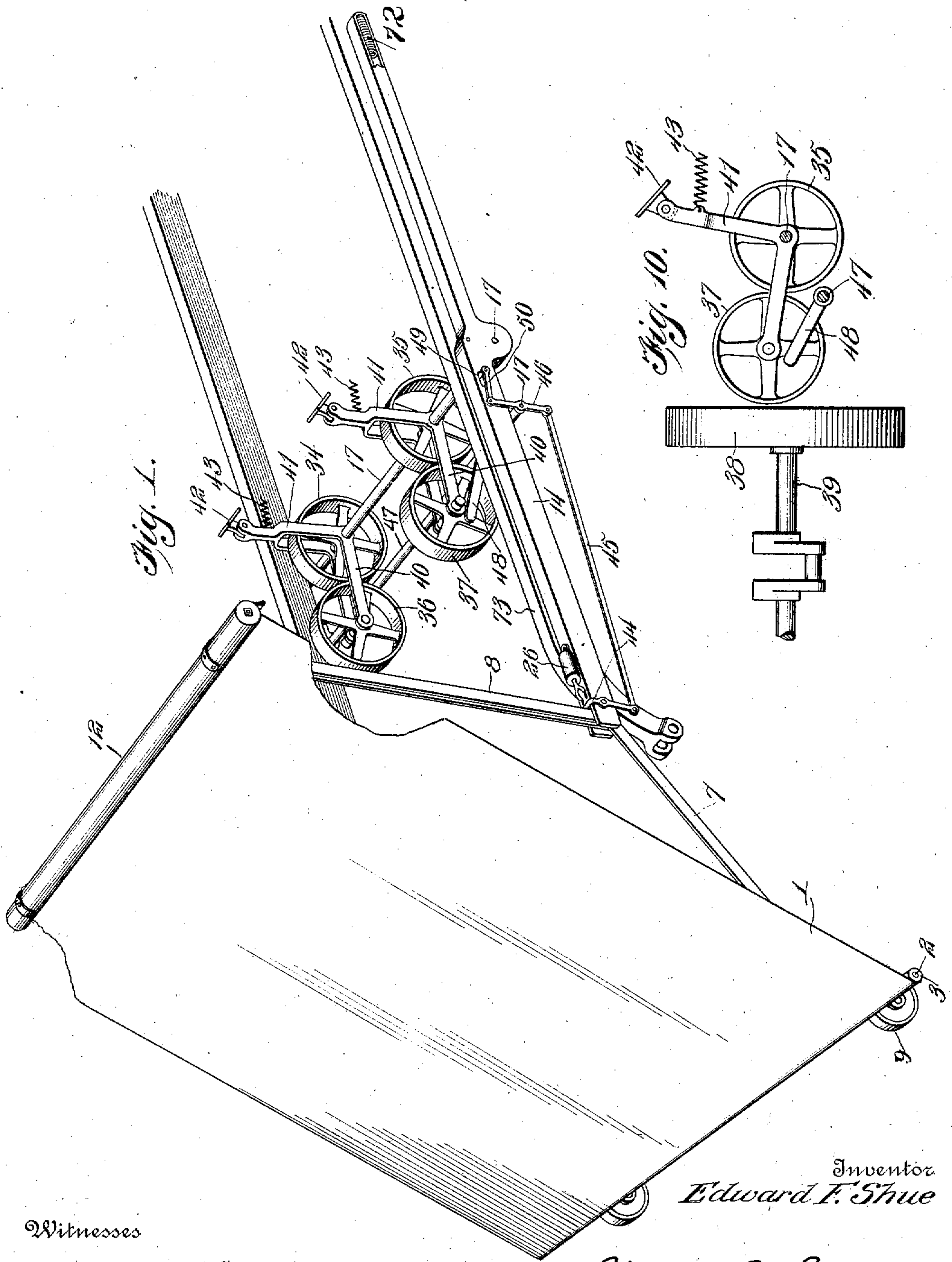


960,120.

E. F. SHUE.
FENDER.
APPLICATION FILED JULY 27, 1909.

Patented May 31, 1910.
3 SHEETS—SHEET 1.



Witnesses

Louis R. Heinrichs -
R. M. Smith

Inventor
Edward F. Shue

By Victor J. Evans
Attorney

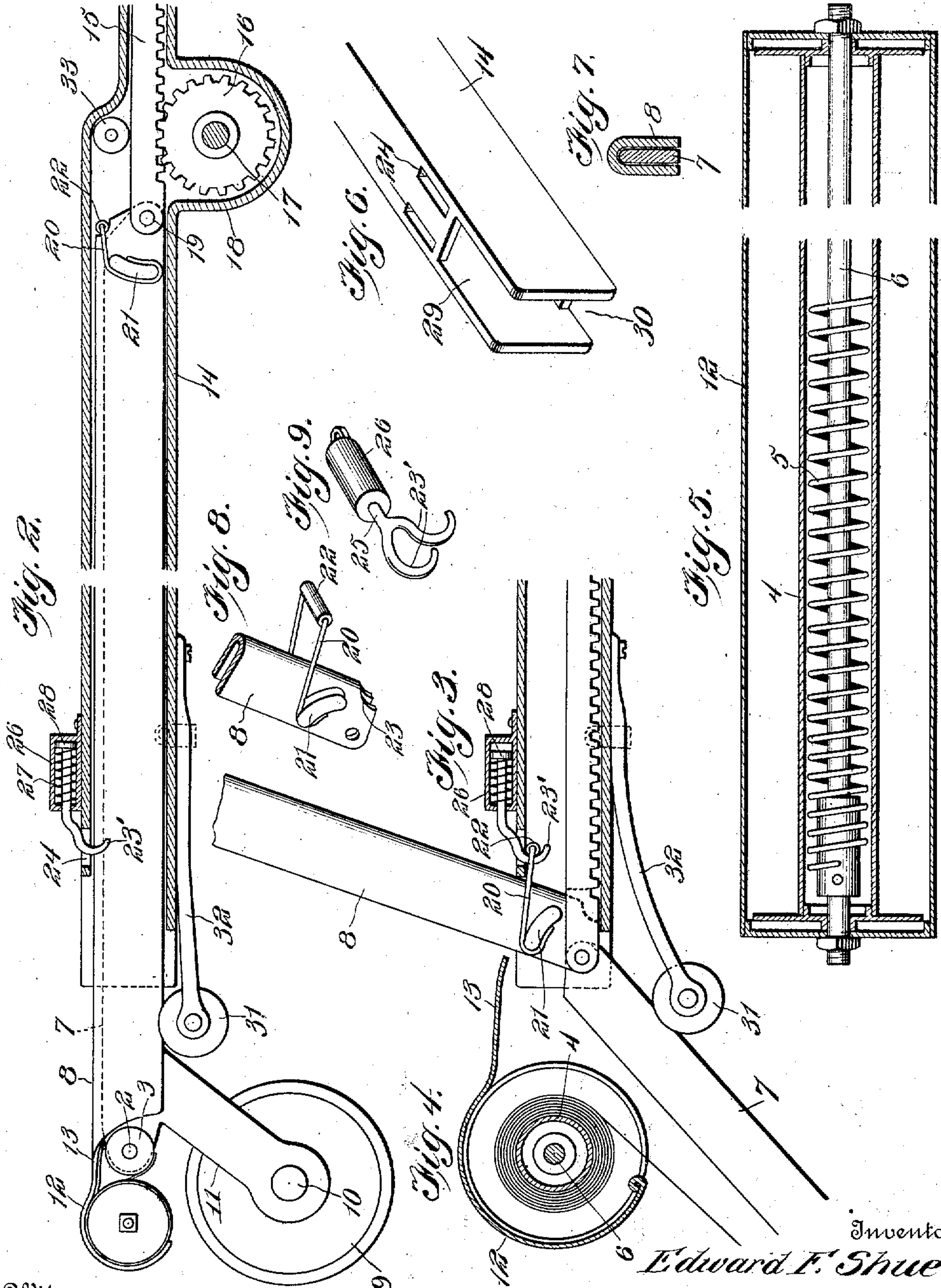
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3 SHEETS—SHEET 2.



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Louis E. Heinrichs.
R. M. Smith.

Inventor
Edward F. Shue
By Victor J. Evans
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3 SHEETS—SHEET 3.

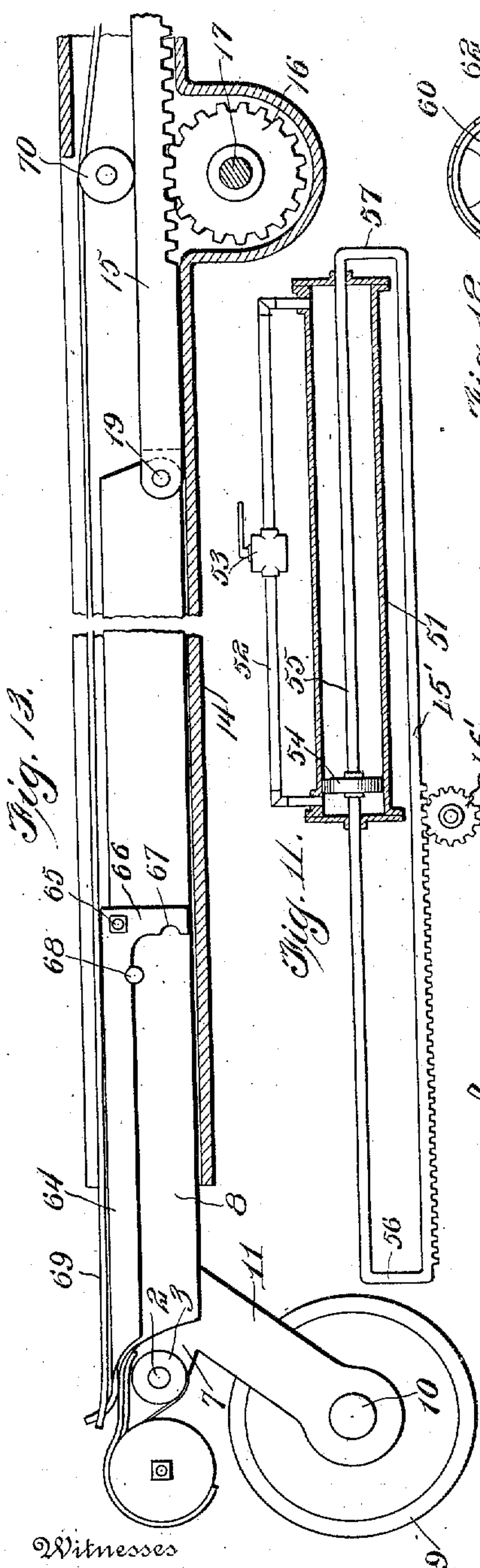


Fig. 13.

Fig. 11.

Fig. 12.

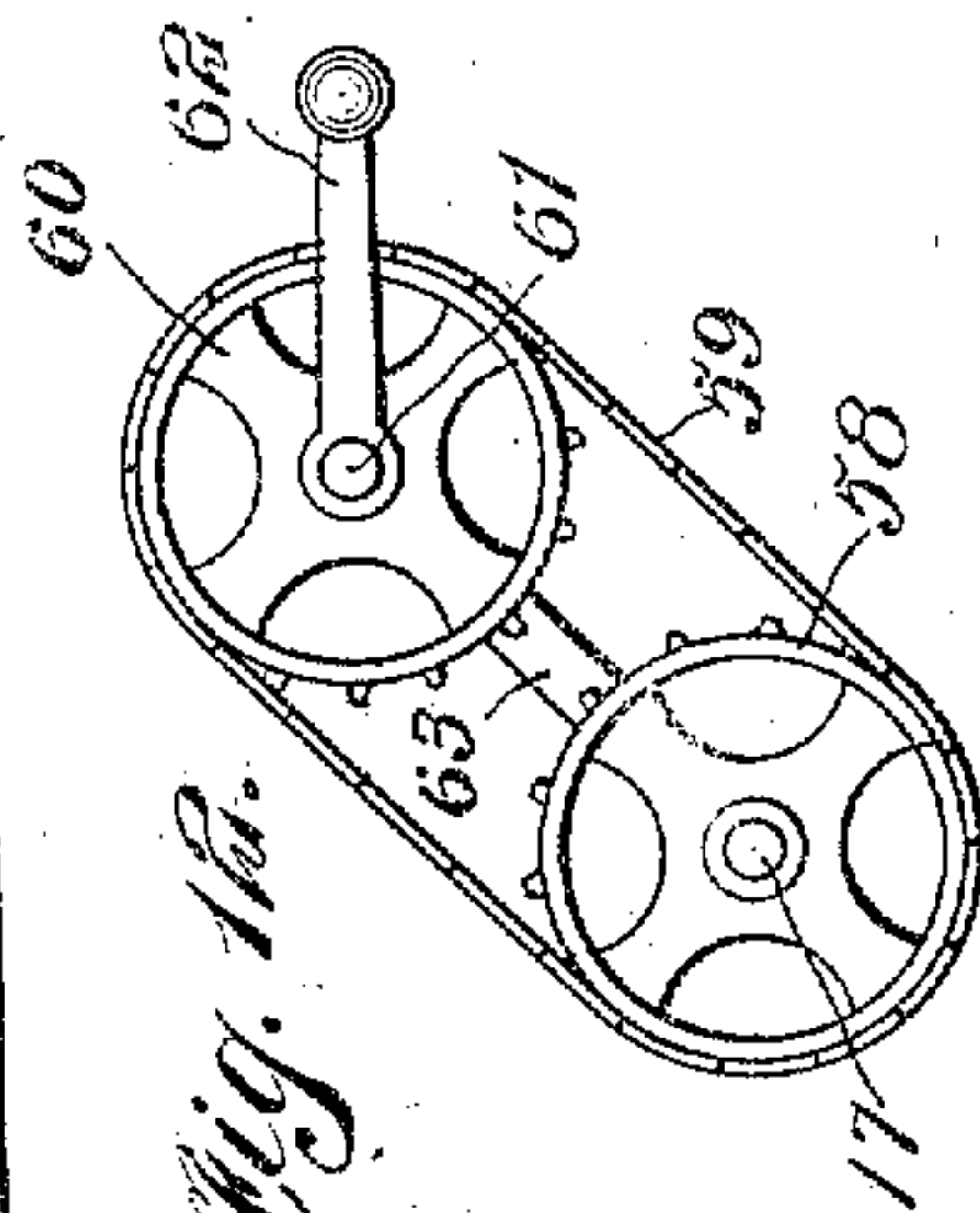


Fig. 14.

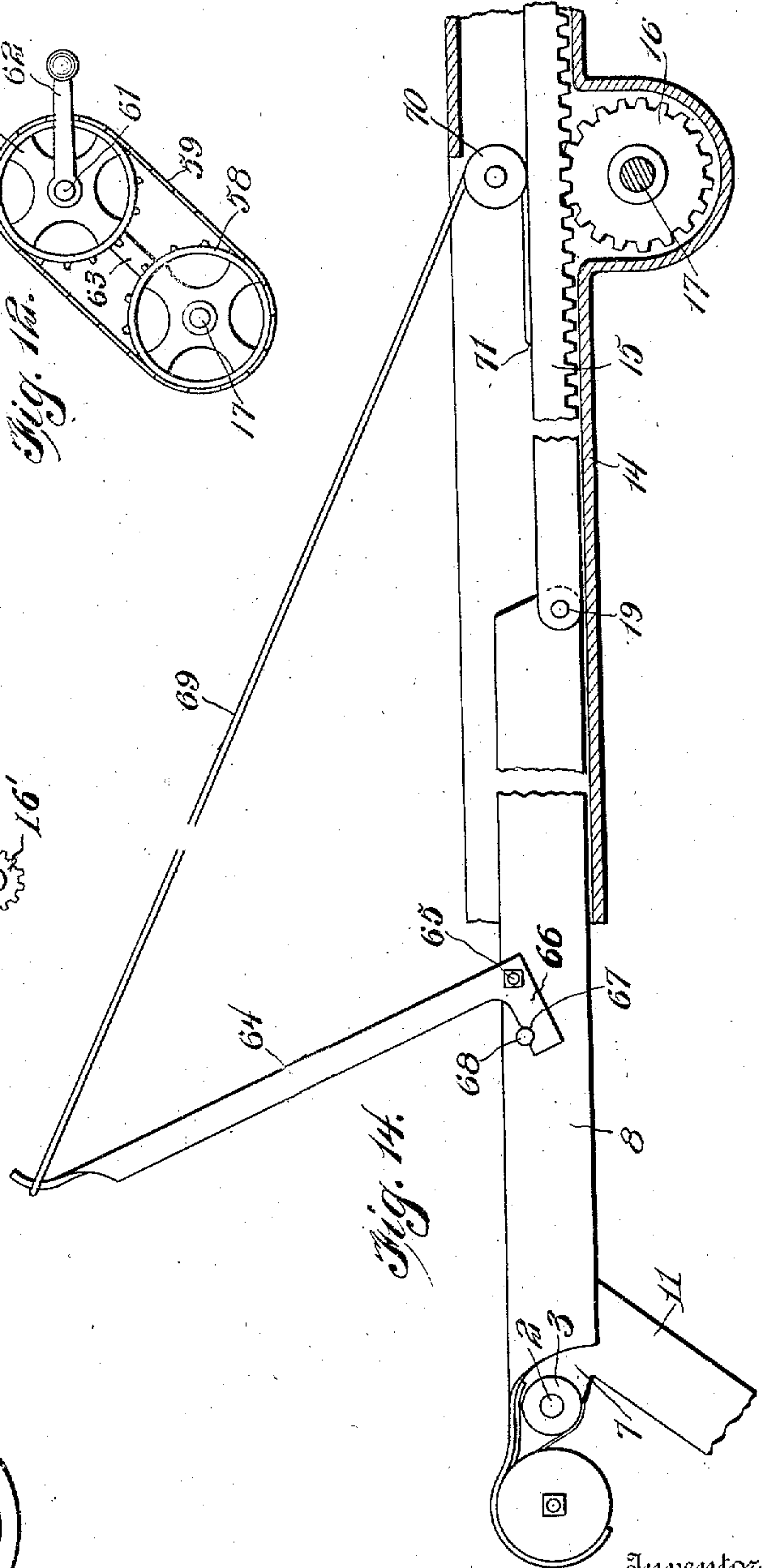


Fig. 14.

Witnesses

Louis P. Heinrichs.
R. M. Smith.

Inventor
Edward F. Shue

By Victor J. Evans
Attorney

UNITED STATES PATENT OFFICE.

EDWARD F. SHUE, OF NEW YORK, N. Y.

FENDER.

960,120.

Specification of Letters Patent. Patented May 31, 1910.

Application filed July 27, 1909. Serial No. 509,764.

To all whom it may concern:

Be it known that I, EDWARD F. SHUE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Fenders, of which the following is a specification.

This invention relates to fenders, the object of the invention being to provide an exceedingly compact folding or collapsible fender which is designed to be mounted upon motor vehicles, cars and horseless vehicles in general, the said fender embodying a flexible apron combined with means for quickly spreading such flexible apron in position to catch persons or objects in front of the vehicle and prevent injury to such persons or objects, the fender being carried in a normally folded and inoperative position and being adapted to be quickly thrown to its operative or spread position in case the necessity therefor arises.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination and arrangement of parts as herein fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a perspective view of the fender of this invention, showing the same spread or in its operative position, together with means for spreading and retracting the fender apron. Fig. 2 is an enlarged vertical longitudinal section through one sheath at one side of the fender, showing the folded or retracted position of the parts. Fig. 3 is a similar section of the end portion thereof, showing the operative or spread position of the parts. Fig. 4 is a cross section on an enlarged scale through the spring roller on which the flexible apron is wound, including the housing for said roller apron. Fig. 5 is longitudinal section through the same. Fig. 6 is a detail perspective view of the forward end of one of the sheaths. Fig. 7 is a cross section through the nested arms or spreaders at one side of the fender. Fig. 8 is a detail view of the inner end of the upper spreader arm, showing a portion of the tilting mechanism. Fig. 9 is a detail perspective view of the tilting hook. Fig. 10 is a side elevation of the fender projecting and retracting mechanism. Fig. 11 is a longitudinal section through the mechanism for operating

the fender by compressed air. Fig. 12 is a side elevation of the hand-operating mechanism for the fender. Fig. 13 is a vertical longitudinal section similar to Fig. 2, showing other means for spreading the arms which carry the fender apron. Fig. 14 is a section similar to Fig. 3, showing the operation of the arrangement shown in Fig. 13.

The improved fender contemplates the use of a flexible apron 1 which may be of any suitable size in accordance with the vehicle in connection with which it is used. It should be of sufficient size to cover the forward portion of the frame of the machine including the engine and wheels so as to protect a person from coming in contact with such parts of the machine frame as might cause injury to the person. The fender apron 1 which may be composed of canvas or any other suitable flexible material is connected along its bottom edge to a rod 2 and this rod is preferably covered with a rubber sleeve 3 to prevent injurious contact with the person. At its upper edge, the apron 1 is connected to a spring roller 4 containing a spring 5 connected with the shaft 6 thereof and with the roller in such manner as to automatically wind the apron 1 upon the roller when the tension of said apron is relaxed.

The flexible apron 1 is carried and supported by means of two sets of spreaders or arms arranged at opposite sides of the frame, 7 designating the lower arms and 8 the upper arms or spreaders. The rod 2 is mounted on the forward extremities of the spreader arms 7 while the roller 4 is mounted on the outer extremities of the upper arms or spreaders 8, as clearly shown in Fig. 1, and these arms or spreaders 7 are mounted so as to swing from a normally horizontal position to the angular relation shown in Figs. 1 and 3, in which latter position they act to sustain the apron 1 in the position shown in Fig. 1. When the arms or spreaders 7 are in the position illustrated in Fig. 1, they are supported by the rollers 9 which are journaled on shafts 10 carried by extensions or feet 11 on the lower arms or spreaders 7, said rollers being adapted to rest and travel upon the ground in order to form a support for the lower portion of the fender.

The upper arms or spreaders 8 are preferably formed out of sheet metal bent into U-form as shown in Fig. 7 so as to receive and

form a housing for the lower arms or spreaders 7 when all of the arms are drawn back into the sheaths hereinafter particularly described and as shown in Fig. 2.

5 In order to protect and conceal the spring roller, and the fender apron when wound thereon, I provide a cylindrical housing 12, as best shown in Fig. 4, said housing having its upper side extended backward as shown at 13 and connected to the upper arms or spreaders 8 as shown in Fig. 2. When the apron is wound upon the roller and the fender, as a whole is in its normal or folded or inoperative position, as shown in Fig. 2, the housing 12 forms a horizontal fender bar which extends across the front of the machine and is located in approximately the same horizontal plane as the side bars of the chassis or truck frame of the car.

20 In connection with each set of arms or spreaders 7 and 8, I employ a combined sheath and guide 14 of sufficient size to receive the respective set of arms 7 and 8 in a manner illustrated in Figs. 2 and 3, the said arms being adapted to nest, one within the other, as shown in Fig. 2 and slide back in the sheath 14, as illustrated in Fig. 2. In connection with each pair of spreaders, I employ a sliding element 15 which is preferably in the form of a rack bar, as shown in Fig. 2, meshing with and driven by a pinion 16 on a shaft 17 extending transversely of the frame of the car, and by preference arranged in a housing 18 forming a pendent extension of the sheath 14, as shown in Fig. 2.

At its forward end, the sliding member 15 has a jointed connection at 19 with the spreader arms so that, as said sliding element 15 is moved back and forth, a corresponding movement is imparted to the spreader arms. Connected to the arm 8 adjacent to the rear end thereof is a tilting loop consisting of a flexible connection 20 having its opposite ends secured to arcuate lugs 21 upon opposite sides of the spreader arm 8, as shown in Fig. 8. The connection 20 extends slightly to one side of the arm 8 and carries a sleeve 22 which is received in a notch 23 in the upper inner corner of the arm or spreader 8, as shown in Fig. 2. Co-operating with said tilting loop is a bifurcated hook 23', the extremities of which project inward through slots 24 in the sheath 14. The shank 25 of said hook is arranged to slide in a casing 26 secured fast to the sheathing 14 and the movement of said hook 23' is cushioned by means of a buffer spring 27 which is mounted in said casing 26 and interposed between the forward end of the casing and a shoulder 28 on the shank 25. It will now be understood that as the spreader arms are thrust forward, the sleeve 22 comes in contact with and is caught by the hook 23' with the re-

sult that the upper spreader arm 8 is swung on its pivotal connection with the sliding member 15 to the position shown in Fig. 8, the sheath 14 being left open at the point 29 to allow the upper spreader arm 9 to swing upward in the manner illustrated and described. The sheath 14 is also cut away at 30 to allow the lower spreader arm 7 to swing downward at an inclination, as shown in Figs. 1 and 3, and as said spreader arm swings downward it bears against a sustaining roller 31 journaled on the forward extremity of a supporting spring 32 secured to the under side of the sheath, as shown in Fig. 3. The roller 31 prevents the lower part of the fender from striking too forcibly against the roadbed or street upon which the vehicle is traveling. When the spreader arms 7 and 8 are swung into the position described and illustrated in Figs. 1 and 3, the flexible fender apron is simultaneously unreeled from the roller 4 and set in the spread out condition shown in Fig. 1 in readiness to catch persons or objects in the path of the vehicle.

33 designates a guide roller arranged within the sheath 14 and forming a bearing for the sliding member 15 to avoid friction and allow the same to operate without binding or cramping.

The mechanism for projecting and retracting the fender and the parts thereof hereinabove described may be constructed and arranged as shown in Figs. 1 and 10, in which it will be observed that on the pinion shaft 17 I mount a pair of friction wheels 34 and 35 which bear against other corresponding friction wheels 36 and 37, the last-named wheels being adapted to be thrown into and out of frictional engagement with the fly wheel 38 of the motor on the car, 39 designating the motor shaft. Each of the wheels 36 is journaled in the bifurcated forwardly extending arm 40 of an elbow lever, the other upwardly extending arm 41 of which is provided with a pedal 42 upon which the operator may readily place his foot for the purpose of throwing the wheel 36 or 37, as the case may be, into and out of frictional engagement with the fly wheel 38, the levers 41 being normally held backward by means of retracting springs 43, the function of which is to sustain the wheels 36 and 37 normally out of engagement with the fly wheel 38. It will be observed, however, that by depressing either of the pedals 42, the corresponding friction wheel 36 or 37 may be moved quickly into contact with the fly wheel, motion thereupon being imparted by means of the friction wheels to the pinion shaft 17 which in turn acts to thrust the apron spreading arms forward or backward according to the direction of rotation of said pinion shaft.

When the operator depresses the right

hand pedal 42 for example, the wheel 36 is moved up against the fly wheel 38, which thereupon acts to impart a rotary movement to the pinion shaft 17 which causes the sliding members 15 to move forward and spread the apron in a manner illustrated in Fig. 1. Just as the upper spreader arms 8 reach their upstanding position shown in Figs. 1 and 3, one of said arms, as shown in Fig. 1 comes in contact with the trip lever 44 pivotally mounted on one of the sheaths 14 and connected by means of a rod 45 to a lever 46. The last-named lever 46 is mounted transversely of the sheaths 14 and has rigidly connected thereto a pair of lever arms 48 adapted to come in contact with the projecting shafts or journals of the wheels 36 and 37 above described and as shown in Figs. 1 and 10. The result is that one of the arms 48 will act to throw the wheel 36 upward out of contact with the fly wheel 38 thereby stopping the rotation of the pinion shaft 17 and leaving the fender set. When the operator desires to fold and retract the fender he presses upon the other pedal 42 which throws the friction wheel 37 into contact with the fly wheel 38. This serves to rotate the pinion shaft in the opposite direction, moving the sliding members 15 backward. Just before completing the backward movement, the rear extremity of the spreader arm 8 comes in contact with a pin 49 on a link 50 which connects with the upper arm of a lever 46, thereby rocking said lever 46 and the shaft 47 and causing one of the arms 48 to throw the wheel 37 out of engagement with the fly wheel 38. This prevents further rotation of the pinion shaft 17 and the fender as a whole is now in its folded or inoperative position.

The sliding member 15 may be actuated by means illustrated in Fig. 11 wherein it will be observed that I use an air cylinder 51 to which compressed air is led through a pipe 52 leading to opposite ends of said cylinder and controlled by a hand-manipulated valve 53.

Mounted to reciprocate within the cylinder 51 is a piston 54 which is mounted on a piston rod 55 operating through stuffing boxes in the opposite ends of the cylinder 51 and connected at 56 and 57 to the sliding rack bar 15'. The sliding rack bar 15' is arranged on the inside of the chassis and actuates the pinion 16' on the shaft 17 causing the pinions 16 to actuate the sliding members 15.

Both of the sliding members 15 may be operated by a single hand-manipulated valve 53 and will be connected to the apron spreading arms in the same manner as hereinabove described and illustrated, for example, in Figs. 2 and 3.

The fender may be manually spread and

folded by the means illustrated in Fig. 12, in which it will be observed that I mount a sprocket wheel 58 on the pinion shaft 17 and from said wheel 58 a sprocket chain 59 extends upward through the floor of the vehicle around another sprocket wheel 60 mounted on a shaft 61 adapted to be operated by means of a hand crank 62. The operator by manipulating the crank 62 may revolve the pinion shaft 17 and thus project and retract the fender mechanism hereinabove described. The shaft 61 together with the sprocket wheel mounted thereon and the operating crank 62 may be pushed forward against the dash board of the vehicle or drawn backward so as to be more accessible for operation, as such movement will not interfere with the operative relation of the sprocket mechanism to the pinion shaft 17. Any suitable frame 63 may be employed for supporting the shaft 61 above described.

Instead of employing the tilting mechanism above described and illustrated in Figs. 2, 3, 8 and 9, I may employ the expedient illustrated in Figs. 13 and 14 wherein it will be observed that I use in connection with each of the upper spreader arms 8 a tilting lever 64 which is pivotally connected to the spreader arm 8 at 65 and provided with a short elbow extension or arm 66 having a notch 67 adapted to engage a pin 68 on the arm 8 when moved upward to the position shown in Fig. 14, said tilting arm 64 normally occupying the horizontal position shown in Fig. 13 in which position it is adapted to slide into the sheath 14 as shown. Each tilting lever 64 has connected to the upper end thereof a cable or flexible connection 69 which extends downward around a guide pulley 70 arranged inside of the sheath 14 and above the sliding member 15, the other end of said connection 69 being fastened to the sliding member 15 at the point 71. It will now be seen that after sliding the member 15 it draws on the connection 69 and swings the arm or lever 64 from the position shown in Fig. 13 upward to the position shown in Fig. 14. When it reaches the position shown in Fig. 14, the further outward thrust of the sliding member 15 will cause the arm 64 to act as a lever on the spreader arm 8, swinging the latter to the upward or spreading position shown in Fig. 1. When the sliding member 15 is retracted, the arm or lever 64 automatically swings downward, such downward movement of the part 64 being insured by the winding action of the spring roller 4, the tension of which always acts to draw the apron 1 taut and the extremities of the spreader arms together.

Each sheath 14 is preferably made of sufficient length to accommodate a bumper spring 72 behind the rear end of the adjacent sliding member 15 so that when the

fender is folded, a cushion is provided for the fender bar formed by the housing 12 to prevent the same from being held rigidly so as to injure any person with whom said fender bar may come in contact.

By reference to Fig. 1, it will be observed that the sheaths 14 are adapted to extend parallel with and alongside of the side bars 73 of the chassis or frame of a motor car and the said sheaths may be secured to said side bars in any convenient manner.

I claim:—

1. A fender comprising parallel sliding elements, actuating means therefor, a flexible apron, and apron spreading means actuated by the movement of the sliding elements.

2. A fender comprising parallel sliding elements, actuating means therefor, a flexible apron, and apron spreading arms actuated by the movement of the sliding elements.

3. A fender comprising a sliding element, a flexible fender apron, oppositely movable apron spreaders actuated by the sliding element, and a roller carried by and movable with one pair of spreaders and having said apron wound thereon.

4. A fender comprising jointed spreader arms, a roller carried by one pair of said arms and movable therewith, a flexible fender apron connected with said arms and wound upon said roller, and means including a sliding member operating to spread and fold said arms.

5. A fender comprising jointed spreader arms, a flexible fender apron connected with said arms, and means for spreading and folding said arms including a sliding member connected with said arms and a sheath in which said arms and sliding member are received.

6. A fender comprising jointed spreader arms, a flexible fender apron connected with said arms, a sheath into which said arms are adapted to slide, means for imparting a sliding movement to said arms, and means for cushioning the inward movement of said arms.

7. A fender comprising jointed spreader arms, a flexible apron connected with said arms, an apron winding roller, and means

including a sliding member operating to spread said arms apart.

8. A fender comprising jointed spreader arms, a flexible fender apron connected with said arms, an apron winding spring roller, and means including a sliding member operating to spread said arms.

9. A fender comprising jointed spreader arms, a flexible fender apron connected with said arms, yielding supports for sustaining said arms in operative position, and means including a sliding member operating to spread and fold said arms.

10. A fender comprising jointed spreader arms, a flexible fender apron connected with said arms, means including a sliding member operating to spread and fold said arms, a roller on which the apron is adapted to be wound, and a housing for said roller forming a front fender bar.

11. A fender comprising jointed spreader arms, a flexible fender apron connected with said arms, and means operating to spread and fold said arms including a sliding member, a sheath in which the arms and sliding member move, and a trip cooperating with one of said arms.

12. A fender comprising jointed spreader arms, a flexible fender apron connected with said arms, and means for spreading and folding said arms including a sliding member and rack and pinion mechanism for actuating the sliding member.

13. A fender comprising jointed spreader arms, a flexible fender apron connected with said arms, and means operating to spread and fold said arms including a sliding member, rack and pinion mechanism for actuating the sliding member, and means for imparting motion to said pinion.

14. A fender comprising jointed spreader arms, a flexible fender apron connected with said arms, means including a sliding member operating to spread and fold said arms, and means for limiting the opening and closing movement of the fender apron.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD F. SHUE.

Witnesses:

REXFORD M. SMITH,
JOHN L. FLETCHER.