Jan. 30, 1951 F. W. DAVIS 2,539,993

RETRACTABLE WHEEL SUPPORT FOR LUGGAGE

Filed July 2, 1946 3 Sheets-Sheet 1

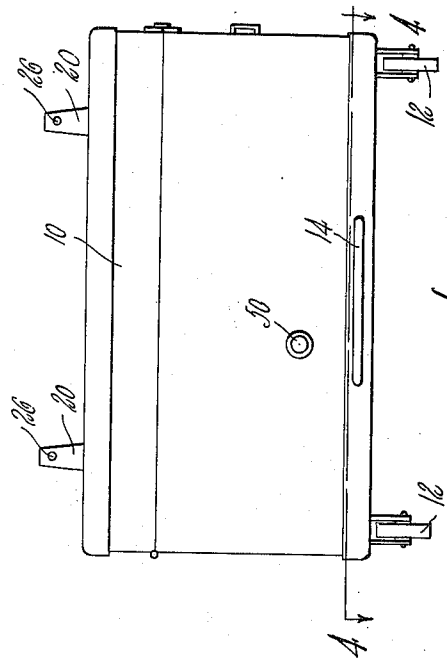

Fig. 2.

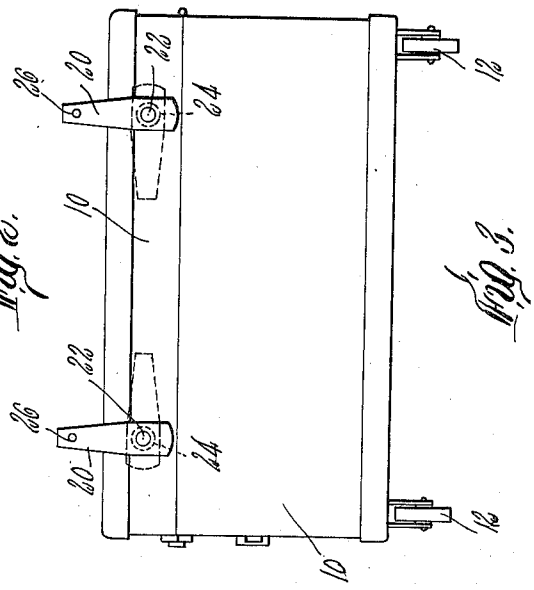

Fig. 3.

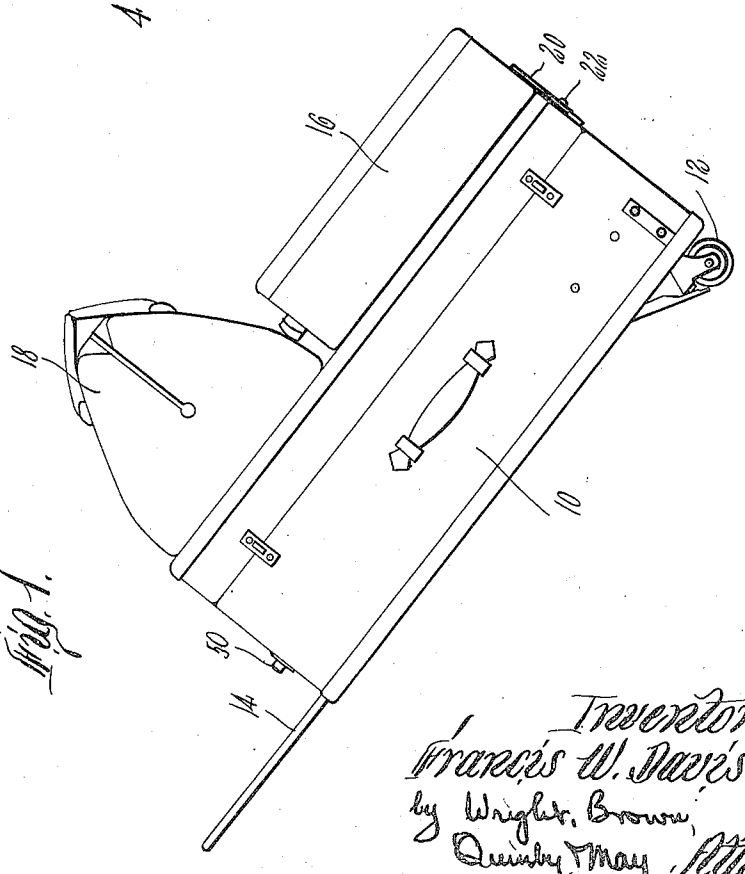

Fig. 1.

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RETRACTABLE WHEEL SUPPORT FOR LUGGAGE

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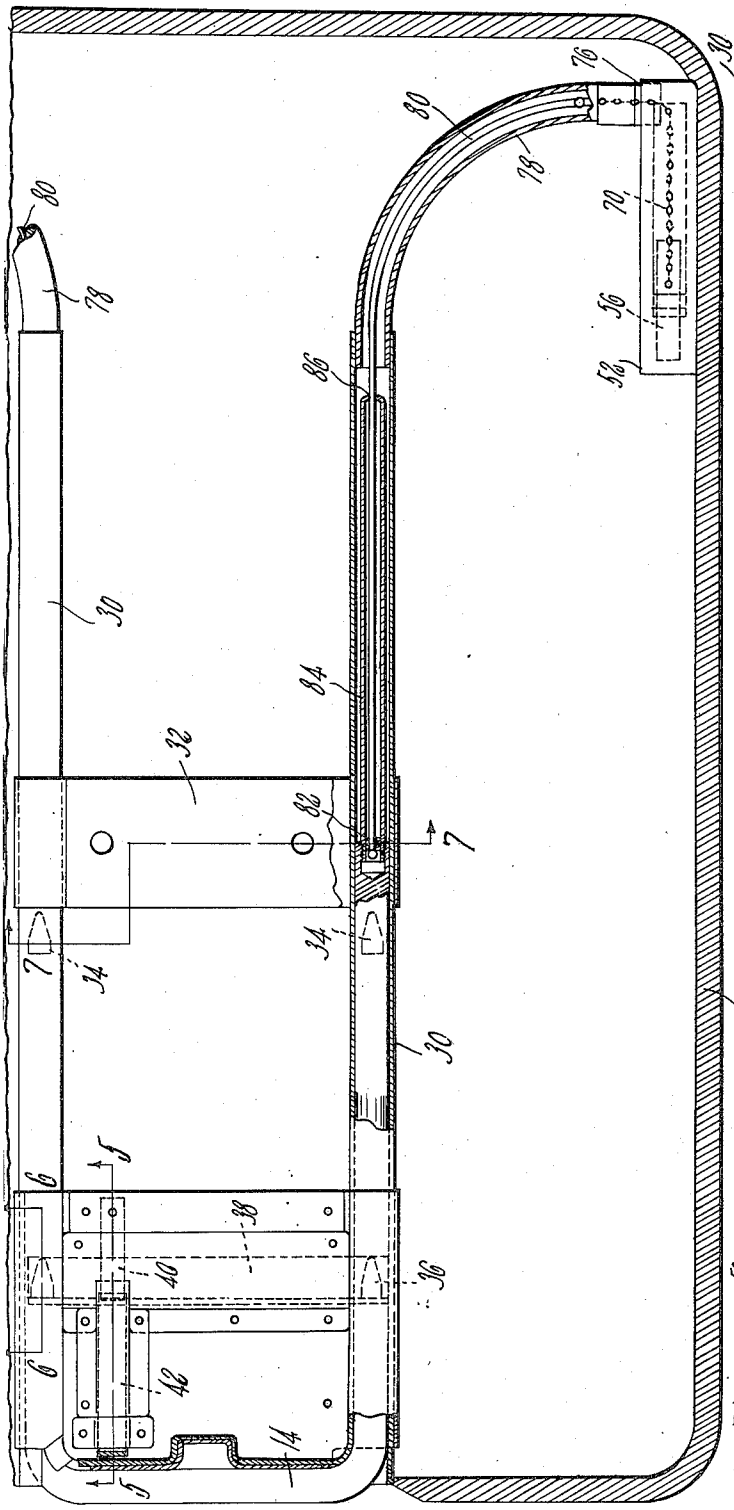

Fig. 4.

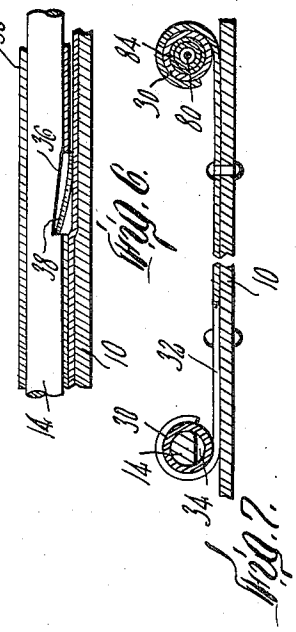

Fig. 6.

Fig. 7.

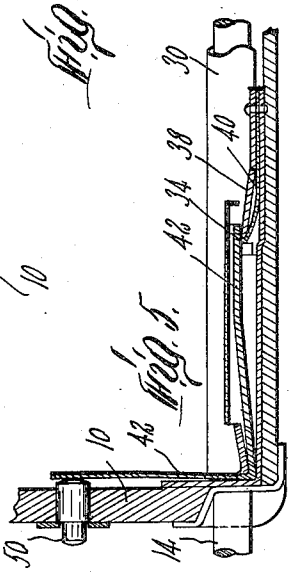

Fig. 5.

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RETRACTABLE WHEEL SUPPORT FOR LUGGAGE

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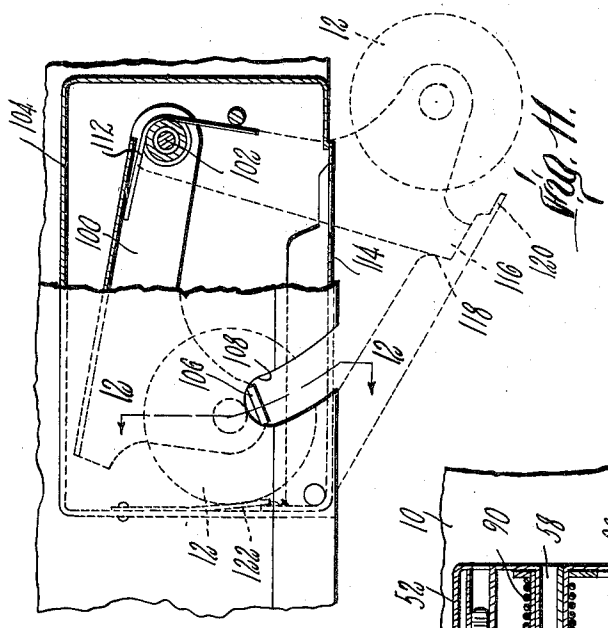

Fig. 11.

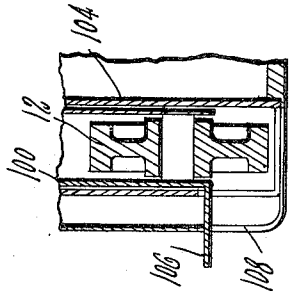

Fig. 12.

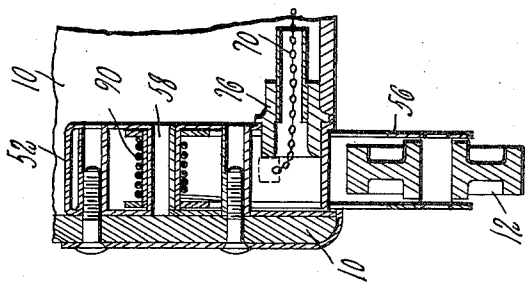

Fig. 10.

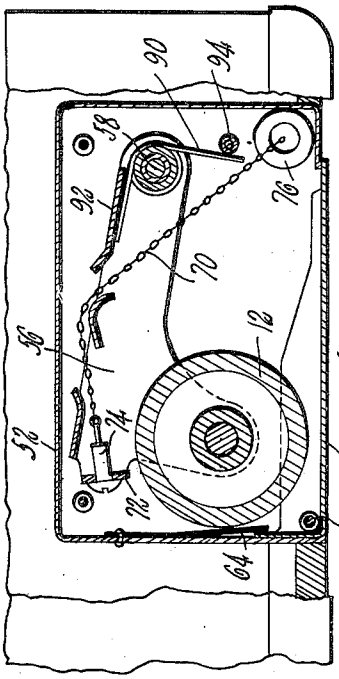

Fig. 8.

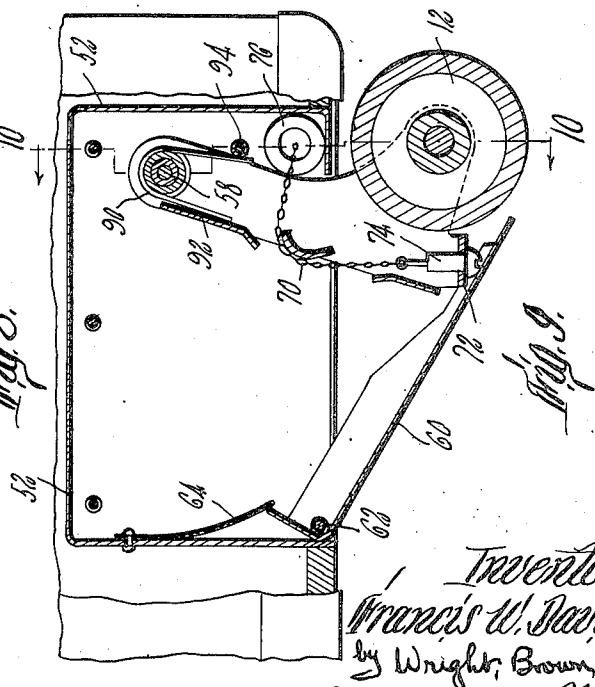

Fig. 9.

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RETRACTABLE WHEEL SUPPORT FOR LUGGAGE

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Application July 2, 1946, Serial No. 681,095

6 Claims. (Cl. 280—41)

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This invention relates to luggage, such as suitcases of large size, which are usually heavy when packed. It is often difficult to secure desired assistance in transporting hand luggage to and from railroad trains and the like so that the transportation of luggage of this description on a train platform and in a railroad station is often a difficult problem. It is an object of the present invention to provide luggage which contains built-in means for facilitating transportation of this kind. To this end a pair of small wheels are built into recesses in an end edge of the luggage, these wheels being movable to an operative position partly or wholly outside of the normal exterior contour of the luggage in which position they carry the weight of the luggage and permit it to be wheeled over a supporting surface such as a floor or platform. A convenient handle is provided at the other end of the luggage, this handle being preferably movable into and out of the luggage so that when the handle and wheels are not in use they are housed within the exterior contour of the luggage.

For a more complete understanding of the invention, reference may be had to the following description thereof and to the drawings, of which:

Figure 1 is a side elevational view of an embodiment of the invention in condition for use;

Figure 2 is an end elevation of the improved article of luggage;

Figure 3 is an opposite end elevation of the same;

Figure 4 is a fragmentary sectional view on the line 4—4 of Figure 2;

Figure 5 is a section on the line 5—5 of Figure 4;

Figure 6 is a section on the line 6—6 of Figure 4;

Figure 7 is a section on the line 7—7 of Figure 4;

Figure 8 is a sectional view showing one of the wheels and its associated mechanism in closed position;

Figure 9 is a similar section showing the wheel in its position of use;

Figure 10 is a section on the line 10—10 of Figure 9;

Figure 11 is an elevational view of a modified form of wheel supporting mechanism, a portion being broken away to show in section;

Figure 12 is a section on the line 12—12 of Figure 11;

Figure 1 of the drawings shows an embodiment of the invention in position for use. This

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comprises a piece of hand luggage 10 such as a suitcase of large size, this suitcase being provided, according to the invention, with a pair of wheels 12 on which it can be trundled, and a suitable handle member 14. If desired, provision may be made for carrying extra pieces of luggage 16 and 18, for example, upon the case 10 such means consisting of one or more lugs 20 which are pivoted at the end of the case 10 as at 22 so as to be movable from an upright position in which a portion projects above the top of the case as shown in Figures 2 and 3, to a position indicated in dotted lines in Figure 3 in which the lugs are flat against the end of the case and do not project beyond any edge thereof. The lugs may be mounted with spring washers 24 to provide frictional resistance so that they will stay in either position. Each lug also may have a hole 26 in the end thereof through which a suitable lashing can be passed if needed to hold the additional pieces 16 and 18 in place on the case 10.

As indicated in Figure 4, the handle 14 is preferably U-shaped and may be made of rod or tube stock bent to shape. Each of the legs of the handle member slides in a tubular casing 30. These casings are anchored within the bottom of the case 10 by any suitable means such as a clip 32 which may be riveted or otherwise fastened to the bottom of the case on the inside thereof, the ends being curled around the tubular casings 30 as indicated in Figure 7. When the handle 14 is pulled out to its extended position for use, it is desirable that it be releasably locked in such position. For this purpose the legs of the handle member are suitably notched as at 34, the casings 30 also being notched as at 36 so that these notches register when the handle is in its extended position. At such time a locking plate 38 is adapted to move into the notches so that an edge thereof catches in the notches 34 and prevents retraction of the handle member as long as the locking plate 38 engages in the notches 34. A light spring 40 is provided to press the plate 38 yieldingly into the notches 34. When it is desired to return the handle to its telescoped position within the casings 30, the locking plate 38 is pushed out of the notches 34 by suitable means such as a rocking lever 42 which, as shown in Figure 5, is preferably L-shaped, one leg of the L pressing against the locking plate 38, the other leg being engaged by a push button 50 which extends through the wall of the case 10. By pressing the button 50, the handle member 14 is unlocked and can be pushed to its telescoped

position within the case 10 so that the transverse end portion of the handle member is flush with an end wall of the case 10.

The wheels 12 are disposed in separate housings 52 which form recesses in corners of the case 10 at the opposite end from the handle 14 and within the normal exterior contour of the case, such contour being customarily rectangular. The two housings 52 and the mechanism contained therein are substantially identical so that a description of one will answer for both. As shown in Figures 8 and 9, the wheel 12 is rotatably mounted on a bracket 56 which may conveniently be made of heavy sheet metal and movable so as to shift the wheel from a position within the housing to a position partly or wholly outside of it. As shown, the bracket is pivoted at 58 so that the wheel 12 can swing into the housing 52 as indicated in Figure 8 or may be swung out of the housing, as indicated in Figure 9, where it is in its exterior position for use. The housing 52 is provided with a cover plate or lid 60 which is hinged thereto as at 62, a spring 64 being provided to bear against the lid 60 in such a way as to tend to move the lid to its closed position as shown in Figure 8. When the bracket 56 is rocked to swing the wheel 12 out of the housing 52, the lid 60 is pushed to its open position by the wheel 12 and is held in such position by the end of the bracket 56. When the bracket is swung in the opposite direction to move the wheel back into the housing 52 the lid is swung back to its closed position by the spring 54.

According to the invention I may connect the brackets 56 with the handle member 14 in such a way that the outward movement of the handle member to its extended position for use results in swinging the brackets 56 so as to move the wheels 12 to their position for use. Since in the embodiment of the invention illustrated on the drawings the extent of outward movement of the handle 14 is more than is needed for moving the wheels out, a lost-motion connection is provided between the handle and the wheels. For this purpose each bracket may have attached thereto a suitable flexible tension member such as a chain 70 which is attached at one end to part 72 of the bracket 56 by means of an adjusting screw 74. The chain 70 leads through a suitable grommet 76 into a tube 78 where its other end is connected to a flexible wire 80. The other end of the wire is secured to a ferrule 82 slidable in a tubular extension 84 of one of the legs of the handle member 14. This tubular extension 84 has a reduced aperture 86 at its end remote from the handle member 14. The ferrule 82 is slidable within the tube 84 so that when the handle 14 is pulled out to its position of use, the tube moves relatively to the ferrule 82 until the latter engages the end of the tube around the reduced opening 86. Thereupon, further movement of the handle acts through the wire 80 and the chain 70 to swing the wheel brackets 56 to the position indicated in Figure 9. The locking plate 38 engages in the notches 34 and thus locks the handle 14 in its extended position, thus also locking the wheel brackets 56 in their extended position. The screw terminal 74 on each of the chains 70 can be readily adjusted so as to cause the wheels 12 to be in the proper operating positions when the handle is fully extended and is locked by the locking plate 38.

When the push button 50 is pressed to release the handle 14, it can be returned to its inoperative position and the wheels 12 with their brackets 56 are thus released to swing back into the housings 52. This movement of the brackets and wheels is brought about by any suitable means such as a spring 90 for each of the brackets the spring being coiled around the pivot member 58 and having end portions bearing respectively against the bracket 56 as at 92 and a pin 94 or other convenient stop element.

The wheels and brackets need not be operated by movement of the handle member 14. If preferred, each bracket can be independently operated, mechanism for such operations being illustrated in Figures 11 and 12. As therein shown, each wheel 12 is mounted on a bracket 100 rockable about a fixed pivot 102 in a housing 104. The bracket 100 is provided with a pedal member 106 which projects out through a slot 108 in the outer side wall of the housing 104. This pedal is readily engageable by the foot of the operator and, when pressed downward, serves to swing the bracket 100 so that it projects out from the housing 104 as indicated in dotted lines in Figure 11. This movement of the bracket 100 is against the pressure of a spring 112 which may be arranged similarly to the spring 90 shown in Figure 8. As the wheel is swung out to its operative position, it pushes against the hinged lid 114 of the housing 104 until the end portion 116 of the bracket catches on a shoulder 118 on the inner surface of the lid 114, thus locking the bracket and wheel in their operative position. When it is desired to return the wheel 12 to its enclosed position, the free end 120 of the lid 114 can be readily engaged by the toe of the operator and swung out sufficiently to release the bracket from the shoulder 118 whereupon the bracket and wheel are swung back into the housing by the spring 112 and the lid 114 is closed by a suitable spring 122.

What I claim is:

1. A piece of luggage having two wheels mounted therein near corners thereof, and means for moving said wheels to operative positions outside of the exterior contour of said piece, said means including a handle member normally housed within said piece and lost motion connections between said handle member and said wheels whereby when said handle member is moved to its extended position the final portion only of said movement is effective to move the wheels to their operative positions.

2. A piece of luggage having two wheels mounted therein near the bottom corners at one end thereof, means for moving said wheels to operative positions outside of the normal exterior contour of the piece, said means including a notched handle member normally housed in said piece at the other end thereof and movable to an extended position for use and operative connections between said handle member and wheels, means for releasably locking said handle member in its extended position, said locking means including a spring pressed latch within said piece adapted to engage in the notches of the handle member, and means including a push button projecting from the end of the piece adjacent to the handle member for disengaging said latch from said notches.

3. A piece of luggage having a small housing within each of the bottom corners at one end thereof, a handle at the other end of said piece adapted to be pulled out to an extended position, a bracket movably mounted in each said housing, a wheel rotatably carried by each said

bracket and movable thereby into and out of its housing, and means operatively connecting said handle with said brackets to move said wheels out of said housings in response to movement of said handle to its extended position, said connecting means including telescoping elements whereby the distance of movement of the handle is substantially greater than the distance of the resulting movement of each said bracket.

4. A piece of luggage having a small housing within each of the bottom corners at one end thereof, a handle at the other end of said piece adapted to be pulled out to an extended position, a bracket movably mounted in each said housing, a wheel rotatably carried by each said bracket and movable thereby into and out of its housing, spring means pressing each bracket to move its wheel into its housing, and means operatively connecting said handle with said brackets to move said wheels out of their housings in response to movement of the handle to its extended position, said means including a length of chain extending into each said housing and telescoping elements whereby the distance of movement of said handle to its extended position is substantially greater than the resultant distance of movement of said wheels.

5. A piece of luggage having recesses in the bottom corners at one end thereof, a handle at the other end thereof adapted to be pulled out to an extended position, means for releasably locking said handle in its extended position, a bracket movably mounted in each said recess, a wheel rotatably carried by each said bracket and movable thereby out of its recess, means including flexible tension elements operatively connecting said handle with said brackets to move said wheels out of said recesses in response to movement of said handle to its extended position, and means for adjusting the length of said flexible tension elements.

6. A piece of luggage having recesses in the bottom corners at one end thereof, a bracket

movably mounted in each said recess, a wheel rotatably carried by each said bracket and movable thereby into and out of said recess, a handle at the other end of said piece adapted to be pulled out to an extended position, said handle having parallel shanks slidably mounted in said piece, each said shank having a notch therein, flexible means operatively connecting said shanks to said brackets respectively to move said wheels out of said recesses in response to movement of said handle to its extended position, a latch plate mounted within said piece and spring-pressed against said shanks to engage in the notches thereof when the handle is in its extended position, and means operable to disengage said latch plate from said notches, said disengaging means including a push button projecting from said piece and a bell crank rockably mounted in said piece with one arm engaging said button and the other arm engaging said plate.

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