

(No Model.)

J. P. TIRRELL & A. B. TAYLOR.

BUFFER FOR STORE SERVICE APPARATUS.

No. 413,267.

Patented Oct. 22, 1889.

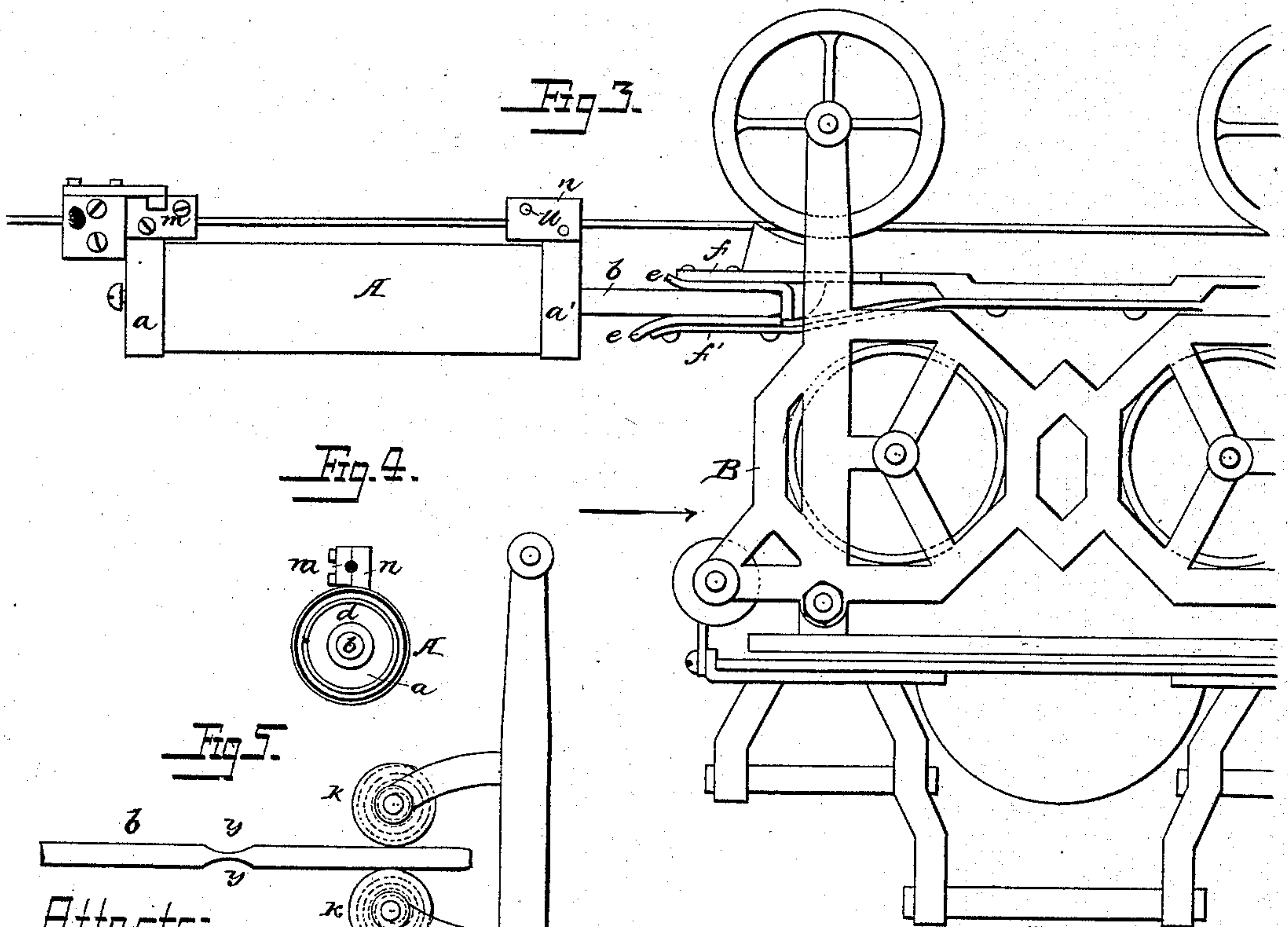
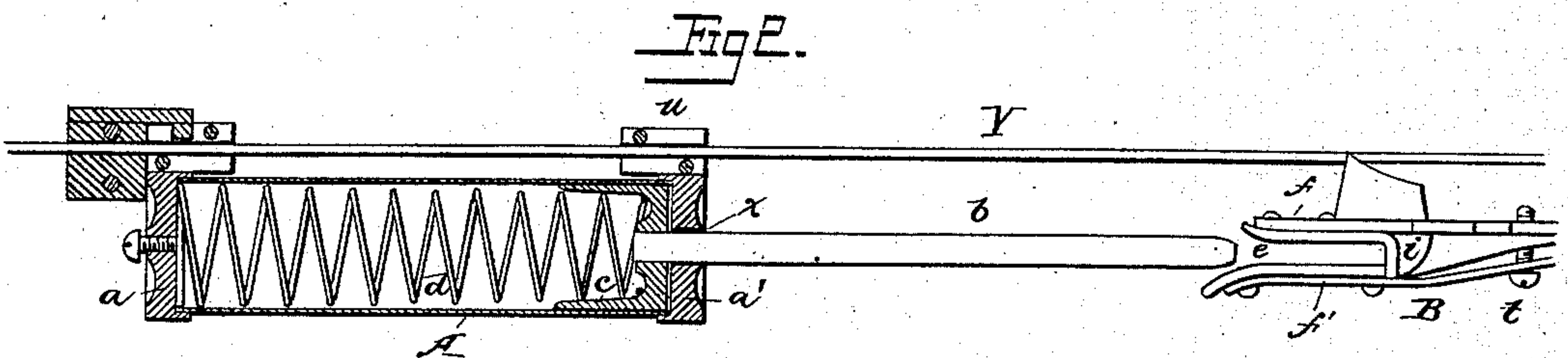
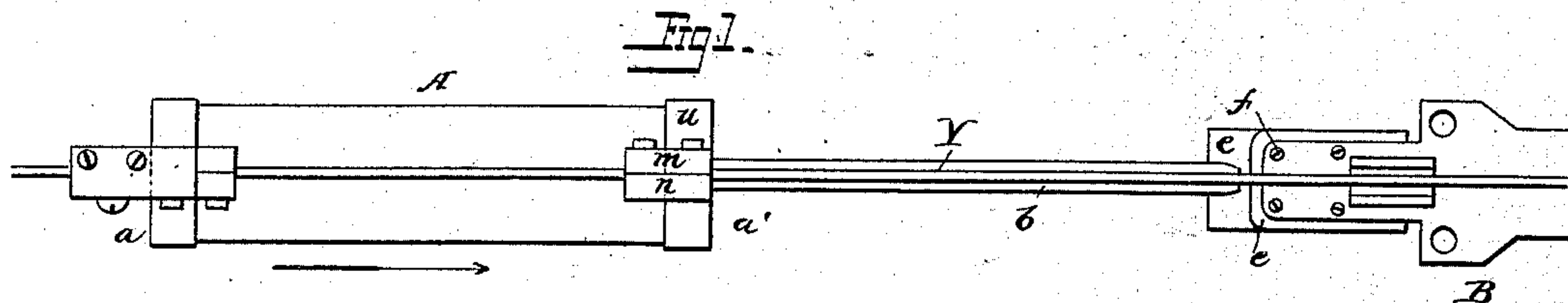


Fig. 4.

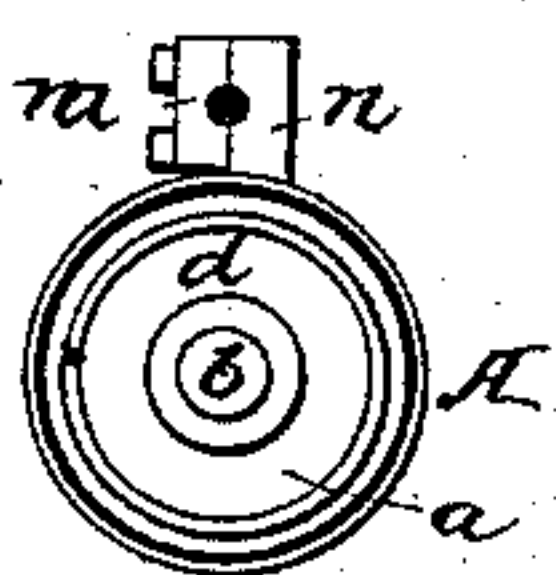
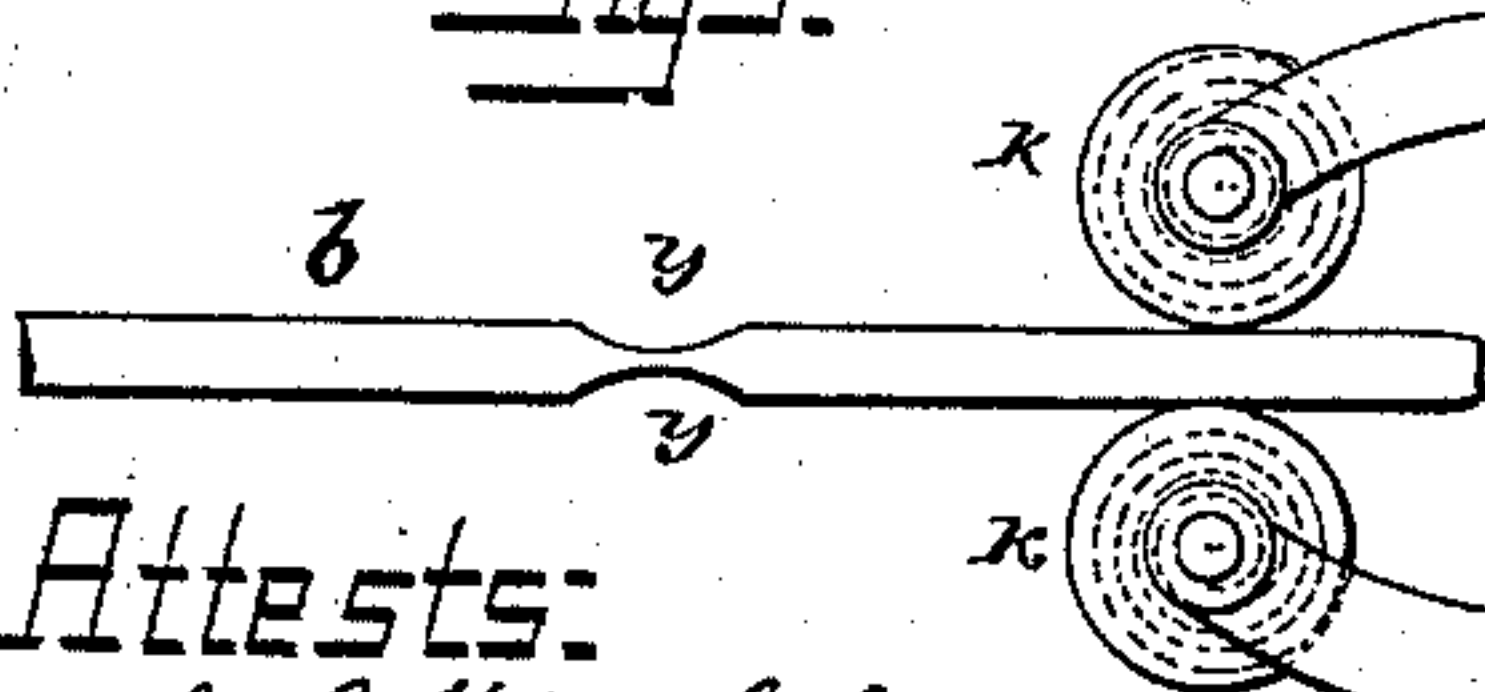


Fig. 5.



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UNITED STATES PATENT OFFICE.

JACOB P. TIRRELL AND AMOS B. TAYLOR, OF BOSTON, MASSACHUSETTS,
ASSIGNORS, BY MESNE ASSIGNMENTS, TO THE LAMSON CONSOLIDATED
STORE SERVICE COMPANY, OF NEW JERSEY.

BUFFER FOR STORE-SERVICE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 413,267, dated October 22, 1889.

Application filed December 26, 1885. Serial No. 186,784. (No model.)

To all whom it may concern:

Be it known that we, JACOB P. TIRRELL and AMOS B. TAYLOR, citizens of the United States, and residents of Boston, Suffolk county, Massachusetts, have invented certain new and useful Improvements in Store-Service Cars and Buffers, of which the following is a specification.

Our invention relates to that class of devices used for arresting the movements of the cars of store-service apparatus upon their tracks; and our invention consists of a buffer in which the car is brought into contact with the stationary portion of the device without impact, but with a sliding frictional resistance, and also in the use of an air-cushion in connection with the said friction device, and in constructing the various parts, as fully set forth hereinafter.

In the drawings, Figure 1 is a plan view of part of a track of a store-service apparatus, showing the arresting device at one end thereof and part of a car provided with a spring-clamp. Fig. 2 is a side elevation in part section of Fig. 1. Fig. 3 is a side elevation showing the parts in a different position. Fig. 4 is an end view looking in the direction of the arrow, Fig. 1. Fig. 5 is a side view illustrating a modification.

Adjacent to the track or secured to the same, as shown in the drawings, is arranged a cylinder A, having two heads a a' , the latter perforated for the passage of the rod b of a piston c , the rod fitting somewhat loosely in the opening x in the head a' , and the piston fitting somewhat loosely in the cylinder, and a spring d between the piston and the rear head of the cylinder serves to throw forward the piston to the position shown in Fig. 2.

The car B, which moves upon the track, carries a spring-clamp or friction device consisting of a fixed jaw f and a spring-jaw f' , parallel to the jaw f at its outer end, the inner faces of the jaws being lined with leather, rubber, or other suitable material e , and a stop i limits the movement of the jaw f' toward the jaw f , so that they will normally occupy a position a short distance apart, as shown in Fig. 2, and the said clamp is so arranged that as the car approaches the end of

the track the clamp will be brought to a position to receive the projecting end of the piston-rod b . As the clamp is brought upon the end of the piston-rod a twofold action takes place. First, the end of the piston-rod is forced to a slight extent between the jaws; and, secondly, as the friction of the jaws upon the rod increases the rod is forced back, carrying with it the piston c , which thereby compresses the air in the cylinder at the end of the piston, and as the air-pressure increases and as the end of the piston-rod is forced farther between the jaws the resistance to the onward movement of the car becomes gradually greater and greater until the momentum of the car is finally entirely absorbed and the car ceases its forward movement. As the piston travels backward, a portion of the air from the rear of the piston escapes forward around the piston and out of the opening x , so that when the piston reaches the limit of the movement imparted to it by the contact of the car there is less air in volume at the rear of the piston than when it started on its backward movement. The expansion of the air, however, is sufficient in connection with the spring b to drive the piston forward after the car has ceased its travel; but the reduction in the quantity of the air at the rear of the piston prevents the latter from being thrown without resistance to the forward end of the cylinder, while a further resistance is offered by the air between the end of the piston and the head a' of the cylinder, so that the rebound is so slight that there is no tendency to throw the car away from contact with the piston-rod, which is gripped firmly by the clamp. As there is no abrupt impact or contact of the car with the piston-rod, and as the resistance to the backward movement of the piston increases gradually, the motion of the car is arrested so easily that the stoppage is effected without any noise, shock, or jarring of the parts, thus avoiding the strains and injury to the cars which result when the stoppage is effected by the impact of a car against an immovable or but slightly movable object. While the compression of the air in the cylinder would serve to gradually arrest the movement of the

car, the positive contact of any portion of the car with the end of the piston-rod would result in a shock accompanied by considerable noise; but the use of the clamp, as described, bringing the car into frictional contact only with the sides of the rod avoids impact and shock, and also causes a gradual resistance to the movement of the car, which co-operates with the action of the compressed air to prevent noise, shocks, and strains. When the car is to be started in its travel in the opposite direction, a very slight pressure in the direction of the arrow, Fig. 3, will serve to disengage the car from the piston-rod, the clamp sliding easily along the rod under the pressure requisite to send the car on its backward travel. It will be evident that the clamp, instead of being carried by the car, may be secured in a fixed position adjacent to the track, and that the air-cushion cylinder, with its piston and piston-rod, may be carried by the car, in which case the piston-rod would extend through both heads of the cylinder, so as to make contact with the buffers at both ends of the track. We also contemplate making the clamp in different ways, so as to secure a frictional contact with the sides of the rod *b*, which at its outer end may sometimes be flattened to expose a greater surface. Thus the clamp may consist of two friction-wheels *k k*, Fig. 5, which receive between them the end of the rod *b*, and each of which contains a spring, (shown in dotted lines,) which is gradually wound up by the rotation of the wheel as the car travels forward upon the rod, and the latter is reduced in thickness at *y y*, so that when the wheels come opposite this portion they turn back without contact with the rod, so as to avoid any reaction tending to throw the car toward the end of the rod.

A screw *t*, Fig. 2, or other adjusting device, may be used to increase or decrease the rigidity of the spring-jaw *f'*, to vary the force of the clamp.

To facilitate and cheapen the construction of the air-buffer, we make the heads *a a'* of cast metal and the cylinder *A* of a separate tube or section of pipe fitting recesses in the inner faces of the heads and retained in place by clamping the heads to the wire or track *Y*, as shown in the drawings. The attachment between each head and the wire consists of a lug *n* upon the head and a clamping-piece *m*, secured to the lug by screws *u*, the wire passing between the lug and the clamping-piece, so that the head may be applied to and disconnected from the wire while it is suspended in position.

Although we have described the air-cushion as being used in connection with the friction device for creating a sliding contact with the sides of the rod *b*, the said friction device may be used in connection with a rod secured in a fixed position, either upon the car or adjacent to the track.

Without limiting ourselves to the precise

construction and arrangement of parts shown, we claim—

1. In a store-service apparatus, the combination of a track, a car traveling thereon, a yielding stop carried by or adjacent to the track, and a clamp on the car provided with jaws arranged to grasp and move with their opposite faces in frictional contact with said stop, substantially as described.

2. The combination, with a track and a car-buffer having a longitudinally-yielding rod *b*, of a car provided with a clamp having parallel faces arranged to make contact with and move frictionally against the opposite sides of the rod in the direction of its length, substantially as set forth.

3. The combination, with the track of a store-service apparatus, of an air-cushion provided with a projecting rod and a car having a clamp with parallel jaws arranged to make frictional contact with the sides of the rod and to move thereon as the car approaches the point where it is to be arrested, substantially as described.

4. The combination, with the track and car of a store-service apparatus, of a frictional buffer consisting of a clamp having longitudinal parallel friction-faces extending in the line of the track and a rod or bar also extending in the line of the track and adapted to enter endwise between the frictional faces of the clamp, whereby to gradually increase the extent of frictional surface and resistance to the movement of the rod, substantially as described.

5. The combination, with the track and car of a store-service apparatus, of a rod *b*, supported in the line of the track, and a frictional clamp arranged to slide upon the rod in the direction of its length, and consisting of two parallel jaws, one fixed and the other yielding, and arranged to receive between them the end of the rod, substantially as described.

6. The combination, in a store-service apparatus, of a track and a car, an air-cylinder provided with a piston and projecting rod arranged adjacent to the track, and a spring-clamp arranged upon the car to receive the end of the rod and to slide upon the same with a frictional resistance, substantially as set forth.

7. The combination, in a buffer for store-service apparatus, of an air-cushion, a yielding stop supported thereby, and a frictional clamp, one carried by the car and the other adjacent to the way, and arranged to operate substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JACOB P. TIRRELL.
AMOS B. TAYLOR.

Witnesses:

CHARLES M. BARNES,
F. B. TIFFANY.